Dynamics 365 CE Essentials

Administering and Configuring Solutions

—

Sarah Critchley

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Sarah Critchley
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For Joe, Jax, and Meg

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About the Author

Sarah Critchley is a Microsoft Dynamics Business Applications MVP and an experienced technical consultant. She has worked on numerous business system implementations and is now working as the Research and Development Industry Solutions Lead in an established worldwide business applications practice. Having led software projects in numerous industries, including healthcare and the public sector, she now works across all areas of the project lifecycle, from demonstrations, design, and architecture to documentation, customizations, and development. She gets involved in the technical community through chairing the CRM User Group in the United Kingdom, running technical events, and presenting on technical and functional topics at conferences around the world.

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Scott Durow is an experienced software architect and technologist with a passion for enabling business transformation through Microsoft technologies.

Scott is a Microsoft Business Applications MVP specializing in Dynamics 365. He is also the author of the Ribbon Workbench and SparkleXRM.

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Introduction

The term *business applications* doesn't sound very interesting. It suggests grey, dull offices, computers with lots of spreadsheets, and the politics of a large organization. While this may have been true at one time, I want you to think of something different when you see or hear the term *business applications*. Think of a system that sends you notifications about your monthly bank statement. Think of engaging with your energy company on Twitter and getting a resolution to your problem in less than 30 minutes. Think of a real estate agent taking a couple on a tour of a home, entering information into their device, unconcerned that they have no WIFI or 4G signal. Think of your doctor prescribing you your latest medication and the system on which that had to be carried out. Finally, think of vulnerable people seeking aid in a system that can help feed them, clothe them, and provide shelter, even giving them a safe home. *These* are business applications—applications that enable and empower human beings, organizations, and society to do more and to do better.

Microsoft Dynamics 365 is a suite of business applications that allow you to combine several different tools to create an infrastructure, a framework, and a core system within an organization. By doing so, it allows organizations to meet the demands of an ever-changing industry as well as customer expectations. Dynamics 365 provides connectivity and enhancements to other applications, such as Office 365, to allow greater productivity using Outlook, SharePoint, Excel, Word, Teams, and even LinkedIn. Built on Microsoft Azure, Dynamics 365 has the ability to provide world-class reliability and performance, extending the capability of business applications even further in infrastructure, scalability, and serverless computing technology.

This book will focus on one specific area of that platform, which is Dynamics 365 for Customer Engagement (CE). Within that, we will look at how to create business solutions built upon the Common Data Service for Applications (CDS). The CDS is at the core of Dynamics 365 and the business application platform that Microsoft offers, providing connectivity as a database across all areas, including talent, finance, and operations, as well as other third-party systems. Dynamics 365 CE provides "first-party apps" for field service, sales, project service, customer service, social engagement, portals, and marketing. Most of these apps can be licensed separately or can be purchased together in plan licenses, giving organizations the opportunity to tailor their business applications based on their needs. Included within these pages will be the essential information on how to get started using the standard applications and their features. It will also include how to extend those capabilities using a variety of no-code processes, including workflows, business rules, business process flows, action steps, task flows, and more. At the end of the book, you (the reader) will be equipped with a solid understanding of how to get started with Dynamics 365 CE and how to customize it to match your business needs.

Setting the Scene

Dynamics 365 CE is currently on major version 9.0 and is in between a large reboot of the user interface. In the latest version at the time of writing (9.02), a user can use either the classic form, referred to as the 'Classic UI' or the new user interface, which is called the Unified Interface (UI). There are some very large differences between them. For clarity, this book will refer to the Unified Interface (UI) where possible, however some experiences, especially those that are setup and administrative, the Classic UI will be used. The two user interfaces do have a lack of parity as to what is comparatively possible; however, expect this to be resolved in the coming releases of the platform. For this reason, there may be some changes in look and feel of the application between what is available at time of reading.

This book purposefully doesn't cover a UI Overview due to the nature of the changing releases and versions, many of the elements are in flux and whilst during the book I have been as descriptive as possible for walkthroughs, an extensive chapter on getting used to the user interface did not seem it would be the best content to include.

The Unified Interface (UI)

The Unified Interface has modernized the interface and reengineered the application to use a single interface across all devices and formats, from web to mobile. A user can work on any form factor and ratio because the UI controls are designed to collapse into minified style controls that are easier to use and take less of the form up. This responsive design has brought the application up to modern standards, allowing for further support to be added for screen readers and for easier navigation of forms using the Tab button. Satya Nadella, CEO of Microsoft, has consistently focused on the accessibility within technology, speaking at Ignite 2018 about the topic and actively participating in leadership teams with this as the focus.

The UI has a very similar interface to that of Office 365, such as Outlook and OneNote. The tabs and how the related items work in forms within the Dynamics 365 CE application, as well as the fonts and the look and feel of the application, allow users to get started in a more familiar environment as opposed to an entirely custom application. User experience is an important sub-topic of software development and has a huge influence on user adoption of an application. This must be a consideration of Dynamics 365 CE and any additional customizations we make as customisers on the existing application.

Format of the Book

This book is split in two. The first part is called ‘Setup’ and focuses on the functionality within a number of the native apps of Dynamics 365 CE. Each chapter will cover what functionality is included within the app, how to set it up, and how to get started using the functionality. The book will focus specifically on the features of Dynamics 365 CE 9.0 Online and not earlier, with the exception of references to previous versions when discussing the Outlook Client Integration Capabilities in Chapter 1, which is done to give context surrounding a long and changing journey with the features.

The second part of this book is focused on Configuration. This will look at ways in which the application can be customized to perform certain tasks and the ways in which this can be achieved using the native extensibility platform that the application provides. Dynamics 365 CE provides an extensive range of configuration functions, which are available through the UI and do not require any knowledge of coding. At the end of this section, readers will be confident in their knowledge of the extensibility of the platform and what types of customizations can be used to modify the standard application. Both sections will provide considerations for real-life applications of the functionality where relevant, some of the potential shortcomings, and associated workarounds.

There is also an extra chapter at the end of the book which covers the latest Marketing App functionality within Dynamics 365 CE.

The strength of the Dynamics 365 CE application is the standard configuration and customization capabilities that it provides. Even if readers know how to code, it is an established best practice to use out-of-the-box methods first before extending the application further. IT departments and system administrators that know these features of the application would be able to have greater ownership, allowing them to make more decisions and be more capable of analyzing and mitigating risk when changing processes. This allows for less overhead and for organizations to be more agile and adaptive to the changing needs of industries and customers.

Now, let’s get started with setting up Dynamics 365 for Customer Engagement.

PART I

SETUP

CHAPTER 1

Customer Management

This chapter will introduce the *Accounts* and *Contacts* records and explain why these are so fundamental within Dynamics 365 CE. This introduction will include key things to consider when using these records at the start of implementations and how such records can be customized to suit the needs of the business. It will then move on to email integration options, focusing on installing the latest App for Outlook before moving on to how activities can be utilized and how they are paramount for customer interaction and insight, timeline management, and customizing the timeline. This chapter will set you up with core knowledge about Dynamics 365 CE, allowing you to move forward with confidence into the next chapters.

Accounts and Contacts

Accounts and Contacts are two fundamental record types within Dynamics 365 CE. Record types are often referred to as *entities* within Dynamics 365 CE. Entities are used to categorize the *types* of a record, and in database terms are the same as a table within a database. Users and processes create records of that type within the user interface or programmatically, creating rows within that table. Entities have related metadata linked to them, such as fields, views, and forms. *Fields* are columns within the database linked to the entity and are the descriptive information that is stored within the row. Dynamics 365 CE comes with many entities already pre-created and used within defined business processes, such as Accounts and Contacts. There is also the ability to create custom entities that can be used to support existing processes or instead, to create entirely new processes.

Most interactions within the rest of the system center around these records. Because of this, they are often the most customized or renamed entities in the standard system. The name is often changed to “People” or “Organizations” to represent the terminology of a specific implementation. Changing the name of these entity types can often lead to

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more work than originally anticipated as a result of having to change any reference to the original names, such as in views and dashboards. In some areas, the original names cannot be changed, which then leads to further confusion as an organization has to be familiar with both terms.

To avoid renaming these fundamental entities, it helps to understand these records' potential within an organization and how they are represented. Despite changing the name of these entities within an implementation, people will often still find that the name is only representative of a department or a section of the company, while a different department would refer to them with another name. Understanding the potential of these records and looking at the different scenarios they are used in is so important for all projects and will lead to a greater appreciation of how they can fit within the organisation using Dynamics 365 CE.

What Are Accounts and Contacts?

Accounts are fundamentally a collection of related records that are related to a specific engagement or business relationship. A contact represents how to contact a person. I have chosen my words very carefully here for good reason. Accounts often get used *specifically* as organizations or companies; however, using them in this way is fine only until you start getting into a few different scenarios. An example would be when using 'Fourth Coffee' as the company:

- Is Fourth Coffee the legal entity, or is that a different company? Will that different company be it's parent company?
- Is Fourth Coffee the one that invoices go to, or could another record deal with the invoices?
- Is Fourth Coffee a contractor that also is a contact and a company at the same time? What if a contractor utilizes sub-contractors who belong to a different company?

Once these questions start to be asked, one might think they can be resolved by adding new fields to the entity, which becomes problematic. Data starts to become only important in specific scenarios, and these records become packed with fields that will not be relevant for all records.

Another consideration for the Account record is deciding where this would sit within the counterpart finance system structure. A Contact record would be linked to an Account record in CE, and other information would be held in the finance system. The front- and back-office systems often have different users, creating a requirement to "open up" the integration between the two systems so they display information from both systems. In finance and operations, a *Vendor* is a separate record type to that of an Account, which has a totally different meaning.

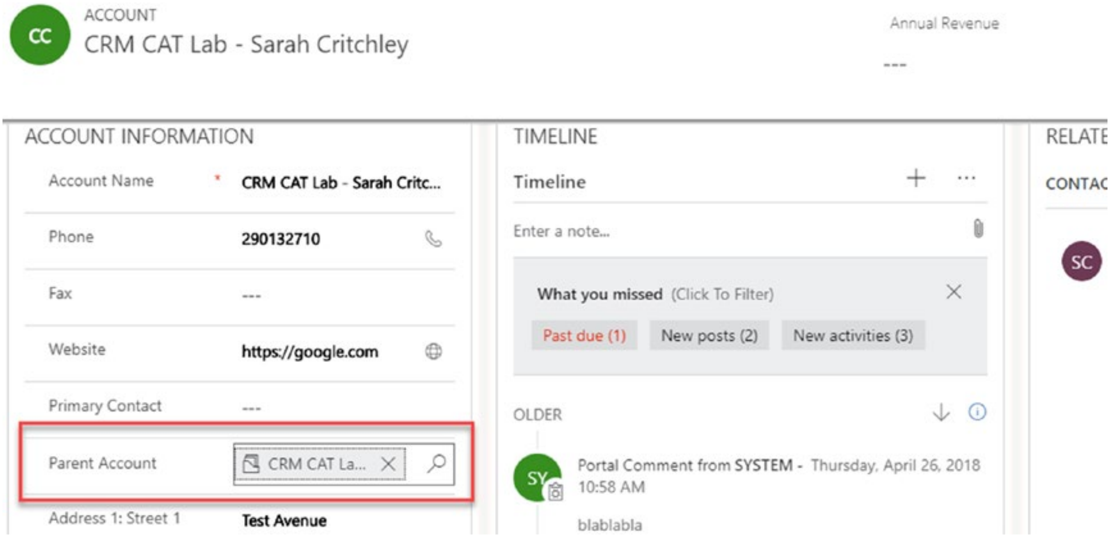
Returning to the definition of an account, as it is a collection of related records that are related to a specific engagement or business relationship, it's easy to see an account differently based on different perspectives. So, for those instances where you wish to add organization data or contractor data, an option would be to extend the Account record with custom entities specific to the type of data you're holding. This would abstract the data from the core record information.

The same challenges appear for contacts. Contacts often get described as "customers," but could refer to internal contractors, and not necessarily an individual who the business treats as a customer. The terms *Individuals* and *People* are also a challenge, as these come with the assumption that only one of that record would exist, as only one exists within the world in which they do business. Within Dynamics 365 CE, uniqueness in relation to Outlook Integration (which will be discussed in a later chapter) is based on email address. This functionality underpins the creation of new contact functionality and links email activities to the contact. For this reason, it is then easier to approach the definition of a contact as being how to contact a person.

Ensure that your definitions of what an account and a contact are within a business system are clearly defined and are discussed early on in your project. This could help with enhancing the system through customizations if required and aid in resolving any problems created later with terminology misunderstandings.

Parent Accounts

Dynamics 365 CE provides the capability to associate one account with another account as its "parent." A *parent* can have many child accounts; this structure is easy to see in a visual format by selecting the Hierarchy icon on a view within the legacy Classic UI application. Figure 1-1 displays the field this is referencing within the form.


CC
ACCOUNT
CRM CAT Lab - Sarah Critchley
Annual Revenue
ACCOUNT INFORMATION
TIMELINE
RELATE
Timeline
CONTAC
SC
What you missed (Click To Filter)
Past due (1)
New posts (2)
New activities (3)
OLDER
SY

Account Name * CRM CAT Lab - Sarah Critc...
Phone 290132710
Fax ---
Website https://google.com
Primary Contact ---
Parent Account CRM CAT La...
Address 1: Street 1 Test Avenue

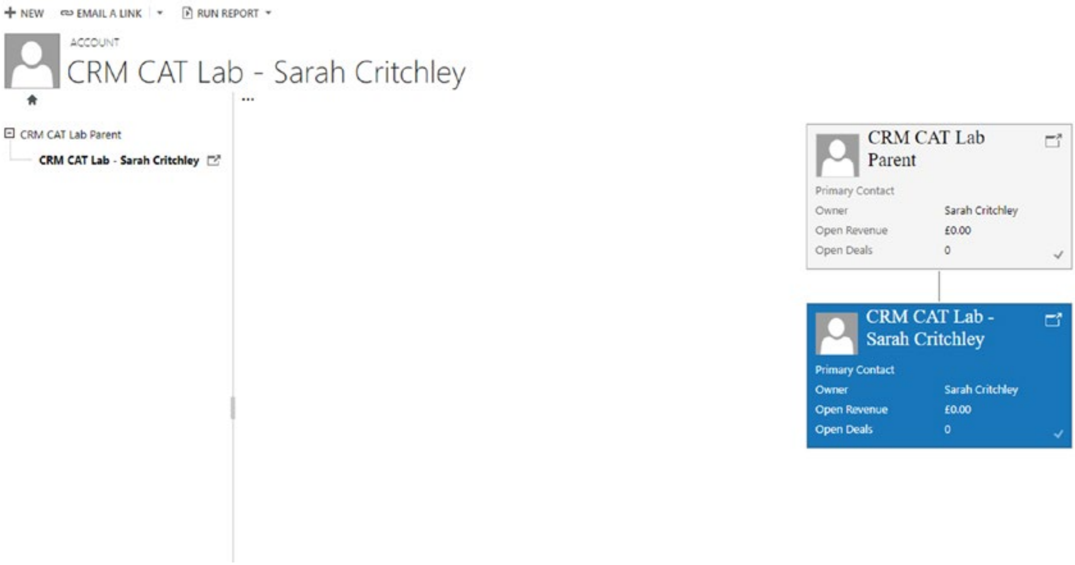
Enter a note...

Portal Comment from SYSTEM - Thursday, April 26, 2018 10:58 AM

blablabla

Figure 1-1. *An account with the Parent Account field set, making this a child account*

You can then visualize the hierarchy of accounts by selecting the Hierarchy button on the list view (next to its name). This is shown in Figure 1-2.


+ NEW
EMAIL A LINK
RUN REPORT
ACCOUNT
CRM CAT Lab - Sarah Critchley
CRM CAT Lab Parent
CRM CAT Lab - Sarah Critchley

CRM CAT Lab Parent
Primary Contact
Owner Sarah Critchley
Open Revenue £0.00
Open Deals 0

CRM CAT Lab - Sarah Critchley
Primary Contact
Owner Sarah Critchley
Open Revenue £0.00
Open Deals 0

Figure 1-2. *Visual Hierarchy view available in the Classic UI application version of 9.02*

Associating an account as a child or a parent of another doesn't just give helpful reporting capabilities. It also automatically rolls up associated activities, such as appointments and emails, from the child account and makes them visible within the parent. This is especially helpful when a parent account has multiple child accounts, so that all activities will be visible at the parent level, without users having to individually find those activities within the children.

This relationship is especially useful when an account is responsible for invoices, as they can normally be associated with a parent account (which is the case for Local Authorities in the UK in a specific region; normally one is invoiceable). By associating these relationships, it means any further customizations done within this area to automate functions can be easily achieved.

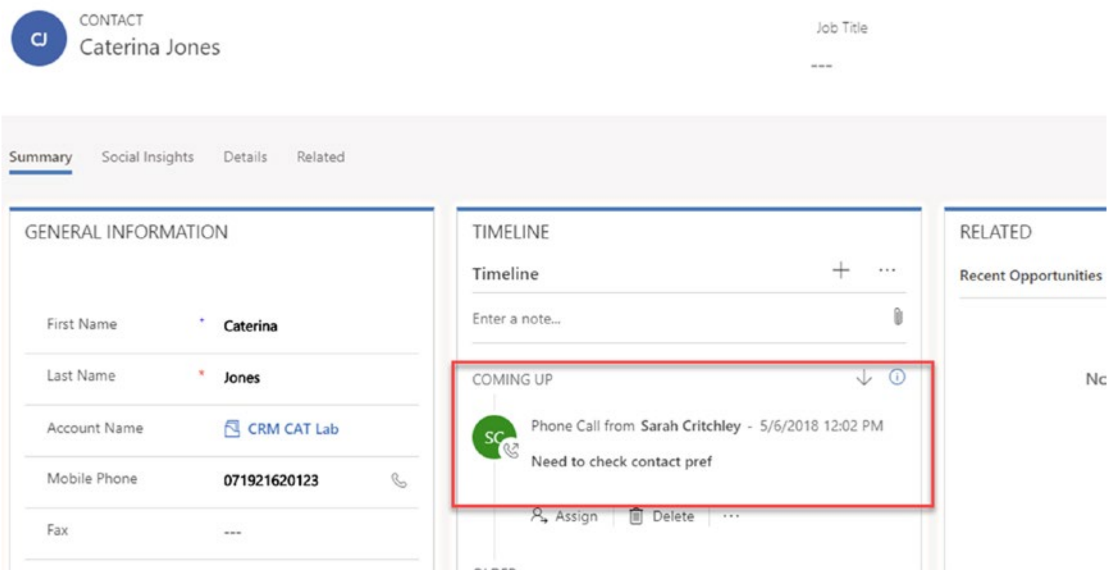
Standard Features Associated with Accounts and Contacts

There is standard functionality available on the Account and Contact records that is useful to be aware of when using Dynamics 365 CE.

Like the account and parent account rollup functionality, activities from an associated contact automatically roll up to the contact's associated account. This is especially useful in instances of Outlook Integration where a user is using Outlook to communicate with a customer; for example, when investigating a case, those emails can be automatically tracked to the Case record within Dynamics 365 CE using the Outlook Integration feature. When that record is viewed within Dynamics 365, those email activities can be seen not only on the Contact record, but also in the associated Account record, giving a single record within the system the ability to see all communication from all associated Contact records.

To use this feature, ensure the relationship between Contact and Account records is set using the Account Name field within the Contact record; the associated activities will automatically roll up.

In Figure 1-3, the phone call was scheduled on a Contact record.


CJ
CONTACT
Job Title
Summary
Social Insights
Details
Related
GENERAL INFORMATION
TIMELINE
Timeline
Enter a note...
COMING UP
SC
Assign
Delete
RELATED
Recent Opportunities
Nc

Caterina Jones

Job Title: ---

First Name: Caterina

Last Name: Jones

Account Name: CRM CAT Lab

Mobile Phone: 071921620123

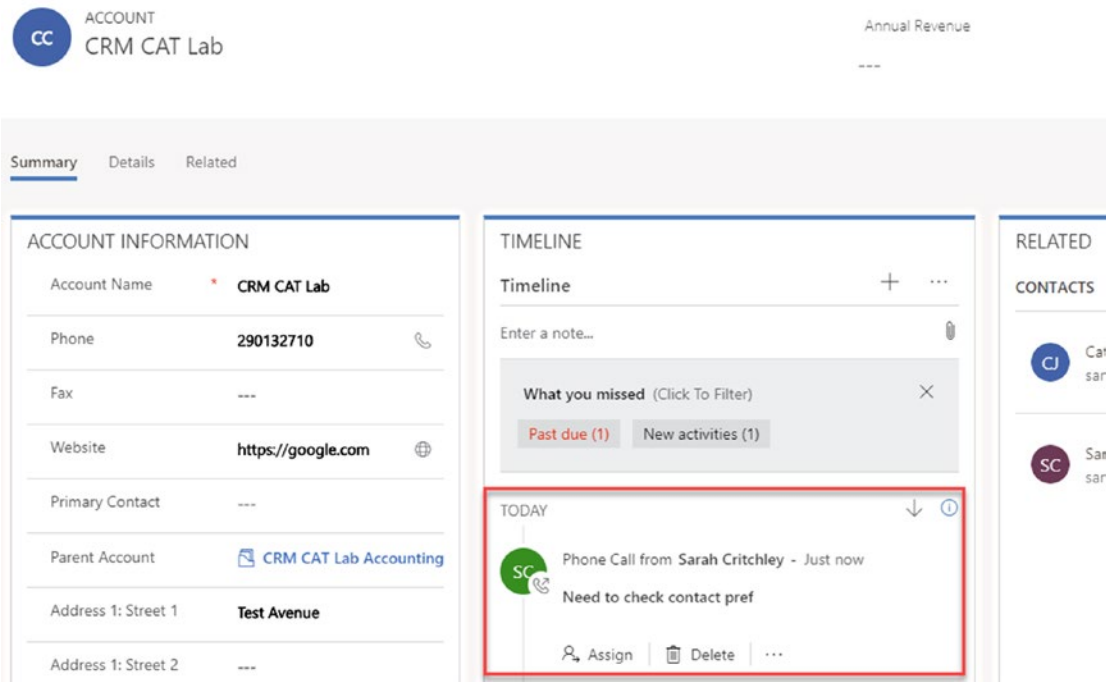
Fax: ---

Phone Call from Sarah Critchley - 5/6/2018 12:02 PM

Need to check contact pref

Figure 1-3. *A Contact record with an upcoming Phone Call activity*

The phone call can be seen within the Account record in Figure 1-4, as it has rolled up to the associated account.



CRM CAT Lab

Annual Revenue ---

ACCOUNT INFORMATION

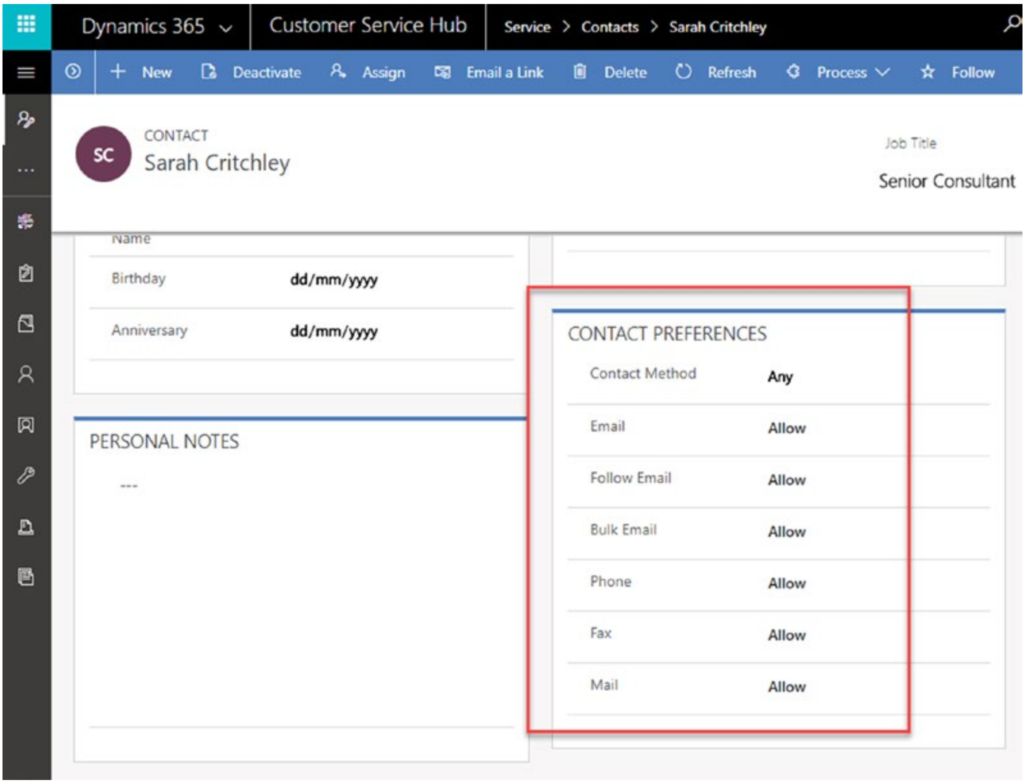
Account Name * CRM CAT Lab
Phone 290132710
Fax ---
Website https://google.com
Primary Contact ---
Parent Account CRM CAT Lab Accounting
Address 1: Street 1 Test Avenue
Address 1: Street 2 ---

Phone Call from Sarah Critchley - Just now
Need to check contact pref

Figure 1-4. *The account associated with the Contact record, showing the Phone Call activity, despite its not being directly associated*

Within the Account and Contact records there is a standard feature that allows users to control whether emails and bulk emails are to be sent from within Dynamics 365 CE to those contacts. This feature is particularly useful where automated emails are being sent from within the system and an organization needs to prevent these from being sent. It doesn't, however, prevent a user from sending a contact an email directly from within Outlook.

The fields that can restrict this process are included in the section called "Contact Preferences" within the Details tab, which can be seen in Figure 1-5. The "Email" field will prevent any email from being sent from within Dynamics 365 in both the context of an individual email activity and also bulk emails. Emails are classified as "Bulk Email" when they are sent from quick campaigns, campaign activities, or customer journeys (using the Dynamics 365 for Marketing app) or are sent using the Send Direct Mail feature available on a Contact record. Individual emails are single email activities associated with individual records. The "Bulk Email" field will prevent emails from being sent out only when considered a bulk email.


Dynamics 365
Customer Service Hub
Service > Contacts > Sarah Critchley
New
Deactivate
Assign
Email a Link
Delete
Refresh
Process
Follow
SC

CONTACT
Sarah Critchley

Job Title
Senior Consultant

Name

Birthday	dd/mm/yyyy
Anniversary	dd/mm/yyyy

PERSONAL NOTES

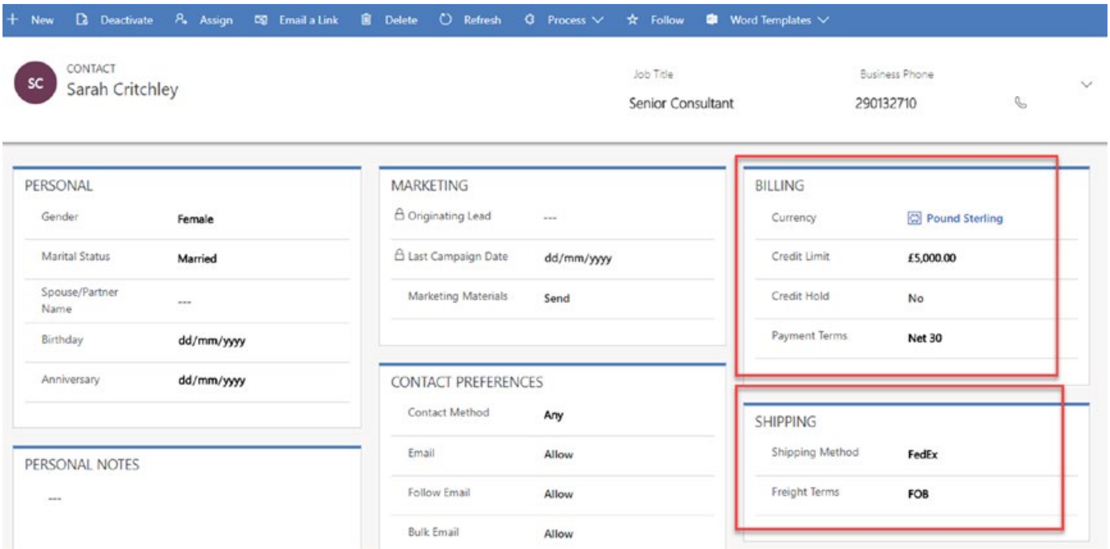
CONTACT PREFERENCES

Contact Method	Any
Email	Allow
Follow Email	Allow
Bulk Email	Allow
Phone	Allow
Fax	Allow
Mail	Allow

Figure 1-5. *The Contact Preference section within a Contact record holds the "Email" and "Bulk Email" fields*

These fields are often utilized within marketing add-ons to the Dynamics 365 CE platform through marketing lists or segmentations. Subscription lists are a common feature underpinning how contacts are contacted to be able to tailor the marketing experiences they receive. A part of this is where a user can unsubscribe from a list so as to no longer receive messages using a specific channel, such as email. A contact can also ask an organization to not contact them again regarding any sort of message and to withdraw any sort of service from the contact. These examples are where Contact record preference fields hold a high value, as they then prevent automated messages from being sent and assist in segmentation within queries.

Lastly, there are some fields to be aware of before you begin any sort of customization that come as part of the native Dynamics 365 CE product. These include the fields within the Billing and Shipping sections of Account and Contact records, highlighted in Figure 1-6. These fields, while not holding any functionality, are often also found on other records, such as Quote, Order, and Invoice. This means, with some relative ease, by using relationship mapping, covered later in the book, you can automatically populate these fields with the default data from the associated Account and Contact records, resulting in a more consistent experience for users, as well as in correct and complete data.



CONTACT
Sarah Critchley

Job Title: Senior Consultant
Business Phone: 290132710

PERSONAL

Gender	Female
Marital Status	Married
Spouse/Partner Name	---
Birthday	dd/mm/yyyy
Anniversary	dd/mm/yyyy

PERSONAL NOTES

MARKETING

Originating Lead	---
Last Campaign Date	dd/mm/yyyy
Marketing Materials	Send

CONTACT PREFERENCES

Contact Method	Any
Email	Allow
Follow Email	Allow
Bulk Email	Allow

BILLING

Currency	Pound Sterling
Credit Limit	£5,000.00
Credit Hold	No
Payment Terms	Net 30

SHIPPING

Shipping Method	FedEx
Freight Terms	FOB

Figure 1-6. *Billing and Shipping sections within a Contact record to be aware of for automation opportunities and integration*

Be aware of the fields that are used within the form. There are many fields on an entity that come as part of the platform—which you can see within the Form Designer's field explorer—that hold standard features (Figure 1-7). These include Last Login, Modified On, SLA, and others that you may wish to review before customizing the system, as you may create similar fields. This will assist you in getting the most out of the standard platform. Customizing the user interface and the Form Designer is covered in Part II of this book.

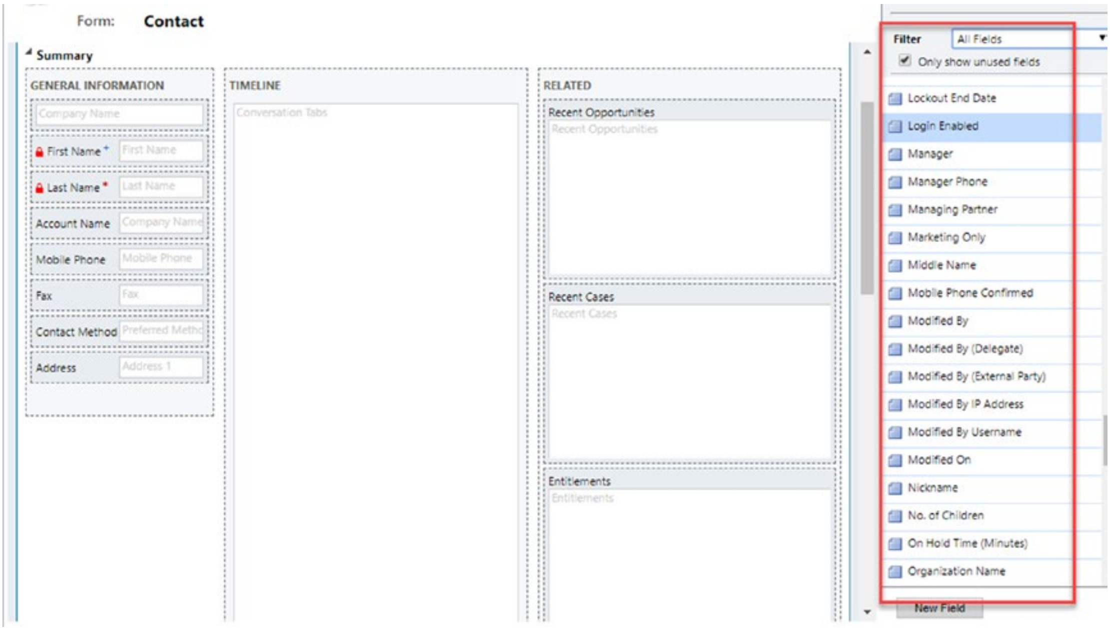

Form: Contact
Summary
GENERAL INFORMATION
Company Name
First Name *
First Name
Last Name *
Last Name
Account Name
Company Name
Mobile Phone
Mobile Phone
Fax
Fax
Contact Method
Preferred Method
Address
Address 1
TIMELINE
Conversation Tabs
RELATED
Recent Opportunities
Recent Opportunities
Recent Cases
Recent Cases
Entitlements
Entitlements
Filter
All Fields
Only show unused fields
Lockout End Date
Login Enabled
Manager
Manager Phone
Managing Partner
Marketing Only
Middle Name
Mobile Phone Confirmed
Modified By
Modified By (Delegate)
Modified By (External Party)
Modified By IP Address
Modified By Username
Modified On
Nickname
No. of Children
On Hold Time (Minutes)
Organization Name
New Field

Figure 1-7. *Form Designer within Dynamics 365 CE with the field explorer highlighted, displaying fields not considered standard on the Contact form*

Address Entity

On Account and Contact records, the "Address" fields look like any normal field where you can enter lines of the address, the city, and zip code and save those details, report on them, and have them appear in views. These types of fields are often referred to as "composite" field controls and compress multiple fields. There is a separate Address entity that can be utilized within Account and Contact records and is used to store addresses linked to those records, ready for use in other processes. At the time of writing, the address entity is not available in the Unified Interface; however, expect there to be updates to the platform that allow this functionality to be available soon.

360-degree View of the Customer

A common requirement for organizations is to be able to view an Account or Contact record and get a "360-degree view" of the customer. This view is different depending on not only the organization using Dynamics 365 CE but also the department that is using it, all the way down to the user and what information is *relevant* for them, at *that* specific time. Understanding what information is useful to the organization, department managers, and users is really important if you want to obtain a cascade of information that can be easily aggregated for each user based on what is important to them. By doing so, all users will be looking at the same data, seeing different representations of that data depending on their role. Many of the standard features of Dynamics 365 CE can be customized to be able to achieve this, and a great start is to try asking yourself and the business these simple questions:

- What can a user see immediately after they load a form? Is this information relevant?
- Can all the information on the form fit within one screen, or does a user need to scroll and "find" the data they are looking for?
- Are you using colors/theming and have you considered the accessibility impact?
- Have you considered using notifications to highlight specific data based on certain scenarios? This can be achieved using Business Rules (covered later in the book).
- How many entities are included in the related tab? Are all of them relevant?
- Do all the entities have appropriate icons and views set up for them? Views within sub-grids should display key data.
- Are the views editable where they need to be, allowing users to quickly add data when required without having to navigate away?
- Have main views been configured to give users a 360 view of all relevant data for multiple records at any one time? This can even remove the need to click into a form.
- Have quick-view forms been utilized? Quick-view forms allow users to see a small set of information for related records without having to navigate into them.

Answering these questions will help you design views and forms for users that makes use of standard features and provides a realistic 360-degree view of the customer for most users. Run user-experience workshops and create material to show users how to obtain the information they need and how to obtain feedback and modify the view as appropriate. UI customizations are covered in the second chapter of this book, which looks at how to customize views, forms and create dashboards.

Email (Outlook) Integration for Dynamics 365 CE Online

Dynamics 365 CE allows for native Microsoft Outlook Integration so that a user's current day-to-day activities within Outlook can be kept within the Outlook application and integrate in the background using Dynamics CE. A user's day-to-day tasks might not look like Microsoft Outlook, and can include other email providers, such as Gmail. Integration capabilities are still there for other providers using POP3 or SMTP email protocols; however, some functionality is limited (such as manual tracking). The intention in this section is not to provide a full list of current capabilities and versioning, as this can easily be obtained by reviewing the official Microsoft Doc page, linked in the "Further Reading" section at the end of this chapter. Instead, this chapter will look at how to set up the latest connector, the different options available when setting up email integration, challenges and possible mitigations.

Being aware of the capabilities of Outlook Integration is important as it has a direct effect on the way users interact with contacts and accounts within their day-to-day activities. Email is utilized regularly across multiple devices, where multiple users are interacting with those records regularly. Integration within Dynamics 365 is often an expected and required function in order for businesses to operate seamlessly between Microsoft Outlook and Dynamics 365 CE.

Microsoft Outlook Integration is the preferred option for integrating with Dynamics 365, providing most functionality and often what can be described as "native" integration. There are two ways to integrate Dynamics 365 CE with Microsoft Outlook, as follows:

- The Dynamics 365 Full add-in is often referred to as the Outlook Add-In, Outlook Client, or even Dynamics 365 for Outlook. This is installed locally on the user's machine by downloading the `.exe` file and installing it. This was previous deprecated at the end of 2017; however, this decision was since reversed in early 2018.

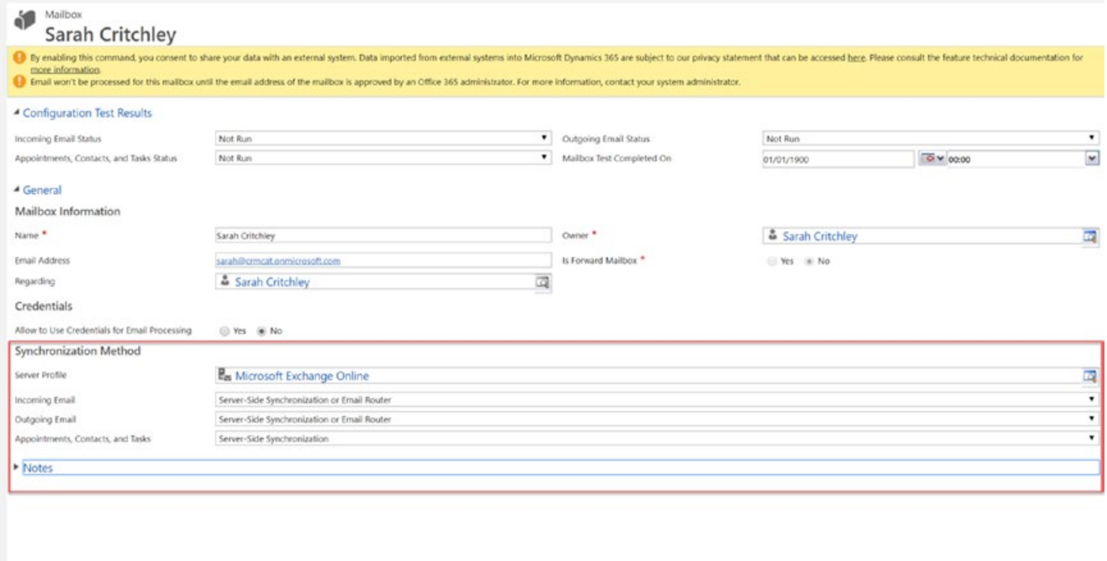
- The Dynamics 365 App for Outlook is the latest version of Outlook Integration and was rebuilt using HTML. It can be deployed via Dynamics 365 without the need to install anything on the users' machines. This also appears in Outlook Web Access for those users. This is currently a preview feature for 9.0 that has been made GA in the 9.02 release in April 2018. You *must* use server-side synchronization integration, described later in this chapter, to utilize this version.

Using both add-ins at the same time is unsupported, so an organization must choose one version of the Outlook client. Microsoft has communicated within its documentation, found in the "Further Reading" section at the end of this chapter, that the preferred way is to utilize server-side synchronization with the Dynamics 365 App for Outlook. The following sections include steps to set up the app using server-side sync, allowing access to the features from web, desktop, and mobile.

This section will look at the steps to set up the mailbox before you configure the Dynamics 365 App for Outlook. If you navigate to the "App for Outlook" area within Dynamics 365 CE and don't see any users, this is normally caused by the fact that you do not have an approved and running mailbox. A mailbox within Dynamics 365, as seen in Figure 1-8, represents the link between a user's mailbox on the exchange server (that stores its email messages) and Dynamics 365. The options configured within this record in Dynamics 365 CE are created per user and govern how the email synchronization is managed between the two systems. Within "System Settings," users can configure default mailbox settings for each user, so there will be no requirement to configure the following steps separately as new users are added. This is particularly useful when there are hundreds or even thousands of users.

1. Navigate to Settings, click "Email Configuration," and then "Mailboxes."
2. You will see a Mailbox record created for each user you have in the system, but they are not going to be activated and running by default.

3. Set the fields within the Synchronization Method tab to “Server-Side Synchronization” (Email Router is an older option of integration that provided a separate service, or “route,” by which to send the messages between an exchange server and Dynamics 365, but requires Outlook to be running to synchronize).



Mailbox
Sarah Critchley

By enabling this command, you consent to share your data with an external system. Data imported from external systems into Microsoft Dynamics 365 are subject to our privacy statement that can be accessed here. Please consult the feature technical documentation for more information.

Email won't be processed for this mailbox until the email address of the mailbox is approved by an Office 365 administrator. For more information, contact your system administrator.

Configuration Test Results

Incoming Email Status: Not Run
Appointments, Contacts, and Tasks Status: Not Run
Outgoing Email Status: Not Run
Mailbox Test Completed On: 01/01/1900 00:00

General

Mailbox Information

Name *: Sarah Critchley
Email Address: sarah@crmcat.onmicrosoft.com
Regarding: Sarah Critchley
Owner *: Sarah Critchley
Is Forward Mailbox *: ○ Yes ● No

Credentials

Allow to Use Credentials for Email Processing: ○ Yes ● No

Synchronization Method

Server Profile: Microsoft Exchange Online
Incoming Email: Server-Side Synchronization or Email Router
Outgoing Email: Server-Side Synchronization or Email Router
Appointments, Contacts, and Tasks: Server-Side Synchronization

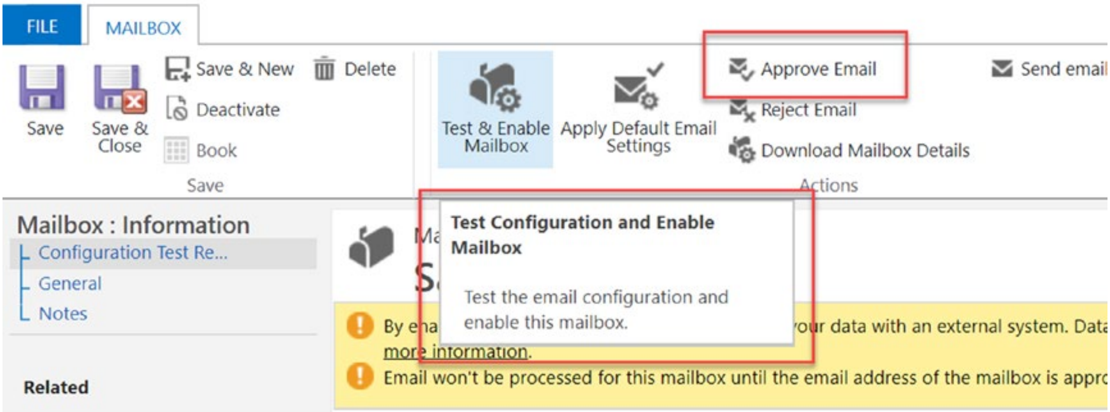
Figure 1-8. *Dynamics 365 CE Mailbox record with the synchronization method being configured for server-side sync*

Server-side synchronization is the term used to specify which type of synchronization this specific mailbox is using. It allows for Dynamics 365 CE to communicate directly with the exchange server without having the middleware of an email router. As each mailbox is a separate record, each can be different for different users. Specifying server-side synchronization has the advantage of being able to track email, contacts, tasks, and appointments dynamically and automatically, at a minimum frequency of every five minutes, without the need to have the Outlook application open. This frequency can happen quicker, depending on the mailbox, but because each mailbox is different (the rate of emails being sent and received is rarely the same for individuals), this can be shorter or longer.

The next steps to activate this mailbox are as follows:

1. Ensure the email for the user is approved to send emails by clicking “Approval Email,” as seen in Figure 1-9.

2. Click “Test and Enable”; there will be a test message sent using the options you configured. The outcome of this test can be seen in the fields in the mailbox itself.


FILE
MAILBOX
Save
Save & Close
Save & New
Deactivate
Book
Delete
Save
Test & Enable Mailbox
Apply Default Email Settings
Approve Email
Reject Email
Download Mailbox Details
Send email
Actions
Mailbox : Information
Configuration Test Re...
General
Notes
Related

Test Configuration and Enable Mailbox

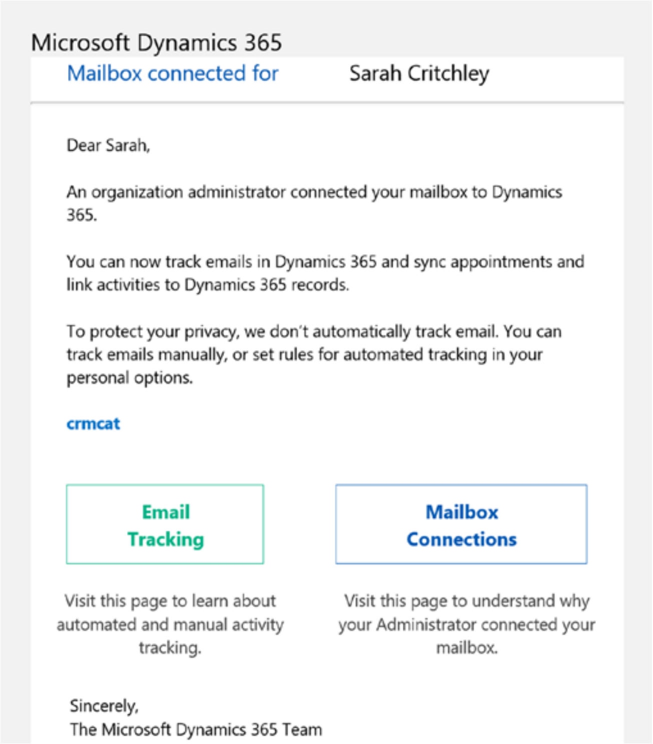
Test the email configuration and enable this mailbox.

By ena … our data with an external system. Data … more information.

Email won't be processed for this mailbox until the email address of the mailbox is appro

Figure 1-9. *Approve the email for the mailbox and click “Test and Enable Mailbox” to start a test between the specified user’s mailbox and Dynamics 365 CE*

Once activated, the user who is associated with this mailbox should receive an email, as seen in Figure 1-10, confirming the activation.



Microsoft Dynamics 365

Mailbox connected for Sarah Critchley

Dear Sarah,

An organization administrator connected your mailbox to Dynamics 365.

You can now track emails in Dynamics 365 and sync appointments and link activities to Dynamics 365 records.

To protect your privacy, we don't automatically track email. You can track emails manually, or set rules for automated tracking in your personal options.

crmcat

Email Tracking

Visit this page to learn about automated and manual activity tracking.

Mailbox Connections

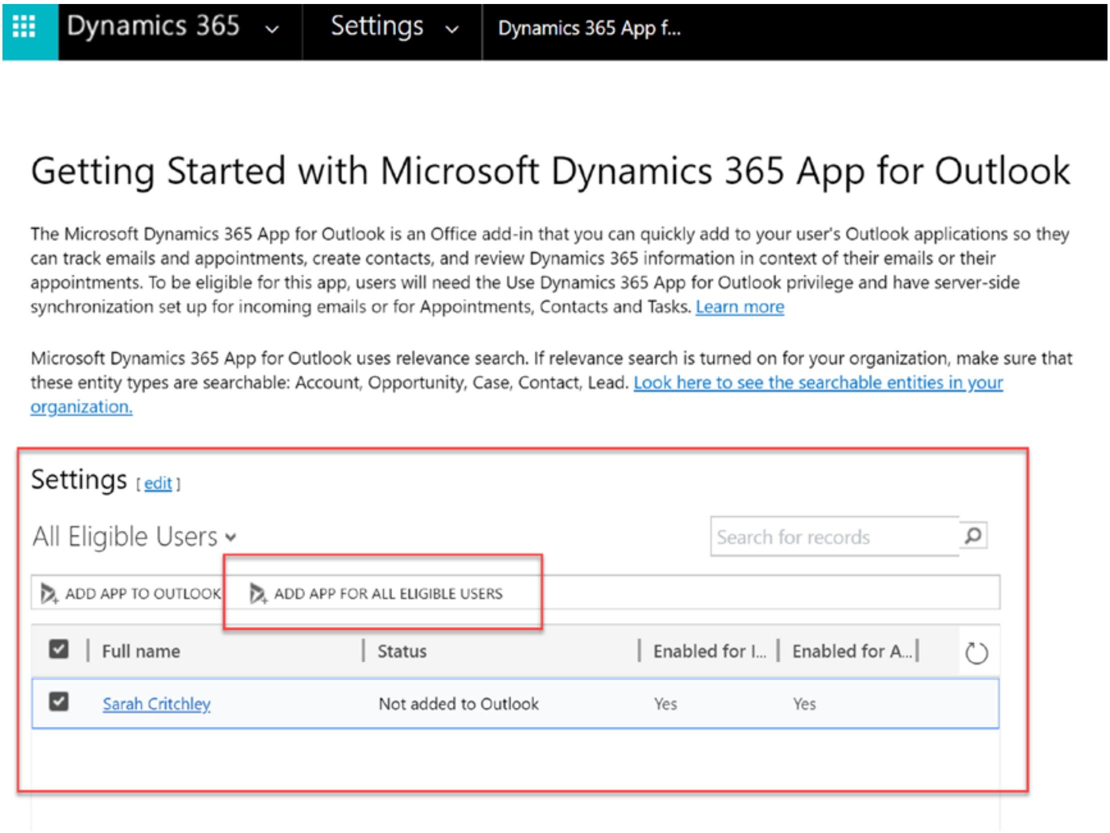
Visit this page to understand why your Administrator connected your mailbox.

Sincerely,
The Microsoft Dynamics 365 Team

Figure 1-10. *Confirmation email after Dynamics 365 and Outlook have been successfully linked*

Once a mailbox is active and running for a user, App for Outlook can be installed. The app offers functionality across web (through Outlook Web Access), mobile (Microsoft Outlook App), and desktop (Microsoft Outlook, also available on Mac). Dynamics 365 provides the capability to push this app automatically to the accounts of users via Office 365 so there is no direct install required for users. Within the "Settings" area, you can also automatically push the app directly to those who have an eligible mailbox, as follows:

1. Navigate to Settings ➤ Dynamics 365 App for Outlook.
2. Select the user(s) you wish to push the app to and select "Add App for all Eligible Users" as shown in Figure 1-11.
3. After doing so, you will see the status of those users as "Pending."


Dynamics 365
Settings
Dynamics 365 App f...
Settings [edit]
All Eligible Users
Search for records
ADD APP TO OUTLOOK
ADD APP FOR ALL ELIGIBLE USERS

Getting Started with Microsoft Dynamics 365 App for Outlook

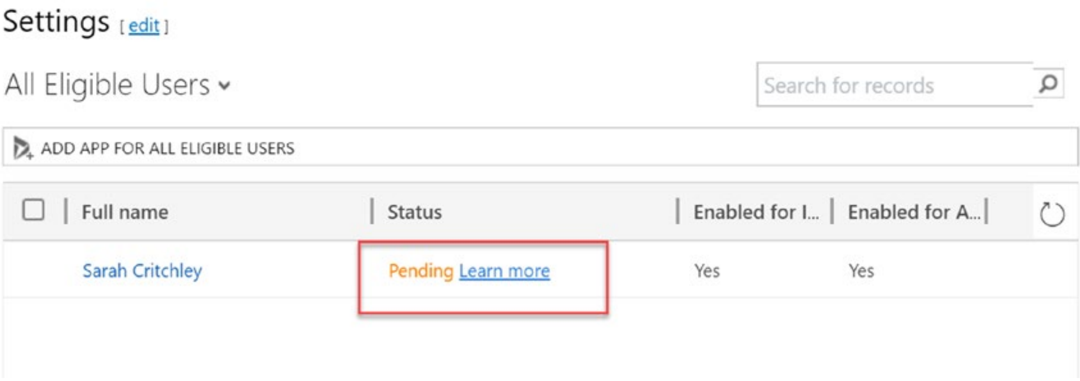
The Microsoft Dynamics 365 App for Outlook is an Office add-in that you can quickly add to your user's Outlook applications so they can track emails and appointments, create contacts, and review Dynamics 365 information in context of their emails or their appointments. To be eligible for this app, users will need the Use Dynamics 365 App for Outlook privilege and have server-side synchronization set up for incoming emails or for Appointments, Contacts and Tasks. Learn more

Microsoft Dynamics 365 App for Outlook uses relevance search. If relevance search is turned on for your organization, make sure that these entity types are searchable: Account, Opportunity, Case, Contact, Lead. Look here to see the searchable entities in your organization.

☑	Full name	Status	Enabled for I...	Enabled for A...
☑	Sarah Critchley	Not added to Outlook	Yes	Yes

Figure 1-11. *Installing the Dynamics 365 App for Outlook for eligible users*

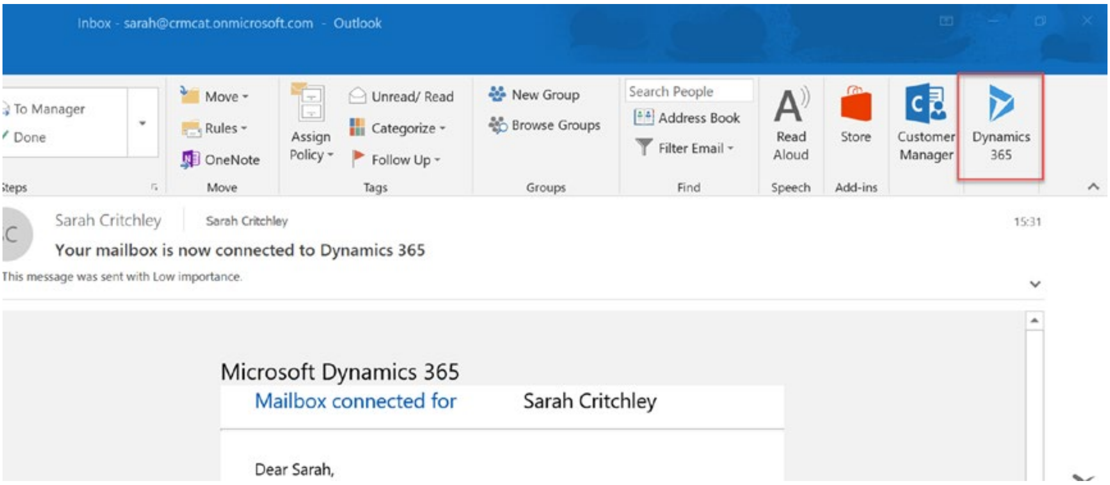
Once the app is installing, within the "All Eligible Users" view, you can see the status of the app and when it is pending or installed successfully, as seen in Figure 1-12.


Settings [edit]
All Eligible Users
Search for records
ADD APP FOR ALL ELIGIBLE USERS

☐	Full name	Status	Enabled for I...	Enabled for A...
	Sarah Critchley	Pending Learn more	Yes	Yes

Figure 1-12. *Once added, the status will be updated. Once completed, it will say "Completed" and refresh to display "Added in Outlook".*

Once the app has completed installation, which can take up to 15 minutes, the Dynamics 365 button will be visible within the clients. When accessing the Dynamics 365 App for Outlook across clients, there is still a familiar interface and loading screens across all of them. These can be seen in Figures 1-13, 1-14, and 1-15.


Inbox - sarah@crmcat.onmicrosoft.com - Outlook
To Manager
Done
Steps
Move
Rules
OneNote
Move
Assign Policy
Unread/ Read
Categorize
Follow Up
Tags
New Group
Browse Groups
Groups
Search People
Address Book
Filter Email
Find
Read Aloud
Speech
Store
Add-ins
Customer Manager
Dynamics 365
15:31

Sarah Critchley Sarah Critchley

Your mailbox is now connected to Dynamics 365

This message was sent with Low importance.

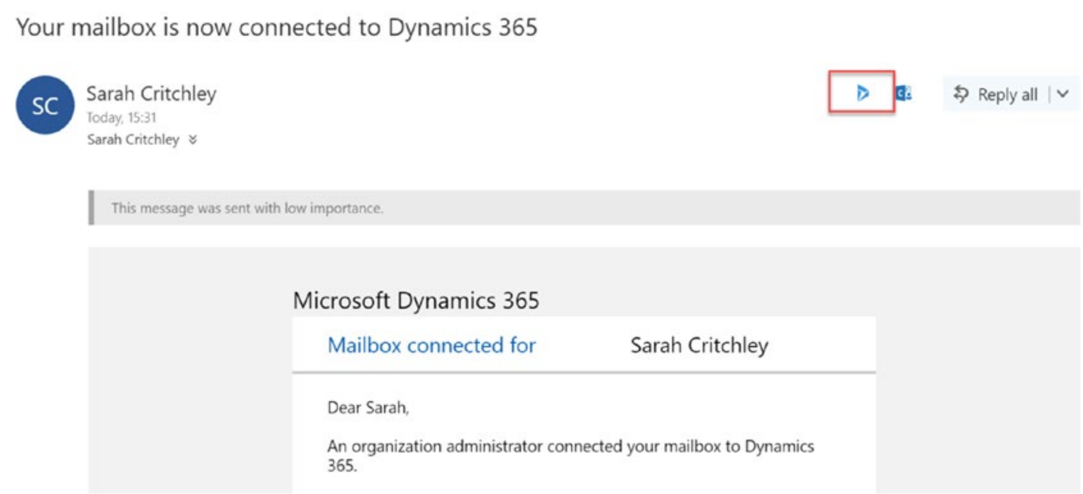
Microsoft Dynamics 365

Mailbox connected for Sarah Critchley

Dear Sarah,

Figure 1-13. Desktop client with the Dynamics 365 button available in the ribbon

The Dynamics 365 button can be seen near the “Reply All” dropdown in Outlook Web Access (OWA), as seen in Figure 1-14.


SC
Reply all

Your mailbox is now connected to Dynamics 365

Sarah Critchley
Today, 15:31
Sarah Critchley

This message was sent with low importance.

Microsoft Dynamics 365

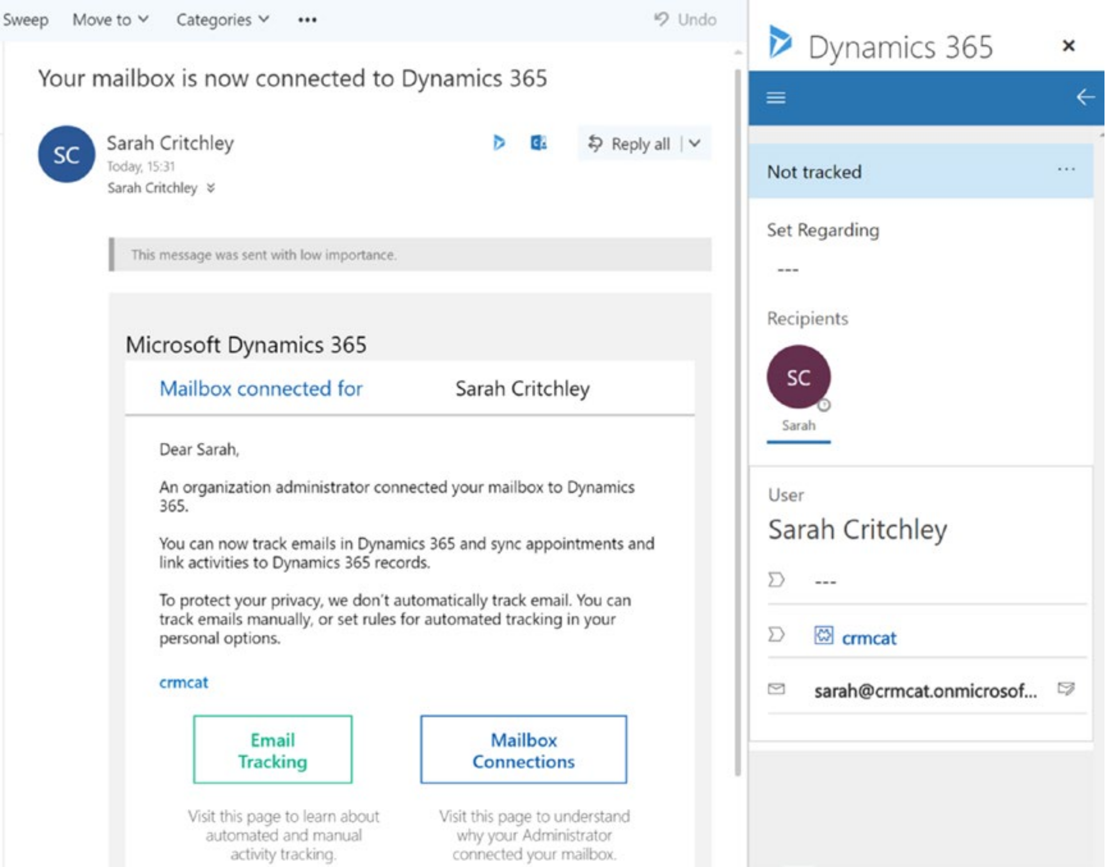
Mailbox connected for Sarah Critchley

Dear Sarah,

An organization administrator connected your mailbox to Dynamics 365.

Figure 1-14. Outlook web access via the browser with the Dynamics logo visible in the toolbar

When you select the Dynamics button within OWA, the Dynamics 365 pane expands on the right-hand side to give contextual information about the recipient of the email (Figure 1-15).


Sweep
Move to
Categories
Undo
Reply all
Dynamics 365
Not tracked
Set Regarding

Recipients
SC
Sarah
User
Sarah Critchley
---
crmcat
sarah@crmcat.onmicrosof...
SC
Email Tracking
Mailbox Connections

Your mailbox is now connected to Dynamics 365

Sarah Critchley
Today, 15:31
Sarah Critchley

This message was sent with low importance.

Microsoft Dynamics 365

Mailbox connected for Sarah Critchley

Dear Sarah,

An organization administrator connected your mailbox to Dynamics 365.

You can now track emails in Dynamics 365 and sync appointments and link activities to Dynamics 365 records.

To protect your privacy, we don't automatically track email. You can track emails manually, or set rules for automated tracking in your personal options.

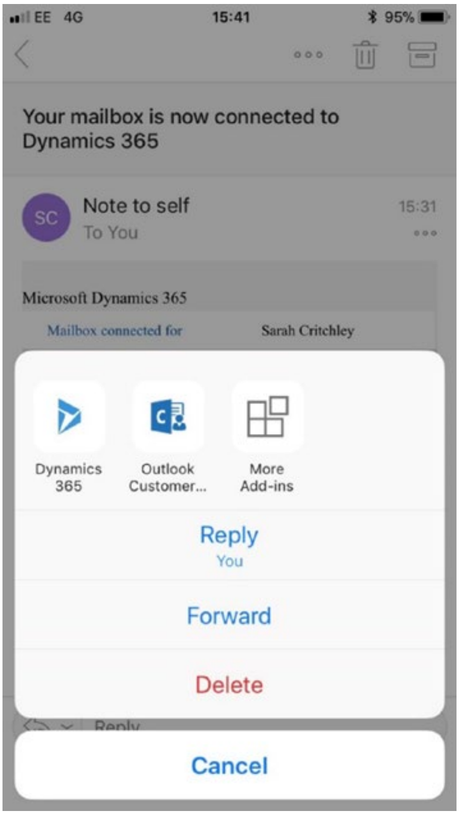
crmcat

Visit this page to learn about automated and manual activity tracking.

Visit this page to understand why your Administrator connected your mailbox.

Figure 1-15. *Outlook web access via the browser with the Dynamics 365 pane expanded after selecting the Dynamics button*

On mobile, the experience is similar for the user, with the screens and functionality operating in the same way as on the web client. This is seen in Figures 1-16 and 1-17.



Your mailbox is now connected to Dynamics 365

Note to self

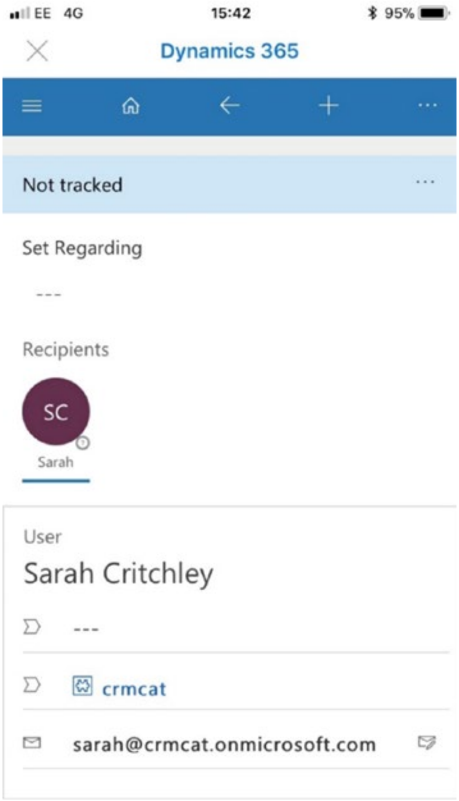
To You

Microsoft Dynamics 365

Mailbox connected for Sarah Critchley

EE 4G
15:41
95%
SC
15:31
Dynamics 365
Outlook Customer...
More Add-ins
Reply
You
Forward
Delete
Reply
Cancel

Figure 1-16. *Microsoft Outlook for IOS with the Dynamics 365 option and pane open*


EE 4G
15:42
95%
Dynamics 365
Not tracked
Set Regarding

Recipients
SC
Sarah
User
Sarah Critchley
---
crmcat
sarah@crmcat.onmicrosoft.com

Figure 1-17. *Microsoft Outlook for IOS with the Dynamics 365 option and pane open*

The contextual information still appears on mobile at the bottom of the screen when setting the reference "Set Regarding" field within the record of the activity (Figure 1-17).

Once the app is installed, emails and activities can begin being tracked. Users will see similarities between all different clients, such as when a "Set Regarding" field is set to an email and a notification then appears to let you know this was successfully tracked, displaying the quick-view information of the record within the pane (Figure 1-18). A 'Regarding' field is a link to an associated record from an Activity. For those who are not familiar with the 'Regarding' field - this is covered in a later 'Activities' section.

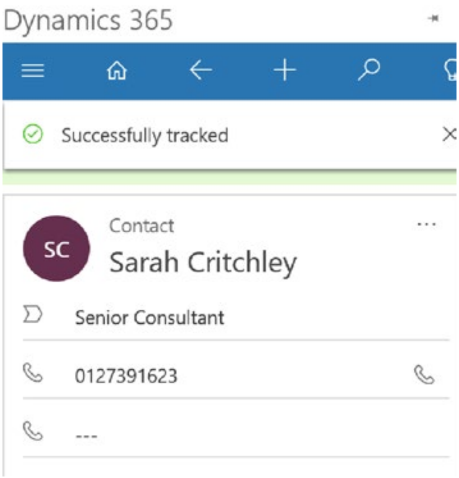


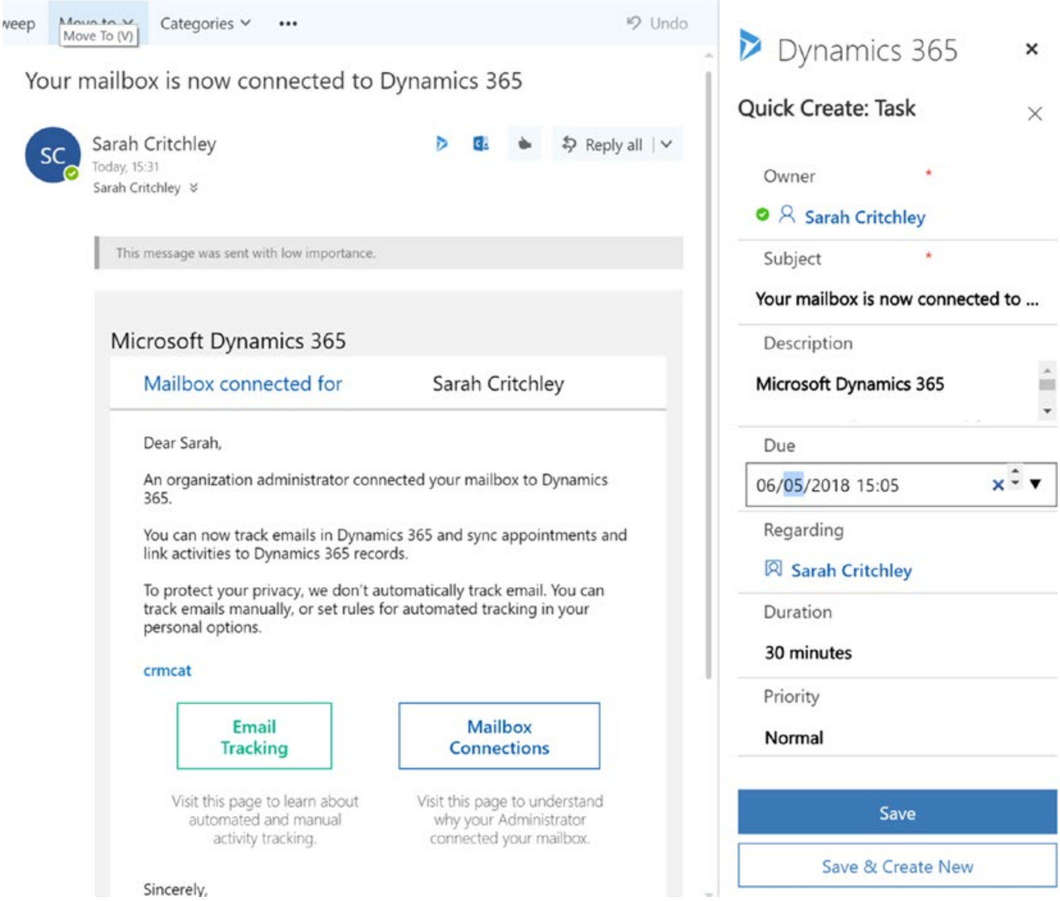
Figure 1-18. *Successfully tracking an item within the Outlook app*

Within the Dynamics 365 App for Outlook pane, users can also click the action menu ("…") and choose to either associate the record with a different regarding, remove the link all together, or view the record within Dynamics 365.

It is the same experience when creating appointments and tasks within Outlook. Users can click the Dynamics 365 button and choose the regarding record with which to associate the activity. Setting the regarding record will queue the activity record to be created within Dynamics 365 CE and then to be linked together, creating a copy of that activity within the Dynamics 365 CE application and also tracking it for changes. This is especially useful where a user is managing their day-to-day activities within Outlook on any device, and their colleagues can see the latest updates from within Dynamics 365.

One of the major differences between the App for Outlook and the older "full" add-in is that manual tracking is not possible within the app and this is instead performed in the background; however, tracking is very close to immediate within the application.

Users can also add activities (tasks, phone calls, and appointments) to records from within Outlook. This can be done by selecting the action menu button and selecting "Add Activity." A user can select the type of activity and complete the form to save this in Dynamics 365 CE (Figure 1-19). This is especially useful in scenarios of task management, as the ownership of the task or activity can often change, and thus you might need to create and synchronize a task or other activity for a different user directly from Outlook.



Your mailbox is now connected to Dynamics 365

SC Sarah Critchley
Today, 15:31
Sarah Critchley

This message was sent with low importance.

Microsoft Dynamics 365

Mailbox connected for Sarah Critchley

Dear Sarah,

An organization administrator connected your mailbox to Dynamics 365.

You can now track emails in Dynamics 365 and sync appointments and link activities to Dynamics 365 records.

To protect your privacy, we don't automatically track email. You can track emails manually, or set rules for automated tracking in your personal options.

crmcat

Visit this page to learn about automated and manual activity tracking.

Visit this page to understand why your Administrator connected your mailbox.

Sincerely,

Quick Create: Task

Owner *
Sarah Critchley

Subject *
Your mailbox is now connected to ...

Description
Microsoft Dynamics 365

Due
06/05/2018 15:05

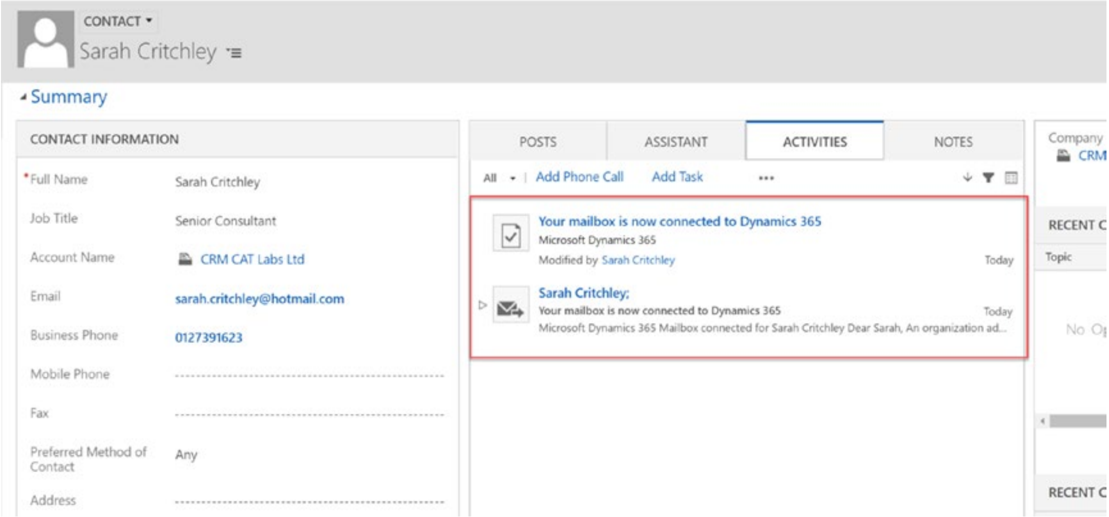
Regarding
Sarah Critchley

Duration
30 minutes

Priority
Normal

Figure 1-19. *Creating a task within Outlook and setting the owner of that task will display it within that user's dashboard*

Creating and synchronizing activities directly within Outlook means you can remain within the Outlook app while creating tasks and appointments, knowing they are being synchronized in the background (Figure 1-20).


CONTACT
Summary
CONTACT INFORMATION
POSTS
ASSISTANT
ACTIVITIES
NOTES
All
Add Phone Call
Add Task
Company
RECENT C
Topic
No O
RECENT C

Sarah Critchley

*Full Name: Sarah Critchley
Job Title: Senior Consultant
Account Name: CRM CAT Labs Ltd
Email: sarah.critchley@hotmail.com
Business Phone: 0127391623
Mobile Phone:
Fax:
Preferred Method of Contact: Any
Address:

Your mailbox is now connected to Dynamics 365
Microsoft Dynamics 365
Modified by Sarah Critchley Today

Sarah Critchley;
Your mailbox is now connected to Dynamics 365 Today
Microsoft Dynamics 365 Mailbox connected for Sarah Critchley Dear Sarah, An organization ad...

Figure 1-20. *The email message and task synchronized to the contact in Dynamics 365 from within Outlook*

Managing the synchronization between contacts can be easily set up by tracking contacts directly from Outlook. Open the Contact Manager Add-In by selecting "Add-In" and then "Dynamics 365," as shown in Figure 1-21. This will open a view of the Outlook contacts, and the Dynamics 365 contacts will also be visible (because the Outlook application creates and manages a Contacts list like Dynamics 365 CE does). Click the Contact and click "Track." The "Link" button will associate it with the account you select and also track it, automatically tracking any associated email messages linked to this contact.

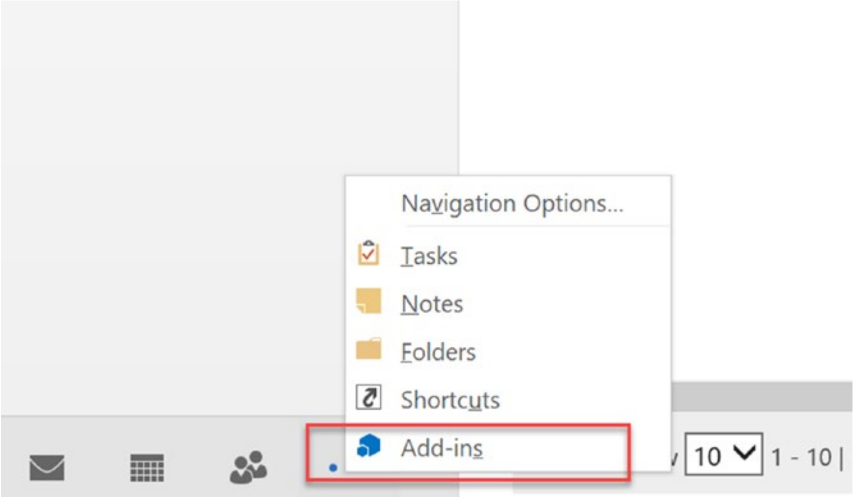
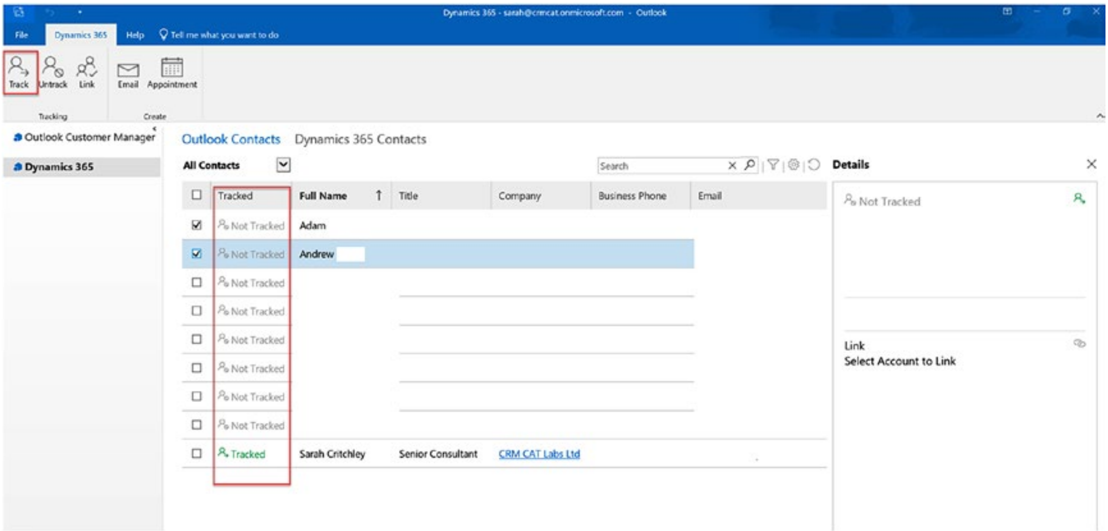

Navigation Options...
Tasks
Notes
Folders
Shortcuts
Add-ins
10
1 - 10 |

Figure 1-21. *Selecting the add-in from within the Outlook application*

The Contact Manager gives users visibility into which contact is being tracked and to manage this functionality from a central space (Figure 1-22).


Dynamics 365 - sarah@crmcat.onmicrosoft.com - Outlook
File
Dynamics 365
Help
Tell me what you want to do
Track
Untrack
Link
Email
Appointment
Tracking
Create
Outlook Customer Manager
Dynamics 365
Outlook Contacts
Dynamics 365 Contacts
All Contacts
Search
Details

☐	Tracked	Full Name	Title	Company	Business Phone	Email
☑	Not Tracked	Adam				
☑	Not Tracked	Andrew [redacted]				
☐	Not Tracked					
☐	Not Tracked					
☐	Not Tracked					
☐	Not Tracked					
☐	Not Tracked					
☐	Not Tracked					
☐	Tracked	Sarah Critchley	Senior Consultant	CRM CAT Labs Ltd		

Not Tracked

Link
Select Account to Link

Figure 1-22. *Review which contacts are being tracked from the Contact Manager*

In summary, setting up the App for Outlook should be discussed within organizations at the start of implementations to ensure the functionality meets their needs. The app allows users to keep their often normal, day-to-day operations within Microsoft Outlook and to benefit from the background synchronization achieved using the native integration functionality. The contact users have with customers then creates the 360-degree view from Dynamics 365 so that users are able to see the emails and appointments that have been scheduled in the past and for the future.

The Account and Contact record types have been covered in this section, including how to work with those records on a day-to-day basis using Outlook; now, let's move on to the final part of this chapter, which will cover activity management and the timeline view.

Activity Management and the Timeline

Activities were highlighted in the previous section in the context of Microsoft Outlook. This section will look at activities in more detail and at how they are used within Dynamics 365 CE. Activities can be especially useful for managing past, present, and future customer engagements. They can be read and interpreted using the timeline interface, underpinning reporting and customer engagement across the entire system.

What Are Activities?

Activities are a special type of record within Dynamics 365 CE that can be associated with any other record type within the system enabled for activities. Examples of standard activities include phone calls, tasks, appointments, and emails. With specific apps within Dynamics 365 CE, such as Field Service or Portals, more activities become available and expand the types of activities available within the system. They are best considered as supporting records that add extra dimensions and information for users, giving them visibility into every record from the timeline view. Because of this, the data within these records can be easily filtered and sorted depending on the need. Activities are often considered to be "schedulable" as they all have a start and end date by default. The reason this happens is because all activities are child entities associated with a parent Activity Pointer entity (Figure 1-23).

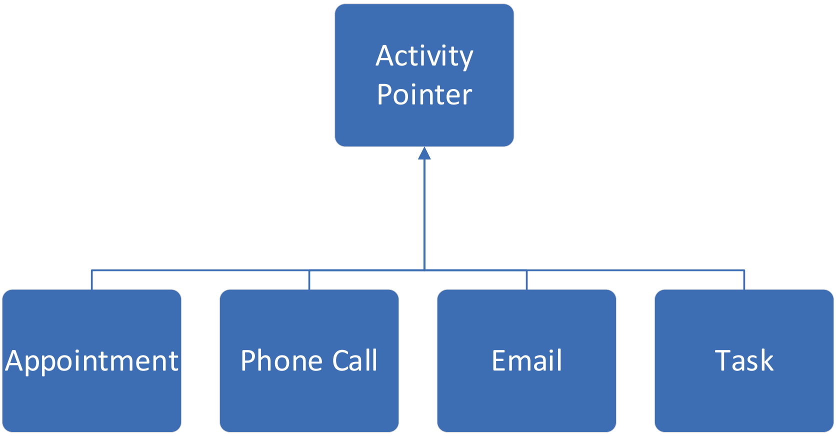


Figure 1-23. *Activities roll up to the Activity Pointer entity*

The Activity Pointer is a non-customizable entity within the system that provides Activity records with a base set of field information so that any record type defined as an activity will have the same set of fields at a minimum, in addition to specific ones for that type. When a new activity record is made by a user, a new Activity Pointer record is also created that holds base fields such as start and end time, due date, and duration. The Activity Pointer records can be seen under the Activities entity within Advanced Find, available on the main navigation bar allowing users to search and query records within the system.

Dynamics 365 CE hides the fact that two entities are created from the user interface (for the most part), and only the specific record—e.g., phone call—is visible within the system so the user can focus on the record type based on their needs at the time.

Making a new entity an activity-type entity can be done when creating the record within the entity definition itself. Consideration needs to be given when creating a custom activity because that activity is going to be available to be created on any other type of record and will be available within the timeline for those records. If the record type is only going to be appropriate in one entity, it may be best to simply create a normal entity and not make it an activity. This is a critical point and an important design decision. Creating a full entity and then creating a relationship between that and the related entity allows the child records to be visible via a sub-grid component. This design avoids the confusion of having activity records available to be created and filtered where they are not needed or relevant.

How Can They Be Used?

Activities can be used in many ways. The previous section discussed using them in the context of Outlook Integration, but they can also be used within the Dynamics 365 CE application itself, enhancing productivity and reporting capabilities for users.

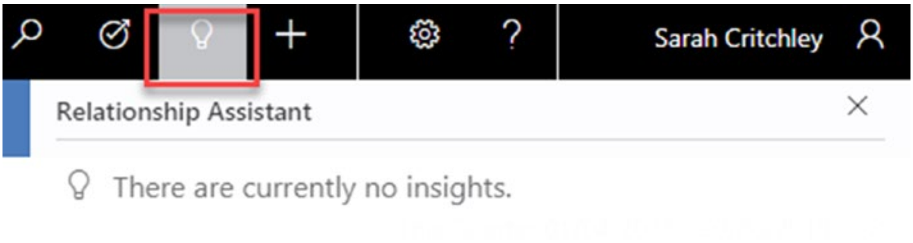
Using the standard activities on a day-to-day basis will allow a business to see all the contact points with their customers and will also provide the capability to more easily manage workloads. By using Outlook Integration and tracking, all email activities are logged within the system, and any other user within Dynamics 365 CE can see the integration taking place. Dynamics 365 CE has a feature called Phone Support in the Customer Service Hub app, which allows a new Case record to be created and automatically creates and opens a Phone Call activity at the same time. Creating phone calls for the future will allow a salesperson to plan their weekly calls and estimate how long they will take. Appointment activities can also be synchronized with Outlook Integration, allowing other users and colleagues to see availability and when interactions are taking place, such as when the last face-to-face meeting was.

Activities don't just have to be created manually and are often automatically created through workflows and other customization options set on specific actions being taken within a system. This gives the capability for dashboards of tasks and phone calls for the week to be created and to be visible as soon as a user logs in to the system. While this seems like basic functionality, by using this feature an organization gains access to the following information:

- Interaction with the customers (visible on the rollup from Contact to Account records)
- Length of support given to customers
- Appointments and meetings taking place
- Email engagement and conversations with customers
- Missed opportunities (where activities are *not* taking place)
- Scheduled workload (by using the duration of all planned activities)

This information is not only easily obtainable from activities but is also what is used in the latest ‘Relationship Assistant’ functionality in Dynamics 365 CE. Relationship Assistant gives the user informed recommendations about their next best action based on real activity data.

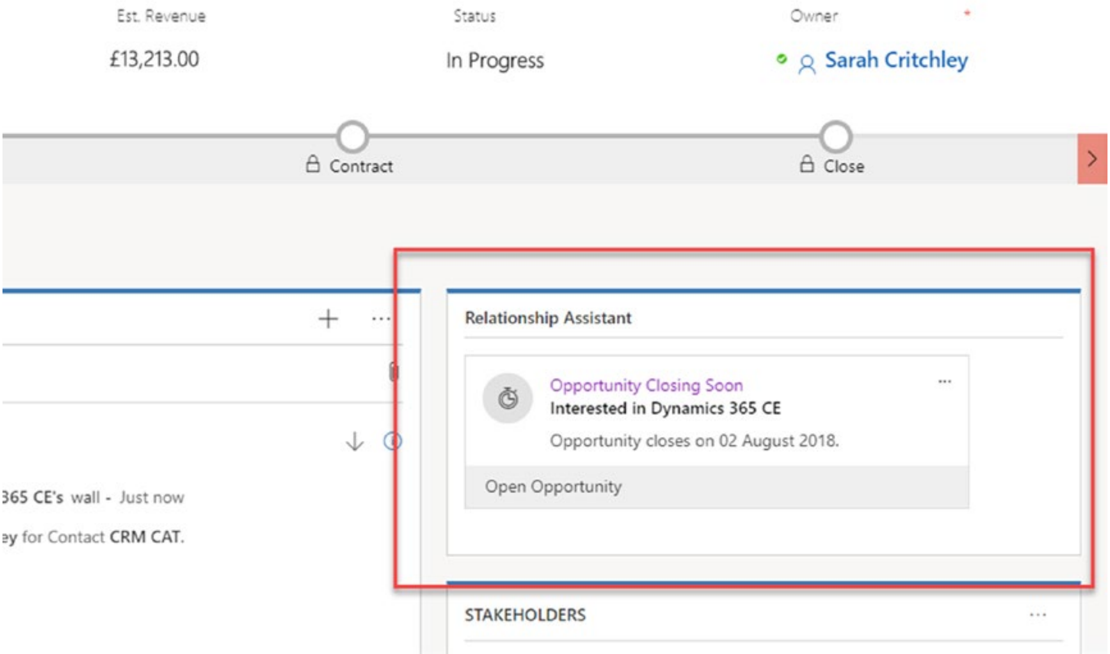
Relationship Assistant can be selected within the navigation bar in Dynamics 365 via the lightbulb icon (Figure 1-24). When clicked, it displays action cards that give recommendations based on those activities within the system. It would suggest if you have not contacted somebody for a while, upcoming appointments, and even suggest actions based on email messages that have not been responded to.



There are currently no insights.

Figure 1-24. *Relationship Assistant button on the navigation within Dynamics 365 CE*

Relationship Assistant can also be added as a form component so as to be seen by users as soon as they open a record. This is configured as standard on the Opportunity form, as seen in Figure 1-25.


Est. Revenue

£13,213.00

Status

In Progress

Owner

Sarah Critchley

Relationship Assistant

Opportunity Closing Soon

Interested in Dynamics 365 CE

Opportunity closes on 02 August 2018.

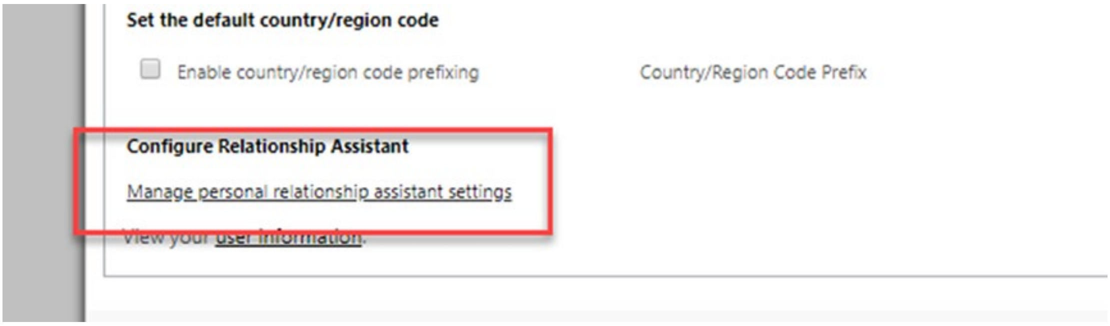
Open Opportunity

365 CE's wall - Just now

ey for Contact CRM CAT.

Figure 1-25. *An example of a card generated by the Relationship Assistant*

The Relationship Assistant can be used from the icon on the header, from within dashboards, and as embedded into forms. There is a variety of cards available, with the main being "base cards." These often refer to upcoming activities that are due today or appear when things have been missed (e.g., activities past their due date with no action taken on them). These cards are the only type of cards available in the Relationship Assistant for on-premises Dynamics CE customers. There are more-tailored cards that use email exchange data and email engagement; time-based cards, such as opportunity closing or not been modified for some time; and productivity-type cards based on specific activity content, such as emails and appointments. These can be configured via the Options icon on a card itself or within the personal options of a user under the General tab. Select "Manage personal relationship assistant settings" to configure, as shown in Figure 1-26.



Set the default country/region code

☐ Enable country/region code prefixing

Configure Relationship Assistant

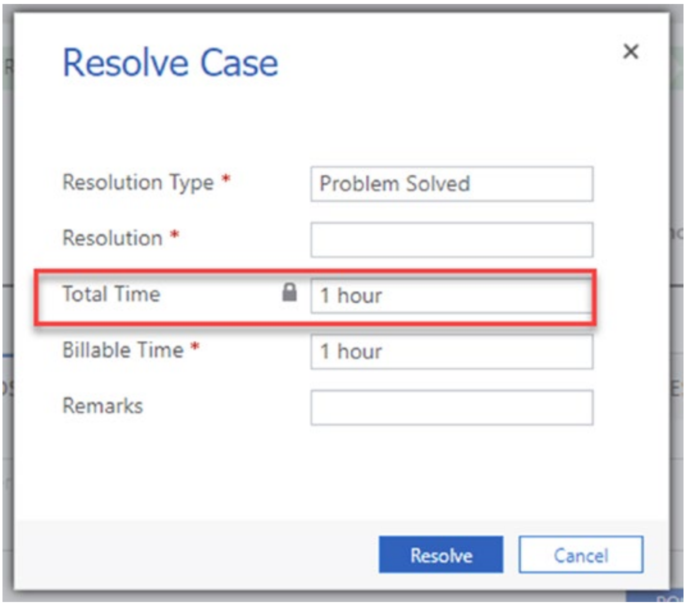
Manage personal relationship assistant settings

View your user information.

Figure 1-26. *Managing Relationship Assistant settings*

Taking full advantage of activities and using them within Outlook and Dynamics 365 CE also allows the Relationship Assistant feature to give a more-tailored experience to users. It gives them next-best-action recommendations on specific records with the aim to remind them and allow them to be more productive.

Activities are also used within out-of-the-box features, such as closing opportunities and cases (e.g., an “Opportunity Closing” record). These activities are created when a user attempts to close a record, such as an Opportunity. If activities are still in an “open” state, the closure activity won’t be able to be applied. If an activity is in an open state, it normally means it is scheduled for the future or has not been completed; hence, the system assumes there is still some action to do. This would normally generate a warning to notify the user that the record cannot be closed until all activities are completed. The Case entity has a similar feature and also has notable functionality related to its “Total Time” field. Upon case resolution, the “Duration” field is rolled up on all associated activities (as this comes from the Activity Pointer), displaying this within the “Total Time” field, as seen in Figure 1-27, then copying it to the “Billable Time” field—but leaving this editable. This field is also especially important for entitlements, where they are configured to decrement on minutes.



Resolve Case

Resolution Type * Problem Solved

Resolution *

Total Time 1 hour

Billable Time * 1 hour

Remarks

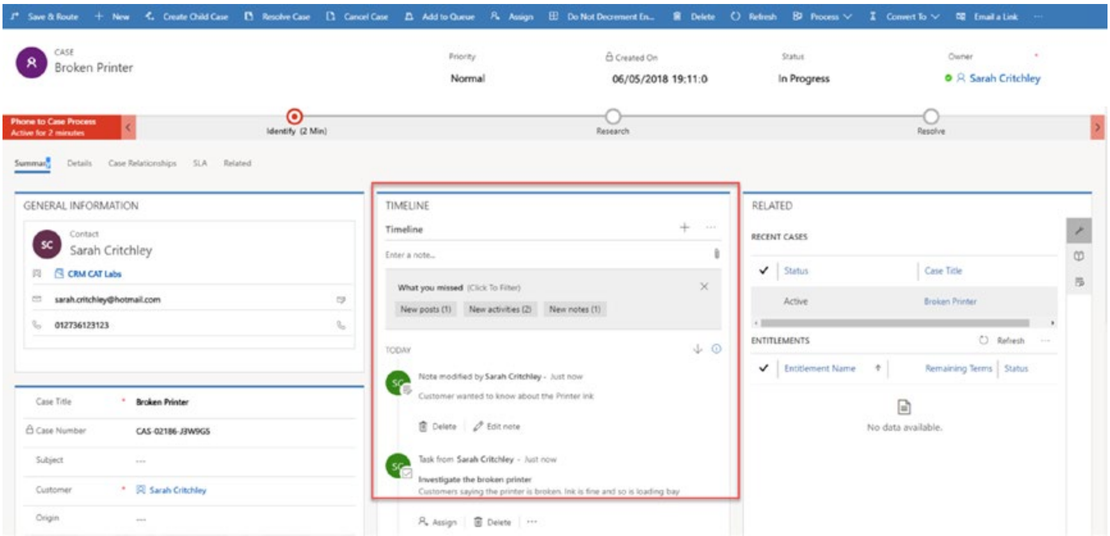
Figure 1-27. *Case Resolution form with the rollup of associated activities from their "Duration" field*

There is no setup to utilize activities within Dynamics 365, except that, like accounts and contacts, they need to have awareness of the users, training for how they will be used within the system, and knowledge of their effects and uses on related functionality.

The Timeline

The timeline was introduced in the latest version, at time of writing, of Dynamics 365 (9.0) and displays a combination of all activities and notes within a single view. It replaces the old Activities tab, where activities, posts, and notes were all in separate tabs that a user had to select to view. The timeline feature allows a user to perform filtering and sorting to find anything specific they are looking for within that single view. It also provides notifications, such as new activities or activities that are overdue, straight away to users as they load the form.

The timeline can be found on standard records at the center of the screen, highlighted in Figure 1-28. It forms a central space for activities to be used and communication to be easily visible to give a clear view of what the latest information is regarding this record.


Save & Route
New
Create Child Case
Resolve Case
Cancel Case
Add to Queue
Assign
Do Not Decrement En...
Delete
Refresh
Process
Convert To
Email a Link
Phone to Case Process
Active for 2 minutes
Identify (2 Min)
Research
Resolve
Summary
Details
Case Relationships
SLA
Related
GENERAL INFORMATION
TIMELINE
Timeline
Enter a note...
What you missed (Click To Filter)
New posts (1)
New activities (2)
New notes (1)
TODAY
Delete
Edit note
Assign
Delete
RELATED
RECENT CASES
Status
Case Title
ENTITLEMENTS
Refresh
Entitlement Name
Remaining Terms
Status
No data available.

CASE
Broken Printer

Priority: Normal
Created On: 06/05/2018 19:11:0
Status: In Progress
Owner: Sarah Critchley

Contact: Sarah Critchley
CRM CAT Labs
sarah.critchley@hotmail.com
012736123123

Case Title: Broken Printer
Case Number: CAS-02186-J3W9G5
Subject: ---
Customer: Sarah Critchley
Origin: ---

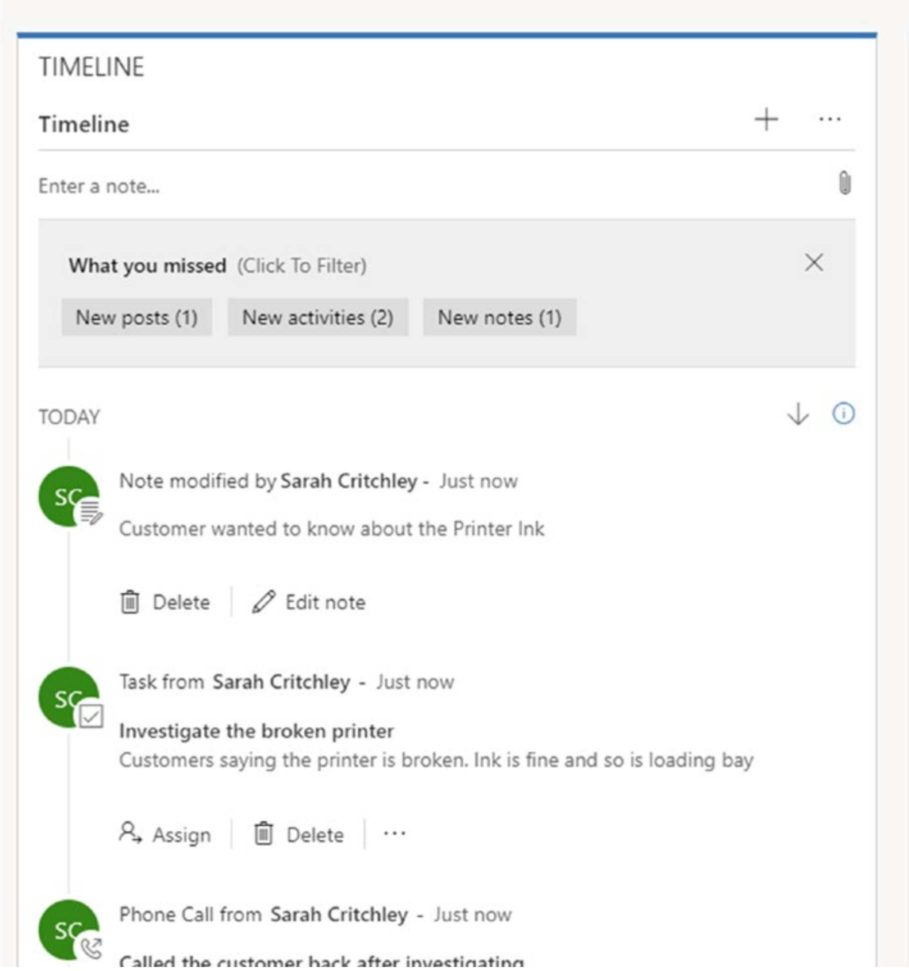
Note modified by Sarah Critchley - Just now
Customer wanted to know about the Printer ink

Task from Sarah Critchley - Just now
Investigate the broken printer
Customers saying the printer is broken. Ink is fine and so is loading bay

Active | Broken Printer

Figure 1-28. *Timeline form component displays activities, posts, and notes in a single view*

The timeline has the capability to track the new activities the user has not seen and flag them to the user when they load a record, as seen in Figure 1-29.


TIMELINE
Timeline
Enter a note...
What you missed (Click To Filter)
New posts (1)
New activities (2)
New notes (1)
TODAY
SC
Delete
Edit note
SC
Assign
Delete
SC

Note modified by Sarah Critchley - Just now

Customer wanted to know about the Printer Ink

Task from Sarah Critchley - Just now

Investigate the broken printer

Customers saying the printer is broken. Ink is fine and so is loading bay

Phone Call from Sarah Critchley - Just now

Called the customer back after investigating

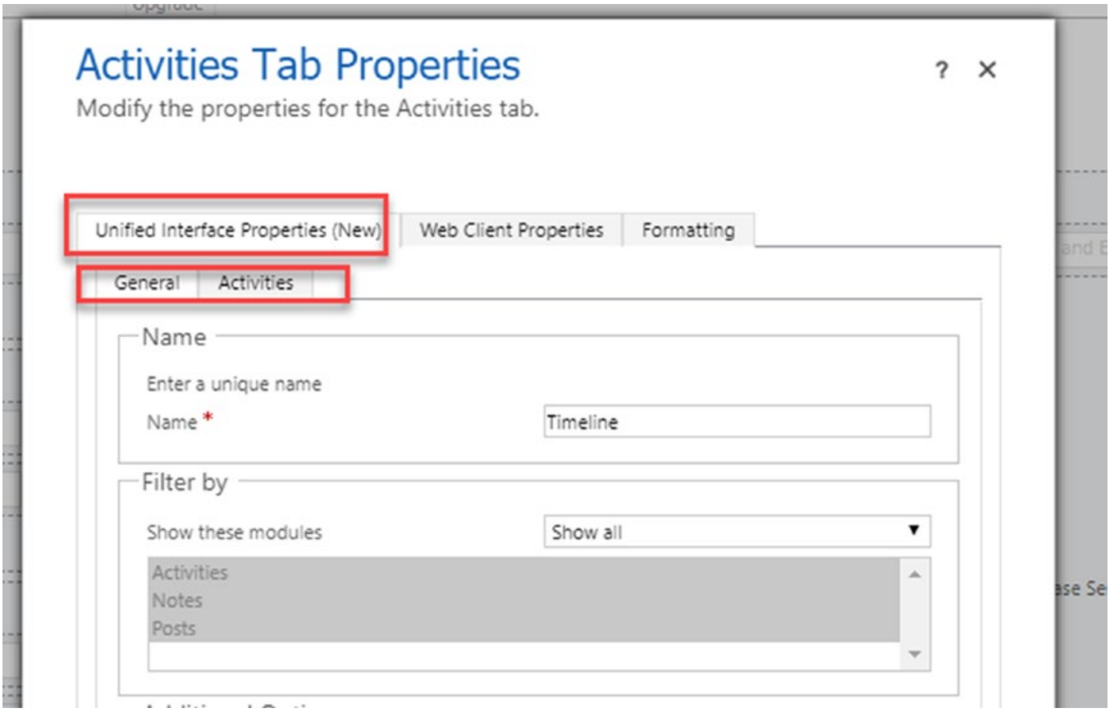
Figure 1-29. *Timeline form component displaying items missed*

As the timeline can potentially have a lot of information within a small area of the form, there are a lot of configuration options to ensure this is set up to get the best out of the functionality of each record type. This is especially important to allow activities to be used easily.

Task: Add the Timeline Control on a Form. The following steps will need system administrator privileges. Navigate to System Settings ➤ Customizations ➤ Solutions. Open the Solution and open or add in the entity you wish to customize. Double-click the

"Timeline" section to open the properties, as you'll see in the screenshot. Ensuring the Unified Interface Properties tab is selected, there are two options: General and Activities (Figure 1-30). Within the "General" area you can customize the following:

- The name of tab
- Displaying specific modules (activities, notes, and posts) or combinations of the three
- Create a note or post in a "quick" way at the top of the timeline
- Display the Filter pane or expand it by default
- Sort the Filter pane in ascending or descending order (the field it's sorted on is configured in the Activities tab)



Activities Tab Properties

Modify the properties for the Activities tab.

Enter a unique name

Name * Timeline

Show these modules Show all

?
×
Unified Interface Properties (New)
Web Client Properties
Formatting
General
Activities
Name
Filter by
Activities
Notes
Posts

Figure 1-30. *Configuring a timeline form component*

In the Activities tab, you can customize the following:

- Display all activities within the system or select specific activities to display. (Note: as is standard, this means *display only* not necessarily create. The Unified Interface currently only provides the functionality to create phone calls, tasks, appointments, and emails; however, it is expected to be added to in later versions)
- Sort field to sort the timeline. Note that these are only fields on the Activity Pointer record, not specific record types (so you cannot filter on "Call To", for example, but you *can* filter on "Sort Date" because this is an Activity Pointer field).
- How the fields are displayed on the form, including creating activities using quick create or main forms.

One special point to make is the sorting of the timeline. Dynamics 365 CE provides a field called "Sort Date" on the Activity Pointer entity. This field is blank by default until it is populated by custom business logic, for example a workflow, and can be used to sort on the timeline in ascending or descending order. The feature of this field is that it can be populated based on the information specifically related to the requirement or business. A phone call sort order can be one date, but an email one another. But that date would be held within the same field name, providing a user the ability to see those activities sorted within the timeline and sorted in a single space, despite their being different record types.

Filtering is achieved by selecting the action menu button within the timeline and selecting "Open Filter Pane." This opens the Filter options, which allow you to sort by record type, status, and the date. Especially useful is the ability to see the number of activities as an aggregate and see immediately the activities in an open state, as this would also indicate they have a pending action, as seen in Figure 1-31.

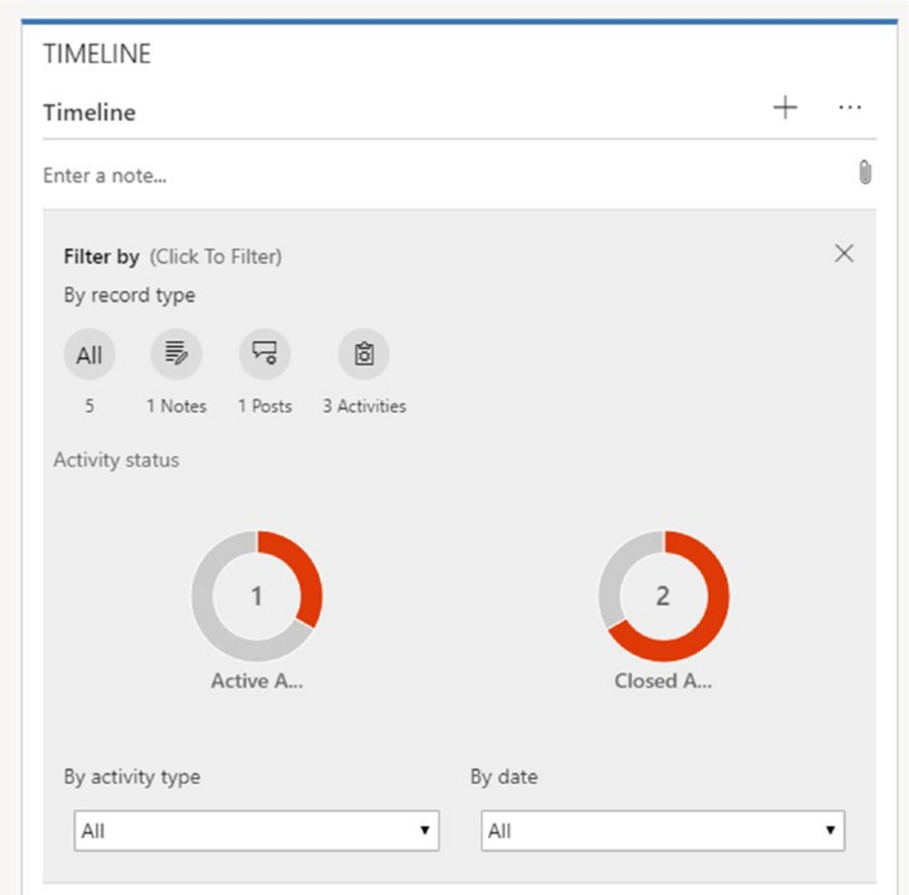

TIMELINE
Timeline
+
...
Enter a note...
Filter by (Click To Filter)
By record type
All
5
1 Notes
1 Posts
3 Activities
Activity status
1
Active A...
2
Closed A...
By activity type
All
By date
All

Figure 1-31. Timeline filter

Summary

This chapter has covered the core introduction of Dynamics 365 CE with accounts, contacts, activities, and timeline management. In addition to that, introduces the Microsoft Outlook integration capabilities and options. These areas are fundamental to understanding how to utilize some of the key features within the platform. Accounts, contacts, and activities are used in almost every record, especially standard out-of-the-box record types. This chapter covered getting started with the timeline and the configuration options available so that readers can set up the timeline as is best suited for the record types in question.

Chapter Tasks

At the end of every chapter, there will be a section that gives up to ten suggested tasks for you to complete within Dynamics 365 CE. These tasks will be based around the topics covered within the chapter and are aimed at expanding practical knowledge and application prowess regarding those topics that goes beyond reading about them.

- Review the account and contact relationship by creating new records and associating contacts with the account.
- Create a hierarchy of a parent account with child account records and view them within the hierarchy.
- Create an activity within a Contact record of type Email, Phone Call, Appointment, and Task and check the account for the rollup feature.
- Check the activity rollup feature from a child account to a parent account.
- Set up the Dynamics 365 App for Outlook by following the walkthrough within this chapter.
- Create activities that are due soon so that they appear within the Relationship Assistant. See them within the Relationship Assistant and become familiar with the cards.
- Close an Opportunity record (by clicking "Close as Won") and see the activity within the timeline called Opportunity Close.
- Review the timeline and perform filters and sorting.

Further Reading

Dynamics 365 CE Outlook Integration Versioning and Information (Microsoft, 2018) URL: `https://docs.microsoft.com/en-us/dynamics365/customer-engagement/outlook-app/v8/deploy-dynamics-365-app-for-outlook`

Dynamics 365 CE Outlook Integration Frequency Information (Microsoft, 2018) URL: https://docs.microsoft.com/en-us/dynamics365/customer-engagement/admin/server-side-synchronization#server-side-synchronization-frequency

Dynamics 365 CE Outlook Supported Apps (Microsoft, 2018) URL: https://docs.microsoft.com/en-us/dynamics365/customer-engagement/outlook-app/v8/deploy-dynamics-365-app-for-outlook#supported-operating-systems-for-outlook-on-the-desktop

CHAPTER 2

Customer Service

Dynamics 365 CE includes a Customer Service app that includes a range of functionality designed to give you the core capability to deliver an omni-channel customer-service experience. Omni-channel experiences have progressed from the ability to simply deliver multi-channel experiences, which allow organizations to deliver their messages across more than one channel, such as social media and their website. Omni-channel customer service allows organizations to manage when a customer switches channel, they can retain the context of the customer's enquiry and gives the capability to be able to transfer that from one channel to another seamlessly.

An example of an omni-channel customer-service experience would be an individual tweeting the organization about a defective product. This tweet automatically creates a case within Dynamics 365 CE, as it was picked up by the keyword search and negative sentiment rule within Microsoft Social Engagement. The customer's details and history are available because the social profile is synchronized with Dynamics 365 CE. The case is automatically put in the account manager's queue, and they tweet back, suggesting moving the conversation to private message so they can discuss more personal information. A private link is given so as to transition easily. The account manager organizes a phone call, as it would be easier to resolve the issue and have a conversation. The conversation ends, and the account manager logs it against the account. An email is then sent out to confirm the resolution. A response is received, and the account manager closes the case.

There are many examples like this one: the ability to transition between different channels within a single enquiry is something that is required of customer-service departments within organizations. This chapter will explain how to set up the functionality provided within Dynamics 365 CE that allows departments to achieve this.

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S. Critchley, *Dynamics 365 CE Essentials*, https://doi.org/10.1007/978-1-4842-3973-5_2

What Are Cases and How Are They Used?

At the center of any Customer Service Management System is the ability to log the details of a customer's incident. The record that holds this information in Dynamics 365 CE is the *Case* entity. Cases can manage both support tickets and inquiry records. They are built to be generic so they can guide a user through solving a problem. Their generic nature is a core advantage: cases are a common place to see customizations within the system, tailoring them for a specific organization. This allows any industry to make minor customizations to the entity so it becomes specific to their requirements, should they need it to be.

Cases can integrate with extensions, such as CTI integration, SLA functionality, and entitlement contract management. The Case entity is the central record within Dynamics 365 CE that these extensions operate from, allowing self-service channels like portals and chat bots to provide an omni-channel experience that gives customers the ability to choose the channel best suited for them, and allowing users within the system to use a single space to facilitate customer engagement.

Having the ability to use the context of the customer is one of the important capabilities of the Case record type as discussed in the previous chapter. Once a customer is associated with a case, a user can see contextual information about that customer instantly, including contact details, entitlement details and SLAs, and all the associated history for the customer. If a case is created from Twitter or another social profile using Dynamics 365 Social Engagement integration, the details of the profile would also be visible from the case record. This information is available as soon as the record is created by users, allowing them to act instantly. Service-level agreements are time-based expectations, and every second is important to be able to provide a timely resolution, so having access to information about the customer when it's needed plays a huge part in meeting those agreements between customer and organization.

The Lifecycle and Functionality of a Case

Cases have a lifecycle that includes expectations of the user at specific places within it. The lifecycle begins with the identification of a customer. As a customer-service agent, the user needs to know who is making the query or who has the issue. The agent would learn this by searching the system to find the customer, normally based first on the name of the company they are with and then on the name of the person, using their first and last names on the filtered list from the identification of the account.

Identifying the customer and setting the fields with links to those records populates the Quick View form with core information about the customer (Figure 2-1). The Quick View form gives the user the opportunity to verify that the customer's details are correct using the extended information, or they can use the form for a quick reference without having to open the full record and navigate away from the case at hand.

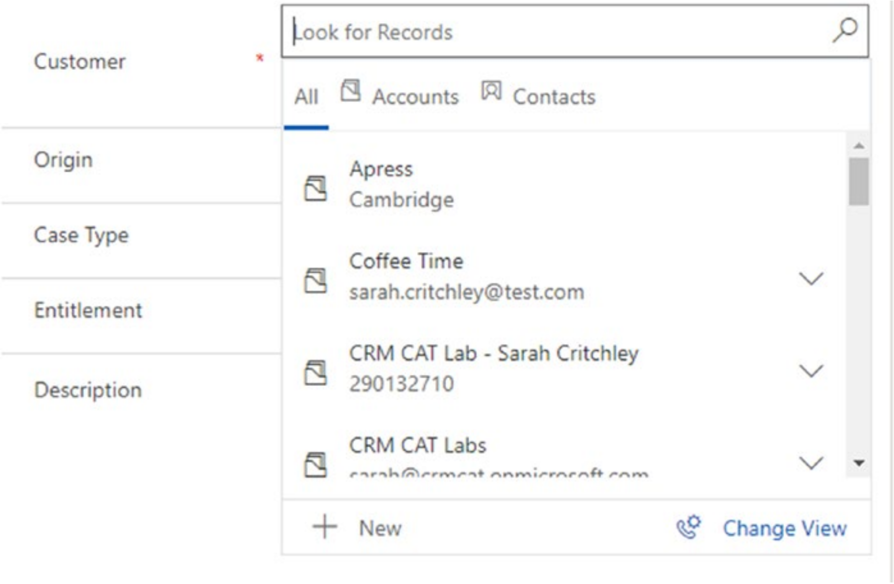
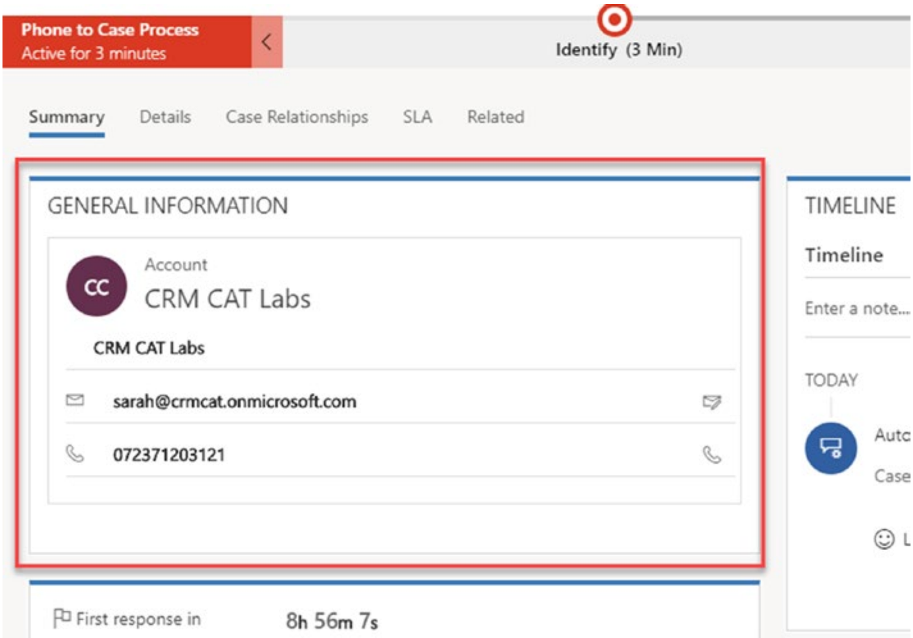

Customer
*
Look for Records
All
Accounts
Contacts
Origin
Apress
Cambridge
Case Type
Coffee Time
sarah.critchley@test.com
Entitlement
CRM CAT Lab - Sarah Critchley
290132710
Description
CRM CAT Labs
New
Change View

Figure 2-1. *Adding an Account record within the "Customer" field*

The Quick View form shows read-only information from a related record, which is the customer on the Case form, as seen in Figure 2-2. It allows the user to check information without having to navigate away from the case. Modifying Quick View forms is covered in the second section of this book.

The "Customer" field can include an Account record *or* a Contact field. It is a special type of field that allows for a dual lookup of these two types of records. As there is already a "Contact" field on the Case record (within the Details tab), and other functionality uses this as an "Account" field, it is normally best practice to use this for the Account record.



Phone to Case Process
Active for 3 minutes
Identify (3 Min)
Summary
Details
Case Relationships
SLA
Related
GENERAL INFORMATION
CC
Account
TIMELINE
Timeline
Enter a note...
TODAY
Autc
Case
First response in

CRM CAT Labs

CRM CAT Labs

sarah@crmcat.onmicrosoft.com

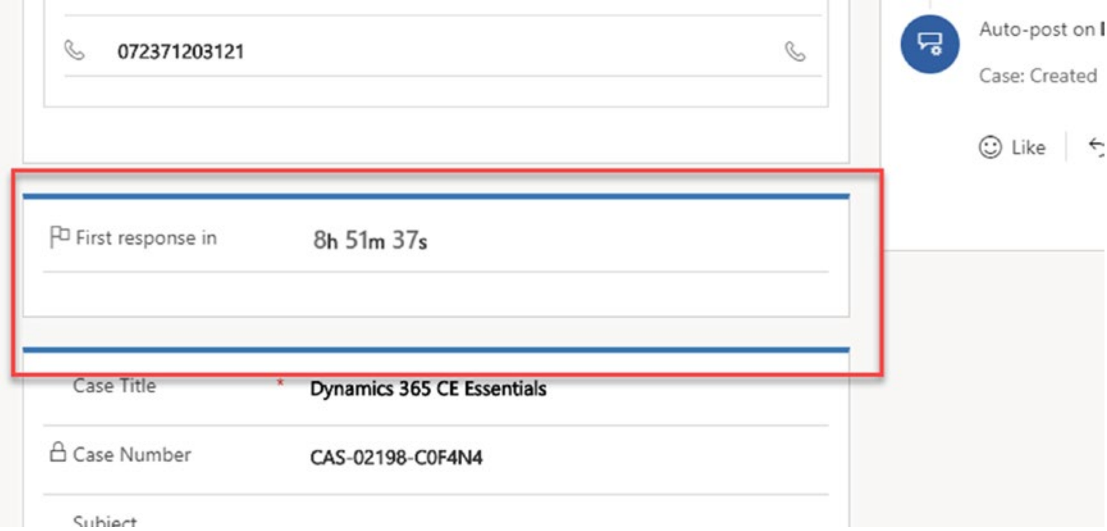
072371203121

8h 56m 7s

Figure 2-2. *The Quick View form of the customer on the Case record*

Upon case creation, setting the source of the case is important so as to distinguish any specific entitlement channel. (Entitlement's are covered in more depth later in this chapter). Products have a similar impact where they can be related to entitlements, so including them at case creation allows for the "Entitlement" field to be filtered by contact, origin, and product (the next chapter covers products and the product catalog in greater depth). Having these field values populated where relevant allows for the "Entitlement" field to filter on more data, reducing the number of matching records, thus helping the user make a quicker decision to associate the correct entitlement to the case.

Saving the record at this point associates these contractual details with the customer and triggers any SLAs associated with the entitlement contract, or organisation as seen in Figure 2-3. The user does not need to know the details about the entitlement, because they are focusing on information related to the issue the customer is experiencing.


Auto-post on
Case: Created
Like

072371203121

First response in 8h 51m 37s

Case Title * Dynamics 365 CE Essentials

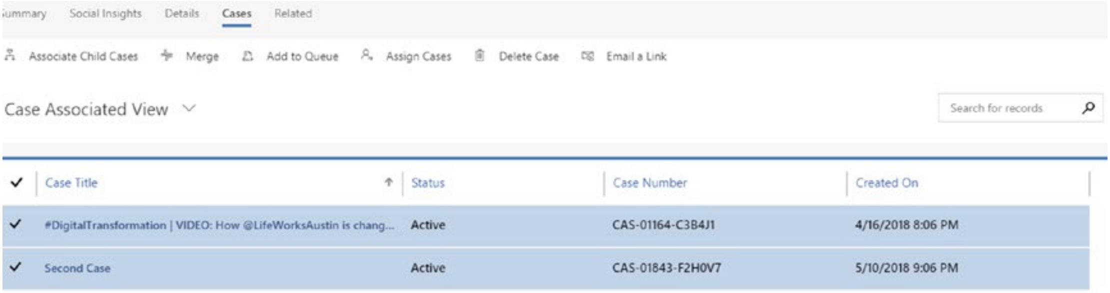
Case Number CAS-02198-C0F4N4

Subject

Figure 2-3. *A service-level agreement activating on the case, counting down*

Sub-grids become available after the creation of a record; in these, a user can see the existing case for the Account record selected. Related-case visibility is especially important for a number of reasons, the most obvious of which is to see a case history, but there is more to it than just that. A user will also be able to use this information to see if there are any other cases open that are the same or similar and identify patterns that could indicate a different issue than the ones being reported.

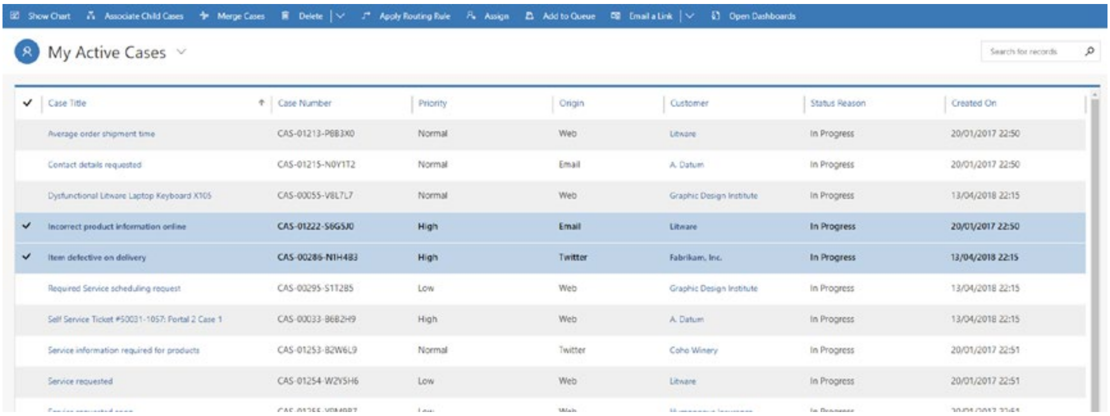
If these scenarios occur, such as a duplicate case being created, there are some remedial actions the user can perform that are native functionality to Dynamics 365 CE. This includes merging the cases (the one the user just made and the duplicate). If they are not the same and instead linked, the user can create a parent/child relationship, linking the two (Figure 2-4).


ummary
Social Insights
Details
Cases
Related
Associate Child Cases
Merge
Add to Queue
Assign Cases
Delete Case
Email a Link
Case Associated View
Search for records

✓	Case Title	Status	Case Number	Created On
✓	#DigitalTransformation | VIDEO: How @LifeWorksAustin is chang...	Active	CAS-01164-C3B4J1	4/16/2018 8:06 PM
✓	Second Case	Active	CAS-01843-F2H0V7	5/10/2018 9:06 PM

Figure 2-4. *Selecting cases to merge them using the Merge button in the command bar*

To merge two cases, select the two that need to be merged within the Case Associated view so they are highlighted, as seen in Figure 2-4. Click “Merge” in the command bar. This cannot be done within the small sub-grid on the form, but can still be achieved while on the record by selecting the Related tab and then “Cases.” Alternatively, this can be completed on the main Case view as seen in Figure 2-5.

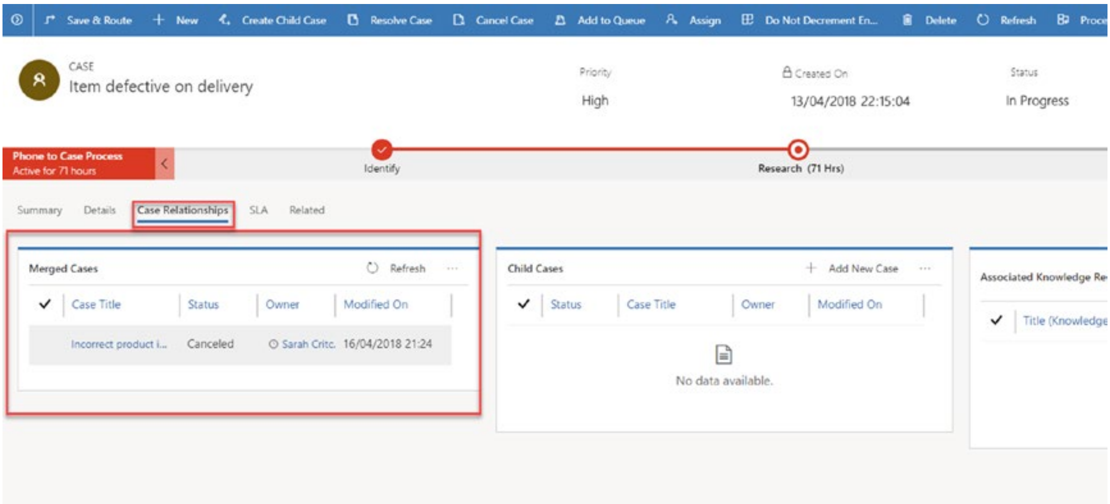


✓	Case Title	Case Number	Priority	Origin	Customer	Status Reason	Created On
	Average order shipment time	CAS-01213-P8B3X0	Normal	Web	Litware	In Progress	20/01/2017 22:50
	Contact details requested	CAS-01215-N0Y1T2	Normal	Email	A. Datum	In Progress	20/01/2017 22:50
	Dysfunctional Litware Laptop Keyboard X105	CAS-00055-V8L7L7	Normal	Web	Graphic Design Institute	In Progress	13/04/2018 22:15
✓	Incorrect product information online	CAS-01222-S6G5J0	High	Email	Litware	In Progress	20/01/2017 22:50
✓	Item defective on delivery	CAS-00286-N1H4B3	High	Twitter	Fabrikam, Inc.	In Progress	13/04/2018 22:15
	Required Service scheduling request	CAS-00295-S1T2B5	Low	Web	Graphic Design Institute	In Progress	13/04/2018 22:15
	Self Service Ticket #50031-1057: Portal 2 Case 1	CAS-00033-B6B2H9	High	Web	A. Datum	In Progress	13/04/2018 22:15
	Service information required for products	CAS-01253-B2W6L9	Normal	Twitter	Coho Winery	In Progress	20/01/2017 22:51
	Service requested	CAS-01254-W2Y5H6	Low	Web	Litware	In Progress	20/01/2017 22:51

Figure 2-5. *Selecting cases to merge using the main My Active Cases view*

You can see the cases that have been merged into the current record by navigating to the Case Relationships tab on a Case record and reviewing the Merged Cases sub-grid. When a case is merged, it is not deleted; the status is simply changed, as shown in Figure 2-6, and some of the data from the merged record is then transferred to the main record.

When merging cases, Dynamics 365 CE displays a notification to choose the main case that the other case(s) will be merged into.


Save & Route
New
Create Child Case
Resolve Case
Cancel Case
Add to Queue
Assign
Do Not Decrement En...
Delete
Refresh
Phone to Case Process
Active for 71 hours
Identify
Research (71 Hrs)
Summary
Details
Case Relationships
SLA
Related
Refresh
Add New Case
No data available.

CASE
Item defective on delivery

Priority: High
Created On: 13/04/2018 22:15:04
Status: In Progress

Merged Cases

Case Title	Status	Owner	Modified On
Incorrect product i...	Canceled	Sarah Critc.	16/04/2018 21:24

Child Cases

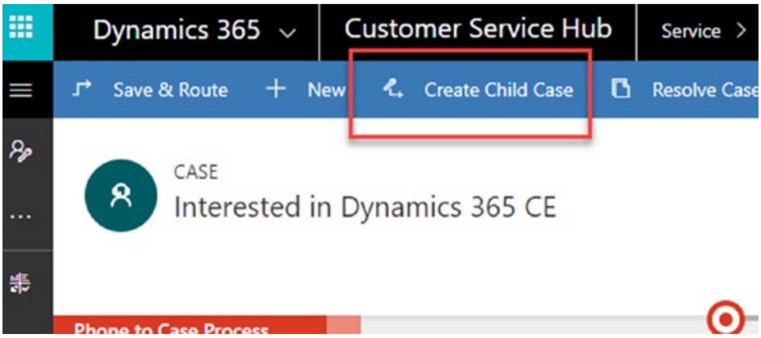
Status	Case Title	Owner	Modified On

Associated Knowledge Re

Title (Knowledge

Figure 2-6. *Reviewing merged cases using the merged cases sub-grid*

From parent cases, users can create a new case directly from the current case. This would make the current case the parent and the new case the child. This is achieved by clicking the Create Child Case button on the Case record (Figure 2-7).


Dynamics 365
Customer Service Hub
Service
Save & Route
New
Create Child Case
Resolve Case
Phone to Case Process

CASE
Interested in Dynamics 365 CE

Figure 2-7. *Create a Child Case button on the Case record*

If the child case is already created, you can navigate to the Case Relationships tab, go to the “Child Cases” section, click the action (“…”) button, and select “Add Existing Case,” choosing from the grid view (Figure 2-8). Adding a child case adds some restrictions on the case resolution of the parent case while the child case record remains open, which are highlighted in the next section.

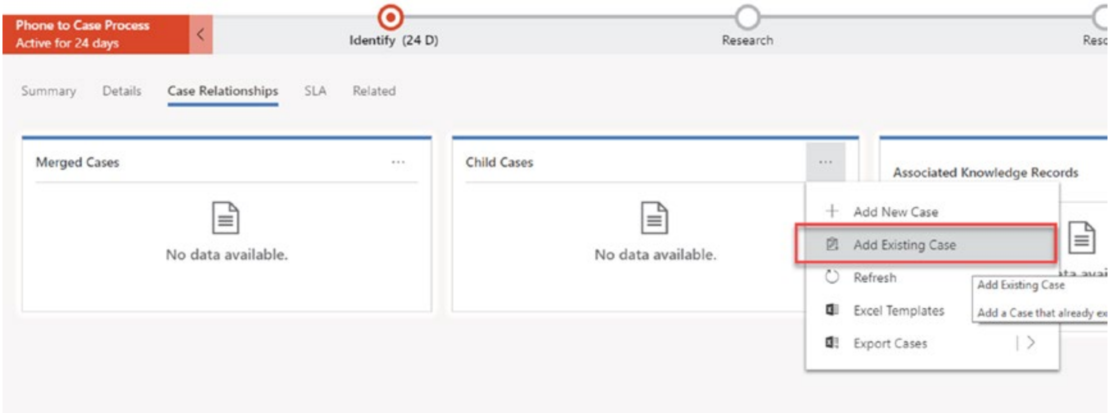
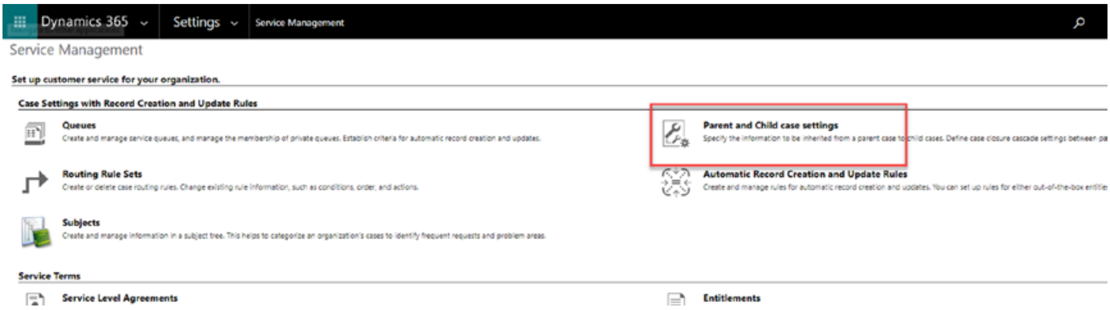

Phone to Case Process
Active for 24 days
Identify (24 D)
Research
Reso
Summary
Details
Case Relationships
SLA
Related
Merged Cases
No data available.
Child Cases
No data available.
Associated Knowledge Records
Add New Case
Add Existing Case
Refresh
Excel Templates
Export Cases
Add Existing Case
Add a Case that already ex

Figure 2-8. *"Add Existing Case" to the Case record*

Resolving Cases

When using the parent and child case relationship functionality, as described in the previous section, there are some key considerations in relation to Case Resolution. If a user attempts to resolve the parent case while any number of child cases are still open, there are three separate behaviors that Dynamics 365 CE can be configured for. If they are not configured and are left as "default," then the parent and child cases can be resolved without any conflict, and so if a parent is closed before a child, it is deemed as acceptable within the business operation. If not, these can be modified within the Classic UI. Navigate to Settings ➤ Service Management. There is a configuration area that allows users to configure two additional behavior settings.

You can configure the system so that if a parent is closed, it will automatically resolve all linked child cases (Figure 2-9). The second option is to prevent the closure of the parent if there are still active child cases. There is no right or wrong configuration in this instance, and both options are viable ones for organizations. Discuss the definition of what the organization would classify as a child case in the context of the services they provide and which behavior is acceptable. As a parent and child relationship naturally infers a dependency, a popular option is to apply the preventative functionality.



Service Management

Set up customer service for your organization.

Case Settings with Record Creation and Update Rules

Queues
Create and manage service queues, and manage the membership of private queues. Establish criteria for automatic record creation and updates.

Routing Rule Sets
Create or delete case routing rules. Change existing rule information, such as conditions, order, and actions.

Subjects
Create and manage information in a subject tree. This helps to categorize an organization's cases to identify frequent requests and problem areas.

Parent and Child case settings
Specify the information to be inherited from a parent case to child cases. Define case closure cascade settings between pa

Automatic Record Creation and Update Rules
Create and manage rules for automatic record creation and updates. You can set up rules for either out-of-the-box entitie

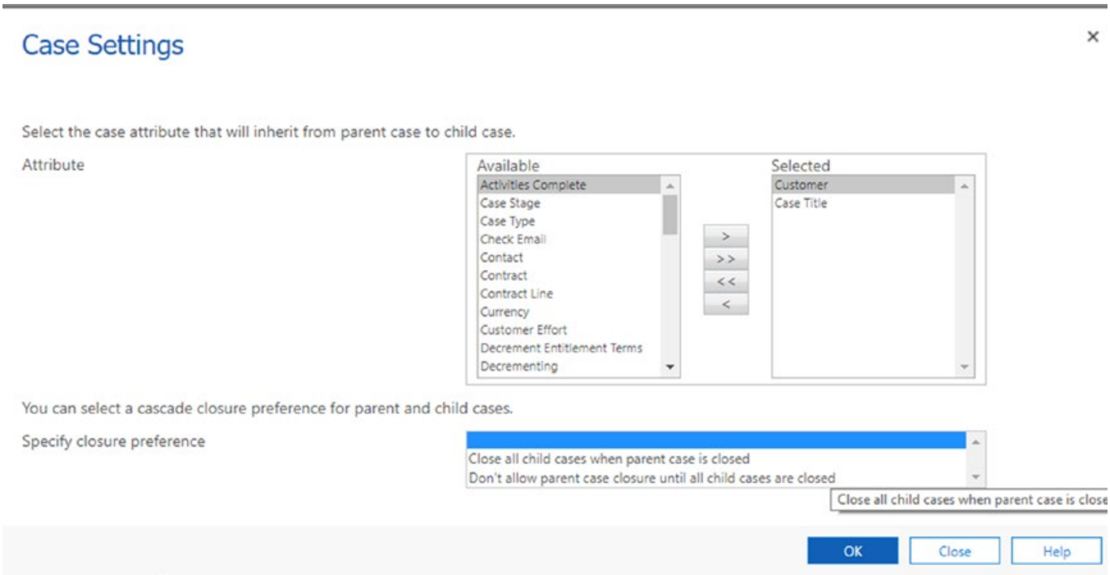
Service Terms

Service Level Agreements

Entitlements

Figure 2-9. *Parent and child settings within the Classic Client under "Settings"*

Select "Parent and Child case settings," which opens a new screen. Select the attributes to move over to the child case and specify the closure preference from this screen in the available options, as seen in Figure 2-10.



Case Settings

Select the case attribute that will inherit from parent case to child case.

Attribute

Available
- Activities Complete
- Case Stage
- Case Type
- Check Email
- Contact
- Contract
- Contract Line
- Currency
- Customer Effort
- Decrement Entitlement Terms
- Decrementing

Selected
- Customer
- Case Title

You can select a cascade closure preference for parent and child cases.

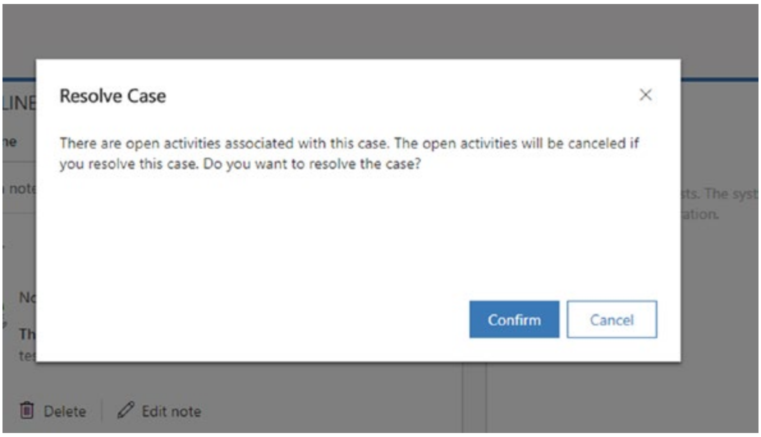
Specify closure preference
- Close all child cases when parent case is closed
- Don't allow parent case closure until all child cases are closed

Close all child cases when parent case is close

Figure 2-10. *Case settings for configuring parent/child case-resolution settings*

There is also functionality when defining the parent/child relationship in order for the child to inherit specific values from the parent record. This inheriting behavior is very similar to relationship mapping, discussed in the second section of the book. Where if a user creates a child record while on the record of its parent, the 1:N mapping allows certain fields to be auto-populated. However, this is normally only available for making *new* records; the case here is special. It allows a user to map attributes from the parent to the child not just for new cases made in the context of the parent record, but also even where existing ones are linked. The act of the association triggers the update without your having to create workflows to do a similar job.

Upon closing a case by selecting “Resolve Case” on the Case record, a warning appears if the user attempts to close a case with active or open activities, as seen in Figure 2-11. The system notifies the user with a warning. Dynamics 365 CE expects there to be some resolution to these activities before the whole case is resolved. It is not best practice to leave activities open, which will then remain in “Open” lists and dashboards; it often means these will be orphaned and never updated. For this reason, it’s recommended to ensure all activities are closed before resolving a case.



There are open activities associated with this case. The open activities will be canceled if you resolve this case. Do you want to resolve the case?

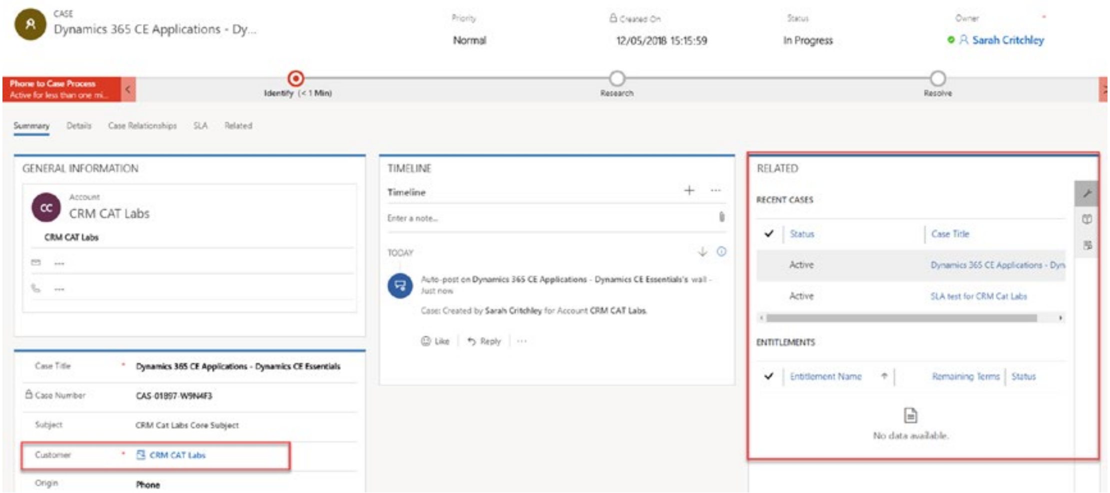
Figure 2-11. *Notification warning the user of open activities before resolving a case*

Core Case Relationships

There are a number of key relationships within a Case record that are important to be aware of. Some are only populated under certain conditions, and some have to be manually populated.

On the main Case form, the “Customer” lookup field normally refers to the account. It was discussed earlier in the chapter that you should use this as an account rather than a contact lookup, despite the option being there for both. There are also standard sub-grids on the form, such as Related Cases, which are linked to the account and not to a contact. There is also an Entitlements sub-grid displaying associated entitlements linked to the account.

A Knowledge Article sub-grid is available on the Case form. This is slightly different in how it operates compared with Related Cases and Entitlements. As opposed to being a link between other records and the case, it operates as a search tool to find articles that can assist the user in the resolution of the case, as seen in Figure 2-12.


CASE
Phone to Case Process
Active for less than one mi...
Identify (< 1 Min)
Research
Resolve
Summary
Details
Case Relationships
SLA
Related
GENERAL INFORMATION
TIMELINE
Timeline
Enter a note...
TODAY
Like
Reply
RELATED
RECENT CASES
ENTITLEMENTS

Dynamics 365 CE Applications - Dy...

Priority: Normal

Created On: 12/05/2018 15:15:59

Status: In Progress

Owner: Sarah Critchley

Account: CRM CAT Labs

CRM CAT Labs

Auto-post on Dynamics 365 CE Applications - Dynamics CE Essentials's wall - Just now

Case: Created by Sarah Critchley for Account CRM CAT Labs.

Case Title: Dynamics 365 CE Applications - Dynamics CE Essentials

Case Number: CAS-01897-W9N4F3

Subject: CRM Cat Labs Core Subject

Customer: CRM CAT Labs

Origin: Phone

Status	Case Title
Active	Dynamics 365 CE Applications - Dyn
Active	SLA test for CRM Cat Labs

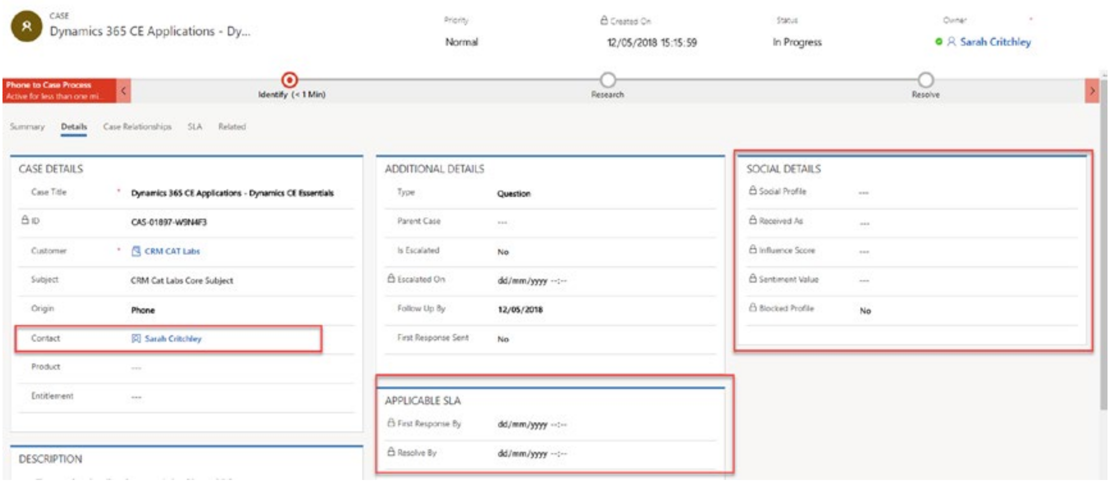
Entitlement Name	Remaining Terms	Status

No data available.

Figure 2-12. *The Related sub-grid on the Case form*

On a Case form, the Details tab includes more relationships. The “Contact” field, for example, will be filtered based on the account selected within the “Customer” field. This doesn’t need to be populated; however, as cases are opened by being reported by an individual, it is normally the best practice to do so. In addition to this, Contact records have a direct relationship to the entitlements available, and by selecting this users can filter down to which entitlements are applicable in that instance.

Service-level agreements are a key relationship for cases. They can be found under the SLA tab within the Case form, as seen in Figure 2-13. This will be reviewed with entitlements and SLAs later in this chapter. The SLA tab links the SLAs that have met the activation condition(s) on the case. The most popular and standard SLA types are “First Response By” and “Resolve By.” These are normally referred to as key performance indicators (KPI) and provide deadlines for when a user must send the first response on case creation and when a case must be resolved by.



CASE
Dynamics 365 CE Applications - Dy...

Priority: Normal
Created On: 12/05/2018 15:15:59
Status: In Progress
Owner: Sarah Critchley

CASE DETAILS

Case Title	Dynamics 365 CE Applications - Dynamics CE Essentials
ID	CAS-01897-W9N4F3
Customer	CRM CAT Labs
Subject	CRM Cat Labs Core Subject
Origin	Phone
Contact	Sarah Critchley
Product	---
Entitlement	---

DESCRIPTION

ADDITIONAL DETAILS

Type	Question
Parent Case	---
Is Escalated	No
Escalated On	dd/mm/yyyy --:--
Follow Up By	12/05/2018
First Response Sent	No

APPLICABLE SLA

First Response By	dd/mm/yyyy --:--
Resolve By	dd/mm/yyyy --:--

SOCIAL DETAILS

Social Profile	---
Received As	---
Influence Score	---
Sentiment Value	---
Blocked Profile	No

Figure 2-13. *Highlighting key areas on the Case form Details tab, including Contact, SLAs, and Social Details*

Lastly, there is the "Social Details" section. This section's fields are only ever completed by the system in the case where there is Microsoft Social Engagement integration set up and a case has been created from the automatic case-creation rules within Dynamics 365, the setup of which will be covered in a later chapter. These fields are read-only and cannot be modified or manually entered, even to correct wrong information.

Phone Support, CTI Integration, and Skype for Business

Functionality in Dynamics 365 CE that automatically detects who is calling is a common requirement in call center operations. This functionality can save a large amount of time as it reduces the time a user is searching for a record while the customer is waiting on the phone. In addition to that, it also helps customer service because it reduces overall call time and improves efficiency. Automatically detecting the contact from a phone call is often referred to as CTI integration—computer telephony integration.

CTI normally handles inbound and outbound calling to an organization, identifying the contact from the Dynamics 365 system. When the record is located, this is displayed to the user so they can begin the service call without ever needing to search. The reduction of searching is especially important as cases within Dynamics 365 can be directly linked with little or no effort. CTI is also relevant for outbound calls, where the connector provides a user interface that allows an agent to dial directly from the Contact record and gives them the ability to make a phone call without ever having to lift the phone. Dynamics 365 CE does not perform this feature as standard, and many connectors interface with Dynamics 365 CE and various phone systems.

There is also sometimes a requirement for IVR (interactive voice response) systems to be linked to the CTI functionality. IVR systems provide customers who dial a phone number a confirmation message stating who they have called and often then gives callers the opportunity to route themselves to the correct department based on their query. IVR functionality is most beneficial when it hands off to a CTI and completes the process as just described. This can often then be routed to queues and teams automatically.

Despite the requirements for CTI, Skype for Business is becoming a popular tool for business-to-business relationships. Dynamics 365 version 9.0 provides the capability for seamless Skype for Business integration, giving users the ability for increased productivity without any setup or cost associated with it, provided the correct Office 365 version is in use. This was available in previous versions; however, now users can see the status straight from the record that the user is displayed in; i.e., mainly “owner”-type fields. Hovering over the ‘Owner’ field for example, brings up their IM and call details so they can single-click IM or Call directly from Dynamics 365, opening Skype for Business from within the context of that user (Figure 2-14).

Even if an organization is not using any IVR or CTI, by navigating to the Case view, a user can click the Phone Support button instead of New, which automatically creates a new case and opens a blank Phone Call activity. While this seems a minor step compared to the functionality just described, it is great practice to allow users to utilize the activity communication that Dynamics 365 CE provides.

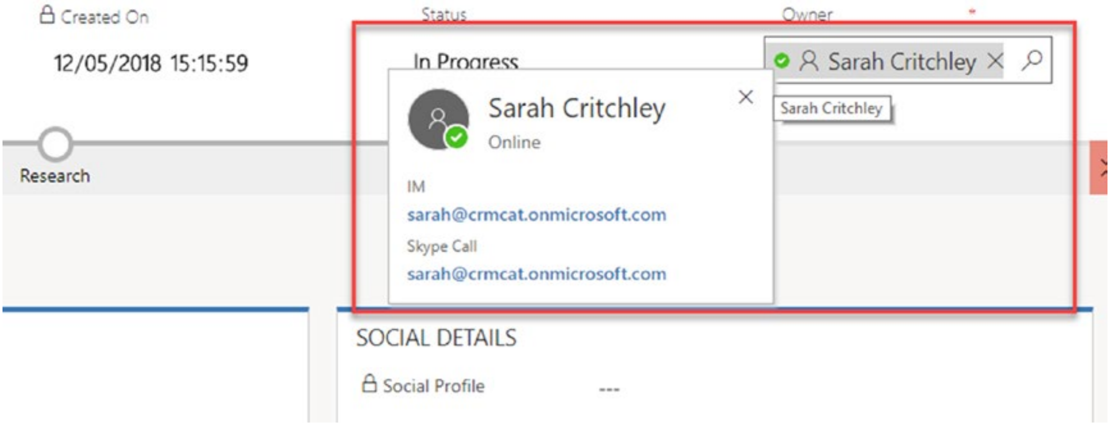

Created On
12/05/2018 15:15:59
Research
Status
In Progress
Owner
Sarah Critchley
Sarah Critchley
Sarah Critchley
Online
IM
sarah@crmcat.onmicrosoft.com
Skype Call
sarah@crmcat.onmicrosoft.com
SOCIAL DETAILS
Social Profile

Figure 2-14. *Hovering over the "User" field displays the IM detail from Skype for Business*

Clicking the IM opens Skype for Business, allowing a call to be created and connected without having to dial a number, as seen in Figure 2-15.

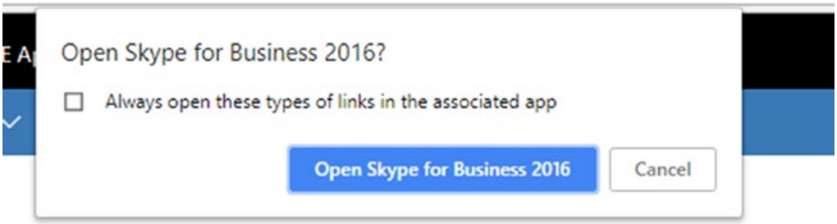

Open Skype for Business 2016?
☐ Always open these types of links in the associated app
Open Skype for Business 2016
Cancel

Figure 2-15. *Clicking the IM allows for Skype for Business to be directly opened from Dynamics 365 CE*

Unified Service Desk

The Unified Service Desk (USD) is a client application installed on users' machines, normally in a call-center environment or where there is a large number of users. It is designed to offer a single unified interface for users to be able to access contact information quickly, often integrating with CTI solutions; it provides script capability for users to follow scripts dynamically with customers based on the user's need. The USD can be configured so that data from within the full Dynamics 365 CE environment can be aggregated and visible as a high-level overview for the contact desktop application. It is designed to reduce load time of records and is specifically configurable to ensure organizations get the most out of and focus specifically on the customer experience.

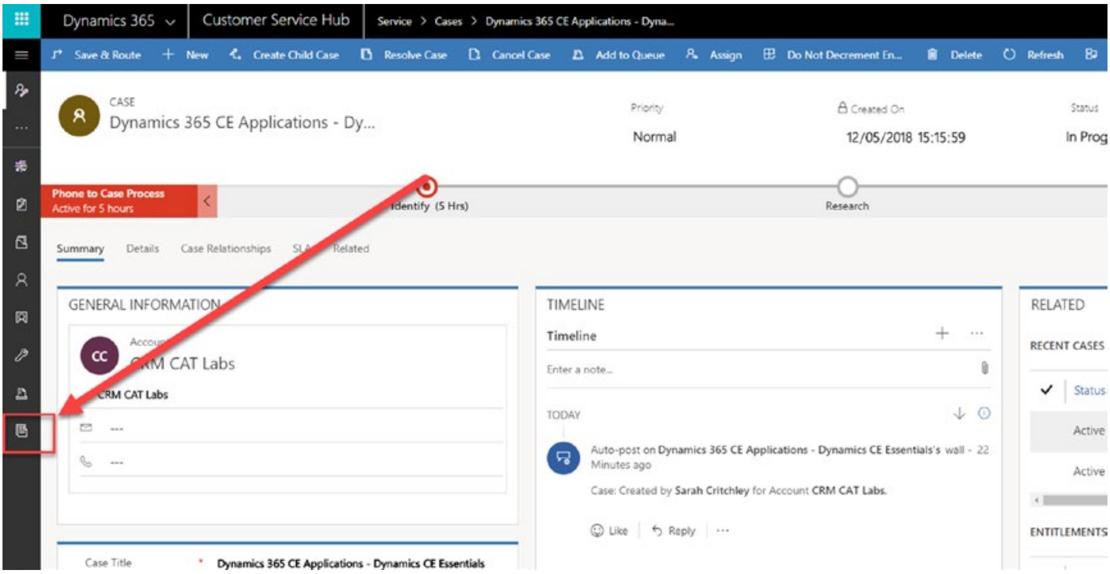
USD utilizes the UII, Unified Interface Integration, which is a modular framework that allows these customizations to take place, often with limited code, and provides a faster to-business scenario. It ships with adapters and has the ability to connect with other applications and host the CTI framework. USD is on its own release cycle compared to the main Dynamics 365 CE main application. It links in with modern, omni-channel forms of communication and does an excellent job of holding context between them, such as starting from a web chat and moving easily into a phone call. Context transfer is engineered to allow call-center agents to access the right data for the right call, handle multiple sessions, retain that context, and reduce the work required before and after a call, often handled with CTI and transcribing of calls.

This book does not cover functionality concerning Unified Service Desk; it is highlighted here as an available option for customer-service and specifically high-volume call-center scenarios. There is a great deal of information available from Microsoft and the Dynamics 365 community on getting started with USD, which can be found within the "Further Reading" section at the end of this chapter.

Queues and Routing

Dynamics 365 CE has long had queues as an integral part of service-management functionality. Queues allow any record type, configured for queues, to be placed within a queue of items to be acted on by a user. There are some record types configured for queues as standard, such as Cases. Custom entities can be enabled for queues within the entity definition, described in the second section of this book. Any record type enabled for queues has the Add to Queue command bar button available. This can be operated manually or can be used within a workflow. Adding the item to a queue creates a queue item, which logs which queue it is in, who is working on it, and the time at which it entered the queue.

Users can navigate to queues by selecting them from the Customer Service Hub app. Once selected, "All queues you're a member of" will be the default queue selected. This view is a combination of all the items within all available queues you as a user are a member of. Users can filter and change that by selecting a different view. Queues have different views; for example, this include "Items available to work on" and "Items working on" within the same queue. Users can change the queue and have the same set of views available with which to change and filter the records, just like within other areas of the system.


Dynamics 365
Customer Service Hub
Service > Cases > Dynamics 365 CE Applications - Dyna...
Save & Route
New
Create Child Case
Resolve Case
Cancel Case
Add to Queue
Assign
Do Not Decrement En...
Delete
Refresh
CASE
Phone to Case Process
Active for 5 hours
Identify (5 Hrs)
Research
Summary
Details
Case Relationships
SLA
Related
GENERAL INFORMATION
TIMELINE
Timeline
Enter a note...
TODAY
Like
Reply
RELATED
RECENT CASES
Status
Active
Active
ENTITLEMENTS

Dynamics 365 CE Applications - Dy...

Priority: Normal

Created On: 12/05/2018 15:15:59

Status: In Prog

Account: CRM CAT Labs

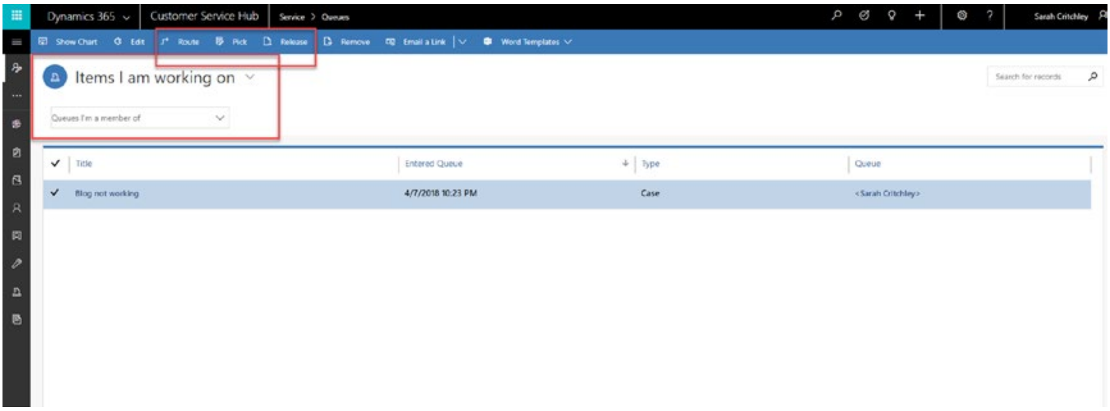
Auto-post on Dynamics 365 CE Applications - Dynamics CE Essentials's wall - 22 Minutes ago

Case: Created by Sarah Critchley for Account CRM CAT Labs.

Case Title: Dynamics 365 CE Applications - Dynamics CE Essentials

Figure 2-16. *Selecting queues from the Customer Service Hub sitemap*

Select the Queue button within the sitemap in the Customer Service Hub app, as shown in Figure 2-16. Select the different queues using the dropdown list that looks like an option set, and select the views by clicking the view name, as seen in Figure 2-17.


Dynamics 365
Customer Service Hub
Service > Queues
Sarah Critchley
Show Chart
Edit
Route
Pick
Release
Remove
Email a Link
Word Templates
Items I am working on
Queues I'm a member of
Search for records

Title	Entered Queue	Type	Queue
Blog not working	4/7/2018 10:23 PM	Case	<Sarah Critchley>

Figure 2-17. *Selecting the queue, view, route, pick, and release from the command bar*

The benefit of queues is that a user would be able to be part of a queue that is normally available to other users and can pick items from that shared list of "to do" items. The action of "picking" logs who is working on that item, having picked it.

Queues are especially important for customer-service scenarios. An item may not be completed within a single queue from start to finish. Instead, it could be routed from one queue to another either manually or automatically based on the data contained in the item. Queues are often used in escalation scenarios and when support teams escalate between the different support levels. Queues are designed to be able to move between teams seamlessly, using routing rules where possible.

Queues are created automatically for users and teams when the user or team record is created. They can also be created on their own and set as public or private depending on if an organization wishes to keep those queues open or only for a specific set of users. Queues created automatically are shown with '<' and '>' characters.

You can manually add to a queue by selecting "Add to Queue," as shown in Figure 2-18.

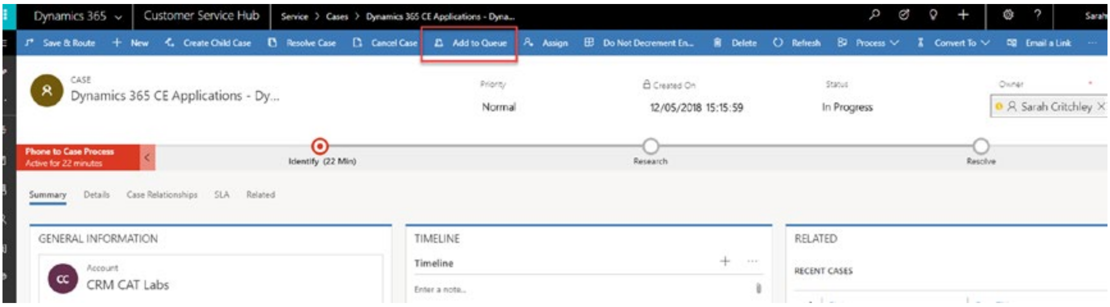
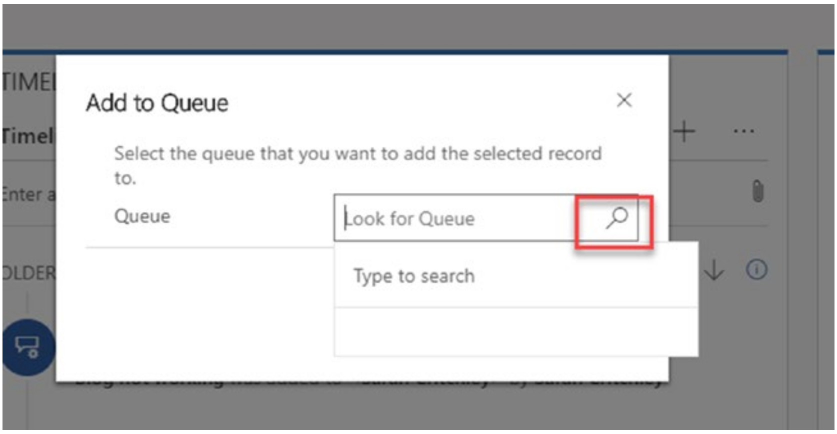

Dynamics 365
Customer Service Hub
Service > Cases > Dynamics 365 CE Applications - Dyna...
Save & Route
New
Create Child Case
Resolve Case
Cancel Case
Add to Queue
Assign
Do Not Decrement En...
Delete
Refresh
Process
Convert To
Email a Link
CASE
Dynamics 365 CE Applications - Dy...
Priority
Normal
Created On
12/05/2018 15:15:59
Status
In Progress
Owner
Sarah Critchley
Phone to Case Process
Active for 22 minutes
Identify (22 Min)
Research
Resolve
Summary
Details
Case Relationships
SLA
Related
GENERAL INFORMATION
Account
CRM CAT Labs
TIMELINE
Timeline
Enter a note...
RELATED
RECENT CASES

Figure 2-18. *Selecting "Add to Queue" from within a Case record*

Then, select from the available queues, as seen in Figure 2-19.


Add to Queue

Select the queue that you want to add the selected record to.

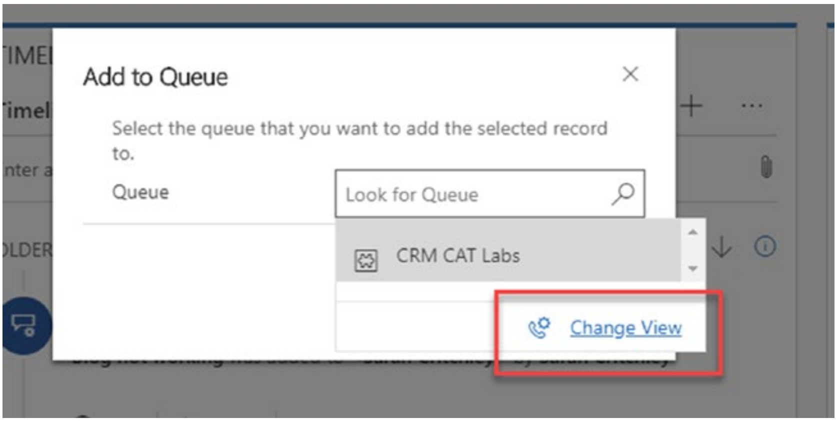
Queue: Look for Queue

Type to search
TIMEL
Timel
Enter a
OLDER

Figure 2-19. *The notification after selecting "Add to Queue"; a user must select the queue to add the record to*

To add a record to a queue (and create the link to a queue from the record—the queue item), select "Add to Queue" from the Case record (or other entity record activated for queues).

Select the queue from the lookup. Select "Change View" if required and select a different view where a user will be able to see, as shown in Figure 2-20.

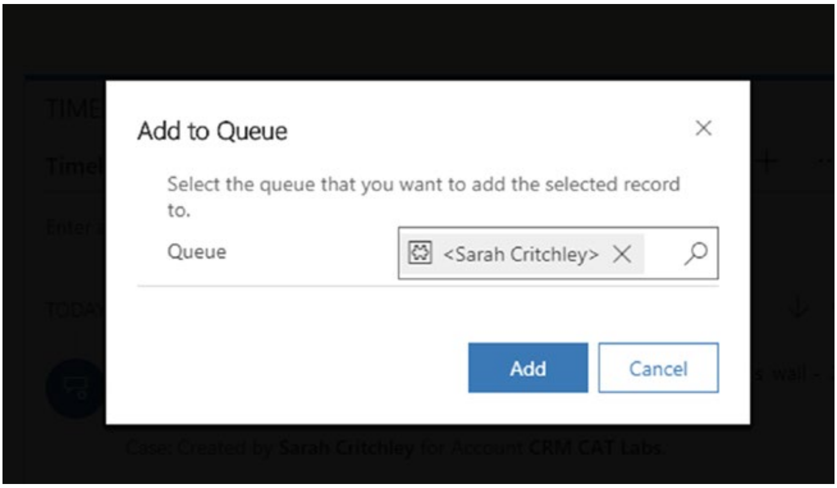

Add to Queue

Select the queue that you want to add the selected record to.

Queue: Look for Queue

Figure 2-20. *Click "Change View" if no queues appear when the lookup button is selected*

Now, select the queue for the item to be added, as seen in Figure 2-21.


Add to Queue

Select the queue that you want to add the selected record to.

Queue: <Sarah Critchley>

Figure 2-21. *A queue selected*

In a queue, you can select the Pick button. This function allows you to notify the queue that you are working on the item; this will populate the “Worked By” field within the queue item with your user record.

The Unified Interface, at time of writing, does not display the queue item’s detail; instead, this can be visible from the Classic UI. Navigate to a record in a queue (e.g., a case) and click “Queue Item Details,” which will open a new window (Figure 2-22). Here, the queue item’s detail is visible. The Queue Item record displays which record the item is related to as well as the field “Worked By,” which is populated automatically when a user selects “Pick.” A significant amount of reporting can be achieved from this queue item detail, such as workload of teams, backlogs, or items not being worked on.

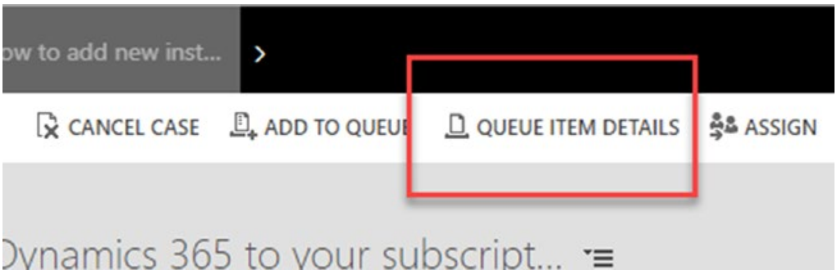
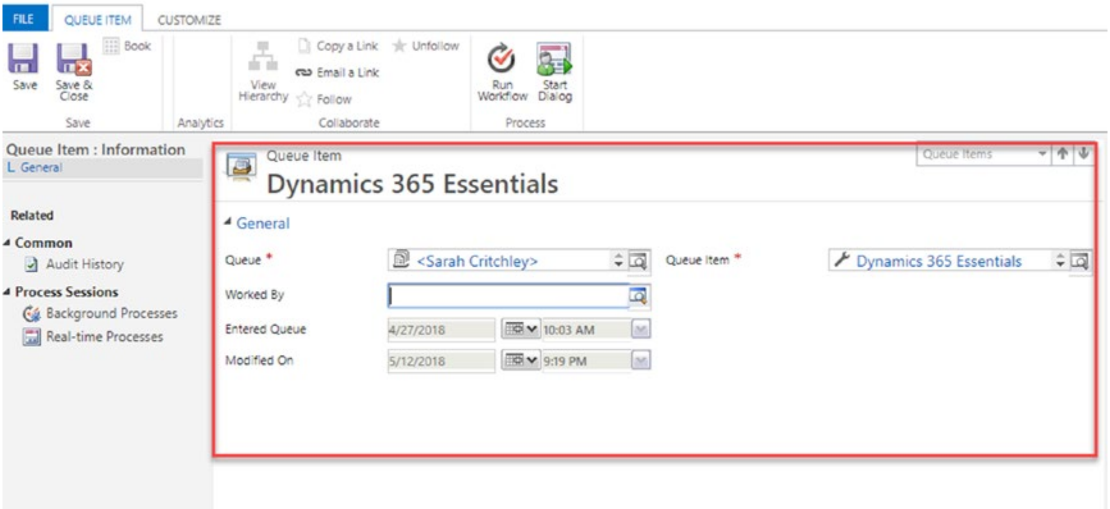

ow to add new inst...
CANCEL CASE
ADD TO QUEUE
QUEUE ITEM DETAILS
ASSIGN
Dynamics 365 to your subscript...

Figure 2-22. *In the Classic UI, select “Queue Item Details” to open further information about the Queue record*

Further detail is available on the queue item, such as when the item entered the queue and when it was last modified; this is also useful information for reporting, seen in Figure 2-23.

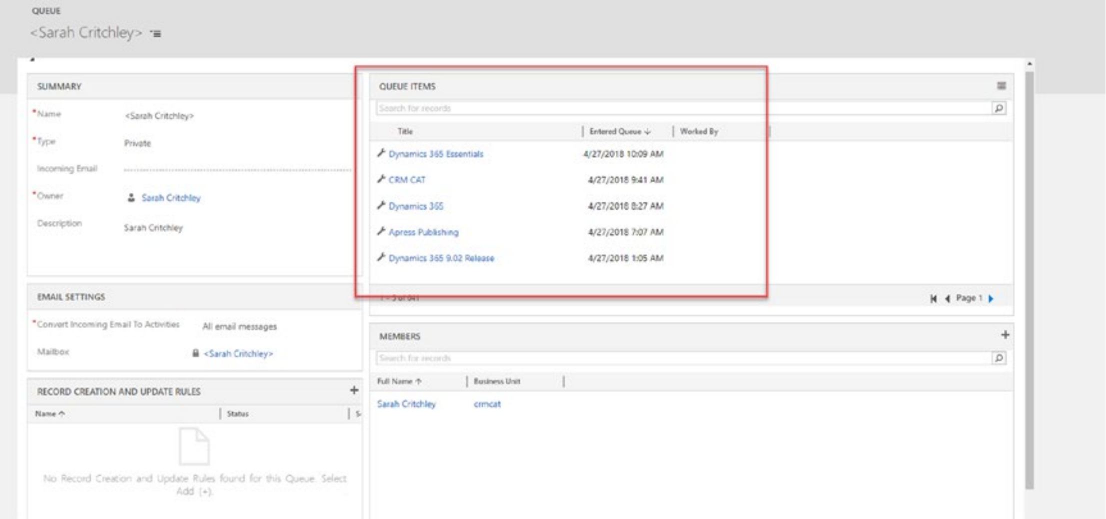

FILE
QUEUE ITEM
CUSTOMIZE
Save
Save & Close
Book
Save
Analytics
View Hierarchy
Copy a Link
Email a Link
Follow
Unfollow
Collaborate
Run Workflow
Start Dialog
Process
Queue Item : Information
General
Related
Common
Audit History
Process Sessions
Background Processes
Real-time Processes
Queue Items

Queue Item
Dynamics 365 Essentials
General

Queue * <Sarah Critchley>
Queue Item * Dynamics 365 Essentials
Worked By
Entered Queue 4/27/2018 10:03 AM
Modified On 5/12/2018 9:19 PM

Figure 2-23. *Queue item record*

The Queue itself can be viewed in the Classic UI from the Settings area. This displays all the current queue items within that queue and who is working on them under the "Worked By" column (Figure 2-24).



<Sarah Critchley>

*Name <Sarah Critchley>
*Type Private
Incoming Email
*Owner Sarah Critchley
Description Sarah Critchley

*Convert Incoming Email To Activities All email messages
Mailbox <Sarah Critchley>

Name	Status

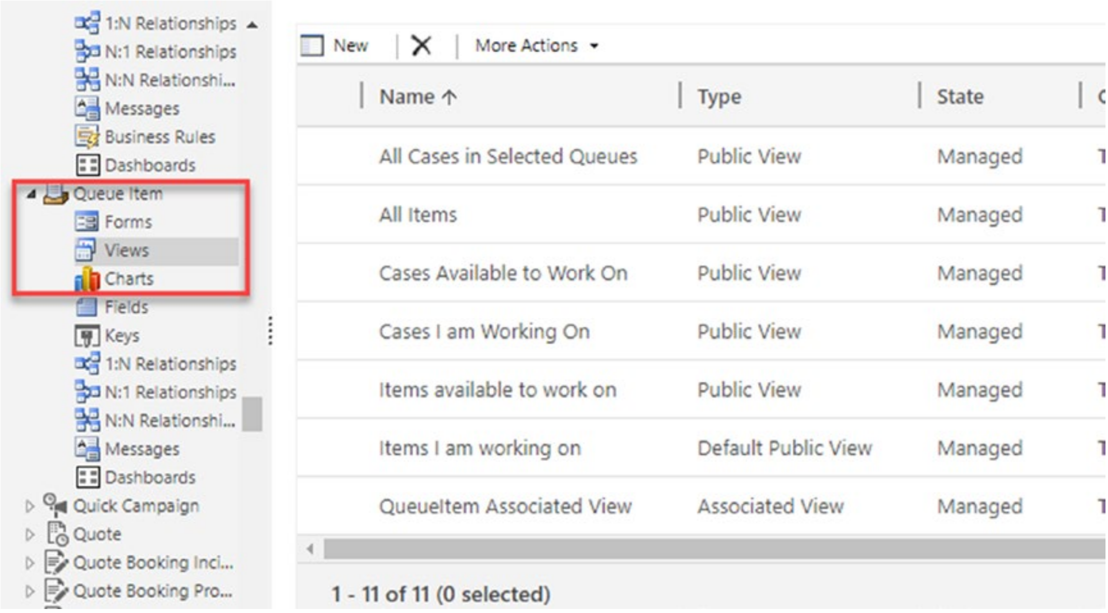
No Record Creation and Update Rules found for this Queue. Select Add (+).

Title	Entered Queue	Worked By
Dynamics 365 Essentials	4/27/2018 10:09 AM	
CRM CAT	4/27/2018 9:41 AM	
Dynamics 365	4/27/2018 8:27 AM	
Apress Publishing	4/27/2018 7:07 AM	
Dynamics 365 9.02 Release	4/27/2018 1:05 AM	

Full Name	Business Unit
Sarah Critchley	crmcat

Figure 2-24. *Queue Item sub-grid within a Queue record displaying all the queue items within it*

The queue item views don't display the "Working On" attribute, nor other important critical information that may be useful for reporting. They can be modified though, despite being managed. For step by step walkthroughs of customising, please see the second section of this book before attempting to make the following customisations. Navigate to a solution and add the Queue Item entity, then proceed to modify the view that you need this column to be added to, as seen in Figure 2-25. In Part II of the book, we will cover how exactly to make such changes. Making these changes means that the Unified Interface can be used to see the information without relying on the Classic UI and switching between the two.


1:N Relationships
N:1 Relationships
N:N Relationshi...
Messages
Business Rules
Dashboards
Queue Item
Forms
Views
Charts
Fields
Keys
1:N Relationships
N:1 Relationships
N:N Relationshi...
Messages
Dashboards
Quick Campaign
Quote
Quote Booking Inci...
Quote Booking Pro...
New
More Actions

Name ↑	Type	State
All Cases in Selected Queues	Public View	Managed
All Items	Public View	Managed
Cases Available to Work On	Public View	Managed
Cases I am Working On	Public View	Managed
Items available to work on	Public View	Managed
Items I am working on	Default Public View	Managed
QueueItem Associated View	Associated View	Managed

1 - 11 of 11 (0 selected)

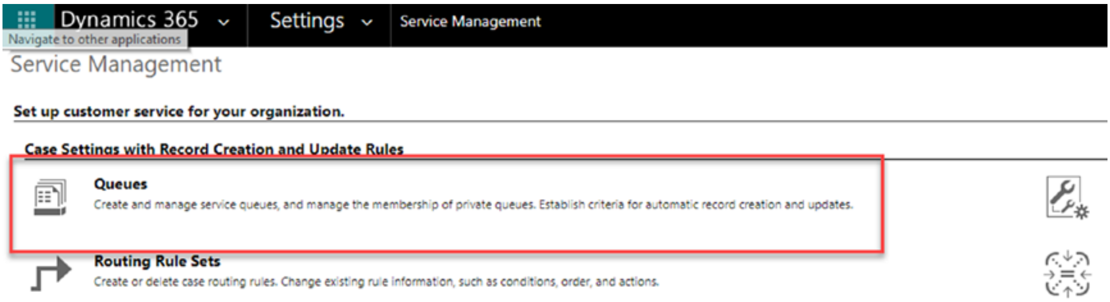
Figure 2-25. *Modifying the view of the queues to add further information in the UCI*

Creating and Configuring Queues

The configuration and creation of queues must be completed using the Classic UI, at time of writing (Figure 2-26); however, this service-management configuration is expected to be possible within the Customer Service Hub app coming in the October 2018 release of Dynamics 365 CE.

Task: Create a new queue.

Navigate to Settings ➤ Queues.


Dynamics 365
Navigate to other applications
Settings
Service Management

Service Management

Set up customer service for your organization.

Case Settings with Record Creation and Update Rules

Queues
Create and manage service queues, and manage the membership of private queues. Establish criteria for automatic record creation and updates.

Routing Rule Sets
Create or delete case routing rules. Change existing rule information, such as conditions, order, and actions.

Figure 2-26. *Select "Queues" from the Classic UI to begin creating a new queue or modify existing ones*

Click “New” to create a new blank queue (Figure 2-27). This opens a new empty Queue record.

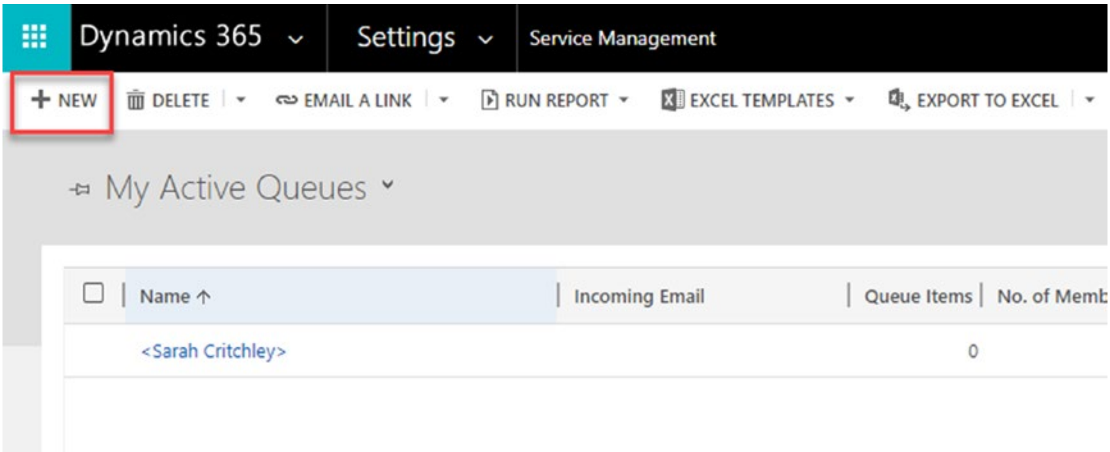
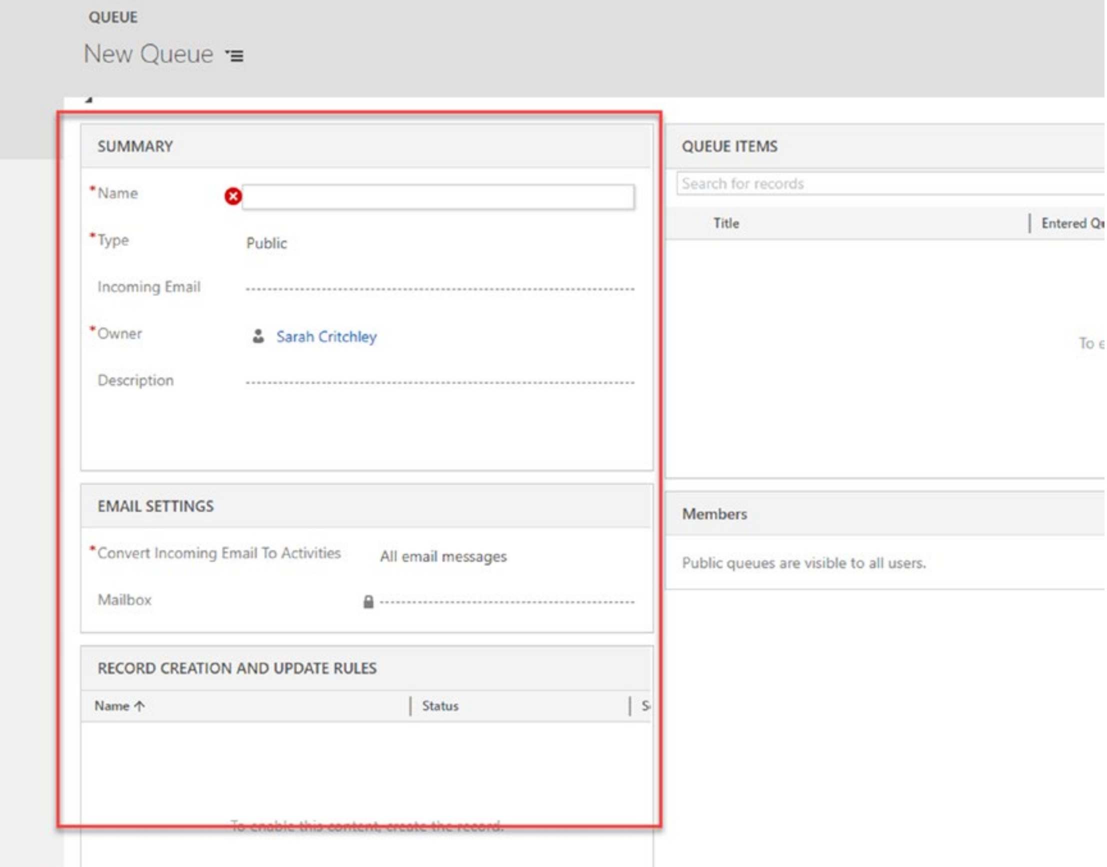

Dynamics 365
Settings
Service Management
+ NEW
DELETE
EMAIL A LINK
RUN REPORT
EXCEL TEMPLATES
EXPORT TO EXCEL
My Active Queues
Name
Incoming Email
Queue Items
No. of Memb
<Sarah Critchley>
0

Figure 2-27. *Click the New button to create a new queue*

There are several configuration options available, as displayed in Figure 2-28. Let’s review those options and what they mean.

- **Name:** The name of the queue
- **Type:** Queues can be public or private. Public queues can be visible to all users. Private queues need to be added via the Customer Service Manager, System Customizer, or System Administrator roles, and members must be added to them to be able to see the queue and the queue items.
- **Incoming Mail:** The email address normally associated with a shared mailbox that is managed by a number of users (e.g., a support queue). This would allow an Email activity to be created and sent to the queue when sending items to that email address.
- **Description:** Basic text as to what the queue is used for within the organization

Queues can also be configured to retrieve incoming email and convert those emails to Email activities. Queues are set up with an email address that a customer can email, and, based on the email settings within the queue, converts those received emails into Email activities and adds them to the queue.



QUEUE

New Queue

SUMMARY

*Name

*Type: Public

Incoming Email

*Owner: Sarah Critchley

Description

EMAIL SETTINGS

*Convert Incoming Email To Activities: All email messages

Mailbox

RECORD CREATION AND UPDATE RULES

Name ↑	Status

To enable this content, create the record.

QUEUE ITEMS

Search for records

Title

Members

Public queues are visible to all users.

Figure 2-28. *Configurable queue options*

The “Record Creation and Update Rules” section allows for records to be automatically created and routed to specific queues. Record creation and update rules can be configured to automatically route to a queue after completing their creation/update logic. These will be discussed later in the chapter.

Routing Rules

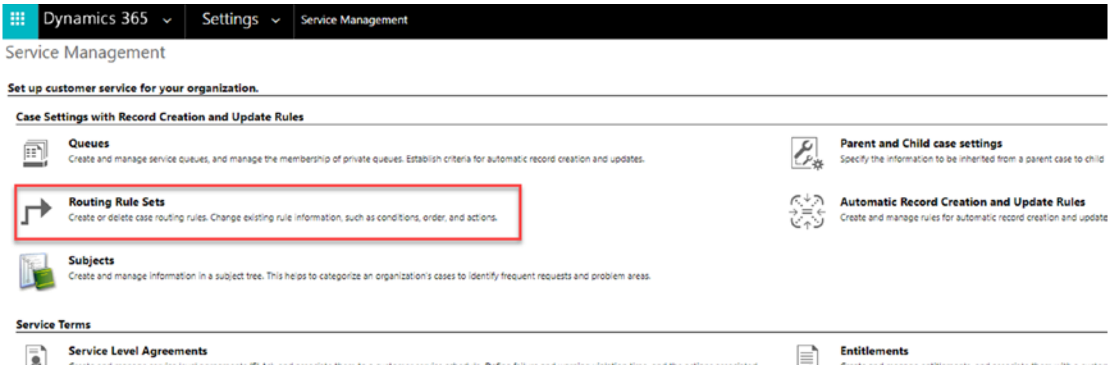
Routing rules can be configured to allow cases to be routed automatically and dynamically based on the data within the record. Records that are created automatically get the rules applied to them automatically. They can also be manually applied to cases by selecting the Save and Route button. This functionality is also critical for those scenarios where items are passing between teams and queues.

Routing rules are made up of rule items that are then applied per line to the record. Rules can be configured in the same way as workflows, where a user can configure AND, OR, and IF conditions to then route the item to the designated queue. It is important to remember a routing rule itself does not get configured to the queue; it's the individual items that are configured.

The *order* of the rule items is critical to the business logic being applied. Once a rule is activated and the rule is running, the rule will run through the items in order, and when a condition is met, no other rules execute. So, if there are conditions within the list that are important and should supersede any others, it's important they are near the top. An example of this scenario is if, within a rule, there is a routing rule item line that is related to whether the case is escalated. This type of information could mean an escalated case is routed to a different queue than it would if it were not escalated, so it would be important to place this rule item above other routing rule item lines. It is also important that the user who owns the routing rule set has the privileges to run workflows. Workflows are utilized behind the scenes and mimic the same rules configured in the rule set.

Task: Create a new routing rule.

To create a new routing rule, navigate to Classic Client ➤ Settings ➤ Routing Rule Sets, as seen in Figure 2-29.



Set up customer service for your organization.

Case Settings with Record Creation and Update Rules

Queues
Create and manage service queues, and manage the membership of private queues. Establish criteria for automatic record creation and updates.

Parent and Child case settings
Specify the information to be inherited from a parent case to child

Routing Rule Sets
Create or delete case routing rules. Change existing rule information, such as conditions, order, and actions.

Automatic Record Creation and Update Rules
Create and manage rules for automatic record creation and update

Subjects
Create and manage information in a subject tree. This helps to categorize an organization's cases to identify frequent requests and problem areas.

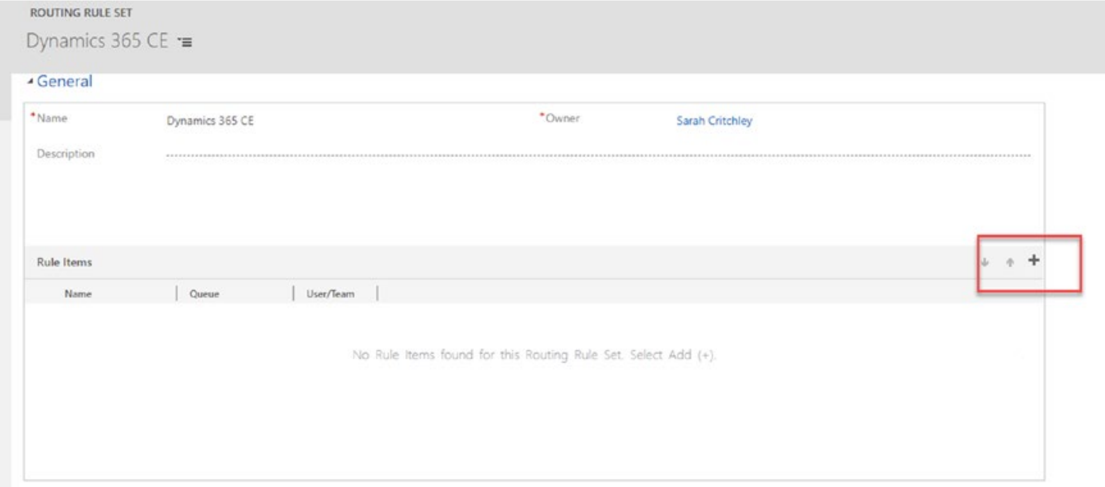
Service Terms

Service Level Agreements

Entitlements

Figure 2-29. *Select "Routing Rule Sets" from the Classic UI*

Create a new rule item by entering text in the “Name” field, then save the record. Click the plus icon within the sub-grid, as seen in Figure 2-30, to begin creating rule items. Examples of rule items can be where subjects are specific or can indicate the products they are relevant for.

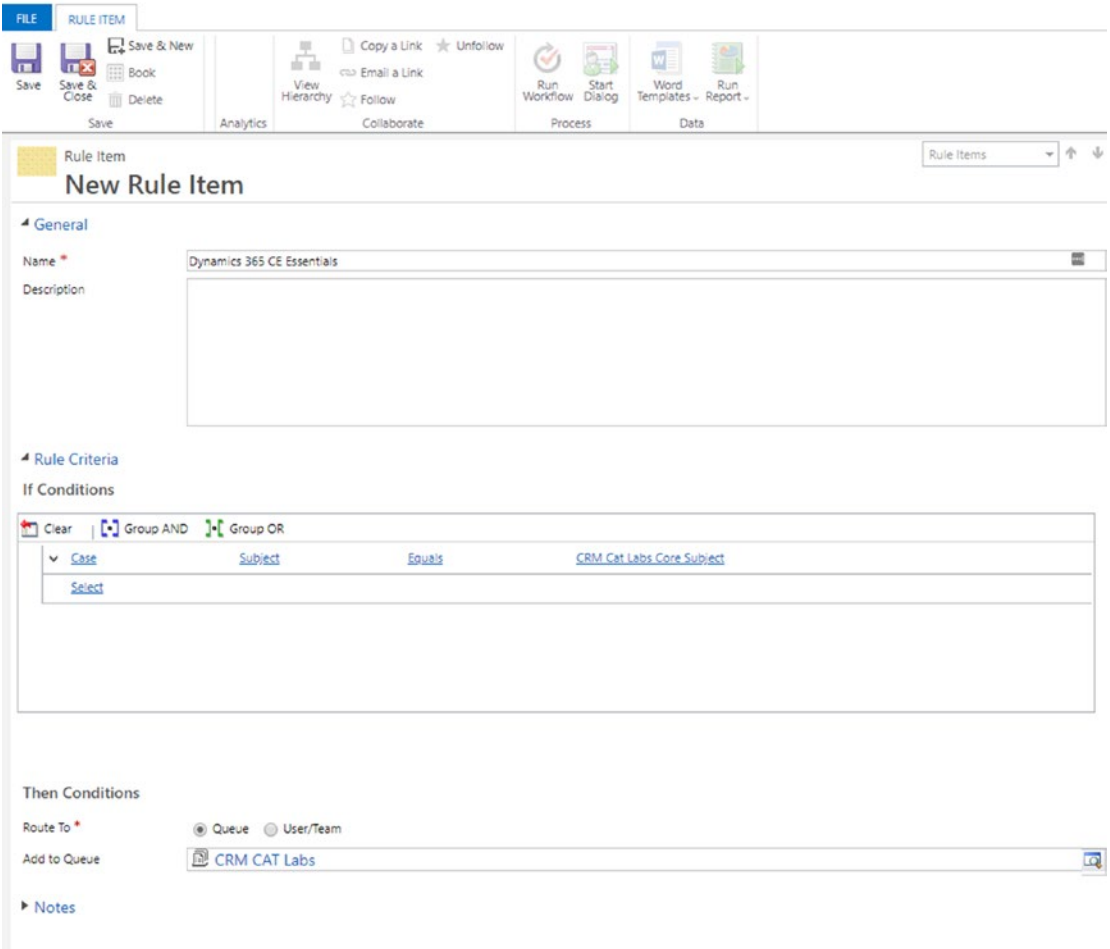

ROUTING RULE SET
Dynamics 365 CE
General
*Name: Dynamics 365 CE
*Owner: Sarah Critchley
Description
Rule Items
Name	Queue	User/Team

No Rule Items found for this Routing Rule Set. Select Add (+).

Figure 2-30. *Create a new Routing Rule Set record and select the “+” icon on the Rule Item sub-grid to create a new item*

Configuring a Rule Item

Selecting the plus icon from the sub-grid within a Routing Rule Set record, seen in Figure 2-30, a new window will open, which is an empty rule item (Figure 2-31). Enter a name and a description. Within the “Rule Criteria” section, define a simple rule item line by selecting a case as the entity type and the ‘Subject’ as the field. This must equal a specific subject, such as the default subject, for example purposes.


FILE
RULE ITEM
Save
Save & Close
Save & New
Book
Delete
Save
Analytics
View Hierarchy
Copy a Link
Email a Link
Follow
Unfollow
Collaborate
Run Workflow
Start Dialog
Process
Word Templates
Run Report
Data
Rule Items
Rule Item
New Rule Item
General
Rule Criteria
If Conditions
Clear
Group AND
Group OR
Select
Then Conditions
Notes

Name * Dynamics 365 CE Essentials

Description

Case | Subject | Equals | CRM Cat Labs Core Subject

Route To * ● Queue ○ User/Team

Add to Queue CRM CAT Labs

Figure 2-31. *Create a new rule item and rule criteria*

Save the rule item and activate the rule set, by selecting ‘Activate’ on the command bar, as seen in Figure 2-32.

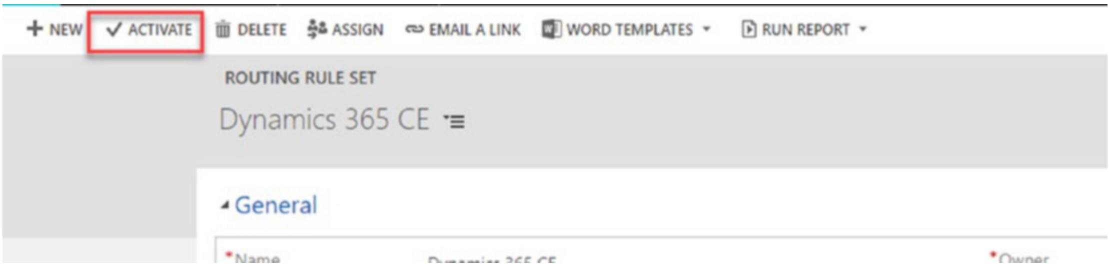
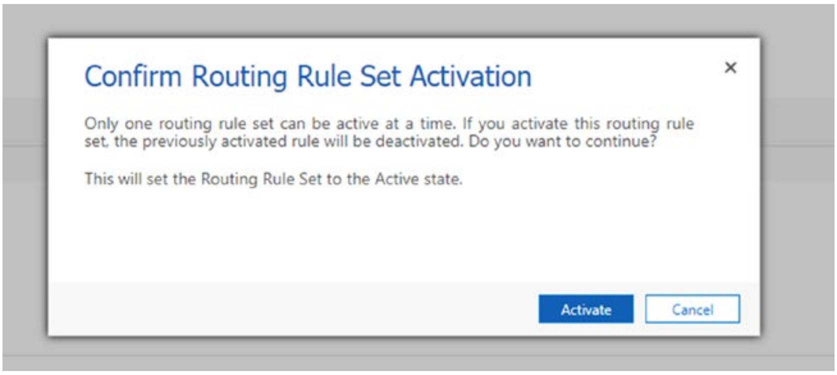

NEW
ACTIVATE
DELETE
ASSIGN
EMAIL A LINK
WORD TEMPLATES
RUN REPORT
ROUTING RULE SET
Dynamics 365 CE
General
*Name
*Owner

Figure 2-32. *Activating a routing rule set*

Once selected, a warning will appear that only one rule set can be activated at any one time, which can be seen in Figure 2-33. This is why it is really important to include all relevant items within the same rule set as individual rule items.


Confirm Routing Rule Set Activation

Only one routing rule set can be active at a time. If you activate this routing rule set, the previously activated rule will be deactivated. Do you want to continue?

This will set the Routing Rule Set to the Active state.

Figure 2-33. *Select "Activate" to begin using the routing rule set*

Click the Activate button on the warning message to deactivate any currently active rule sets and activate the one just created.

From now on, any cases automatically created within Dynamics 365 CE will have this routing rule set applied to them. For cases created manually, you have the option to save the case and click "Route" or to click "Save and Route," as seen in Figure 2-34.

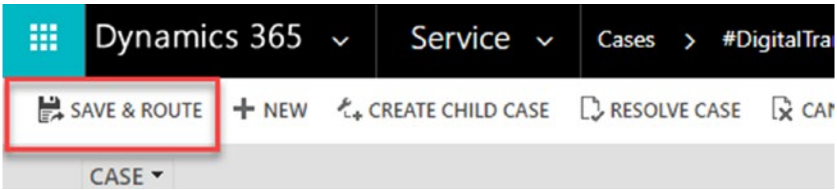
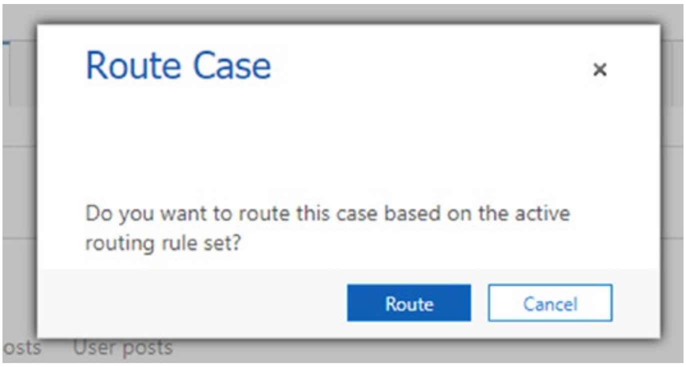


Figure 2-34. *Selecting "Save and Route" on a Case record*

When using the 'Save and Route' button, you will need to select "Route" on the notification to confirm the routing rule set to be applied when a case is manually routed (Figure 2-35).



Route Case

Do you want to route this case based on the active routing rule set?

Figure 2-35. *Confirming the routing on a case*

There are some caveats to using routing rules. Routing rules are *only* available for cases, and other record types cannot be activated to use them. Only one routing rule set can be applied per organization, further adding to why the rules need to be applied within a single routing set.

Using Queues and Routing Rules to Manage Workloads

Queues and routing sets can be used to manage cases effectively and efficiently as they are owned and actioned by different members of the team. They can be used in conjunction with one another, as a case is originally routed once created, managed by a team member, and then needs to be handed over to another team member. Users need to click “Save and Route” for the routing rules to activate, and based on the data and the updates performed by the team member, the record would get routed to the next member of the team in a different queue without their needing to know the specific rules or teams they need to go to. This can then continue until the case is resolved, cutting down wait time resulting from members’ having to use dashboards or rely on automatic emails.

Now that you know what queues are and how to create new queues and routing rules, use this chapter to review the following items:

- Review your queues created automatically from users and teams—are they being used?
- Are any new queues required? Do you have any escalation processes?
- Have you trained your users how to use queues?
- Do you require any specific routing rules and conditions to be included to make use of escalation functionality?

Figures 2-36 and 2-37 display a suggested process for using queues and a routing rule set and how they can be used automatically and manually and be routed through multiple users.

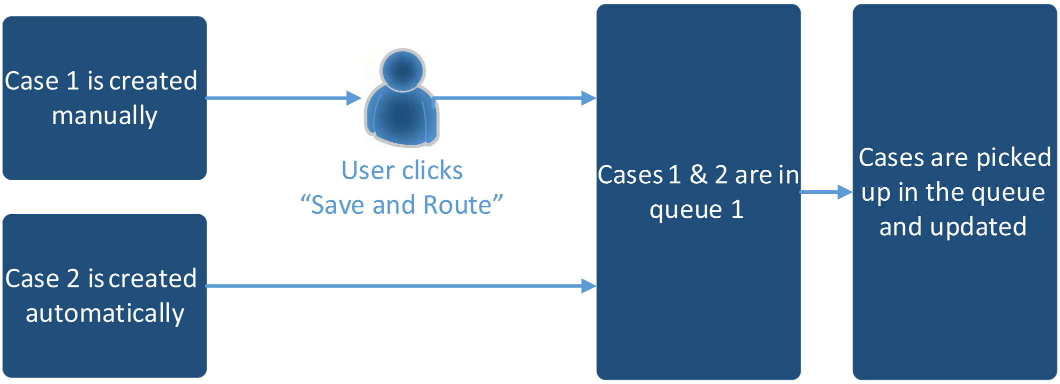

Case 1 is created manually
User clicks "Save and Route"
Case 2 is created automatically
Cases 1 & 2 are in queue 1
Cases are picked up in the queue and updated

Figure 2-36. *A suggested implementation of queues and a routing rule set (part 1)*

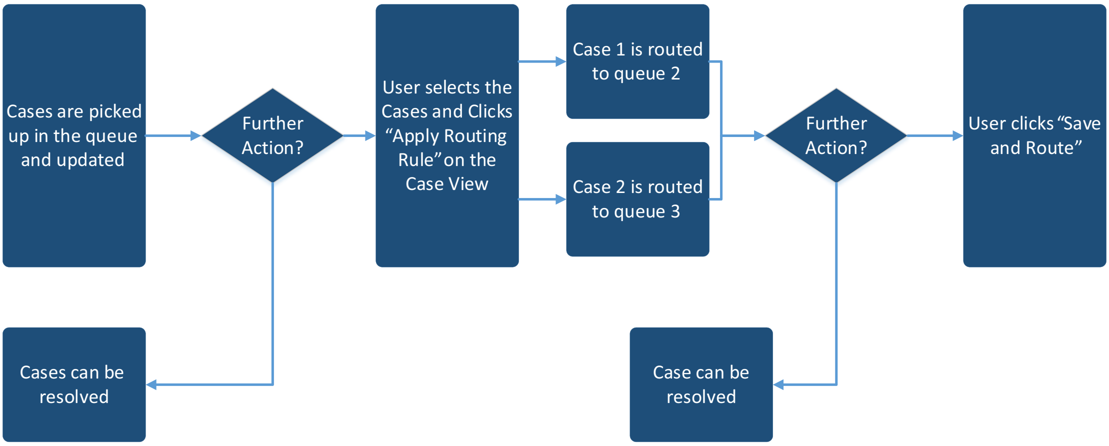

Cases are picked up in the queue and updated
Further Action?
User selects the Cases and Clicks "Apply Routing Rule" on the Case View
Case 1 is routed to queue 2
Case 2 is routed to queue 3
Further Action?
User clicks "Save and Route"
Cases can be resolved
Case can be resolved

Figure 2-37. *A suggested implementation of queues and a routing rule set (part 2)*

Knowledge Base Implementation and Feedback

As part of the core customer service functionality, the *knowledge base* provides the ability for users of Dynamics 365 to create, store, and revise articles of information. That information can be anything from details about the service the organization provides and the products they create, to internal training and how to use the system—the list is endless. This information is and should be readily available for consumption, feedback, and review for customers and internal users alike.

Within Dynamics 365 CE is an inbuilt knowledge-base creation and revision process. The creation process is managed using a business process flow that guides a user to create the article, mark it for approval, and then schedule it for publishing automatically, automatically scheduling it for expiry, disappearing from active views. This allows organizations to have a self-managing library of information, readily available for both internal and external consumption.

Since Microsoft Portals was released (covered later in this chapter), external self-service knowledge bases have been implemented more easily than they were previously. For a long time within Dynamics 365 CE, a user has had the ability to email an article to a contact. This is especially useful in service scenarios when utilizing cases, as one can find a useful article and email the contact a copy embedded within the email itself. The self-service paradigm of customer service has since evolved into an expectation by consumers that they can browse that knowledge more freely, at their leisure and requirement. Self-service is an ideal that organizations strive for, and it contributes to customers' decision-making processes when choosing their service providers. Self-service is so popular because it empowers customers to solve their own problems in their own time and on their own terms, whether that is via a knowledge base FAQ or a live chat bot available at midnight. These functions provided by service providers allow their support agents to deal with more complicated customer issues that cannot be solved easily via automation. Improving their efficiency and their available time and reducing costs allows the organization to perhaps put this savings elsewhere to improve their service.

Knowledge articles are at the core of the self-service portal available within Dynamics 365 CE and are available as one of the standard portal templates. The template allows articles to be visible externally, whether a user is authenticated or not. Articles can be highlighted as being external or internal, allowing an organization to configure which records appear on the portal for customers and which remain internal to the business.

With the recent releases of Dynamics 365 CE, it is essential to know there are currently two different types of knowledge articles within the system. It is not known how long they will remain visible within the platform before they are removed. *Articles* are the legacy type of knowledge base article, with the entity name called *kbarticle*. The latest, updated version with improved functionality are called *knowledge articles*, with the entity name *knowledgearticle*. Knowledge articles are the only one in the latest UI, which is an effective way to differentiate the two. While knowledge articles can be viewed within the Classic UI (Figure 2-38), they are not editable, and the formatting is not correct, as they were not designed to be viewed using the Classic UI.

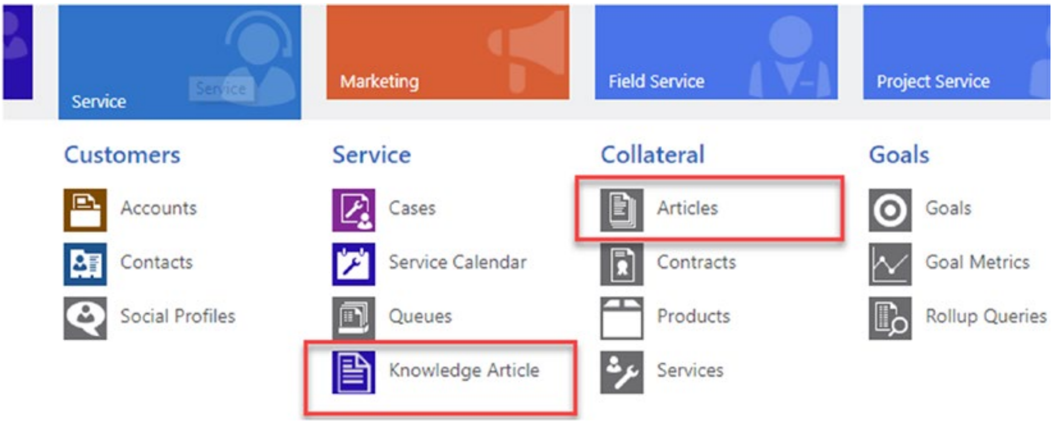
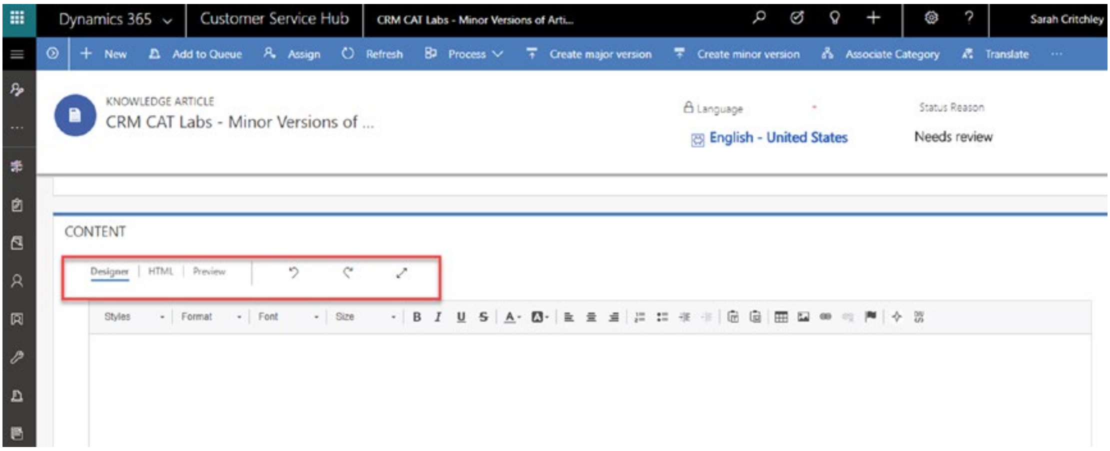

Service
Marketing
Field Service
Project Service
Customers
Accounts
Contacts
Social Profiles
Service
Cases
Service Calendar
Queues
Knowledge Article
Collateral
Articles
Contracts
Products
Services
Goals
Goals
Goal Metrics
Rollup Queries

Figure 2-38. *Both types of articles visible within the Classic Client sitemap*

Knowledge articles have more enhanced functionality (Figure 2-39). This functionality includes a rich text editor and a familiar way to create content—one that is not defined on templates as it was previously. HTML can be used to create more-visual content. In addition to that, users can preview the article on different form factors, allowing them to see how the article will look on web, in different dimensions, and on mobile. Customers are often using their phones to achieve their day-to-day activities and interact with their service providers. This often replaces desktop PC's while on the go, especially with data connectivity widely available for 4G and 3G networks. This is why it is so important for organizations to consider the mobile consumption of material. This book will look at mobile more in depth in a later chapter.


Dynamics 365
Customer Service Hub
CRM CAT Labs - Minor Versions of Arti...
Sarah Critchley
New
Add to Queue
Assign
Refresh
Process
Create major version
Create minor version
Associate Category
Translate
CONTENT
Designer
HTML
Preview
Styles
Format
Font
Size

KNOWLEDGE ARTICLE
CRM CAT Labs - Minor Versions of ...

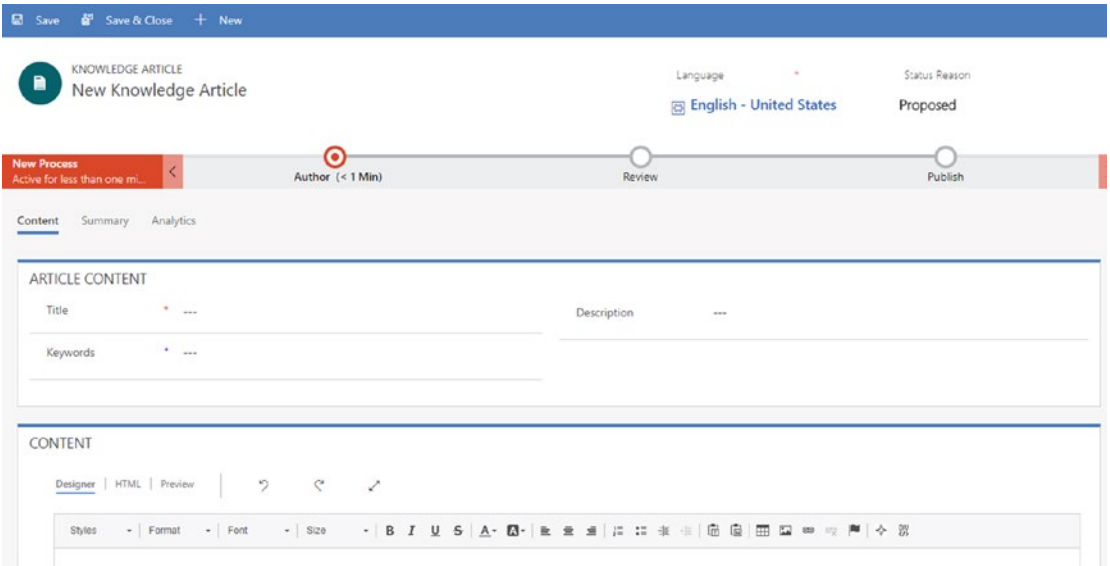
Language
English - United States

Status Reason
Needs review

Figure 2-39. *The Rich Text Editor, HTML, and preview capabilities of the new knowledge article*

Knowledge Article Lifecycle

Like cases, the knowledge article lifecycle is straightforward because it is guided through the process using a business process flow. Business process flows give the user the ability to run through a process while being reminded of certain data to be entered at a specific point within the lifecycle (Figure 2-40). The fields within a stage are not visible until a user clicks on the target icon for that stage. The user can keep the stage docked in a panel on the right-hand side of their screen by clicking the “pop out” icon to keep the fields displayed. This can help with navigating records that utilize business process flows.



KNOWLEDGE ARTICLE
New Knowledge Article

Language: English - United States
Status Reason: Proposed

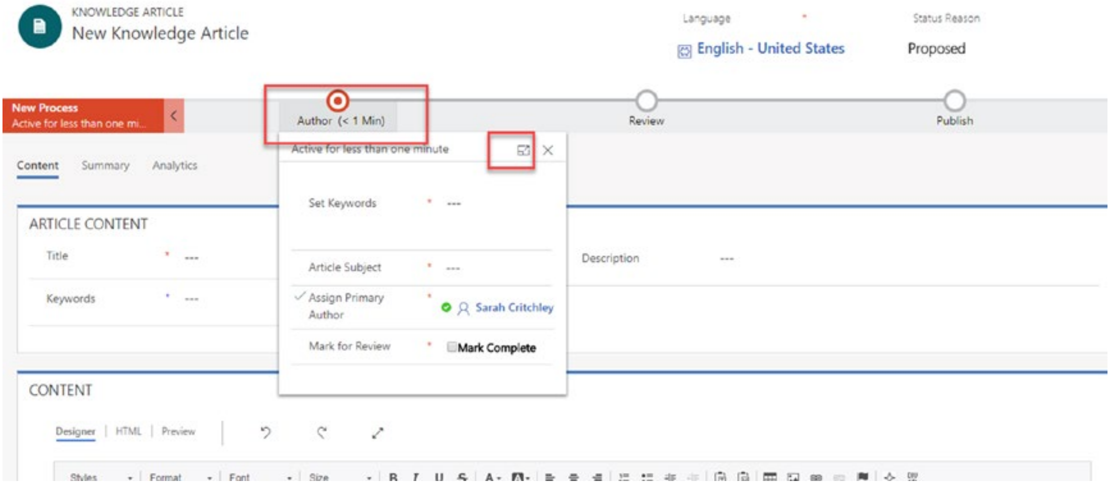
New Process
Active for less than one mi...
Author (< 1 Min)
Review
Publish

ARTICLE CONTENT
Title: ---
Keywords: ---
Description: ---

CONTENT

__Figure 2-40.__ A new knowledge article with the business process flow stage minimized

Figure 2-41 shows the “pop out” icon available on a business process flow stage.



KNOWLEDGE ARTICLE
New Knowledge Article

Language: English - United States
Status Reason: Proposed

New Process
Active for less than one mi...

Author (< 1 Min)
Active for less than one minute

Set Keywords: ---
Article Subject: ---
Assign Primary Author: Sarah Critchley
Mark for Review: ☐ Mark Complete

ARTICLE CONTENT
Title: ---
Keywords: ---
Description: ---

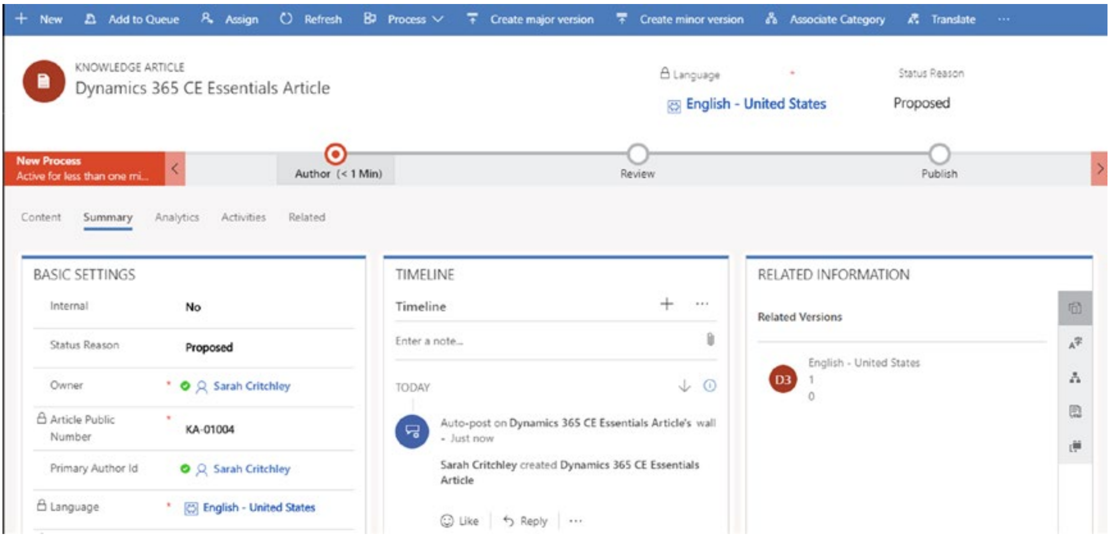
CONTENT

Figure 2-41. *The business process flow fields visible on the stage and the “dock” button highlighted to dock the fields*

In the first stage of the business process flow for a new knowledge article, a user is prompted to complete the keywords for the article. These keywords are the words a different user would search for when looking for a relevant article for their needs. The article creator is also prompted to complete the “Title”, “Subject” (using the subject hierarchy, covered later), “Description” and “Content” fields. This first stage is about creating the context for use before it is reviewed by another user, who would review the draft knowledge article. Once the user, who in this case would also be the author of the article, has completed the content, they would mark it for review by selecting “Mark for Review.”

Subjects are used in many places within Dynamics 365 CE, including cases and knowledge articles. Subjects are a basic hierarchy structure within Dynamics 365 CE that can be used for reporting, categorizing, and functionality such as routing, which was reviewed in the previous section. They are often compared to categories, another, newer way of reporting and creating a hierarchy of categorization. A later section will address how to create and set up a subject hierarchy and will also compare them to categories.

It is also important to be aware of the other tabs on the Knowledge Article form (Figure 2-42). The tab called Summary is mainly read-only content in the “Basic Settings” area, detailing the versioning and language. There is notably the “Publishing” area, which can be modified; however, this is completed near the end of the knowledge article creation lifecycle within the business process flow. On the right-hand side of the form, there is a "Related Information" section. This area also manages related items, such as articles, versions, translations, categories, and products. Some of this is reference information, such as versions, but other aspects assist with linking records within the system of relevance to the article being created, such as products.


New
Add to Queue
Assign
Refresh
Process
Create major version
Create minor version
Associate Category
Translate
New Process
Active for less than one mi...
Author (< 1 Min)
Review
Publish
Content
Summary
Analytics
Activities
Related
Timeline
Enter a note...
TODAY
Like
Reply
D3

KNOWLEDGE ARTICLE
Dynamics 365 CE Essentials Article

Language: English - United States
Status Reason: Proposed

BASIC SETTINGS

Internal: No
Status Reason: Proposed
Owner: Sarah Critchley
Article Public Number: KA-01004
Primary Author Id: Sarah Critchley
Language: English - United States

TIMELINE

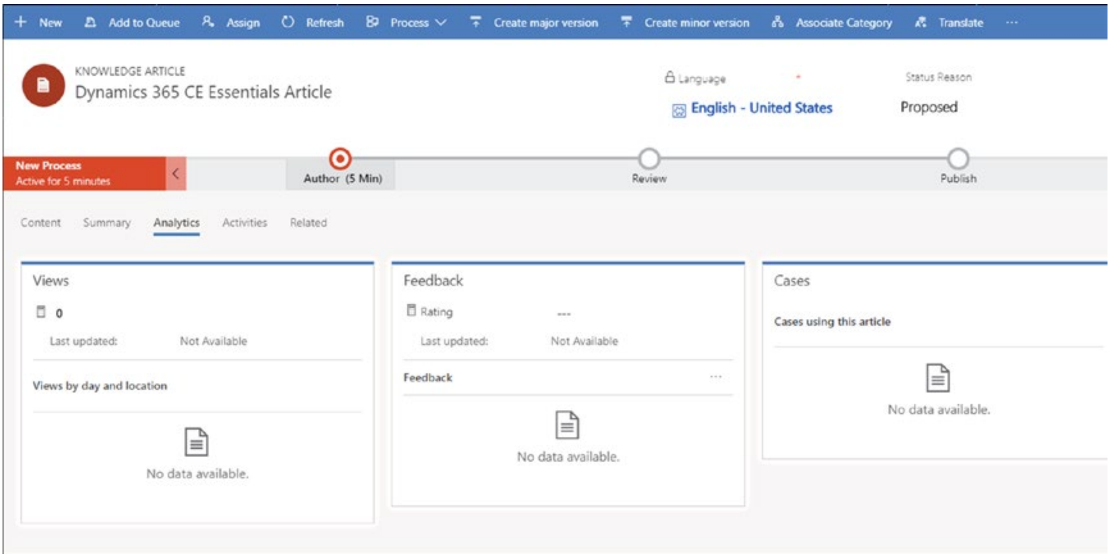
Auto-post on Dynamics 365 CE Essentials Article's wall - Just now
Sarah Critchley created Dynamics 365 CE Essentials Article

RELATED INFORMATION

Related Versions
English - United States
1
0

__Figure 2-42.__ Knowledge article Summary tab displaying "Basic Settings" and "Related Information" areas

The third tab, Analytics, includes three sections, as seen in Figure 2-43. First, a section that manages the views of the article. When a user or a portal user views the article, this is logged, and metrics can be seen in this area. The second section displays feedback for the article, managing where a user has scored the article and left feedback, aggregating the scores to an overall number. Lastly, where a case has utilized the article and linked it to the case, it is visible within the "Case" area, so a knowledge-article manager can easily see the most used articles.


+ New
Add to Queue
Assign
Refresh
Process
Create major version
Create minor version
Associate Category
Translate
...
KNOWLEDGE ARTICLE
New Process
Active for 5 minutes
Author (5 Min)
Review
Publish
Content
Summary
Analytics
Activities
Related
Views
Feedback
Cases
Views by day and location
Cases using this article
No data available.
No data available.
No data available.

Dynamics 365 CE Essentials Article

Language: English - United States

Status Reason: Proposed

Views: 0
Last updated: Not Available

Rating: ---
Last updated: Not Available

Figure 2-43. Knowledge article Analytics tab

Once the "Author" stage of the business process flow has been completed and marked for review, the next step for the user would be to click "Add to Queue," adding it to a knowledge manager's (named user's) queue, before clicking "Next Stage" for the "Review" stage, knowing that it is within a queue to be reviewed as part of the internal organisational process. Knowledge articles are another record type configured for queues as standard, so no customization is needed. This queue can be for users who have the Knowledge Article Manager or Reviewer role, where they review the article or use the standard Knowledge Manager dashboard, identified with the "Needs Review" status and stream. Once the article has been reviewed, the reviewer selects "Approved" or "Rejected" in the next stage of the business process flow, as seen in Figure 2-44. This action updates the status of the record to "Approved" automatically. A user also can select "Approve" from the command bar to perform the same functionality.

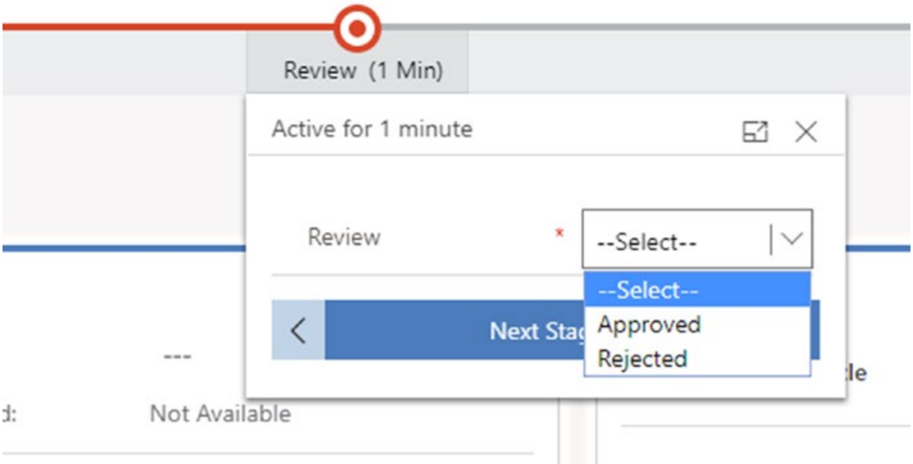
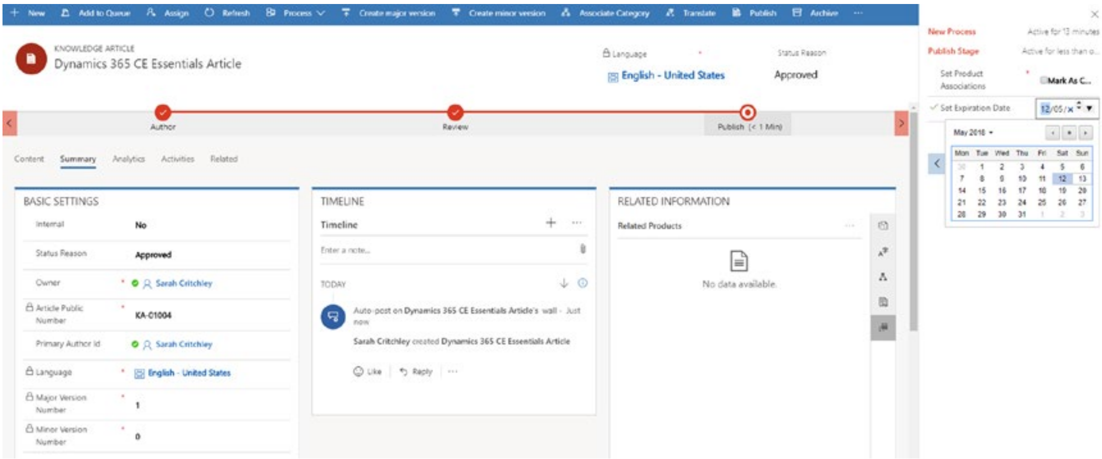


Figure 2-44. *Selecting "Approved" or "Rejected" within a knowledge article review*

Approving moves the knowledge article to the next stage. If it hasn't been approved, the stage does not advance, and it is up to the user to move the article back to the previous stage to perform necessary edits and mark it as waiting for review again by changing the status to "Needs Review" and completing the same cycle of review.

The "Publish" stage reminds the user to set product associations if required. This can be achieved using the Summary tab and clicking the "Products" icon in the "Related Information" section of the sub-grid to link the related products. This is especially useful if the article is going to be on a portal and can be filtered by product or service by the user. Once completed, or if not required, check the box and then set the expiration date for the article, as seen in Figure 2-45. The article will automatically expire once this date is reached, and no user interaction is required. It's a clear process where a user writes content, reviews it, publishes it, and uses the standard knowledge dashboards to manage expiring articles and update them.


New
Add to Queue
Assign
Refresh
Process
Create major version
Create minor version
Associate Category
Translate
Publish
Archive
Author
Review
Publish (< 1 Min)
Content
Summary
Analytics
Activities
Related
BASIC SETTINGS
TIMELINE
Timeline
Enter a note...
TODAY
Like
Reply
RELATED INFORMATION
Related Products
No data available.
New Process
Active for 13 minutes
Publish Stage
Active for less than o...
Mark As C...
May 2018

KNOWLEDGE ARTICLE
Dynamics 365 CE Essentials Article

Language: English - United States
Status Reason: Approved

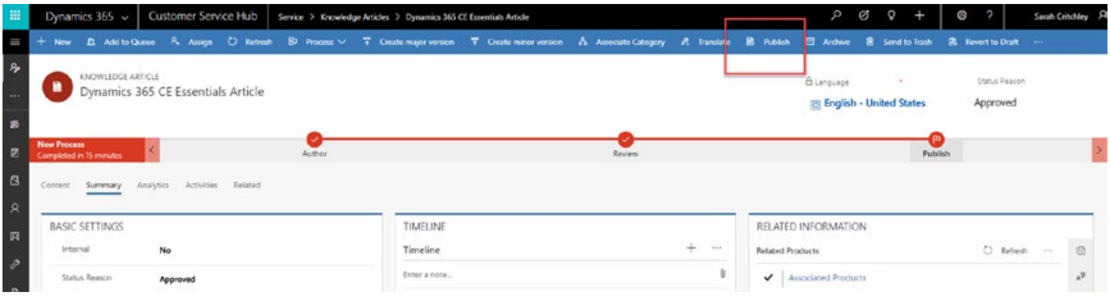
Internal: No
Status Reason: Approved
Owner: Sarah Critchley
Article Public Number: KA-01004
Primary Author Id: Sarah Critchley
Language: English - United States
Major Version Number: 1
Minor Version Number: 0

Auto-post on Dynamics 365 CE Essentials Article's wall - Just now
Sarah Critchley created Dynamics 365 CE Essentials Article

Set Product Associations
Set Expiration Date: 12/05/x

Figure 2-45. *Setting the expiration of an article*

Now that the business process flow is completed, the user needs to publish the article (finishing the business process flow doesn't automatically publish it). This can be done by clicking "Publish" in the command bar (Figure 2-46).


Dynamics 365
Customer Service Hub
Service > Knowledge Articles > Dynamics 365 CE Essentials Article
Sarah Critchley
New
Add to Queue
Assign
Refresh
Process
Create major version
Create minor version
Associate Category
Translate
Publish
Archive
Send to Trash
Revert to Draft
New Process
Completed in 15 minutes
Author
Review
Publish
Content
Summary
Analytics
Activities
Related
BASIC SETTINGS
TIMELINE
Timeline
Enter a note...
RELATED INFORMATION
Related Products
Refresh
Associated Products

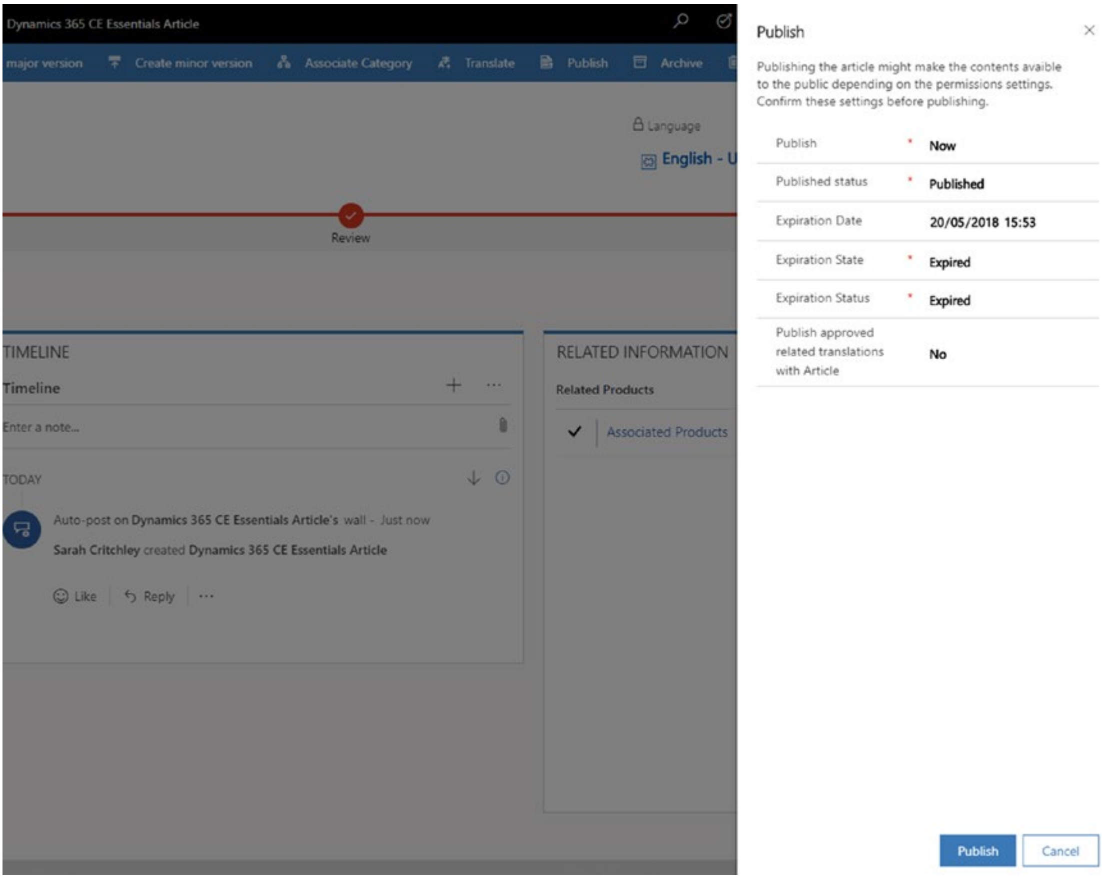
KNOWLEDGE ARTICLE
Dynamics 365 CE Essentials Article

Language: English - United States
Status Reason: Approved

Internal: No
Status Reason: Approved

Figure 2-46. *Clicking "Publish" to complete knowledge-article creation*

A panel will appear on the right-hand side of the screen, as seen in Figure 2-47, where a user can configure any extra details, such as when to publish (which can also be completed earlier on the Summary tab) and the expiration status; this is the status and status reason to be set once the expiration date is reached. “Publish” is selected on the pane once all the information is correct.

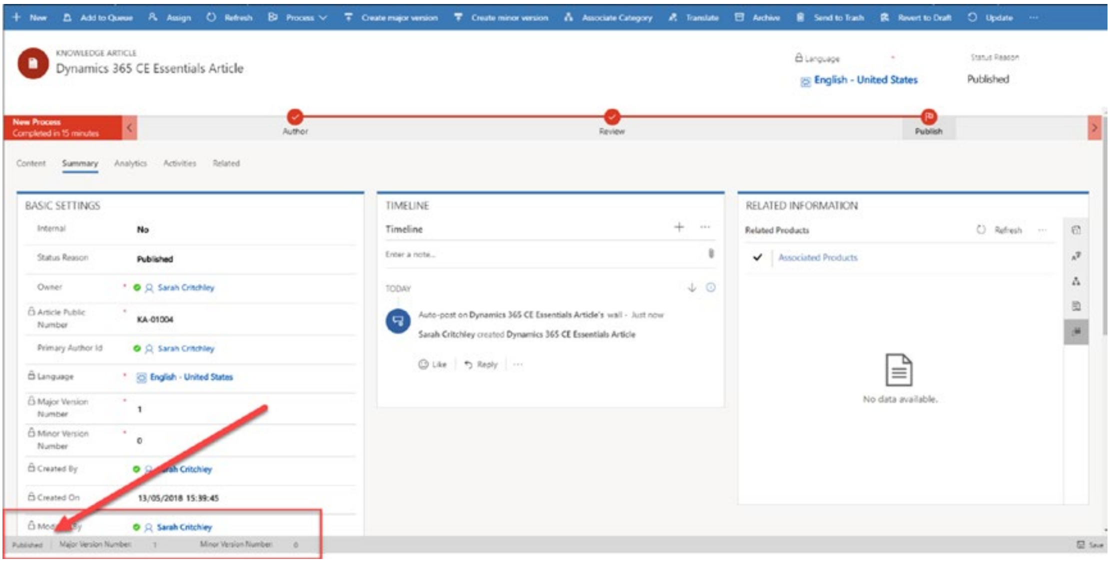

Dynamics 365 CE Essentials Article
major version
Create minor version
Associate Category
Translate
Publish
Archive
Language
English - U
Review
TIMELINE
Timeline
Enter a note...
TODAY
Auto-post on Dynamics 365 CE Essentials Article's wall - Just now
Sarah Critchley created Dynamics 365 CE Essentials Article
Like
Reply
RELATED INFORMATION
Related Products
Associated Products
Publish
Publish
Cancel

Publishing the article might make the contents avaible to the public depending on the permissions settings. Confirm these settings before publishing.

Publish *	Now
Published status *	Published
Expiration Date	20/05/2018 15:53
Expiration State *	Expired
Expiration Status *	Expired
Publish approved related translations with Article	No

Figure 2-47. *Completing the final details for the article before it is published*

Once the knowledge article is published, the status changes to “Published” and the Major Version Number will be incremented to 1 (Figure 2-48).


New
Add to Queue
Assign
Refresh
Process
Create major version
Create minor version
Associate Category
Translate
Archive
Send to Trash
Revert to Draft
Update
KNOWLEDGE ARTICLE
New Process
Completed in 15 minutes
Author
Review
Publish
Content
Summary
Analytics
Activities
Related
BASIC SETTINGS
TIMELINE
Timeline
Enter a note...
TODAY
Like
Reply
RELATED INFORMATION
Related Products
Refresh
Associated Products
No data available.
Save

Dynamics 365 CE Essentials Article

Language: English - United States
Status Reason: Published

Internal: No
Status Reason: Published
Owner: Sarah Critchley
Article Public Number: KA-01004
Primary Author Id: Sarah Critchley
Language: English - United States
Major Version Number: 1
Minor Version Number: 0
Created By: Sarah Critchley
Created On: 13/05/2018 15:39:45
Modified By: Sarah Critchley

Auto-post on Dynamics 365 CE Essentials Article's wall - Just now
Sarah Critchley created Dynamics 365 CE Essentials Article

Published | Major Version Number: 1 Minor Version Number: 0

Figure 2-48. *Published knowledge article*

Knowledge Article Statuses

There are various statuses of the knowledge article. Use Table 2-1 to become familiar with how they are set, as some are set automatically following certain user actions.

Table 2-1. *Knowledge Article Statuses*

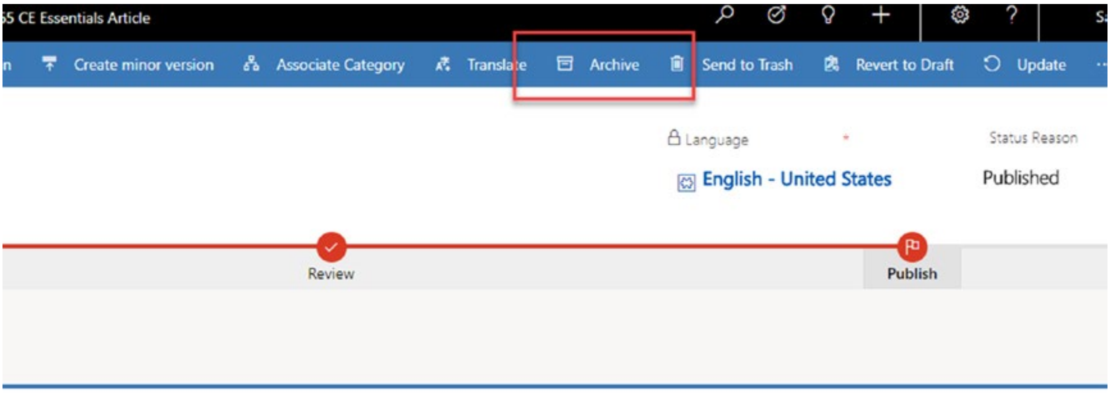
Status	Status Reason	Notes
Draft	Draft	An article begins in this state, but the status reason “Draft” is manually set.
	Proposed	An article normally begins in this state. Even restoring an article will be in “Draft” status with a “Proposed” status reason.
	Needs Review	Manually set
	In Review	Manually set
Approved	Approved	Updated to this status once “Approved” is selected on the command bar

(*continued*)

Table 2-1. *(continued)*

Status	Status Reason	Notes
Discarded	Discarded	Set when a user clicks “Send to Trash” on an article
	Rejected	This is not automatically set; rejecting an article takes it back to “Draft” status, “Proposed” status reason
Scheduled	Scheduled	Automatically set when scheduling a publish date for the future
Published	Published	Automatically set when an article is published from the present time
	Needs Review	Manually set
	Updating	Manually set
Expired	Expired	Automatically set when the “Expired On” date is past today’s date and time
	Rejected	This is not automatically set; rejecting an article takes it back to “Draft” status, “Proposed” status reason
Archived	Archived	Set when a user clicks “Archive”

To archive a knowledge article normally means the knowledge article is no longer relevant or important for an organization, but the organization wishes to retain it. Click the Archive button, shown in Figure 2-49, to change the status to “Archived.”


5 CE Essentials Article
Create minor version
Associate Category
Translate
Archive
Send to Trash
Revert to Draft
Update
Review
Publish

Language
English - United States

Status Reason
Published

Figure 2-49. *Click the Archive button on the command bar to change the status to “Archived”*

Knowledge articles can also be discarded by selecting the Send to Trash button, as seen in Figure 2-50. This is like sending a document to the recycle bin, where it is no longer needed and will most likely be removed from the system.

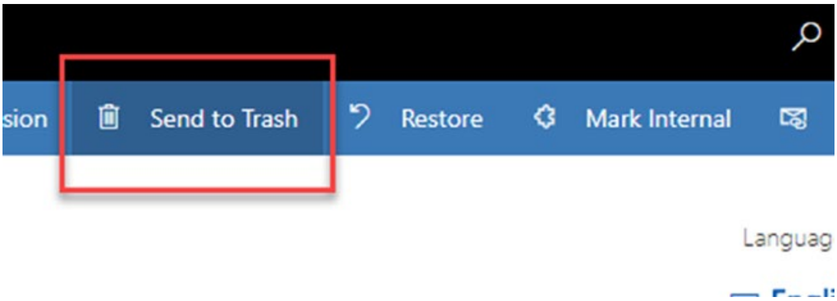


Figure 2-50. *Sending an article to trash updates the status to "Discarded"*

Knowledge articles that have been sent to the trash can be restored, again like a recycle bin on a computer. This is often done if the user reviewing the knowledge article confirms that it should be retained within the system, and that a status of "Archived" might be more appropriate. Knowledge articles can be restored by clicking the Restore button, as seen in Figure 2-51, when an article is in a "Discarded" state.

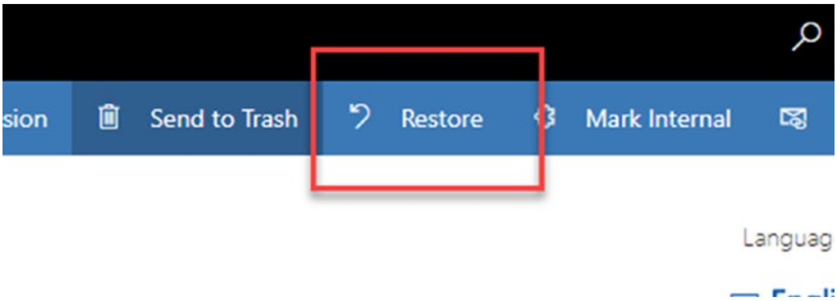


Figure 2-51. *Users can restore articles previously set as "Discarded"*

Subjects and Categories

Subjects are a special type of hierarchal field allowing a user to set a value that is associated with that record. They are configured within the Classic UI, soon to be available in the UCI Client under the Customer Service Hub app in the Service Management module, expected in October 2018. When configuring subjects, a user can add a new subject and child subjects, creating a topical hierarchy.

Task: Set up subjects. To set up the subject tree, navigate to Service Management from the "Settings" area in the Classic UI and select "Subjects" (Figure 2-52).

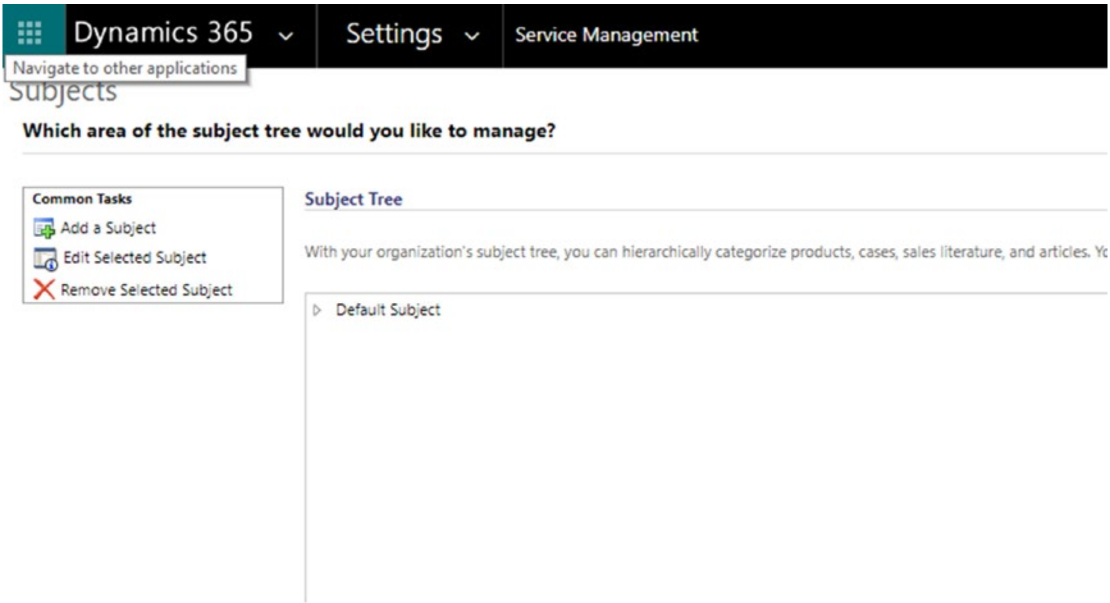

Dynamics 365
Settings
Service Management
Navigate to other applications
Subjects
Which area of the subject tree would you like to manage?
Common Tasks
Add a Subject
Edit Selected Subject
Remove Selected Subject
Subject Tree
With your organization's subject tree, you can hierarchically categorize products, cases, sales literature, and articles. Yo
Default Subject

Figure 2-52. Subjects within the Classic UI

Click on "Add a Subject." You will be asked to name the subject within the "Title" field. Populating the "Parent Subject" field means this will be underneath that parent subject; if left blank it will be classified as a parent itself. Click the Add button to confirm this item is to be added to the subject hierarchy (Figure 2-53).

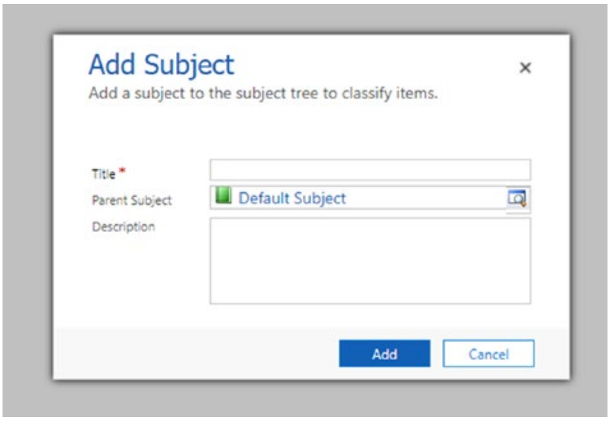
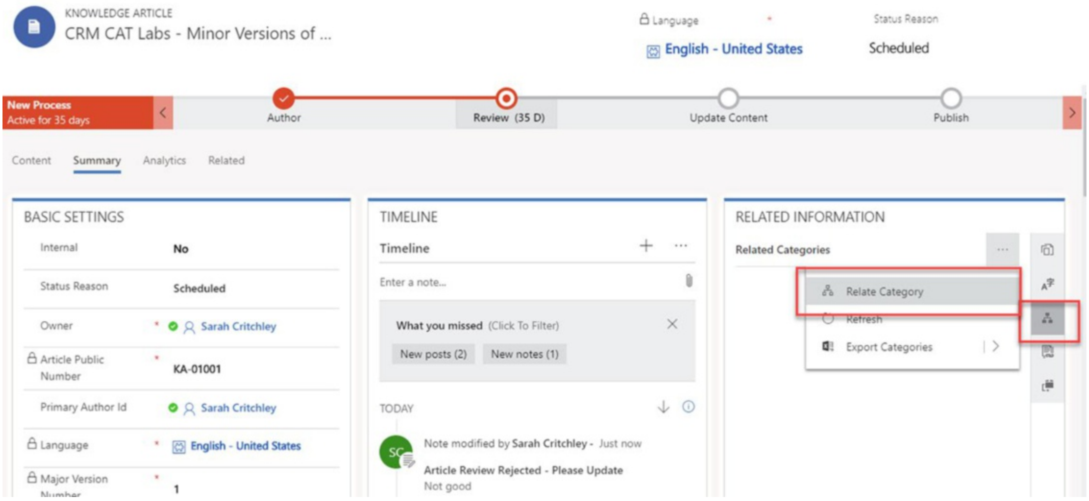

Add Subject
×
Add a subject to the subject tree to classify items.
Title *
Parent Subject
Default Subject
Description
Add
Cancel

Figure 2-53. Defining a new subject

In contrast, *Categories*, released in the later versions of Dynamics 365 CE are a record type linked to knowledge articles as standard. Categories can also be configured to be linked to other entities through customization. Categories have very similar functionality to subjects, but with an improved interface, and can be added to knowledge articles in two ways. First, by using the Related Information sub-grid and clicking “Relate Category,” as seen in Figure 2-54. You will then be prompted to add the category. The key difference from subjects is that more than one category can be linked to a record, while only a single subject can be linked.

Categories, when created, have a category number assigned by the standard auto-numbering functionality within Dynamics 365 CE. This can be configured within the Classic UI in the “Administration” area.

The second way to associate a category with a knowledge article is to click “Associate Category” on the command bar whilst in the Knowledge Article form. This is a convenient way of doing so: once selected, you simply select the category and click Save. You can repeat the process however many times necessary to add multiple categories.


KNOWLEDGE ARTICLE
CRM CAT Labs - Minor Versions of ...

Language: English - United States
Status Reason: Scheduled

New Process
Active for 35 days

Review (35 D)

BASIC SETTINGS
Internal: No
Status Reason: Scheduled
Owner: Sarah Critchley
Article Public Number: KA-01001
Primary Author Id: Sarah Critchley
Language: English - United States
Major Version Number: 1

What you missed (Click To Filter)
New posts (2) New notes (1)

TODAY
Note modified by Sarah Critchley - Just now
Article Review Rejected - Please Update
Not good

Figure 2-54. *Relating a category to a knowledge article using the sub-grid*

Task: Associate a category with an existing knowledge article.

Navigate to an article and click the “Categories” icon in the Related Information sub-grid on the Summary tab. Click the action button (“…”) and “Relate Category,” as seen in Figure 2-55. Select the category from the lookup record.

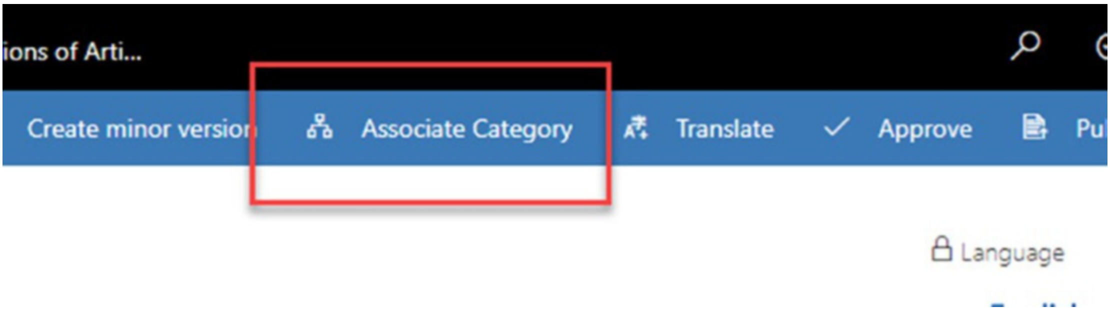
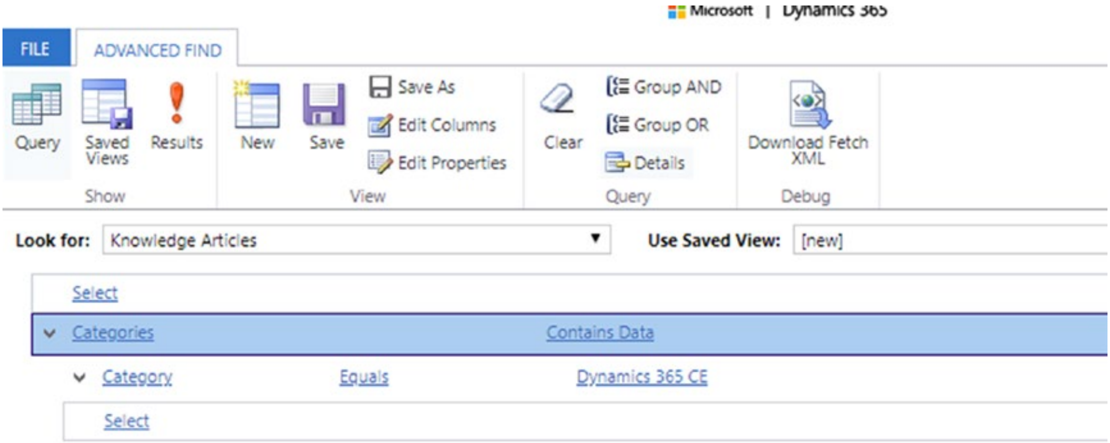

ions of Arti...
Create minor version
Associate Category
Translate
Approve
Pu
Language

Figure 2-55. *Associating a category with a knowledge article using the command bar button*

One of the benefits of using categories rather than subjects is being able to link multiple categories to a record. This allows views to be created and embedded into dashboards using the Advanced Find feature in the Classic Client or the "Customization" area (Figure 2-56).

Behind the scenes for knowledge articles, there is a many-to-many (N:N) relationship with categories. There is an interlink entity behind the scenes called *KnowledgeArticleCategories*, which holds the specific data that makes this relationship reportable. This structure can be manually created in the same way for other entities, including custom entities where users need to configure categories to link to other records. This is achieved using customizations and can be approached using code or workflows. This functionality will be covered in the second section of the book.


Microsoft | Dynamics 365
FILE
ADVANCED FIND
Query
Saved Views
Results
Show
New
Save
Save As
Edit Columns
Edit Properties
View
Clear
Group AND
Group OR
Details
Query
Download Fetch XML
Debug
Select
Select

Look for: Knowledge Articles

Use Saved View: [new]

Categories — Contains Data

Category — Equals — Dynamics 365 CE

Figure 2-56. *Using Advanced Find to report on categories*

Feedback

Dynamics 365 CE provides users with the ability to give feedback on knowledge articles. Feedback is also configurable for other entities (by selecting “Feedback” within the entity configuration). Feedback gives internal and external consumers of the knowledge article the opportunity to rate the article and provide comments. Authors and organizations then have the chance to revise and update the article.

On the Analytics tab of a knowledge article, there is a section labeled “Feedback.” This gives users an aggregate of the normalized ratings of all associated feedback entries (Figure 2-57). This field updates regularly but not in real time. It will not display the updated rating aggregate straight away, despite there being associated feedback records.

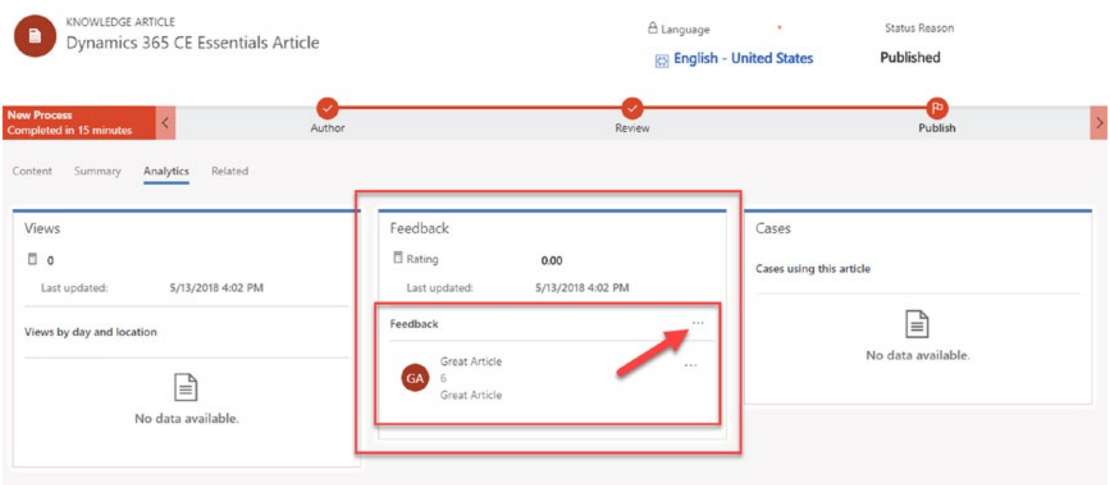
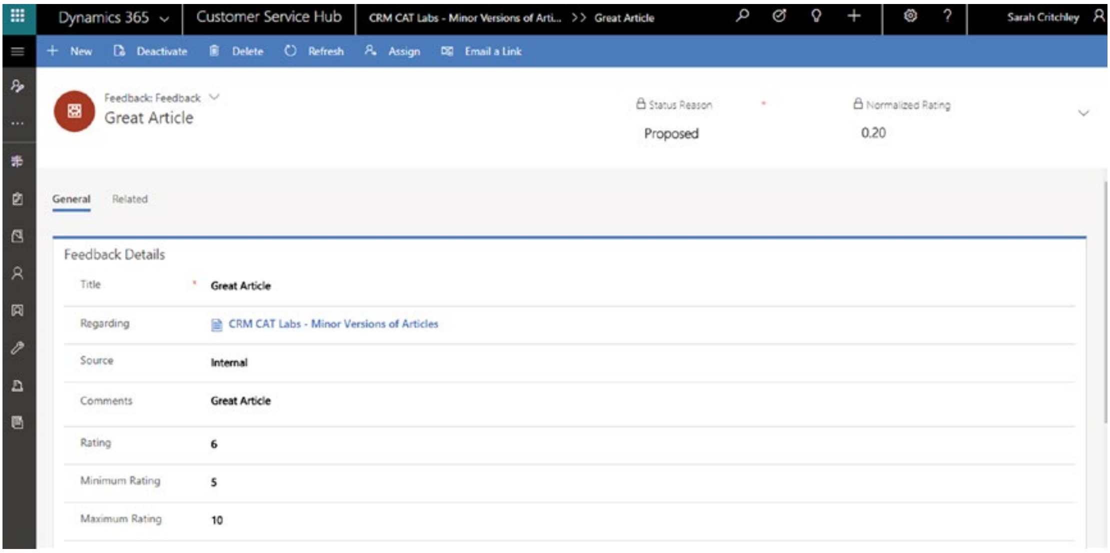

KNOWLEDGE ARTICLE
Dynamics 365 CE Essentials Article
Language
English - United States
Status Reason
Published
New Process
Completed in 15 minutes
Author
Review
Publish
Content
Summary
Analytics
Related
Views
0
Last updated: 5/13/2018 4:02 PM
Views by day and location
No data available.
Feedback
Rating 0.00
Last updated: 5/13/2018 4:02 PM
Feedback
GA
Great Article
6
Great Article
Cases
Cases using this article
No data available.

Figure 2-57. *“Feedback” section within knowledge articles*

Selecting the action button (“…”) and clicking “Create Feedback” opens a new blank Feedback record (Figure 2-58). A user then needs to complete the fields, including the “Regarding” field. Note: The system does not auto-populate as standard because the field is a special “regardingobjectid” field, like that of activities. At the time of writing, this doesn’t auto-populate when created in the context of its parent record, as activities do.

The fields “Minimum Rating,” “Maximum Rating,” and the actual “Rating” get completed by the user. This is an important part of how the feedback aggregates, because all users and organizations can be different in how they rate something. Therefore, the minimum and maximum ratings can be entered by a user manually.

Equally, it can also be auto-populated through customization by organizations to enforce it. Regardless, the “Rating” is entered, which must be between the min and max, and then it is normalized into a rating that can be aggregated based on a percentage of the given min and max. The normalization formula is (Rating – Minimum Rating) / (Maximum Rating – Minimum Rating).


Dynamics 365
Customer Service Hub
CRM CAT Labs - Minor Versions of Arti... >> Great Article
Sarah Critchley
New
Deactivate
Delete
Refresh
Assign
Email a Link
Feedback: Feedback
General
Related

Great Article

Status Reason: Proposed

Normalized Rating: 0.20

Feedback Details

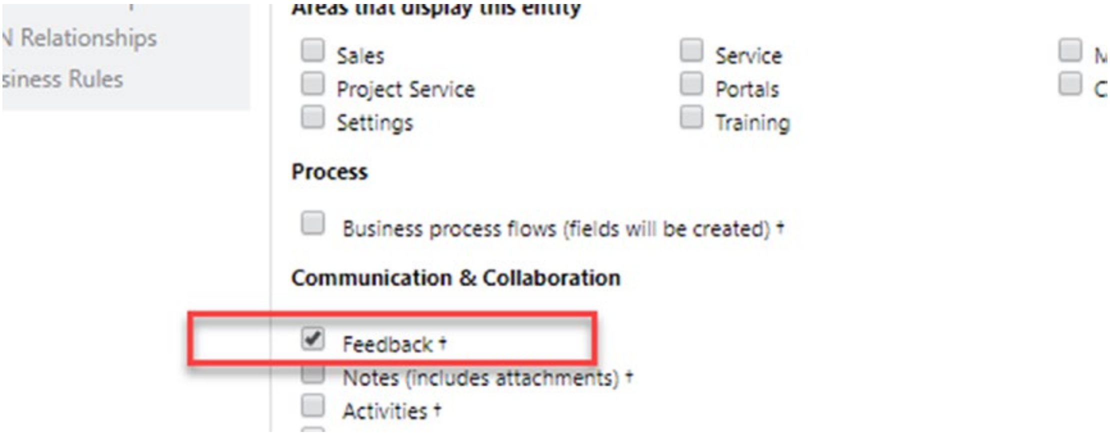
Title	Great Article
Regarding	CRM CAT Labs - Minor Versions of Articles
Source	Internal
Comments	Great Article
Rating	6
Minimum Rating	5
Maximum Rating	10

Figure 2-58. *Creating a new Feedback record*

Using the Feedback Entity on Custom Entities

Feedback can be enabled on custom entities. On the Entity Configuration screen, a user selects “Feedback” within the entity definition, as seen in Figure 2-59. It is important to know that once selected and saved, this option cannot be undone, as it creates fields within the background system.

Once activated, users have access to the same functionality available within the knowledge article. For the Classic UI, this will already be available using the associated relationships, and the ability to create feedback is already there. For adding the custom entity within the Unified Interface, a new sub-grid will need to be created, similar to that available on the knowledge articles, as this is not automatically created.



Areas that display this entity

☐ Sales
☐ Project Service
☐ Settings
☐ Service
☐ Portals
☐ Training
☐ N
☐ C

Process

☐ Business process flows (fields will be created) †

Communication & Collaboration

☑ Feedback †
☐ Notes (includes attachments) †
☐ Activities †

Figure 2-59. Configuring feedback on other record types

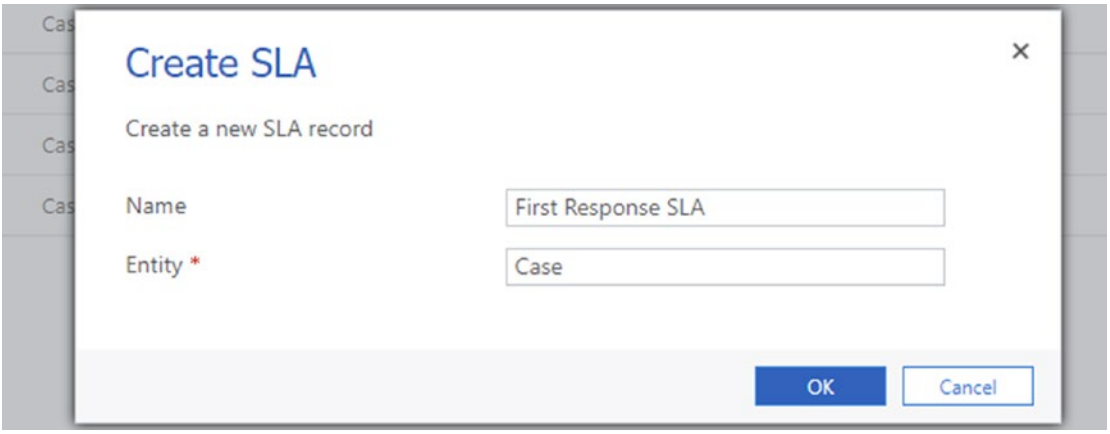
SLAs and Entitlements

Service-level agreements (SLAs) are not a new concept to the service industry. They are an agreement between a provider and a customer on a specific commitment in relation to the service they receive. This commitment is normally based on time, which is how it is represented within Dynamics 365 CE. Within Dynamics CE, SLAs are configured for a number of standard record types, including Cases and Leads, and can be configured for custom record types as well. SLAs give the ability to embed the timer visualization within those record forms.

Creating SLAs is currently achieved in the Classic UI; however, it is expected that in the October 2018 release it will be possible to create SLAs within the UI Client in the Customer Service Hub app.

Task: Create a new SLA.

1. To create a new SLA, in the Classic Client, navigate to Settings ➤ Service Management ➤ Service Level Agreements.
2. Click “New,” and a prompt will appear to name the SLA and select the entity (Figure 2-60). The dropdown list is populated by all record types enabled for SLAs, which is configured in the entity configuration area in the relevant or default solution, in the same way as feedback.



Create SLA

Create a new SLA record

Name: First Response SLA

Entity *: Case

Figure 2-60. Navigating to service-level agreements within the Classic Client

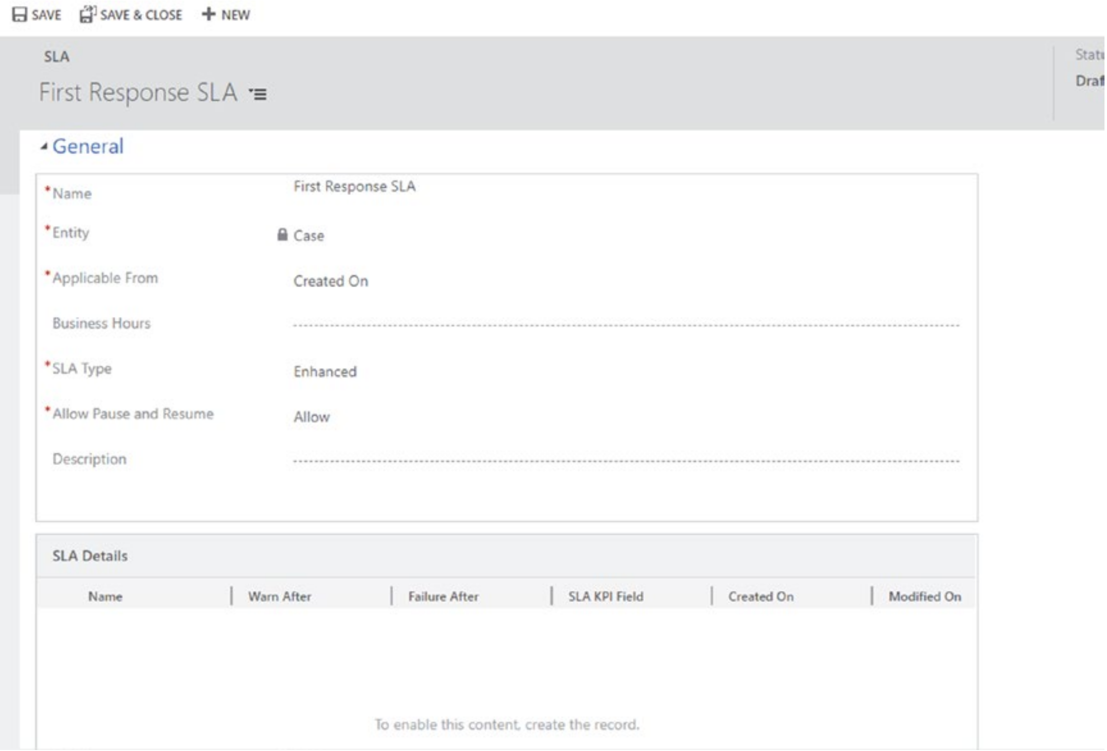
The next section will walk through how to add SLA detail items and the details related to the SLA record.

Creating a New SLA for the Case Record

SLAs are made up of core SLA information, such as the type, date it is applicable from, and the SLA items (Figure 2-61). The SLA items manage the conditions and actions that should take place under certain conditions. The core SLA information includes when the SLA is applicable *from*, which can be any datetime field on the selected record type. For "First Response"-type SLAs, this is often a "Created On" field. Business hours can be set if this area of Dynamics 365 CE is being utilized. This area manages the hours agents are available and can be set up in the same area.

The "SLA Type" field gives two options: simple and enhanced. The timer isn't available for simple SLAs, nor are pausing and resuming; however, Microsoft has announced that simple SLAs will be deprecated, so for now select "Enhanced." Keep "Pause and Resume" set to "Allow," which will be discussed shortly as far as how this is managed in system settings using the different statuses.

Once the base information on the SLA is set up, save the record and click the plus icon in the sub-grid to create an SLA detail item.


SAVE
SAVE & CLOSE
NEW
SLA
First Response SLA
Statu
Draf
General
SLA Details
Name
Warn After
Failure After
SLA KPI Field
Created On
Modified On
To enable this content, create the record.

*Name	First Response SLA
*Entity	Case
*Applicable From	Created On
Business Hours	
*SLA Type	Enhanced
*Allow Pause and Resume	Allow
Description	

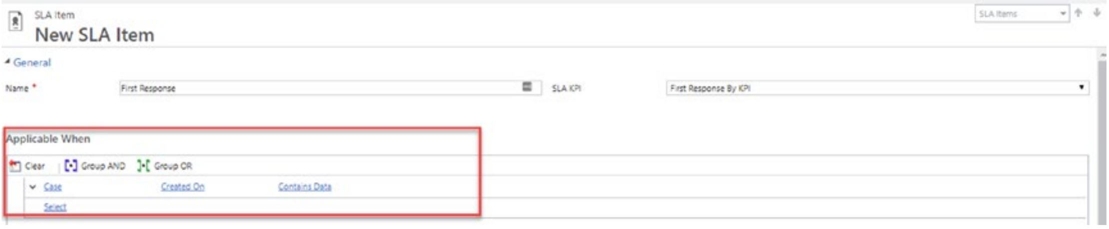
***Figure 2-61.** Creating a new SLA and configuring the base configuration information*

Each SLA detail line associated with an SLA record is what is known and seen in the system as an *SLA KPI*. If the conditions are met, a new SLA KPI Instance record is created—for example, in the context of a case—and a timer begins for that specific item. This gives organizations the capability to manage multiple SLA indicators and monitor them within the case, including their pass and fail metrics, helping to identify areas of improvement within an organization.

The two KPI instances set up for a case by default are the First Response and Resolve By KPIs, which are very common in the service industry. They can be configured without any customizations. To expand this to different KPIs, a customizer will need to navigate to the entity, e.g., a case, and create a new lookup field to the SLA KPI Instance entity. The name of the lookup field will then be available in the “SLA KPI” field dropdown list when configuring the item.

This example will continue to go through the setup of an SLA KPI called “First Response by KPI.”

Ensure a new SLA Item has been created by selecting the plus icon on the 'SLA Details' sub-grid in the SLA record. The next thing to set up for the SLA is the time when this item is applicable. In this instance, it would be when the "Created On" field contains data. Enter this within the "Applicable When" area as seen in Figure 2-62 and move on to the success criteria.


SLA Item
New SLA Item
General
SLA Items
Applicable When
Clear
Group AND
Group OR
Select

Name * First Response

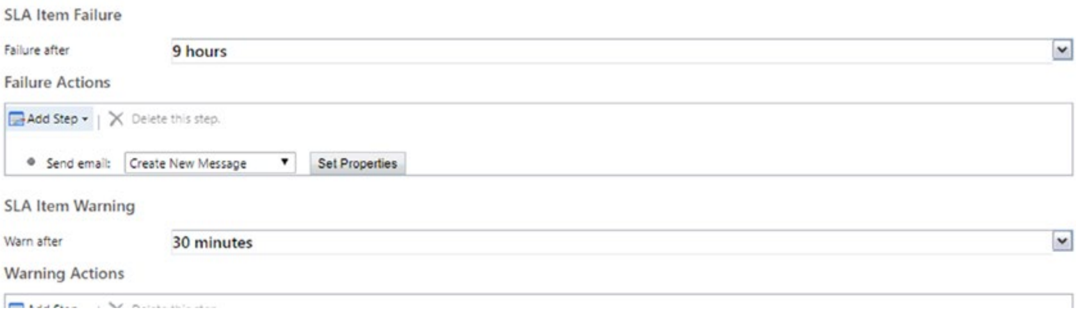
SLA KPI First Response By KPI

Case Created On Contains Data

Figure 2-62. *Setting up the "Applicable When" criteria for the SLA*

The success criteria indicates when the KPI has been met and will stop the SLA timer defined on the SLA KPI record linked to the base record (e.g. Case), as the status of "Succeeded." In this instance, it would be when the field "First Response Sent" is set to "Yes". Add the success criteria to the 'Success Criteria'.

Determining the Success Actions and Failure Actions is the next step to completing the item. The failure criteria specify the conditions for failure of the SLA and are indicated by time. The "Failure after" field is a dropdown field, but a user can enter any time frame they require, even if it's not displayed, in hours, as seen in Figure 2-63.


SLA Item Failure
Failure Actions
Add Step
Delete this step.
Set Properties
SLA Item Warning
Warning Actions

Failure after 9 hours

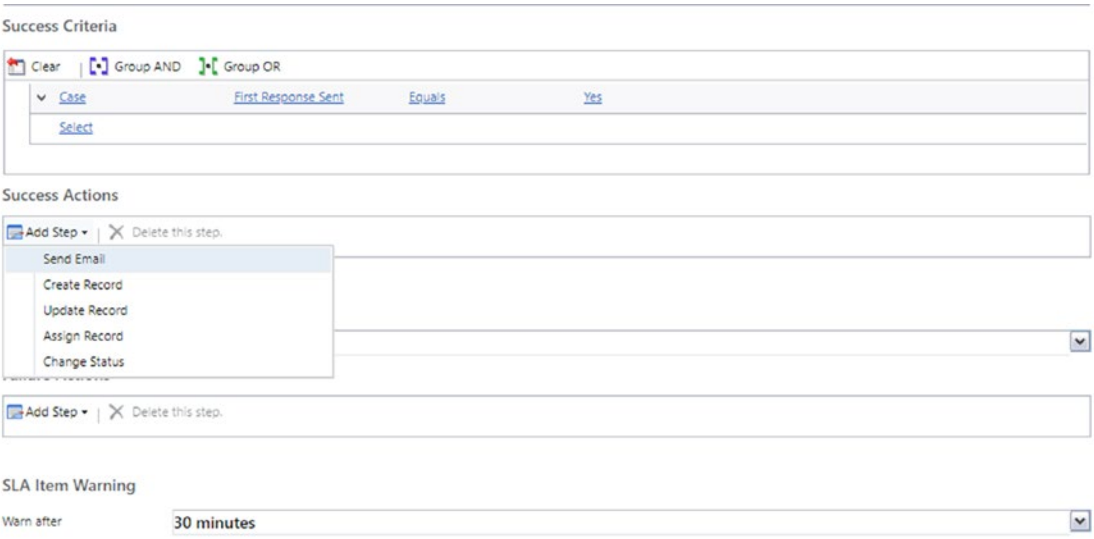
Send email: Create New Message

Warn after 30 minutes

Figure 2-63. *"Failure After" field can be manually entered and not just selected from the dropdown list*

Failure Actions can be set up, such as sending an email to the owner of the Case record. This is very similar to some actions available in workflows. We will cover those in more depth in Part II of the book.

Warning times can indicate to the owner of the record that the time is approaching when the SLA will be considered as failed. It is also normal to notify the owner of the record by creating a new email or a new activity, which they would see within a dashboard. Success Actions can also be set up, as seen in Figure 2-64, once the SLA's configured Success Criteria are met in the same way. Success and Failure Actions are not necessarily required; however, they can assist in the awareness and management of the SLA to improve the chances of their being met.



Success Criteria

Case | First Response Sent | Equals | Yes

SLA Item Warning

Warn after: 30 minutes

Clear
Group AND
Group OR
Select
Success Actions
Add Step
Delete this step.
Send Email
Create Record
Update Record
Assign Record
Change Status
Add Step
Delete this step.

Figure 2-64. *Setting the Success Criteria and Actions*

Setting Up Success Actions in the SLA Detail Record

Once the SLA detail item is completed, click "Save and Close," and then activate the SLA by clicking "Activate" on the command bar. This updates it to a read-only status. Once the SLA is activated, the SLA can also be set as the default SLA. Across the Dynamics 365 CE instance, the SLA can be applied to all cases (or other entities) by default without being linked to an entitlement. Only one default SLA can be set per organization. For the purposes of the next task choose "Set As Default" on the SLA record.

Task: Test the SLA.

Navigate to a case and create a new case. With the SLA set as default, an entitlement won't need to be set. Once saved, the First Response KPI SLA begins and a timer automatically starts counting down, as seen in Figure 2-65.

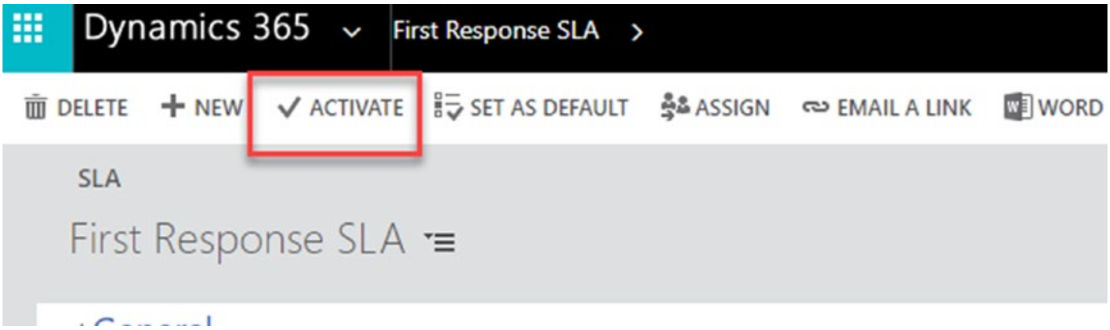
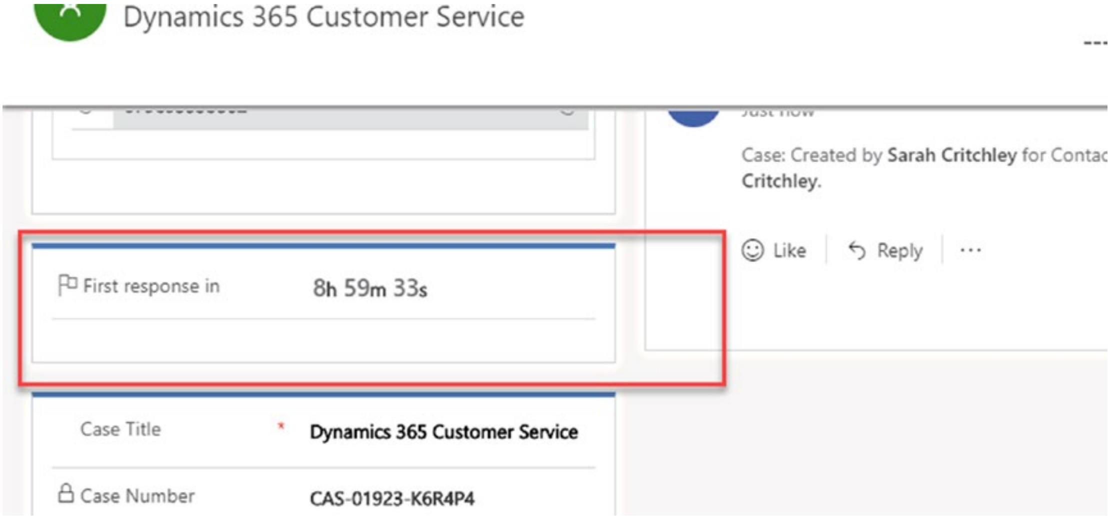

Dynamics 365
First Response SLA
DELETE
NEW
ACTIVATE
SET AS DEFAULT
ASSIGN
EMAIL A LINK
WORD
SLA
First Response SLA

Figure 2-65. *Activating an SLA*

You can also navigate to the SLA tab on the Case entity to see the SLA KPI instance created (this is useful where if there are more than one—e.g., First Response and Resolve By—all of which will be visible if the conditions are met). Other information such as warning time and failure time is also visible from this view (Figure 2-67).


Dynamics 365 Customer Service
Like
Reply

Case: Created by **Sarah Critchley** for Contac Critchley.

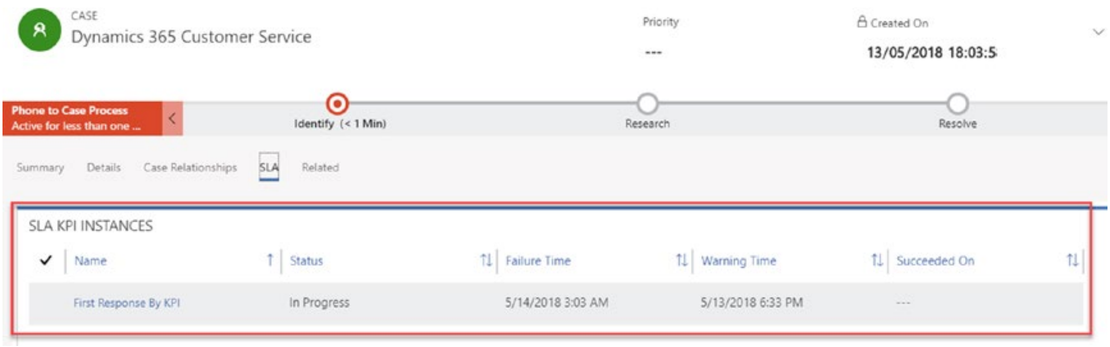
First response in 8h 59m 33s

Case Title * Dynamics 365 Customer Service

Case Number CAS-01923-K6R4P4

Figure 2-66. *The timer counting down based on the SLA item detail*

The SLA tab gives more contextual detail about the SLAs, as seen in Figure 2-67, and can be reviewed, especially if a timer isn't available for all applicable SLA KPI instances.


CASE
Dynamics 365 Customer Service
Phone to Case Process
Active for less than one ...
Identify (< 1 Min)
Research
Resolve
Summary
Details
Case Relationships
SLA
Related
SLA KPI INSTANCES

Priority: ---

Created On: 13/05/2018 18:03:5

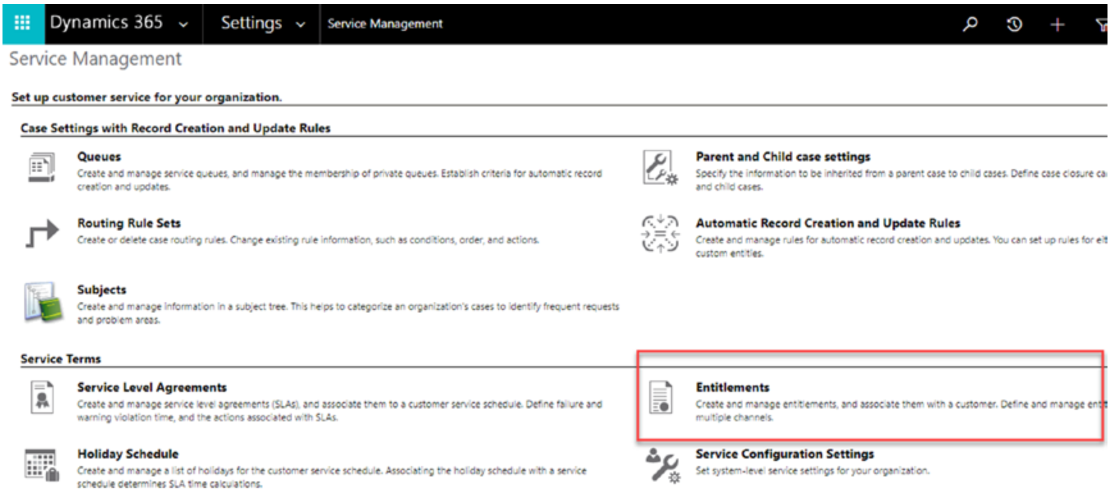
Name	Status	Failure Time	Warning Time	Succeeded On
First Response By KPI	In Progress	5/14/2018 3:03 AM	5/13/2018 6:33 PM	---

***Figure 2-67.** SLA KPI instances available to view from the SLA tab on the Case record*

SLAs are fantastic on their own when not linked to accounts or entitlements directly, but their limitation is that only one can be applied per organization. This is a great opportunity to define a base level of expectation for service staff. It does not, however, give customers a personalized experience. SLAs are normally linked to entitlements, which will be covered in the next section. Normally, the service level is agreed upon within a contract and terms and conditions, and SLAs provide an extension for entitlements to fulfill that as part of the contract.

Entitlements

Entitlements are an improvement upon the legacy Contract entity found in Dynamics 365 CE (Figure 2-68). Contracts have been announced as being deprecated, and therefore entitlements are a natural progression for contract-based functionality. Entitlements give organizations the capability to manage contractual commitments for the accounts they hold and provide a level-of-service commitment to them.



Service Management

Set up customer service for your organization.

Case Settings with Record Creation and Update Rules

Queues
Create and manage service queues, and manage the membership of private queues. Establish criteria for automatic record creation and updates.

Parent and Child case settings
Specify the information to be inherited from a parent case to child cases. Define case closure ca and child cases.

Routing Rule Sets
Create or delete case routing rules. Change existing rule information, such as conditions, order, and actions.

Automatic Record Creation and Update Rules
Create and manage rules for automatic record creation and updates. You can set up rules for ei custom entities.

Subjects
Create and manage information in a subject tree. This helps to categorize an organization's cases to identify frequent requests and problem areas.

Service Terms

Service Level Agreements
Create and manage service level agreements (SLAs), and associate them to a customer service schedule. Define failure and warning violation time, and the actions associated with SLAs.

Entitlements
Create and manage entitlements, and associate them with a customer. Define and manage ent multiple channels.

Holiday Schedule
Create and manage a list of holidays for the customer service schedule. Associating the holiday schedule with a service schedule determines SLA time calculations.

Service Configuration Settings
Set system-level service settings for your organization.

Figure 2-68. *Navigate to Service Management and select "Entitlements"*

Entitlements allow organizations to manage the start and end dates of these commitments automatically. Users can set an entitlement to start in the future, putting them in a "Waiting" state. A future date when the entitlement should expire will also be set, at which point the record will become inactive automatically, no longer able to be utilized with cases.

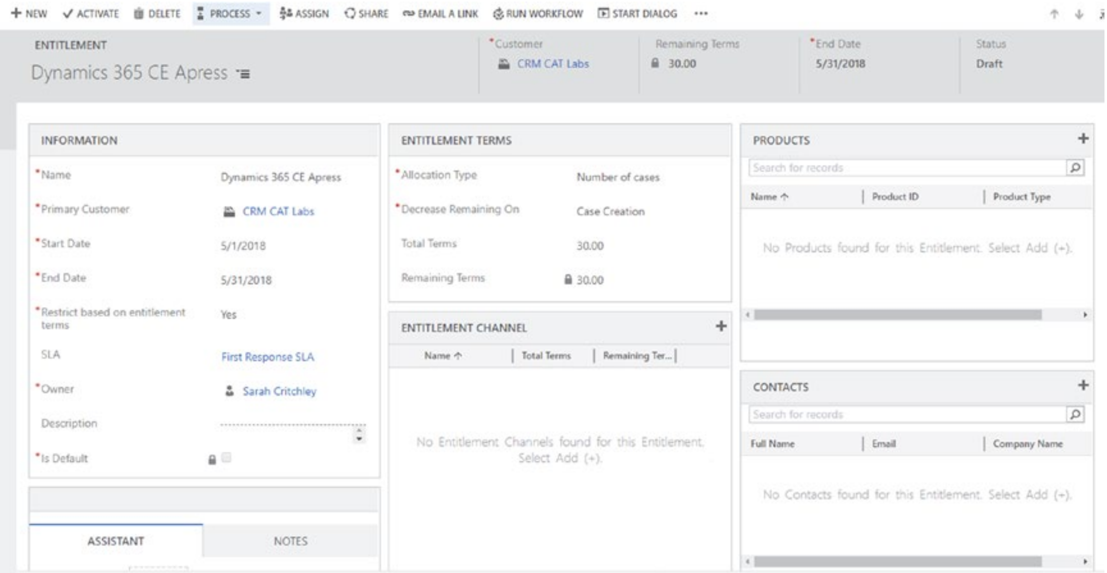
Entitlements hold an allocation of the number of either cases or hours an account can have within a set period of time. These terms are then logged and automatically decremented based on either case resolution or case creation.

Organizations can further limit when the entitlements can be used by specifying the following:

- **Channels** – This is linked to the origin of the case (e.g., phone, web, etc.) and specifies a certain number of allocations per channel.
- **Products** – The entitlement is valid for
- **Contacts** – The entitlements is valid for

If an entitlement is set to restrict the creation or resolution of cases based on the terms, it means it could prevent cases from being created or resolved when there are no more terms left. This could be argued as being the whole point of entitlements; however, it can get tricky when multiple agreements are linked, as entitlement terms cannot go into negative numbers. In this scenario, using the standard case functionality of "Do not decrement entitlement terms," available on the "…" action button, can come in handy. This is also useful for when something should be completed free of charge and not be decremented.

Entitlements are simple to set up. Before beginning this next step, deactivate and reactivate the SLA from the previous step if this was followed, so it is no longer set as the default.



ENTITLEMENT
Dynamics 365 CE Apress
*Customer CRM CAT Labs
Remaining Terms 30.00
*End Date 5/31/2018
Status Draft

INFORMATION

*Name	Dynamics 365 CE Apress
*Primary Customer	CRM CAT Labs
*Start Date	5/1/2018
*End Date	5/31/2018
*Restrict based on entitlement terms	Yes
SLA	First Response SLA
*Owner	Sarah Critchley
Description	
*Is Default	☐

ENTITLEMENT TERMS

*Allocation Type	Number of cases
*Decrease Remaining On	Case Creation
Total Terms	30.00
Remaining Terms	30.00

ENTITLEMENT CHANNEL

Name ↑	Total Terms	Remaining Ter...

No Entitlement Channels found for this Entitlement. Select Add (+).

PRODUCTS

Search for records

Name ↑	Product ID	Product Type

No Products found for this Entitlement. Select Add (+).

CONTACTS

Search for records

Full Name	Email	Company Name

No Contacts found for this Entitlement. Select Add (+).

Figure 2-69. *Entitlement record within Dynamics 365 CE*

Creating a New Entitlement

Like SLAs, entitlements currently can only be created within the Classic UI. This is expected to change in the October 2018 release, when they will become able to be created from the UI Client within the Customer Service Hub app.

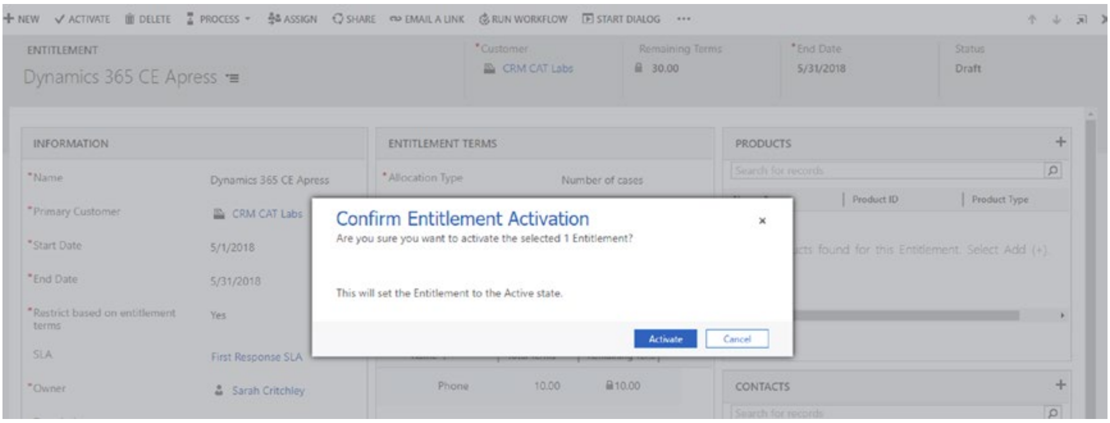
Task: Create an entitlement. Navigate to Settings ➤ Entitlements in the Classic Client and click on "New."

1. Complete the basic details for the entitlement, such as the "Name," "Primary Customer" (the account this should be linked to), "Start Date," and "End Date" fields (Figure 2-69).
2. Use the Entitlement Channel sub-grid to set the "Origin" field to "Phone"
3. Link the SLA made in the previous step by searching for it in the lookup field. This is how SLAs are designed to work together with entitlements. Together, they operate a contractual service-level agreement framework, which is available to users without any customization.

Channel is important to note for restrictions, as some of the "Origin" options are set as standard on the case entity, which is useful to be aware of. They are as follows:

- **Phone support** – The origin is set to "Phone."
- **Social Activity** – The origin is set to "Twitter" when linked via Social Engagement automatically.
- **Web** – Through customer service portals, this is set to "Web" automatically.

Activate the entitlement using the Activate button on the command bar and confirm activation, as seen in Figure 2-70.


NEW
ACTIVATE
DELETE
PROCESS
ASSIGN
SHARE
EMAIL A LINK
RUN WORKFLOW
START DIALOG
ENTITLEMENT
INFORMATION
ENTITLEMENT TERMS
PRODUCTS
Search for records
Product ID
Product Type
CONTACTS
Search for records
Activate
Cancel

Dynamics 365 CE Apress

*Customer: CRM CAT Labs
Remaining Terms: 30.00
*End Date: 5/31/2018
Status: Draft

*Name: Dynamics 365 CE Apress
*Primary Customer: CRM CAT Labs
*Start Date: 5/1/2018
*End Date: 5/31/2018
*Restrict based on entitlement terms: Yes
SLA: First Response SLA
*Owner: Sarah Critchley

*Allocation Type: Number of cases

Phone 10.00 10.00

Confirm Entitlement Activation

Are you sure you want to activate the selected 1 Entitlement?

This will set the Entitlement to the Active state.

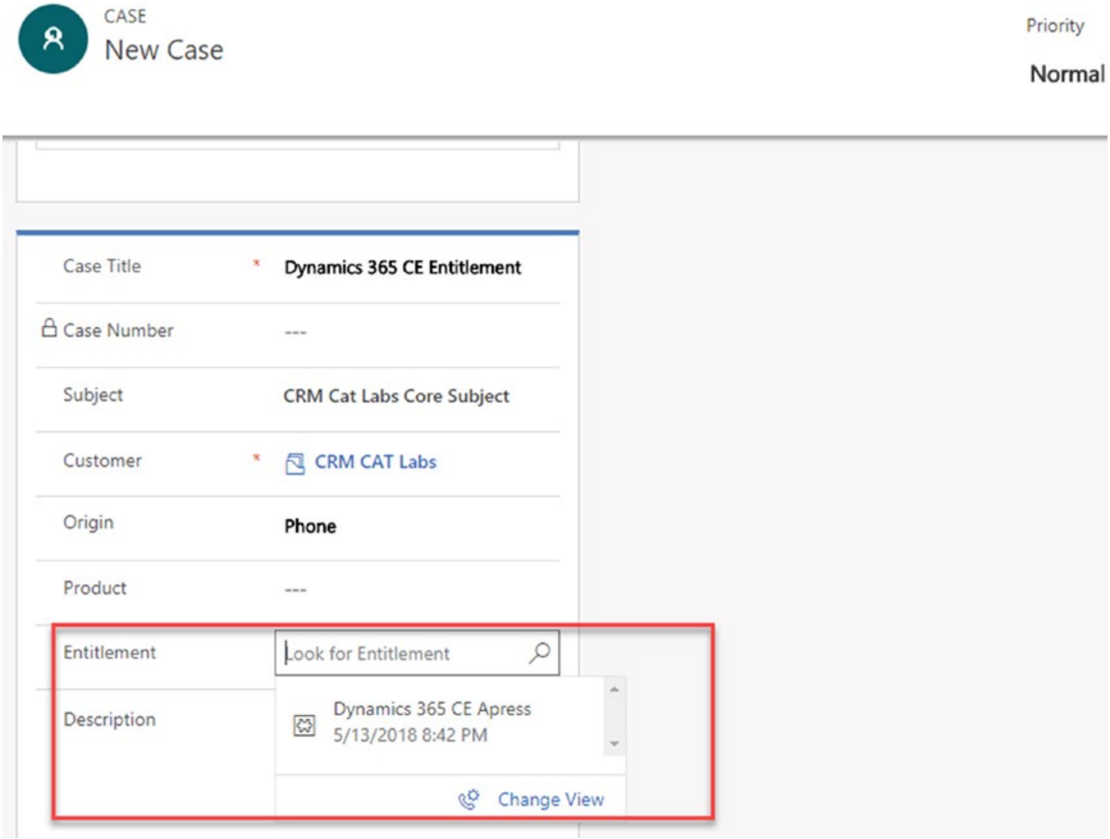
Figure 2-70. *Entitlement record within Dynamics 365 CE*

Activating the Entitlement on a Case

Let's see the entitlement in action on a Case record.

1. Within the Customer Service Hub app, create a new Case record for the account specified within the entitlement.
2. Ensure the Origin field is set to one specified in the Channel Filter ('Phone') if the example was followed, from the previous section if this was used.
3. The new entitlement will be available within the dropdown as shown in Figure 2-71. Select it and save the record.

The SLA will have been activated without its being set as the default, and as seen in Figure 2-71, the Entitlements Terms have been decremented, as has the Channel, since it matched the channel specified within the Case record.



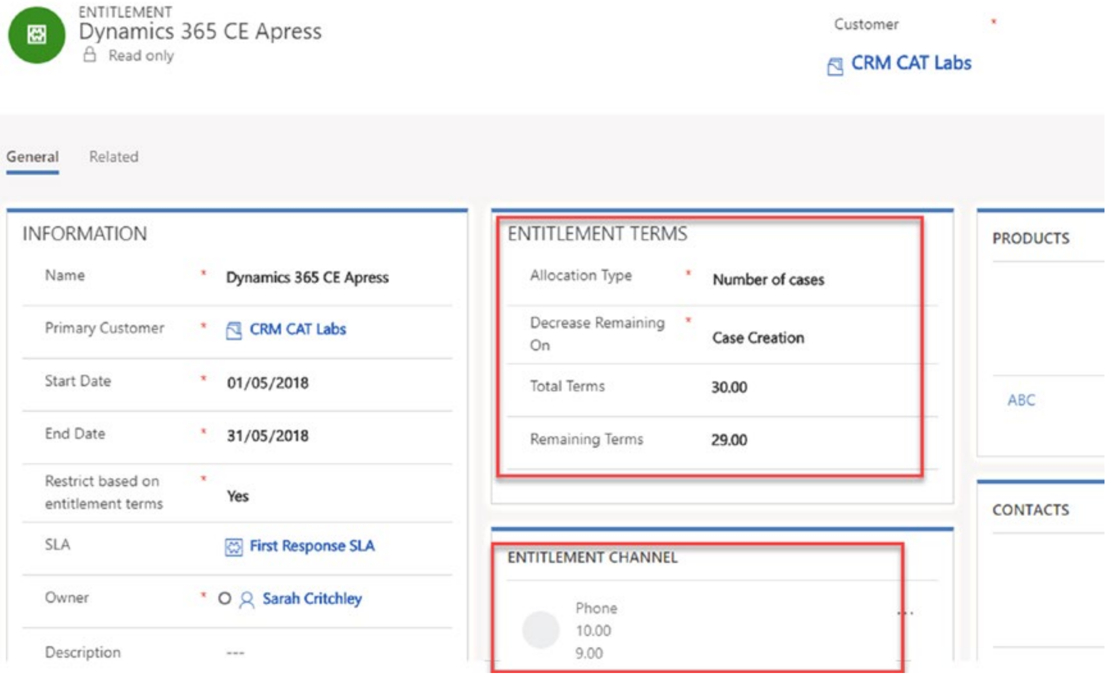
CASE
New Case

Priority
Normal

Case Title *	Dynamics 365 CE Entitlement
Case Number	---
Subject	CRM Cat Labs Core Subject
Customer *	CRM CAT Labs
Origin	Phone
Product	---
Entitlement	Look for Entitlement
Description	

Figure 2-71. *Selecting the new entitlement in a Case record*

When an entitlement is linked to a case, the terms are automatically decremented, and if the origin matches the origin specified within the Case record, that too is decremented (Figure 2-72). Entitlement channels are a useful way of logging how often a customer raises cases in specific ways, offering the potential for organizations to drive them toward using self-service routes such as portals.


ENTITLEMENT
Dynamics 365 CE Apress
Read only
General
Related
PRODUCTS
CONTACTS

Customer * CRM CAT Labs

INFORMATION

Name * Dynamics 365 CE Apress
Primary Customer * CRM CAT Labs
Start Date * 01/05/2018
End Date * 31/05/2018
Restrict based on entitlement terms * Yes
SLA First Response SLA
Owner * Sarah Critchley
Description ---

ENTITLEMENT TERMS

Allocation Type * Number of cases
Decrease Remaining On * Case Creation
Total Terms 30.00
Remaining Terms 29.00

ENTITLEMENT CHANNEL

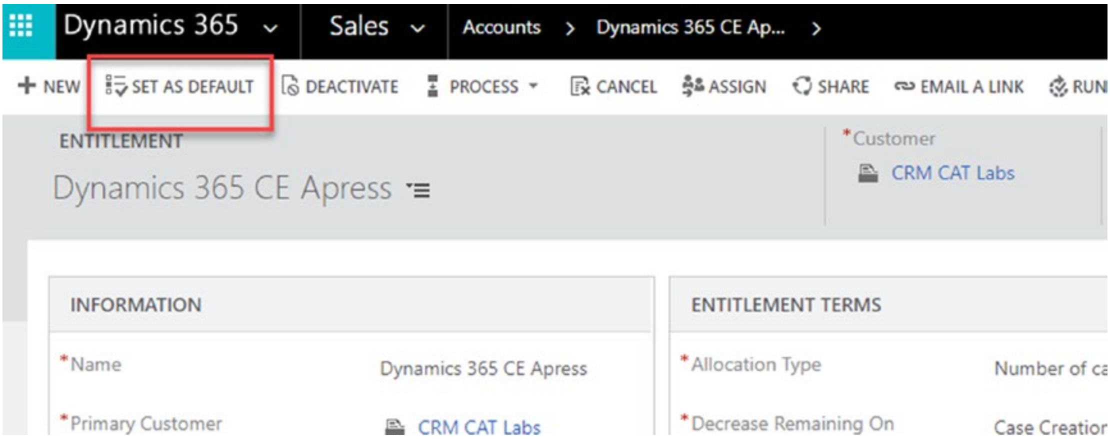
Phone
10.00
9.00

PRODUCTS

ABC

Figure 2-72. *Entitlement Terms and Channel are decremented*

Notice that the user had to specify the entitlement manually. This can be avoided by setting the entitlement as "Default," as seen in Figure 2-73, much like the functionality available within the SLA, so that the entitlement will always be the default one applied for cases regarding this customer (account).


Dynamics 365
Sales
Accounts > Dynamics 365 CE Ap... >
+ NEW
SET AS DEFAULT
DEACTIVATE
PROCESS
CANCEL
ASSIGN
SHARE
EMAIL A LINK
RUN
ENTITLEMENT
Dynamics 365 CE Apress

*Customer CRM CAT Labs

INFORMATION

*Name Dynamics 365 CE Apress
*Primary Customer CRM CAT Labs

ENTITLEMENT TERMS

*Allocation Type Number of ca
*Decrease Remaining On Case Creatior

Figure 2-73. *Click "Set as Default" to automatically apply this entitlement for the specified customer*

Entitlements are a useful way to manage contractual and service-level agreements without doing any customization within the system. A small amount of configuration sets an organization up to effectively manage terms and conditions, and also to manage customer service departments and a core set of principles regarding the service they provide.

Social Engagement

Customer service within Dynamics 365 CE is not just about the Customer Service Hub application, but also includes other applications within the business application platform. One such application is Microsoft Social Engagement.

Microsoft Social Engagement allows organizations to set up search terms on particular topics to monitor specific social channels. This could be the name of their organization, their competitors, or certain products, to name a few examples. The app can look at a range of different social media sites, including Twitter, Facebook, Instagram, Linked In (in a limited way), blogs, RSS feeds, and more.

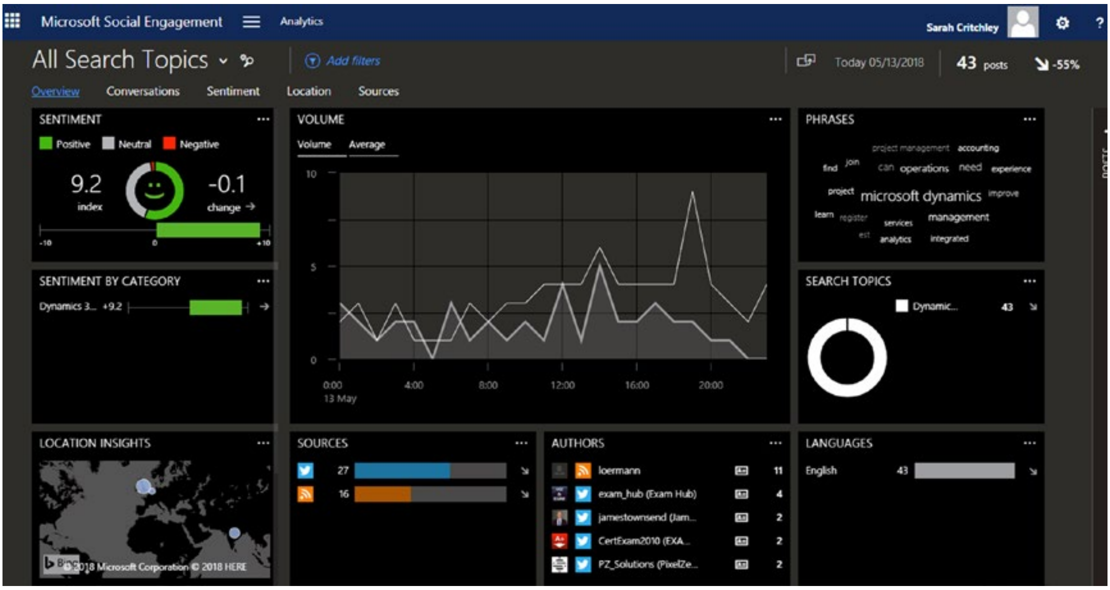

Microsoft Social Engagement
Analytics
Sarah Critchley
All Search Topics
Add filters
Today 05/13/2018
43 posts
-55%
Overview
Conversations
Sentiment
Location
Sources
SENTIMENT
Positive
Neutral
Negative
9.2
index
-0.1
change
VOLUME
Volume
Average
10
5
0
0:00
13 May
4:00
8:00
12:00
16:00
20:00
PHRASES
project management
accounting
find
join
can
operations
need
experience
project
microsoft dynamics
improve
learn
register
services
management
analytics
integrated
SENTIMENT BY CATEGORY
Dynamics 3... +9.2
SEARCH TOPICS
Dynamic...
43
LOCATION INSIGHTS
© 2018 Microsoft Corporation © 2018 HERE
SOURCES
27
16
AUTHORS
loermann
11
exam_hub (Exam Hub)
4
jamestownsend (Jam...
2
CertExam2010 (EXA...
2
PZ_Solutions (PixelZe...
2
LANGUAGES
English
43

Figure 2-74. *Social Engagement dashboard*

Social Engagement picks up posts that match the search terms or accounts that are specified within the setup. It allows the user of the application to review analytics related to those results from one of the main application dashboards (Figure 2-74).

One important area of the Social Engagement platform is sentiment analysis and its ability to review posts with negative, positive, and neutral sentiments. Microsoft Social Engagement analyzes the posts in their native languages.

The various dashboards within Microsoft Social Engagement include other important analytics, such as the following:

- Categorization of sentiments (particularly useful when linking search topics to categories)
- Phrase cloud
- Search topic exposure visualization
- Top authors
- Sources based on where they came from; e.g., Twitter, RSS, etc.

By default, it ships with different dashboards, a few of which are seen in Figures 2-75, 2-76, and 2-77. These dashboards can be selected using the tabs at the top of the screen. One dashboard focuses on conversation analysis, another on sentiment, and the third on location and sources. Each provides useful metrics based on the overlay of the various sources and categories set up.

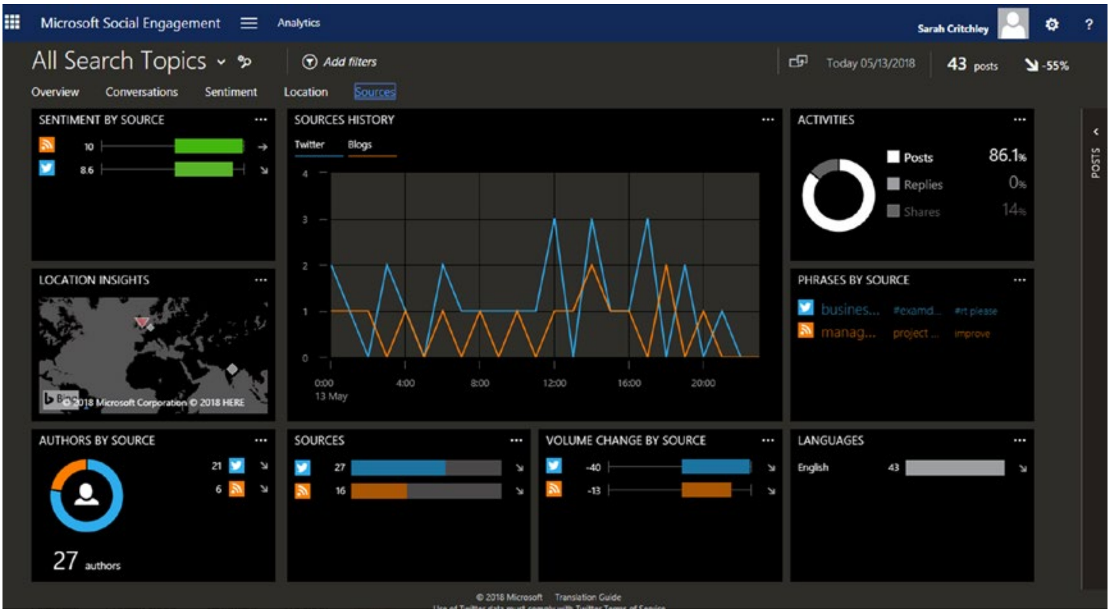

Microsoft Social Engagement
Analytics
Sarah Critchley
All Search Topics
Add filters
Today 05/13/2018
43 posts
-55%
Overview
Conversations
Sentiment
Location
Sources
SENTIMENT BY SOURCE
10
8.6
SOURCES HISTORY
Twitter
Blogs
4
3
2
1
0
0:00
13 May
4:00
8:00
12:00
16:00
20:00
ACTIVITIES
Posts
86.1%
Replies
0%
Shares
14%
POSTS
LOCATION INSIGHTS
© 2018 Microsoft Corporation © 2018 HERE
PHRASES BY SOURCE
busines...
#examd...
#rt please
manag...
project ...
improve
AUTHORS BY SOURCE
21
6
27 authors
SOURCES
27
16
VOLUME CHANGE BY SOURCE
-40
-13
LANGUAGES
English
43
© 2018 Microsoft
Translation Guide

Figure 2-75. Sources dashboard within Microsoft Social Engagement

There is a right-hand panel within the application called “Posts” available from the dashboard screen. This can be selected so that the posts are displayed based on the search terms and the source data for the dashboard, as seen in Figure 2-76. These posts can be reviewed and responded to (provided a profile is set up) from this screen and can be tagged using labels, assigned to users, and, if the sentiment isn’t correct, changed.

Microsoft Social Engagement has the potential to be a very powerful tool, allowing organizations to reach their customers via social media, where they can spend a lot of time in their day-to-day activities. It also allows organizations to manage their social messaging and manage inbound social activities that reference them, especially negative statements. This gives organizations the capability and functionality to turn negative posts into positive ones and thus create loyal customers, within the public domain.

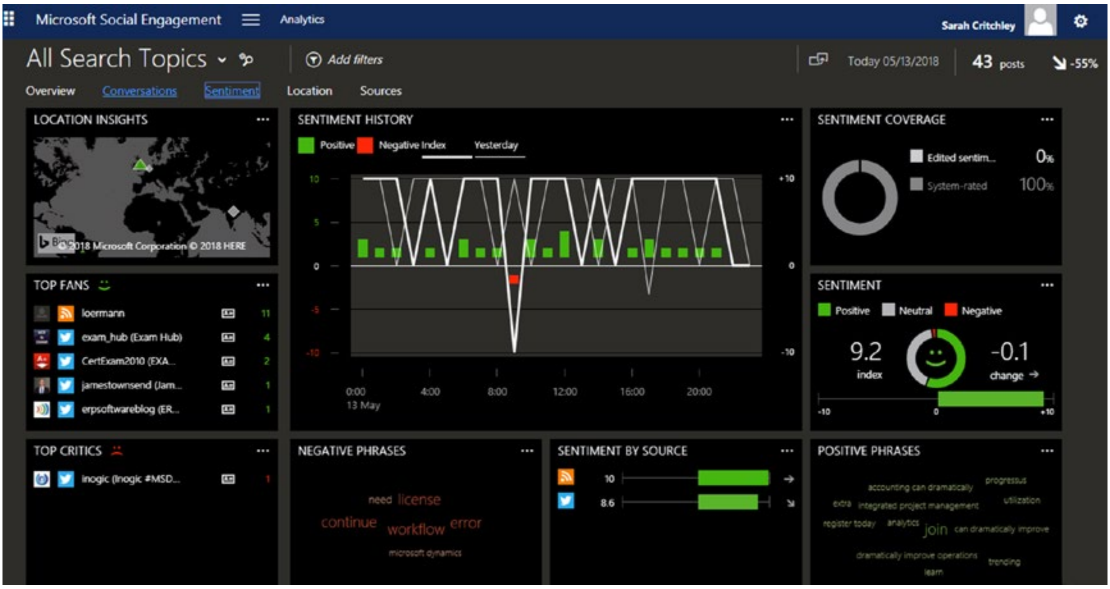
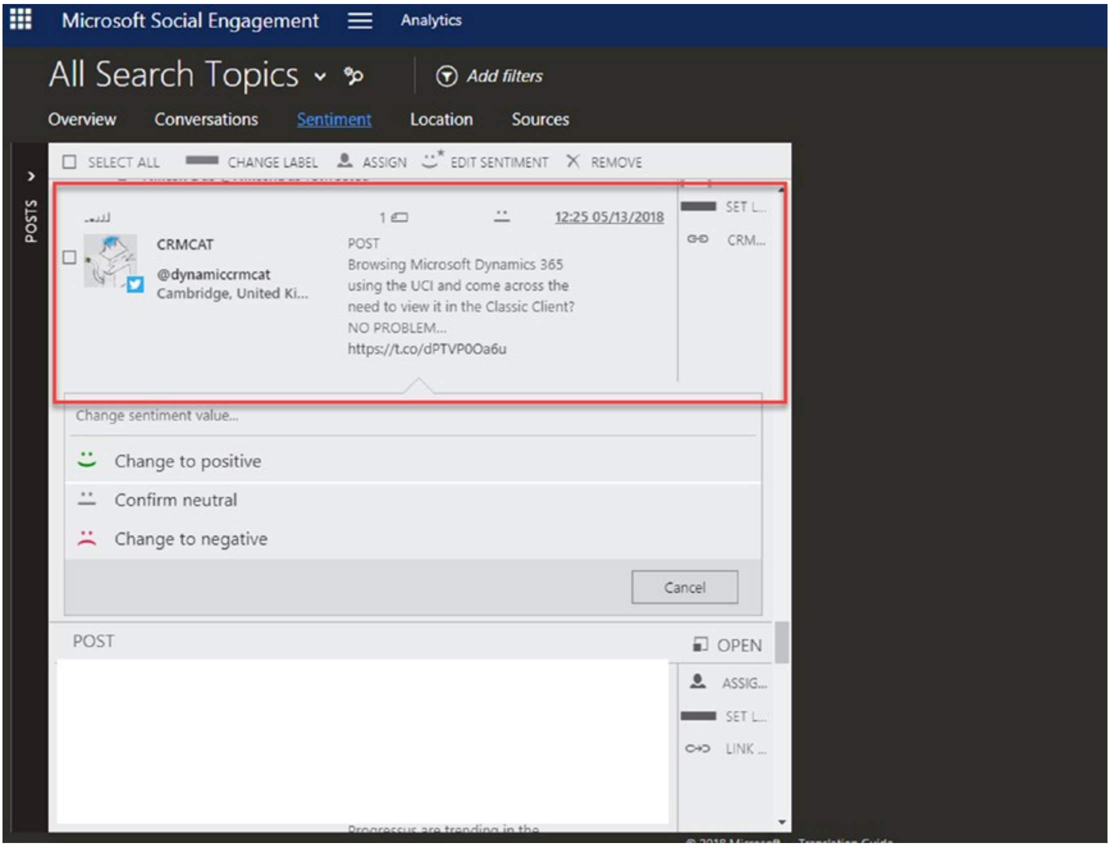

Microsoft Social Engagement
Analytics
Sarah Critchley
All Search Topics
Add filters
Today 05/13/2018
43 posts
-55%
Overview
Conversations
Sentiment
Location
Sources
LOCATION INSIGHTS
© 2018 Microsoft Corporation © 2018 HERE
SENTIMENT HISTORY
Positive
Negative Index
Yesterday
10
5
0
-5
-10
+10
0
-10
0:00
13 May
4:00
8:00
12:00
16:00
20:00
SENTIMENT COVERAGE
Edited sentim...
0%
System-rated
100%
TOP FANS
loermann
exam_hub (Exam Hub)
CertExam2010 (EXA...
jamestownsend (Jam...
erpsoftwareblog (ER...
SENTIMENT
Positive
Neutral
Negative
9.2
index
-0.1
change
-10
0
+10
TOP CRITICS
inogic (Inogic #MSD...
NEGATIVE PHRASES
need
license
continue
workflow
error
microsoft dynamics
SENTIMENT BY SOURCE
10
8.6
POSITIVE PHRASES
accounting can dramatically
progressus
extra
integrated project management
utilization
register today
analytics
join
can dramatically improve
dramatically improve operations
trending
learn

Figure 2-76. *Conversation dashboard within Microsoft Social Engagement*

Adding labels and routing to users allows for easy and quick management of potentially unhappy customers.


Microsoft Social Engagement
Analytics
All Search Topics
Add filters
Overview
Conversations
Sentiment
Location
Sources
POSTS
SELECT ALL
CHANGE LABEL
ASSIGN
EDIT SENTIMENT
REMOVE
1
12:25 05/13/2018
CRMCAT
@dynamiccrmcat
Cambridge, United Ki...
SET L...
CRM...
Change sentiment value...
Change to positive
Confirm neutral
Change to negative
Cancel
POST
OPEN
ASSIG...
SET L...
LINK ...

POST
Browsing Microsoft Dynamics 365 using the UCI and come across the need to view it in the Classic Client? NO PROBLEM... https://t.co/dPTVP0Oa6u

Figure 2-77. Opening "Posts" pane from Social Engagement

Setting Up Social Engagement: Profile

Setting up Social Engagement consists of a number of short steps, as follows:

1. Set up a profile.
2. Set up search terms.
3. Set up and configure Dynamics 365 CE Integration.

Task: Set up a Social Engagement profile. First, to be able to respond to tweets directly from Microsoft Social Engagement, a profile needs to be linked and authenticated with the platform.

1. Open Social Engagement and click Settings ➤ Social Profiles (Figure 2-78).

2. Click “New Profile,” where various profiles can be selected, including Facebook, Linked In, Instagram, YouTube, and Twitter profiles.

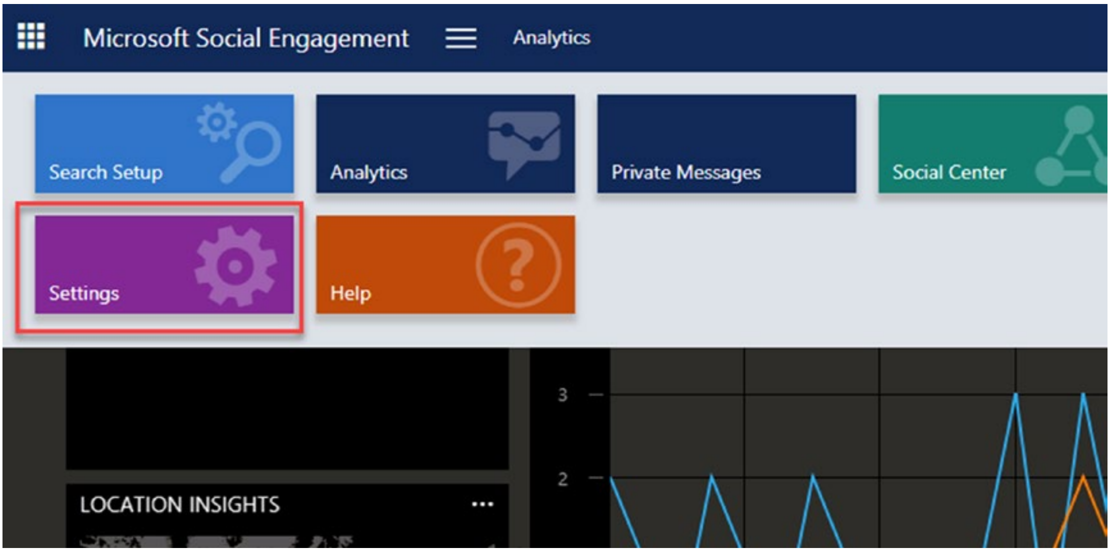
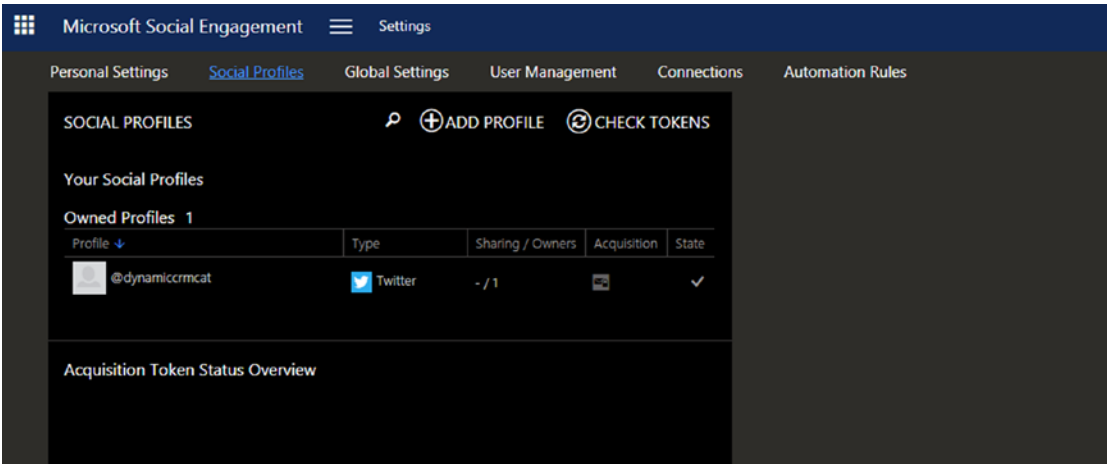

Microsoft Social Engagement
Analytics
Search Setup
Analytics
Private Messages
Social Center
Settings
Help
LOCATION INSIGHTS
3
2

Figure 2-78. *Navigating to Settings within Social Engagement from the sitemap*

The Social Profile tab enables organizations to set up their organizational profiles for their social media accounts, as seen in Figure 2-79.

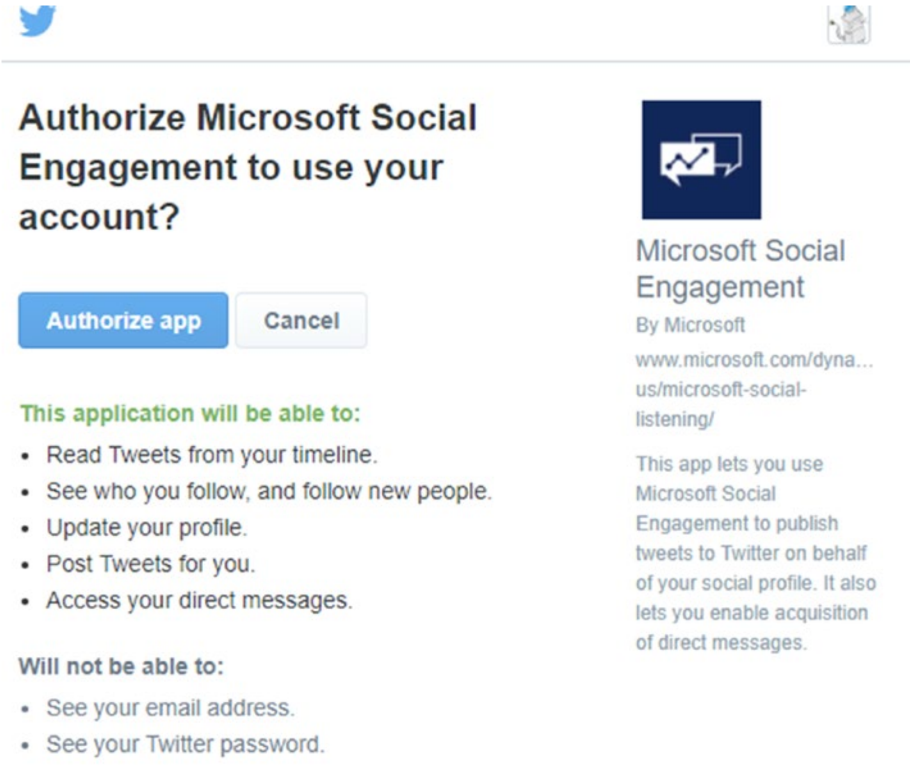

Microsoft Social Engagement
Settings
Personal Settings
Social Profiles
Global Settings
User Management
Connections
Automation Rules
SOCIAL PROFILES
ADD PROFILE
CHECK TOKENS
Your Social Profiles
Owned Profiles 1
Acquisition Token Status Overview

Profile ↓	Type	Sharing / Owners	Acquisition	State
@dynamiccrmcat	Twitter	- / 1		✓

Figure 2-79. *Navigate to the Social Profiles tab*

It is important that the terms and conditions are reviewed when linking profiles as the notifications explain what the application can do with the account details should it be authorized, as seen in Figure 2-80. Ensure the person setting this up has permission to do so. Once authorized, ownership of the account can be specified and shared with other users, allowing them access to it through Microsoft Social Engagement; they will be able to respond to tweets and other posts from other types of platforms from within the application. Private messages can be allowed from this area but will need to be changed if required, as this is set to "Not Allowed" by default.

If an organization is planning to use the Microsoft Social Engagement app to respond directly to messages, certain profiles contain a checkbox to prompt the user to continue the dialog within a private message (this is part of the Twitter API, for example). If Private Messages are set to not being allowed, this option will not be available through the Microsoft Social Engagement application.



Authorize Microsoft Social Engagement to use your account?

This application will be able to:

- Read Tweets from your timeline.
- See who you follow, and follow new people.
- Update your profile.
- Post Tweets for you.
- Access your direct messages.

Will not be able to:

- See your email address.
- See your Twitter password.

Microsoft Social Engagement

By Microsoft

www.microsoft.com/dyna... us/microsoft-social-listening/

This app lets you use Microsoft Social Engagement to publish tweets to Twitter on behalf of your social profile. It also lets you enable acquisition of direct messages.

Figure 2-80. *Authorizing the Social Engagement app with a Twitter profile*

Setting Up Social Engagement: Searches

To see dashboards populated with data, at least one search term or profile needs to be set up. Following that, a period of time needs to pass for the platform to collect the records matching the search criteria.

Task: Set up searches in the Social Engagement app. Navigate to "Search Setup" from the sitemap, as seen in Figure 2-81.

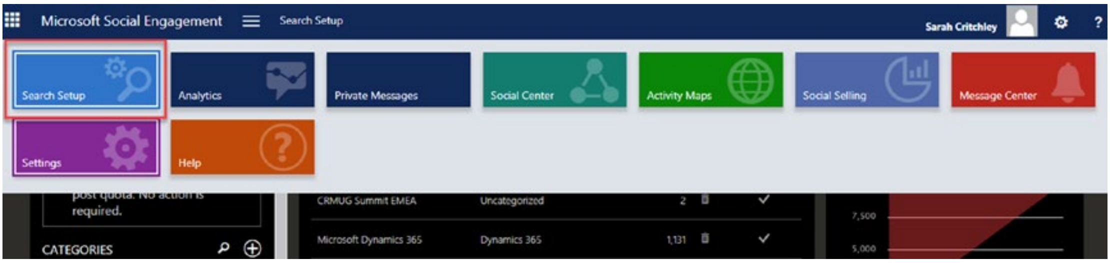
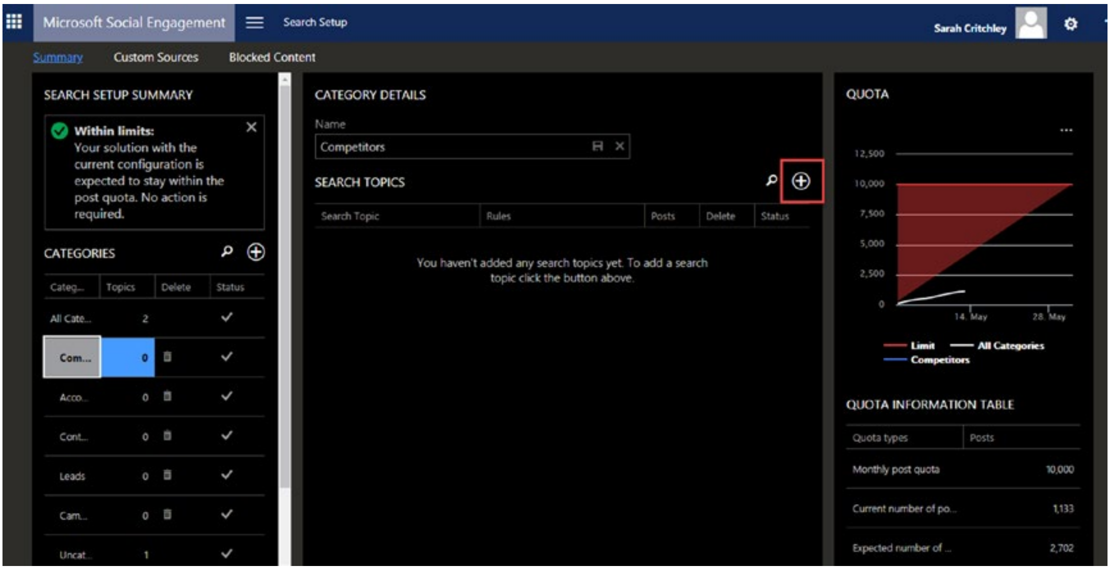

Microsoft Social Engagement
Search Setup
Sarah Critchley
Search Setup
Analytics
Private Messages
Social Center
Activity Maps
Social Selling
Message Center
Settings
Help
required.
CATEGORIES
CRMUG Summit EMEA
Uncategorized
Microsoft Dynamics 365
Dynamics 365
7,500
5,000

Figure 2-81. *The "Search Setup" area of the sitemap*

The Search Setup screen opens, as seen in Figure 2-82. On the left-hand side of the screen there are some pre-defined categories. I'd recommend clicking "Delete" on the categories that have absolutely no relevance to the organization. New ones can be created by selecting the plus icon on this screen and naming the search topic, as seen in Figure 2-83. These are logical groupings used to aggregate searches within the dashboard, which is why it is important to make them relevant for your organization.


Microsoft Social Engagement
Search Setup
Sarah Critchley
Summary
Custom Sources
Blocked Content
SEARCH SETUP SUMMARY
CATEGORIES
CATEGORY DETAILS
SEARCH TOPICS
QUOTA
12,500
10,000
7,500
5,000
2,500
0
14. May
28. May
Limit
All Categories
Competitors
QUOTA INFORMATION TABLE

Within limits: Your solution with the current configuration is expected to stay within the post quota. No action is required.

Categ...	Topics	Delete	Status
All Cate...	2		✓
Com...	0	🗑	✓
Acco...	0	🗑	✓
Cont...	0	🗑	✓
Leads	0	🗑	✓
Cam...	0	🗑	✓
Uncat...	1		✓

Name: Competitors

Search Topic	Rules	Posts	Delete	Status

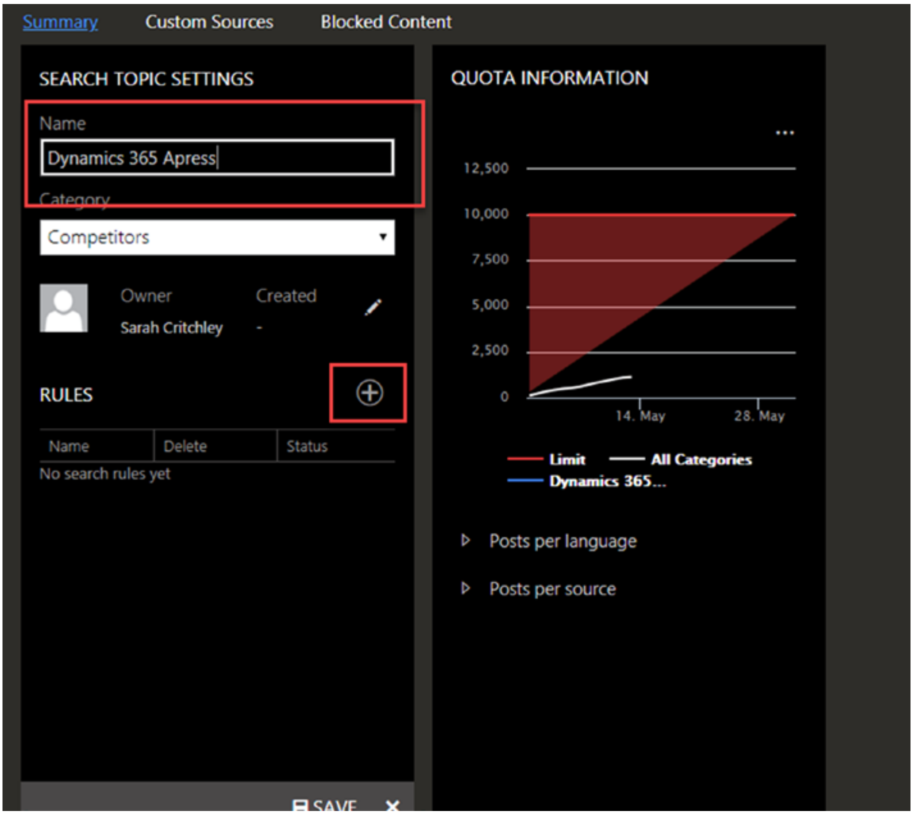
You haven't added any search topics yet. To add a search topic click the button above.

Quota types	Posts
Monthly post quota	10,000
Current number of po...	1,133
Expected number of ...	2,702

Figure 2-82. *Creating a new search topic*

In the middle of the screen are the search topics.

1. Create a new search category by selecting "+" on the Categories sub-grid, as seen in Figure 2-83.
2. After a search topic has been named, click the plus icon to create a new search rule. Note: To log posts from Facebook pages and Instagram, profiles need to be set up in those respective areas. The Keywords rule is the most generic rule, as it is not linked to a specific channel and can be linked to more than one social channel.


Summary
Custom Sources
Blocked Content
SEARCH TOPIC SETTINGS
RULES
QUOTA INFORMATION
...
12,500
10,000
7,500
5,000
2,500
0
14. May
28. May
Limit
All Categories
Dynamics 365...
Posts per language
Posts per source
SAVE

Name
Dynamics 365 Apress

Category
Competitors

Owner Sarah Critchley

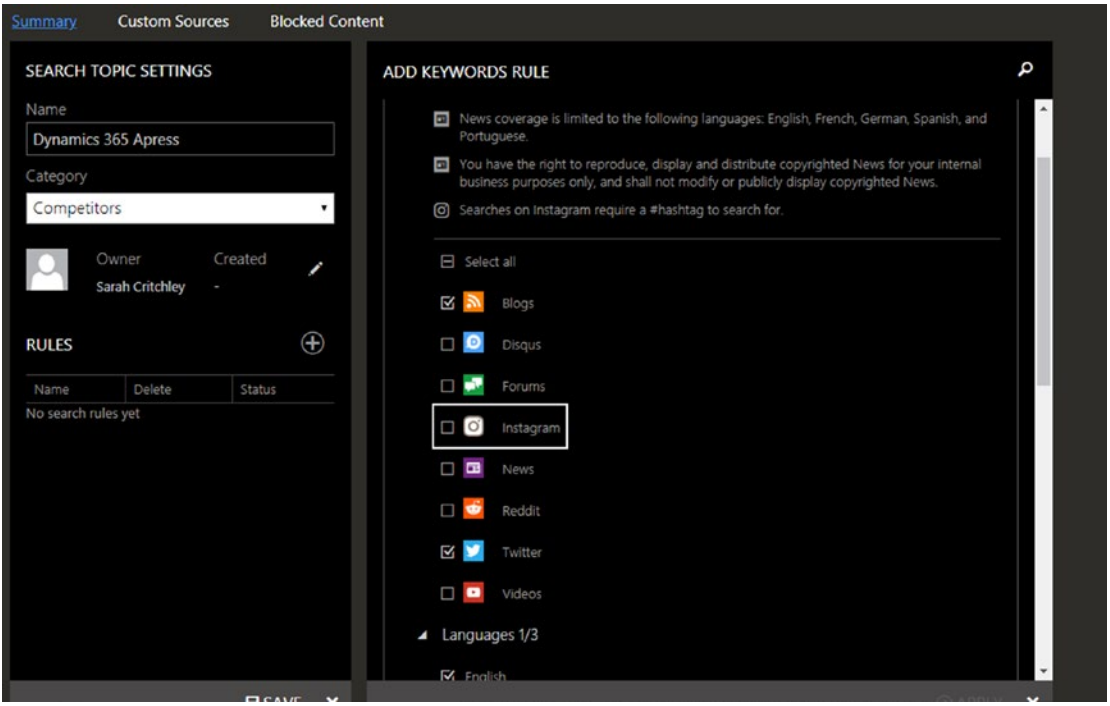
Created -

Name	Delete	Status

No search rules yet

Figure 2-83. *Creating a new search rule in Social Engagement*

1. Select which sources the Keywords rule should search in, as seen in Figure 2-84.



SEARCH TOPIC SETTINGS

Name: Dynamics 365 Apress

Category: Competitors

Owner: Sarah Critchley

Created: -

RULES

Name	Delete	Status
No search rules yet		

ADD KEYWORDS RULE

News coverage is limited to the following languages: English, French, German, Spanish, and Portuguese.

You have the right to reproduce, display and distribute copyrighted News for your internal business purposes only, and shall not modify or publicly display copyrighted News.

Searches on Instagram require a #hashtag to search for.

⊟ Select all
☑ Blogs
☐ Disqus
☐ Forums
☐ Instagram
☐ News
☐ Reddit
☑ Twitter
☐ Videos

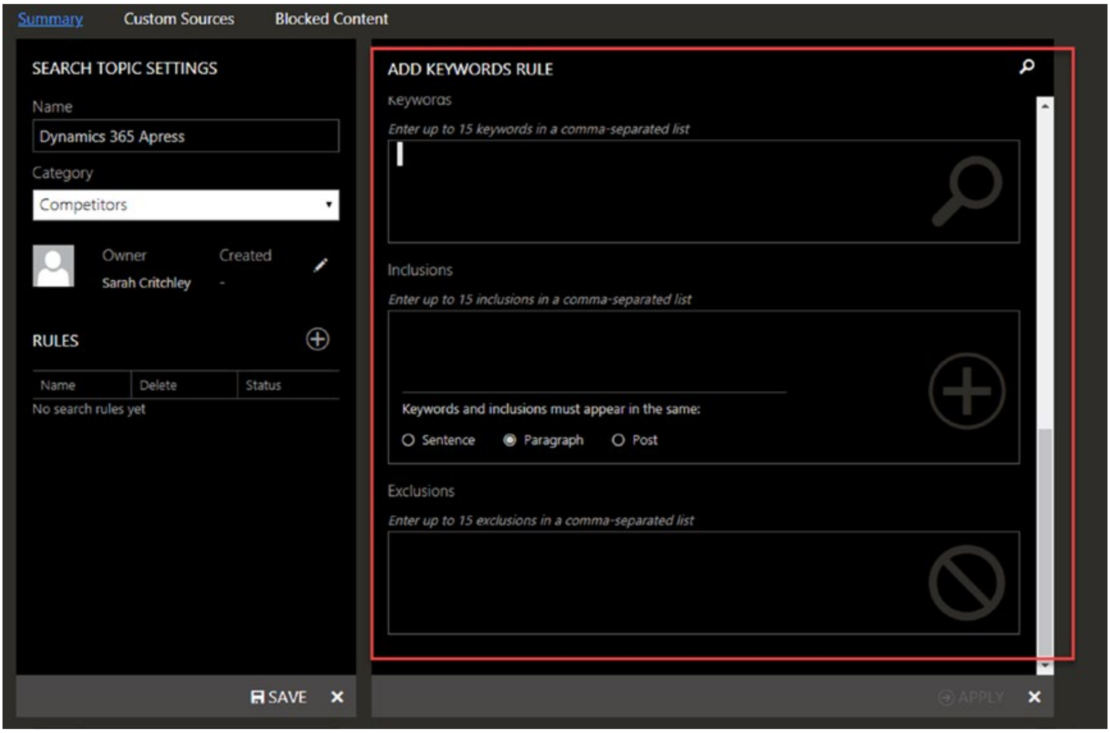
Languages 1/3
☑ English

Figure 2-84. Setting up a Keywords rule and selecting the sources

2. Once a user selects the sources, keywords are set up. They can be defined as follows (Figure 2-85):

    - **Inclusions** are items the post MUST include.
    - **Exclusions** should NOT be included within the post picked up. These are ways of limiting the amount of posts found.

3. Once completed, click “Check,” and the quota is checked to ensure the number of posts the application anticipates finding is within the monthly quota limit for the organization. Social Engagement operates on a monthly quota amount for posts picked up using the search terms; 10,000 posts come as standard (at time of writing), which normally isn’t enough for most medium-size organizations. A larger post allowance will likely need to be added to the plan.


Summary
Custom Sources
Blocked Content
SEARCH TOPIC SETTINGS
RULES
Name
Delete
Status
SAVE
ADD KEYWORDS RULE
Keywords
Inclusions
Exclusions
APPLY

Name: Dynamics 365 Apress

Category: Competitors

Owner: Sarah Critchley

Created: -

No search rules yet

Enter up to 15 keywords in a comma-separated list

Enter up to 15 inclusions in a comma-separated list

Keywords and inclusions must appear in the same:

○ Sentence ● Paragraph ○ Post

Enter up to 15 exclusions in a comma-separated list

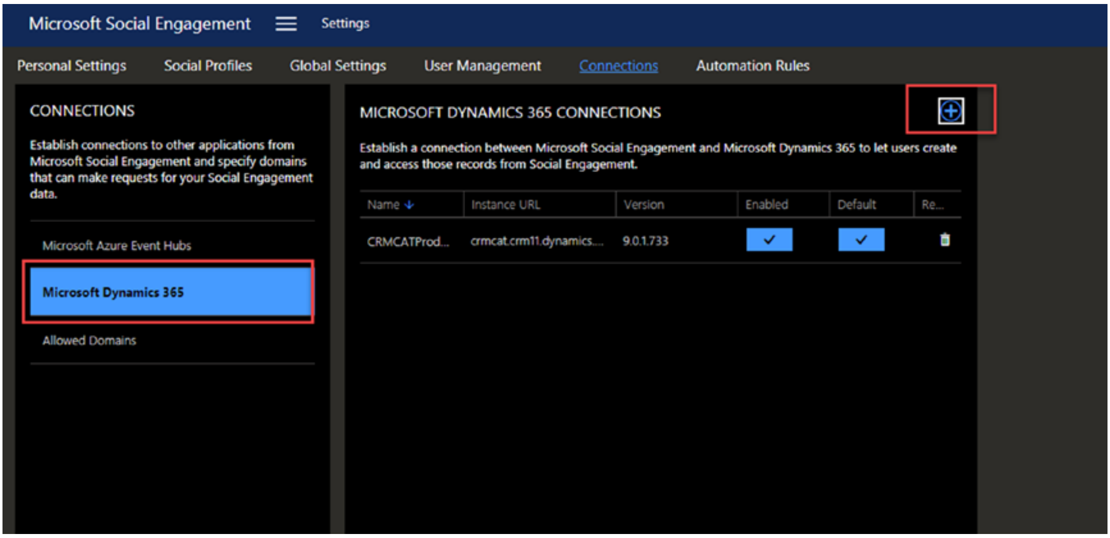
Figure 2-85. *Creating the Keyword rule by setting keywords, inclusions, and exclusions*

Setting Up Social Engagement: Connections

The next step is setting up the integration between Social Engagement and Dynamics 365 CE.

1. Navigate to the Connections tab, still in the “Settings” area of Microsoft Social Engagement.
2. From here, click “Microsoft Dynamics 365.” Click the plus icon in the top right-hand corner to create a new connection, as shown in Figure 2-86.
3. Set the connection type as “Online” (an “On-premises” option is also available) and then enter the URL itself or click “Check Instances” to populate a dropdown box of available Dynamics 365 CE instances within the authenticated tenant. This is shown in Figure 2-87.

4. Click "Continue." It will then take a few moments to create and test the new connection. Once completed, it will load the Dynamics 365 instance details with some admin information regarding the language, version, and record details.


Microsoft Social Engagement
Settings
Personal Settings
Social Profiles
Global Settings
User Management
Connections
Automation Rules
Microsoft Azure Event Hubs
Microsoft Dynamics 365
Allowed Domains

CONNECTIONS

Establish connections to other applications from Microsoft Social Engagement and specify domains that can make requests for your Social Engagement data.

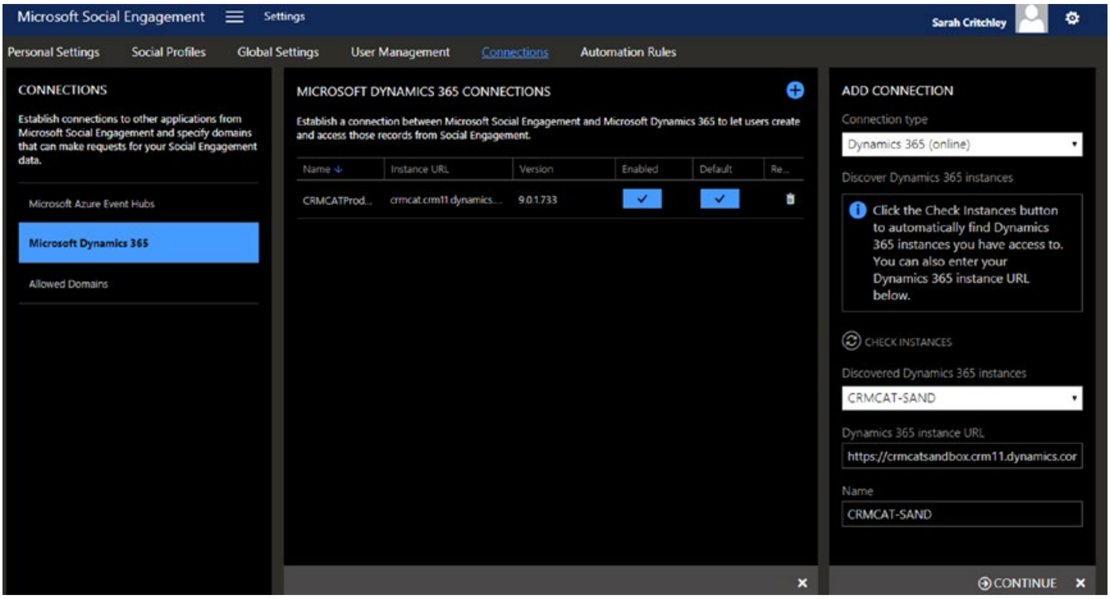
MICROSOFT DYNAMICS 365 CONNECTIONS

Establish a connection between Microsoft Social Engagement and Microsoft Dynamics 365 to let users create and access those records from Social Engagement.

Name ↓	Instance URL	Version	Enabled	Default	Re...
CRMCATProd...	crmcat.crm11.dynamics....	9.0.1.733	✓	✓	🗑

Figure 2-86. *Creating a new connection*

The connection is established, but the record-creation rules are not yet completed. The initial setup of cases are achieved, and more entities can be added here as required.


Microsoft Social Engagement
Settings
Sarah Critchley
Personal Settings
Social Profiles
Global Settings
User Management
Connections
Automation Rules
CONNECTIONS
Microsoft Azure Event Hubs
Microsoft Dynamics 365
Allowed Domains
MICROSOFT DYNAMICS 365 CONNECTIONS
ADD CONNECTION
CHECK INSTANCES
CONTINUE

Establish connections to other applications from Microsoft Social Engagement and specify domains that can make requests for your Social Engagement data.

Establish a connection between Microsoft Social Engagement and Microsoft Dynamics 365 to let users create and access those records from Social Engagement.

Name	Instance URL	Version	Enabled	Default	Re...
CRMCATProd...	crmcat.crm11.dynamics...	9.0.1.733	✓	✓	

Connection type: Dynamics 365 (online)

Discover Dynamics 365 instances

Click the Check Instances button to automatically find Dynamics 365 instances you have access to. You can also enter your Dynamics 365 instance URL below.

Discovered Dynamics 365 instances: CRMCAT-SAND

Dynamics 365 instance URL: https://crmcatsandbox.crm11.dynamics.cor

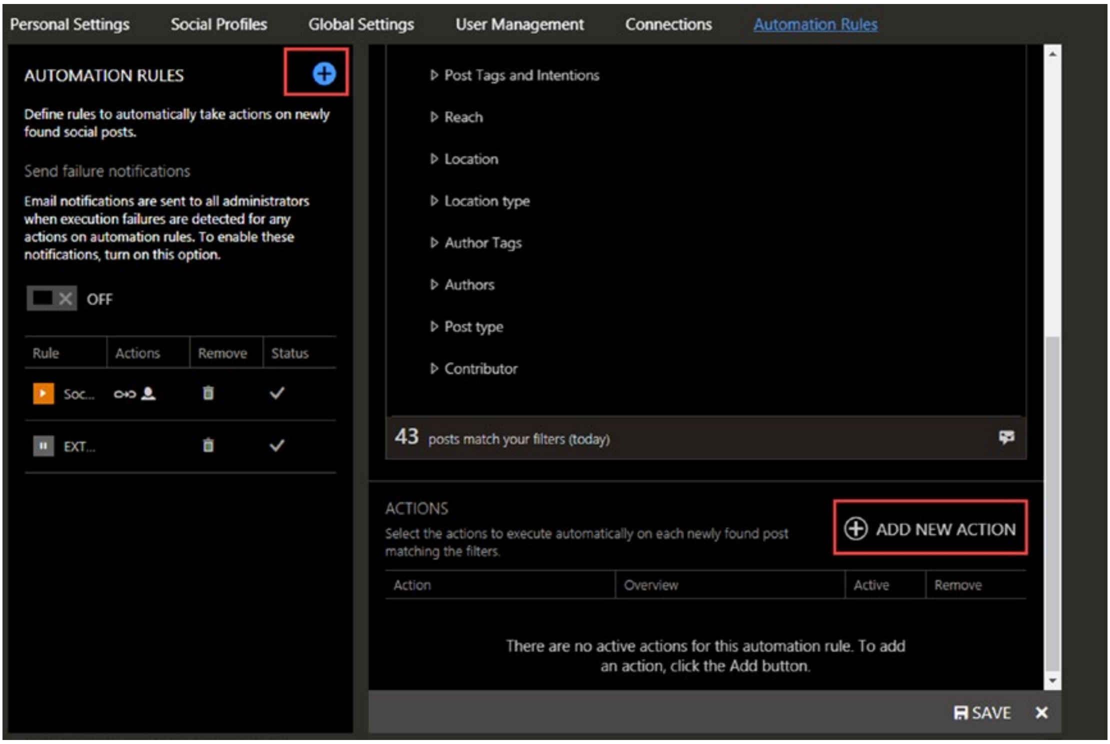
Name: CRMCAT-SAND

Figure 2-87. *Selecting the instances to connect with*

Setting Up Social Engagement: Automatic Creation Rules

At this point, it is important to realize what is currently set up. Social Engagement creates social profiles for accounts based on the posts it finds that match the search terms. It will also create social activities linked to those social profiles as they are created. At this point, no secondary record is created as part of this integration. This section will establish the final part of the setup for the Dynamics 365 CE Integration to create records such as Cases.

1. Navigate to the Automation Rules tab in the “Settings” area of the sitemap within the Social Engagement app.
2. Click the plus icon to create a new rule. The rule can be based on a previously set up search, or it can be based on new criteria, such as keywords, sentiment, and more.
3. Click “Add New Action,” as shown in Figure 2-88, and select “Link to Dynamics 365” (Figure 2-89). A new pane will appear on the right-hand side.


Personal Settings
Social Profiles
Global Settings
User Management
Connections
Automation Rules
AUTOMATION RULES
Send failure notifications
OFF
Rule
Actions
Remove
Status
Soc...
EXT...
Post Tags and Intentions
Reach
Location
Location type
Author Tags
Authors
Post type
Contributor
ACTIONS
ADD NEW ACTION
Action
Overview
Active
Remove
SAVE

Define rules to automatically take actions on newly found social posts.

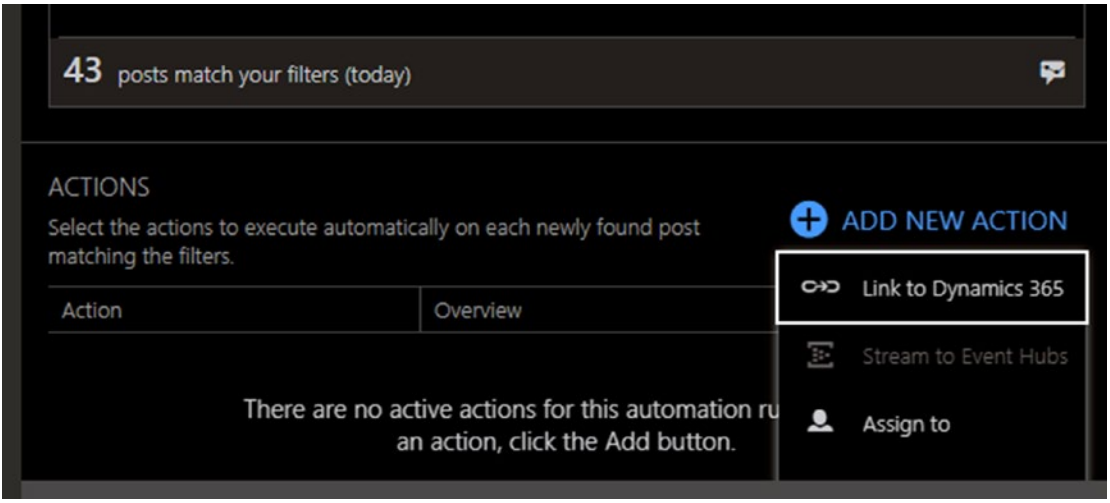
Email notifications are sent to all administrators when execution failures are detected for any actions on automation rules. To enable these notifications, turn on this option.

43 posts match your filters (today)

Select the actions to execute automatically on each newly found post matching the filters.

There are no active actions for this automation rule. To add an action, click the Add button.

Figure 2-88. *Setting up actions from Social Engagement to perform logic within Dynamics 365*


ACTIONS
ADD NEW ACTION
Action
Overview
Link to Dynamics 365
Stream to Event Hubs
Assign to

43 posts match your filters (today)

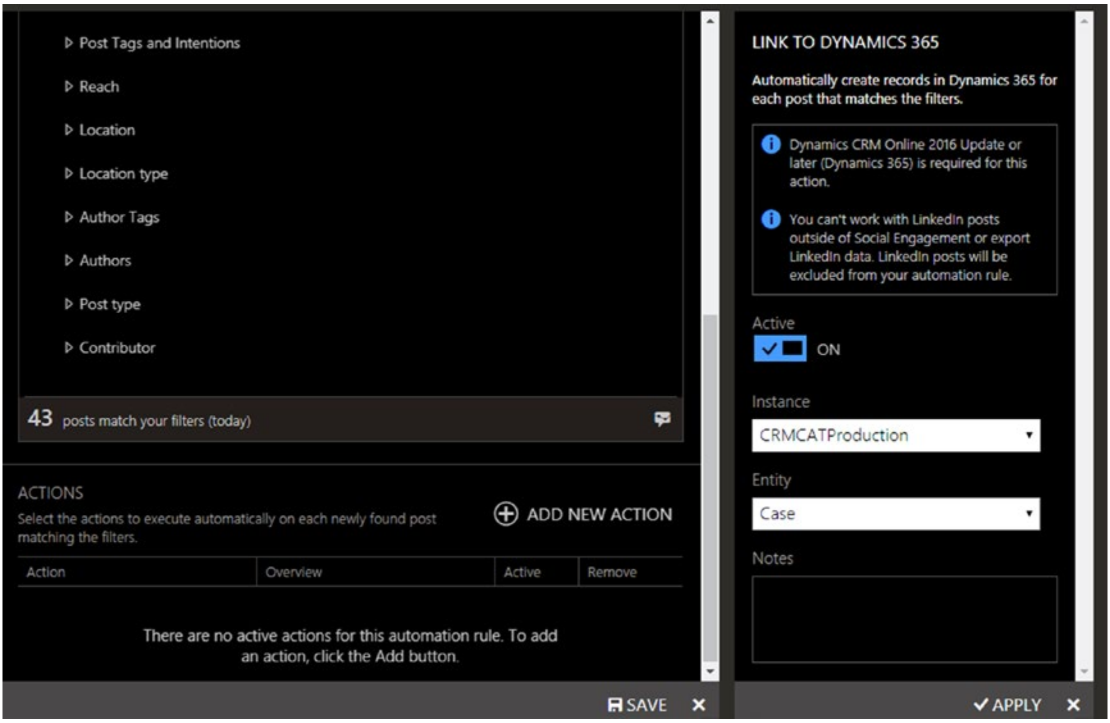
Select the actions to execute automatically on each newly found post matching the filters.

There are no active actions for this automation ru
an action, click the Add button.

Figure 2-89. *Setting up actions," from Social Engagement to perform logic within Dynamics 365*

4. Specify the instance, entity, and any notes you require and click "Apply." The action will appear in the grid. Click "Save."

   Linking Social Engagement to Dynamics 365 provides instructions on which instance to create the new record in and which entity should be created (Figure 2-90).


Post Tags and Intentions
Reach
Location
Location type
Author Tags
Authors
Post type
Contributor
ACTIONS
ADD NEW ACTION
Action
Overview
Active
Remove
SAVE
LINK TO DYNAMICS 365
APPLY

43 posts match your filters (today)

Select the actions to execute automatically on each newly found post matching the filters.

There are no active actions for this automation rule. To add an action, click the Add button.

Automatically create records in Dynamics 365 for each post that matches the filters.

Dynamics CRM Online 2016 Update or later (Dynamics 365) is required for this action.

You can't work with LinkedIn posts outside of Social Engagement or export LinkedIn data. LinkedIn posts will be excluded from your automation rule.

Active: ON

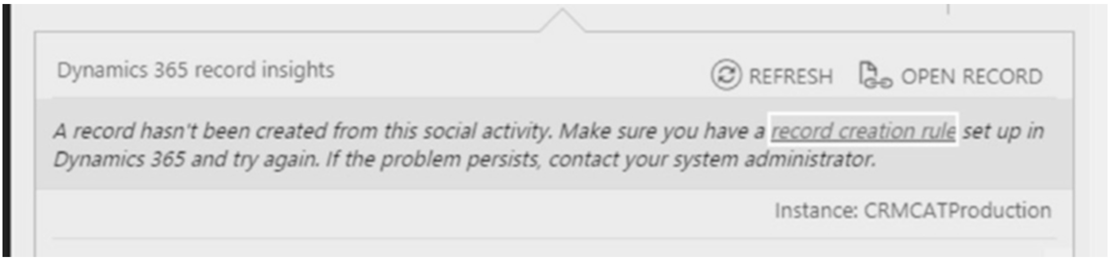
Instance: CRMCATProduction

Entity: Case

Notes:

***Figure 2-90.** Completing the connection with Dynamics 365 and Social Engagement*

The last step is to create the corresponding Automatic Creation Rule within the instance of Dynamics 365 CE with Social Engagement. If you try to manually link a record to Dynamics 365 CE without an activated creation rule at this point in the setup, an error will occur, as the integration isn't 100 percent complete; this error is shown in Figure 2-91.

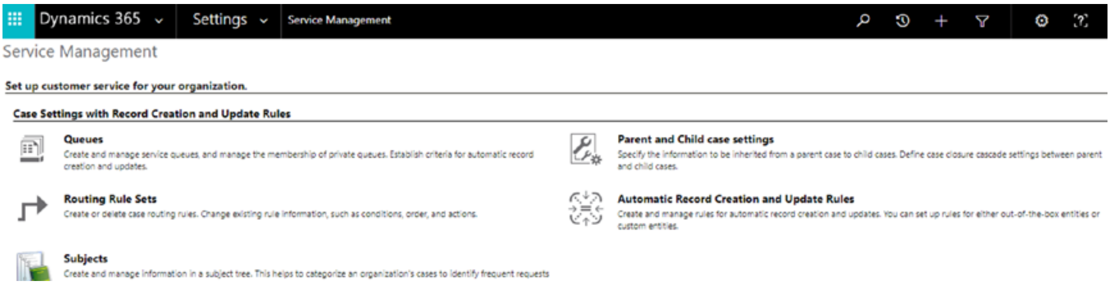


A record hasn't been created from this social activity. Make sure you have a record creation rule set up in Dynamics 365 and try again. If the problem persists, contact your system administrator.

Instance: CRMCATProduction

Figure 2-91. *Error stating the setup is not completed from Social Engagement when "Link in Dynamics 365" is clicked from a post*

5. To complete the final setup steps, in the Classic UI of Dynamics 365 CE, click "Automatic Record Creation and Update Rules" (Figure 2-92). As with other customer service configurations, it is expected that the creation of automatic creation and update rules will be possible within the Customer Service Hub app within the UI Client as part of the October 2018 release.



Set up customer service for your organization.

Case Settings with Record Creation and Update Rules

Queues
Create and manage service queues, and manage the membership of private queues. Establish criteria for automatic record creation and updates.

Parent and Child case settings
Specify the information to be inherited from a parent case to child cases. Define case closure cascade settings between parent and child cases.

Routing Rule Sets
Create or delete case routing rules. Change existing rule information, such as conditions, order, and actions.

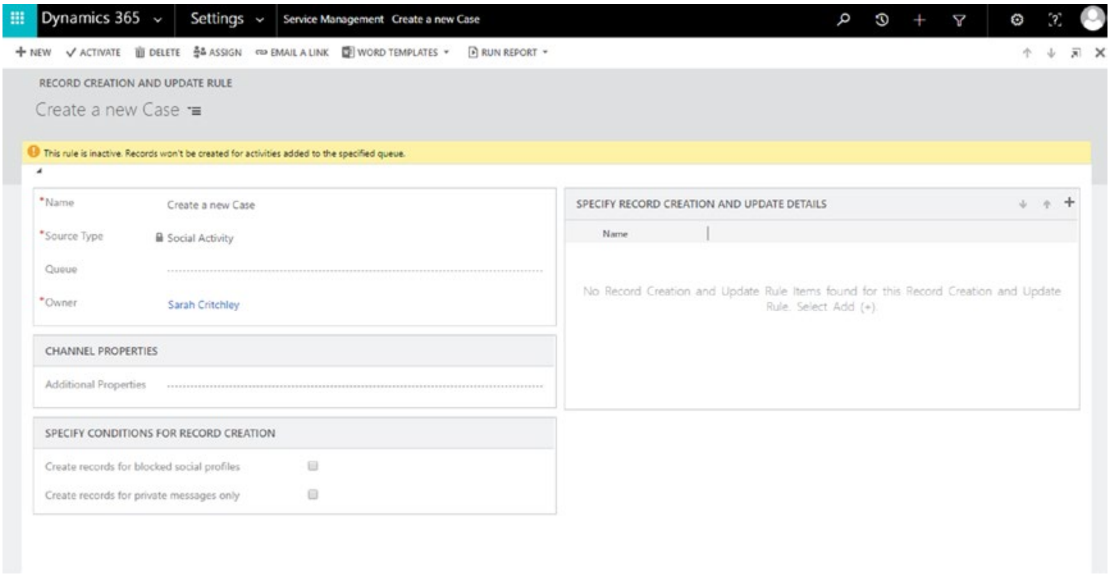
Automatic Record Creation and Update Rules
Create and manage rules for automatic record creation and updates. You can set up rules for either out-of-the-box entities or custom entities.

Subjects
Create and manage information in a subject tree. This helps to categorize an organization's cases to identify frequent requests

Figure 2-92. *Select "Automatic Record Creation and Update Rules" from within Dynamics 365*

6. Click "New." Specify the name and set the source type as "Social Activity," as shown in Figure 2-93. The source type can be one of several different activities, so take a moment to review the different available types of triggers that can be linked to automatic creation and update rules.

   As mentioned earlier, a social activity is created per social post, and this is the action within Dynamics 365 CE for which we want a case to be created.


Dynamics 365
Settings
Service Management Create a new Case
NEW
ACTIVATE
DELETE
ASSIGN
EMAIL A LINK
WORD TEMPLATES
RUN REPORT
RECORD CREATION AND UPDATE RULE
CHANNEL PROPERTIES
SPECIFY CONDITIONS FOR RECORD CREATION
SPECIFY RECORD CREATION AND UPDATE DETAILS
Name

Create a new Case

This rule is inactive. Records won't be created for activities added to the specified queue.

*Name Create a new Case
*Source Type Social Activity
Queue
*Owner Sarah Critchley

Additional Properties

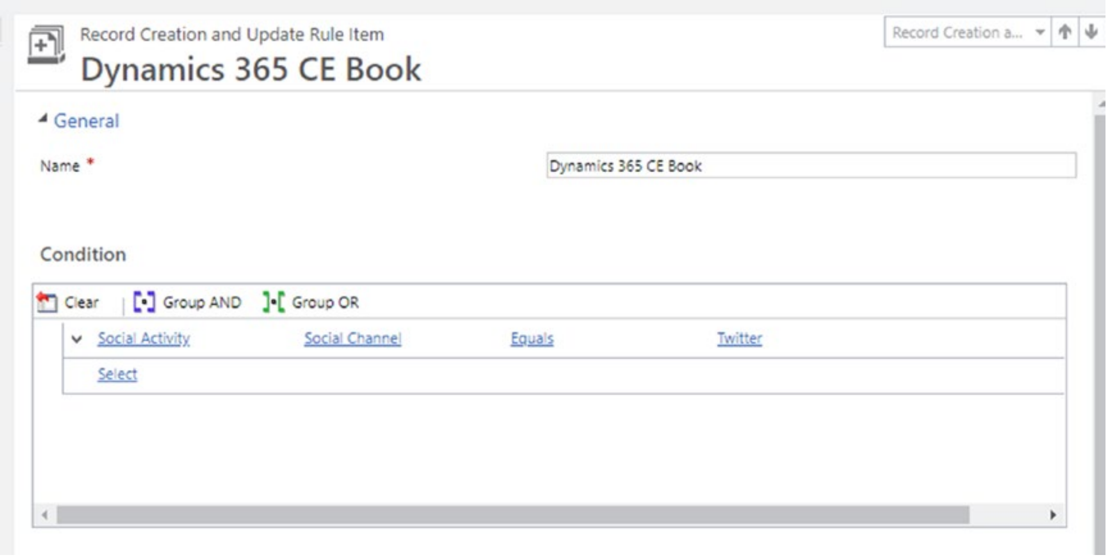
Create records for blocked social profiles ☐
Create records for private messages only ☐

No Record Creation and Update Rule Items found for this Record Creation and Update Rule. Select Add (+).

Figure 2-93. *Configuring an Automatic Record Creation and Update Rule*

You can also specify to create (or not) records for blocked profiles (as it won't by default) and only specify private messages for cases if organisations wish to filter the rules. The cases can also be automatically routed to a queue, which was discussed in the previous section.

7. Click the plus icon on the Detail sub-grid to create a new line for the rule. Specify the condition criteria, such as the channel type; it can be filtered even more by social profile and other related information, like an SLA. The example in Figure 2-94 is if the social activity has the social channel set to "Twitter" which is should be by default based on the integration with Social Engagement.


Record Creation and Update Rule Item
Dynamics 365 CE Book
Record Creation a...
General
Name *
Condition
Clear
Group AND
Group OR
Select

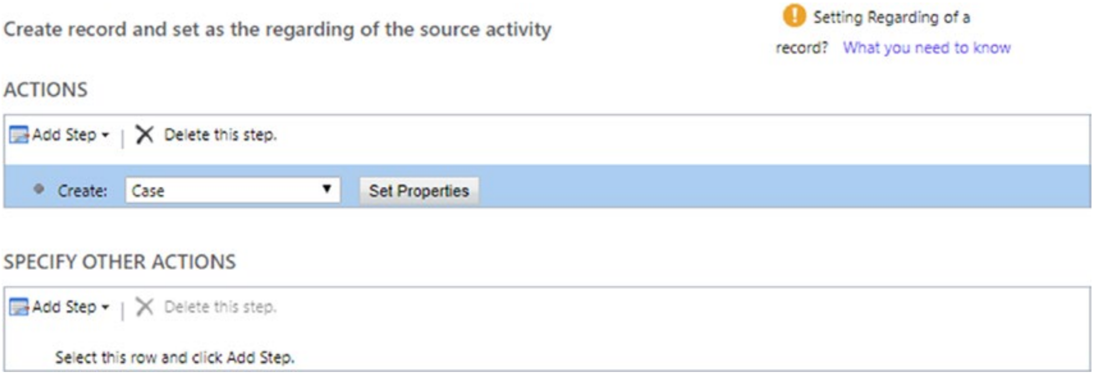
Name: Dynamics 365 CE Book

Social Activity | Social Channel | Equals | Twitter

Figure 2-94. Setting the conditions for the case-creation rule

8. The next step is to configure what actions occur if the trigger conditions are met. In this situation, a case is created. Add a new step under the "Actions" heading to create a new entity of type Case, as shown in Figure 2-95.

Note At the time of writing, a bug in 9.02 is that the 'Origin' option set on the 'Case' entity will never get set, as it's being set from Channel Properties, which is a different option set than that specified in the Origin within Dynamics 365 CE. If the rule is based on social channel, as it was in the previous example, I recommend manually setting this field in the workflow to that specific channel; e.g., in this case, Twitter.



Create record and set as the regarding of the source activity

Setting Regarding of a record? What you need to know

ACTIONS

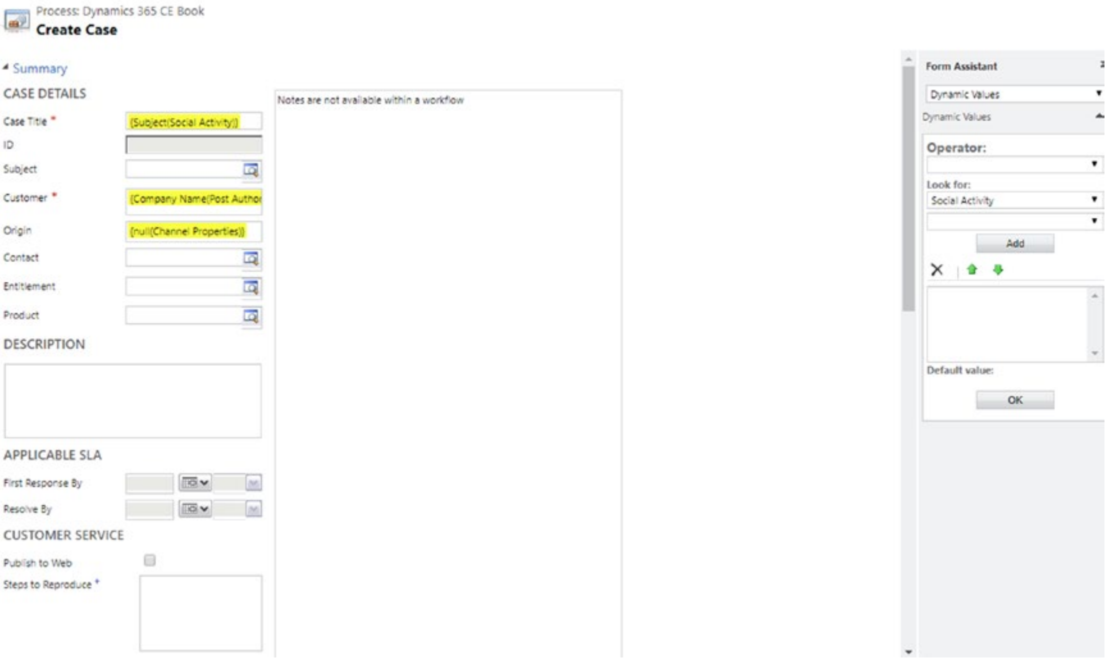
Create: Case

SPECIFY OTHER ACTIONS

Select this row and click Add Step.

Figure 2-95. *Creating a new record within the case-creation and update rule*

9. Click the Set Properties button and you will notice the details have already been prepopulated for the social post that would trigger the action, as seen in Figure 2-96.



Process: Dynamics 365 CE Book

Create Case

Summary

CASE DETAILS

Case Title * {Subject(Social Activity)}
ID
Subject
Customer * {Company Name(Post Autho
Origin {null(Channel Properties)}
Contact
Entitlement
Product

DESCRIPTION

APPLICABLE SLA

First Response By
Resolve By

CUSTOMER SERVICE

Publish to Web ☐
Steps to Reproduce *

Notes are not available within a workflow

Form Assistant

Dynamic Values

Operator:

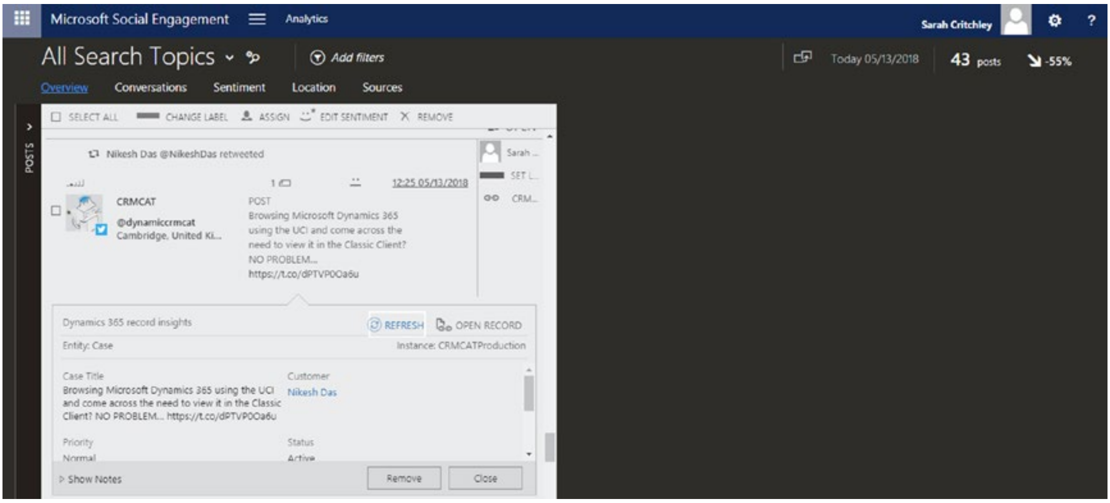
Look for: Social Activity

Default value:

Figure 2-96. *The properties are automatically set on the Case record*

Other actions can be added after the initial creation, if required.

To test these steps, navigate to the Microsoft Social Engagement app and expand the "Post" pane on the right-hand side of the screen from the dashboard. Select a record and then select "Link to CRM." It will create the Case record automatically, as specified by the preceding rules, giving details of that case while still within the context of the Social Engagement app (Figure 2-97).


Microsoft Social Engagement
Analytics
Sarah Critchley
All Search Topics
Add filters
Today 05/13/2018
43 posts
-55%
Overview
Conversations
Sentiment
Location
Sources
POSTS
☐ SELECT ALL
CHANGE LABEL
ASSIGN
EDIT SENTIMENT
REMOVE
Sarah ...
SET L...
CRM...
Dynamics 365 record insights
REFRESH
OPEN RECORD
Show Notes
Remove
Close

Nikesh Das @NikeshDas retweeted

CRMCAT
@dynamiccrmcat
Cambridge, United Ki...

12:25 05/13/2018

POST
Browsing Microsoft Dynamics 365 using the UCI and come across the need to view it in the Classic Client? NO PROBLEM... https://t.co/dPTVP0Oa6u

Entity: Case
Instance: CRMCATProduction

Case Title: Browsing Microsoft Dynamics 365 using the UCI and come across the need to view it in the Classic Client? NO PROBLEM... https://t.co/dPTVP0Oa6u
Customer: Nikesh Das
Priority: Normal
Status: Active

Figure 2-97. *Linking a post to Dynamics 365 from Social Engagement and seeing the case details*

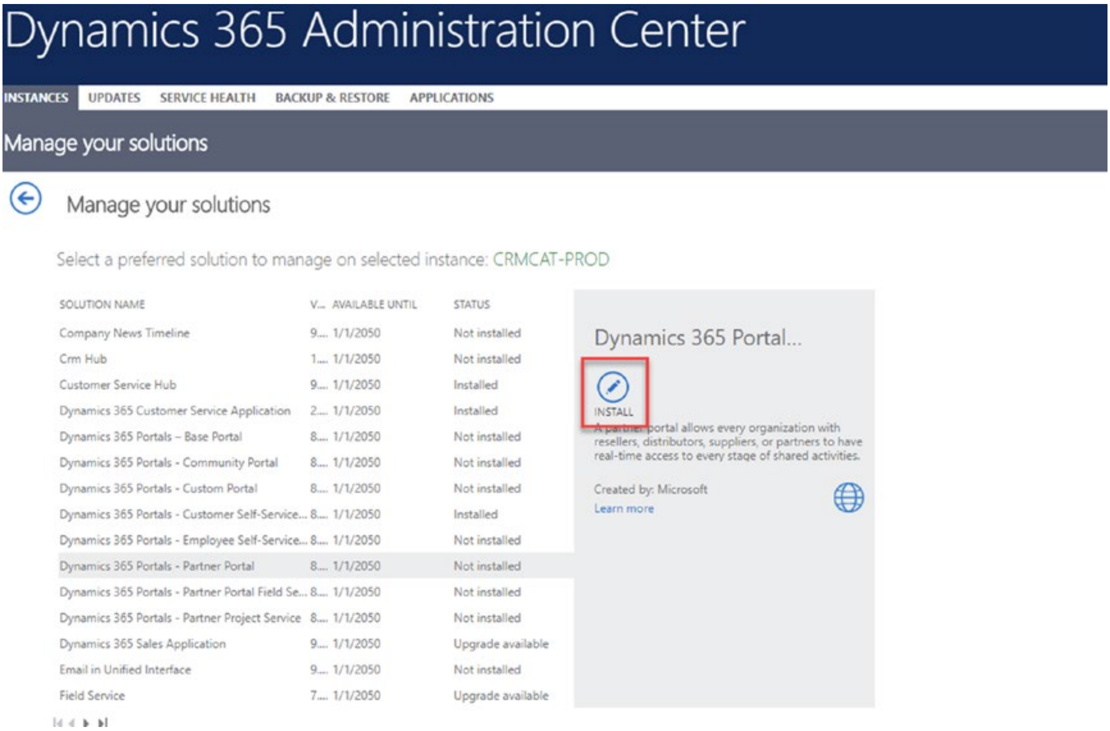
Microsoft Portals Configuration for Self-Service

Microsoft Portals are based on the framework from ADX Studios. Microsoft acquired ADX Studios in 2015 and developed their portal product further to create Microsoft Portals. Microsoft Portals for Dynamics 365 allows a user to achieve a configuration-focused approach to creating an external or internal portal environment connected to Dynamics 365 CE data as opposed to going through extensive development.

At the time of writing, Dynamics 365 CE Online has allowed for Enterprise Plan licenses to have a portal instance for free along with the plan, allowing organizations to take advantage of Microsoft Portals. There are templates for portals available for organizations to leverage as standard, such as the customer self-service portal, partner portal, and community forums. These templates use standard out-of-the-box entities to provide a framework so organizations can get started straight away and customize going forward depending on requirements.

Microsoft Portals require setup and minor configuration before they can be used. This section will cover the steps required to get started. The user completing the following steps will need administrative privileges within Office 365.

1. Navigate to the administrative area of Office 365 and go to Dynamics 365. Click the instance to configure the portal for and select "Solutions". This will load available applications that can be added, as shown in Figure 2-98.



Select a preferred solution to manage on selected instance: CRMCAT-PROD

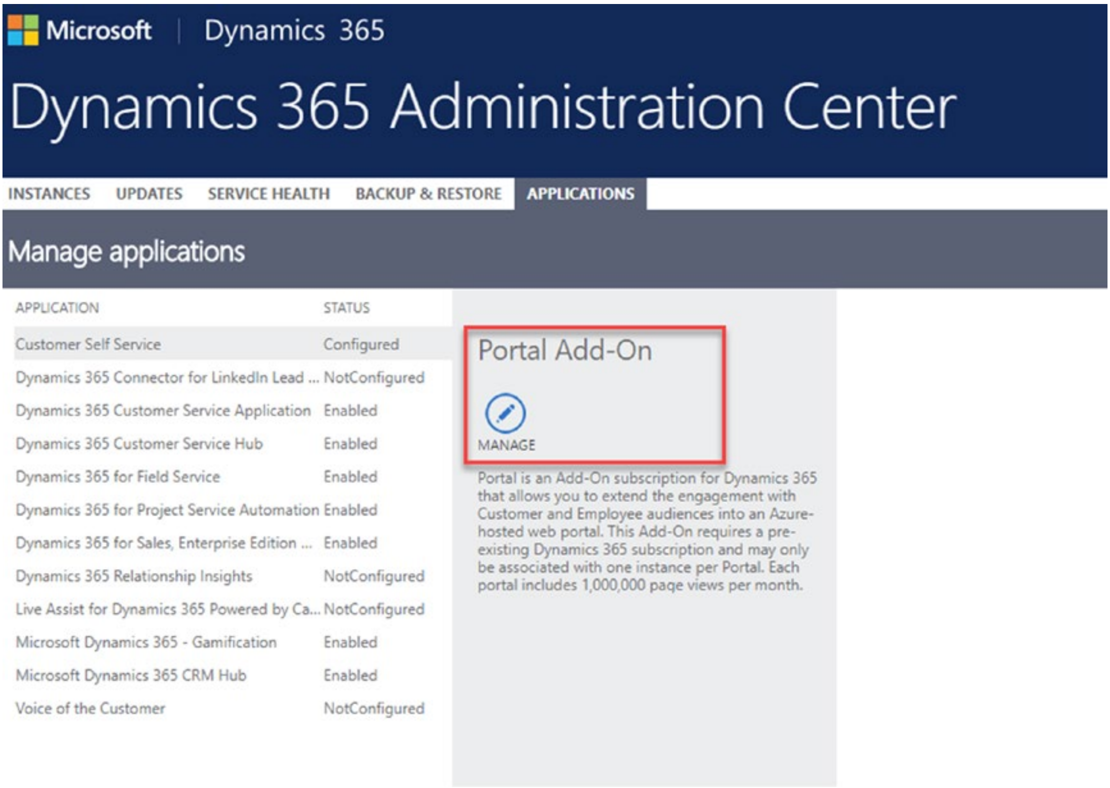
SOLUTION NAME	V...	AVAILABLE UNTIL	STATUS
Company News Timeline	9....	1/1/2050	Not installed
Crm Hub	1....	1/1/2050	Not installed
Customer Service Hub	9....	1/1/2050	Installed
Dynamics 365 Customer Service Application	2....	1/1/2050	Installed
Dynamics 365 Portals – Base Portal	8....	1/1/2050	Not installed
Dynamics 365 Portals - Community Portal	8....	1/1/2050	Not installed
Dynamics 365 Portals - Custom Portal	8....	1/1/2050	Not installed
Dynamics 365 Portals - Customer Self-Service...	8....	1/1/2050	Installed
Dynamics 365 Portals - Employee Self-Service...	8....	1/1/2050	Not installed
Dynamics 365 Portals - Partner Portal	8....	1/1/2050	Not installed
Dynamics 365 Portals - Partner Portal Field Se...	8....	1/1/2050	Not installed
Dynamics 365 Portals - Partner Project Service	8....	1/1/2050	Not installed
Dynamics 365 Sales Application	9....	1/1/2050	Upgrade available
Email in Unified Interface	9....	1/1/2050	Not installed
Field Service	7....	1/1/2050	Upgrade available

A partner portal allows every organization with resellers, distributors, suppliers, or partners to have real-time access to every stage of shared activities.

__Figure 2-98.__ Selecting "Install" on the Dynamics 365 Portals - Customer Self Service' within the Dynamics 365 instance to start setting up portals

2. Find the Dynamics 365 Customer Self-Service Portal from within the list and click "Install" (Figure 2-98). It can take up to an hour to install the solution within the environment.

3. Once completed, go to the Applications tab and click “Customer Self Service,” then “Manage” (Figure 2-99).

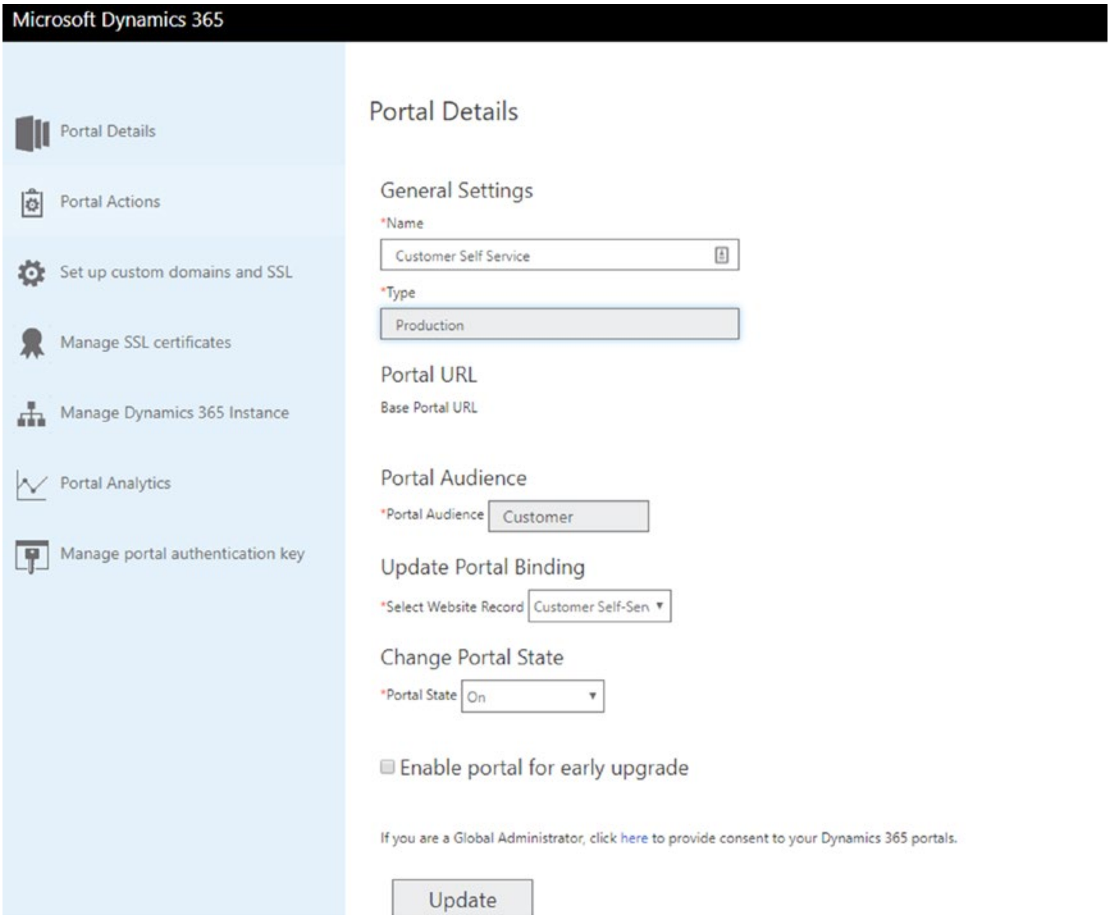


APPLICATION	STATUS
Customer Self Service	Configured
Dynamics 365 Connector for LinkedIn Lead ...	NotConfigured
Dynamics 365 Customer Service Application	Enabled
Dynamics 365 Customer Service Hub	Enabled
Dynamics 365 for Field Service	Enabled
Dynamics 365 for Project Service Automation	Enabled
Dynamics 365 for Sales, Enterprise Edition ...	Enabled
Dynamics 365 Relationship Insights	NotConfigured
Live Assist for Dynamics 365 Powered by Ca...	NotConfigured
Microsoft Dynamics 365 - Gamification	Enabled
Microsoft Dynamics 365 CRM Hub	Enabled
Voice of the Customer	NotConfigured

Portal is an Add-On subscription for Dynamics 365 that allows you to extend the engagement with Customer and Employee audiences into an Azure-hosted web portal. This Add-On requires a pre-existing Dynamics 365 subscription and may only be associated with one instance per Portal. Each portal includes 1,000,000 page views per month.

***Figure 2-99.** Installing the Portal Add-On within Applications tab after add-on has been provisioned*

This opens the Portal Management screen shown in Figure 2-100, where lots of different options can be configured, including the name of the portal, the instance it is connected to, and actions, such as restarting the portal and installing custom domain names and SSL certificates. This section of the book will only cover the basic setup of the portal so as to get started using the out-of-the-box system; however, there is further documentation by Microsoft that details how to extends the Portals product. Go ahead and configure the basic settings, including the Dynamics 365 CE linked URL.


Microsoft Dynamics 365
Portal Details
Portal Actions
Set up custom domains and SSL
Manage SSL certificates
Manage Dynamics 365 Instance
Portal Analytics
Manage portal authentication key
Update

Portal Details

General Settings

*Name: Customer Self Service

*Type: Production

Portal URL

Base Portal URL

Portal Audience

*Portal Audience: Customer

Update Portal Binding

*Select Website Record: Customer Self-Serv

Change Portal State

*Portal State: On

☐ Enable portal for early upgrade

If you are a Global Administrator, click here to provide consent to your Dynamics 365 portals.

Figure 2-100. *Configuring the portal name, URL, and template details*

Once set up and configured, the “Portals” section will be available within the sitemap of the Classic UI, where the portal is configured and customized to suit the needs of the organization (Figure 2-101).

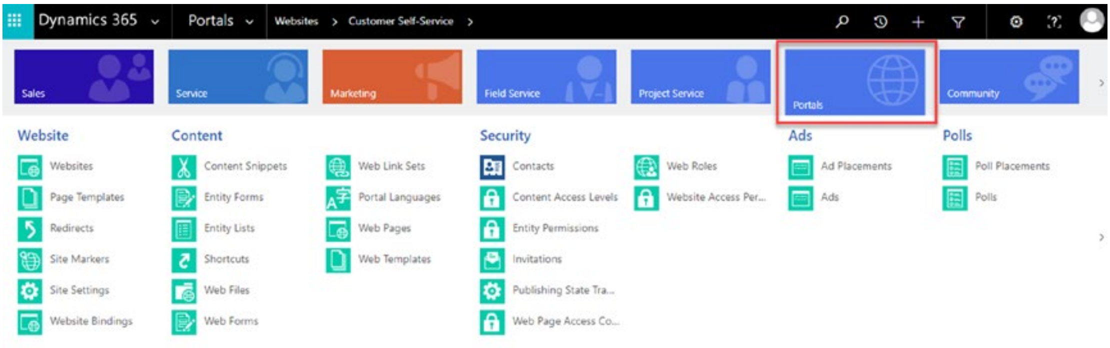

Dynamics 365
Portals
Websites > Customer Self-Service >
Sales
Service
Marketing
Field Service
Project Service
Portals
Community
Website
Websites
Page Templates
Redirects
Site Markers
Site Settings
Website Bindings
Content
Content Snippets
Entity Forms
Entity Lists
Shortcuts
Web Files
Web Forms
Web Link Sets
Portal Languages
Web Pages
Web Templates
Security
Contacts
Content Access Levels
Entity Permissions
Invitations
Publishing State Tra...
Web Page Access Co...
Web Roles
Website Access Per...
Ads
Ad Placements
Ads
Polls
Poll Placements
Polls

Figure 2-101. *Once the setup has completed, "Portals" will be added to the sitemap within the Classic Client*

Once the portal has been set up successfully, navigate to the URL specified in the "Base Portal URL" field on the Configuration screen in Figure 2-100 to see the new website. Alternatively, you can navigate to Classic Client ➤ Portals and select the portal to see the URL.

Microsoft Portals contain a basic styling template, and the branding should be similar to that of Figure 2-102, except be branded "Consoto." Which is the basic sample data provided by Microsoft.

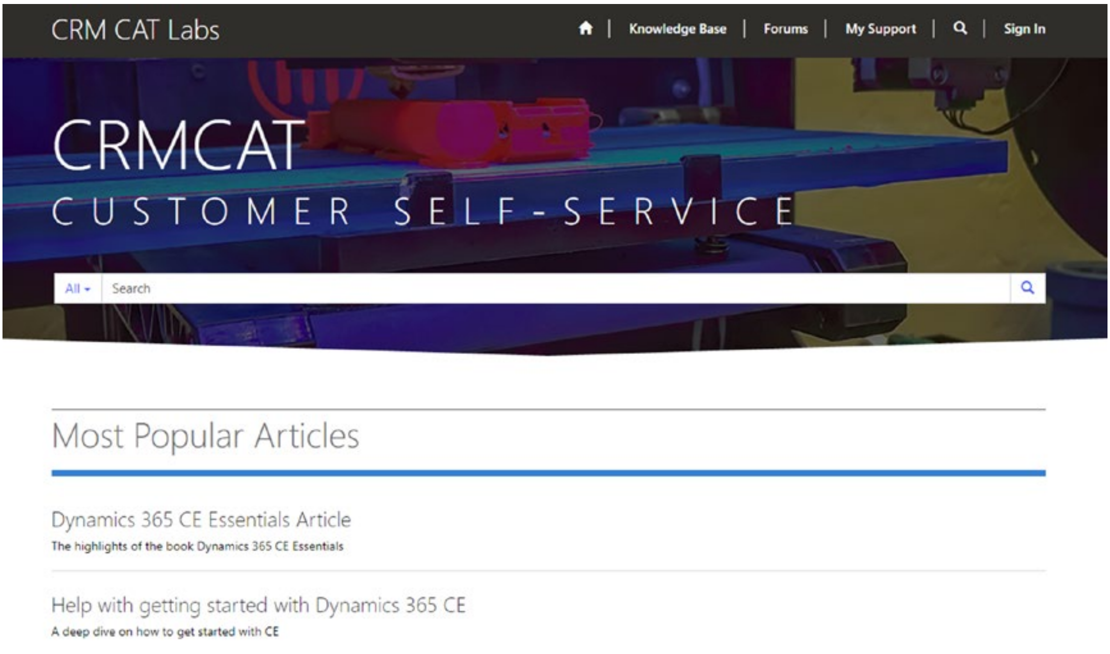
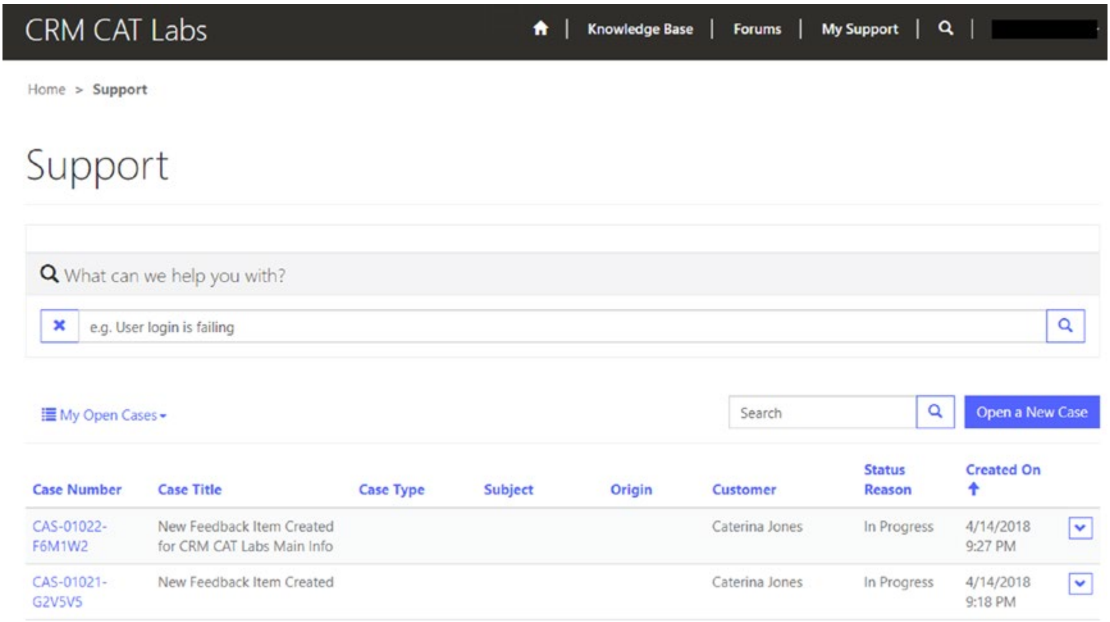

CRM CAT Labs
Knowledge Base
Forums
My Support
Sign In
CRMCAT
CUSTOMER SELF-SERVICE
All
Search
Most Popular Articles
Dynamics 365 CE Essentials Article
The highlights of the book Dynamics 365 CE Essentials
Help with getting started with Dynamics 365 CE
A deep dive on how to get started with CE

Figure 2-102. *The standard layout of a template for customer service*

There is a large amount of functionality available in the standard Customer Service Portal template which does not require any further customisations, which includes the following:

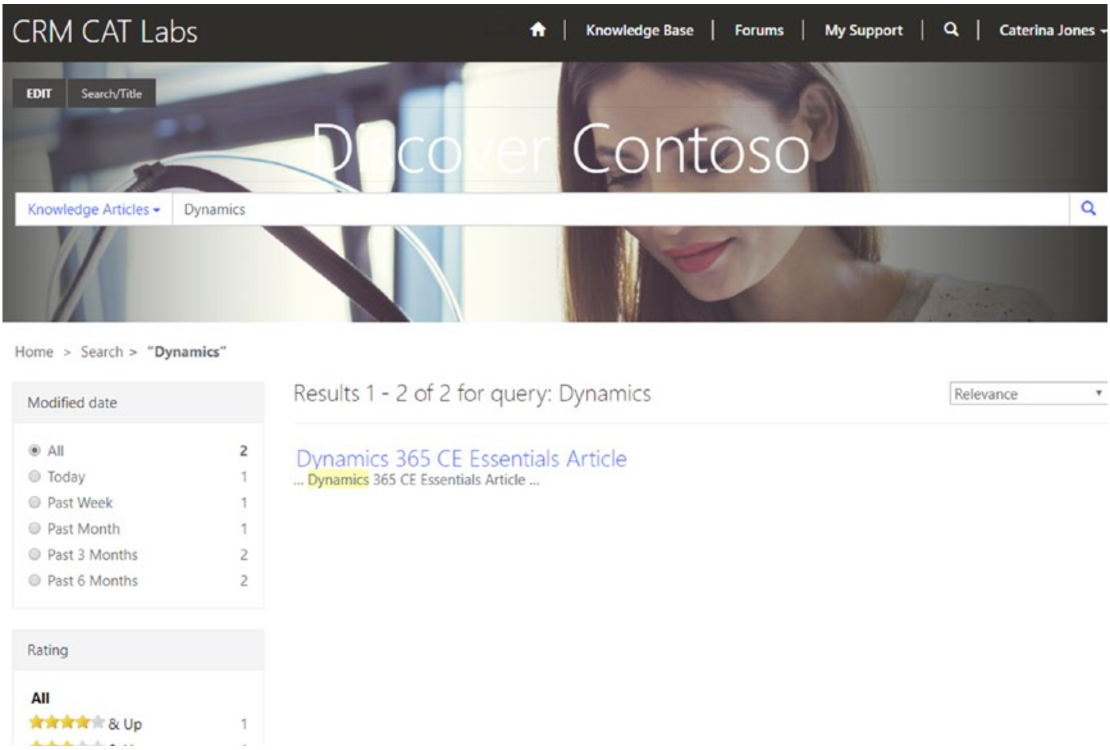
- Visibility of published knowledge articles
- Authentication through portal contacts, invitation functionalities, and portal user management
- Forums and the ability for signed-in users to create new posts
- Case management – Signed-in users to view related cases
- Case management – Signed-in users to make new cases; see Figure 2-103
- Case management – Signed-in users to edit existing cases (Close and Cancel)
- Account management from the portal


CRM CAT Labs
Knowledge Base
Forums
My Support
[redacted]
Home > Support
Support
What can we help you with?
e.g. User login is failing
My Open Cases
Search
Open a New Case

Case Number	Case Title	Case Type	Subject	Origin	Customer	Status Reason	Created On ↑
CAS-01022-F6M1W2	New Feedback Item Created for CRM CAT Labs Main Info				Caterina Jones	In Progress	4/14/2018 9:27 PM
CAS-01021-G2V5V5	New Feedback Item Created				Caterina Jones	In Progress	4/14/2018 9:18 PM

Figure 2-103. *Creating a case from the portal creates a Case record within Dynamics 365*

Organizations can use the Customer Self-Service Template, modifying the branding to get started using the capabilities of the portal, to enhance their customer engagement. Details on how to modify branding and other options within Microsoft Portals are included in the "Further Reading" section at the end of this chapter.


CRM CAT Labs
Knowledge Base
Forums
My Support
Caterina Jones
EDIT
Search/Title
Discover Contoso
Knowledge Articles
Dynamics
Home > Search > "Dynamics"
Modified date
All 2
Today 1
Past Week 1
Past Month 1
Past 3 Months 2
Past 6 Months 2
Rating
All
★★★★ & Up 1
Relevance

Results 1 - 2 of 2 for query: Dynamics

Dynamics 365 CE Essentials Article

... Dynamics 365 CE Essentials Article ...

Figure 2-104. *Viewing knowledge articles from the portal*

Summary

This chapter has covered an extensive amount of information on how to get started with the standard customer service capabilities that Dynamics 365 CE has to offer. It has covered how important it is to engage customers socially using the Microsoft Social Engagement platform, which together with the Case record is at the core of logging, managing, and solving customer queries and problems. Managing those engagements contractually and in a timely manner using entitlements and SLAs allows organizations to offer their service to customers and tailor the type of service they can offer while maintaining a core expectation of when they should be responded to and resolved by.

Using Microsoft Portals to offer a self-service feature to customers empowers customers to solve their own problems using knowledge articles and submit their own support tickets, taking the incoming service inquiries down from other channels such as the phone. By using these features together, organizations will be able to provide a high level of customer service and offer enhanced levels of capability compared to their competitors.

Chapter Tasks

At the end of every chapter, there will be a section that gives up to ten suggested tasks for you to complete within Dynamics 365 CE. These tasks will be based around the topics covered within the chapter and are aimed at expanding practical knowledge and applications regarding those topics that goes beyond reading about them.

1. Create a new SLA and Entitlement record for a customer.
2. Create a new Case record, linking the Entitlement record from the previous task to the Case record (and ensuring it is applicable).
3. Use the "Do Not Decrement Entitlement Terms" feature to not reduce the terms count on the entitlement.
4. Create a new queue.
5. Create a new routing rule.
6. Apply the routing rule to a case.
7. Create a new knowledge article and complete the business process flow, publishing the article at the end.
8. Search for the knowledge article within a case and link a knowledge article to the case.
9. Set up the Microsoft Social Engagement app by following the instructions within this chapter.
10. Set up the Customer Service template for Microsoft Portals and search for the knowledge article within the portal and log a case while logged in.

Further Reading

Unified Service Desk and Dynamics 365 CE (Microsoft, 2018). URL: `https://docs.microsoft.com/en-us/dynamics365/customer-engagement/unified-service-desk/unified-service-desk`

Microsoft Portals (Microsoft, 2018). URL: `https://docs.microsoft.com/en-us/dynamics365/customer-engagement/portals/configure-portal`

CHAPTER 3

Sales

Managing a sales pipeline can be challenging for organizations. Often, sales people need to have the latest information regarding their customers' interactions readily available. They need to be able to easily update the system and advance opportunities to the next stage of development, as well as provide accurate quotes and correct product estimates. This is done while providing a great service to potential customers and collaboratively working with their sales team and company to get what they need at the right time in the lifecycle. Sales is not about just pipeline management, but also the setup behind the scenes. The sales lifecycle is enhanced by the setup and use of the product catalog, which allows organizations to manage the products they sell from the front-line sales team and provide an integration point to back-office systems. This chapter will cover a deep dive into the sales lifecycle, what the product catalog is in Dynamics 365 CE and how to set it up.

Product Catalog Setup and Management

Dynamics 365 CE has a sales cycle that is underpinned by opportunities, quotes, and invoices. Products are an optional feature of Dynamics 365 CE, and the sales lifecycle can be utilized without defining specific products and relationships. That said, being aware of products and related functionality can assist organizations in knowing how best to implement the product catalog within Dynamics 365 CE and to keep it maintained with little effort while still providing enhancements to their sales lifecycle. As the sales cycle progresses through to an opportunity, then to a quote, order, and invoice, the products related to these records are retained throughout the lifecycle, providing reporting capabilities and suggestion features that are aimed at helping a sales person in their day-to-day role. Products are not the only thing within the catalog. It is made up of a framework that creates a structure allowing products to be available at different prices

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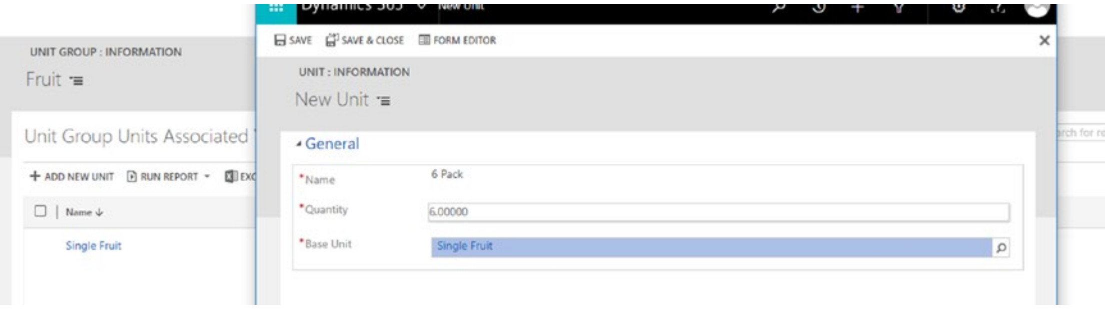
S. Critchley, *Dynamics 365 CE Essentials*, https://doi.org/10.1007/978-1-4842-3973-5_3

and price formulas, linking together with recommendations for cross-selling, up-sell opportunities, managing different units of sale, and discount availability.

The product catalog within Dynamics 365 CE does not formulate an actual warehousing solution, something Dynamics Finance and Operations would be more suited for. It would, however, be a great starting point for integration between a back-office system that is better suited for warehousing and inventory management and Dynamics 365 CE, thus adding value.

A product is defined as an item which is sold, this can be an actual physical item or a service, for example. A product record in Dynamics 365 CE can be seen as the ‘Product Definition.’ Instances of the products are associated on ‘Price Lists’ as Price List Items. Hierarchal family relationships can be created with products, which have a lineage of related properties that are inherited down across the children of the parent products, becoming uneditable and eliminating the possibility of more properties being added at each stage. They can, if required, be overridden. Properties can normally be attributes that need to be displayed on the product record at the sales stage. Examples could be “Color” or “Number of Rooms,” often determining characteristics that could assist in the picking and selling of the item.

A product is always associated with a *unit* and a *unit group*. Units manage the quantity and sizes of the product that ships. Unit groups always start out with a singular unit. In the following examples, the custom unit group “Crate” was created and has a unit quantity of 1. A second unit was associated with the unit group “Large Crate,” which has a base unit of “Crate” with a quantity of 2. Units can be easily built up to ensure the quantity of the product being sold is correct. Another example is fruit. Singular fruit can be sold, but it can also be sold as a six-pack or a twelve-pack, often seen in supermarkets. This example is shown in Figure 3-1.



*Name 6 Pack

*Quantity 6.00000

*Base Unit Single Fruit

Single Fruit

Figure 3-1. *Units and unit groups—using the base unit*

The diagram in Figure 3-2 is a basic entity relationship diagram that displays how the unit groups, units, product families, products, and other related record types fit together to be available on a price list. To summarize:

- A product instance is referred to as a *price list item*.
- A price list item is a specific instance of the product with a set cost.

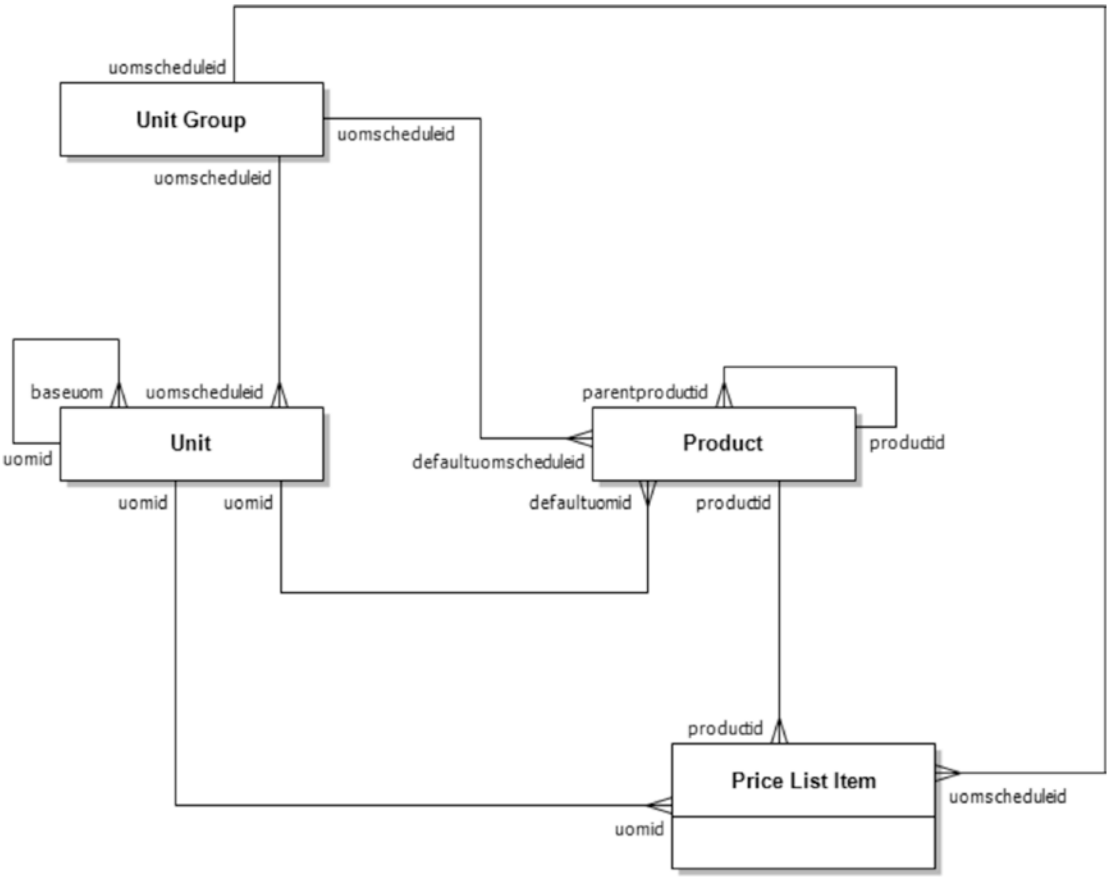

uomscheduleid
Unit Group
uomscheduleid
uomscheduleid
baseuom
uomscheduleid
uomid
Unit
uomid
uomid
parentproductid
Product
productid
defaultuomscheduleid
defaultuomid
productid
productid
Price List Item
uomscheduleid
uomid

***Figure 3-2.** Overview entity relationship diagram of the product and unit structure*

When a user creates an *opportunity*, a *price list* is specified. A price list item is linked to a specific price list. The user can then use all of the products available from the price list as *opportunity products* to sell as part of the sale. The next section will walk through how to set up an example product catalog using all of these configurations.

Creating a Family Hierarchy and Properties

This section will walk through how to get started with products and creating family hierarchies with properties.

Task: Create a family hierarchy.

1. Navigate to Classic UI ➤ Settings ➤ Product Catalog (Figure 3-3).

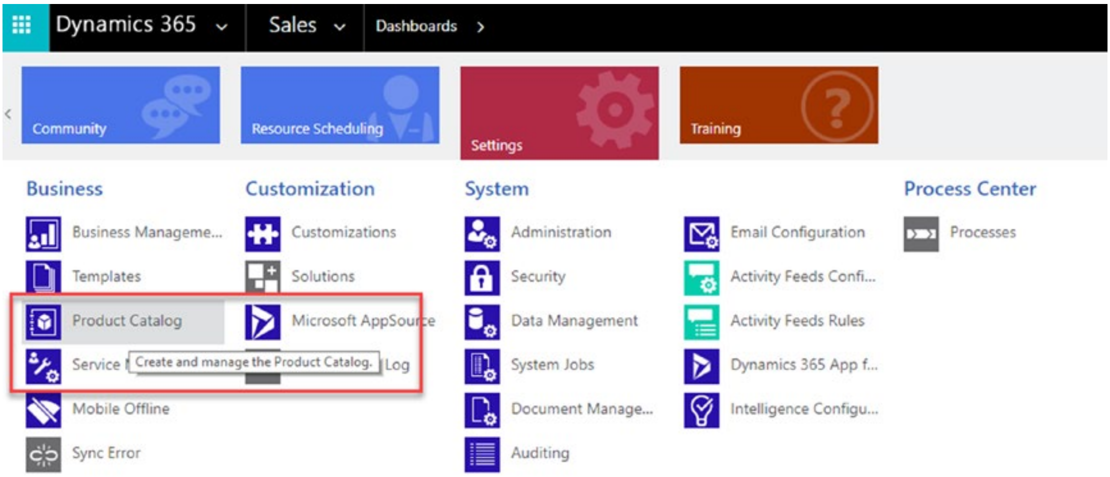
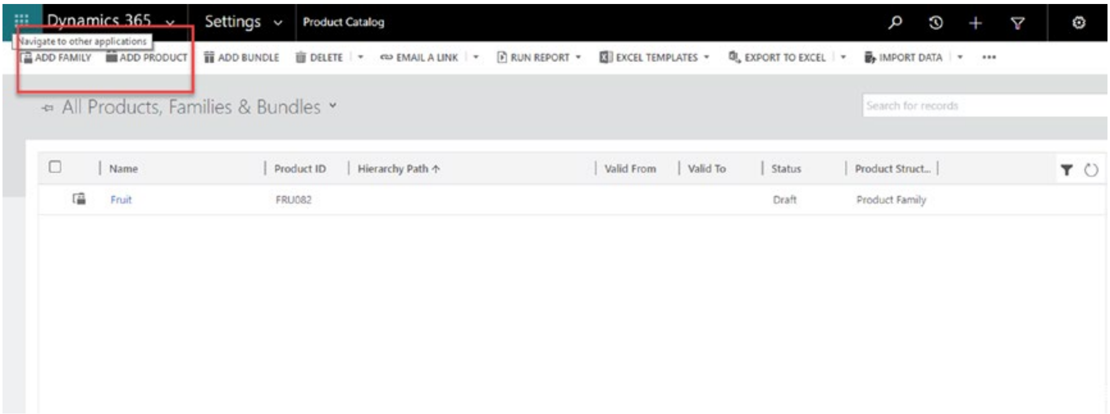

Dynamics 365
Sales
Dashboards
Community
Resource Scheduling
Settings
Training
Business
Business Manageme...
Templates
Product Catalog
Service
Create and manage the Product Catalog.
Mobile Offline
Sync Error
Customization
Customizations
Solutions
Microsoft AppSource
Log
System
Administration
Security
Data Management
System Jobs
Document Manage...
Auditing
Email Configuration
Activity Feeds Confi...
Activity Feeds Rules
Dynamics 365 App f...
Intelligence Configu...
Process Center
Processes

Figure 3-3. *Navigating to the product catalog from the sitemap within the Classic UI*

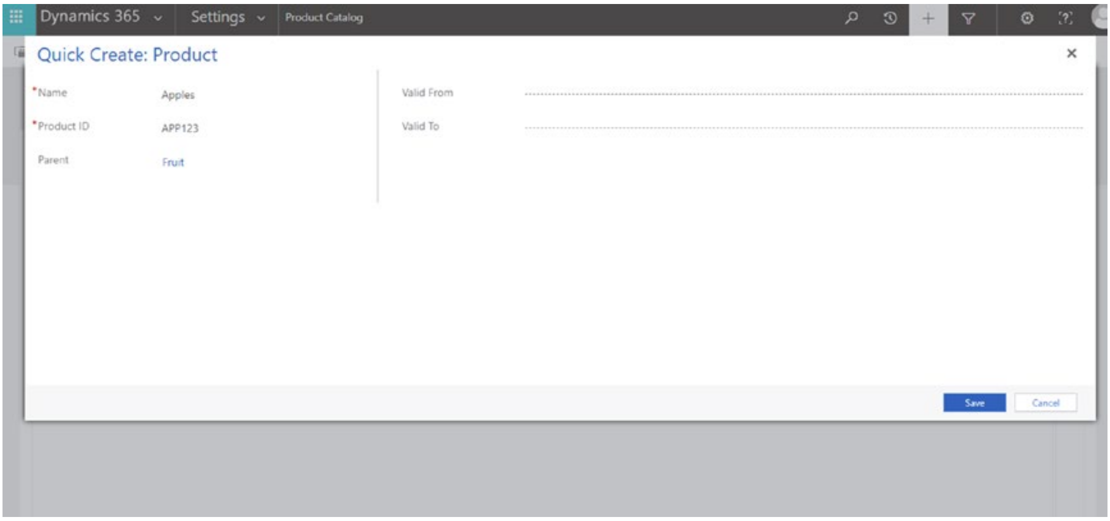
2. A product family needs to be created first to be associated with the product. Click "Add Family" to create a new record, as seen in Figure 3-4.


Dynamics 365
Settings
Product Catalog
Navigate to other applications
ADD FAMILY
ADD PRODUCT
ADD BUNDLE
DELETE
EMAIL A LINK
RUN REPORT
EXCEL TEMPLATES
EXPORT TO EXCEL
IMPORT DATA
All Products, Families & Bundles
Search for records

Name	Product ID	Hierarchy Path ↑	Valid From	Valid To	Status	Product Struct...
Fruit	FRU082				Draft	Product Family

Figure 3-4. *Click "Add Family" to create a blank Family record*

3. Type “Fruit” as the name, type a product ID (which must be unique), and save the record (Figure 3-5). (You can set expiry for the family if you wish so it can no longer be used for new products, but we won’t use that for now!). You should then be taken back to the Product List.



Quick Create: Product

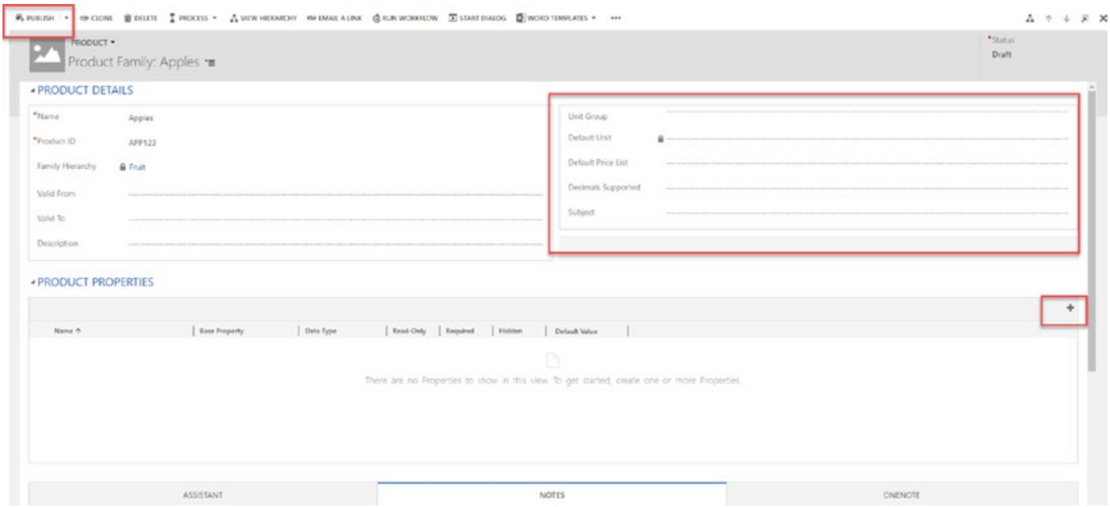
*Name Apples
*Product ID APP123
Parent Fruit
Valid From
Valid To

Figure 3-5. *Adding a new product*

4. Repeat these steps to create a second family, but instead call this “Apples,” and in the “Parent” lookup select the family created in the previous step: “Fruit.” Save the record and then open it from the view by double-clicking or selecting its name.

5. Publish the family by selecting the Publish button dropdown icon and then choosing “Publish Family,” as shown in Figure 3-6.

   Opening a product family could be confusing as it appears the same as a Product record. A family can be distinguished by its name, which has been appended with “Product Family:” at the beginning. Having a blank “Product Details” section is normal for a product family as a lot of the fields are relevant for only products.


PUBLISH
CLONE
DELETE
PROCESS
VIEW HIERARCHY
EMAIL A LINK
RUN WORKFLOW
START DIALOG
WORD TEMPLATES
PRODUCT
PRODUCT DETAILS
Valid From
Valid To
Description
Unit Group
Default Unit
Default Price List
Decimals Supported
Subject
PRODUCT PROPERTIES
Name
Base Property
Data Type
Read-Only
Required
Hidden
Default Value
ASSISTANT
NOTES
ONENOTE

Product Family: Apples

*Status Draft

*Name Apples

*Product ID APP123

Family Hierarchy Fruit

There are no Properties to show in this view. To get started, create one or more Properties.

Figure 3-6. *Product Family record*

6. Click the plus icon while on the Product Family record ("Fruit") on the Product Properties sub-grid. A new window should open. Properties enable users to create characteristics for the family and product.

7. Type the name of the property: "Color."

8. Leave the remaining configurations options as they are; however, it is important to understand what they do, which is summarized below:

   - **Read Only** – This means the property will not be editable within the product grid in the opportunity, quote, order, or invoice.

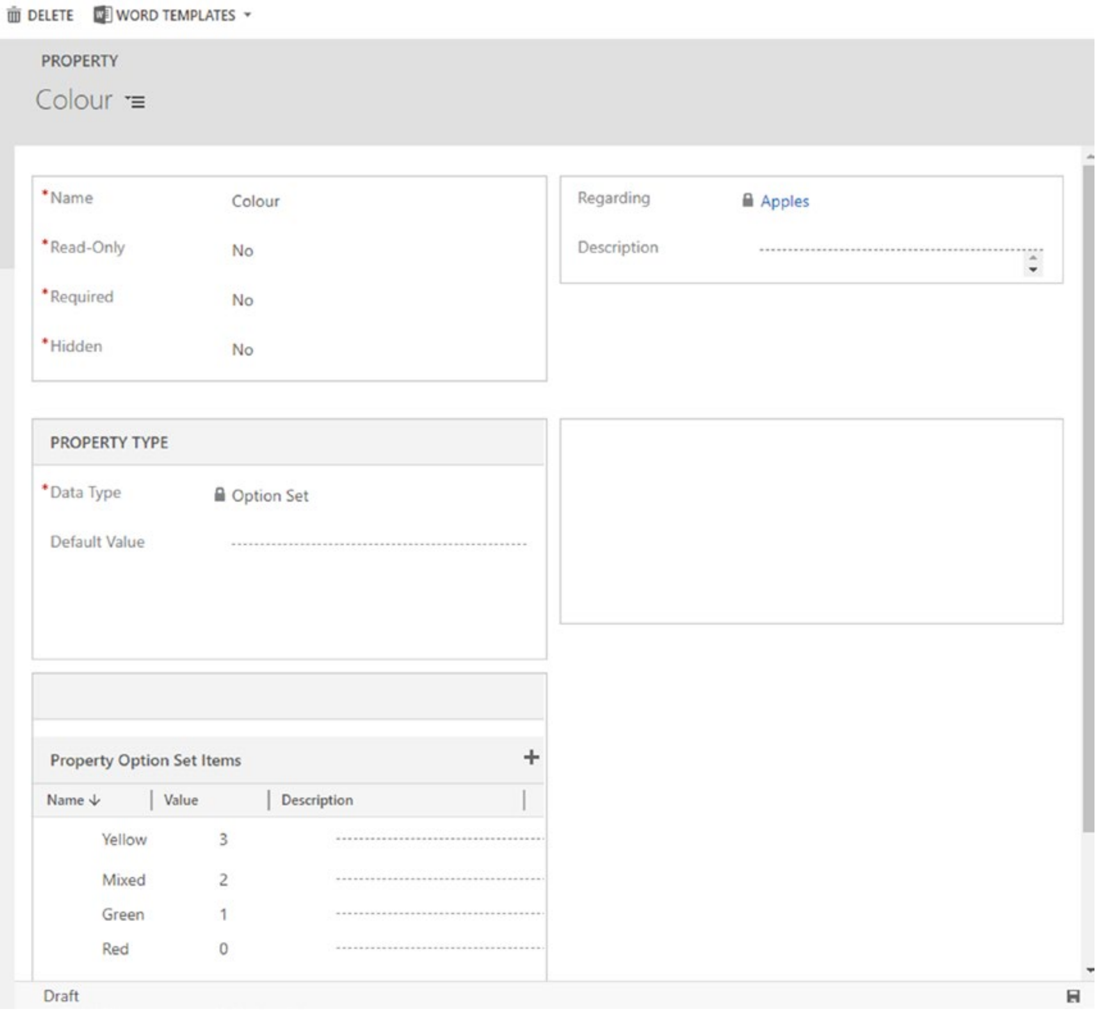
   - **Required** – It will be required for the user to complete the product grid in the opportunity, quote, order, or invoice.

   - **Hidden** – It will not show up within the product property editor when adding product-line items in the opportunity, quote, order, or invoice.

9. Set the "Data Type" field to "Option Set." These field options relate to the types of fields this property is referring to and would need to be completed when adding the product-line items on an opportunity, quote, order, or invoice.

10. Save the record, which will enable the sub-grid to add option-set items for the "Color" field. Add a small number of options; e.g., "Yellow," "Red," and "Blue."

11. Once completed, save and close the record. See Figure 3-7.


DELETE
WORD TEMPLATES
PROPERTY
Colour
PROPERTY TYPE
Property Option Set Items
Draft

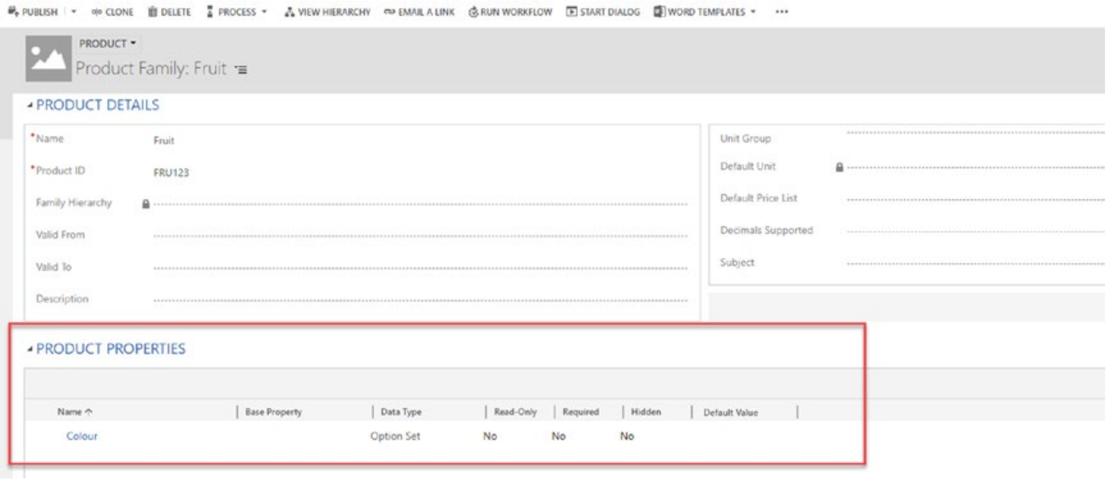
*Name	Colour
*Read-Only	No
*Required	No
*Hidden	No
Regarding	Apples
Description	
*Data Type	Option Set
Default Value	

Name	Value	Description
Yellow	3	
Mixed	2	
Green	1	
Red	0	

Figure 3-7. *The product Property form*

In the current example, the “Fruit” family now has a product property. This property will be inherited by the Apple family, which is visible when you navigate to the Apple Product Family record, as shown in Figure 3-8. It will be marked as an inherited property, and, while it cannot be deleted, it can be overwritten or hidden.

All products associated with the level of hierarchy will inherit those properties when they are associated with the family, and users will be prompted to complete those properties when associating product-line items within an Opportunity, Quote, Order, or Invoice record. Properties must be created at the family level and cannot be created at the product level.


PUBLISH
CLONE
DELETE
PROCESS
VIEW HIERARCHY
EMAIL A LINK
RUN WORKFLOW
START DIALOG
WORD TEMPLATES
PRODUCT
PRODUCT DETAILS
Family Hierarchy
Valid From
Valid To
Description
Unit Group
Default Unit
Default Price List
Decimals Supported
Subject
PRODUCT PROPERTIES

Product Family: Fruit

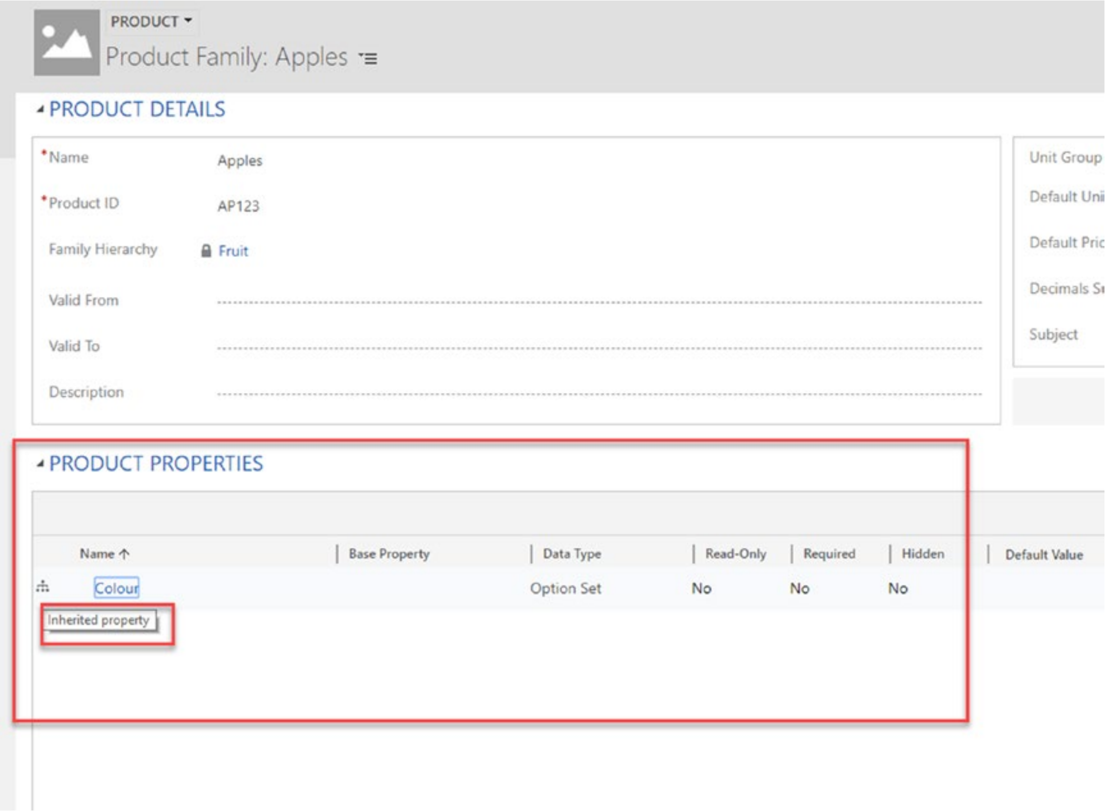
*Name Fruit
*Product ID FRU123

Name	Base Property	Data Type	Read-Only	Required	Hidden	Default Value
Colour		Option Set	No	No	No	

Figure 3-8. *Inherited product property*

Products can be used without an association with a family hierarchy; however, they cannot take advantage of the Properties feature since this is held at the Family record level (Figure 3-9).

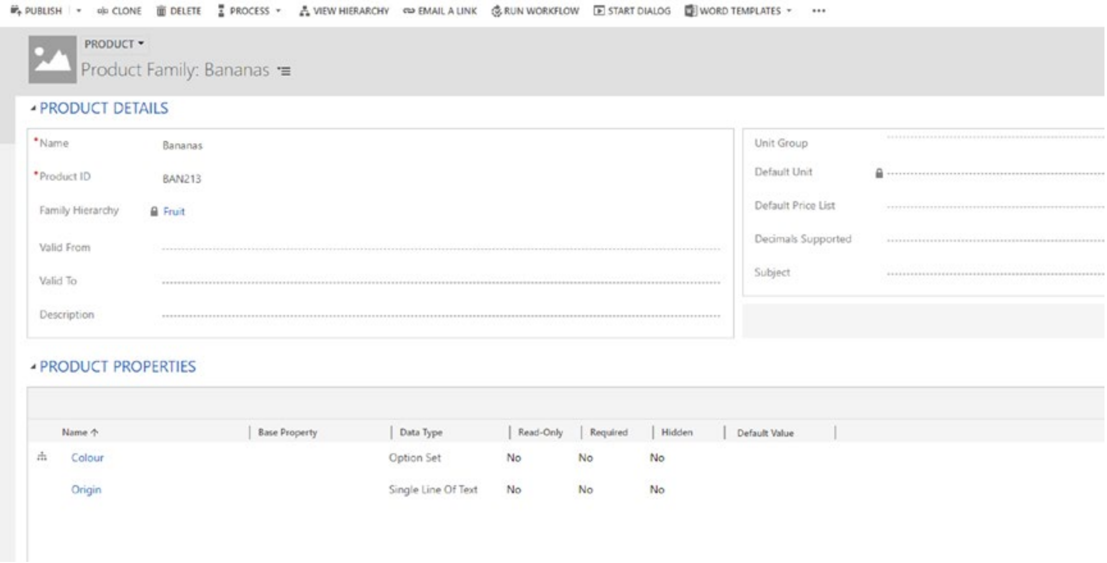
1. Create another product family called “Bananas” and associate the product family with the “Fruit” family.
2. Create one property at this level called “Origin” of type “Single Line Of Text” (Figure 3-10).


PRODUCT
Product Family: Apples
PRODUCT DETAILS
Unit Group
Default Uni
Default Pric
Decimals Su
Subject
PRODUCT PROPERTIES
Inherited property

*Name: Apples
*Product ID: AP123
Family Hierarchy: Fruit
Valid From
Valid To
Description

Name	Base Property	Data Type	Read-Only	Required	Hidden	Default Value
Colour		Option Set	No	No	No	

Figure 3-9. *Inherited property on the family level*

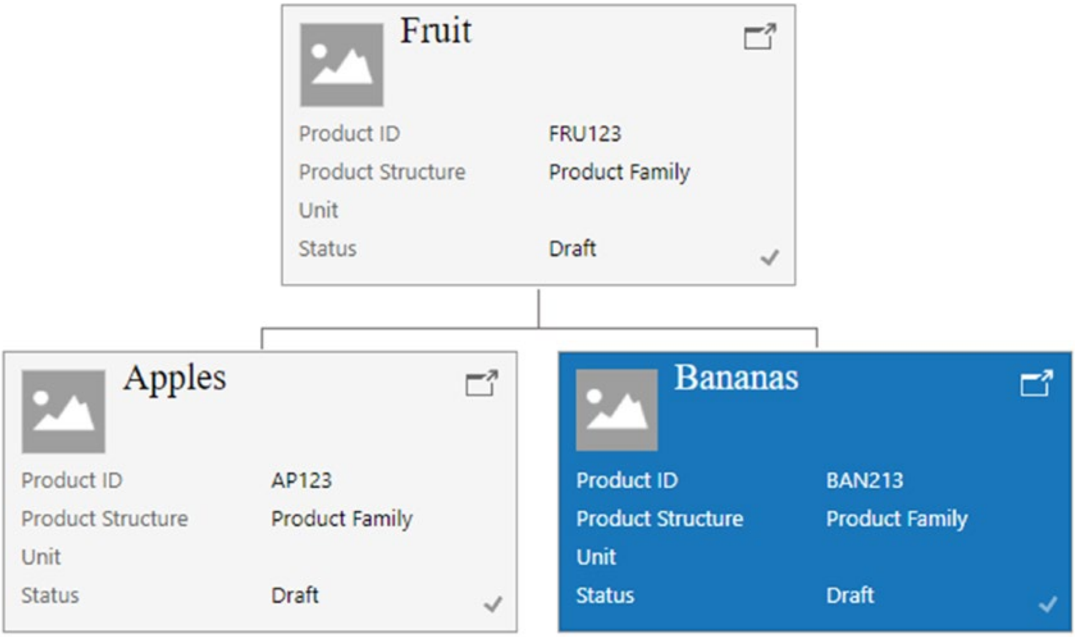

PUBLISH
CLONE
DELETE
PROCESS
VIEW HIERARCHY
EMAIL A LINK
RUN WORKFLOW
START DIALOG
WORD TEMPLATES
PRODUCT
Product Family: Bananas
PRODUCT DETAILS
Unit Group
Default Unit
Default Price List
Decimals Supported
Subject
PRODUCT PROPERTIES

*Name: Bananas
*Product ID: BAN213
Family Hierarchy: Fruit
Valid From
Valid To
Description

Name	Base Property	Data Type	Read-Only	Required	Hidden	Default Value
Colour		Option Set	No	No	No	
Origin		Single Line Of Text	No	No	No	

Figure 3-10. *New product family with one inherited property*

By following the examples in the preceding steps, you should have created the hierarchy seen in Figure 3-11. This can be opened in Dynamics 365 by selecting "View Hierarchy" within a Family record. The "Origin" product property is only available on "Bananas" and not on "Apples." This is a local field and will only be visible on this record, or on child records that have "Bananas" referenced as a parent.



Fruit

Product ID	FRU123
Product Structure	Product Family
Unit	
Status	Draft

Apples

Product ID	AP123
Product Structure	Product Family
Unit	
Status	Draft

Bananas

Product ID	BAN213
Product Structure	Product Family
Unit	
Status	Draft

Figure 3-11. *Product family hierarchy*

Creating Products Linked to Product Families

Now that a small product family structure has been created in the previous steps, it's time to associate products with those families and see how they link with the associated properties.

1. Navigate to the Products view from the product catalog and click "Add Product" (Figure 3-12).

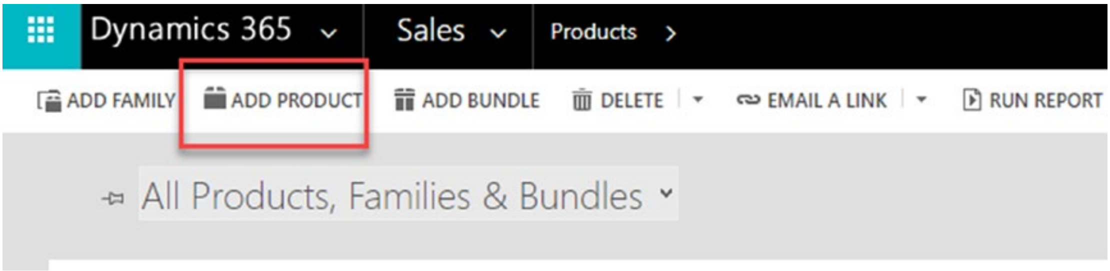

Dynamics 365
Sales
Products
ADD FAMILY
ADD PRODUCT
ADD BUNDLE
DELETE
EMAIL A LINK
RUN REPORT
All Products, Families & Bundles

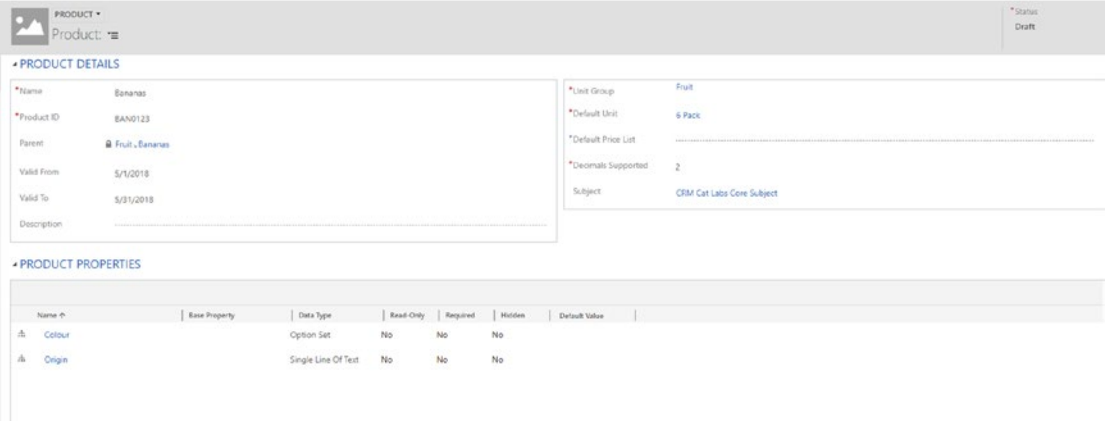
Figure 3-12. *Adding a new product*

2. Complete the details within the form. In the "Product" lookup, ensure "Banana" is selected as the family to associate this with as seen in the 'Parent' field. Like product families, products can expire; enter start and end dates to set up the scheduling and expiry engine automatically so that it cannot be used when it is no longer valid in the business.

3. Click "New" on the lookup for "Unit Group." Create the unit group and group as described here:

   - **Unit Group** – Name: Fruit
   - **Unit Group Base Unit** – Name: Single Fruit

   This creates a unit group called "Fruit" and a unit called "Single Fruit" that has the quantity of 1. This is the base unit and the lowest amount of units this product is sold by.


PRODUCT
Product:

*Status
Draft

PRODUCT DETAILS

*Name	Bananas
*Product ID	BAN0123
Parent	Fruit , Bananas
Valid From	5/1/2018
Valid To	5/31/2018
Description	

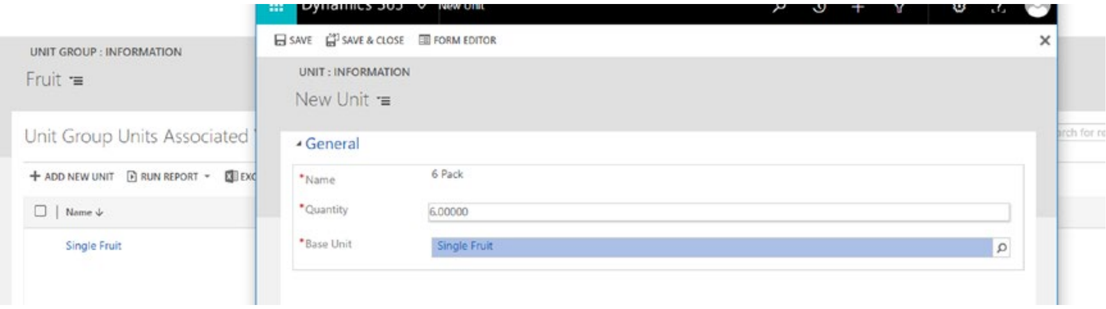
*Unit Group	Fruit
*Default Unit	6 Pack
*Default Price List	
*Decimals Supported	2
Subject	CRM Cat Labs Core Subject

PRODUCT PROPERTIES

Name ↑	Base Property	Data Type	Read-Only	Required	Hidden	Default Value
Colour		Option Set	No	No	No	
Origin		Single Line Of Text	No	No	No	

Figure 3-13. *Adding a new product*

4. Create a second unit associated with the unit group “Fruit” called “6 Pack” and enter quantity as “6” and base unit as “Single Fruit,” as seen in Figures 3-13 and 3-14.


UNIT GROUP : INFORMATION
Fruit
Unit Group Units Associated
ADD NEW UNIT
RUN REPORT
Name
Single Fruit
SAVE
SAVE & CLOSE
FORM EDITOR
UNIT : INFORMATION
New Unit
General

*Name 6 Pack
*Quantity 6.00000
*Base Unit Single Fruit

Figure 3-14. *Creating a unit group and units*

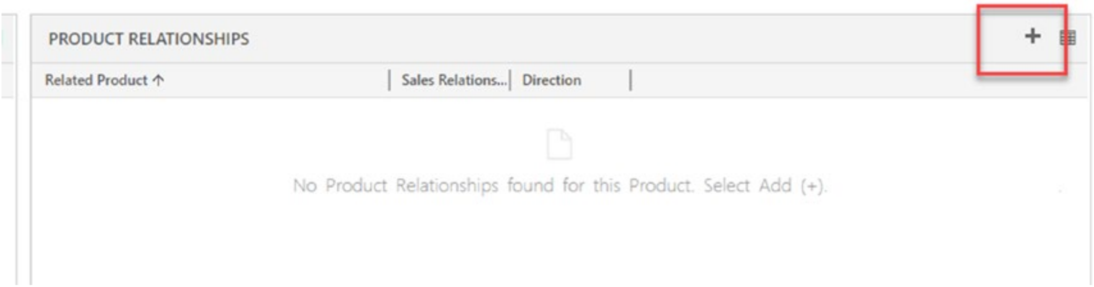
5. Complete the Product record by setting the decimals in the ‘Decimals Supported’ field (normally 2) and the subject if required (as discussed in an earlier chapter).
6. Save the record.

Upon saving the record, the Product Properties sub-grid will be populated with the two properties set up in the earlier steps. This demonstrates the inheritance the product has obtained from being associated with the linked product family. Following the previous steps, create another two products, “Oranges” and “Pears,” in the same way to use in the next steps.

Product Relationships

Products can display relationships to other products based on suggestions Dynamics 365 CE can give a user when adding a product line within a Sales record, such as an opportunity. This is particularly important for users, who can be notified which products are out of stock or unavailable or which products could earn more money for an up-sell, for example. This section will cover how to set up these product relationships.

1. Open the Product record created in the previous example and click the plus icon in the Product Relationship sub-grid (Figure 3-15).



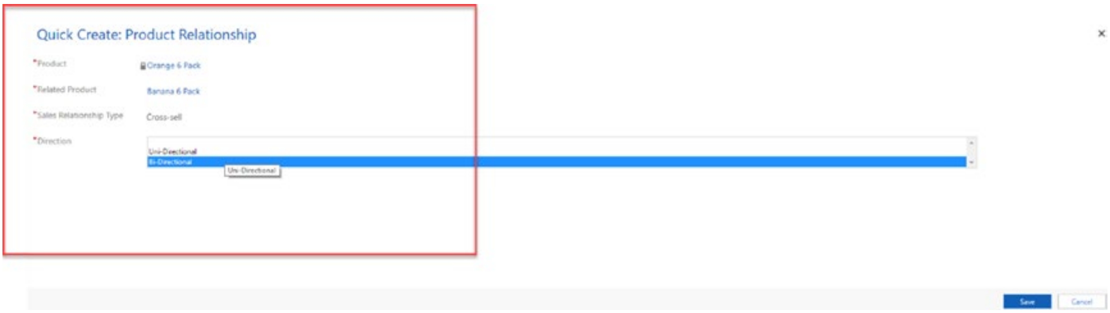
PRODUCT RELATIONSHIPS

Related Product ↑	Sales Relations...	Direction

No Product Relationships found for this Product. Select Add (+).

Figure 3-15. *Creating a product relationship*

2. A new window opens for you to create a new product relationship. This form is referred to as the Quick Create form and is shown in Figure 3-16.
3. Select another product to relate it to, which can be any of the products made in the previous examples.
4. Select “Cross Sell” in the ‘Sales Relationship Type.
5. Select the direction as “Bi-Directional.” *Bi-directional* means if “Pear” is selected by a user on the Product sub-grid in a Sales record, such as an opportunity, and if the relationship was uni-directional only, only the Banana record would be visible this way. If a user does the same on the Banana record, Pear wouldn’t be offered as a cross-sell item, as the relationship is one-directional. Bi-directional means it would appear in both scenarios as a cross-sell relationship suggestion.



Quick Create: Product Relationship

*Product: Orange 6 Pack
*Related Product: Banana 6 Pack
*Sales Relationship Type: Cross-sell
*Direction: Bi-Directional

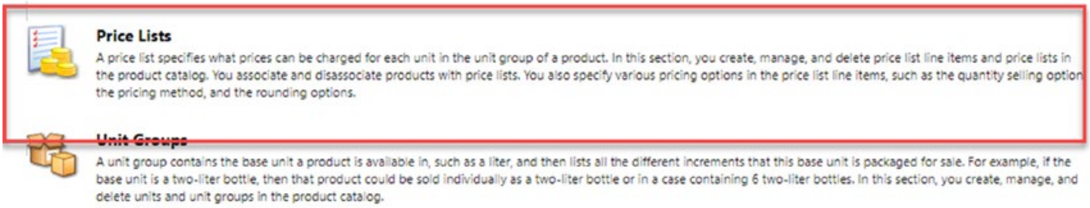
Figure 3-16. *Adding a product relationship*

A new product relationship has been added and will now appear within the “Suggestions” window on a Sales record.

Price Lists and Price List Items

It is recommended that products have a default price list. This is because of standard behavior where if a product has been set and the price list removed, the price is obtained from the default price list set on the product. A price list is a list of products that can be selected from within an opportunity. Only one price list can be associated with a record. *Price list item* is the name given to the specific instance of a product on a price list at a particular cost or calculated cost. The next steps will guide you through creating a new price list.

1. Navigate to the Classic UI, then go to Settings ➤ Price Lists ➤ New (Figure 3-17).



Price Lists

A price list specifies what prices can be charged for each unit in the unit group of a product. In this section, you create, manage, and delete price list line items and price lists in the product catalog. You associate and disassociate products with price lists. You also specify various pricing options in the price list line items, such as the quantity selling option the pricing method, and the rounding options.

Unit Groups

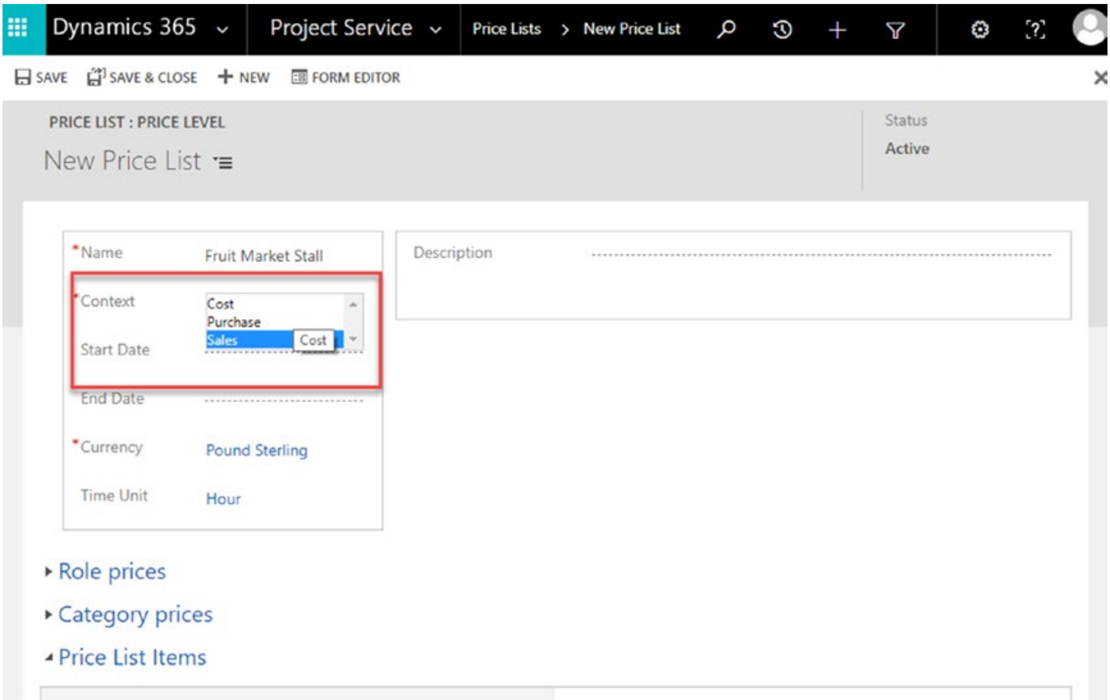
A unit group contains the base unit a product is available in, such as a liter, and then lists all the different increments that this base unit is packaged for sale. For example, if the base unit is a two-liter bottle, then that product could be sold individually as a two-liter bottle or in a case containing 6 two-liter bottles. In this section, you create, manage, and delete units and unit groups in the product catalog.

Figure 3-17. *Adding a Price List*

2. In the new blank Price List record, select the "Sales" option for the field "Context."

   The Project Service app, another app within Dynamics 365 CE introduced different types of price lists, which have different behaviors, as shown in Figure 3-18. These include the options "Cost" and "Purchase," which are not relevant here.

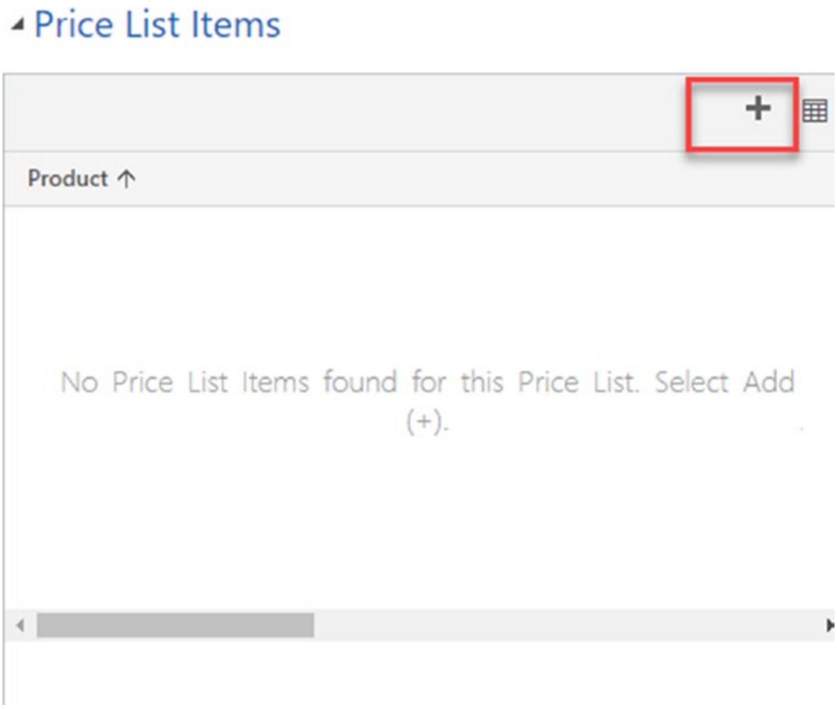
3. Save the record, ensuring the time unit "Hour" is removed by selecting the field and selecting 'Delete' on your keyboard. Once saved, new price list items can be created.


Dynamics 365
Project Service
Price Lists > New Price List
SAVE
SAVE & CLOSE
NEW
FORM EDITOR
PRICE LIST : PRICE LEVEL
New Price List
Status
Active
Role prices
Category prices
Price List Items

*Name Fruit Market Stall
*Context Cost / Purchase / Sales (Cost)
Start Date
End Date
*Currency Pound Sterling
Time Unit Hour
Description

Figure 3-18. *Price list context, added for project service automation customizations*

4. Expand the Price List Item tab in the Price List form, and select the plus icon on the sub-grid to create a new price list item (Figure 3-19).


Price List Items

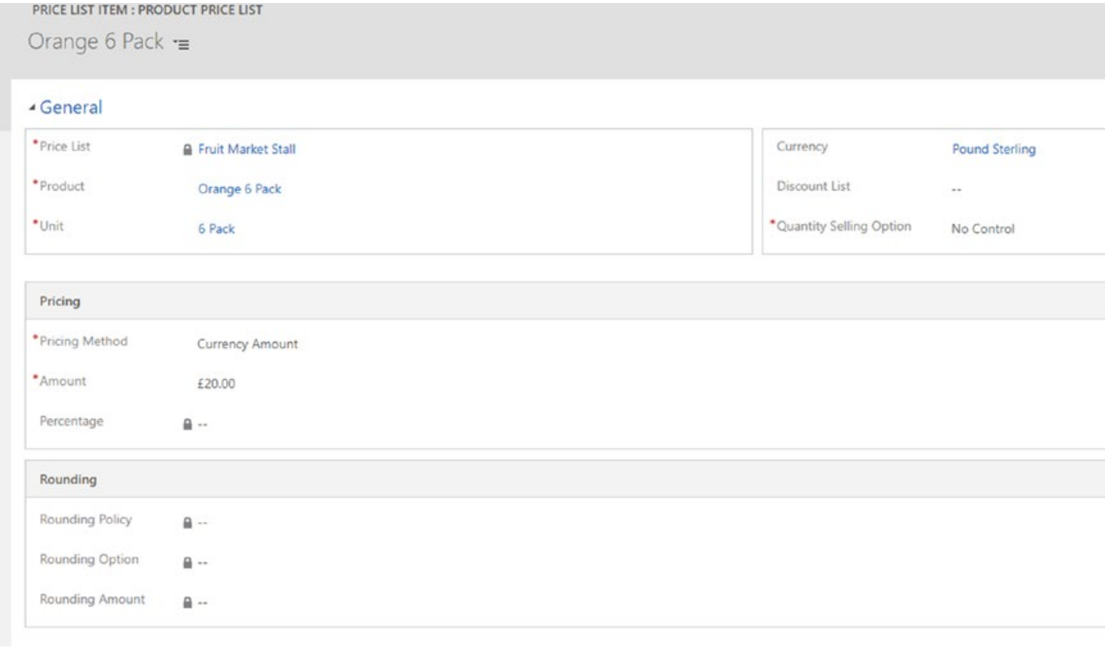
No Price List Items found for this Price List. Select Add (+).

Figure 3-19. *Click the plus icon in the sub-grid to start creating price list items*

The price list item is the link between the Product record and the specific instance of it on a price list. A product can have multiple prices and so would have different Price List Item records on different price lists, all relating back to a single Product record. The Product record stores core information about a product that does not change often and is generic for the organization.

5. Complete the initial record details for the price list item, as shown in Figure 3-20, including the “Product” and “Unit” lookup fields. There are some specific fields on this record that require some explanation:

    - **Quantity Selling Option** – Allows the user to split the quantities; e.g., decimals and halves
    - ***Price Method*** – This is specifically regarding how the amount/ price of this instance of product is calculated. This will be covered in more depth shortly.



PRICE LIST ITEM : PRODUCT PRICE LIST

Orange 6 Pack

General

*Price List	Fruit Market Stall	Currency	Pound Sterling
*Product	Orange 6 Pack	Discount List	--
*Unit	6 Pack	*Quantity Selling Option	No Control

Pricing

*Pricing Method	Currency Amount
*Amount	£20.00
Percentage	--

Rounding

Rounding Policy	--
Rounding Option	--
Rounding Amount	--

Figure 3-20. *Price list item being created using the pricing method "Current Amount"*

Some fields need to be added to the Product entity to make it more relevant as these have been removed by default in previous updates of Dynamics 365 CE. Skip ahead to Setup to learn how to add fields, or get a customizer to add hidden existing fields onto the Product form, shown in Figure 3-21. Once the changes have been made, ensure the customizations have been saved and published so you can see them on the Product record:

- List Price (required)
- Current Cost (required)
- Standard Cost (required)

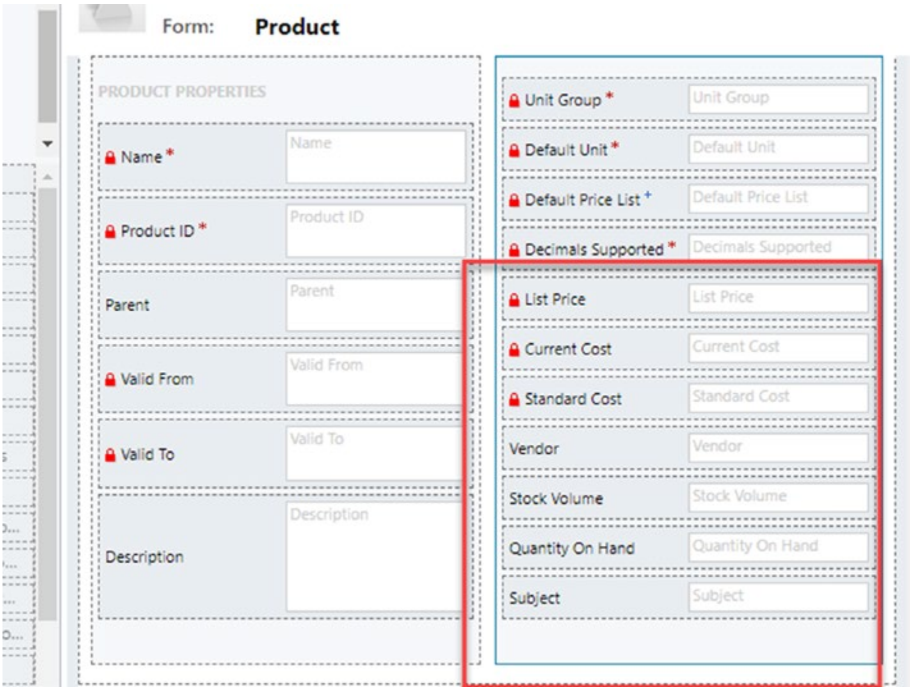
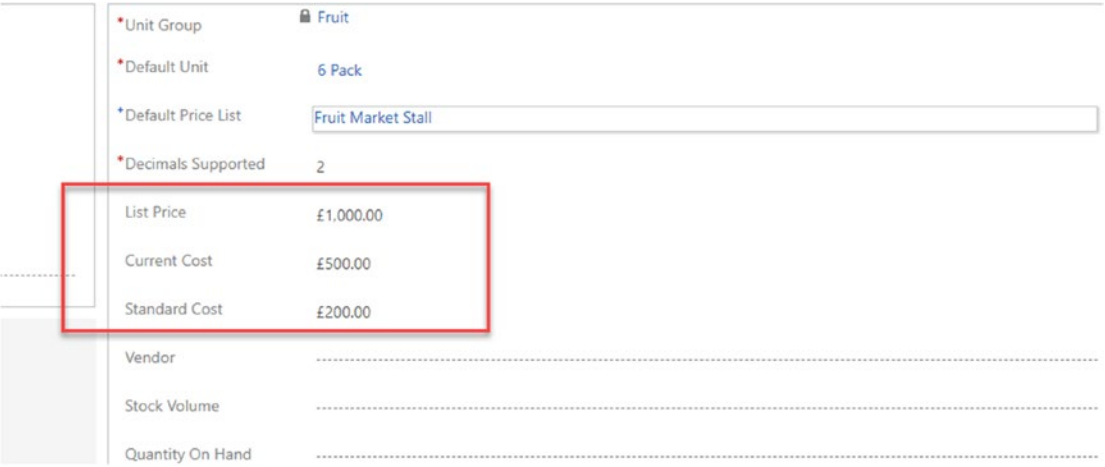

Form: Product
PRODUCT PROPERTIES
Name *
Name
Product ID *
Product ID
Parent
Parent
Valid From
Valid From
Valid To
Valid To
Description
Description
Unit Group *
Unit Group
Default Unit *
Default Unit
Default Price List +
Default Price List
Decimals Supported *
Decimals Supported
List Price
List Price
Current Cost
Current Cost
Standard Cost
Standard Cost
Vendor
Vendor
Stock Volume
Stock Volume
Quantity On Hand
Quantity On Hand
Subject
Subject

***Figure 3-21.** Adding standard fields not visible on the form*

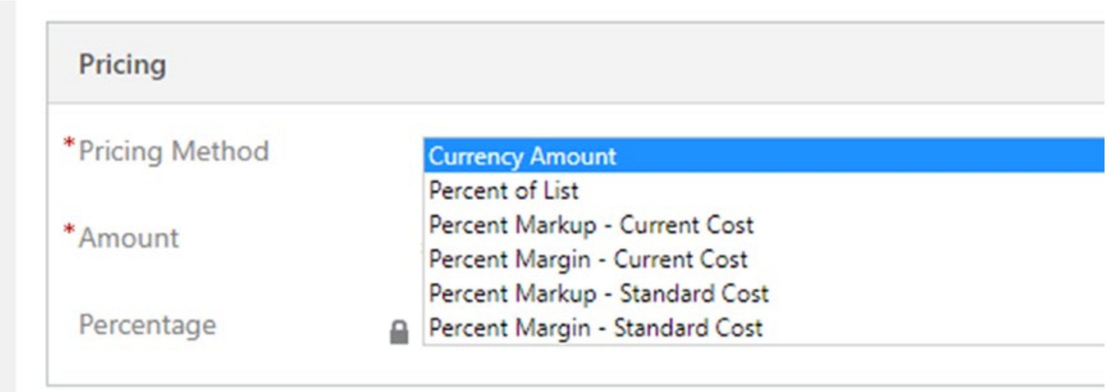
Figures 3-20 and 3-21 display how the fields can be dragged over from the Field Designer onto the Product form, how it looks in the form designer, and how that translates to a real Product form for a user.



*Unit Group	Fruit
*Default Unit	6 Pack
+Default Price List	Fruit Market Stall
*Decimals Supported	2
List Price	£1,000.00
Current Cost	£500.00
Standard Cost	£200.00
Vendor	
Stock Volume	
Quantity On Hand	

***Figure 3-22.** Pricing values critical to understanding the different pricing methods on the price list item*

Figure 3-23 shows the different pricing options available for a price list item based on the data of what is on the Product record it is related to—all except "Currency Amount," which is based on a simple value amount set on the price list item itself.



Pricing

*Pricing Method

*Amount

Percentage

Currency Amount
Percent of List
Percent Markup - Current Cost
Percent Margin - Current Cost
Percent Markup - Standard Cost
Percent Margin - Standard Cost

Figure 3-23. *The different pricing methods available on the price list item*

There are several different options available for managing the price of a product on a price list. There is no correct or incorrect way of pricing products; it is based on what and how the organization sells their products.

- **Currency Amount** – Displays an "Amount" field, and you enter a value. The most straightforward of the options.
- **Percent of List** – A user specifies a percentage—e.g., 50%—and a rounding option (e.g., none, up, or down), which is calculated from the field *list price* on the related product. In the example, this would be £500. 50 percent of that is £250.
- **Percent Mark-up of Current Cost** – Takes a percentage—e.g., 50%—and a rounding option (e.g., none, up, or down) and calculates the percentage of the "Current Cost" field, in this case £500, and adds that amount ONTO the amount displayed in the "Current Cost," marking the value up by this percentage. In the example, this would be £250 + £500 = £750.

- **Percent Margin of the Current Cost** – Takes a percentage—e.g., 50%—and a rounding option (e.g., none, up, or down) and calculates the percentage of the "Current Cost" field, in this case £500, and adds the Current Cost PLUS the amount of the percentage, in this case £250, totaling £750, and divides it by the Current Cost minus the percentage (£250), equaling £1,000 in the example.
- **Percent Markup** and **Margin of Standard Cost** are the same as just described, except they use the "Standard Cost" field instead of the "Current Cost" field.

Ensure the family has been published before trying to use the prices by selecting "Publish Hierarchy," which publishes the entire family and products, or just "Publish," which publishes the open record (Figure 3-24).

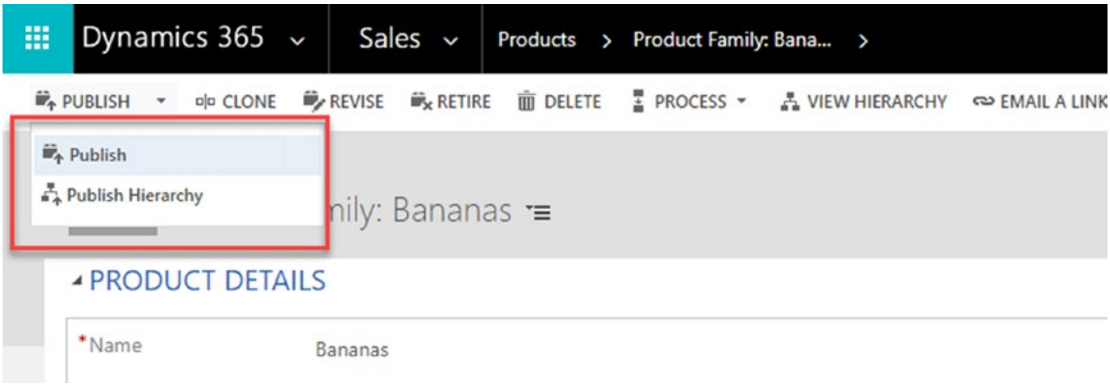
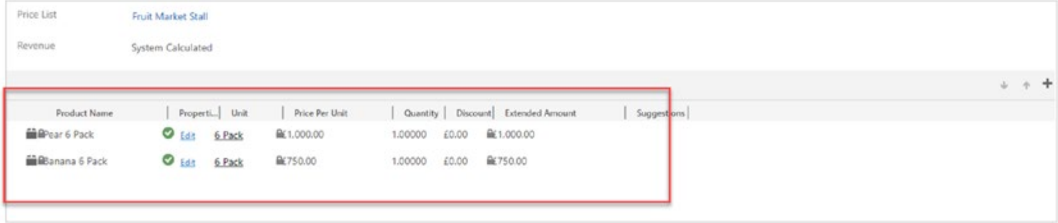

Dynamics 365
Sales
Products
Product Family: Bana...
PUBLISH
CLONE
REVISE
RETIRE
DELETE
PROCESS
VIEW HIERARCHY
EMAIL A LINK
Publish
Publish Hierarchy
nily: Bananas
PRODUCT DETAILS
*Name
Bananas

Figure 3-24. *Publish hierarchy allows for the full family hierarchy to be made available and published for use*

Task: Create three price list items for all the products, trying different pricing methods to see how they work. Once set up, ensure you open an Opportunity record, select the price list, and add your items to see the real amounts based on the options you configured in the earlier steps (Figure 3-25).



Price List Fruit Market Stall

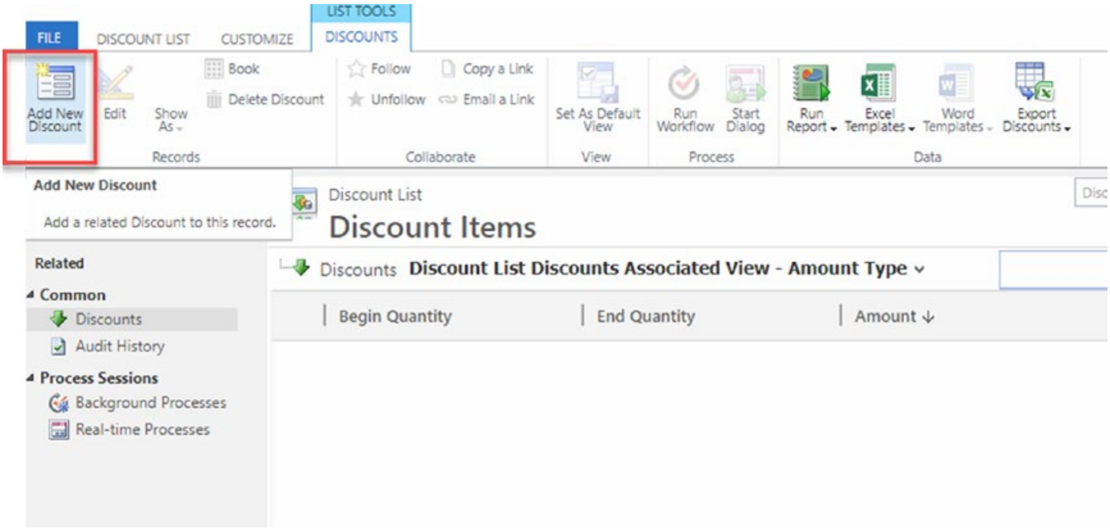
Revenue System Calculated

Product Name	Properti...		Unit	Price Per Unit	Quantity	Discount	Extended Amount	Suggestions
Pear 6 Pack	✓	Edit	6 Pack	£1,000.00	1.00000	£0.00	£1,000.00	
Banana 6 Pack	✓	Edit	6 Pack	£750.00	1.00000	£0.00	£750.00	

__Figure 3-25.__ Examples of the pricing based on the preceding definitions

Discount Lists

Discount lists are linked to price list items, where a specific volume has been purchased within a product line item (Figure 3-26). They can be associated with a price list item and allow for the discount to be applied should the product line item quantity be between the Begin and End amounts set on the associated discount list record.



LIST TOOLS
FILE
DISCOUNT LIST
CUSTOMIZE
DISCOUNTS
Add New Discount
Edit
Show As
Book
Delete Discount
Records
Follow
Unfollow
Copy a Link
Email a Link
Collaborate
Set As Default View
View
Run Workflow
Start Dialog
Process
Run Report
Excel Templates
Word Templates
Export Discounts
Data
Related
Common
Discounts
Audit History
Process Sessions
Background Processes
Real-time Processes

Add New Discount

Add a related Discount to this record.

Discount List

Discount Items

Discounts **Discount List Discounts Associated View - Amount Type**

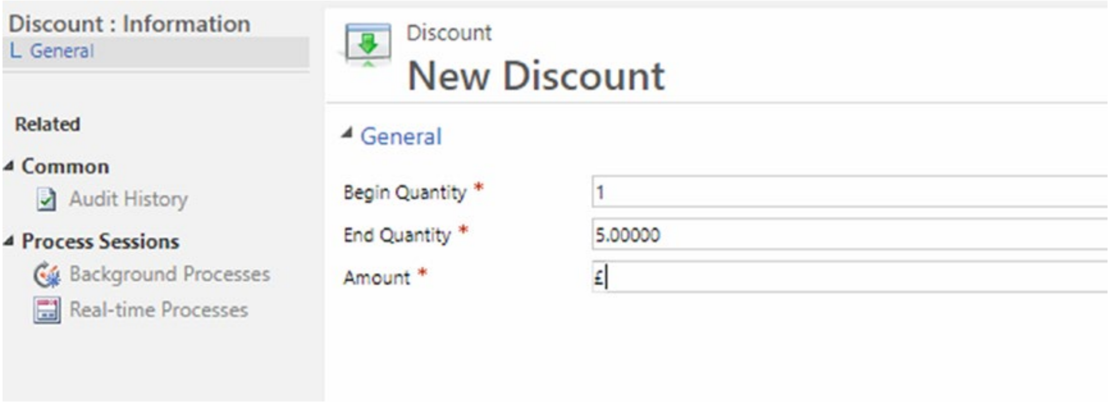
Begin Quantity	End Quantity	Amount ↓

__Figure 3-26.__ Adding a new discount list

Task: Create a new discount list. Navigate to Settings ➤ Product Catalog ➤ Discount List.

1. Click “New” and create a new discount list.
2. Set the “Type” option as “Amount.”

   Discounts can be set to be based on an amount or on a percentage. *Amount* means a set value amount to be discounted, whereas *Percentage* means a percentage of the cost of the item (Figure 3-27). The percentage option is much more fluid because the overall discount then depends on the pricing option of the related price list item (Figure 3-28).

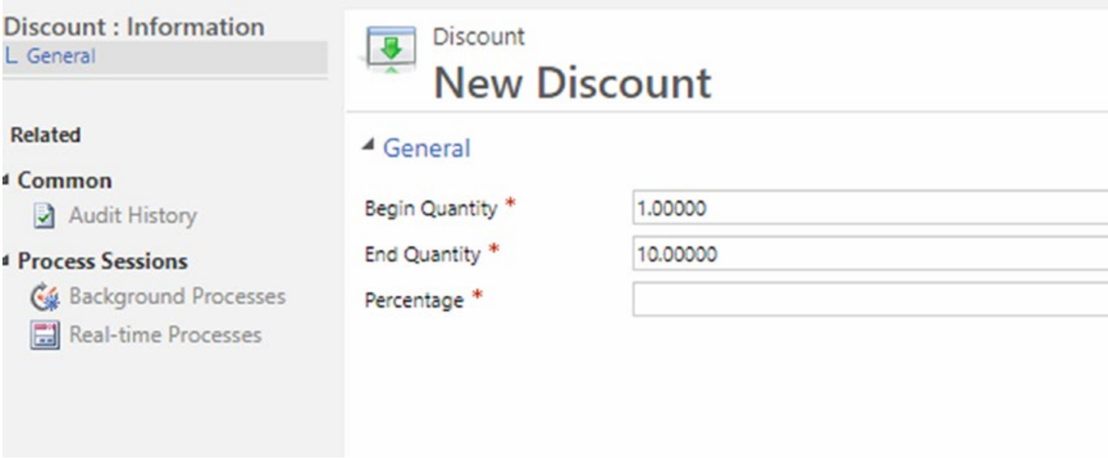

Discount : Information
General
Related
Common
Audit History
Process Sessions
Background Processes
Real-time Processes
Discount
New Discount
General

Begin Quantity * 1

End Quantity * 5.00000

Amount * £

Figure 3-27. *Setting the Begin and End quantities in the fields ‘Begin Quantity’ and ‘End Quantity’ for the volume discount*


Discount : Information
General
Related
Common
Audit History
Process Sessions
Background Processes
Real-time Processes
Discount
New Discount
General

Begin Quantity * 1.00000

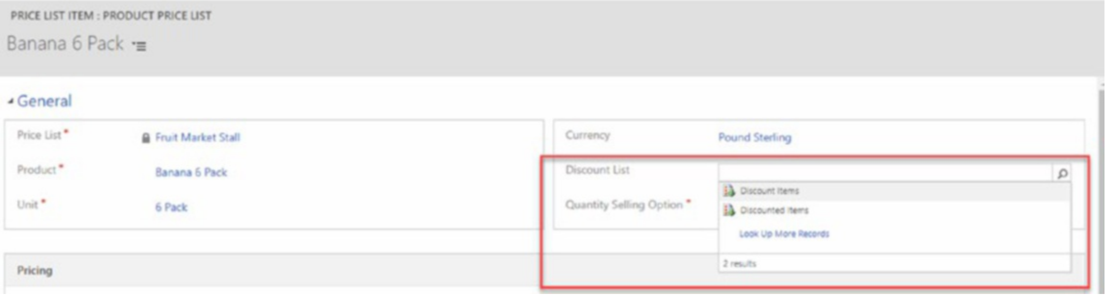
End Quantity * 10.00000

Percentage *

Figure 3-28. *Setting the Begin and End quantities for the volume discount; type is Percentage*

Once the discount list has been created, it is then associated with a price list item within the “Discount List” lookup (Figure 3-29). Only one discount list can be active at any one time for a price list item.

3. Associate the discount list with a price list item by opening the Price List Item and adding the record made in the previous step to the ‘Discount List’ field.
4. Navigate to an Opportunity record and add a product line item, incrementing the quantity to be within the Begin and End quantities listed as set in the Discount List form in the earlier step. There should be a discount applied as specified within the associated discount list.


PRICE LIST ITEM : PRODUCT PRICE LIST
Banana 6 Pack
General
Discount Items
Discounted Items
Look Up More Records
2 results
Pricing

Price List * Fruit Market Stall

Product * Banana 6 Pack

Unit * 6 Pack

Currency Pound Sterling

Discount List

Quantity Selling Option *

Figure 3-29. *Associating the discount list on the price list item*

Leads to Invoice Sales Lifecycle with Product Catalog Integration

Dynamics 365 CE has a full sales lifecycle that reaches across five core entities, with other areas and functionality supporting those areas throughout the process. The product catalog is one of those supporting features.

The sales lifecycle begins with a lead and ends with an invoice. The two core areas of this lifecycle are the initial creation of a lead, which transitions to an opportunity. Quotes supplement the opportunity, and once it has been won, orders and invoices act as reference records with the same detail going forward (Figure 3-30). These records are often integrated with another system or used by entirely separate departments owing to their similarity in nature to eachother.

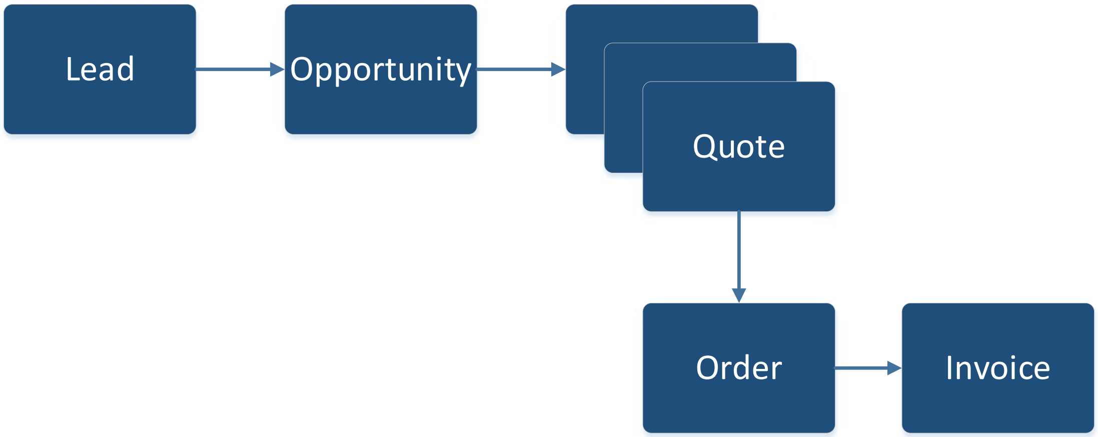


Figure 3-30. *A basic overview of the sales lifecycle process within Dynamics 365 CE*

The lifecycle begins with the Lead entity. “What exactly is a lead?” is a question asked very often. A *lead* is often described as an initial contact an organization has with an individual, and in some cases with the individual’s company. It could also be information that has been purchased in list form, which is a common case in marketing. This information is considered low quality and minimal. Leads can also be records created from marketing automation tools, where they have been scored, graded, and assigned to a member of the sales team to move forward.

The information captured at the lead level is the name, company, and notes of their initial interaction. As with most records within Dynamics 365 CE, activities can be utilized, such as logging when phone calls happened and tracking email conversations. Leads combine the information associated with the contact, account, and opportunity, and once the lead is qualified those records branch out within Dynamics 365. This branching process creates more "permanent" records within the system, such as Contact and Account records, with the sales process moving forward as a qualified opportunity (Figure 3-31).

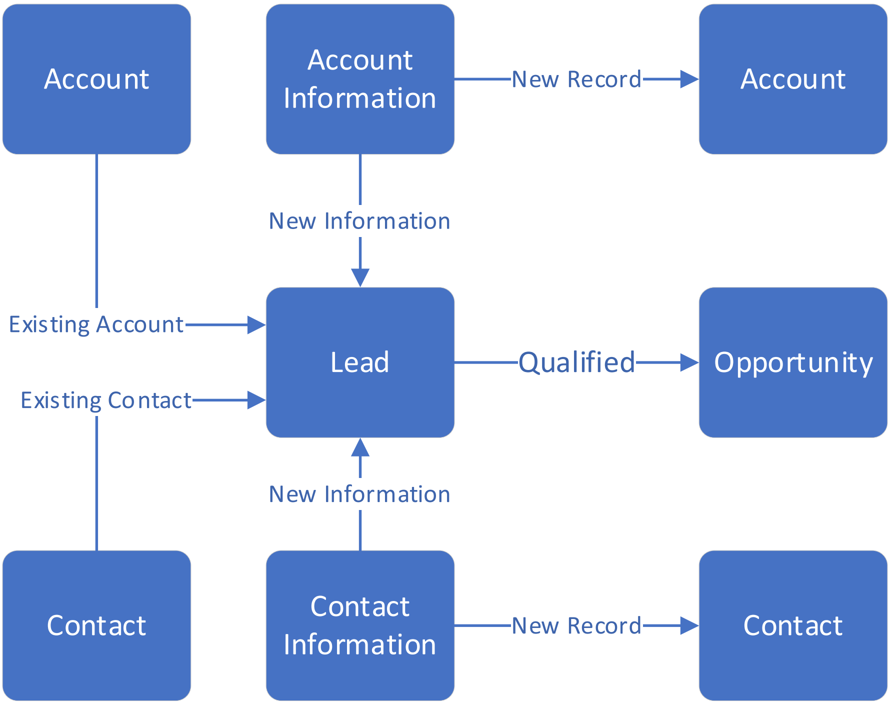
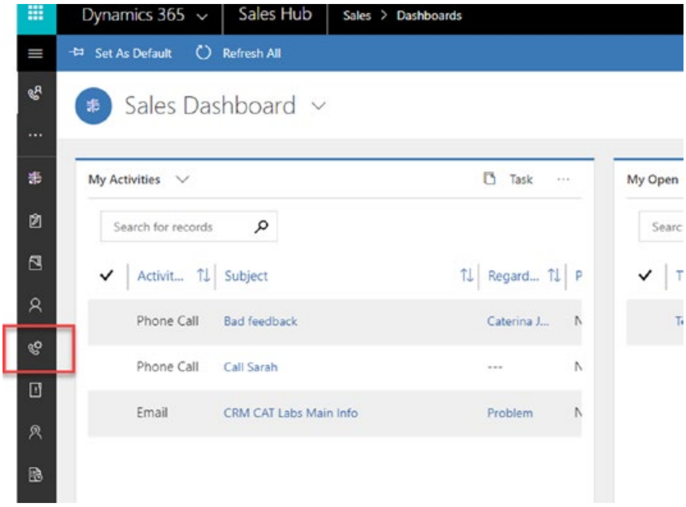

Account
Account Information
New Record
Account
New Information
Existing Account
Lead
Qualified
Opportunity
Existing Contact
New Information
Contact
Contact Information
New Record
Contact

***Figure 3-31.** The qualification process of a lead creates new Account and Contact records where none were specified*

When qualifying a Lead record, if an existing Contact and/or Account record was associated with the Lead record, it would take the information and use it to create new records within Dynamics 365 CE, such as Contact and Account records, taking the initiative to assume existing records were not associated with it, and so it would create them for you. It would then take the information regarding those records and data contained within the Lead record, close the Lead, and create a new Opportunity record, associating the new Contact and Account records with the new Opportunity.

Task: Create a new Lead. Open the Sales Hub App within the Unified Interface and click “Leads” on the sitemap (Figure 3-32).

1. Click “New,” which opens a blank Lead record.

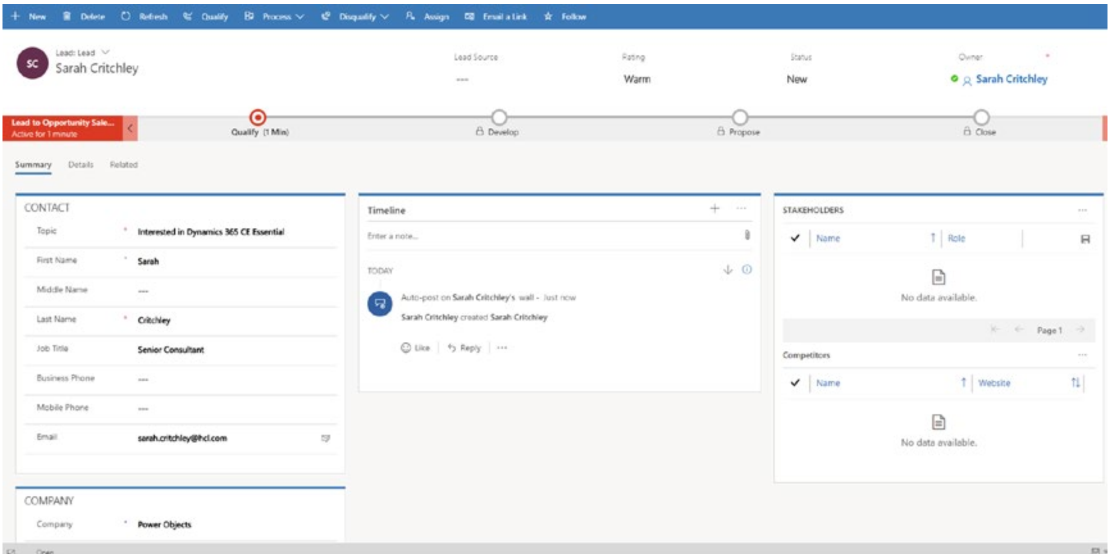

Dynamics 365
Sales Hub
Sales > Dashboards
Set As Default
Refresh All
Sales Dashboard
My Activities
Task
My Open
Search for records
Searc

Activit...	Subject	Regard...	P
Phone Call	Bad feedback	Caterina J...	N
Phone Call	Call Sarah	---	N
Email	CRM CAT Labs Main Info	Problem	N

Figure 3-32. *Click Leads within the Site Map in the Sales Hub App*

There is basic information on the Lead record to complete, including the topic, which is normally a highlight of the interaction and some detail of the requirement or context in which they are created. Also the name and company details of the person are needed. Standard Dynamics 365 CE assumes this is a sales engagement, and so it includes connection grids specifically designed to include your stakeholders and competitors so as to identify key individuals and organizations your organization is running in competition with.

2. Complete the initial details of a lead, including the topic, contact information, and company information. Once completed, save the record (Figure 3-33).


New
Delete
Refresh
Qualify
Process
Disqualify
Assign
Email a Link
Follow
SC
Lead to Opportunity Sale...
Active for 1 minute
Qualify (1 Min)
Develop
Propose
Close
Summary
Details
Related
Timeline
Enter a note...
TODAY
Like
Reply
STAKEHOLDERS
Name
Role
No data available.
Page 1
Competitors
Name
Website
No data available.

Lead: Lead
Sarah Critchley

Lead Source: ---
Rating: Warm
Status: New
Owner: Sarah Critchley

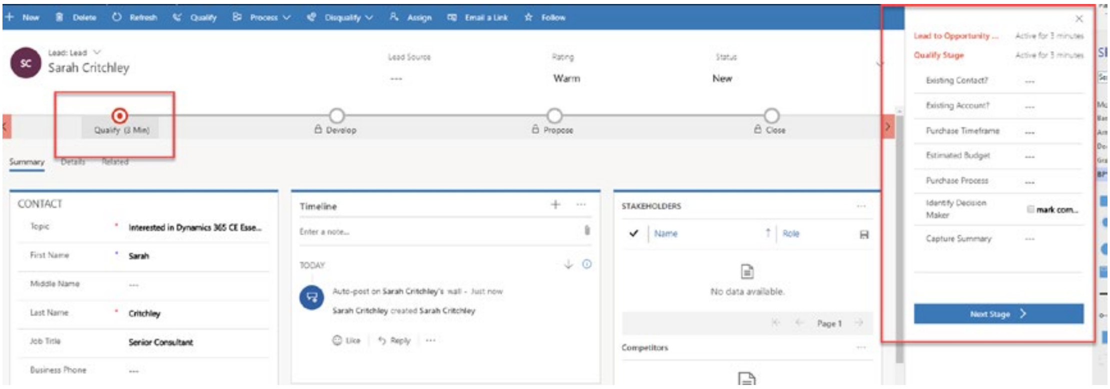
CONTACT
Topic: Interested in Dynamics 365 CE Essential
First Name: Sarah
Middle Name: ---
Last Name: Critchley
Job Title: Senior Consultant
Business Phone: ---
Mobile Phone: ---
Email: sarah.critchley@hcl.com

COMPANY
Company: Power Objects

Auto-post on Sarah Critchley's wall - Just now
Sarah Critchley created Sarah Critchley

Figure 3-33. *Creating a new lead within the Sales Hub*

The lead-to-opportunity process is guided by the lead-to-opportunity business process flow (Figure 3-34). The Qualify stage is singular and references the lead record only. The fields in this stage reference existing Contact and Account records and prompt the user if they already exist within the system to associate them now. If they do exist, users can utilize the “Existing Account” and “Existing Contact” fields to identify them. Leads can be linked to existing records, especially in the context of returning business.


New
Delete
Refresh
Qualify
Process
Disqualify
Assign
Email a Link
Follow
SC
Qualify (3 Min)
Develop
Propose
Close
Summary
Details
Related
Timeline
Enter a note...
TODAY
Like
Reply
STAKEHOLDERS
Name
Role
No data available.
Page 1
Competitors
Next Stage

Lead: Lead
Sarah Critchley

Lead Source: ---
Rating: Warm
Status: New

CONTACT
Topic: Interested in Dynamics 365 CE Esse...
First Name: Sarah
Middle Name: ---
Last Name: Critchley
Job Title: Senior Consultant
Business Phone: ---

Auto-post on Sarah Critchley's wall - Just now
Sarah Critchley created Sarah Critchley

Lead to Opportunity ... Active for 3 minutes
Qualify Stage Active for 3 minutes
Existing Contact? ---
Existing Account? ---
Purchase Timeframe ---
Estimated Budget ---
Purchase Process ---
Identify Decision Maker ☐ mark com...
Capture Summary ---

Figure 3-34. *The business process flow from lead to opportunity*

3. Complete the rest of the fields within the Lead form, including budget-related fields.

Leads can exist for a period during which they are gaining additional score points if lead-scoring functionality is being used (as an extension to the platform or by utilizing the Dynamics 365 for Marketing app, covered later in the book). Leads can be marketed to, and once they meet qualification criteria they can be converted into opportunities. Leads are not designed to stay active, but rather are meant to last for a limited time. The fundamental point is that qualification and disqualification criteria are an internal decisions, not one made by Dynamics 365 CE. The user decides based on their interactions with the individual whether they have met enough criteria to warrant qualification (Figure 3-35).

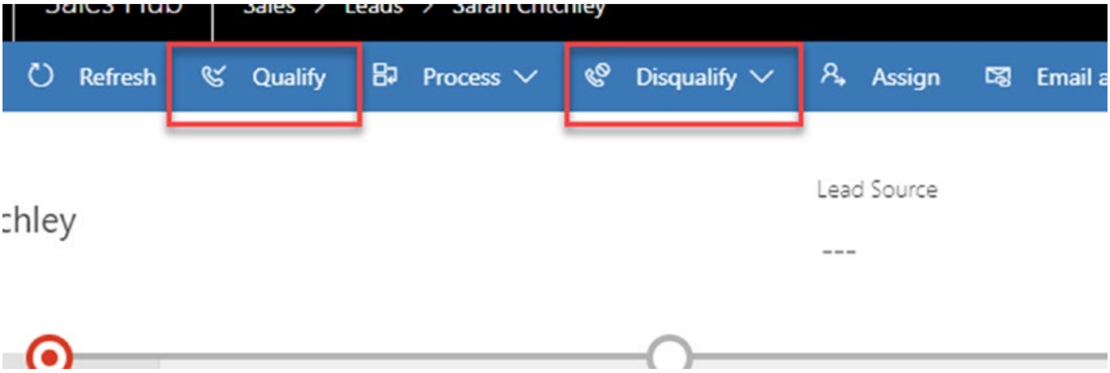
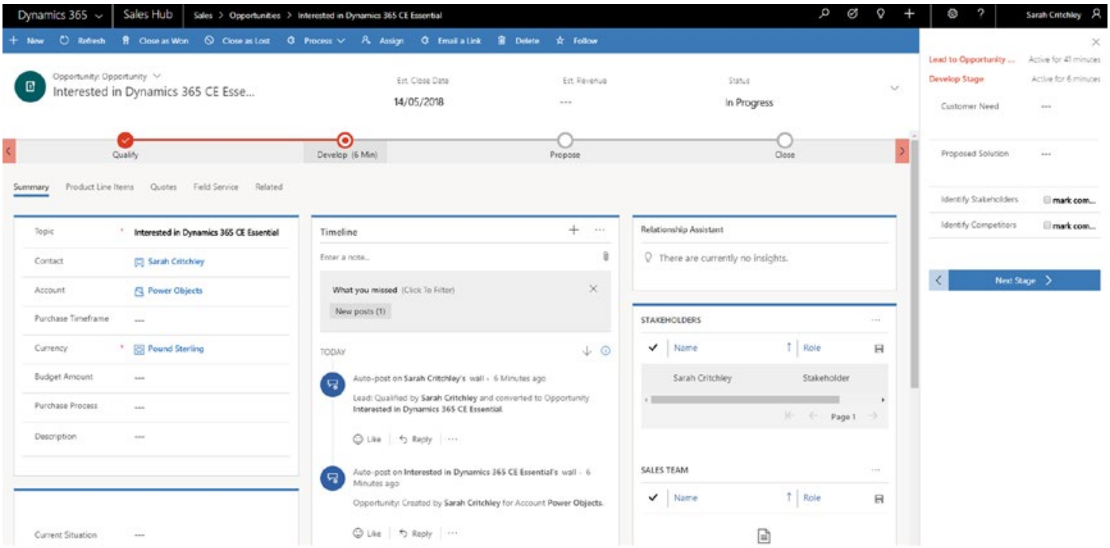


***Figure 3-35.** Qualify and Disqualify buttons on the lead*

Disqualifying a lead would close it, making it read-only and giving it a specific status reason, e.g., “Lost” or “Cannot Be Contacted.”

Qualification will close the lead as “Won,” automatically creating an Opportunity record and Account and Contact records if existing records were not selected. It would maintain the link from the Lead record to the Opportunity record in the fields “Originating Lead” and “Qualifying Opportunity” for any marketing playback of reporting, especially to determine return on investment (ROI).

4. Click the Qualify button on the command bar of the lead record to qualify the lead, ensuring no data is entered in the ‘Existing Account’ and ‘Existing Contact’ fields. It will automatically close and then open a new, linked Opportunity record, creating the Contact and associated Account records (Figure 3-36).


Dynamics 365
Sales Hub
Sales > Opportunities > Interested in Dynamics 365 CE Essential
Sarah Critchley
New
Refresh
Close as Won
Close as Lost
Process
Assign
Email a Link
Delete
Follow
Qualify
Develop (6 Min)
Propose
Close
Summary
Product Line Items
Quotes
Field Service
Related
Timeline
Relationship Assistant
STAKEHOLDERS
SALES TEAM
Name
Role
Like
Reply
Next Stage

Opportunity: Opportunity
Interested in Dynamics 365 CE Esse...
Est. Close Date: 14/05/2018
Est. Revenue: ---
Status: In Progress

Topic: Interested in Dynamics 365 CE Essential
Contact: Sarah Critchley
Account: Power Objects
Purchase Timeframe: ---
Currency: Pound Sterling
Budget Amount: ---
Purchase Process: ---
Description: ---
Current Situation: ---

Enter a note...
What you missed (Click To Filter)
New posts (1)
TODAY
Auto-post on Sarah Critchley's wall - 6 Minutes ago
Lead: Qualified by Sarah Critchley and converted to Opportunity Interested in Dynamics 365 CE Essential.
Auto-post on Interested in Dynamics 365 CE Essential's wall - 6 Minutes ago
Opportunity: Created by Sarah Critchley for Account Power Objects.

There are currently no insights.

Name	Role
Sarah Critchley	Stakeholder

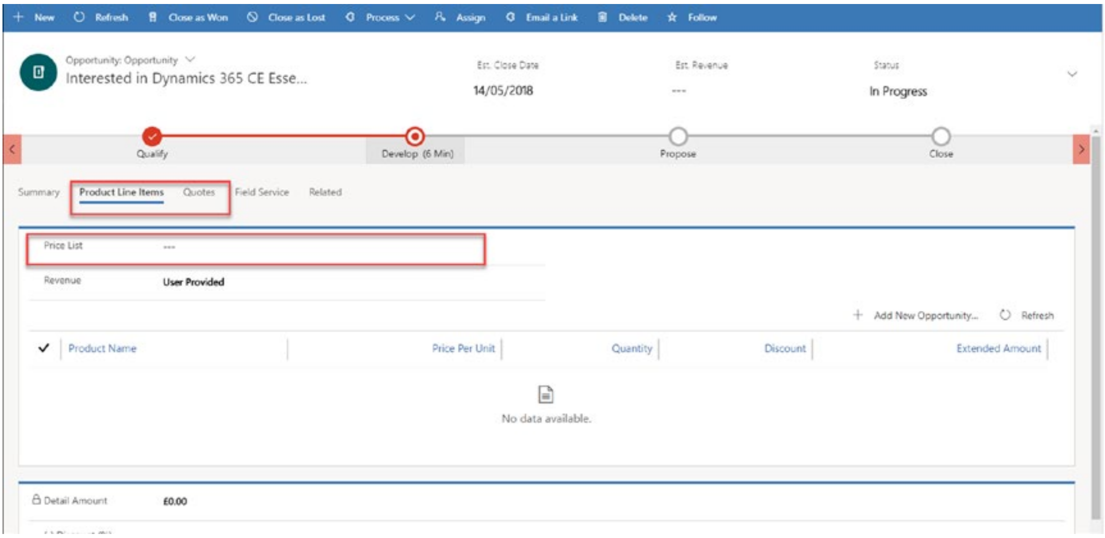
Page 1

Lead to Opportunity ... Active for 41 minutes
Develop Stage Active for 6 minutes
Customer Need: ---
Proposed Solution: ---
Identify Stakeholders: ☐ mark com...
Identify Competitors: ☐ mark com...

***Figure 3-36.** Qualifying a lead creates a new Opportunity record with fields auto-populated from the information entered at the lead stage*

The opportunity's creation prompts you to gather more-detailed information about the opportunity than that required at the lead stage. Gathering more information will take time as you nurture and develop relationships, moving the sales cycle toward a conclusion. The business process flow prompts for information at each stage, with some data being mandatory before the stages can be advanced. For example, as time goes on, estimated closure dates, more-accurate budgets, and products will be discussed, which can be captured within the Opportunity record.

Adding the associated products is managed using the Product Line Items tab within the Sales Hub application. A price list must be entered, and then you add a product line item per product by clicking on "Add New Opportunity Products" within the sub-grid (Figure 3-37).


New
Refresh
Close as Won
Close as Lost
Process
Assign
Email a Link
Delete
Follow
Qualify
Develop (6 Min)
Propose
Close
Summary
Product Line Items
Quotes
Field Service
Related
Add New Opportunity...
Refresh
Product Name
Price Per Unit
Quantity
Discount
Extended Amount
No data available.

Opportunity: Opportunity
Interested in Dynamics 365 CE Esse...
Est. Close Date 14/05/2018
Est. Revenue ---
Status In Progress

Price List ---
Revenue User Provided

Detail Amount £0.00

***Figure 3-37.** Adding new opportunity products within an Opportunity record*

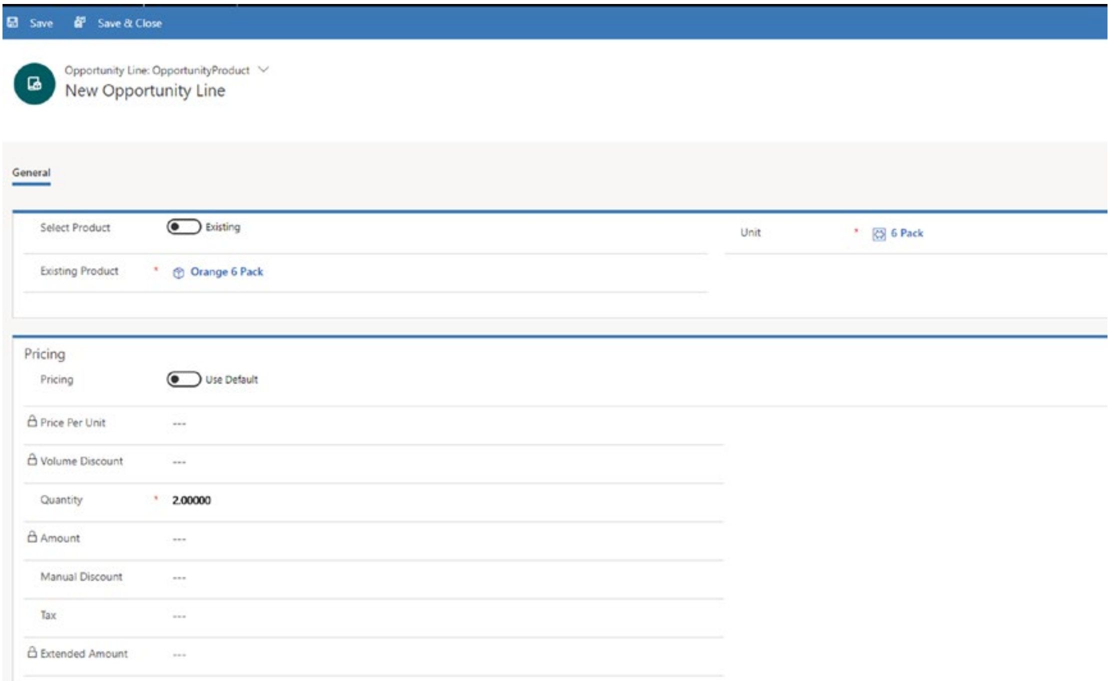
The opportunity product line requires minimal detail:

- Product (“Unit” field auto-populates from “Product” field)
- Quantity

5. Complete the minimum information required within the “Develop” stage of the business process flow on the Opportunity record.

6. Move to the “Propose” stage by clicking “Next Stage” in the business process flow.

7. In the Product Line Items tab, add a Price List record with active price list items from the task earlier in the chapter. Select ‘Add Opportunity Product’ in the sub-grid of the Opportunity and create two new lines, adding them to the Opportunity record, as shown in Figure 3-38. Minimal detail is entered as the pricing will be configured on the product. Enter the ‘Quantity’ and that’s ensure the Product is selected via the Lookup.



Opportunity Line: OpportunityProduct
New Opportunity Line

Select Product: Existing
Unit *: 6 Pack
Existing Product *: Orange 6 Pack

Pricing
Pricing: Use Default
Price Per Unit: ---
Volume Discount: ---
Quantity *: 2.00000
Amount: ---
Manual Discount: ---
Tax: ---
Extended Amount: ---

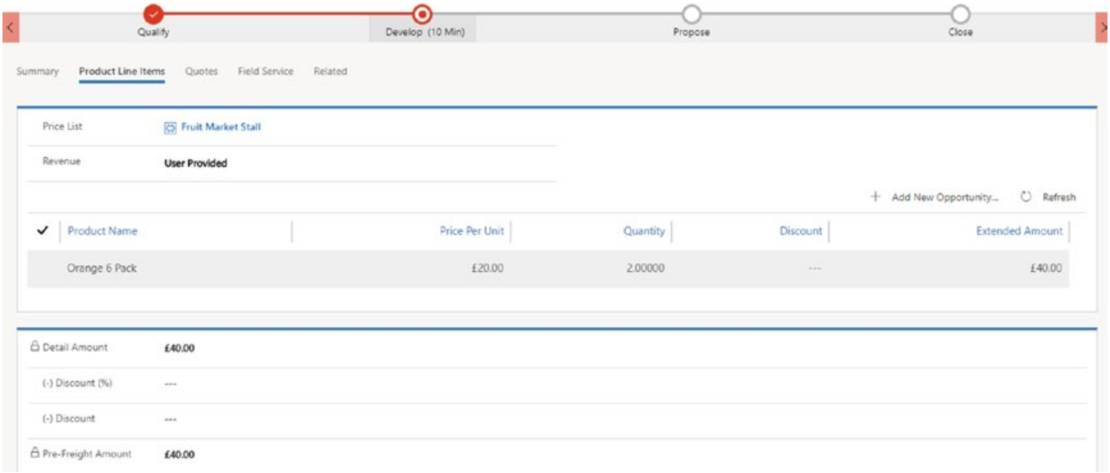
Figure 3-38. *Creating a new opportunity product line*

8. Once finished, click "Save and Close" on the product line item.

   Specific information is automatically populated by the details set up within the product catalog, including the amount. This is also where you can add a discount per line if required, either automatically, per any associated discount list, or manually. You can also add any relevant tax.

   Users can, if the security permission "Override Opportunity Pricing within their security role" is selected, override the pricing and manually enter any amount they wish by selecting the "Override Pricing" button.

   Once completed, the Product sub-grid will show the correct price, quantity, and total for the information just entered. Users can add as many lines as they require (Figure 3-39).


Qualify
Develop (10 Min)
Propose
Close
Summary
Product Line Items
Quotes
Field Service
Related
Add New Opportunity...
Refresh

Price List: Fruit Market Stall

Revenue: User Provided

✓	Product Name	Price Per Unit	Quantity	Discount	Extended Amount
	Orange 6 Pack	£20.00	2.00000	---	£40.00

Detail Amount: £40.00

(-) Discount (%): ---

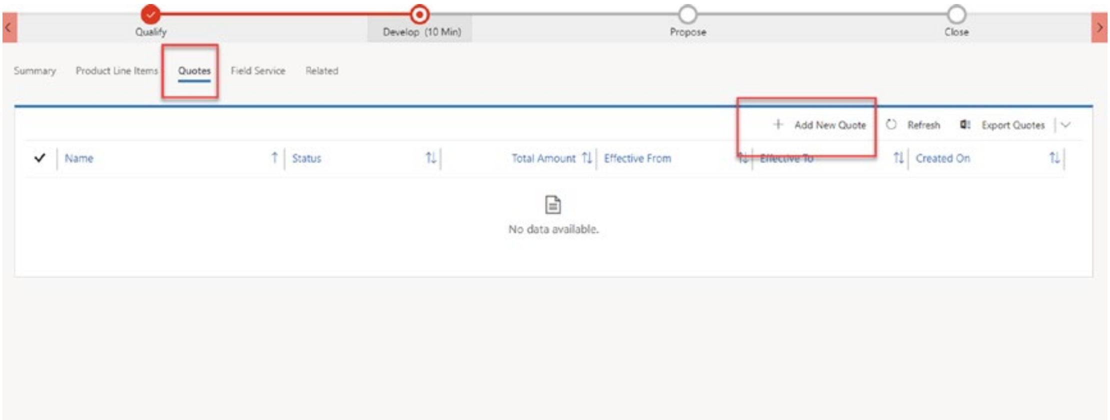
(-) Discount: ---

Pre-Freight Amount: £40.00

Figure 3-39. *Product Line Item sub-grid within the Opportunity record*

At this point, a customer normally would be expecting to receive a formal quote detailing this information. This can be achieved by using the Quote entity and sending a quote using a Word template, which is provided as standard within Dynamics 365 CE.

9. Navigate to the Quotes tab and click “Add New Quote.” This is shown in Figure 3-40.

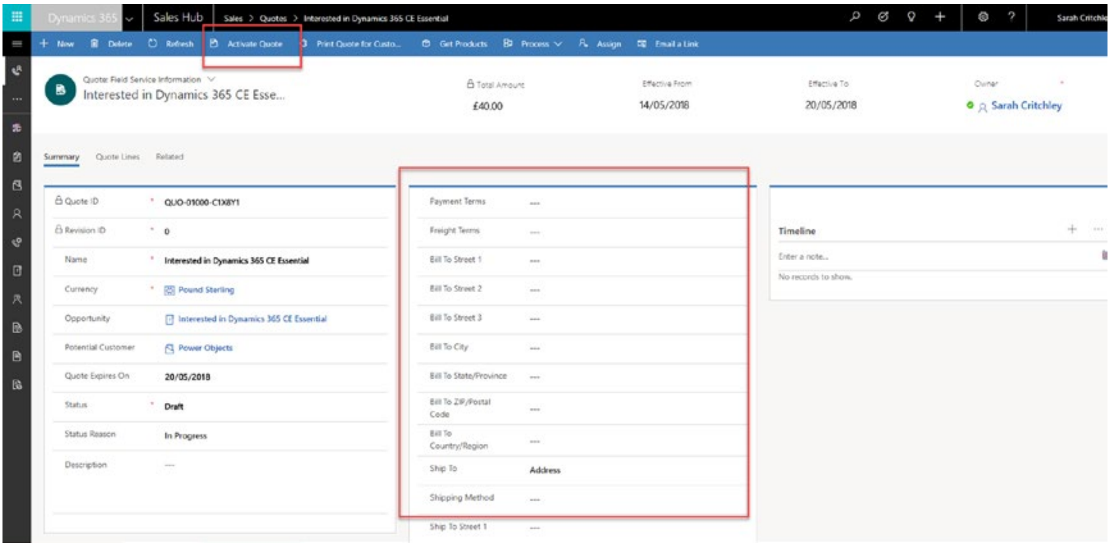

Qualify
Develop (10 Min)
Propose
Close
Summary
Product Line Items
Quotes
Field Service
Related
Add New Quote
Refresh
Export Quotes

✓	Name	Status	Total Amount	Effective From	Effective To	Created On

No data available.

Figure 3-40. *Navigate to the Quotes tab and click “Add New Quote”*

A new Quote record will appear in the sub-grid then automatically open. Dynamics 365 CE prepopulates most of the information, including quote lines. This is copied from the originating Opportunity record (Figure 3-41).


Dynamics 365
Sales Hub
Sales > Quotes > Interested in Dynamics 365 CE Essential
New
Delete
Refresh
Activate Quote
Print Quote for Custo...
Get Products
Process
Assign
Email a Link
Quote: Field Service Information
Summary
Quote Lines
Related
Timeline
Enter a note...
No records to show.

Interested in Dynamics 365 CE Esse...

Total Amount: £40.00
Effective From: 14/05/2018
Effective To: 20/05/2018
Owner: Sarah Critchley

Quote ID: QUO-01000-C1X8Y1
Revision ID: 0
Name: Interested in Dynamics 365 CE Essential
Currency: Pound Sterling
Opportunity: Interested in Dynamics 365 CE Essential
Potential Customer: Power Objects
Quote Expires On: 20/05/2018
Status: Draft
Status Reason: In Progress
Description: ---

Payment Terms: ---
Freight Terms: ---
Bill To Street 1: ---
Bill To Street 2: ---
Bill To Street 3: ---
Bill To City: ---
Bill To State/Province: ---
Bill To ZIP/Postal Code: ---
Bill To Country/Region: ---
Ship To: Address
Shipping Method: ---
Ship To Street 1: ---

Figure 3-41. *Completing the payment terms and activating the quote*

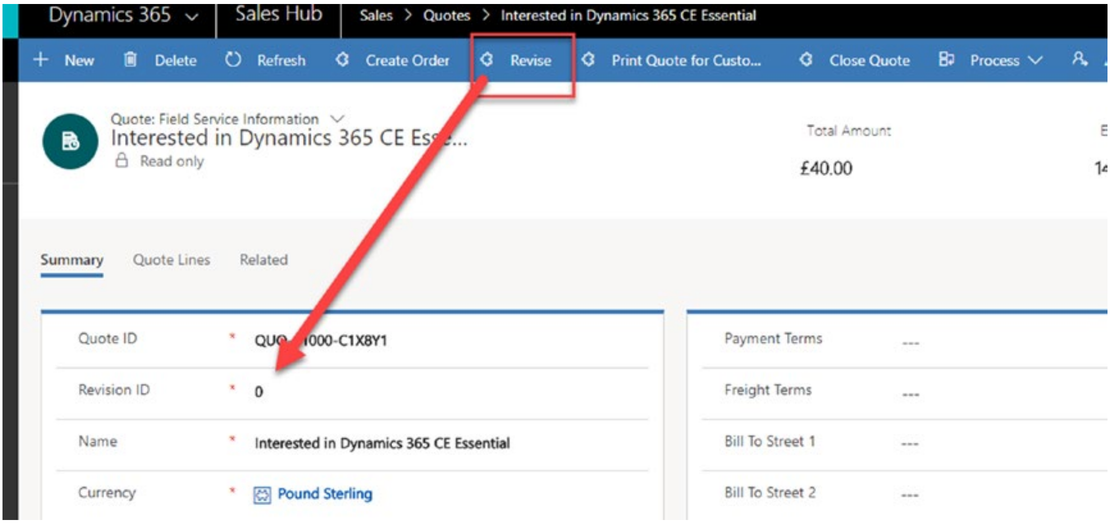
The quote contains information about who is responsible for payment and the location to where the item should be shipped. Dynamics 365 CE does assume this is a physical item or that there is a physical place to go, as there is a "Shipment Address" field. The quote needs to be activated once it is no longer a draft and is ready to be sent to the customer. This is done by clicking "Activate Quote" in the command bar. An active quote is read-only, so it can be viewed. An active quote is one that is the most recent, up-to-date quote and is awaiting a customer decision (and therefore shouldn't be modified).

10. Complete the blank information within the quote where appropriate.

11. Click "Activate Quote."

More than one quote can exist at any one time. Clicking "Add Quote" from the Opportunity record can be used as many times as required. The quote itself has a lifecycle, as it is expected to be updated and changed based on customer feedback and requirements. Revisions can be easily made using the Revision functionality.

Clicking “Revise” on an activated quote closes the current quote and makes a direct copy in draft format so a user can make changes. Revising a quote increments the revision ID automatically by 1. This allows the user to keep a record of previous quotes sent to the customer. Figure 3-42 displays an overview of this process.


Dynamics 365
Sales Hub
Sales > Quotes > Interested in Dynamics 365 CE Essential
New
Delete
Refresh
Create Order
Revise
Print Quote for Custo...
Close Quote
Process
Summary
Quote Lines
Related

Quote: Field Service Information
Interested in Dynamics 365 CE Ess...
Read only

Total Amount
£40.00

Quote ID * QUO 1000-C1X8Y1
Revision ID * 0
Name * Interested in Dynamics 365 CE Essential
Currency * Pound Sterling

Payment Terms ---
Freight Terms ---
Bill To Street 1 ---
Bill To Street 2 ---

Figure 3-42. *The Revision ID being incremented when the quote is revised*

12. Click “Revise” on the activated quote from the previous step. Notice this has now copied the previous quote and incremented the Revision ID by 1 (Figure 3-43).

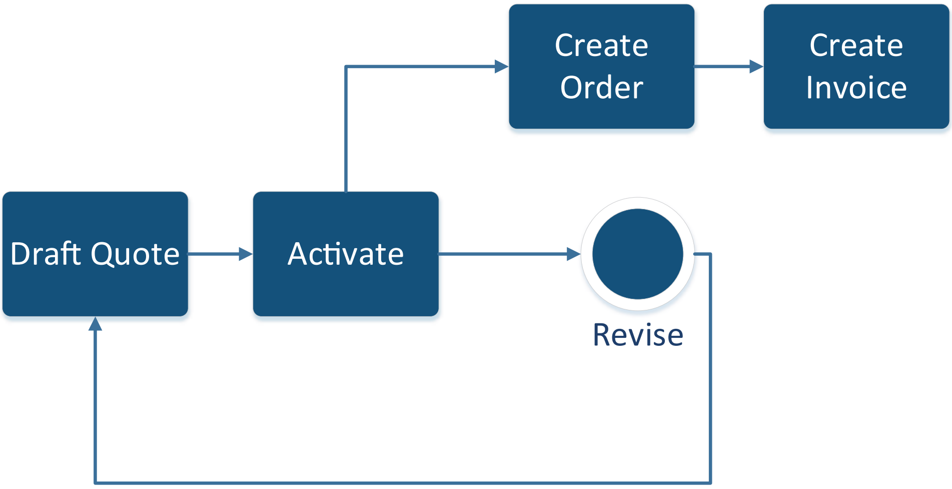

Create Order
Create Invoice
Draft Quote
Activate
Revise

Figure 3-43. *The Revision ID is incremented when the quote is revised*

When a customer has agreed on a quote, it is time to close the Opportunity and Quote records. This will create a new Order record. Creating an Order record and closing the Opportunity and Quote records at the same time can be achieved with a single click.

13. Navigate to the quote agreed upon and clicked "Create Order," as shown in Figure 3-44.

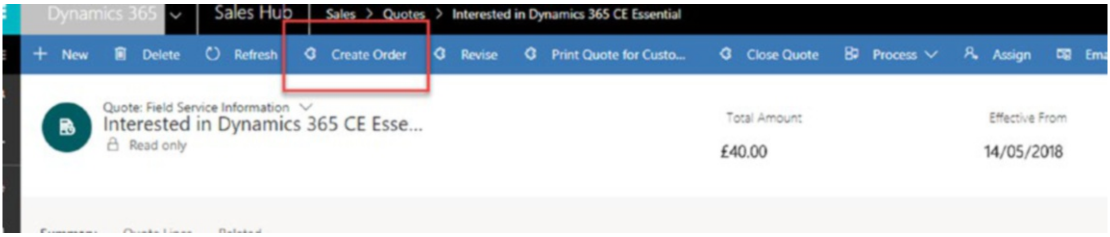

Dynamics 365
Sales Hub
Sales > Quotes > Interested in Dynamics 365 CE Essential
New
Delete
Refresh
Create Order
Revise
Print Quote for Custo...
Close Quote
Process
Assign
Ema
Quote: Field Service Information
Interested in Dynamics 365 CE Esse...
Read only
Total Amount
£40.00
Effective From
14/05/2018

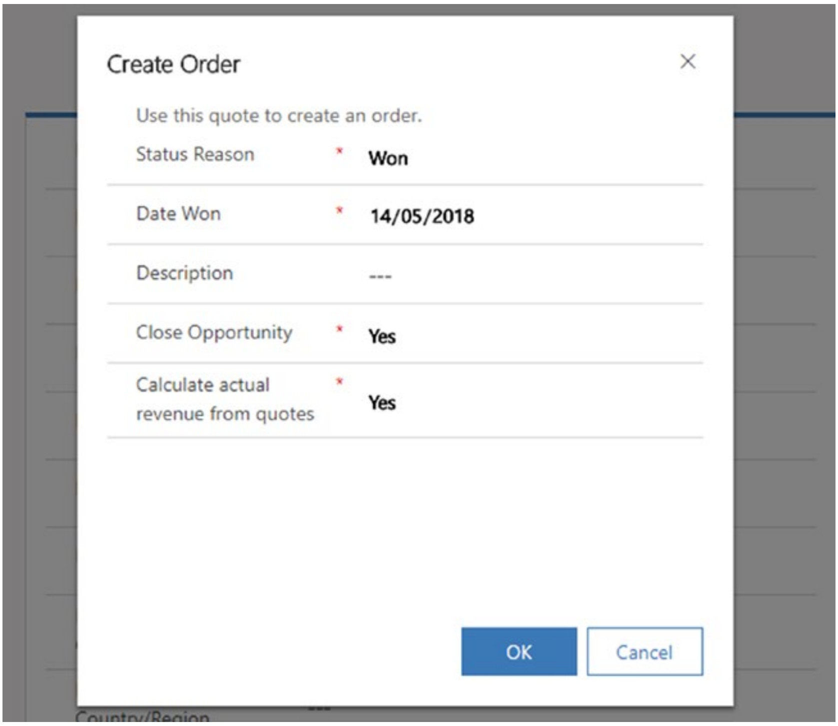
Figure 3-44. Use the Create Order command-bar button on the activated quote to create a new order

---

Note If there is more than one active quote associated with an Opportunity, a different notification will appear asking the user to close the quotes.

The "Create Order" dialog window will appear, where specific options can be selected that roll up to the Opportunity Close record. The most important one is "Calculate Actual Revenue from Quotes." This will take the value from the quote and update the "Actual Revenue" field, as opposed to this being achieved from the opportunity product detail, which could have changed.

14. Click the OK button to automatically close the Opportunity and Quote records and automatically open the Order record (Figure 3-45).



Create Order

Use this quote to create an order.

Status Reason * Won

Date Won * 14/05/2018

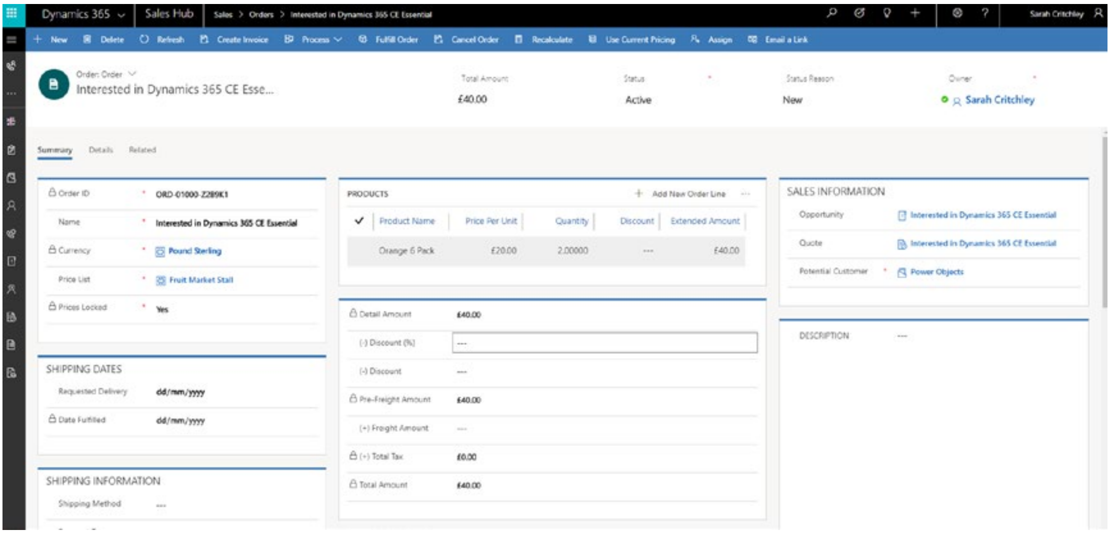
Description ---

Close Opportunity * Yes

Calculate actual revenue from quotes * Yes

Figure 3-45. *'Create Order' Dialog*

An Order record in Dynamics 365 represents a confirmed order (Figure 3-46). This can normally mean that a formal confirmation of works has been agreed upon and signed, such as a contract. It could indicate to a warehouse the need to obtain the items and complete the order, shipping any physical items to the shipping address provided. It could also represent a record of shipment. These examples demonstrate how flexible this record is and what it can represent in an organization's sales process.


Dynamics 365
Sales Hub
Sales > Orders > Interested in Dynamics 365 CE Essential
Sarah Critchley
New
Delete
Refresh
Create Invoice
Process
Fulfill Order
Cancel Order
Recalculate
Use Current Pricing
Assign
Email a Link
Summary
Details
Related
Add New Order Line

Order: Order
Interested in Dynamics 365 CE Esse...

Total Amount: £40.00
Status: Active
Status Reason: New
Owner: Sarah Critchley

Order ID: ORD-01000-Z289K1
Name: Interested in Dynamics 365 CE Essential
Currency: Pound Sterling
Price List: Fruit Market Stall
Prices Locked: Yes

SHIPPING DATES
Requested Delivery: dd/mm/yyyy
Date Fulfilled: dd/mm/yyyy

SHIPPING INFORMATION
Shipping Method: ---

PRODUCTS

Product Name	Price Per Unit	Quantity	Discount	Extended Amount
Orange 6 Pack	£20.00	2.00000	---	£40.00

Detail Amount: £40.00
(-) Discount (%): ---
(-) Discount: ---
Pre-Freight Amount: £40.00
(+) Freight Amount: ---
(+) Total Tax: £0.00
Total Amount: £40.00

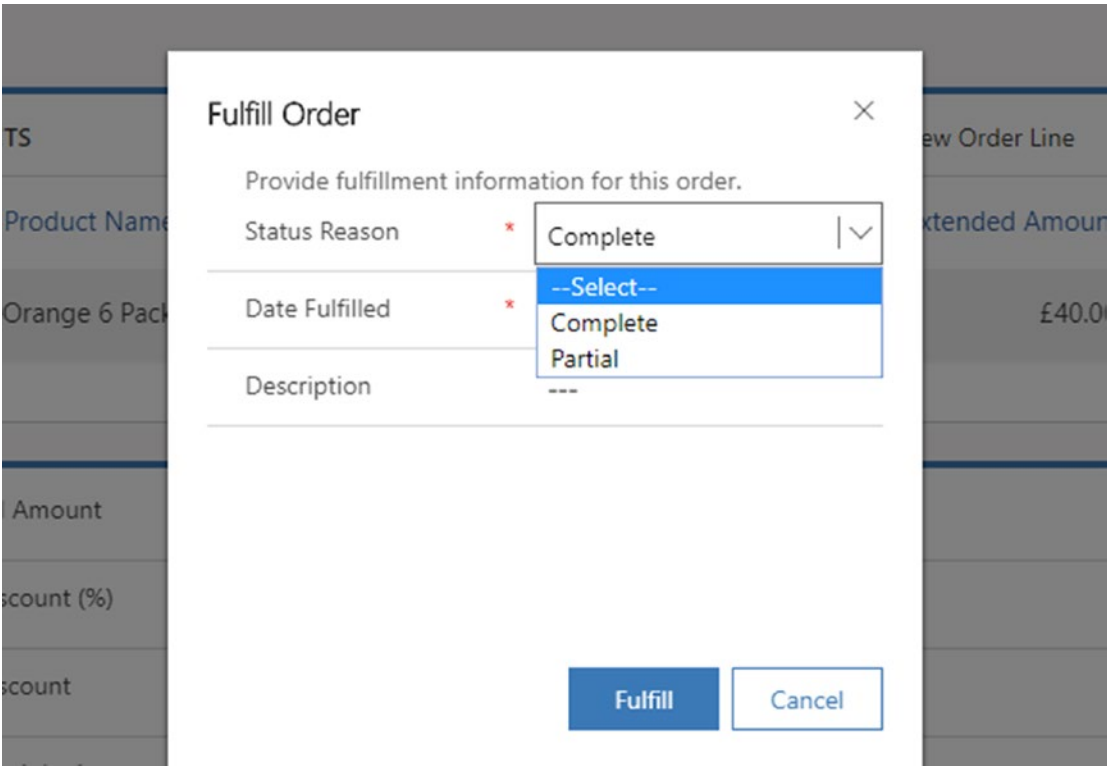
SALES INFORMATION
Opportunity: Interested in Dynamics 365 CE Essential
Quote: Interested in Dynamics 365 CE Essential
Potential Customer: Power Objects

DESCRIPTION: ---

Figure 3-46. *Order record*

The Order record has notable functionality. The Create Invoice button on the command bar does not close the order, and instead creates a new invoice and associates it with the order. An order represents a contractual commitment to provide a service, and so it is assumed this would remain open and active within the system until that is delivered or provided. Keeping an order open means more than one invoice can be associated in instances of payment plans and paying in part, not just the scenario of a single payment.

The order itself could be shipped in more than one part, allowing a user to select "Partial" as the status reason, which closes an order when set to "Fulfilled." Orders can also be cancelled, and selecting "Cancel Order" updates the status and makes the Order record read-only (Figure 3-47).



Fulfill Order

Provide fulfillment information for this order.

Status Reason * Complete

Date Fulfilled *

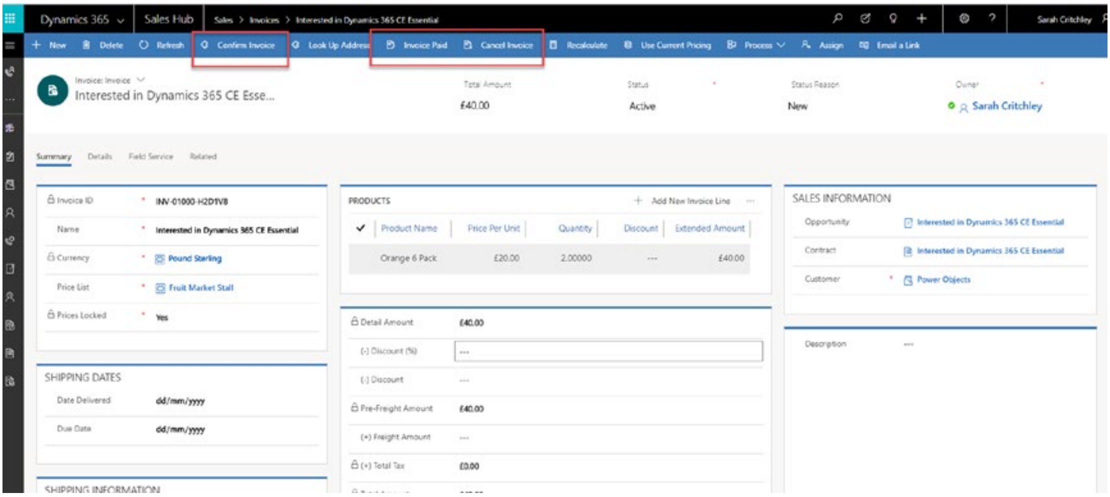
Description ---

TS
Product Name
Orange 6 Pack
Amount
scount (%)
scount
ew Order Line
xtended Amoun
£40.0
--Select--
Complete
Partial
Fulfill
Cancel

Figure 3-47. *Fulfilling an order and selecting "Complete" or "Partial"*

15. Click "Create Invoice" on the Order record. This should open a new Invoice record (Figure 3-48).

16. Navigate back to the Order record (easily by clicking the "Order" lookup field from the invoice) and select "Fulfill Order," selecting "Complete" as the status reason.


Dynamics 365
Sales Hub
Sales > Invoices > Interested in Dynamics 365 CE Essential
Sarah Critchley
New
Delete
Refresh
Confirm Invoice
Look Up Address
Invoice Paid
Cancel Invoice
Recalculate
Use Current Pricing
Process
Assign
Email a Link
Summary
Details
Field Service
Related
Add New Invoice Line

Invoice: Invoice
Interested in Dynamics 365 CE Esse...

Total Amount: £40.00
Status: Active
Status Reason: New
Owner: Sarah Critchley

Invoice ID: INV-01000-H2D1V8
Name: Interested in Dynamics 365 CE Essential
Currency: Pound Sterling
Price List: Fruit Market Stall
Prices Locked: Yes

SHIPPING DATES
Date Delivered: dd/mm/yyyy
Due Date: dd/mm/yyyy

SHIPPING INFORMATION

PRODUCTS

Product Name	Price Per Unit	Quantity	Discount	Extended Amount
Orange 6 Pack	£20.00	2.00000	---	£40.00

Detail Amount: £40.00
(-) Discount (%): ---
(-) Discount: ---
Pre-Freight Amount: £40.00
(+) Freight Amount: ---
(+) Total Tax: £0.00

SALES INFORMATION
Opportunity: Interested in Dynamics 365 CE Essential
Contract: Interested in Dynamics 365 CE Essential
Customer: Power Objects

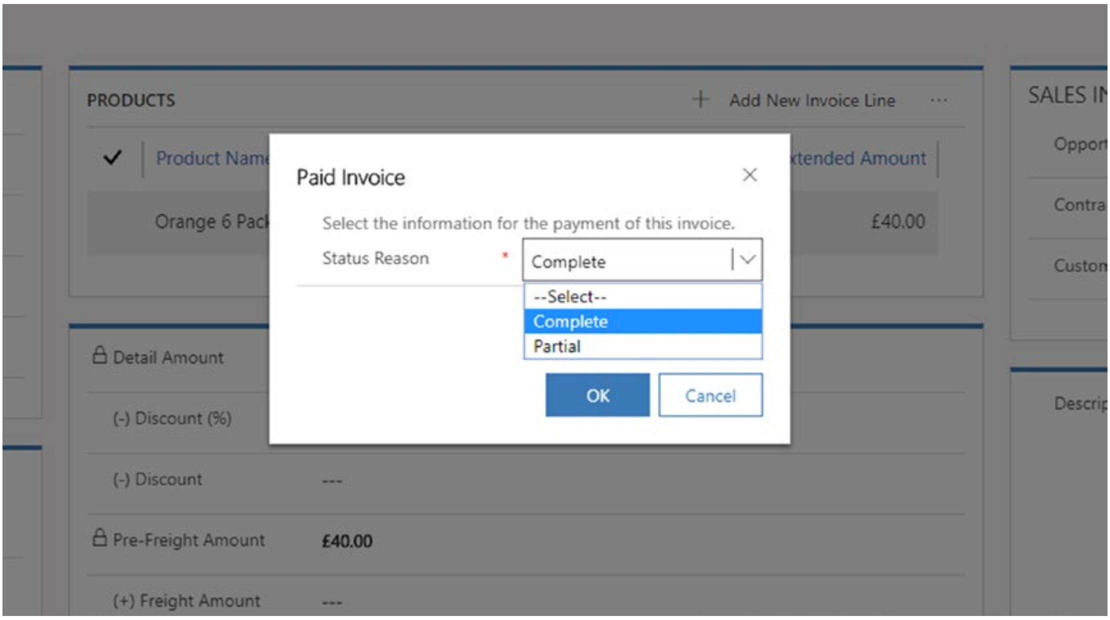
Description: ---

Figure 3-48. *Selecting "Create Invoice" from an Order record creates a new Invoice record, auto-populating data from the Order record*

The Invoice record, like the Order record, has notable functionality:

- The Confirm Invoice button confirms the invoice has been billed; invoices can be generated but not necessary sent, which is where this differentiation is important and useful.
- Invoices can be cancelled—when they have been made in error, for example.
- The same as an order, invoices can be marked as paid, but also can be paid partially. To make new invoices for scenarios of partial payment or payment plans, click "Create Invoice" from the Order record as many times as required, manually editing the products and the cost to suit the invoices being paid.

17. Open the Invoice record and select "Invoice Paid" from the command bar, selecting "Complete" as the status reason (Figure 3-49).



Paid Invoice

Select the information for the payment of this invoice.

Status Reason * Complete

PRODUCTS
Add New Invoice Line
Product Name
Extended Amount
Orange 6 Pack
£40.00
--Select--
Complete
Partial
OK
Cancel
Detail Amount
(-) Discount (%)
(-) Discount

Pre-Freight Amount
£40.00
(+) Freight Amount

SALES IN
Opport
Contra
Custon
Descrip

__Figure 3-49.__ Confirming the invoice has been paid is similar functionality to the fulfillment of an order

Supporting Sales Functionality

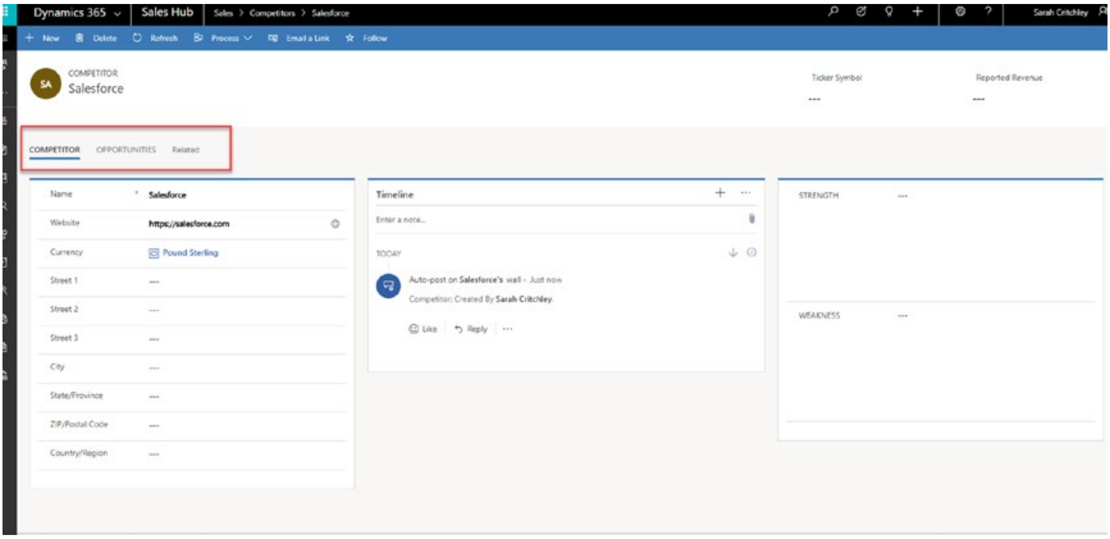
There are several different record types that support the sales lifecycle discussed in the previous section. These records can enhance the sales lifecycle by providing more information that can be optionally used by users.

Competitors

Within the Sales Hub application, there are some extensions to the standard sales process that can be utilized to enhance the features and user experience.

The Competitor record is available on the UI Client sitemap and is a simple concept: a Competitor record holds details of a competitor for an organization. These records are often linked to Opportunity records, allowing the sales team to see who they are up against for the competition of a contract. Information available in the Competitor record includes contact information, revenue, and strengths and weaknesses.

The Opportunities tab on the Competitor record provides users with the ability to see straight away which opportunities the competition is linked to (Figure 3-50). This functionality can be extended to reports or rollup fields to see how many opportunities the sales team has won instead of the competitor so as to create rankings of the largest competitors in the business. In Part II, some of these extensions will be explored.


Dynamics 365
Sales Hub
Sales > Competitors > Salesforce
Sarah Critchley
New
Delete
Refresh
Process
Email a Link
Follow
SA
COMPETITOR
Salesforce
COMPETITOR
OPPORTUNITIES
Related
Timeline
Enter a note...
TODAY
Like
Reply

Ticker Symbol: ---
Reported Revenue: ---

Name: Salesforce
Website: https://salesforce.com
Currency: Pound Sterling
Street 1: ---
Street 2: ---
Street 3: ---
City: ---
State/Province: ---
ZIP/Postal Code: ---
Country/Region: ---

Auto-post on Salesforce's wall - Just now
Competitor: Created By Sarah Critchley.

STRENGTH: ---
WEAKNESS: ---

Figure 3-50. *Competitor record available in the UCI and linked to an Opportunity record*

Connections

Connections within Dynamics 365 CE allow a user to connect any record type to another record type. Examples include connecting an Account to an Account, or a Contact to a Work Order. A "role" is specified when creating the link; this is the reason for connecting record A to record B. The specified role can include a reciprocating role from B to A. A simple example here is a real-life parent and child relationship. A to B could have the role Parent. B to A would be Child. These are managed by "connection roles." There are a large number of connection roles as standard, but new custom connection roles can be created via Classic UI at time of writing by navigating to Settings ➤ Business Management and selecting "Connection Roles."

Connections, while simple, can prove to be useful in sub-grids. They allows users to see relationships to other records. It empowers users to link associated records without having to make customizations for basic relationships and information. Leads and opportunities use these sub-grids as standard in the Stakeholders grid by using the Stakeholder connection role (Figure 3-51).

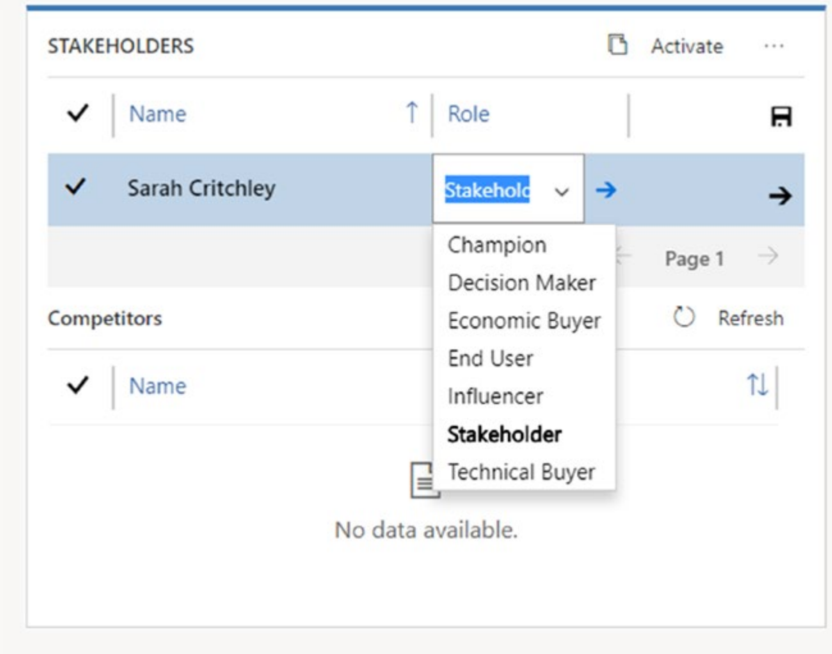
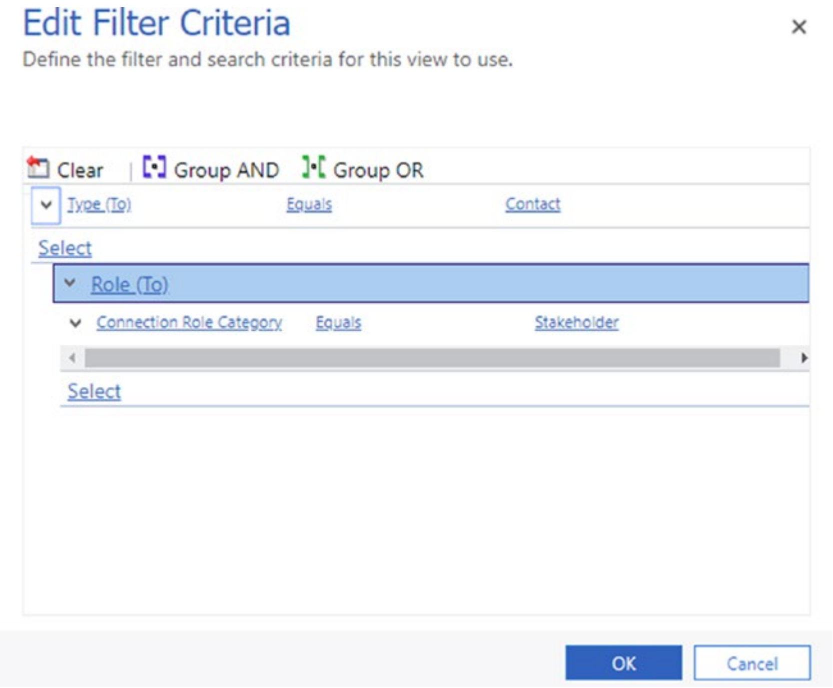

STAKEHOLDERS
Activate
Name
Role
Sarah Critchley
Stakehold
Champion
Decision Maker
Economic Buyer
End User
Influencer
Stakeholder
Technical Buyer
Page 1
Competitors
Refresh
Name
No data available.

Figure 3-51. *Connections being used in standard sales functionality under the "Stakeholders" role*

The query used by the Stakeholders grid is in shown in Figure 3-52. The query has the "type" conditioned to "Contact" and the "to" role as a stakeholder, creating the filtered view. This can easily be achieved for any other standard or custom connection roles to provide a tailored experience using standard features.


Edit Filter Criteria
Define the filter and search criteria for this view to use.
Clear
Group AND
Group OR
Select
Select
OK
Cancel

Type (To) Equals Contact

Role (To)

Connection Role Category Equals Stakeholder

Figure 3-52. *Standard query used for the Stakeholders sub-grid*

The Connections sub-grid can be accessed from the Related tab on all records (Figure 3-53). From there you can add connections. Connections can be used for more than sales within other areas of Dynamics 365 CE, such as customer service.

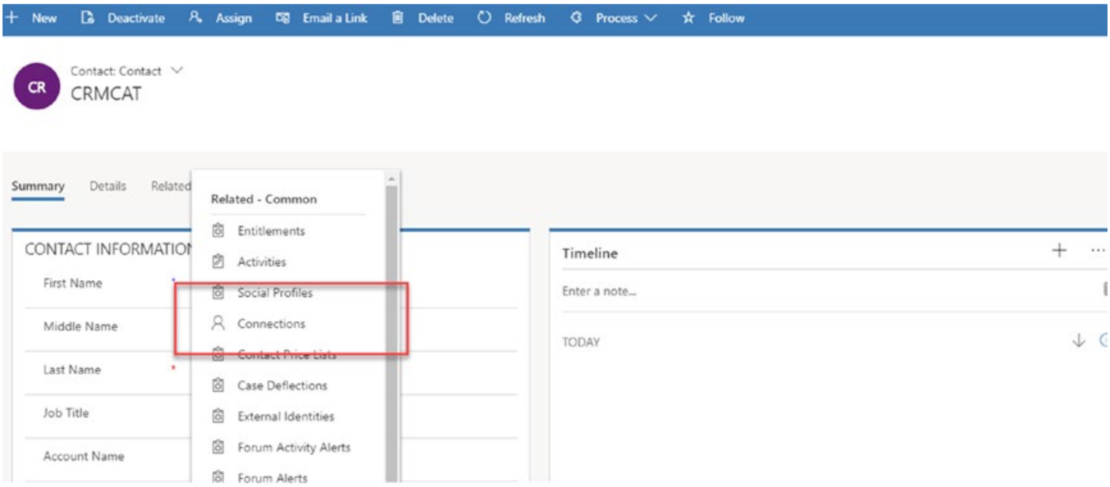

New
Deactivate
Assign
Email a Link
Delete
Refresh
Process
Follow
CR
Contact: Contact
CRMCAT
Summary
Details
Related
CONTACT INFORMATION
First Name
Middle Name
Last Name
Job Title
Account Name
Related - Common
Entitlements
Activities
Social Profiles
Connections
Contact Price Lists
Case Deflections
External Identities
Forum Activity Alerts
Forum Alerts
Timeline
Enter a note...
TODAY

Figure 3-53. *Accessing Connections sub-grid via the Related tab on a record*

Summary

This chapter has given an overview of how to get started with the Sales Hub application. Dynamics 365 CE provides a large amount of functionality within the application, providing organizations with the capability to get started straight away managing their sales pipeline. From the beginning of an interaction with a person that can be captured within a Lead entity all the way through to managing the generation of invoices, the lifecycle not only supports sales people in obtaining the sale through easy collaboration and availability of the most useful data, but also helps other staff through the creation of order and invoice information, which can provide useful integration points to back-office systems.

The customer engagement involved in a sales interaction can be managed through the records in the process, providing support to users through the features of the whole platform. This includes relationship insights, suggestion cards, and reminders about activities. Microsoft Outlook Integration gives users a seamless way to communicate with potential customers within a sales cycle while focusing on the interaction; the data is automatically synchronized to the Dynamics 365 CE platform. Finally, supporting records such as Connections, covered within the last section of the chapter, can give relationship insights to other data held within the organization. Together, these features support users in their use of the app within their organization's sales lifecycle.

Chapter Tasks

At the end of every chapter, there will be a section that gives up to ten suggested tasks for you to complete within Dynamics 365 CE. Completing these tasks will be based around the topics covered within the chapter and are aimed at expanding practical knowledge and application regarding such topics that goes beyond reading about them.

1. Create a product family hierarchy larger than three levels with associated product properties at each level.
2. Create new products related to the product families.
3. Create product relationships on the products created in the previous step.
4. Create a new price list and associate the products as price list items.

5. Create a new lead, associating new contact and account information. Disqualify the lead.
6. Create a new lead and qualify the lead.
7. Add more data into the Opportunity record and add product line items.
8. Create a connection from the opportunity to another record in the system using the standard connection roles.
9. Create a quote, revising it several times.
10. Create a new order from the quote made in the previous step.

Further Reading

Troubleshooting the Sales Hub Application (Microsoft, 2018). URL: `https://docs.microsoft.com/en-us/dynamics365/customer-engagement/sales-enterprise/troubleshooting-admin`

Troubleshooting for Sales People in Dynamics 365 (Microsoft, 2018). URL: `https://docs.microsoft.com/en-us/dynamics365/customer-engagement/sales-enterprise/troubleshooting`

Lead to Qualification Overview (Microsoft, 2018). URL: `https://docs.microsoft.com/en-us/dynamics365/customer-engagement/sales-enterprise/nurture-sales-from-lead-order-sales`

CHAPTER 4

Security Model

Dynamics 365 CE has a native security model that is based on users having various degrees of layered access to the application. This access is governed primarily using security roles assigned to users that refer to an access level with specific privileges. These privileges specify what a user can do on those records normally relative to the owner of the record and can be influenced by the corresponding business unit they are part of.

Often, security within the Dynamics 365 CE application is summarized as having role, record, and field access. This is a good summary of the levels of access, and these types of access are achieved in many different ways, which this chapter will review. Role-based security is one of the primary ways to secure access to Dynamics 365 CE. This approach is also used per app module ("app"), and roles are applied to the app itself, so those users who have the security role linked to the app will have access to the app; however, they still will be restricted as to what the privileges are in their assigned security roles.

Given the application of the General Data Protection Regulation (GDPR) in addition to the Data Protection Act of 1991, organizations have begun looking more closely at their security within business applications. The GDPR looks at specifically embedding security as a company-wide policy and not something that is an augmentation of a business application system. Security within Dynamics 365 CE is as much about the capabilities of the platform as it is about the process an organization puts in place for specific data-policy management and governance. Who has access and can modify the data is not part of just data protection but also procedures; for example, when an employee leaves the organization and the effect this has on their data and the responsibilities they once had.

The end goal of an organization is to have a security model that is consistent, easy to understand, and reflective of the organizational policies. Dynamics 365 CE is just one part of the application and security within other applications, such as Azure, Power BI, and Office 365, where security within those applications also needs to be easily

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understood and documented within the overarching data policy of an organization. Provided that security has been configured for the corresponding data policy of an organization, users should be able to complete their role within the system with no hindrances or error messages preventing them from completing a task pertinent to their role. They would not have access to any records they do not need.

Security needs to be designed such that it makes sense to give access to an organization-level record such as an Account, Contact, and related data. It makes no sense to hide these types of records, as duplicate records would be created in their stead, leading to more data-governance issues. Also, conflicting child records, such as leads and quotes, creates multiple incorrect records. This example is the result of a poorly designed security model. Achieving a balance of giving enough information without providing too little or too much is the principal goal of security model design within Dynamics 365 CE.

Designing a security model can be started in several ways. A discussion of what distinct roles within an organization can do and should be able to do can help define the security roles within the organization. This can then be documented by an organization using Microsoft Excel or even Visio with a simple table or diagram of privileges and access levels, each sheet denoting a business unit. This can be created together with the implementing organization's key stakeholders and begins the design of the system with the "Privacy by Design" paradigm that is one of the main goals of data protection and the GDPR.

The following sections will review the constructs available within Dynamics 365 CE that will give organizations the capability to create a robust, privacy-led design that allows users to complete their tasks and gives users the data they need, when they need it.

Business Units, Teams, Users, and Field Security

Users within the system should have access to everything they need so they can achieve their role within the organization. Having a privacy-by-design approach when designing the application is normally best achieved by constructing the structure first through business-unit level.

Business units within Dynamics 365 CE can mean many different things, but their primary purpose is to create a security context. They are logical groupings of users that segregate access levels based on their hierarchical structure. Common examples of logical groupings include departments, regions, or sections within a company; however, it is important to note that an organization's hierarchal structure shouldn't be reflected in the business-unit structure as standard, and the security design and access to users and their roles should be considered first.

All organizations have a root business unit. This is created when a Dynamics 365 CE Organization is created, and it cannot be deleted. A new layer of "child" business units can be created, which would have their "parent" defined as the root business unit. An example would be "Library Association" as the root, and then divisions underneath as "United Kingdom," "Australia," and "United States." In this example, the divisions are based on geographical information.

Those child units could then be "parents" to other children business units. This relationship is a standard hierarchy with parent/child concepts. In the preceding example, "United Kingdom" could then have "Marketing," "Sales," and "Support" business units all pointing to the "United Kingdom" parent. A similar structure could also apply for the "Australia" and "United States" business units. For this fictional organization, the Library Association would then have a security model based on geographical division. For other organizations, it could work in the same or a different way, using the same parent/child concepts (Figure 4-1).

Users are assigned a specific business unit and can only be in a single business unit. This causes challenges when allowing access to records outside of their business unit, which is often overcome with teams, covered later in this chapter. An example would be user John Smith, who is based in the UK marketing department. John is placed within the "Marketing" business unit, which is a child business unit to the "United Kingdom." Ava Jones, sitting in the UK office, is a CEO and would instead sit at the United Kingdom business-unit level, as she requires oversight of all divisions of the UK office.

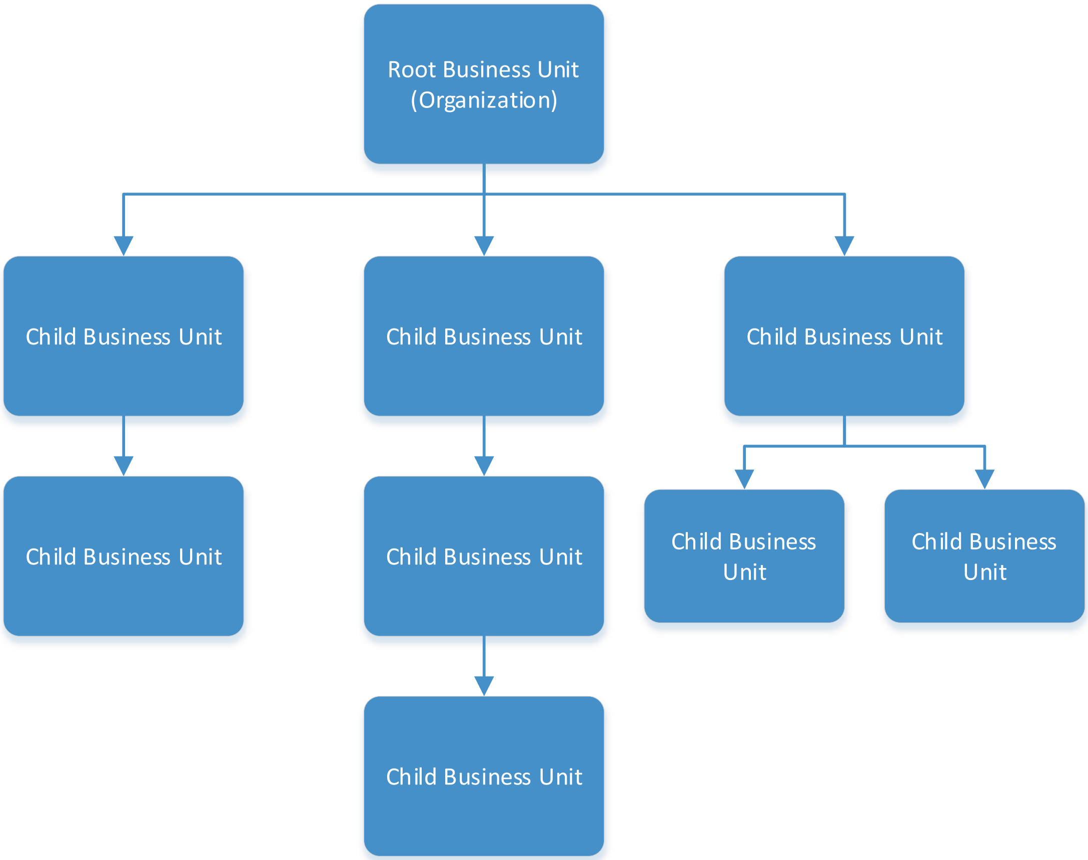

Root Business Unit (Organization)
Child Business Unit
Child Business Unit
Child Business Unit
Child Business Unit
Child Business Unit
Child Business Unit
Child Business Unit
Child Business Unit

***Figure 4-1.** Business unit parent/child structure within Dynamics 365 CE*

Security Roles

Security roles are a specific set of privileges and levels of access. Dynamics 365 CE comes with a list of predefined roles, e.g., "CSR Manager" and "Marketing Manager," which can be found in the "Further Reading" section at the end of this chapter.

Privileges are an action a user can perform on the record. These are summarized in Table 4-1.

Table 4-1. A List of the Diverse Types of Privileges within Dynamics 365 CE

Privilege Name	Description	Dependencies
Create	A user can create a new record. Normally accessed by clicking "New" or the "+" icon on sub-grids	Needs to have Read access. Note: If they do not have Read access, a user can still create for other users.
Read	Access to see the record in lists, dashboards, and other areas of the application	
Write	To make changes to a record	Needs Read access
Delete	Makes the Delete button visible and gives access to delete records	Needs Read access
Append	Adds another record to the current record as a child	Needs Read access
Append To	Adds the current record as a child to another	Needs Read access
Assign	Changes the ownership of a record to another user or team	Needs Write and Read access
Share	Shares a record with a user or a team and gives access to a specific record under a specific privileges set	Needs Read access (the sharer and the share)

Based on these privileges, a user would have a set level of access based at the entity/record level.

Those access levels are summarized in Table 4-2.

Table 4-2. Access-Level Summary

Access Level	Description
Basic or User	User level only, and user only has access to records they own
Local or Business Unit	A user can see the records within their business unit only
Deep or Parent: Child	A user can see the record within the their business unit, AND in the child business unit
Global or Organization	Gives access to all records and ignores the business-unit hierarchy

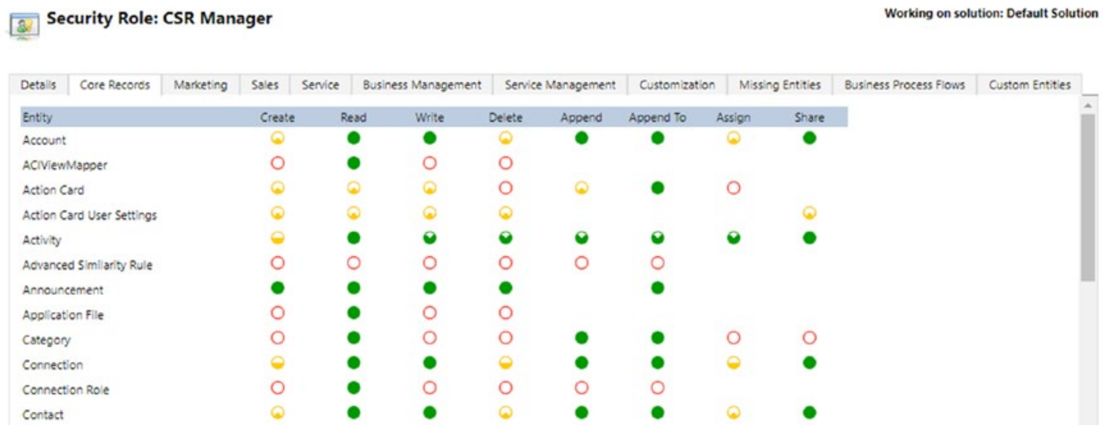
More information on privileges and access levels can be found in the “Further Reading” section at the end of this chapter.

Security roles can be granted to users and teams. A user can have many security roles, and the same applies to a team. Security roles, however, are only available for users and teams specified within the business unit local to the user or team. If a user is at the “United Kingdom” level, and a security role is made at the business-unit level, the “Australia” business unit will not be able to apply for the same security role. Upon security-role creation, a security role is copied to all child business units that the role was originally created at. This means, in this example, the role would be available at all child business units of “United Kingdom” and be available for “Marketing,” “Sales,” and “Support” within this parent unit. These are referred to as *inherited roles* and cannot be modified.

The same functionality applies to teams. Only security roles available at the applied business unit directly linked to the team can be applied. Teams, however, have the additional functionality of allowing team members from *other* business units to join. Teams will be covered in the next section.

It would be useful to review a standard security role that Dynamics 365 CE comes with upon creating an organization. This is a good task to complete in a trial environment yourself as a reader, reviewing the same screens while reviewing the section.

Task: Review a standard security role within Dynamics 365 CE. Open the CSR Manager role within the “Security” area of the settings within the Classic UI (Figure 4-2).



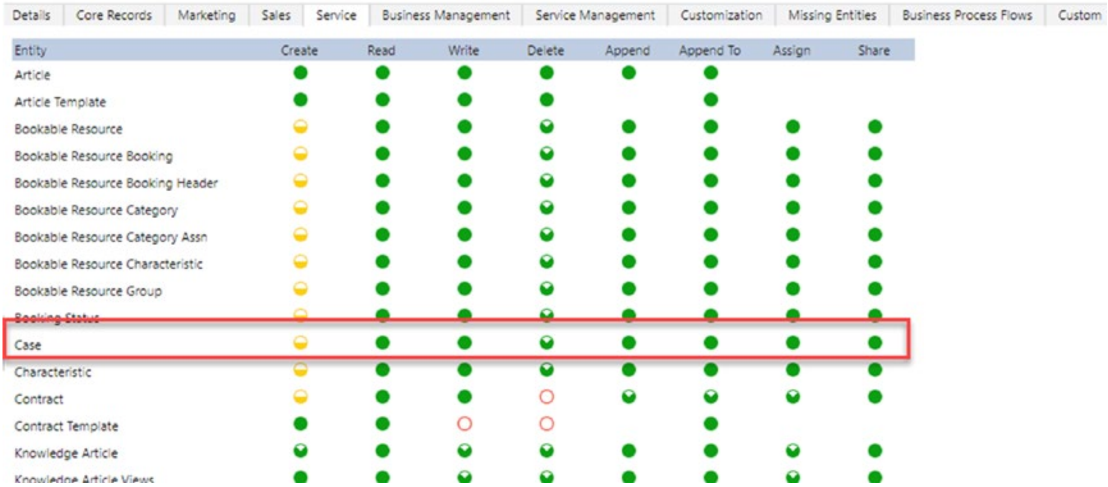
Security Role: CSR Manager
Working on solution: Default Solution
Details
Core Records
Marketing
Sales
Service
Business Management
Service Management
Customization
Missing Entities
Business Process Flows
Custom Entities

Entity	Create	Read	Write	Delete	Append	Append To	Assign	Share
Account	◔	●	●	◔	●	●	◔	●
ACIViewMapper	○	●	○	○				
Action Card	◔	◔	◔	○	◔	●	○	
Action Card User Settings	◔	◔	◔	◔				◔
Activity	◒	●	◕	◕	◕	◕	◕	●
Advanced Similarity Rule	○	○	○	○	○	○		
Announcement	●	●	●	●		●		
Application File	○	●	○	○				
Category	○	●	○	○	●	●	○	○
Connection	◒	●	●	◒	●	●	◒	●
Connection Role	○	●	○	○	○	○		
Contact	◔	●	●	◔	●	●	◔	●

Figure 4-2. *CSR Manager security role, which comes standard with Dynamics 365 CE*

The role displays the privileges at the top of the table, which are denoted by the icons. The more progressively complete the circles are, the more access they have.

- Users with only this security role will be able to see all Account records within the organization (shown by the full green circle, showing organization-level privileges regardless of business unit).
- The user can only create Account records under their user (as opposed to creating an Account record owned by another user). They can also only assign records they own.
- In the Service tab owned by the Case entity, the user can create a Case record under the user of anyone within their business unit. They also can delete a Case owned by any user within their current business unit and any child business units (Figure 4-3).



Entity	Create	Read	Write	Delete	Append	Append To	Assign	Share
Article	●	●	●	●	●	●		
Article Template	●	●	●	●		●		
Bookable Resource	◑	●	●	◕	●	●	●	●
Bookable Resource Booking	◑	●	●	◕	●	●	●	●
Bookable Resource Booking Header	◑	●	●	◕	●	●	●	●
Bookable Resource Category	◑	●	●	◕	●	●	●	●
Bookable Resource Category Assn	◑	●	●	◕	●	●	●	●
Bookable Resource Characteristic	◑	●	●	◕	●	●	●	●
Bookable Resource Group	◑	●	●	◕	●	●	●	●
Booking Status	◑	●	●	◕	●	●	●	●
Case	◑	●	●	◕	●	●	●	●
Characteristic	◑	●	●	◕	●	●	●	●
Contract	◑	●	●	○	◕	◕	◕	●
Contract Template	●	●	○	○		●		
Knowledge Article	◕	●	◕	◕	●	●	◕	●
Knowledge Article Views	●	●	◕	◕	●	●	◕	●

Figure 4-3. *CSR Manager privilages, which comes standard with Dynamics 365 CE*

Every record type within the system is defined as having a privilege, normally under the access conditions just specified. There are some special types of privileges that are covered under specific sections of the security role. These normally have only two levels of access: Organization or None. An example of this is within the Service tab in the CSR Manager role under “Miscellaneous Privileges” (Figure 4-4).

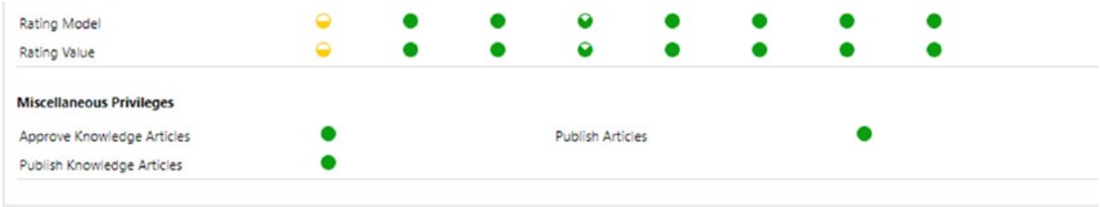


Figure 4-4. *CSR Manager security role, special privilages, which comes standard with Dynamics 365 CE*

Creating a brand-new security role can be complicated, but it is the most secure way of ensuring an organization has enabled all privileges at the correct access levels. Many organizations will copy a similar type of role that has basic access and modify it to enable an easier transition. This is a great exercise for practicing; however, if used in production environments, the roles must be thoroughly tested for their permission set.

Testing Security Roles

Regardless of how the security role is created, within the implementation it is imperative that roles be tested based on the original documented security diagram and model. Simple user stories and acceptance criteria can be created for each privilege upon each entity in each role. They can then be grouped by role and by the entity to perform the test cases in a singular session.

It is important that testing is performed per security role so that any potential error or flaw in the security can be found immediately and be isolated. Then, testing can occur for combinations of roles, where they will be utilized within the initial implementation as a “real user.” Testing this extra step can find any flaws in the security-model design at the user level and not role level. Security roles are additive; roles will never *remove* privileges, only add to them.

When testing a security role (singular) or security roles for a user, ensure you are not a system administrator and that you have multiple user accounts set up within the tenant to allow for switching between system admin roles (to change other users’ privileges) and the roles you are testing.

Teams and Ownership

There are two different types of record ownership within Dynamics 365: user/team ownership or organization ownership. Teams are groups of people across the organization that can have ownership of a record. Having a team "own" a record gives access to multiple users across those different business units based on the security roles that the team has. When a user opens a form, Dynamics 365 CE evaluates their access level and privileges upon that record. This information can come from security roles directly from the user, a team, record sharing, or access teams. The evaluation of these then concludes in the totality of what a user has access to within the application. This information is cached locally in the browser and is made invalid every time a user record is updated or their roles change to reduce loading times (Figure 4-5).

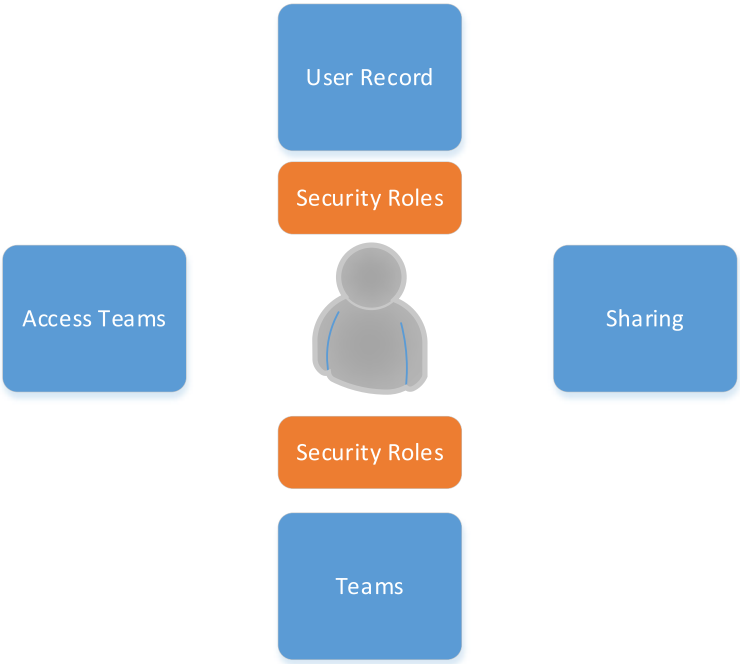


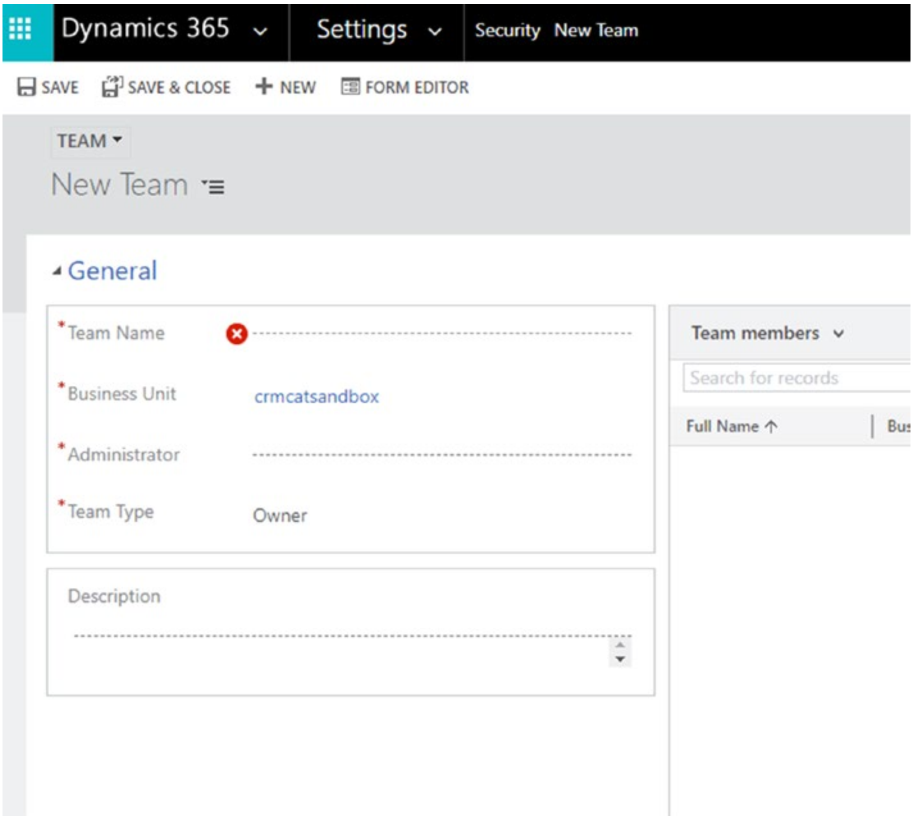
Figure 4-5. *Where security roles are used within Dynamics 365 CE*

Teams are assigned to a business unit. They can, however, contain users who exist across multiple business units. An example includes a “Conference 2018 Team” that has been created in Dynamics 365 for the Library Association organization. Both Ava and John can be a part of this team, which is assigned the root business-unit level, even though Ava and John are users in different business units.

System teams are created per business unit and are a special type of team that cannot be modified and automatically log who is in a specific business unit at any one time. Teams can be created by navigating to “Security” within the Classic Client and then navigating to “Teams.” Clicking “New” brings up a blank Team record. The following fields can be completed (Figure 4-6):

- **Team Name:** The name of your team
- **Business Unit:** The business unit of your team; governs security roles available to apply to the team level
- **Administrator:** Named user that can be accessed in workflows
- **Team Type:** Owner or Access Teams. This section is referring to owner teams. Access teams will be discussed in the next section.

Once created, owner teams can “own” records just like users own records, giving the specific privileges from the team to those users included within the team for that record, on top of any other privileges they have at the user level (meaning the least restrictive layer). It is important to know that with owner teams all users within that team are granted the same level of access. If the team members require a different level of access, access teams will be more appropriate.


Dynamics 365
Settings
Security New Team
SAVE
SAVE & CLOSE
NEW
FORM EDITOR
TEAM
New Team
General
Team members
Search for records
Full Name
Bus

Team Name

Business Unit crmcatsandbox

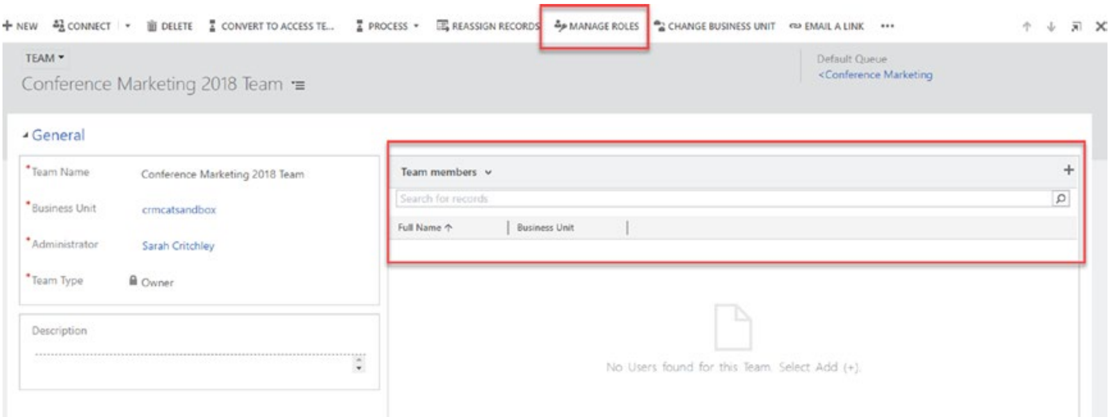
Administrator

Team Type Owner

Description

Figure 4-6. *Creating a new team in Dynamics 365 CE*

Select "Manage Roles" on a team to change the security roles of the team that are applied to all the members within that team. The members can be reviewed in the Team Members sub-grid, as shown in Figure 4-7.


NEW
CONNECT
DELETE
CONVERT TO ACCESS TE...
PROCESS
REASSIGN RECORDS
MANAGE ROLES
CHANGE BUSINESS UNIT
EMAIL A LINK
TEAM
Conference Marketing 2018 Team
General
Team members
Search for records
Full Name
Business Unit

Default Queue <Conference Marketing

Team Name Conference Marketing 2018 Team

Business Unit crmcatsandbox

Administrator Sarah Critchley

Team Type Owner

Description

No Users found for this Team. Select Add (+).

Figure 4-7. *Team record within Dynamics 365 CE*

Testing Teams

It is important to test security roles within team structures. Team structures are designed to give users an extra level of privileges they do not normally have at the user level. It will take more effort to design such tests as you must specifically give the testing user an original role with limited access so you can verify that the access granted by the teams access is being applied correctly in all scenarios relevant to the organization and the security model.

As mentioned in the previous section, using teams gives users the capability to access records that are owned by a different user in a different business unit. This is one of the most useful aspects of a team; however, teams also can impact the security design. It is an important aspect of testing.

Sharing

Sharing is a privilege available to users so they can share the record specifically with another user or a team. Depending upon the access levels, users can share records they own, the business unit owns, the business unit and their children own, or any record within the system. Sharing should be used with caution as it allows users to get around the designed security model. For this reason, it must be ensured that sharing privileges are set to a minimum, if at all. Sharing is an access right given per entity; to restrict this, set this to “None.”

When sharing a record, a share is also created for the child records behind the scenes associated with that parent. This could cause obvious security risks. When a record is initially shared, and the cascade of child-record shares occurs, if the original share is modified, the child shares are *not* updated, and there can be different privileges set on the parent and its children. This can naturally get hard to manage and be confusing for users. (To remove the shares of the children, the original share must be removed.) This result of sharing has been documented to cause notable performance degradations on the Dynamics 365 CE environment due to the increase in the size of the SQL table holding this information behind the scenes.

There are many alternatives to sharing that should be considered before allowing users the ability to share. This includes managing sharing with access teams, covered in the next section. Access teams, for example, allow for a more flexible level of sharing that can be managed more easily and is visible to administrators. One can also reduce sharing with individual users and instead share on the team level.

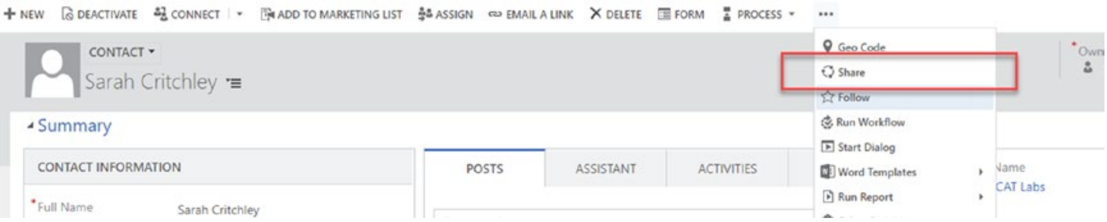
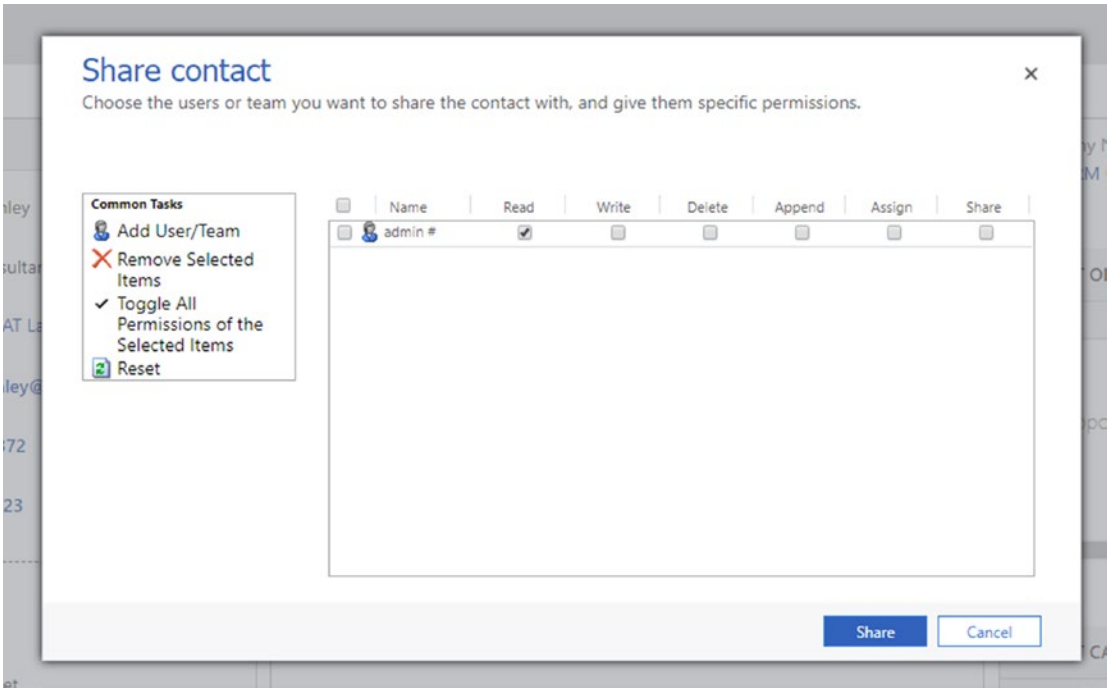

+ NEW
DEACTIVATE
CONNECT
ADD TO MARKETING LIST
ASSIGN
EMAIL A LINK
DELETE
FORM
PROCESS
CONTACT
Sarah Critchley
Summary
CONTACT INFORMATION
POSTS
ASSISTANT
ACTIVITIES
Full Name
Sarah Critchley
Geo Code
Share
Follow
Run Workflow
Start Dialog
Word Templates
Run Report
Name
CAT Labs

Figure 4-8. *Sharing within Dynamics 365 CE*

To share a record, if the user has permissions, navigate to the record and select “Share” (Figure 4-8). This is normally found on the action menu of a record. The user will then see a pop-up giving them the ability to share with a user or a team. They then select the privileges they wish to grant. A user who is sharing cannot grant another user or a team higher access levels or privileges than they already have. Once a record is shared, those who have received their share will be granted any additional privileges to the record they did not previously have (Figure 4-9).


Share contact

Choose the users or team you want to share the contact with, and give them specific permissions.

☐	Name	Read	Write	Delete	Append	Assign	Share
☐	admin #	☑	☐	☐	☐	☐	☐

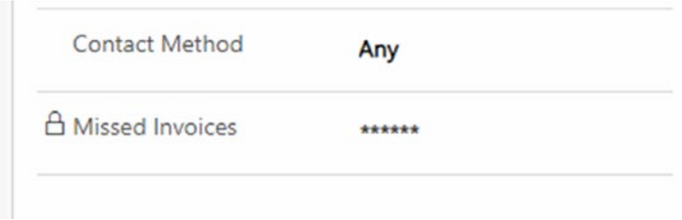
×
Common Tasks
Add User/Team
Remove Selected Items
Toggle All Permissions of the Selected Items
Reset
Share
Cancel

Figure 4-9. *Specific sharing privileges within Dynamics 365 CE*

Field Security

Sometimes a user needs to have read access to a record, but certain aspects of that field should be restricted further as they should not have access to everything held at that level. Field-level security can be useful here and can be built into the security model. Field-security requirements can be easily identified as a column within the documentation of the model's metadata definition when designing the entities and can also be also added to the security model. Field security adds an extra dimension to a security model that can manage specific cases of sensitive data that doesn't include the whole record.

Field security within Dynamics 365 allows an organization to restrict the Read, Update, and Create privileges for a specific field on a record type using field-security profiles. Users are applied to these profiles, allowing for granular access to these fields in combination with their security role unionization (Figure 4-10).

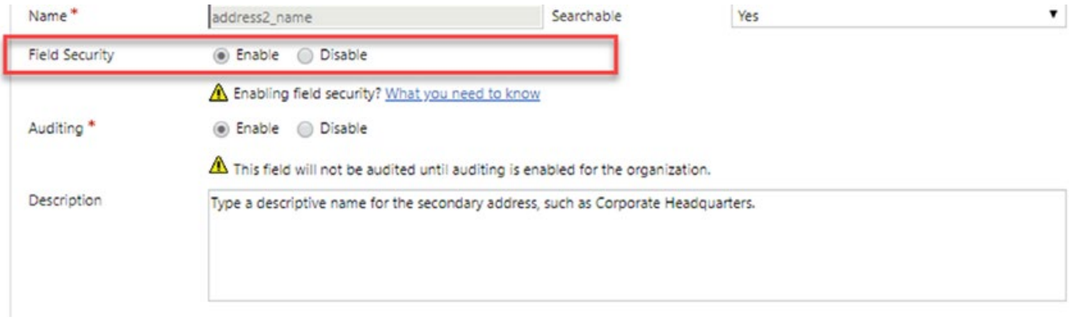


Contact Method Any

Missed Invoices ******

Figure 4-10. *Field security hiding the value of the field on forms if not within the security profile*

To enable field security on a field and secure it, the field itself needs to be set to "Enable" within the solution, as seen in Figure 4-11. By doing this, it restricts the access of every single member within the organization except system administrators and those who have a specific field-security profile related to this field.



Name * address2_name Searchable Yes ▼

Field Security ● Enable ○ Disable

⚠ Enabling field security? What you need to know

Auditing * ● Enable ○ Disable

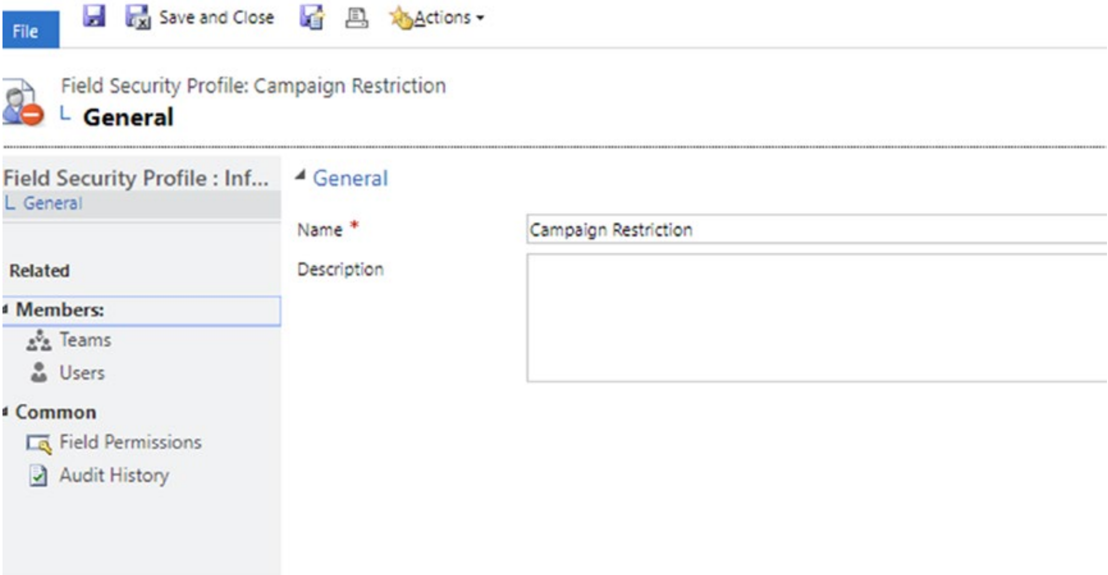
⚠ This field will not be audited until auditing is enabled for the organization.

Description Type a descriptive name for the secondary address, such as Corporate Headquarters.

Figure 4-11. *Field Security option on the field definition*

Task: Create a field-security profile.

1. Navigate to the Classic UI ➤ Settings ➤ Security.
2. Select “Field Security Profiles” and then select “New.” Name your profile (Figure 4-12).


File
Save and Close
Actions
General
Field Security Profile : Inf...
General
Related
Members:
Teams
Users
Common
Field Permissions
Audit History
General
Description

Field Security Profile: Campaign Restriction

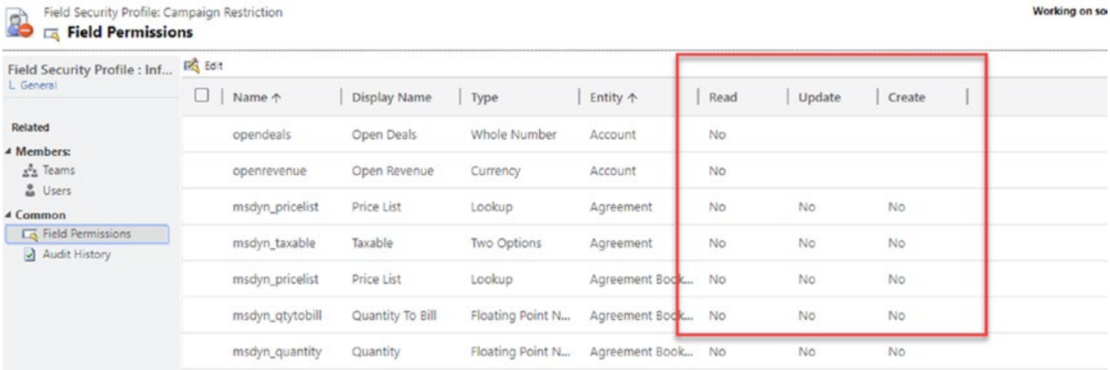
Name * Campaign Restriction

Figure 4-12. *Field-security profile*

In the profile, there is a section called “Members.” These are the teams and users granted the permissions within the system to have specific access (Read, Update, or Create) to the secure field.

3. Add a user to the new profile.

Under the Field Permissions tab, all the fields with “Field Security” enabled are displayed. Selecting the field allows a user to specify what permissions they want users within this profile to have upon the secure field. The field permissions can be seen in Figures 4-13 and 4-14.



Field Security Profile: Campaign Restriction

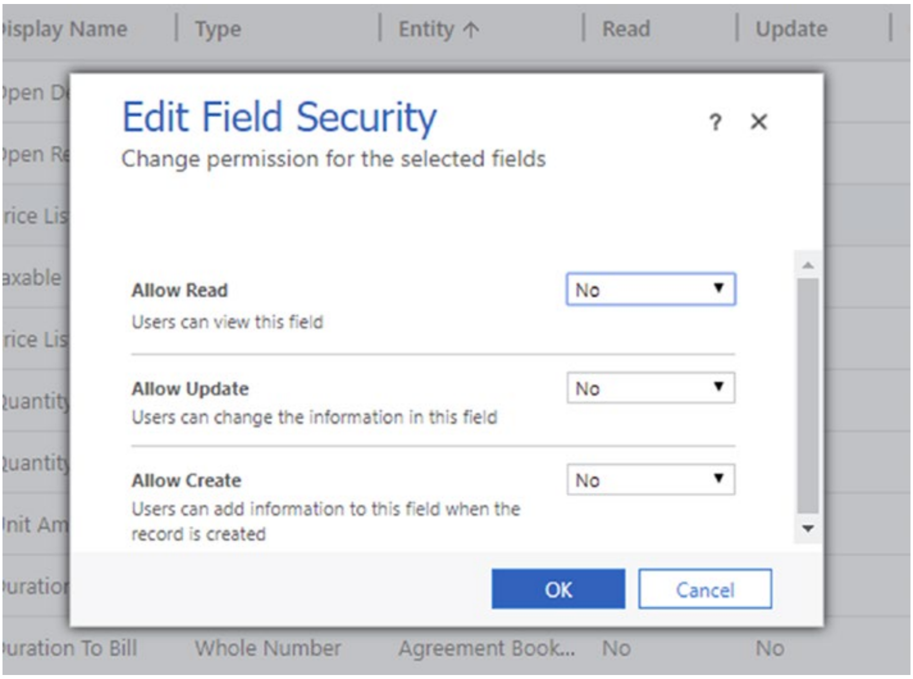
Field Permissions

Working on so
Field Security Profile : Inf...
L General
Related
Members:
Teams
Users
Common
Field Permissions
Audit History
Edit

☐	Name ↑	Display Name	Type	Entity ↑	Read	Update	Create
	opendeals	Open Deals	Whole Number	Account	No		
	openrevenue	Open Revenue	Currency	Account	No		
	msdyn_pricelist	Price List	Lookup	Agreement	No	No	No
	msdyn_taxable	Taxable	Two Options	Agreement	No	No	No
	msdyn_pricelist	Price List	Lookup	Agreement Book...	No	No	No
	msdyn_qtytobill	Quantity To Bill	Floating Point N...	Agreement Book...	No	No	No
	msdyn_quantity	Quantity	Floating Point N...	Agreement Book...	No	No	No

Figure 4-13. *Field-security permissions*

4. Configure a field permission by selecting “Field Permissions” on the right-hand side of the profile, selecting the field in the table, and clicking “Edit.”



Edit Field Security

Change permission for the selected fields

Allow Read: No
Users can view this field

Allow Update: No
Users can change the information in this field

Allow Create: No
Users can add information to this field when the record is created

?
×
OK
Cancel
isplay Name
Type
Entity ↑
Read
Update
uration To Bill
Whole Number
Agreement Book...
No
No

Figure 4-14. *Field-security privileges*

Organizations can view and review their metadata and modify their security easily by using the Entity Metadata Browser from the xrmtoolbox link within the “Further Reading” section at the end of the chapter.

Deployment

Security roles and field-security profiles can be deployed using solutions, which is the recommended approach to deploying to different environments from the original development environment (e.g., to QA, UAT, and production). This ensures the correct records are utilized during testing periods and are modified and overwritten when solutions are upgraded. Security roles and field-security profiles are two separate components within Dynamics 365 CE and are not linked in any way.

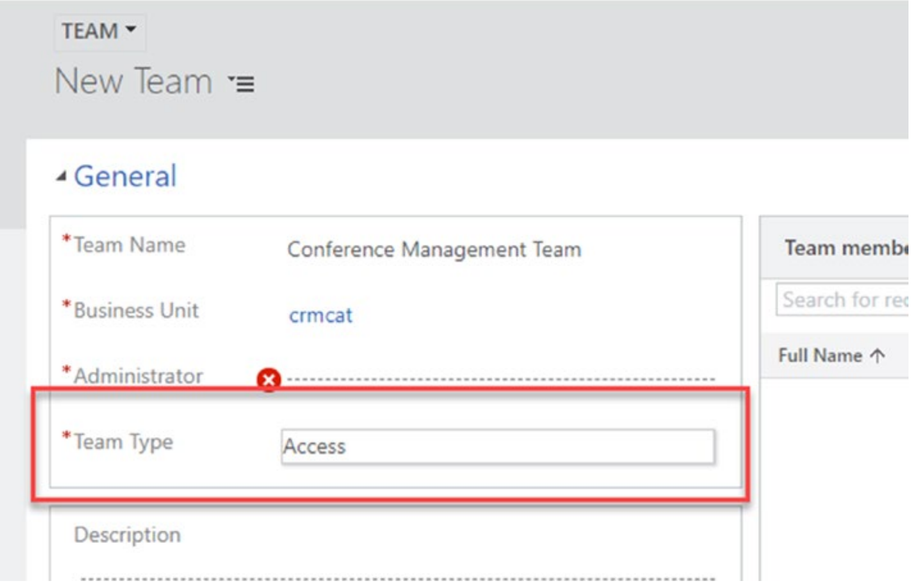
Access Teams

In contrast to owner teams, which obtain their security clearance from the roles assigned to the teams and from a team owning a record, the “basic” level of access gives team members the capability to perform anything on the record just as if they owned it. Access teams, however, do not own records; instead, it is very similar to sharing, where individual records are shared with a team, giving specific access that can be reported on and revoked.

Access teams are particularly useful if record-level access needs to be given that cannot be planned (again, very similar to the use case for sharing). Access teams allow a user to specify the privileges, and multiple teams can have different structured permissions, allowing a “not one size fits all” approach.

An important note, however, is that access teams do not give the capability for ownership of a record. This means views or reporting that is configured to allow the record to appear in views based on the value in the “Owner” field will not apply to access teams. This would need to be configured, which we will look at shortly.

To create an access team manually, often referred to as a *user-created access team*, complete the same steps as for an owner team, except set the “Team Type” field to “Access” as opposed to “Owner” (Figure 4-15).



TEAM

New Team

General

*Team Name Conference Management Team

*Business Unit crmcat

*Administrator

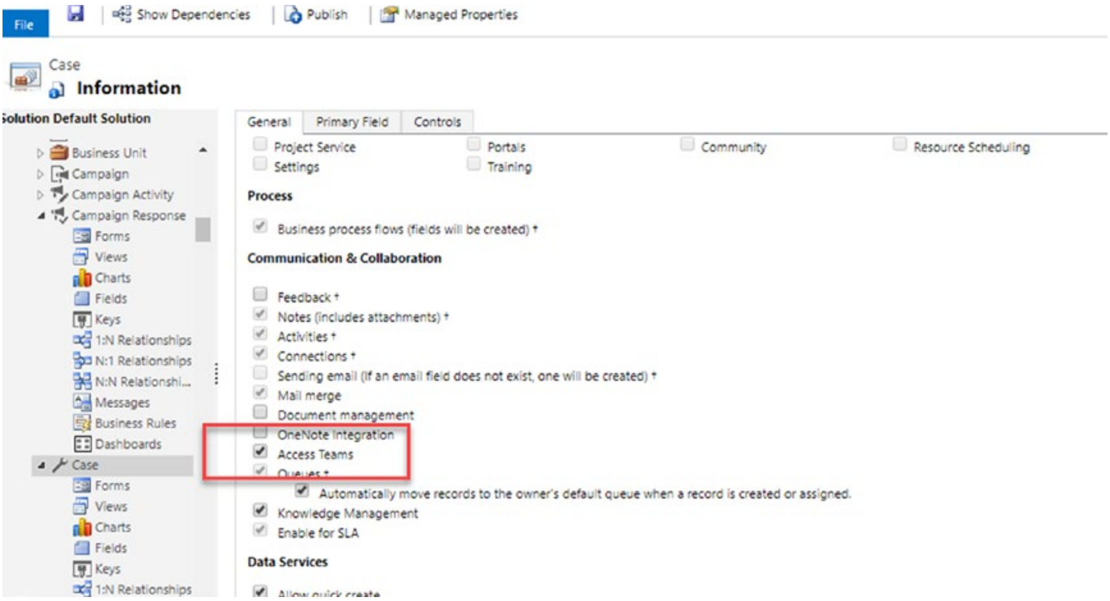
*Team Type Access

Description

Figure 4-15. *Creating an access team within Dynamics 365 CE*

Access teams created by users allow team members to be added, and then the team can be given access to any number of records. User-created access teams are used in the same way as owner teams and sharing, giving access to individual records. The difference between a user-created access team and an ownership team is that the access team does not have defined ownership, nor does it have a security role applied, and its main purpose is to use sharing across the team to define and limit the security permissions on multiple records.

To create access teams per record, which are automatically created by the system, a small amount of setup is required per record type. Similar to queues, an entity/record type has to be enabled for use within access teams at the entity level. This can be configured within a solution and in the entity definition (Figure 4-16).


File
Show Dependencies
Publish
Managed Properties
Case
Information
Solution Default Solution
Business Unit
Campaign
Campaign Activity
Campaign Response
Forms
Views
Charts
Fields
Keys
1:N Relationships
N:1 Relationships
N:N Relationshi...
Messages
Business Rules
Dashboards
Case
Forms
Views
Charts
Fields
Keys
1:N Relationships
General
Primary Field
Controls

☐ Project Service
☐ Settings
☐ Portals
☐ Training
☐ Community
☐ Resource Scheduling

Process

☑ Business process flows (fields will be created) †

Communication & Collaboration

☐ Feedback †
☑ Notes (includes attachments) †
☑ Activities †
☑ Connections †
☐ Sending email (If an email field does not exist, one will be created) †
☑ Mail merge
☐ Document management
☐ OneNote Integration
☑ Access Teams
☑ Queues †
☑ Automatically move records to the owner's default queue when a record is created or assigned.
☑ Knowledge Management
☑ Enable for SLA

Data Services

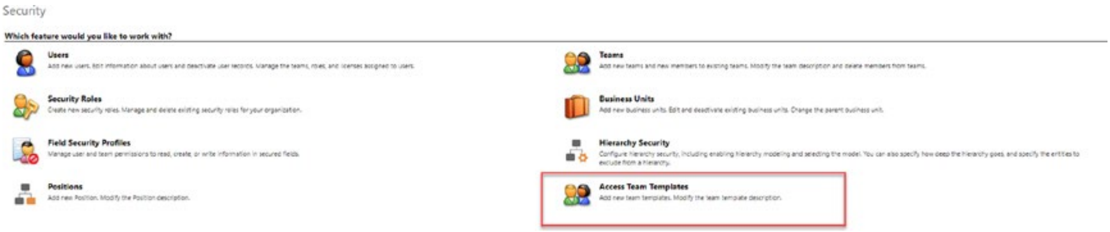
☑ Allow quick create

Figure 4-16. *Within the entity metadata: Select the "Access Teams" control, save, and publish*

Access team templates allow for access teams to be automatically created per record using sub-grids within that record. This is particularly important for collaboration between users and to be able to dynamically provide access to a record that may be outside of a business unit without giving a larger scope to the whole entity than is necessary.

Task: Set up an access team.

1. Navigate to Security within the Classic UI and select "Access Team Templates" (Figure 4-17).
2. Ensure a record has been enabled for access teams (ensuring you have permissions to do so or are in a trial environment) or that you are using a record enabled by default, like the Account entity.
3. Create a new template for the record type just enabled.
4. Set "Entity" as the name of the entity selected in Step 2.



Security

Which feature would you like to work with?

Users
Add new users. Edit information about users and deactivate user records. Manage the teams, roles, and licenses assigned to users.

Security Roles
Create new security roles. Manage and delete existing security roles for your organization.

Field Security Profiles
Manage user and team permissions to read, create, or write information in secured fields.

Positions
Add new Position. Modify the Position description.

Teams
Add new teams and new members to existing teams. Modify the team description and delete members from teams.

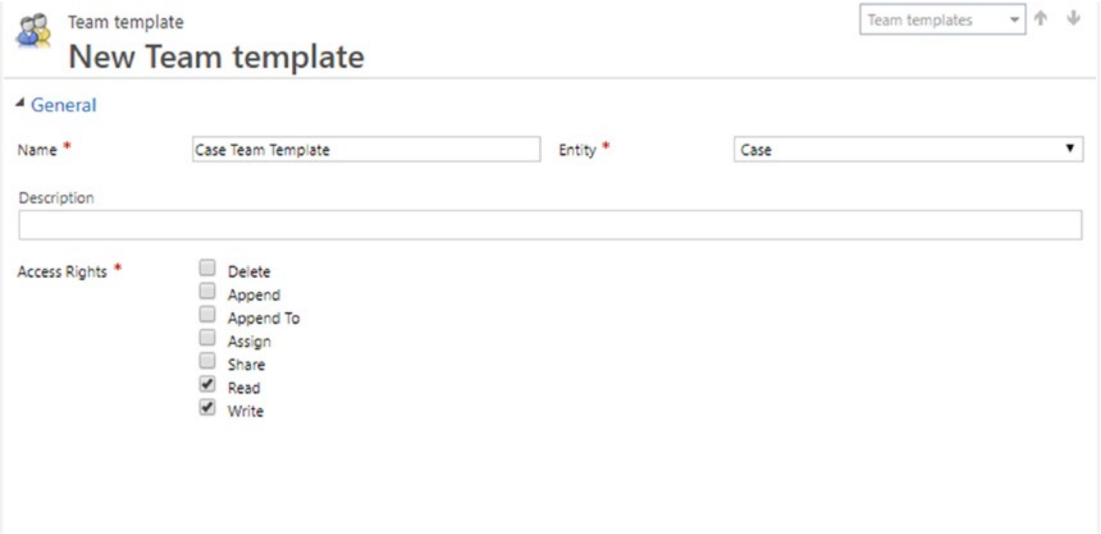
Business Units
Add new business units. Edit and deactivate existing business units. Change the parent business unit.

Hierarchy Security
Configure hierarchy security, including enabling hierarchy modeling and selecting the model. You can also specify how deep the hierarchy goes, and specify the entities to exclude from a hierarchy.

Access Team Templates
Add new team templates. Modify the team template description.

Figure 4-17. *Creating an access team template within Dynamics 365 CE*

In the example in Figure 4-18, this would be the Case entity. (Only Account and Opportunity are enabled out of the box). The “Entity” dropdown in the Properties window, as seen in Figure 4-18, is populated based on the entities that have “Access Team” enabled at the entity-definition level.



Team template

New Team template

General

Name * Case Team Template

Entity * Case

Description

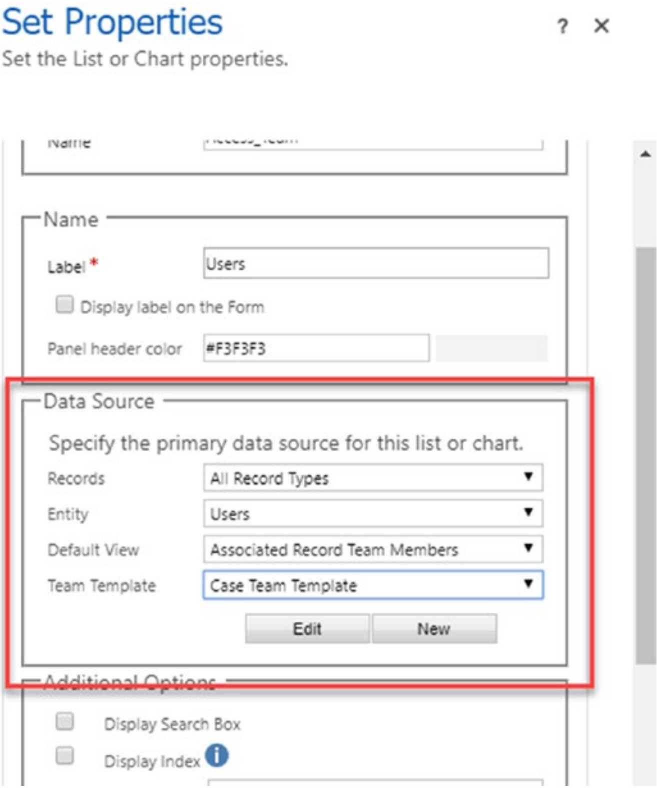
Access Rights *

☐ Delete
☐ Append
☐ Append To
☐ Assign
☐ Share
☑ Read
☑ Write

Figure 4-18. *Creating an access team within Dynamics 365 CE*

5. Within the entity form, add a sub-grid with the data source properties set in the following list and shown in Figure 4-19:

    - **Records:** All record types
    - **Entity:** Users
    - **Default View:** Associated Record Team Members
    - ***Team Template:*** <One created in previous step>



Set Properties

Set the List or Chart properties.

Name

Label * Users

☐ Display label on the Form

Panel header color #F3F3F3

Data Source

Specify the primary data source for this list or chart.

Records: All Record Types

Entity: Users

Default View: Associated Record Team Members

Team Template: Case Team Template

Additional Options

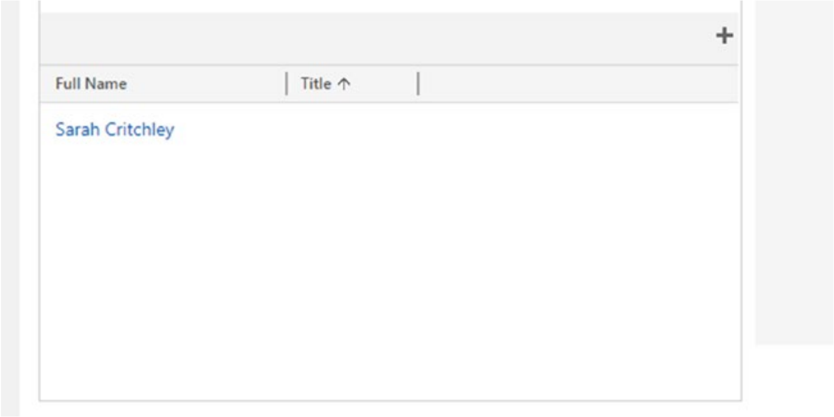
☐ Display Search Box

☐ Display Index

Figure 4-19. *Creating a sub-grid to allow for automatically generated access teams*

It is possible to create more than one access team template and have multiple sub-grids on the entity, creating different access teams based on specific permissions. This is a way to manage the security privileges given at a specific record level.

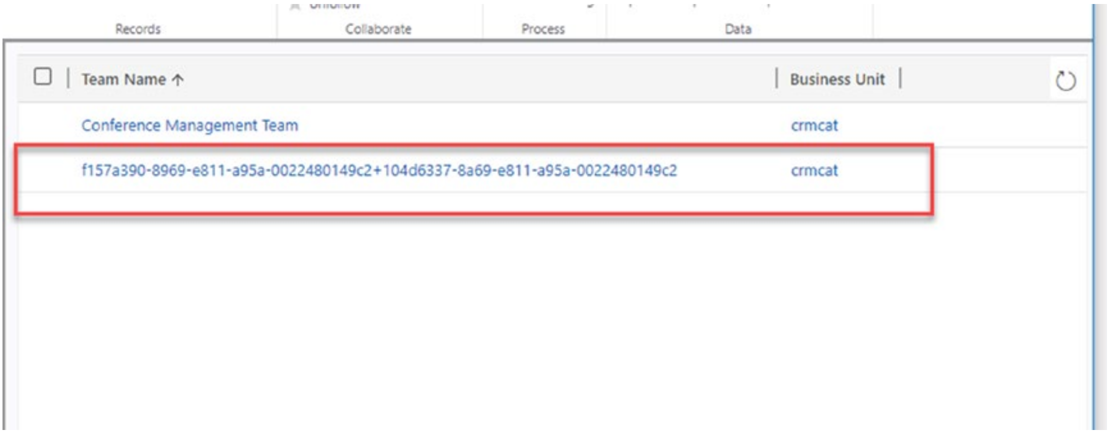
6. Once completed, ensure the customizations have been saved and published, then add a user to the sub-grid (Figure 4-20).



Full Name	Title ↑
Sarah Critchley	

Figure 4-20. *Adding users into the sub-grid within the record*

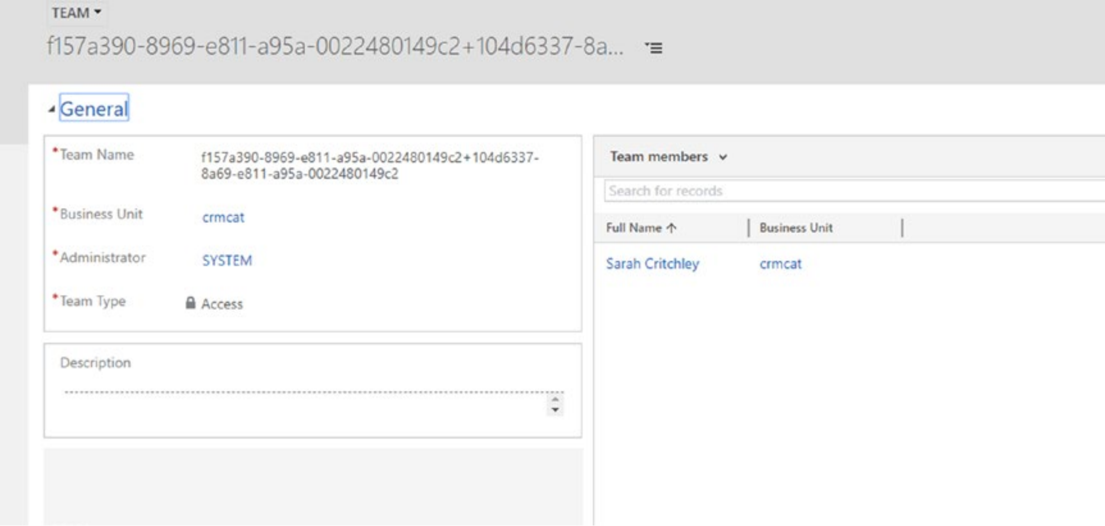
Adding a user will make a new access team; you add the users and remove them using the sub-grid control within the form. The privileges the users are granted while within that team is controlled using the team template. Adding a user initially makes a new team dynamically. The team is not visible in views, however, but can be accessed via Advanced Find by searching for teams with the "Access" type, as seen in Figure 4-21. The name is a system-generated name; however, this can be renamed if required.



☐ Team Name ↑	Business Unit
Conference Management Team	crmcat
f157a390-8969-e811-a95a-0022480149c2+104d6337-8a69-e811-a95a-0022480149c2	crmcat

Figure 4-21. *Advanced Find of the system-generated access team*

It is not recommended to modify the team template while it is in use; however, sometimes this is required. If the template is modified, existing access teams will not be affected and must be recreated. They can be recreated by removing all members from the record and starting again, creating a new access team by adding the first user to the record (Figure 4-22).



f157a390-8969-e811-a95a-0022480149c2+104d6337-8a...

*Team Name: f157a390-8969-e811-a95a-0022480149c2+104d6337-8a69-e811-a95a-0022480149c2
*Business Unit: crmcat
*Administrator: SYSTEM
*Team Type: Access
Description

Team members

Full Name ↑	Business Unit
Sarah Critchley	crmcat

Figure 4-22. *System-created access team when the first user is added*

Access teams are a notable example of record-based ownership security within Dynamics 365 CE and are even used as standard within the Opportunity form in the Sales Team sub-grid. They should be considered within the security model; despite not being related to security roles, they provide reporting capabilities to organizations to see who has access to a given record above their set privileges at any time.

Hierarchal Security

So far, role-, record-, and field-based security have been discussed and demonstrated. Setup is primarily achieved using security roles and teams. Dynamics 365 CE has an extension to that current security functionality called *hierarchal security*. Hierarchal security can be used in combination with the previous methods and allows, in some cases, for a more "real-life" approach to security and how it is reflected within teams through the managerial hierarchy in an organization.

Managerial hierarchy is based on the manager and direct reports. Being a named manager to a user gives the user referred to as the manager read, write, update, and append access to the user's data as if it was their own. (They must have read access as an initial privilege.)

This type of access is only available within the same business unit. The subordinate and the manager must be within the same business unit or a child business unit, which is in contrast to positional security, which can be across multiple business units. Positional security is a custom version of hierarchal security. It also includes the concept of non-direct reporting lines when there are more than two levels of the hierarchy.

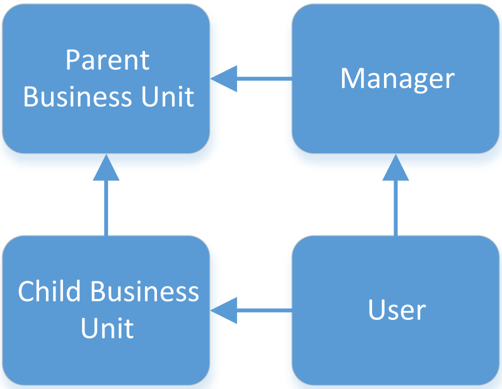

Parent Business Unit
Manager
Child Business Unit
User

Figure 4-23. *Managerial security across a single business unit or child business unit*

Managerial is shown in Figure 4-23, and positional is shown in Figure 4-24; only one can be utilized. They are both set up in the same place within the system.

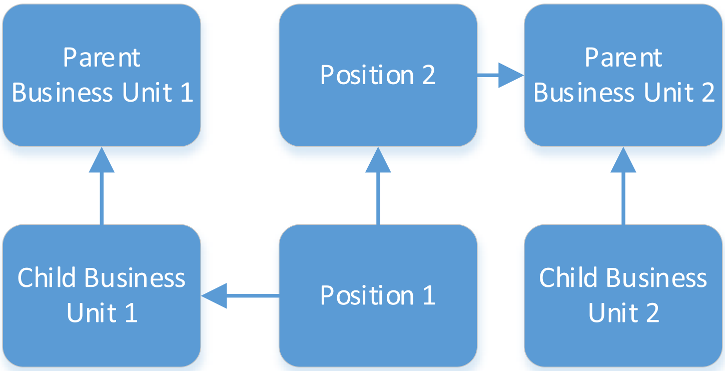
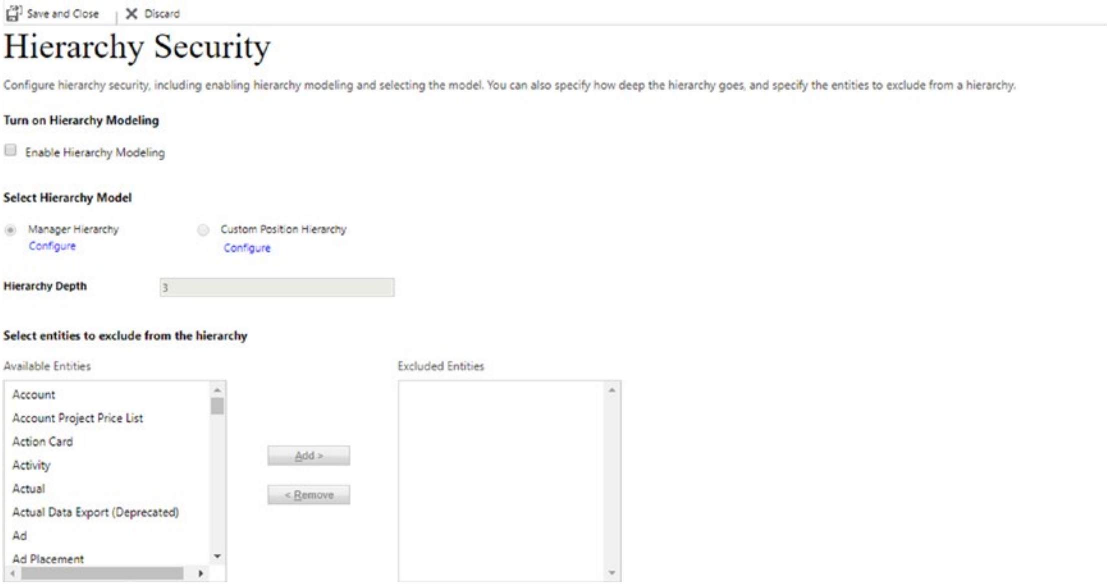

Parent Business Unit 1
Position 2
Parent Business Unit 2
Child Business Unit 1
Position 1
Child Business Unit 2

Figure 4-24. *Positional security across multiple business units*

Task: Set up hierarchal security.

1. Navigate to Hierarchal Security screen from the “Settings” area within the Classic Client (Figure 4-25).



Hierarchy Security

Configure hierarchy security, including enabling hierarchy modeling and selecting the model. You can also specify how deep the hierarchy goes, and specify the entities to exclude from a hierarchy.

Turn on Hierarchy Modeling

☐ Enable Hierarchy Modeling

Select Hierarchy Model

● Manager Hierarchy ○ Custom Position Hierarchy

Hierarchy Depth 3

Select entities to exclude from the hierarchy

Available Entities

Account
Account Project Price List
Action Card
Activity
Actual
Actual Data Export (Deprecated)
Ad
Ad Placement

Excluded Entities

Figure 4-25. *Hierarchal security setup within Dynamics 365 CE*

From this screen, shown in Figure 4-25, you can select either “Manager” or “Positional Hierarchy” and then configure the depth and the entities to not include.

2. Select “Managerial” or “Positional” Security.
3. Configure the depth (if you selected positional).
4. Select which entities to exclude by moving the entities from left to right.

   Not including an entity within the model means this will not be given any extra privileges through this structure, and those records would need to be reliant on other parts of an organization’s security model.

Once the managerial hierarchy is set up, all that needs to be done to complete this setup is to set the managers up within the user record.

5. Navigate to a record (form or view) and select "Change Manager" (Figure 4-26). Another user within the same business unit can then be selected, and this is saved as the "Manager," giving them the elevated security privileges referred to earlier in the chapter.

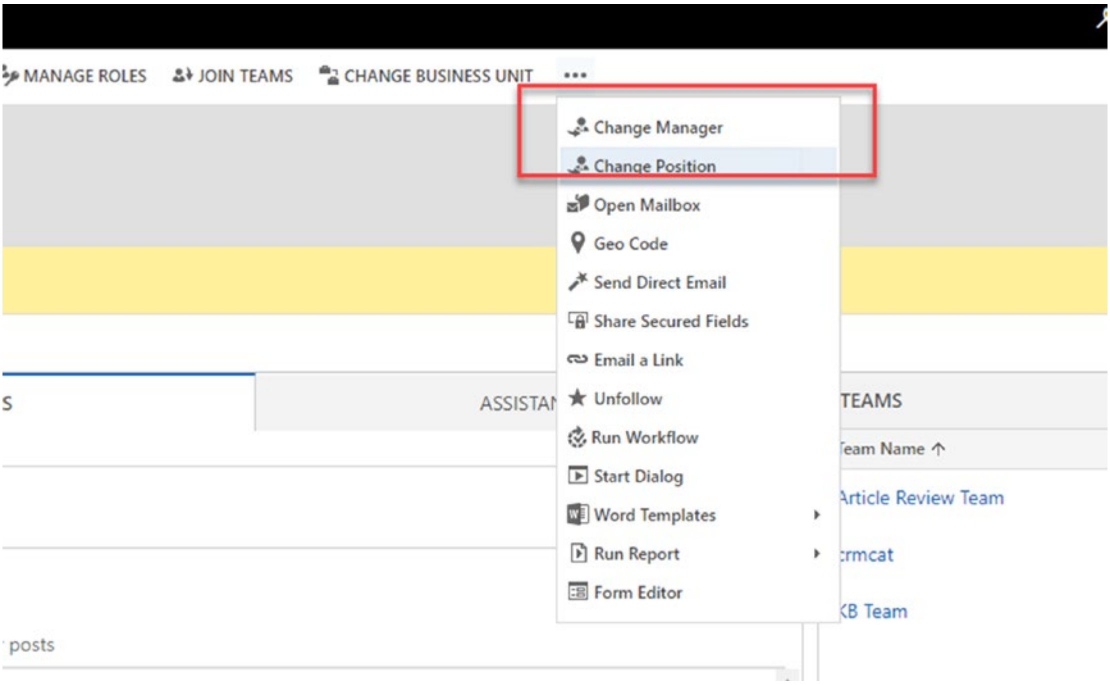

MANAGE ROLES
JOIN TEAMS
CHANGE BUSINESS UNIT
Change Manager
Change Position
Open Mailbox
Geo Code
Send Direct Email
Share Secured Fields
Email a Link
Unfollow
Run Workflow
Start Dialog
Word Templates
Run Report
Form Editor
S
ASSISTAN
TEAMS
eam Name
Article Review Team
crmcat
KB Team
posts

Figure 4-26. Changing a manager position on a user record

By selecting "Custom Position Hierarchy," a user can define the positions within that hierarchy. They can select "Configure" (once saved) or navigate to "Positions" from the security sections of the sitemap in the Classic Client.

1. Select either "Configure" within the previous screen or "Positions" as seen in Figure 4-27 from the "Security" section of the Classic Client sitemap.

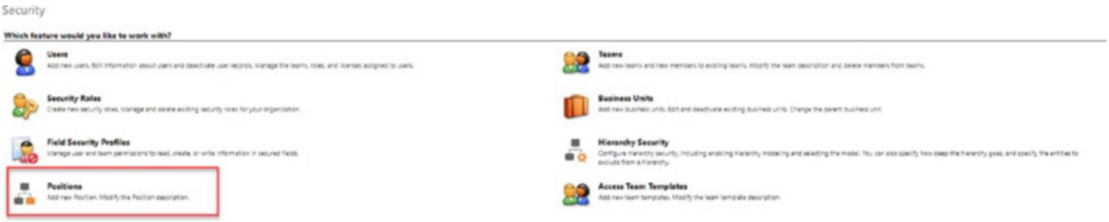
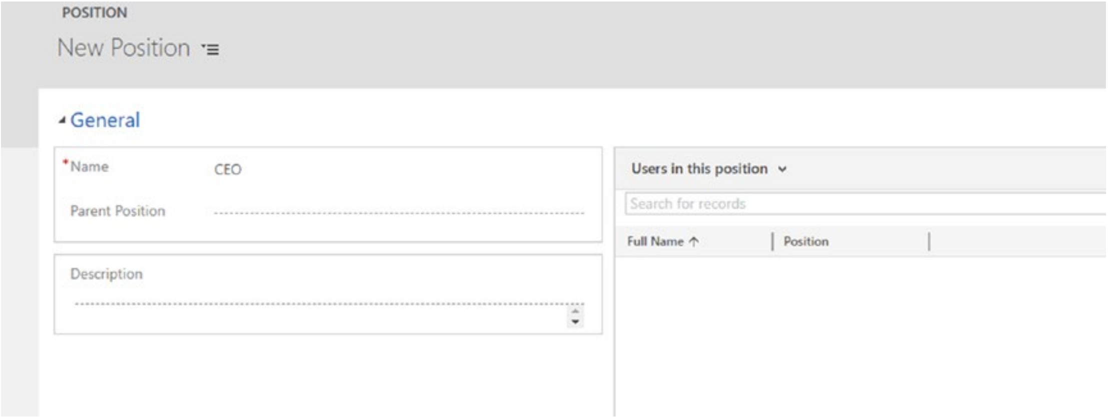

Security
Which feature would you like to work with?
Users
Teams
Security Roles
Business Units
Field Security Profiles
Hierarchy Security
Positions
Access Team Templates

Figure 4-27. *Setting up positions within Dynamics 365 CE*

2. Click “New” to create a new blank Position record. You need to name this position, select the parent (multiple positions can refer to one parent; multiple users can be within one position), and save the record (Figure 4-28).


POSITION
New Position
General
Users in this position
Search for records
Full Name
Position

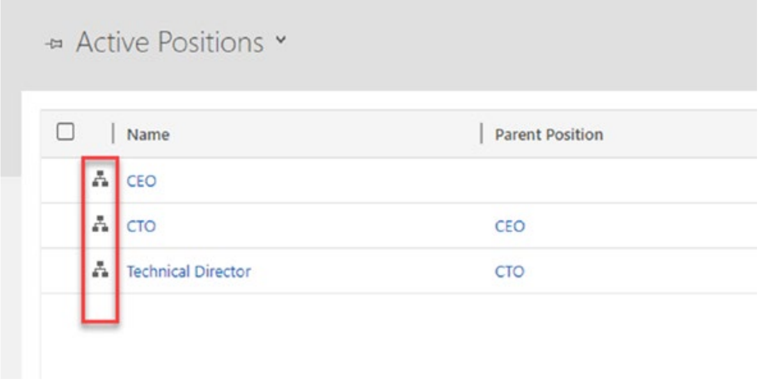
*Name CEO

Parent Position

Description

Figure 4-28. *Setting up custom positions hierarchy*

In the example in Figure 4-29, three positions have been created: CEO, CTO, and Technical Director. Selecting the hierarchy symbol on the left-hand side within the Position view opens up the hierarchy view to see the structure that has been created.

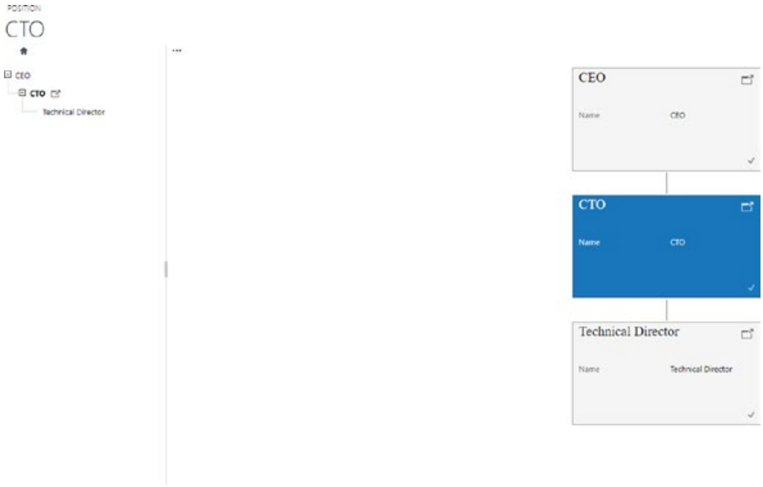


Active Positions

☐	Name	Parent Position
	CEO	
	CTO	CEO
	Technical Director	CTO

Figure 4-29. *Hierarchy View button within a view*

The Hierarchy view, as shown in Figure 4-30, can give you a high-level overview of the current positional hierarchy, allowing you to easily make modifications, especially when initially creating the positions.



POSITION
CTO

CEO
CTO
Technical Director

CEO
Name CEO

CTO
Name CTO

Technical Director
Name Technical Director

Figure 4-30. *Visualizing the positional hierarchy*

The final setup task is to assign the positions created to users within the system.

3. Navigate to a user record and select "Change Position," and then choose one of the positions from the view. This can be seen in Figure 4-31.

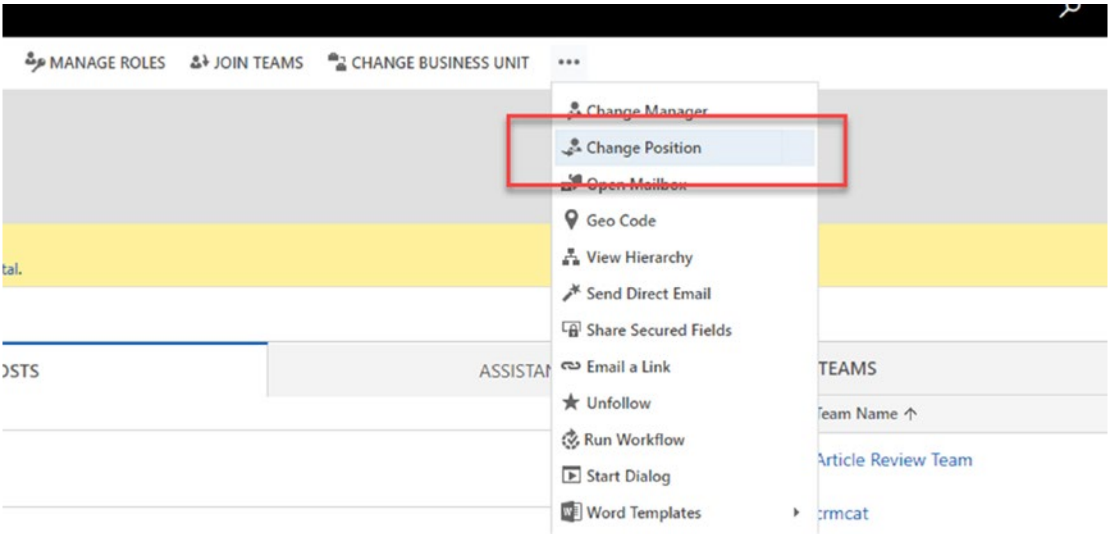

MANAGE ROLES
JOIN TEAMS
CHANGE BUSINESS UNIT
Change Manager
Change Position
Open Mailbox
Geo Code
View Hierarchy
Send Direct Email
Share Secured Fields
Email a Link
Unfollow
Run Workflow
Start Dialog
Word Templates
tal.
OSTS
ASSISTA
TEAMS
Team Name
Article Review Team
crmcat

Figure 4-31. *Assigning a position to a user (a user can only have one position)*

Selecting "Change Position" gives you the choice of the positions created in the previous step, shown in Figure 4-32.

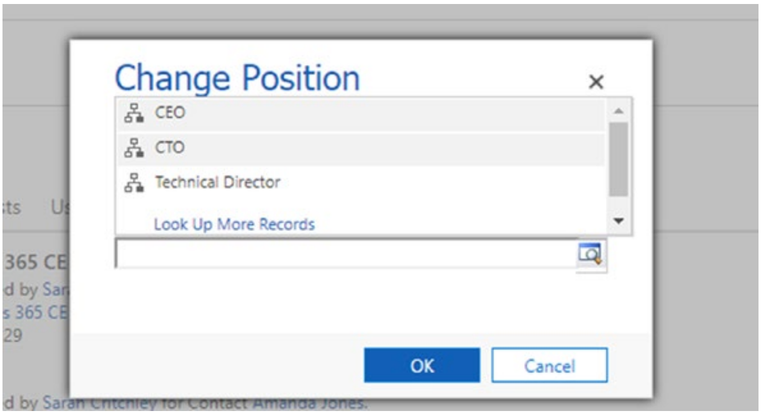

Change Position
CEO
CTO
Technical Director
Look Up More Records
OK
Cancel

Figure 4-32. *Selecting a custom position for a user*

Positional security works in the same way as managerial security as far as the security rights it gives the reporting managers of those subordinates. It is important also to be aware that the manager's access extends to records shared with the subordinates and is inclusive to the records owned or shared with a team that the subordinate record is part of. This is critical about awareness and what the managers have access to and the extension of the reach through managerial and positional security.

Summary

To summarize, this chapter has covered the basic security concepts of Dynamics 365 and how to get started creating a security model. This includes business-unit structure, the application of security roles to users and teams, and field security. Dynamics 365 CE has an extensive security structure capable of allowing a combination of role-, record-, and field-based security. This can be taken advantage of by organizations to give them the capability for compliance with required data security and governance policies.

Chapter Tasks

At the end of every chapter, there will be a section that gives up to ten suggested tasks for you to complete within Dynamics 365 CE. Completing these tasks will be based around the topics covered within the chapter and is aimed at expanding practical knowledge and application regarding those topics that goes beyond reading about them.

1. Create a child business unit for the root business unit.
2. Create a business-unit structure three levels deep.
3. Create new security roles (completely blank or copies of standard security roles) in each business unit, particularly paying attention to the propagation to child business units.
4. Create a new owner team.
5. Create an automatically generated access team.
6. Set up field security for a field on the Case entity.
7. Set up managerial hierarchy.
8. Set up custom positional hierarchy.

Further Reading

Security and Security Roles (Microsoft, 2018). URL: https://docs.microsoft.com/en-us/dynamics365/customer-engagement/admin/security-roles-privileges

Security Overview including a PDF by Microsoft on Scalable Security Modelling with Microsoft Dynamics (Microsoft, 2018). URL: https://docs.microsoft.com/en-us/dynamics365/customer-engagement/admin/security-concepts

Entity Metadata Browser (Microsoft, 2018). URL: https://docs.microsoft.com/en-gb/dynamics365/customer-engagement/developer/browse-your-metadata

CHAPTER 5

Field Service and Resource Scheduling

Dynamics 365 CE includes an extensive field service application that gives organizations the ability to create work orders and schedule resources for those work orders to be completed on site. The field service app provides the capability for asset management, inventory adjustment and management, and scheduling the resources using a detailed, easy-to-use scheduling board. The field service app shares a component, Universal Scheduling, with the project service automation application, also available within Dynamics 365 CE. Universal Scheduling is available to any organization, provided at least one of these apps is licensed, and gives the capability for anything to be scheduled, including custom entities. This increases the available scope within organizations, allowing them to create more-specific workflows around custom components.

The field service app provides offline capability through the support of Resco.net inbuilt features that give engineers peace of mind that they do not have to rely on connectivity to complete work within the app. The app is also capable of managing stock and products so that an organization can manage the full end-to-end lifecycle of an engineer's needing parts to use and bill for on site.

This chapter will focus on the essentials of field service (Figure 5-1). These essentials are how to get started, create work orders and bookings, and use the scheduling board. The chapter will then take a deep dive into the mobile application and how an on-site staff member would set up and complete an assigned job. The end of the chapter will cover some specific functionality that supplements the basic lifecycle of a work order. This chapter will give you enough essential knowledge to be confident in the theory and practicality of getting started with the Dynamics 365 field services app so other resources can be investigated for specific use cases and configuration.

© Sarah Critchley 2018
S. Critchley, *Dynamics 365 CE Essentials*, https://doi.org/10.1007/978-1-4842-3973-5_5

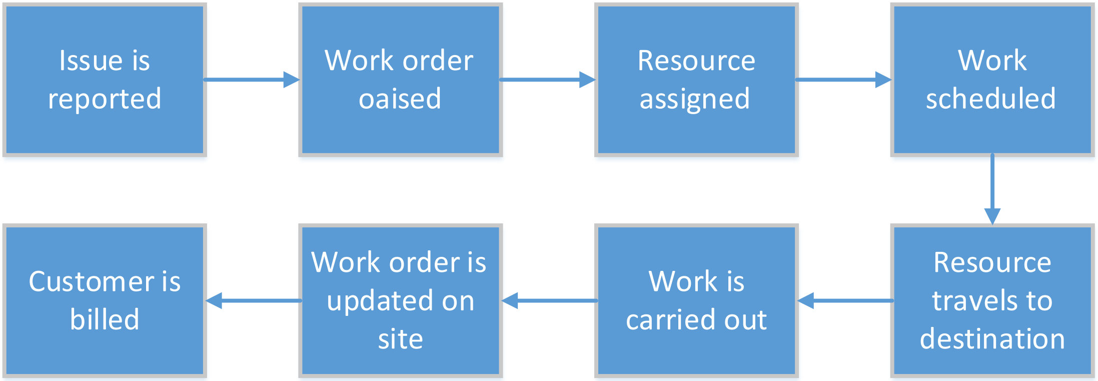


Figure 5-1. *An overview of the core process within the field service application*

Roles Within Field Service

Field service functionality assumes there are distinct roles during the lifecycle of a work order. Beginning from the origin of the work order, which could be a case, opportunity, or even result from another work order, the role of the user creating the work order can be different. It could be support staff, a sales person, or another field engineer. Once a work order has been created with basic information, it is then up to the user in the role of the *dispatcher* to complete any missing information and schedule resources to complete the work required. The dispatcher is essential to the scheduling of bookings based on the current workload of the available resources and is also the final say as to what is being booked. There are automated engines to suggest the most appropriate times and display these in priority order. The booking itself is completed by the dispatcher and managed from the schedule board. One of the primary reasons for this is because booking a work order is not the only scenario that requires management; there is also reorganizing and changing the work orders and providing field support to the engineer on site should they require it. Dispatchers also manage the completed work order, passing the record over to back-end staff, e.g., inventory or finance management, to bill the customer.

Organizations often have conflicting requirements for the dispatcher role, as they often want to omit this role and offer appointments externally to customers to book. Also, organizations want to be able to automatically optimize the scheduling regularly. There are two challenges with these requirements that are worth briefly discussing.

The challenge with offering appointments externally is that it removes the ability to optimize the resource based on both preference and utilization. The functionality would be best approached by adding custom statuses for resource bookings, but this still would require customization to find and locate a resource to see if the appointment is still available and book them in. It would also provide conflict if the resource booked were to reject the order.

The second issue as far as being able to optimize is that the scheduling engine considers many pieces of data about the related work order and customer, including their preferences. It also includes location optimization by not suggesting people outside of a set radius, as well as by suggesting a particular resource that matches the skills the work order requires and has the availability. Meeting customer preferences may not result in also meeting optimization targets for users, nor take into account their previous location before that appointment. Organizations need to be able to prioritize what is the most important element within the scenario, which further demonstrates the helpfulness of having a user in the dispatcher role, as they can make those decisions based on the resources suggested by the system. More details on the roles within the field service application can be found within the "Further Reading" section at the end of this chapter.

In summary, the dispatcher is a prominent role within the field service app for use with the schedule board. If this is functionality or a role that doesn't fit with the requirements or model of a company, there will likely be extra customization involved. That said, automatic scheduling is possible without the dispatcher. However, it does not come with the field service app as standard and is an extra, licensed solution. It provides the ability to schedule open work orders automatically based on the arguments referenced in the previous paragraph. It is not covered in this book; however, details can be found within the "Further Reading" section at the end of this chapter.

Setting Up Resources

Resources are what is referred to within Dynamics 365 CE as a bookable resource. The terminology is careful in relation to what this resource can be referring to, as it does not necessarily mean it is a human being. A bookable resource is *often* referred to as a field engineer, but this could mean any sort of human being that is bookable for any task and doesn't have to be one with parts or the standard "engineer in a van." It can also refer to a drone or a piece of automated equipment that can be booked and scheduled.

A Resource record is where administrative information about the resource is set, such as defining the starting point of the resource for jobs, if time-off requests should be approved, and if they should be displayed on the schedule board and included in availability searches. This information is set per individual resource and can be different per bookable resource.

Resource roles are associated with a resource and are roles that will be required in order for a work order to be completed. These roles are something specific that a bookable resource will have proficiency at based on their skills and the skills defined within the expected role.

Task: Create a new resource role.

1. Navigate to the "Resource Scheduling" section of the Classic UI, select "Resources," and click "New" (Figure 5-2).

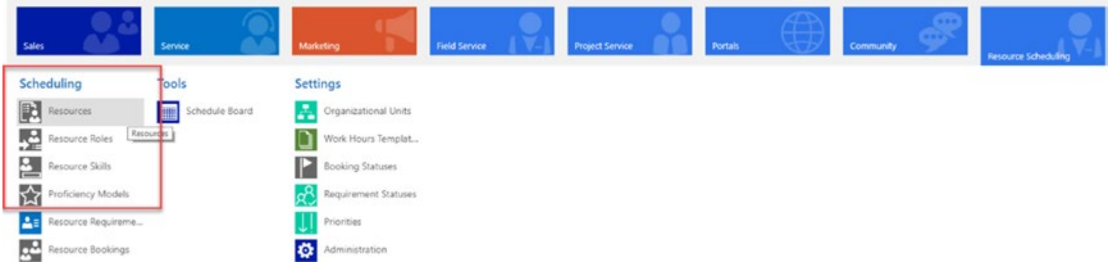
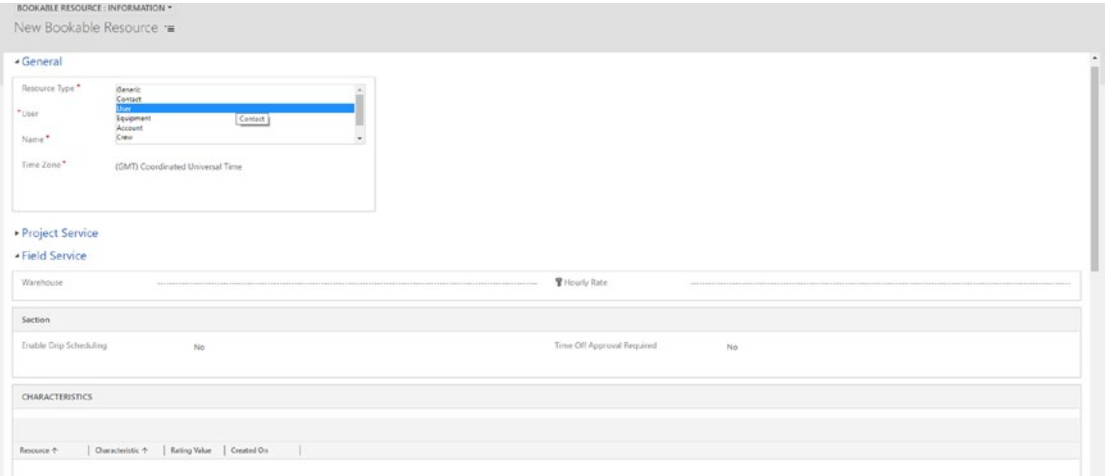

Sales
Service
Marketing
Field Service
Project Service
Portals
Community
Resource Scheduling
Scheduling
Resources
Resource Roles
Resource Skills
Proficiency Models
Resource Requireme...
Resource Bookings
Resources
Tools
Schedule Board
Settings
Organizational Units
Work Hours Templat...
Booking Statuses
Requirement Statuses
Priorities
Administration

Figure 5-2. *Navigate to "Resource Scheduling" and click "Resources"*

2. Set the Resource Type to "User" or "Contact," not entering any other information, and use the default "Main" warehouse and an hourly rate of an arbitrary value, such as $100 (Figure 5-3).
3. Enter a target utilization based on the metrics (e.g., 80 percent billable time out of 100 percent they are working) so performance can be measured, as well as the specific billing type of this role (e.g., is it a free role or a chargeable role).


BOOKABLE RESOURCE : INFORMATION
New Bookable Resource
General
Resource Type
Generic
Contact
User
Equipment
Account
Crew
Contact
User
Name
Project Service
Field Service
Warehouse
Hourly Rate
Section
CHARACTERISTICS
Resource
Characteristic
Rating Value
Created On

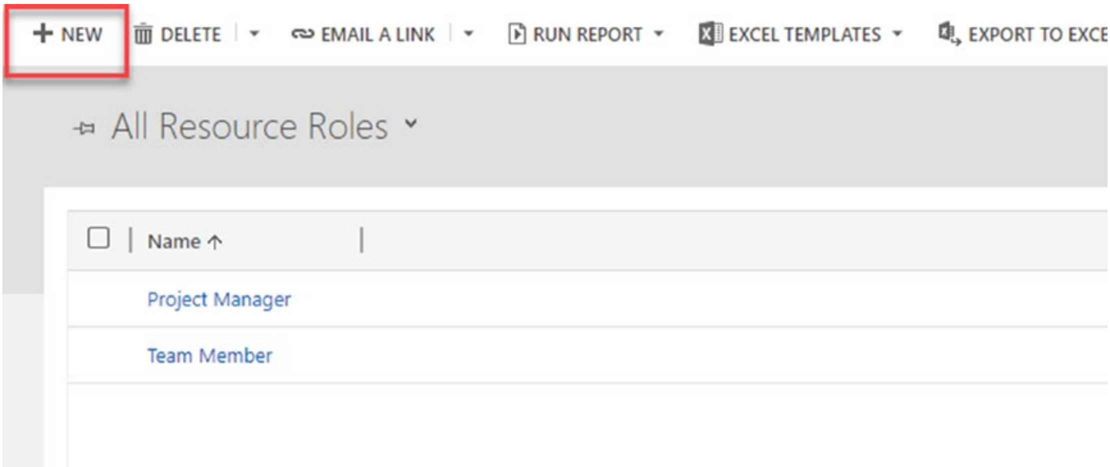
Time Zone* (GMT) Coordinated Universal Time

Enable Drip Scheduling No

Time Off Approval Required No

Figure 5-3. *Set the Resource Type to “User” or “Contact”*

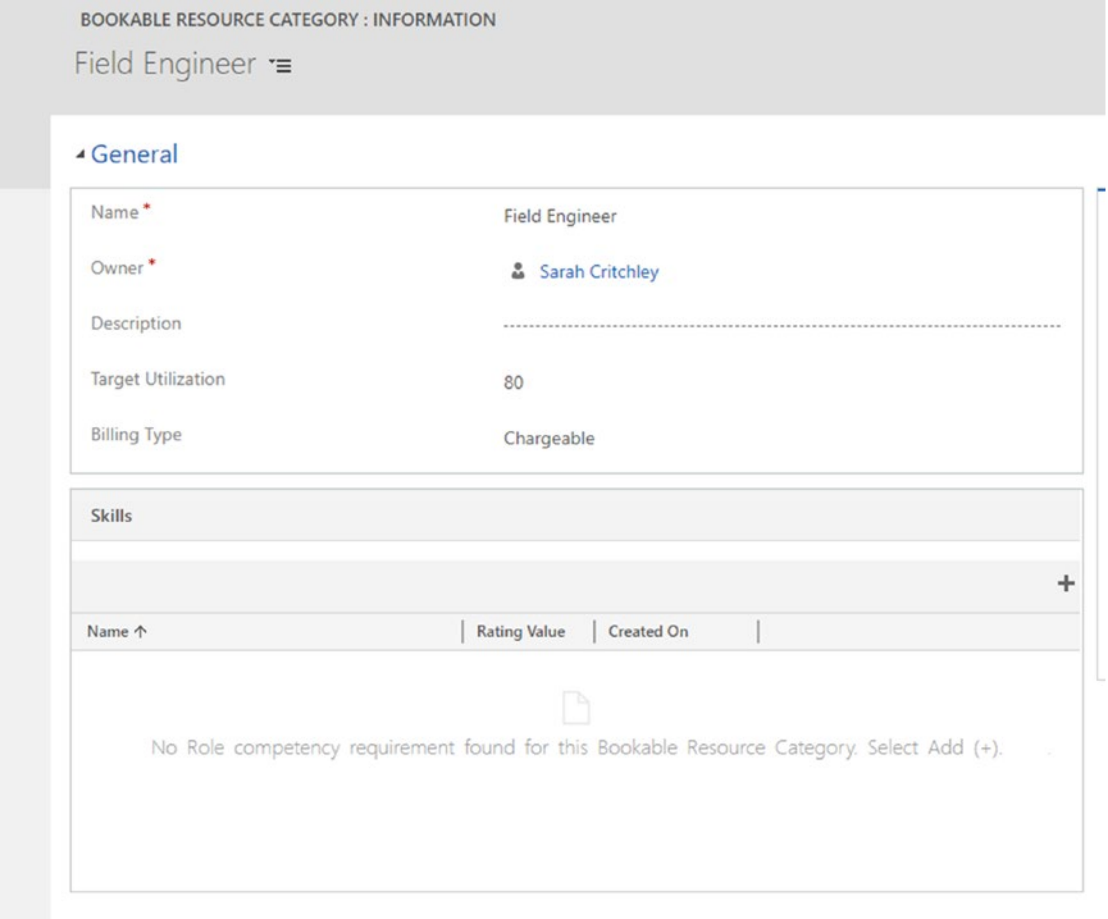
4. Save the record.
5. Navigate to “Resource Roles” and add some skills to the role using the plus button in the sub-grid, shown in Figure 5-5.


+ NEW
DELETE
EMAIL A LINK
RUN REPORT
EXCEL TEMPLATES
EXPORT TO EXCE
All Resource Roles

☐	Name ↑
	Project Manager
	Team Member

Figure 5-4. *Adding a new resource role*

If this is your first time in the field service app, there will be no skills set up. This is an appropriate time to create new skills and get used to the process (Figure 5-5). Alternatively, test data can be imported, which is highlighted at the end of the chapter. While the sub-grid referrs to skills, they are based on the Role Competency Requirement, which references a separate Skill record and what level this skill must be for this role.



Name * Field Engineer
Owner * Sarah Critchley
Description
Target Utilization 80
Billing Type Chargeable

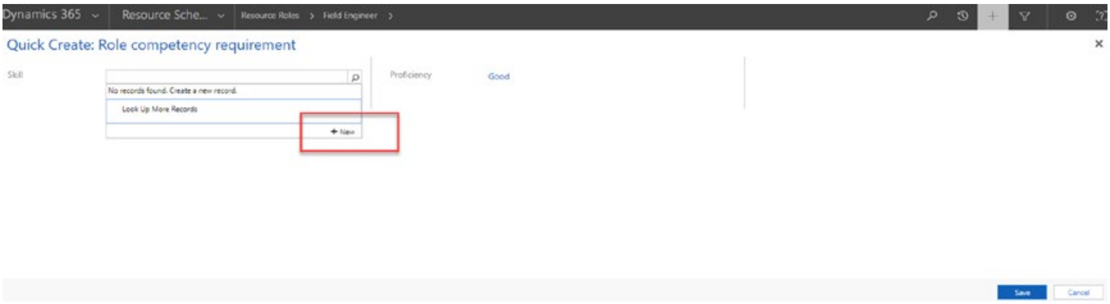
Name ↑	Rating Value	Created On

No Role competency requirement found for this Bookable Resource Category. Select Add (+).

Figure 5-5. *Resource role being created with associated skills*

6. Select “New” on the “Skills” lookup dropdown list, as displayed in Figure 5-6. This will open a new window.

7. A new window will open called “Characteristic,” which is essentially the skill being populated. Set the “Characteristic Type” as a skill not requiring approval. When creating a skill, the proficiency ratings are already created. These can be removed, and a specific (custom) proficiency rating can be used for the organization if required. For this chapter, we will be using the standard proficiency system.


Dynamics 365
Resource Sche...
Resource Roles
Field Engineer
+ New
Save
Cancel

Quick Create: Role competency requirement

Skill

No records found. Create a new record.

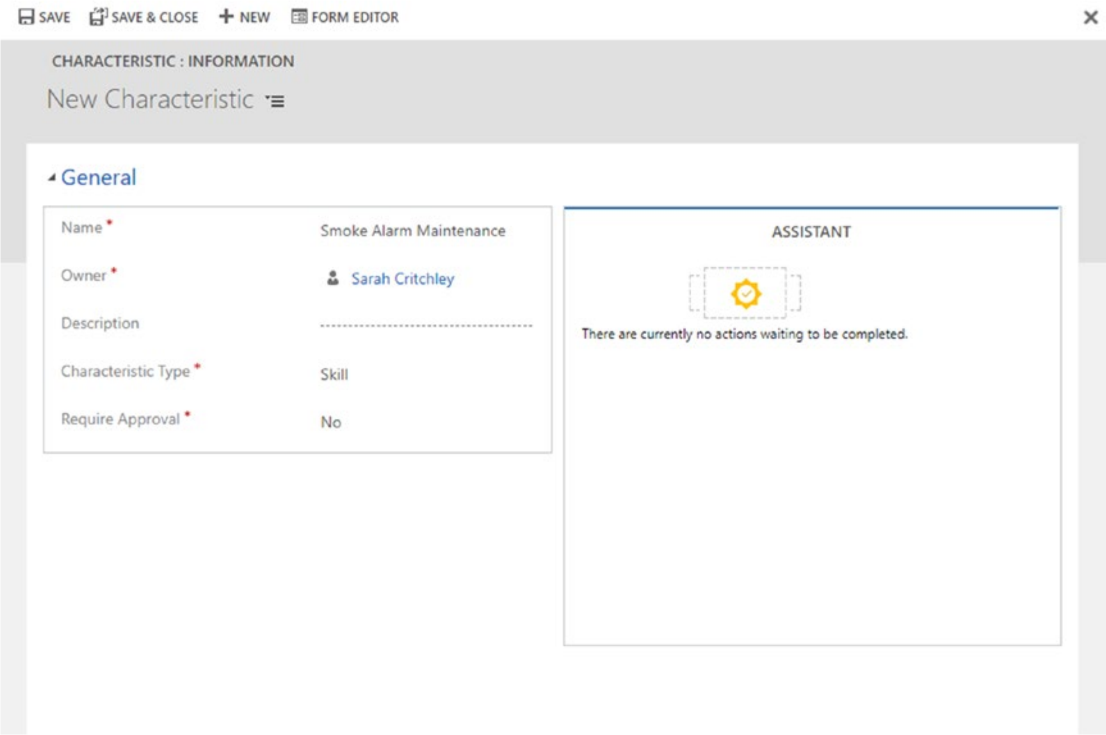
Look Up More Records

Proficiency: Good

Figure 5-6. *Using the Quick Create form to create a new skill*

8. Save the record

9. Select this as a skill for the resource role on the Quick Create form, which should still be open from the previous step, as shown in Figure 5-7.


SAVE
SAVE & CLOSE
NEW
FORM EDITOR
General
ASSISTANT

CHARACTERISTIC : INFORMATION

New Characteristic

Name *: Smoke Alarm Maintenance

Owner *: Sarah Critchley

Description

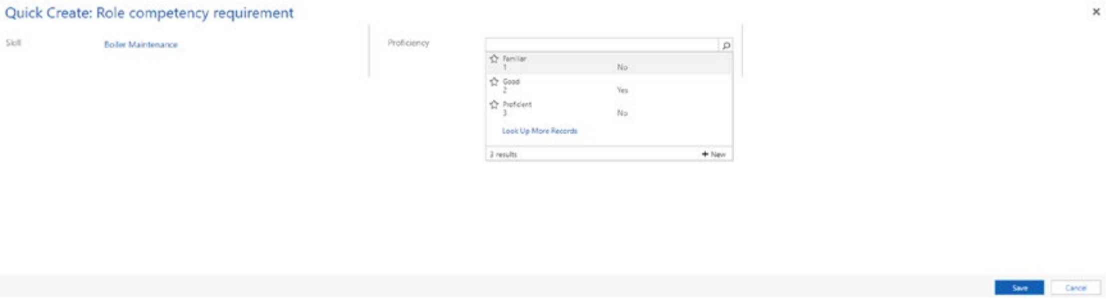
Characteristic Type *: Skill

Require Approval *: No

There are currently no actions waiting to be completed.

Figure 5-7. *Creating a new Characteristic record (skill)*

A resource role has now been created that has some skills at specific proficiency levels (Figure 5-8). These are the levels of the skills a resource would be matched against when being mapped against a work order where this role is required. This role is associated with a resource.

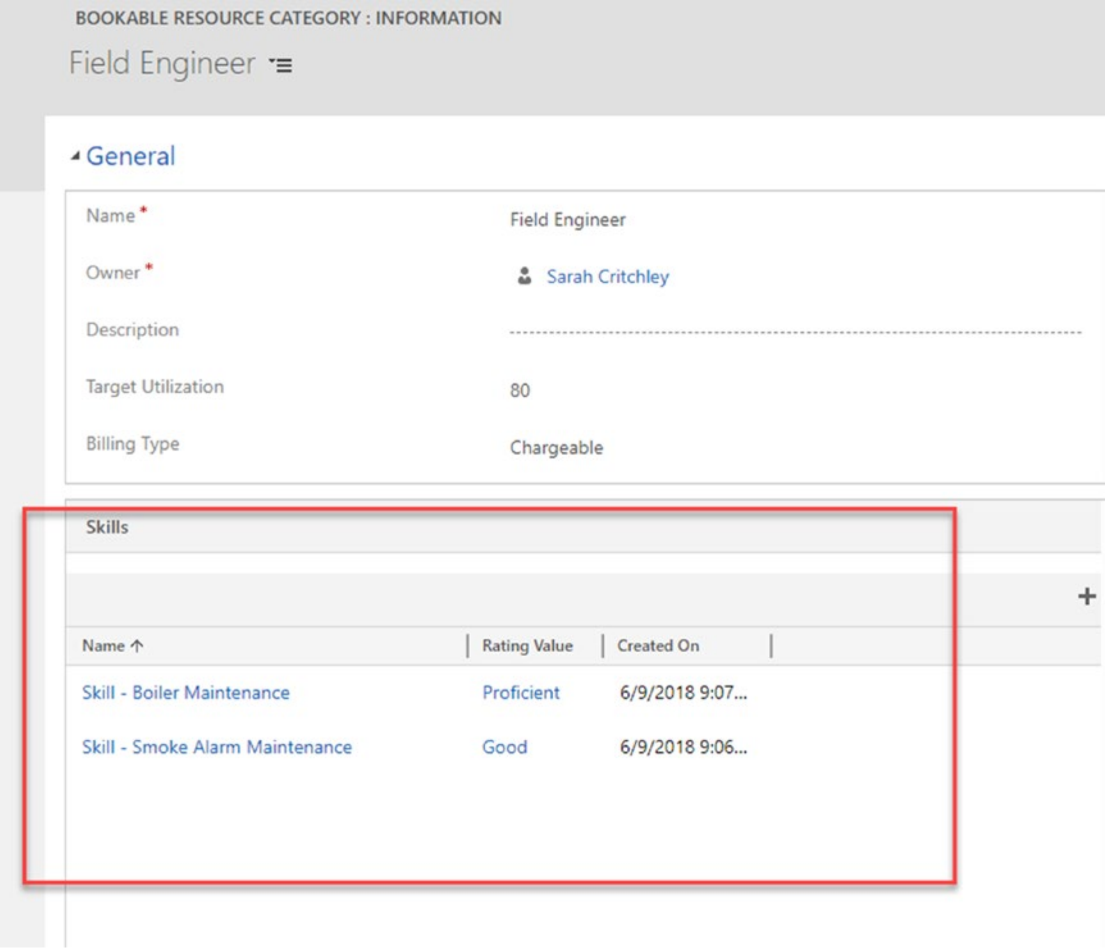

Quick Create: Role competency requirement

Skill Boiler Maintenance

Proficiency
Familiar
1
No
Good
2
Yes
Proficient
3
No
Look Up More Records
3 results
New
Save
Cancel

Figure 5-8. *Setting the proficiency for the skill required*

You can repeat the steps starting from Step 6 to create another skill associated with the bookable resource. This creates a specific set of skills that are associated with this bookable resource category. This category is associated with resources within the system to create a specific level of skills the organization requires for certain roles (Figure 5-9).


BOOKABLE RESOURCE CATEGORY : INFORMATION

Field Engineer

General

Name *	Field Engineer
Owner *	Sarah Critchley
Description	
Target Utilization	80
Billing Type	Chargeable

Skills

Name ↑	Rating Value	Created On
Skill - Boiler Maintenance	Proficient	6/9/2018 9:07...
Skill - Smoke Alarm Maintenance	Good	6/9/2018 9:06...

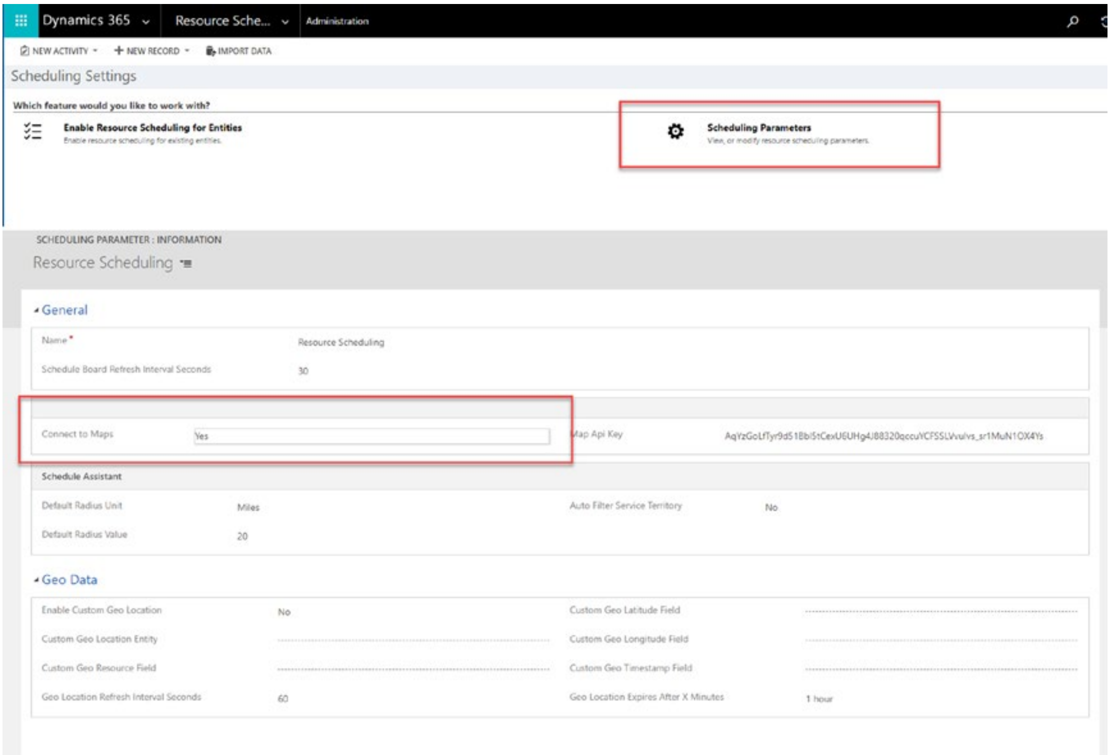
Figure 5-9. *A resource role with two associated skills of different proficiency levels*

Schedule Board

The schedule board is at the center of the field service app. The schedule board allows users to see unscheduled items (including work items or requests for work); schedule those items; see the resource list, resource times, and current schedule; check out distances on maps; and filter the data extensively. This section will cover how to get started using the schedule board.

Connecting to Maps

Before the schedule board can be utilized with maps, this functionality needs to be turned on. Navigate to Scheduling Settings from the "Resource Scheduling" section of the sitemap within the Classic UI and set "Connect to Maps" to "On" (Figure 5-10).


Dynamics 365
Resource Sche...
Administration
NEW ACTIVITY
NEW RECORD
IMPORT DATA
Scheduling Settings
Which feature would you like to work with?
Enable Resource Scheduling for Entities
Enable resource scheduling for existing entities.
Scheduling Parameters
View, or modify resource scheduling parameters.
SCHEDULING PARAMETER : INFORMATION
Resource Scheduling
General
Schedule Assistant
Geo Data

Name* Resource Scheduling
Schedule Board Refresh Interval Seconds 30
Connect to Maps Yes
Map Api Key AqYzGoLfTyr9d51Bbl5tCexU6UHg4J88320qccuYCFSSLVvulvs_sr1MuN1OX4Ys
Default Radius Unit Miles
Auto Filter Service Territory No
Default Radius Value 20
Enable Custom Geo Location No
Custom Geo Latitude Field
Custom Geo Location Entity
Custom Geo Longitude Field
Custom Geo Resource Field
Custom Geo Timestamp Field
Geo Location Refresh Interval Seconds 60
Geo Location Expires After X Minutes 1 hour

Figure 5-10. *Connecting the schedule board to maps within Dynamics 365*

Schedule Board Functionality

Let's get started setting up the schedule board.

1. Navigate to the schedule board via the Classic UI and select "Schedule Board." The board is going to look blank at this stage, but on the left-hand panel, the resource created in the previous steps should be visible (Figure 5-11).

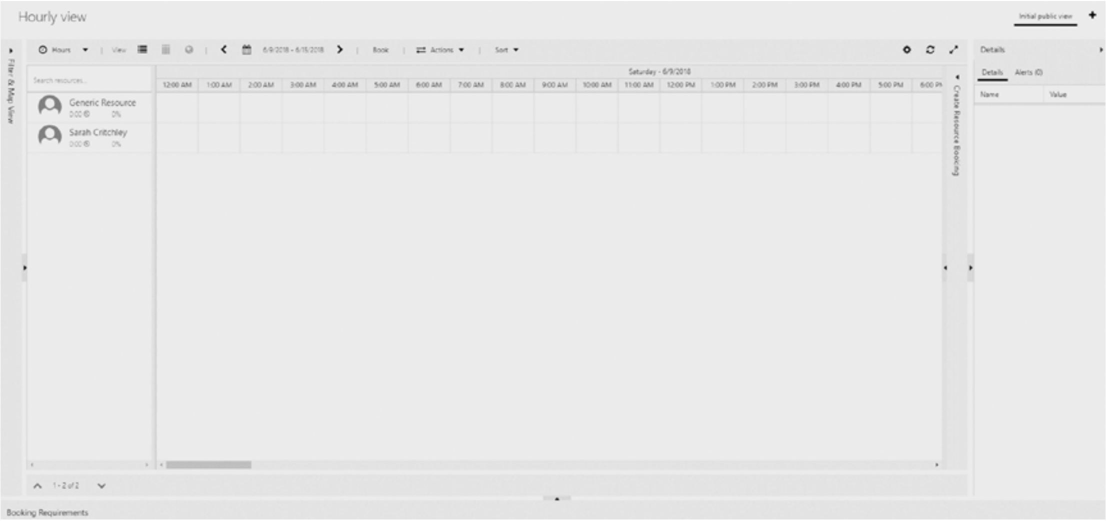

Hourly view
Initial public view
Hours
View
6/9/2018 - 6/15/2018
Book
Actions
Sort
Details
Details
Alerts (0)
Name
Value
Filter & Map View
Search resources...
Generic Resource
Sarah Critchley
Saturday - 6/9/2018
12:00 AM
1:00 AM
2:00 AM
3:00 AM
4:00 AM
5:00 AM
6:00 AM
7:00 AM
8:00 AM
9:00 AM
10:00 AM
11:00 AM
12:00 PM
1:00 PM
2:00 PM
3:00 PM
4:00 PM
5:00 PM
6:00 PM
Create Resource Booking
1 - 2 of 2
Booking Requirements

Figure 5-11. *Schedule board in field service app with no scheduled items*

A resource can get booked under the following conditions:

- There is a resource requirement created that is open.
- An unscheduled work order exists.
- A project exists (this is not covered in this section and is related to the Project Service Automation App).

A *resource requirement* is a generic piece of work that is covered under the "Resource Scheduling" section of the sitemap within the Classic UI and is a way for a requirement to be made within the system and then have a resource booked against it (Figure 5-12).

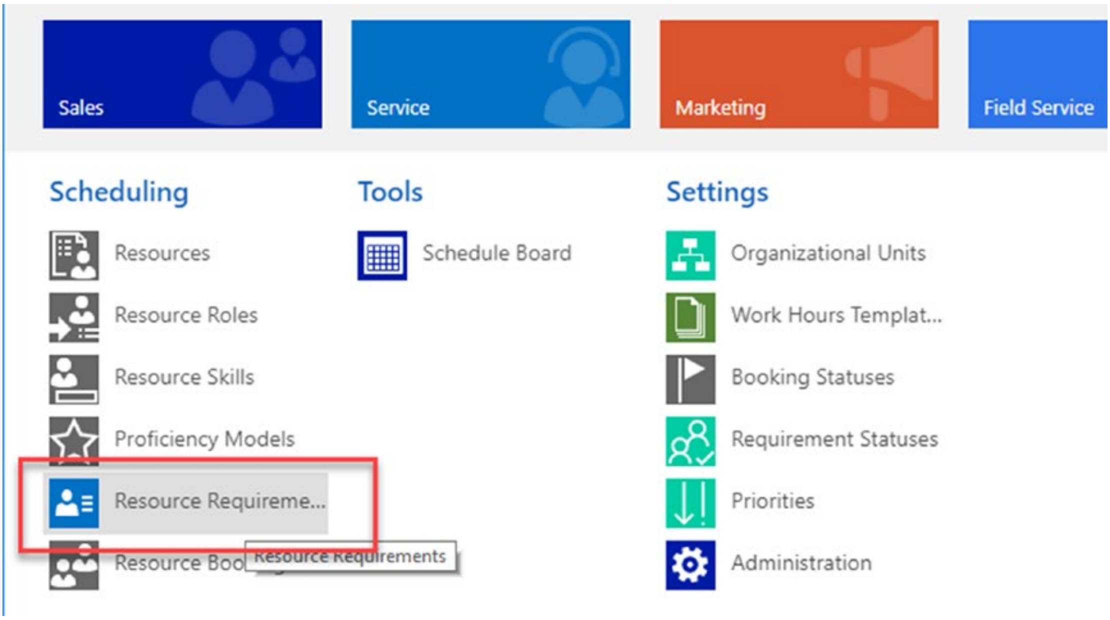
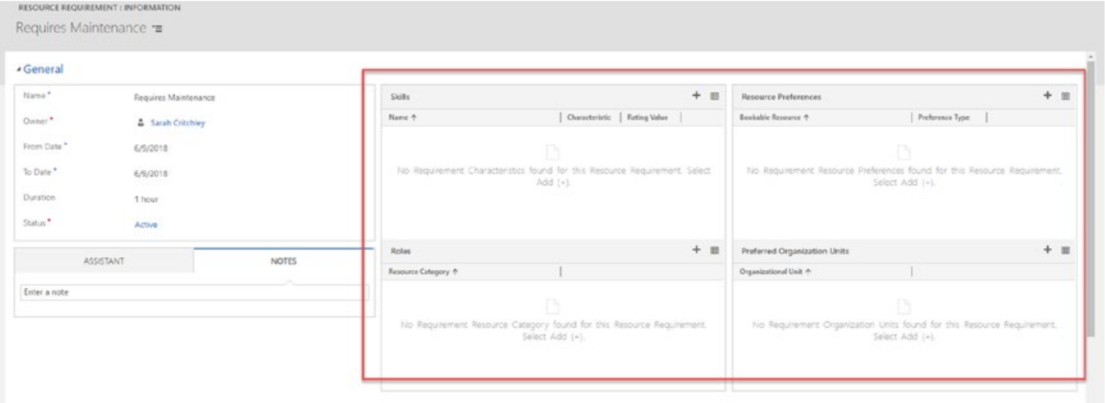

Sales
Service
Marketing
Field Service
Scheduling
Resources
Resource Roles
Resource Skills
Proficiency Models
Resource Requireme...
Resource Boo
Resource Requirements
Tools
Schedule Board
Settings
Organizational Units
Work Hours Templat...
Booking Statuses
Requirement Statuses
Priorities
Administration

Figure 5-12. *Creating a new resource requirement*

Resource requirements can be linked to work orders from a field-service perspective, but there is not a requirement to – keeping a generic resourcing scheduling element the feature and allows users to schedule a piece of work without a work order. Specific linked items can be associated with a resource requirement, including skills and roles required to fulfil that requirement. Inclusive of this are preferences and also specific organization units. These links are used within the resource scheduling engine to suggest the most available resource with the required skills (Figure 5-13).


RESOURCE REQUIREMENT : INFORMATION

Requires Maintenance

General

Name * Requires Maintenance
Owner * Sarah Critchley
From Date * 6/9/2018
To Date * 6/9/2018
Duration 1 hour
Status * Active

ASSISTANT
NOTES
Enter a note

Skills

Name ↑	Characteristic	Rating Value

No Requirement Characteristics found for this Resource Requirement. Select Add (+).

Resource Preferences

Bookable Resource ↑	Preference Type

No Requirement Resource Preferences found for this Resource Requirement. Select Add (+).

Roles

Resource Category ↑

No Requirement Resource Category found for this Resource Requirement. Select Add (+).

Preferred Organization Units

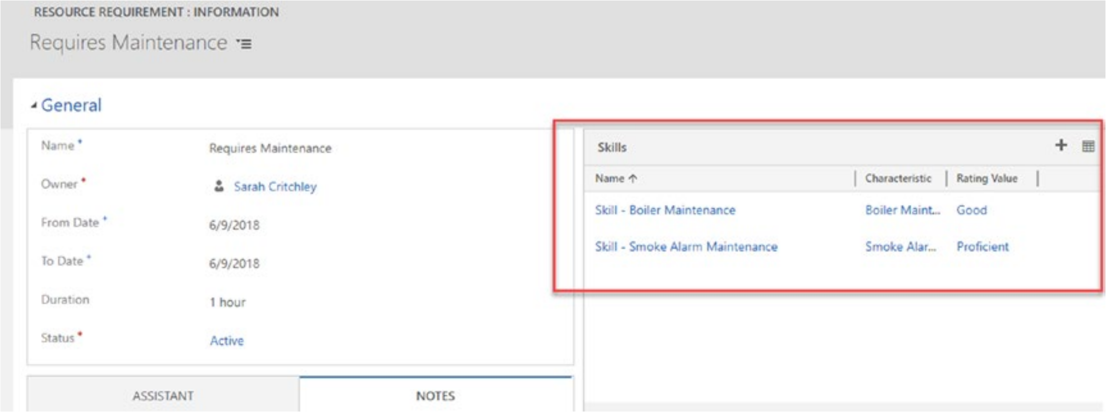
Organizational Unit ↑

No Requirement Organization Units found for this Resource Requirement. Select Add (+).

Figure 5-13. *A resource requirement and the associated items required that would influence scheduling resources*

Task: Create a new resource requirement.

1. Select the “Resource Requirement” item from the sitemap and click “New.”
2. Name the requirement and select “From” and “To” dates inclusive of today’s date.
3. Once the duration is set, save the record.
4. Associate the skills that were created in the previous section so that the resource requirement is set up. This is shown in Figure 5-14.



Name * Requires Maintenance
Owner * Sarah Critchley
From Date * 6/9/2018
To Date * 6/9/2018
Duration 1 hour
Status * Active

Skills

Name ↑	Characteristic	Rating Value
Skill - Boiler Maintenance	Boiler Maint...	Good
Skill - Smoke Alarm Maintenance	Smoke Alar...	Proficient

Figure 5-14. *A resource requirement with associated skills*

5. Navigate back to the original resource requirement and go to the Characteristic sub-grid.
6. Click “New” on “Add New Bookable Resource Characteristic” that also matches these skills which are part of the resource requirement (Figure 5-15).

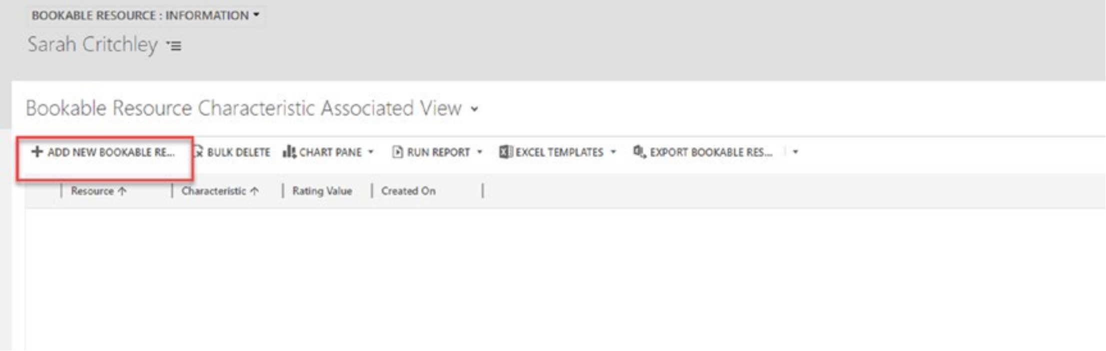
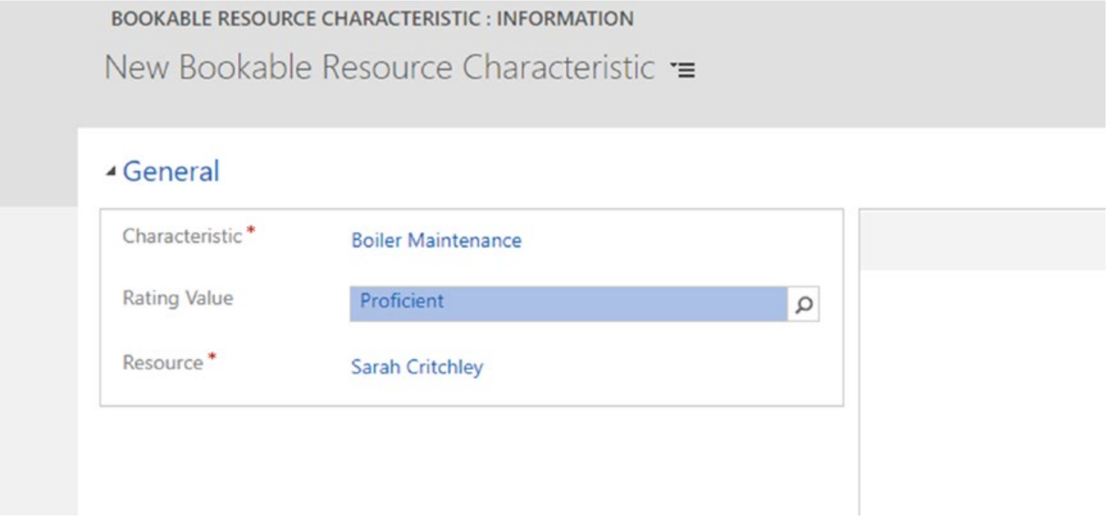

BOOKABLE RESOURCE : INFORMATION
Sarah Critchley
Bookable Resource Characteristic Associated View
+ ADD NEW BOOKABLE RE...
BULK DELETE
CHART PANE
RUN REPORT
EXCEL TEMPLATES
EXPORT BOOKABLE RES...
Resource
Characteristic
Rating Value
Created On

Figure 5-15. *Link a new bookable resource requirement*

Adding this specifies that the resource being booked for this requirement needs to have these skills associated with their record (Figure 5-16).


BOOKABLE RESOURCE CHARACTERISTIC : INFORMATION

New Bookable Resource Characteristic

General

Characteristic * Boiler Maintenance

Rating Value Proficient

Resource * Sarah Critchley

Figure 5-16. *Associating an existing Skill and proficiency to the Resource Characteristic record*

Navigate back to the schedule board; there are two changes to the board. The section "Open Requirements" now has the requirement made in the previous step and is waiting to be scheduled, as shown in Figure 5-17.

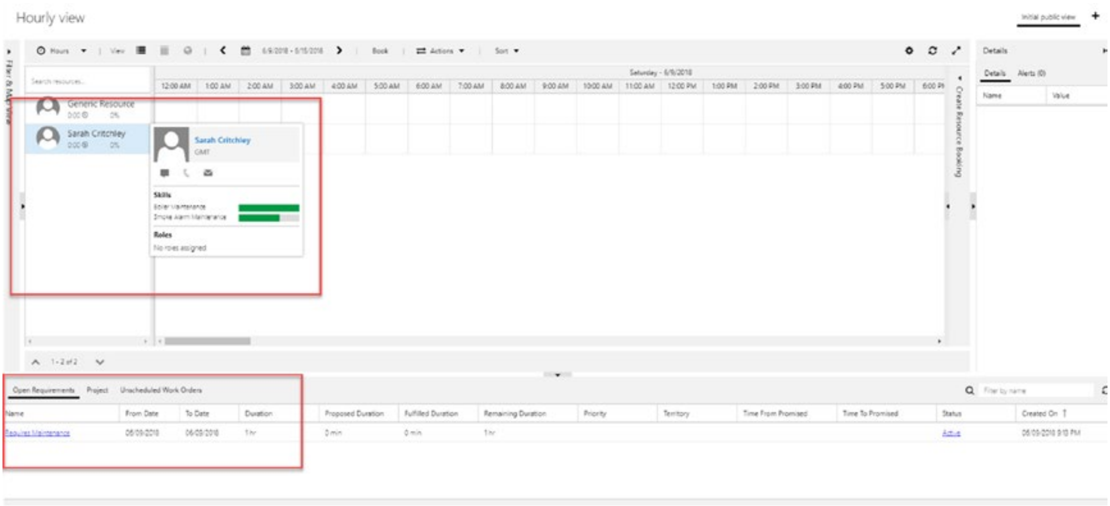

Hourly view
Generic Resource
Sarah Critchley
Skills
Roles
No roles assigned
Open Requirements
Project
Unscheduled Work Orders
Requires Maintenance
Details

Figure 5-17. *In the "Open Requirements" heading the new Resource Requirement record can be seen*

Clicking on the "Requires Maintenance" resource requirement highlighted in Figure 5-18 opens the details regarding that record on the right-hand side. Again, this is particularly useful so that the user, in this case the field service dispatcher, doesn't have to click to open a record and then navigate back to the schedule board. They can perform the tasks from one screen.

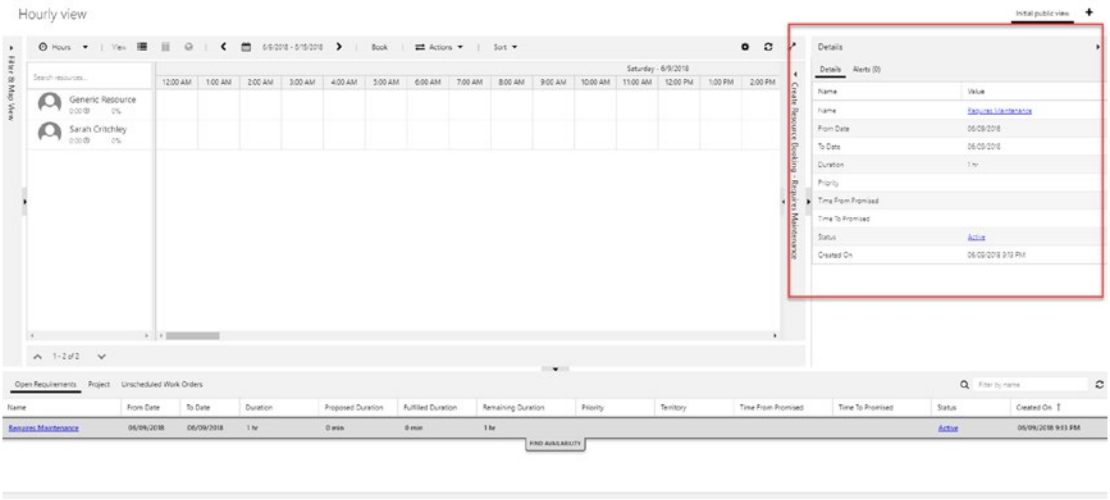
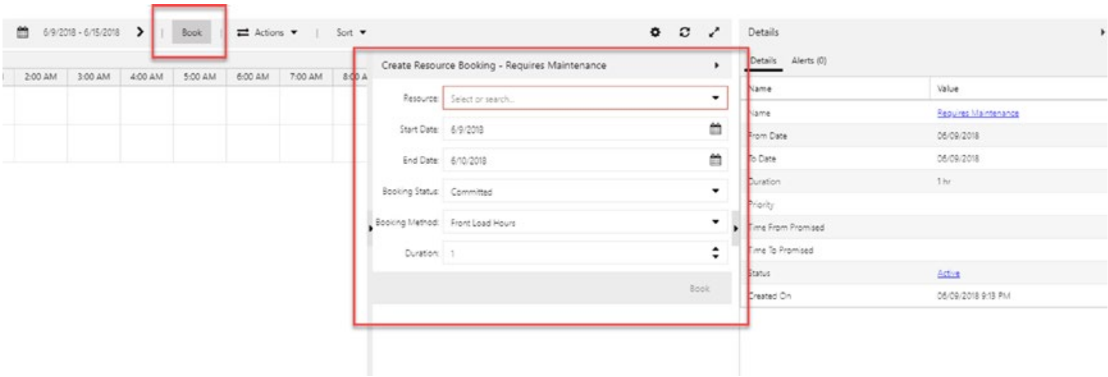

Hourly view
Generic Resource
Sarah Critchley
Details
Open Requirements
Project
Unscheduled Work Orders
Requires Maintenance
FIND AVAILABILITY

Figure 5-18. *Resource requirement specification can be seen from the schedule board*

Some field service dispatchers will still wish to manually book a specific resource. This is possible by selecting the Book button in the center of the schedule board and completing the details manually about whom the user wishes to book.

What this “booking” action is doing behind the scenes is manually making a resource-booking activity record that is scheduled against the resource and the regarding item (such as a work order, or a resource requirement record) being the item selected. In this example, it would be the Resource Requirement record, but it could also be a work order, for example (Figure 5-19).



Create Resource Booking - Requires Maintenance

Resource: Select or search...

Start Date: 6/9/2018

End Date: 6/10/2018

Booking Status: Committed

Booking Method: Front Load Hours

Duration: 1

Details

Details Alerts (0)

Name	Value
Name	Requires Maintenance
From Date	06/09/2018
To Date	06/09/2018
Duration	1 hr
Priority	
Time From Promised	
Time To Promised	
Status	Active
Created On	06/09/2018 9:13 PM

Figure 5-19. *Manually creating a resource-booking activity*

To automatically suggest resources instead, select “Find Availability” on the specific resource line, as seen in Figure 5-20.

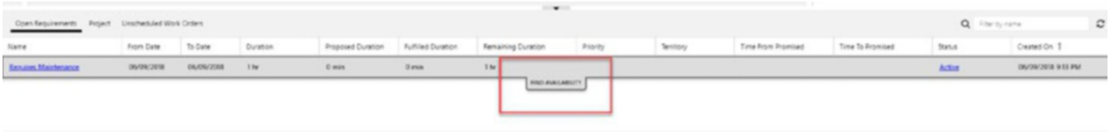
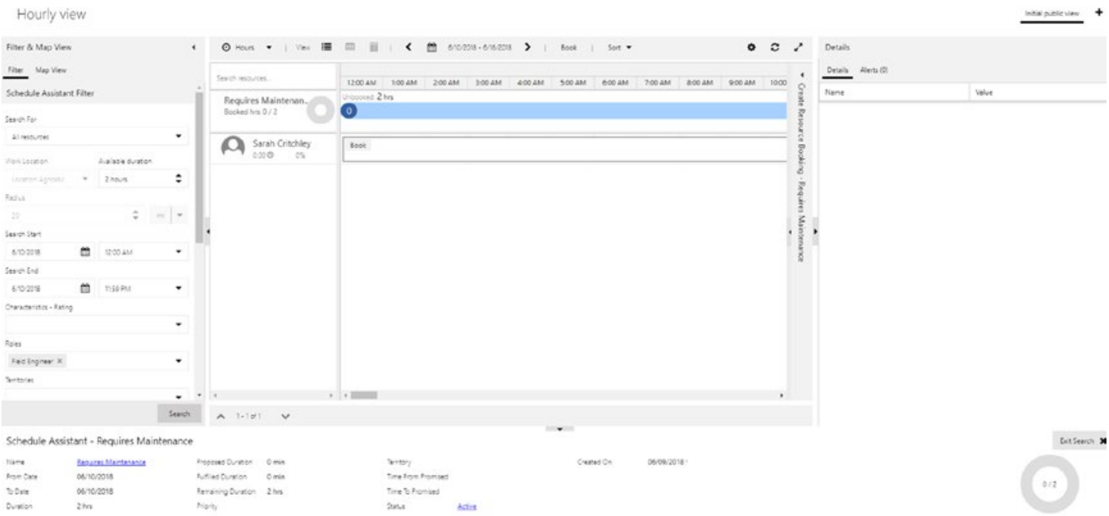


Figure 5-20. *Selecting “Find Availability”*

The scheduling assistant will suggest resources that match the requirements of the selected item. There will be filters input automatically in the filter in the left-hand side of the pane (Figure 5-21).


Hourly view
Filter & Map View
Filter
Map View
Hours
View
Book
Sort
Details
Alerts (0)
Create Resource Booking - Requires Maintenance
Requires Maintenan...
Sarah Critchley
Search
Exit Search

Schedule Assistant Filter

Search For: All resources

Available duration: 2 hours

Search Start: 6/10/2018 12:00 AM

Search End: 6/10/2018 11:59 PM

Roles: Field Engineer

Schedule Assistant - Requires Maintenance

Name: Requires Maintenance

From Date: 06/10/2018

To Date: 06/10/2018

Duration: 2 hrs

Proposed Duration: 0 min

Fulfilled Duration: 0 min

Remaining Duration: 2 hrs

Status: Active

Created On: 06/09/2018

Figure 5-21. *The result of the system's suggesting potential resources from "Find Availability"*

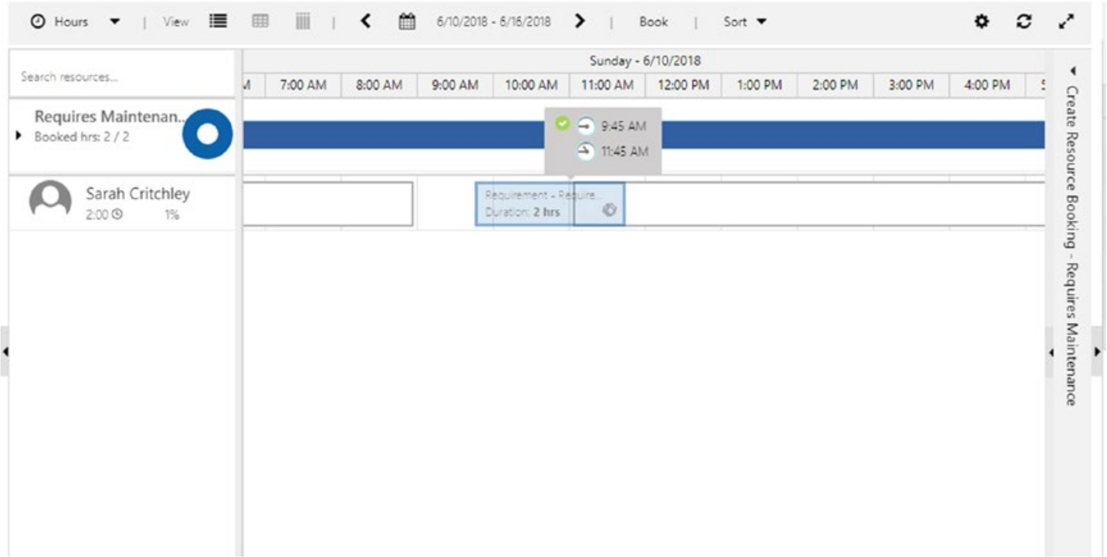

Hours
View
6/10/2018 - 6/16/2018
Book
Sort
Search resources...
Sunday - 6/10/2018
7:00 AM
8:00 AM
9:00 AM
10:00 AM
11:00 AM
12:00 PM
1:00 PM
2:00 PM
3:00 PM
4:00 PM
Requires Maintenan...
Booked hrs: 2 / 2
9:45 AM
11:45 AM
Sarah Critchley
2:00
1%
Requirement - Require...
Duration: 2 hrs
Create Resource Booking - Requires Maintenance

Figure 5-22. *The requirement can be dragged into the schedule board at the specific time to book*

The scheduling engine will highlight the unbooked time window in the resource calendar, and the user can click the Book button to create a new resource booking. This can be selected and dragged to another area if required (the system will suggest the first available unbooked time), as shown in Figure 5-22.

So far, this chapter has not discussed setting up working hours for the resource, or the time available for the resource. This will be done in the next section. It is, however, important to realize that scheduling can be achieved at its most basic level by setting up the following steps:

- Have a resource.
- The resource has a role.
- The role has skills.
- The requirement has a time frame.
- The requirement has a specific role requirement.

Setting Up Working Hours for a Resource

Work hours are a piece of reference data within Dynamics 365 CE that specify when a resource is working on a day-to-day basis. This is as simple as *Monday to Friday, 9 a.m. until 5 p.m.* Work hours for a resource are set up based on the record type being used. In the example in this section, it is a user, but it could also be the Contact or Equipment records. Work hours are a standard, older concept used in previous versions of the scheduling engine. This process involves specifying the time frame a resource is available.

Task: Set up working hours.

1. Navigate to the User record (or the record related to the resource; e.g., a Contact record) and select “Work Hours,” which loads a calendar. The default calendar is set so that a resource works 24/7. This is not sustainable or realistic for resources, so it is important this be modified.
2. Select “Setup” and select “New Weekly Schedule,” as shown in Figure 5-23.

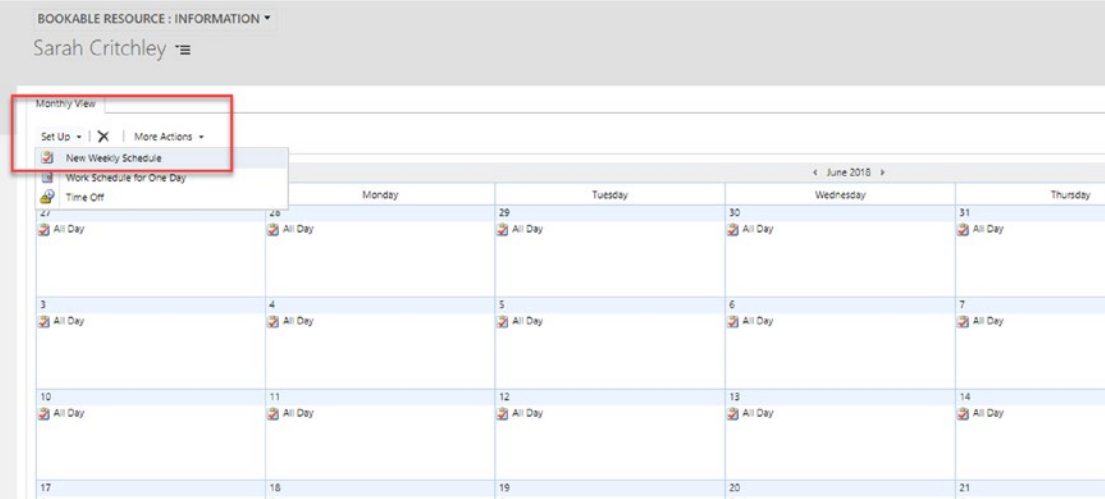
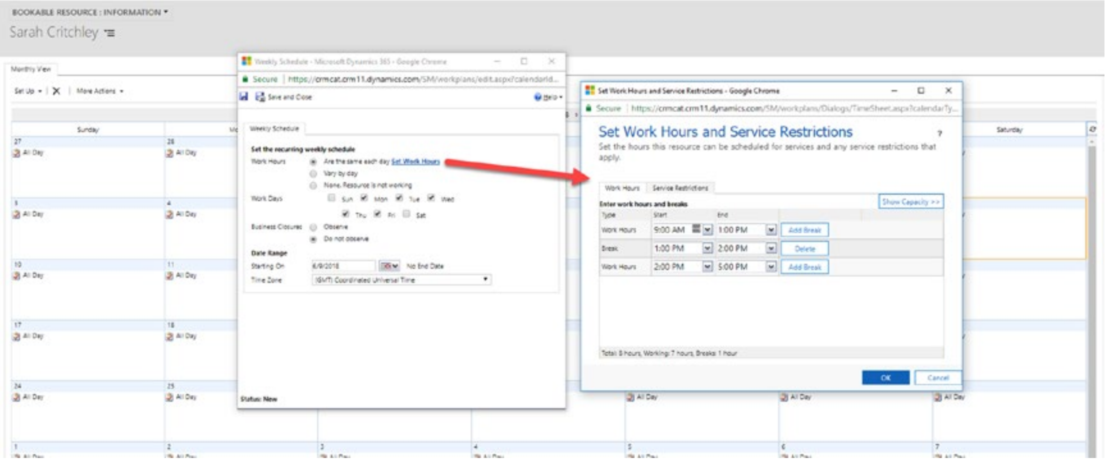

BOOKABLE RESOURCE : INFORMATION
Sarah Critchley
Monthly View
Set Up
More Actions
New Weekly Schedule
Work Schedule for One Day
Time Off
June 2018
Monday
Tuesday
Wednesday
Thursday
All Day

Figure 5-23. *Selecting "New Weekly Schedule" when creating Work Hours for a Resource*

3. Select "Set up Work Hours," and a new screen will open that displays the days of the week. Selecting "Set Work Times" opens a second popup screen, where a user can set a configurable time frame a resource works daily. This can be seen in Figure 5-24.


Weekly Schedule - Microsoft Dynamics 365 - Google Chrome

Secure | https://crmcat.crm11.dynamics.com/SM/workplans/edit.aspx?calendarId...

Set the recurring weekly schedule

Work Hours: ● Are the same each day Set Work Hours
○ Vary by day
○ None. Resource is not working

Work Days: ☐ Sun ☑ Mon ☑ Tue ☑ Wed ☑ Thu ☑ Fri ☐ Sat

Business Closures: ○ Observe ● Do not observe

Date Range

Starting On: 6/9/2018 No End Date

Time Zone: (GMT) Coordinated Universal Time

Status: New

Set Work Hours and Service Restrictions - Google Chrome

Secure | https://crmcat.crm11.dynamics.com/SM/workplans/Dialogs/TimeSheet.aspx?calendarTy...

Set Work Hours and Service Restrictions

Set the hours this resource can be scheduled for services and any service restrictions that apply.

Enter work hours and breaks

Type	Start	End
Work Hours	9:00 AM	1:00 PM
Break	1:00 PM	2:00 PM
Work Hours	2:00 PM	5:00 PM

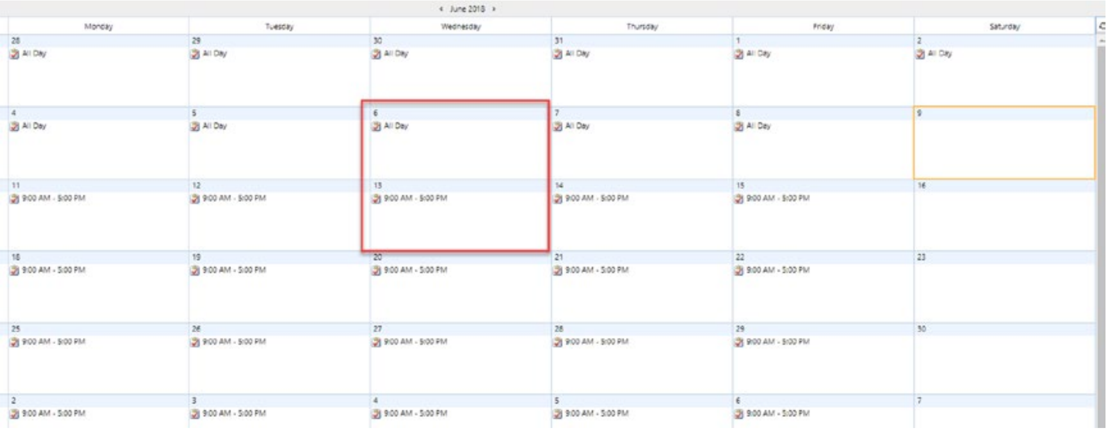
Total: 8 hours, Working: 7 hours, Breaks: 1 hour

BOOKABLE RESOURCE : INFORMATION
Sarah Critchley
Save and Close
Help
Weekly Schedule
Work Hours
Service Restrictions
Show Capacity >>
Add Break
Delete
OK
Cancel
All Day

Figure 5-24. *Two new screens open that display the schedule and then specific times*

4. Change the schedule to 9 a.m. until 5:30 p.m., Monday to Friday, and click OK button.

Once saved, the change is reflected in the overall work hours calendar, as shown in Figure 5-25.



‹ June 2018 ›

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
28 All Day	29 All Day	30 All Day	31 All Day	1 All Day	2 All Day
4 All Day	5 All Day	6 All Day	7 All Day	8 All Day	9
11 9:00 AM - 5:00 PM	12 9:00 AM - 5:00 PM	13 9:00 AM - 5:00 PM	14 9:00 AM - 5:00 PM	15 9:00 AM - 5:00 PM	16
18 9:00 AM - 5:00 PM	19 9:00 AM - 5:00 PM	20 9:00 AM - 5:00 PM	21 9:00 AM - 5:00 PM	22 9:00 AM - 5:00 PM	23
25 9:00 AM - 5:00 PM	26 9:00 AM - 5:00 PM	27 9:00 AM - 5:00 PM	28 9:00 AM - 5:00 PM	29 9:00 AM - 5:00 PM	30
2 9:00 AM - 5:00 PM	3 9:00 AM - 5:00 PM	4 9:00 AM - 5:00 PM	5 9:00 AM - 5:00 PM	6 9:00 AM - 5:00 PM	7

Figure 5-25. *Changes reflected in the main calendar*

Work hours are important as they affect scheduling and the schedule board. Navigate back to the schedule board and the resource that was configured in the previous step. The working hours are visible by the hours that are *not* greyed out (Figure 5-26). The utilization is also affected by the amount of time considered to be working hours and is based on the percentage set up earlier within the Resource record. This time frame is considered when automatically scheduling or suggesting times.

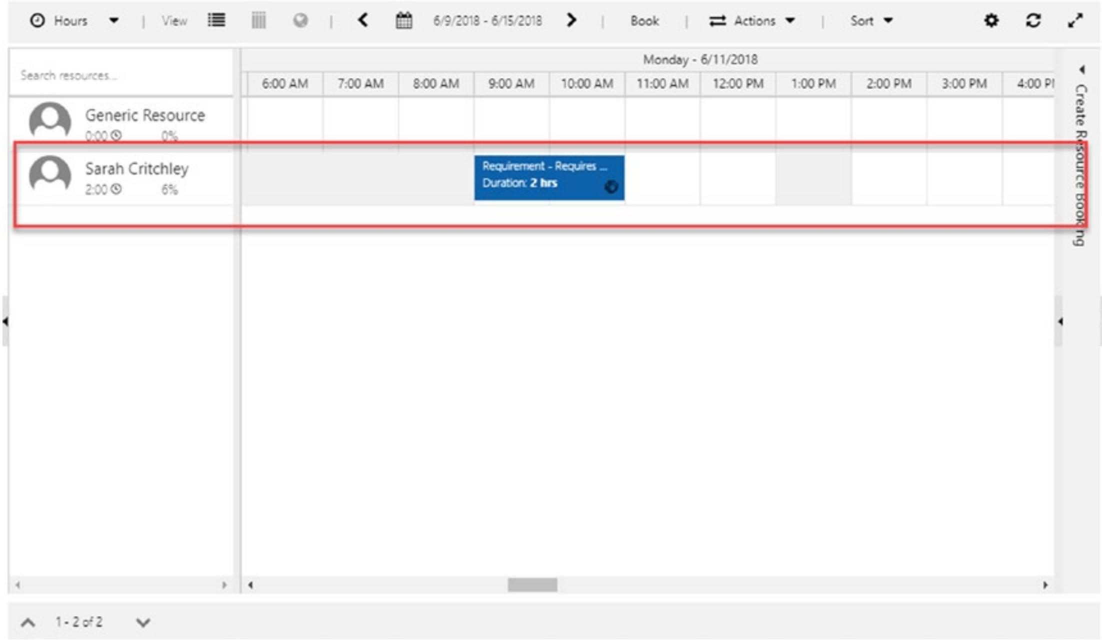
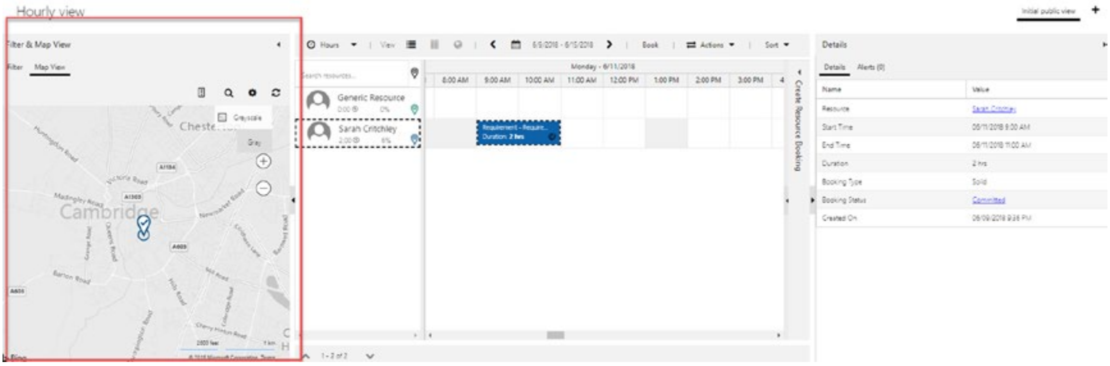

Hours
View
6/9/2018 - 6/15/2018
Book
Actions
Sort
Search resources...
Monday - 6/11/2018
6:00 AM
7:00 AM
8:00 AM
9:00 AM
10:00 AM
11:00 AM
12:00 PM
1:00 PM
2:00 PM
3:00 PM
4:00 PM
Generic Resource
0:00
0%
Sarah Critchley
2:00
6%
Requirement - Requires ...
Duration: 2 hrs
Create Resource Booking
1 - 2 of 2

Figure 5-26. *Greyed-out times on the schedule board indicate unbookable time*

Map View on the Schedule Board

The map view is a particularly useful piece of functionality as it allows a dispatcher to see exactly where a resource is and their destination point for a booking on a map (Figure 5-27).


Hourly view
Initial public view
Filter & Map View
Filter
Map View
Greyscale
Gray
Cambridge
Chesterton
Hours
View
6/9/2018 - 6/15/2018
Book
Actions
Sort
Search resources...
Monday - 6/11/2018
8:00 AM
9:00 AM
10:00 AM
11:00 AM
12:00 PM
1:00 PM
2:00 PM
3:00 PM
Generic Resource
Sarah Critchley
Requirement - Require...
Duration: 2 hrs
Create Resource Booking
1 - 2 of 2
Details
Details
Alerts (0)

Name	Value
Resource	Sarah Critchley
Start Time	06/11/2018 9:00 AM
End Time	06/11/2018 11:00 AM
Duration	2 hrs
Booking Type	Solid
Booking Status	Committed
Created On	06/09/2018 9:38 PM

Figure 5-27. *Map view within the schedule board*

Task: Use the map view in the schedule board.

1. Open the Resource Booking record made in the previous task.
2. Double-click on the resource booking (blue rectangle) on the schedule board to open the record and then enter the longitude and latitude of an arbitrary place in the world.
3. Save the record.
4. Open the map view, ensuring the resource booking (blue rectangle) is selected. This will display the map and the location of the work.

The map functionality begins to become useful once a resource location is known (by default, this is set to the location from the previous job) as items such as estimated time to the destination can be calculated. This can be used to estimate any delays for future appointments based on the location of the resource and when they last checked in to or from a timestamped activity.

Work Order Setup

Work orders are at the core of the business process within the field service app. Work orders define a piece of work that needs to be done and scheduled. It can often link to a Case entity that has been identified by the customer. The work order would take the place of the Resource Requirement entity created in the previous step, except this time the work order holds much more detail and context within the lifecycle associated with field service. The Resource Requirement entity is a more generic bookable item compared to the Work Order. This can be seen in Figure 5-28.

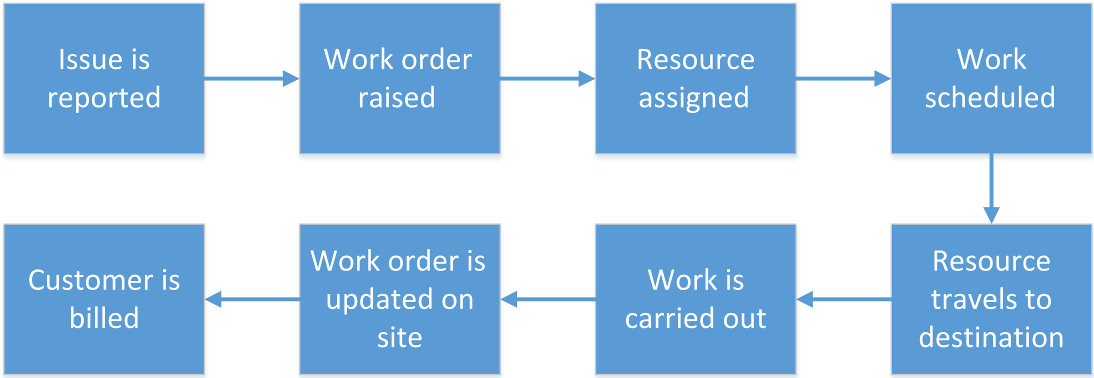

Issue is reported
Work order raised
Resource assigned
Work scheduled
Resource travels to destination
Work is carried out
Work order is updated on site
Customer is billed

Figure 5-28. *Basic lifecycle of a work order within the field service application*

Where an issue is reported, a case will be created from within the Customer Service Hub app and be then converted to a work order. At the time of writing, within the Unified Interface client, converting to a work order from a case is not possible without customizations. However, while this capability is expected to be updated as part of upcoming releases, it is still possible within the Classic UI. This can be seen in Figure 5-29.

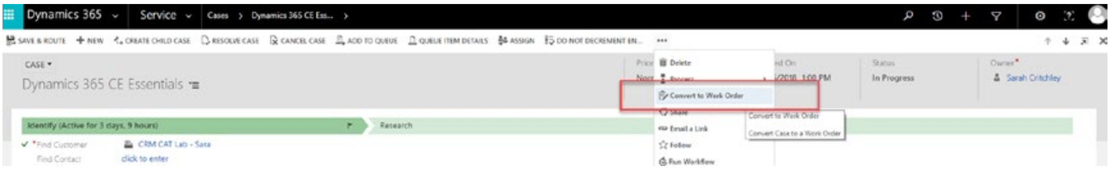
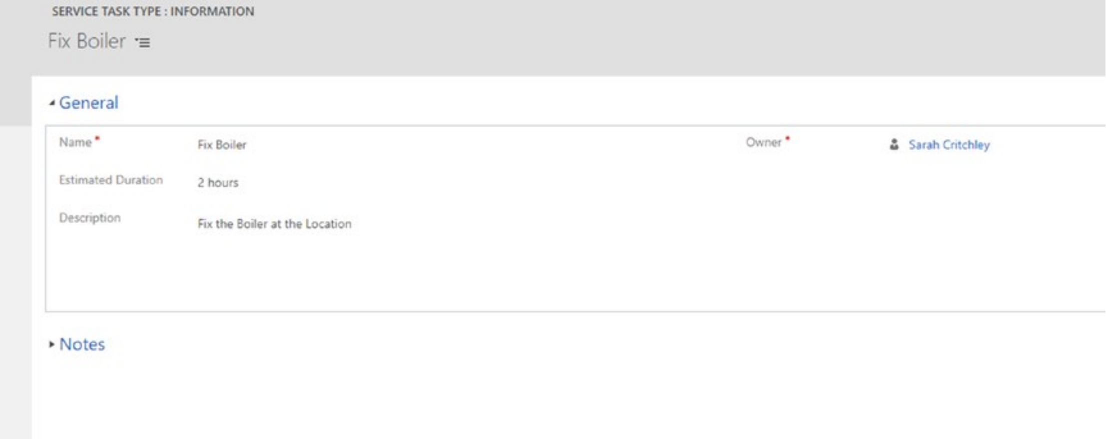

Dynamics 365
Service
Cases
Dynamics 365 CE Ess...
SAVE & ROUTE
NEW
CREATE CHILD CASE
RESOLVE CASE
CANCEL CASE
ADD TO QUEUE
QUEUE ITEM DETAILS
ASSIGN
DO NOT DECREMENT EN...
CASE
Dynamics 365 CE Essentials
Delete
Convert to Work Order
Share
Email a Link
Follow
Run Workflow
Convert to Work Order
Convert Case to a Work Order
Status
In Progress
Owner
Sarah Critchley
Identify (Active for 3 days, 9 hours)
Research
Find Customer
CRM CAT Lab - Sara
Find Contact
click to enter

Figure 5-29. *Converting a case to a work order available via the Overflow button on the Case record*

It is important to set up important configuration records before creating a work order. This includes the service task types. Service task types describe tasks that need to be completed on site by the resource and can be seen as a way of creating an action list of tasks included as part of the work order.

Task: Set up service task Types.

1. Navigate to “Field Service” within the Classic UI ➤ “Administration” ➤ “Service Task Types” and click “New.”
2. Fill in the “Name,” “Estimated Duration,” and “Description” fields (Figure 5-30).
3. Repeat these steps several times, creating different service task types until you have an assortment of different records.

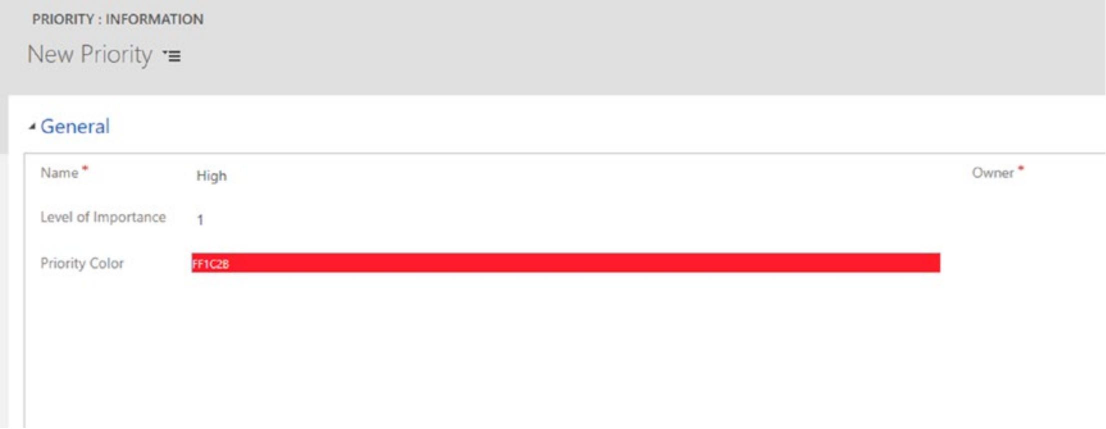

SERVICE TASK TYPE : INFORMATION
Fix Boiler
General
Notes

Name: Fix Boiler
Owner: Sarah Critchley
Estimated Duration: 2 hours
Description: Fix the Boiler at the Location

Figure 5-30. *Create a new service task type*

Task: Set up priorities.

Priorities color code the schedule board based on the priority set. Priorities will also be taken into account within the scheduling engine (Figure 5-31).


PRIORITY : INFORMATION
New Priority
General

Name: High
Owner:
Level of Importance: 1
Priority Color: FF1C2B

Figure 5-31. *Create a new priority with color coding*

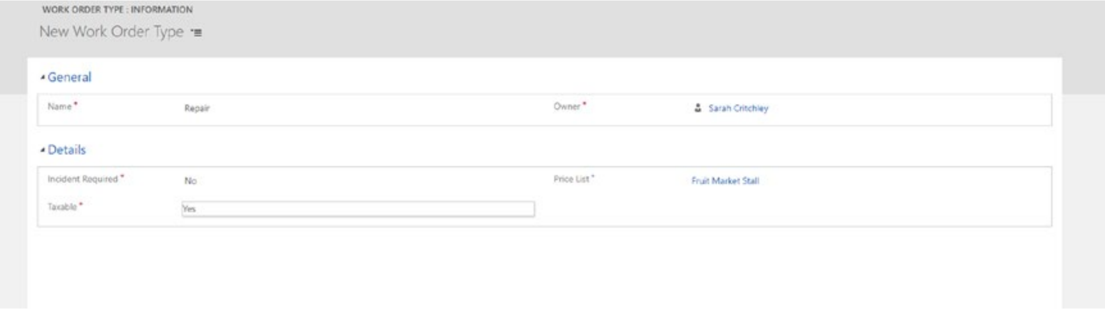
1. Navigate to “Field Service” within the Classic UI ➤ “Administration” ➤ “Priorities and click “New.”
2. Fill in the “Name” and “Level of Importance” fields and set the color by selecting one in the “Priority Color” field.
3. Save the record.
4. Repeat these steps, creating at least two other priorities with different colours.

The final piece of information that is required is the Work Order Type record. A work order type is a category that the work order is linked to. The Work Order Type record specifies rules, such as whether there should be a case linked and the associated price list.

Task: Set up work order types (Figure 5-32).

1. While still within the Administration area, navigate to "Work Order Type" and click "New."
2. Populate the "Name" field.
3. Specify if a case is going to be required as part of the work order.
4. Add a related price list (see Chapter 2, "Sales").
5. Specify if it is taxable (set to "No").

It's important to highlight that a Work Order record will not always be associated or created from a Case record. It could be created from a sales opportunity or from a recurring agreement or schedule. If so, the work order type cannot be set to a type that requires a case (incident) in the configuration.



WORK ORDER TYPE : INFORMATION

New Work Order Type

General

Name* Repair

Owner* Sarah Critchley

Details

Incident Required* No

Price List* Fruit Market Stall

Taxable* Yes

Figure 5-32. *Creating a new work order type*

Creating a Work Order

Now that the configuration records have been set up, it's time to create a work order.

Task: Create a new work order.

1. Navigate to the Field Service Hub application ➤ "Work Orders" and click "New," as shown in Figure 5-33.

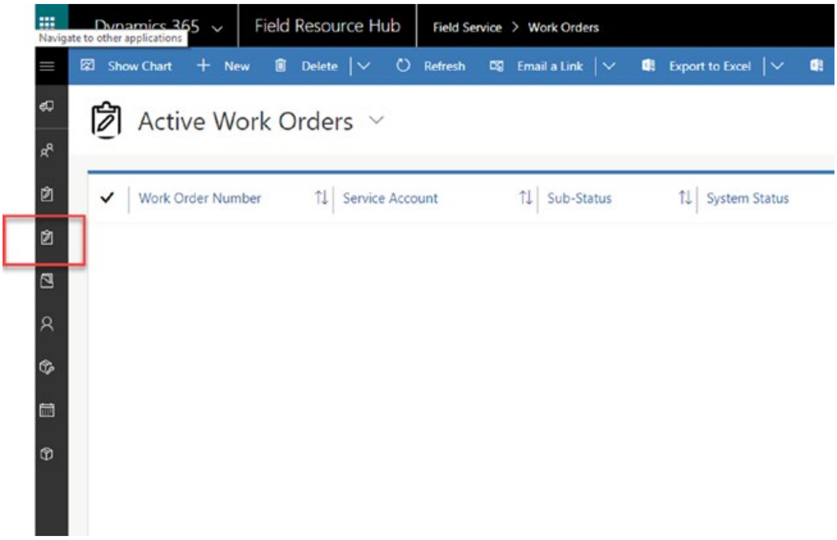
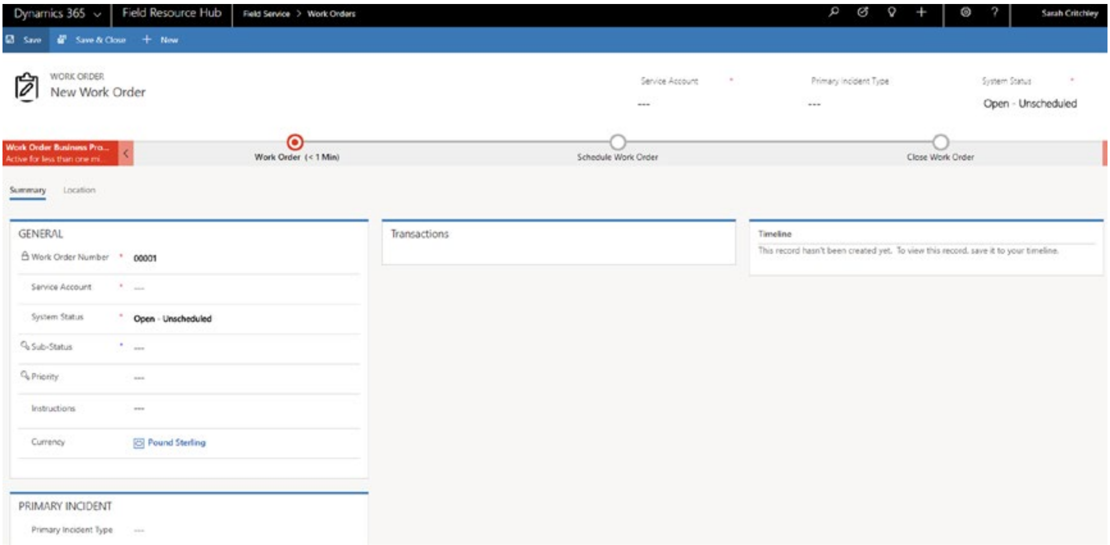

Dynamics 365
Navigate to other applications
Field Resource Hub
Field Service > Work Orders
Show Chart
New
Delete
Refresh
Email a Link
Export to Excel
Active Work Orders
Work Order Number
Service Account
Sub-Status
System Status

Figure 5-33. *Navigate to "Work Orders" in the Field Service Hub application*

2. Complete the following fields on the work order and save the record (Figure 5-34):

   - "Service Account" (populates the Address fields in the Address tab)
   - "Priority" (based on a priority created in the previous step)
   - "Instructions"
   - "Work Order Type" (based on a type created in the previous step)
   - Change "Taxable" to "No"


Dynamics 365
Field Resource Hub
Field Service > Work Orders
Sarah Critchley
Save
Save & Close
New
Work Order Business Pro...
Active for less than one mi...
Work Order (< 1 Min)
Schedule Work Order
Close Work Order
Summary
Location
Transactions

WORK ORDER
New Work Order

Service Account * ---
Primary Incident Type ---
System Status * Open - Unscheduled

GENERAL
Work Order Number * 00001
Service Account * ---
System Status * Open - Unscheduled
Sub-Status * ---
Priority ---
Instructions ---
Currency Pound Sterling

Timeline
This record hasn't been created yet. To view this record, save it to your timeline.

PRIMARY INCIDENT
Primary Incident Type ---

Figure 5-34. *Creating a new work order within the Unified Interface*

The next action goes through adding the service tasks configured in the previous step. Setting these on the work order will define the tasks needing to be completed by the resource selected for completing the work.

Note The “Service Account” field appears to be mandatory; however, this can be changed to optional in the configuration area of Dynamics 365 CE. It does mean the address details will not be copied through from the service account, and this must be entered manually or through customization in other areas of the system. This is particularly useful, as the address where the work is carried out may not always be the address on the Service Account record.

Service tasks will be visible within the sub-grid that will become available on the initial save action of the Work Order record. Products can also be associated at this point, as can services.

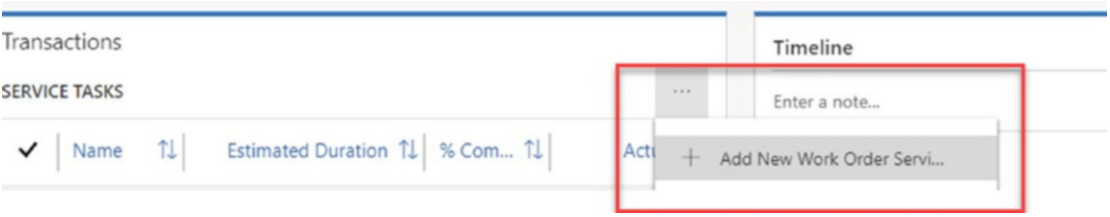

Transactions
SERVICE TASKS
Name
Estimated Duration
% Com...
Acti
...
Timeline
Enter a note...
Add New Work Order Servi...

Figure 5-35. *Adding service tasks to a work order*

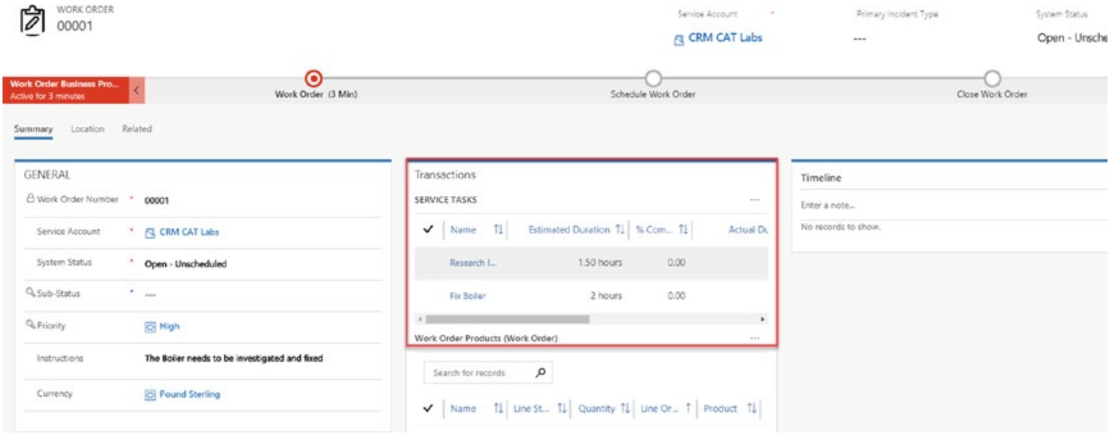
3. Select the action button ("...") on the Service Task sub-grid and click "Add New Work Order Service Tasks" (Figure 5-35). A new window will open, which is a blank Work Order Service Task screen.

4. Associate the "Task Type" to a type created in the previous steps.

5. Add a description.

6. Confirm the "Estimated Duration" field is correct.

7. Click "Save and Close." The previous work order should now be visible, with the new work order service task added in the sub-grid, as shown in Figure 5-36.


WORK ORDER
00001
Work Order Business Pro...
Active for 3 minutes
Work Order (3 Min)
Schedule Work Order
Close Work Order
Summary
Location
Related
Timeline
Enter a note...
No records to show.
Search for records

Service Account: CRM CAT Labs
Primary Incident Type: ---
System Status: Open - Unsche

GENERAL

Work Order Number: 00001
Service Account: CRM CAT Labs
System Status: Open - Unscheduled
Sub-Status: ---
Priority: High
Instructions: The Boiler needs to be investigated and fixed
Currency: Pound Sterling

Transactions

SERVICE TASKS

Name	Estimated Duration	% Com...	Actual Du
Research I...	1.50 hours	0.00	
Fix Boiler	2 hours	0.00	

Work Order Products (Work Order)

Name	Line St...	Quantity	Line Or...	Product

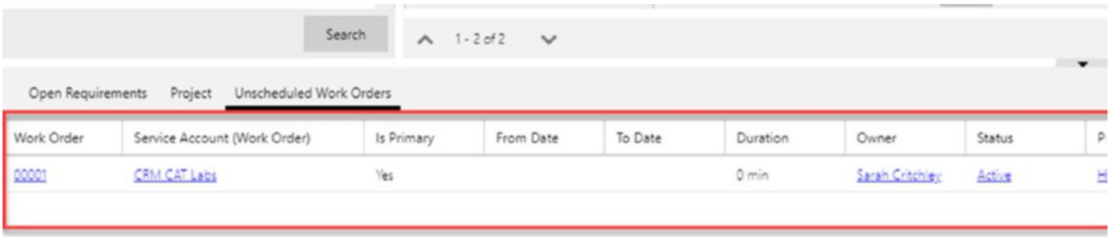
Figure 5-36. *Service tasks are displayed within a work order*

8. Open the business process flow on the Work Order record by clicking on the "Work Order" stage. Review the steps and confirm all required steps have been completed. Move the record onto the next stage, "Schedule Work Order," by selecting "Next Stage."

Using the business process flow is good practice so as to know which steps need to be completed and the lifecycle of a work order.

In the previous section, we reviewed scheduling a generic Resource Requirement record. Now, let's look at scheduling a work order.

9. Navigate to the Classic UI and select "Schedule Board."
10. Click the "Unscheduled Work Order" list; it should have the work order created from the previous step within the list (Figure 5-37).



Work Order	Service Account (Work Order)	Is Primary	From Date	To Date	Duration	Owner	Status	P
00001	CRM CAT Labs	Yes			0 min	Sarah Critchley	Active	H

Figure 5-37. *The work order is visible within the schedule board's Unscheduled Work Orders view*

There are several different ways to schedule a work order manually. One option is to click "Find Availability," as we covered earlier, which presents a list of resources available, with the specific skillset required displayed in a list to the user. A user could also drag the work order onto the board from the view itself, or they could click and drag a time frame onto a resource (Figure 5-38).

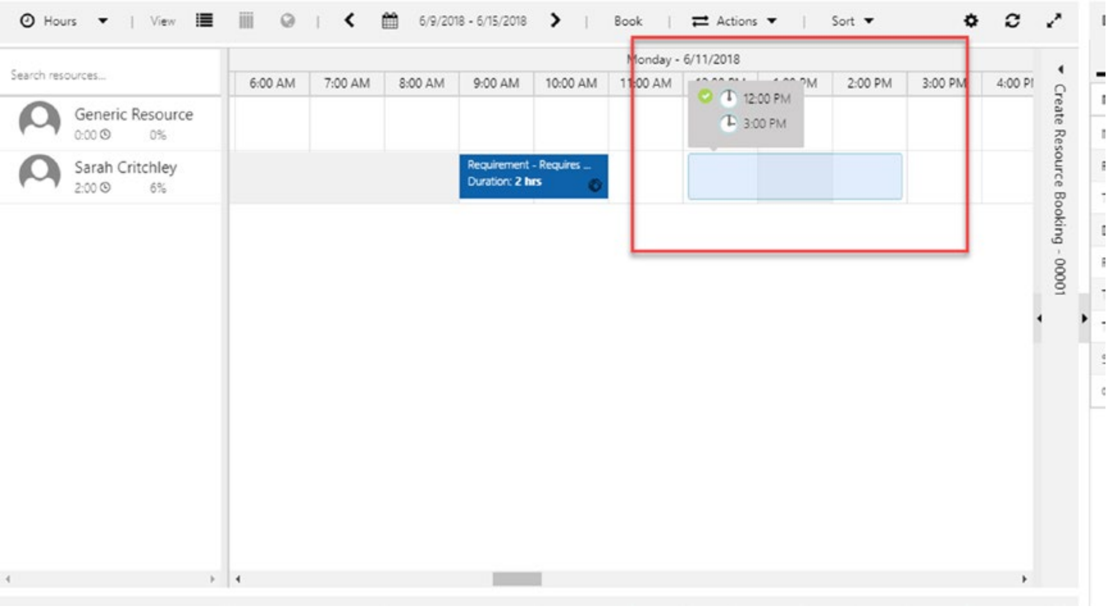
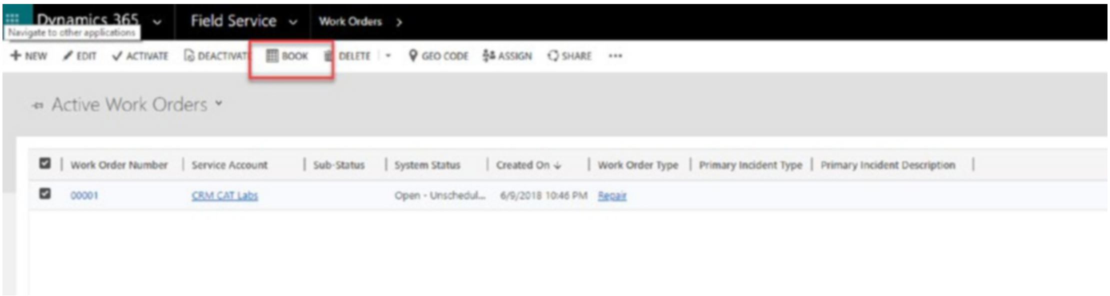

Hours
View
6/9/2018 - 6/15/2018
Book
Actions
Sort
Search resources...
Generic Resource
0:00
0%
Sarah Critchley
2:00
6%
Monday - 6/11/2018
6:00 AM
7:00 AM
8:00 AM
9:00 AM
10:00 AM
11:00 AM
2:00 PM
3:00 PM
4:00 PM
12:00 PM
3:00 PM
Requirement - Requires ...
Duration: 2 hrs
Create Resource Booking - 00001

Figure 5-38. *Clicking and dragging a time frame to place a work order*

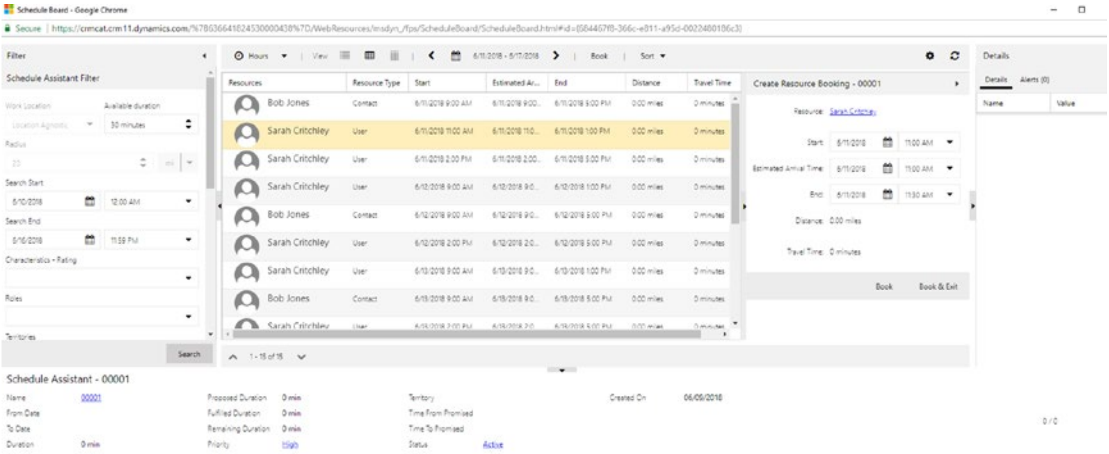
11. To be presented with the availability of resources, navigate to the Work Order view and click "Book" in the command bar (Figure 5-39). This opens the scheduling assistant automatically with pre-defined information. The user can tweak the changes on the left-hand screen before selecting "Search."


Dynamics 365
Navigate to other applications
Field Service
Work Orders
NEW
EDIT
ACTIVATE
DEACTIVATE
BOOK
DELETE
GEO CODE
ASSIGN
SHARE
Active Work Orders

☑	Work Order Number	Service Account	Sub-Status	System Status	Created On ↓	Work Order Type	Primary Incident Type	Primary Incident Description
☑	00001	CRM CAT Labs		Open - Unschedul...	6/9/2018 10:46 PM	Repair		

Figure 5-39. *Select "Book" on a selected work order to open the scheduling assistant*

Scheduling in these examples is simply suggesting the available resources that match the skill level of the requirements. This is the initial stage of scheduling. There is also the option to optimize the route from the resources' set start location to the resources' end location.


Schedule Board - Google Chrome
Secure
https://crmcat.crm11.dynamics.com/%7B636641824530000438%7D/WebResources/msdyn_/fps/ScheduleBoard/ScheduleBoard.html#id={684467f8-366c-e811-a95d-0022480186c3}
Filter
Schedule Assistant Filter
Hours
View
6/11/2018 - 6/17/2018
Book
Sort
Details
Details
Alerts (0)
Name
Value
Search
1 - 15 of 15
Book
Book & Exit

Work Location: Location Agnostic
Available duration: 30 minutes
Radius: 20
Search Start: 6/10/2018 12:00 AM
Search End: 6/16/2018 11:59 PM
Characteristics - Rating
Roles
Territories

Resources	Resource Type	Start	Estimated Ar...	End	Distance	Travel Time
Bob Jones	Contact	6/11/2018 9:00 AM	6/11/2018 9:00...	6/11/2018 5:00 PM	0.00 miles	0 minutes
Sarah Critchley	User	6/11/2018 11:00 AM	6/11/2018 11:0...	6/11/2018 1:00 PM	0.00 miles	0 minutes
Sarah Critchley	User	6/11/2018 2:00 PM	6/11/2018 2:00...	6/11/2018 5:00 PM	0.00 miles	0 minutes
Sarah Critchley	User	6/12/2018 9:00 AM	6/12/2018 9:0...	6/12/2018 1:00 PM	0.00 miles	0 minutes
Bob Jones	Contact	6/12/2018 9:00 AM	6/12/2018 9:0...	6/12/2018 5:00 PM	0.00 miles	0 minutes
Sarah Critchley	User	6/12/2018 2:00 PM	6/12/2018 2:0...	6/12/2018 5:00 PM	0.00 miles	0 minutes
Sarah Critchley	User	6/13/2018 9:00 AM	6/13/2018 9:0...	6/13/2018 1:00 PM	0.00 miles	0 minutes
Bob Jones	Contact	6/13/2018 9:00 AM	6/13/2018 9:0...	6/13/2018 5:00 PM	0.00 miles	0 minutes
Sarah Critchley	User	6/13/2018 2:00 PM	6/13/2018 2:0...	6/13/2018 5:00 PM	0.00 miles	0 minutes

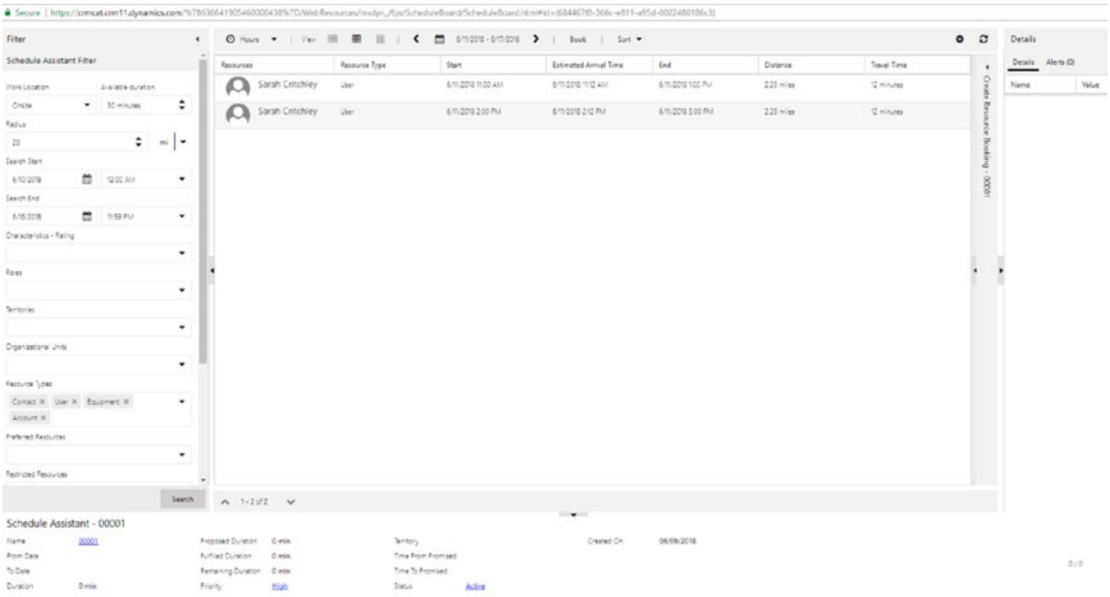
Create Resource Booking - 00001
Resource: Sarah Critchley
Start: 6/11/2018 11:00 AM
Estimated Arrival Time: 6/11/2018 11:00 AM
End: 6/11/2018 11:30 AM
Distance: 0.00 miles
Travel Time: 0 minutes

Schedule Assistant - 00001
Name: 00001
From Date
To Date
Duration: 0 min
Proposed Duration: 0 min
Fulfilled Duration: 0 min
Remaining Duration: 0 min
Priority: High
Territory
Time From Promised
Time To Promised
Status: Active
Created On: 06/09/2018
0 / 0

Figure 5-40. *Being presented with resource options in the scheduling assistant*

At the moment, the example shown in Figure 5-40 does not include location data within the scheduling engine or the records. Scheduling in these examples is suggesting the available resources that match the skill level of the requirements.

Important! This is where it is critical to set the work location on the work order, as well as the resources' work locations in the same space (Figure 5-41). Should a resource and requirement (whether it is a resource requirement or a work order) not match their work location, the scheduling engine will not suggest their availability. This was highlighted in a previous release note for field service, which can be found within the "Further Reading" section at the end of this chapter in the February 2017 Release Notes.


Filter
Schedule Assistant Filter
Hours
View
Book
Sort
Details
Alerts (0)
Name
Value
Create Resource Booking - 00001
Search

Work Location: Onsite
Available duration: 30 minutes
Radius: 20 mi
Search Start: 6/10/2018 12:00 AM
Search End: 6/16/2018 11:59 PM
Resource Types: Contact, User, Equipment, Account

6/11/2018 - 6/17/2018

Resources	Resource Type	Start	Estimated Arrival Time	End	Distance	Travel Time
Sarah Critchley	User	6/11/2018 11:00 AM	6/11/2018 11:12 AM	6/11/2018 1:00 PM	2.20 miles	12 minutes
Sarah Critchley	User	6/11/2018 2:00 PM	6/11/2018 2:12 PM	6/11/2018 5:00 PM	2.20 miles	12 minutes

1 - 2 of 2

Schedule Assistant - 00001

Name: 00001
From Date:
To Date:
Duration: 0 min
Proposed Duration: 0 min
Fulfilled Duration: 0 min
Remaining Duration: 0 min
Priority: High
Territory:
Time From Promised:
Time To Promised:
Status: Active
Created On: 06/09/2018

Figure 5-41. *Scheduling assistant with distances and travel time included*

Once the work location matches, the directions and miles will be visible from the maps and the resource schedule, as seen in Figure 5-42.

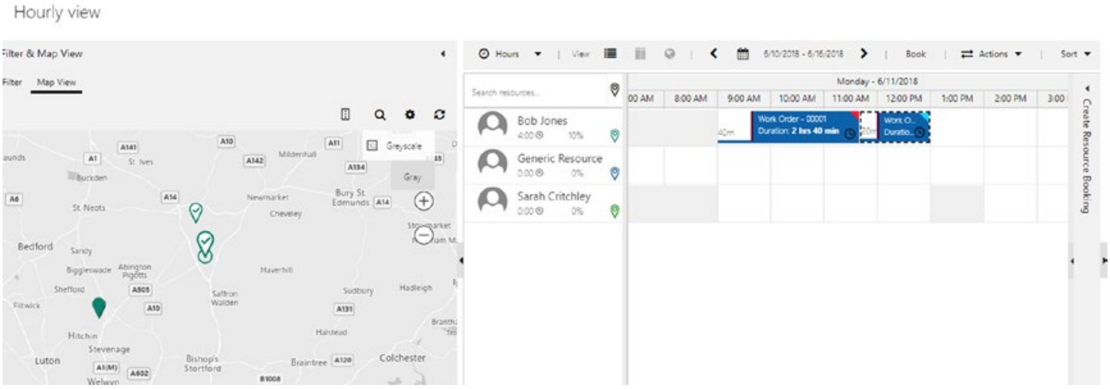
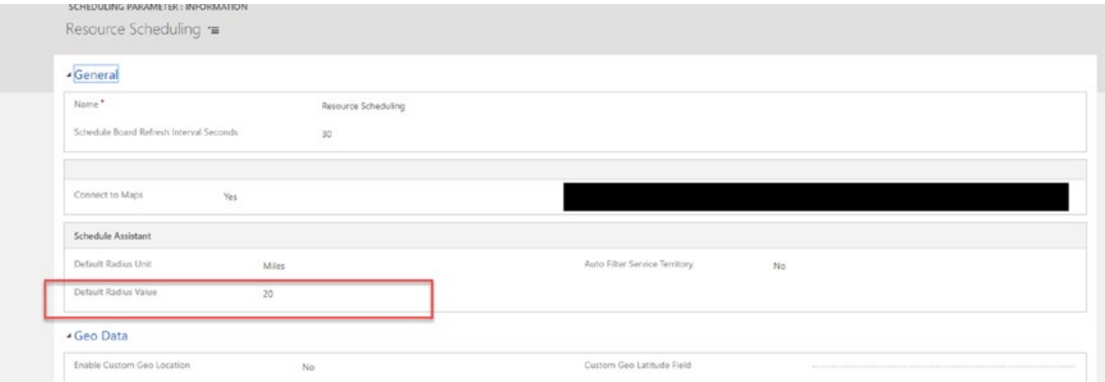

Hourly view
Filter & Map View
Filter
Map View
Greyscale
Gray
St. Ives
Buckden
St. Neots
Bedford
Sandy
Biggleswade
Abington Pigotts
Shefford
Flitwick
Hitchin
Stevenage
Luton
Welwyn
Saffron Walden
Bishop's Stortford
Mildenhall
Newmarket
Cheveley
Bury St. Edmunds
Haverhill
Sudbury
Hadleigh
Halstead
Braintree
Colchester
Hours
View
6/10/2018 - 6/16/2018
Book
Actions
Sort
Search resources...
Monday - 6/11/2018
8:00 AM
9:00 AM
10:00 AM
11:00 AM
12:00 PM
1:00 PM
2:00 PM
Bob Jones
Generic Resource
Sarah Critchley
Work Order - 00001
Duration: 2 hrs 40 min
Create Resource Booking

Figure 5-42. *Using the maps within the schedule board to see the different pins of work orders*

The radius in the scheduling assistant defaults to 20, which can be modified within the Resource Scheduling administration settings, shown in Figure 5-43.



SCHEDULING PARAMETER : INFORMATION

Resource Scheduling

General

Name: Resource Scheduling

Schedule Board Refresh Interval Seconds: 30

Connect to Maps: Yes

[redacted]

Schedule Assistant

Default Radius Unit: Miles

Auto Filter Service Territory: No

Default Radius Value: 20

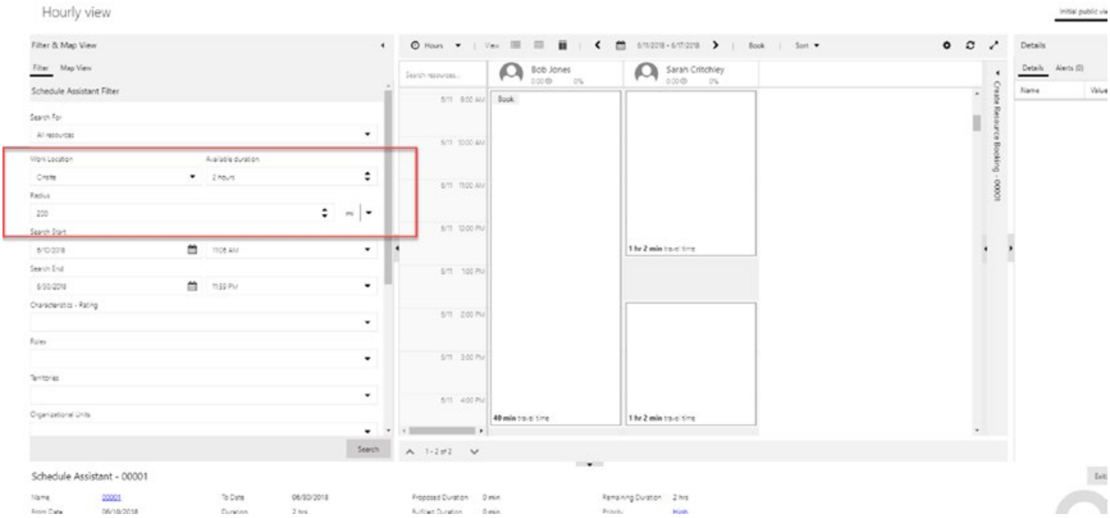
Geo Data

Enable Custom Geo Location: No

Custom Geo Latitude Field

Figure 5-43. *Setting the default "Radius" value in the Resource Scheduling settings*

The radius specifies how close the resource must be to the location specified within the requirement (Figure 5-44). If they are outside of that radius at the time, they won't be suggested to complete this work order.



Hourly view

Filter & Map View

Schedule Assistant Filter

Search For: All resources

Work Location: Onsite

Available duration: 2 hours

Radius: 200 mi

Search Start: 6/10/2018 11:06 AM

Search End: 6/30/2018 11:59 PM

Characteristics - Rating

Roles

Territories

Organizational Units

Bob Jones

Sarah Critchley

40 min travel time

1 hr 2 min travel time

1 hr 2 min travel time

Schedule Assistant - 00001

Name: 00001

To Date: 06/30/2018

From Date: 06/10/2018

Duration: 2 hrs

Proposed Duration: 0 min

Fulfilled Duration: 0 min

Remaining Duration: 2 hrs

Priority: High

Figure 5-44. *Changing the "Radius" setting within the search information on the scheduling assistant*

From a field engineer's perspective, now that there are some bookings in the diary for jobs with specific locations, the engineer, user, or contact can see the visibility of these through the Field Resource Hub or through the field service app, which is linked to the Resco.net service (Figure 5-45).

The field service license through Dynamics 365, at the time of writing, includes a limited license for the Resco.net service. This allows users to use offline functionality through Resco.net and use the field service application by Microsoft, which interfaces with the Resco.net functionality, rather than use the standard offline functionality offered by the Dynamics 365 CE app.

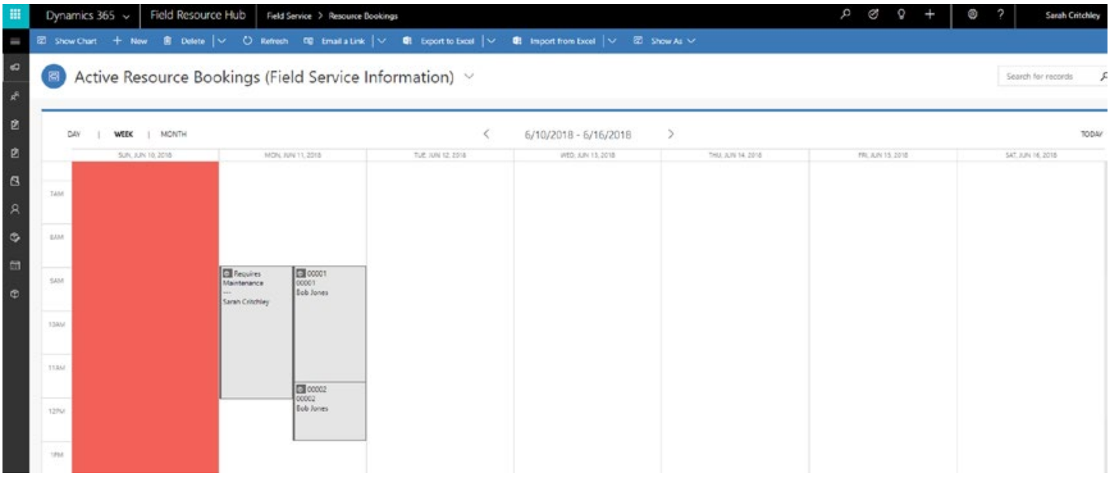

Dynamics 365
Field Resource Hub
Field Service > Resource Bookings
Sarah Critchley
Show Chart
New
Delete
Refresh
Email a Link
Export to Excel
Import from Excel
Show As
Active Resource Bookings (Field Service Information)
Search for records
DAY
WEEK
MONTH
6/10/2018 - 6/16/2018
TODAY
Requires Maintenance
Sarah Critchley
00001
00001
Bob Jones
00002
00002
Bob Jones

Figure 5-45. *Resource booking visibility available in the field service app*

The field service app would be downloaded to the user's device and configured for the user (Figure 5-46). This enables them to select those bookings that relate to the resource bookings booked in by the dispatcher role through scheduling, as seen in the previous sections. Before this app can be properly used, there needs to be some configuration set up, which has been documented and can be referred to in the "Further Reading" section at the end of this chapter for more detail than covered in this chapter.

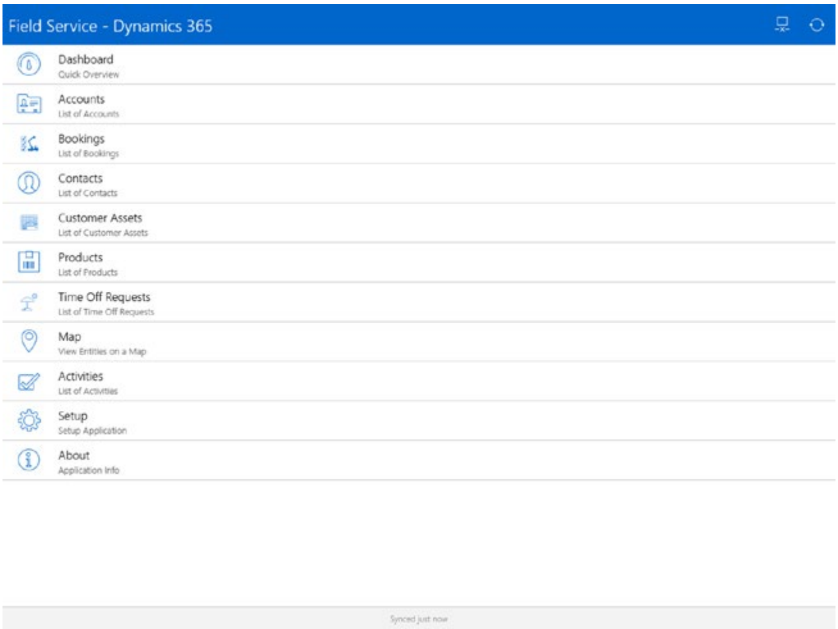
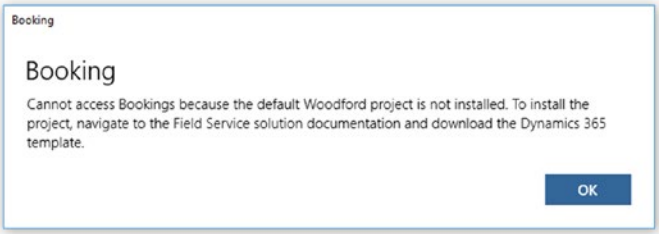

Field Service - Dynamics 365
Dashboard
Quick Overview
Accounts
List of Accounts
Bookings
List of Bookings
Contacts
List of Contacts
Customer Assets
List of Customer Assets
Products
List of Products
Time Off Requests
List of Time Off Requests
Map
View Entities on a Map
Activities
List of Activities
Setup
Setup Application
About
Application Info
Synced just now

Figure 5-46. *Resco.net field service app*

Task: Configure the mobile field service app.

It is important to note that there are no customizations being applied to the field service application at this stage; we are simply installing and configuring it. For that, the ‘Woodford’ solution needs to be installed and a minor setup completed. The “Setting up the Mobile Field Service App” link within the “Further Reading” section contains the template that needs to be imported into Dynamics 365 CE by an administrator to continue to use the mobile field service application.

If the templates are not installed and published, an error will occur, stating that the solution has not been imported and the functionality will not be accessible (Figure 5-47). Ensure the steps have been completed as referenced in the documentation found in the “Further Reading” section.

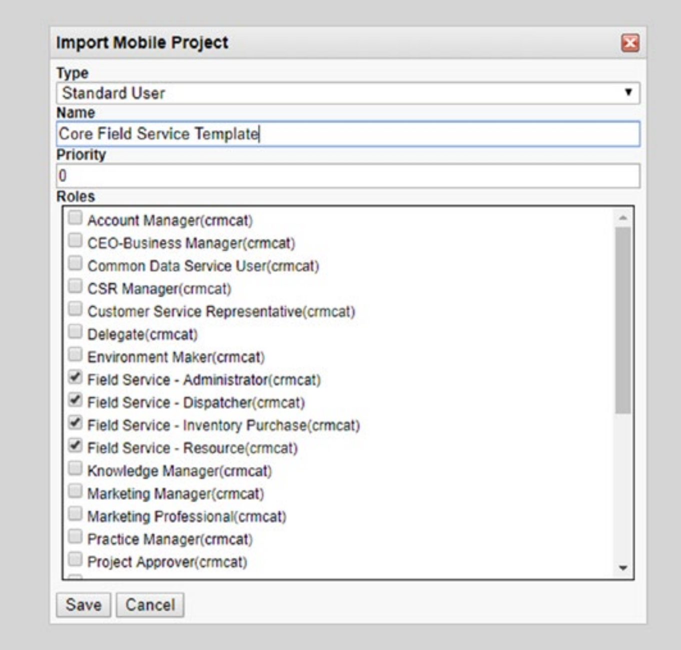


Booking

Cannot access Bookings because the default Woodford project is not installed. To install the project, navigate to the Field Service solution documentation and download the Dynamics 365 template.

Figure 5-47. *Error that will occur if the solution has not been imported*

Important! Ensure that when the template is imported the system administrator role is also added to this list and the version of the project is set to the same as in the app (Figure 5-48). The app version can be seen by selecting "About" within the application.



Type: Standard User

Name: Core Field Service Template

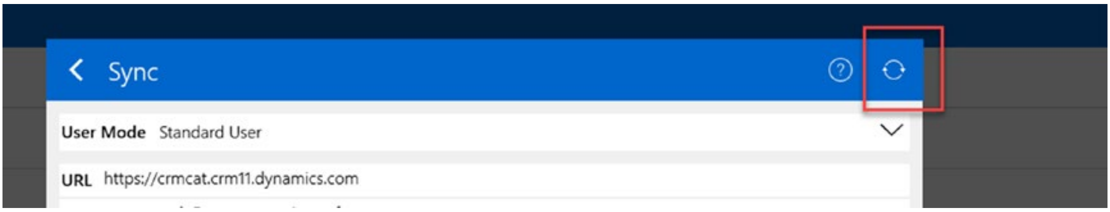
Priority: 0

Roles

- ☐ Account Manager(crmcat)
- ☐ CEO-Business Manager(crmcat)
- ☐ Common Data Service User(crmcat)
- ☐ CSR Manager(crmcat)
- ☐ Customer Service Representative(crmcat)
- ☐ Delegate(crmcat)
- ☐ Environment Maker(crmcat)
- ☑ Field Service - Administrator(crmcat)
- ☑ Field Service - Dispatcher(crmcat)
- ☑ Field Service - Inventory Purchase(crmcat)
- ☑ Field Service - Resource(crmcat)
- ☐ Knowledge Manager(crmcat)
- ☐ Marketing Manager(crmcat)
- ☐ Marketing Professional(crmcat)
- ☐ Practice Manager(crmcat)
- ☐ Project Approver(crmcat)

Figure 5-48. *When the Woodford Solution is open, select the roles for the application to be accessible to*

To synchronize the changes made within the solution setup, click the Refresh button on the application to pull the changes (Figure 5-49).



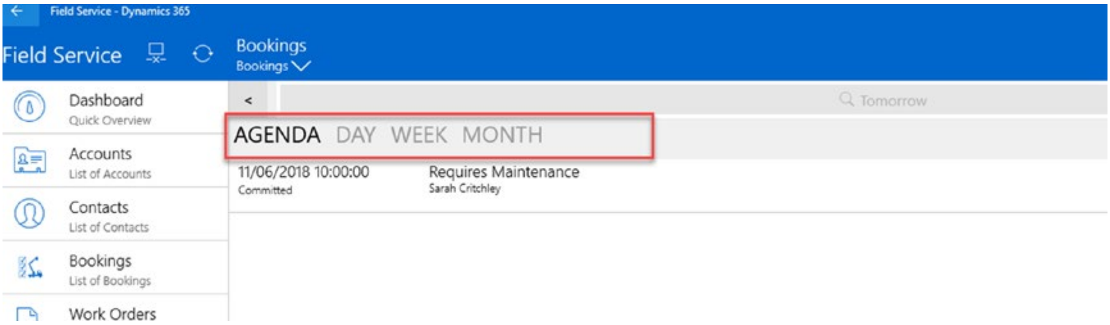
User Mode: Standard User

URL: https://crmcat.crm11.dynamics.com

Figure 5-49. *Setting up the instance to the application—use the Refresh button to connect*

The Resco.net mobile field service app interface is designed to be an easy-to-use interface designed for people using the app on a phone or tablet device.

Once the template has synchronized, there is a clear change in how the app looks, as you can now browse bookings via the day, week, or month, as shown in Figure 5-50. Inclusive of this, you can see an agenda, which displays the current work for that day. This is the same for both tablet and mobile.


Field Service - Dynamics 365
Field Service
Bookings
Bookings
Dashboard
Quick Overview
Accounts
List of Accounts
Contacts
List of Contacts
Bookings
List of Bookings
Work Orders
<
Tomorrow
AGENDA
DAY
WEEK
MONTH

11/06/2018 10:00:00
Committed

Requires Maintenance
Sarah Critchley

Figure 5-50. *The Resco field service app, once configured, can see the agenda and schedule for the users*

Within the mobile field service application, you can open a booking from the agenda and review its status Figure 5-51).

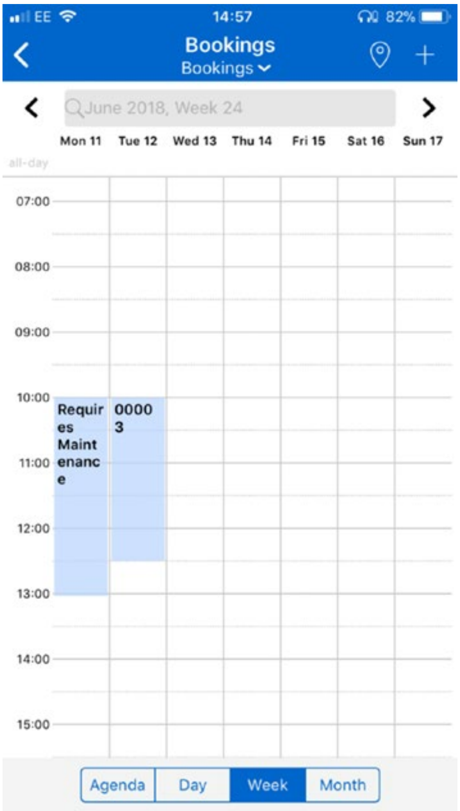

EE
14:57
82%
Bookings
Bookings
June 2018, Week 24
Mon 11
Tue 12
Wed 13
Thu 14
Fri 15
Sat 16
Sun 17
all-day
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
Requires Maintenance
00003
Agenda
Day
Week
Month

Figure 5-51. *A booking can be reviewed and opened within the app*

Booking rules can be set up within the system to correctly set the booking based on the organizational process. Work orders, as standard, are booked as the status "Scheduled," whereas booking rules can be set up within the system to change this to a different status. Work Order records, as standard, are booked as "Scheduled," whereas Resource Requirements are "Committed."

Users can use a filter and see different views based on these statuses. This is where an approval gateway can be created so that bookings are not automatically scheduled and are based on the prior approval of the engineer. An external customer message can be used by the customer service agent or the external portal when the time is being confirmed, even something as simple as "Awaiting Confirmation." Sending automated emails or notifications to the customer about the resource's arrival is also an effective way to use status changes to improve customer service and give on-site resources a degree of autonomy.

This is often seen in applications where a user would be texted or emailed to notify them when their delivery was on the way. This can be customized through Dynamics 365 using workflows and add-on solutions that allow for SMS features. The second section of the book details how to make more custom solutions.

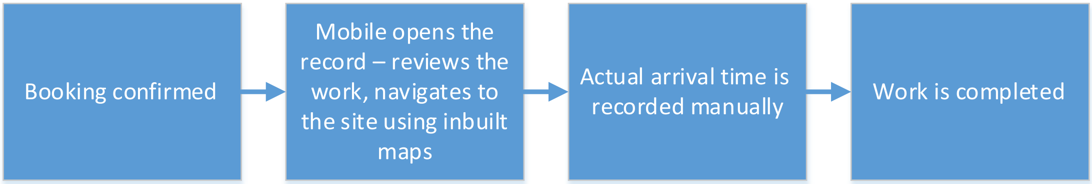

Booking confirmed
Mobile opens the record – reviews the work, navigates to the site using inbuilt maps
Actual arrival time is recorded manually
Work is completed

Figure 5-52. *Process flow of a confirmed booking and the next steps to be completed by the user*

Once an engineer has arrived at their destination, the application does not automatically log that they have arrived. This needs to be manually entered by the onsite resource if the information is required or expected by the business (Figure 5-52). (Note: This would be another good customization point)

Once arrived, the user can review what work needs to be completed using the service tasks from the associated work order. The service tasks are useful here as they assist the engineer in knowing what they need to do; they also provide a link back to the original case, if it was created from a Case record, so the engineer will know the issue raised by the customer and gain visibility into the reported issue.

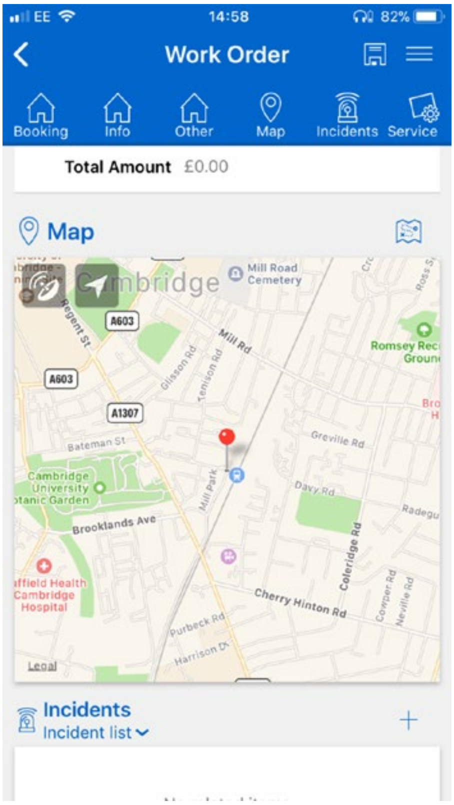
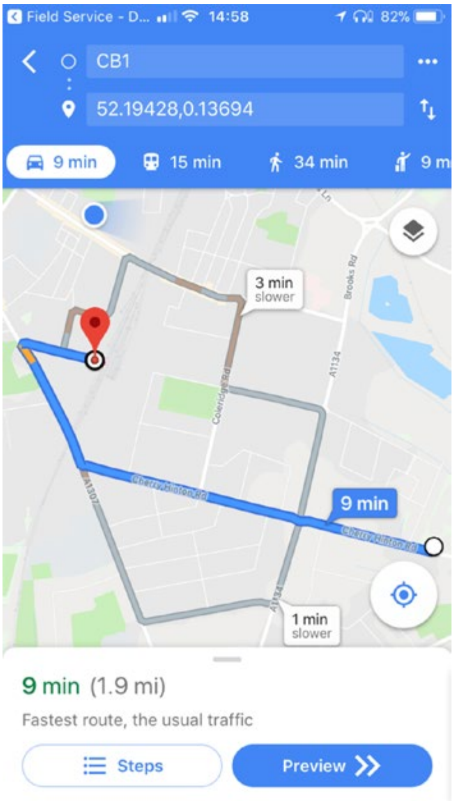

EE
14:58
82%
Work Order
Booking
Info
Other
Map
Incidents
Service
Total Amount £0.00
Map
Cambridge
Mill Road Cemetery
Regent St
A603
A1307
Mill Rd
Glisson Rd
Tenison Rd
Romsey Rec Ground
Greville Rd
Bateman St
Cambridge University Botanic Garden
Mill Park
Davy Rd
Radegu
Brooklands Ave
Coleridge Rd
Cherry Hinton Rd
Cowper Rd
Neville Rd
Nuffield Health Cambridge Hospital
Purbeck Rd
Harrison Dr
Legal
Incidents
Incident list

Figure 5-53. *Using the navigational capabilities of the field service app and related map apps on the phone to achieve this*

Users can use the map application on their device as a navigation tool to get to and from bookings. This is shown in Figures 5-53 and 5-54.



CB1

52.19428,0.13694

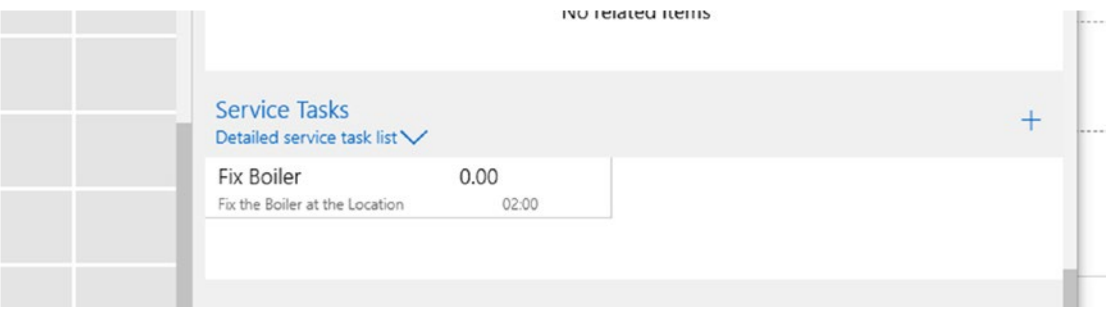
9 min (1.9 mi)

Fastest route, the usual traffic

Field Service - D... 14:58 82%
9 min
15 min
34 min
9 m
3 min slower
9 min
1 min slower
Brooks Rd
Coleridge Rd
Cherry Hinton Rd
A1134
A1307
Steps
Preview

Figure 5-54. *Using map application on the device to travel to and from bookings*

Once a service task has been completed, the engineer can enter the percentage completed against each task, as shown in Figure 5-55, but this is unlikely to happen in real life. The time and effort required for a user to navigate to and find the record and then enter the information can be cumbersome. This can be customized within the application to make this process easier if required.



No related items

Service Tasks

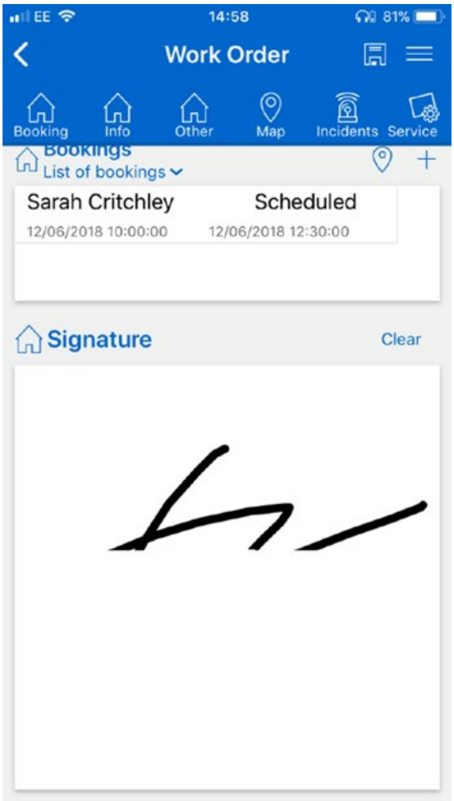
Detailed service task list

Fix Boiler 0.00

Fix the Boiler at the Location 02:00

Figure 5-55. *Service tasks visible on the application for the user to complete*

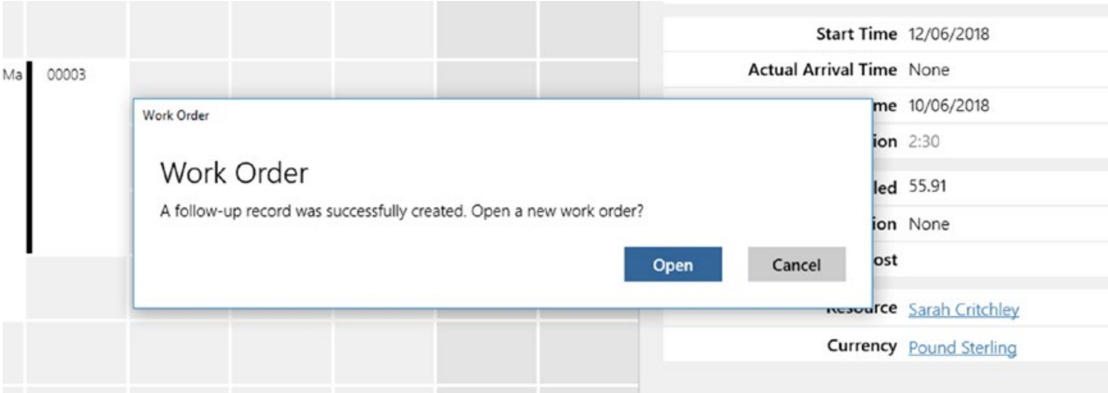
Once the work has been completed, the application allows a signature to be obtained from within the app as standard, and for videos and photos to be taken as evidence of the completed work (Figure 5-56).


EE
14:58
81%
Work Order
Booking
Info
Other
Map
Incidents
Service
Bookings
List of bookings
Signature
Clear

Sarah Critchley Scheduled
12/06/2018 10:00:00 12/06/2018 12:30:00

Figure 5-56. *Using the application to capture signatures*

As things do not always go to plan, it may be that there are problems or issues preventing the work from being completed. Photos and videos would be helpful in this scenario. In addition to that, you can create a follow-up work order to the current one, which can be achieved directly from within the app (Figure 5-57). The work order is auto-populated with basic details for the dispatcher to then complete and schedule.


Ma 00003

Work Order

Work Order

A follow-up record was successfully created. Open a new work order?

Open
Cancel

Start Time 12/06/2018
Actual Arrival Time None
me 10/06/2018
ion 2:30
led 55.91
ion None
ost
rce Sarah Critchley
Currency Pound Sterling

Figure 5-57. *Creating a follow-up work order from an existing work order*

Once a work order has been completed, the user updates the status from within the application to “Completed,” and the end time is captured. This is so it can be reported how long the actual job has taken and metrics can be tracked (Figure 5-58).

As far as the user who is the onsite resource is concerned, at this point the job has been completed, and they can leave the site, loading up their agenda, selecting the next job, and then traveling to the destination as before.

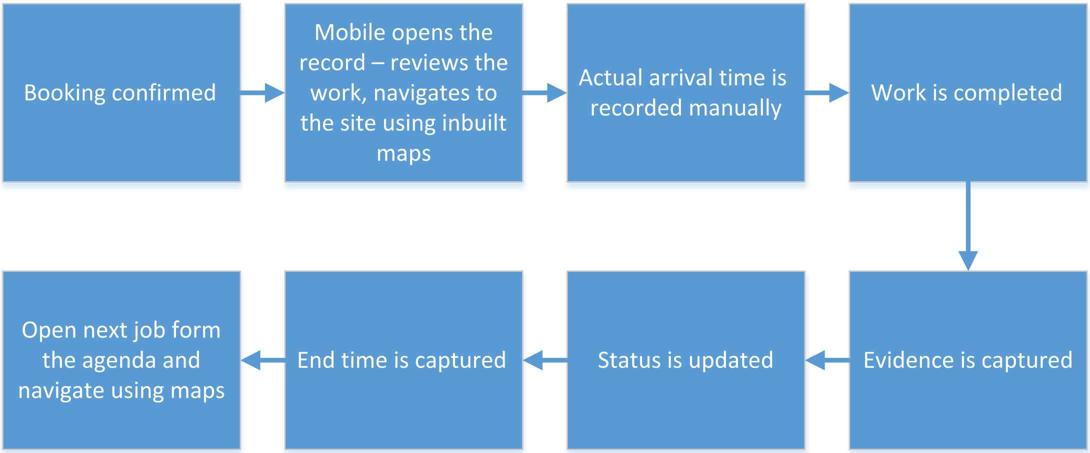
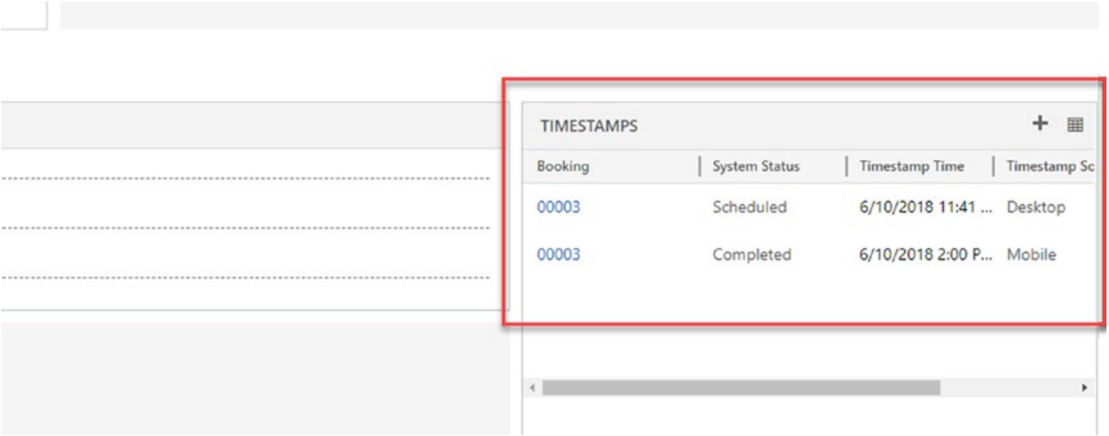

Booking confirmed
Mobile opens the record – reviews the work, navigates to the site using inbuilt maps
Actual arrival time is recorded manually
Work is completed
Evidence is captured
Status is updated
End time is captured
Open next job form the agenda and navigate using maps

Figure 5-58. *Field service basic process flow*

The mobile application will synchronize the data from the local machine (e.g., the smartphone) to the Dynamics 365 server once a connection has been established on the device (if the connection was originally lost). It will update the resource booking and the work order with the fact that the booking has been completed and will include the related notes and pictures. If a follow-up work order has been created because there were issues, this too would be synchronized to the main server.

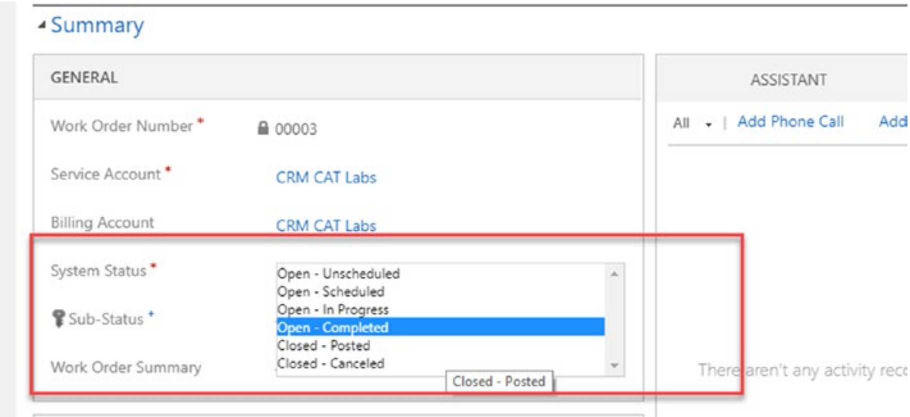
The dispatcher would be able to see the timestamped status changes, which are automatically updated as standard functionality within the application. This allows the dispatcher to track the status updates and the time and date they occurred, as shown in Figure 5-59.



Booking	System Status	Timestamp Time	Timestamp Sc
00003	Scheduled	6/10/2018 11:41 ...	Desktop
00003	Completed	6/10/2018 2:00 P...	Mobile

Figure 5-59. *Timestamped status updates by the user visible in the work order*

The Work Order record can be updated by the dispatcher with the status “Closed – Posted”; however, no automated functionality occurs here (Figure 5-60). This would normally be where an invoice was created if the client needed to be billed. If this is required, it needs to be manually created, customized to provide this functionality upon status change, or managed via the agreements covered later in this chapter.



Summary

GENERAL

Work Order Number* 00003

Service Account* CRM CAT Labs

Billing Account CRM CAT Labs

System Status* Open - Completed

Sub-Status*

Work Order Summary

Open - Unscheduled
Open - Scheduled
Open - In Progress
Open - Completed
Closed - Posted
Closed - Canceled
Closed - Posted
ASSISTANT
All
Add Phone Call
Add
There aren't any activity rec

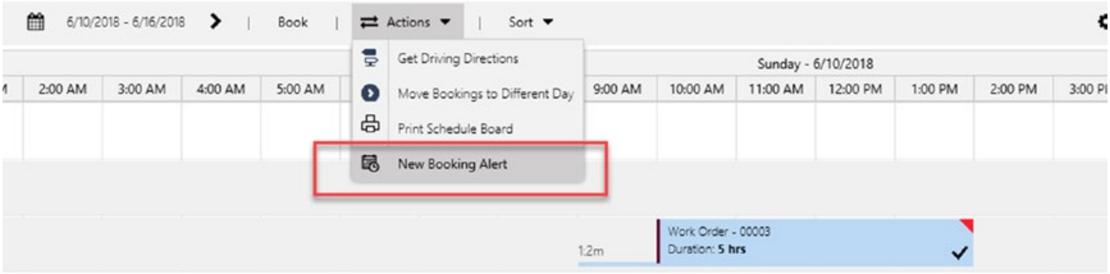
Figure 5-60. *Updating the work order status to posted/completed*

Booking Alerts

A booking alert is a new activity introduced within Dynamics 365 CE field service. It can be related to any activity type record; however, they are normally used as a way to notify a user of a booking and appear on the scheduling board. They are also often used to provide a notification to the dispatcher.

Task: Create a booking alert.

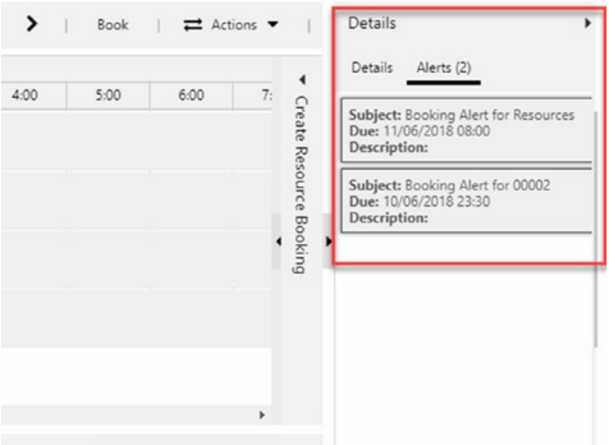
1. Navigate to the Resource Scheduling board and select "Actions."
2. Select "New Booking Alert," as shown in Figure 5-61.
3. Complete the fields within the new record, including the "Subject" and "Assignees" fields, and click "Save and Close."



6/10/2018 - 6/16/2018
Book
Actions
Sort
Get Driving Directions
Move Bookings to Different Day
Print Schedule Board
New Booking Alert
Sunday - 6/10/2018
2:00 AM
3:00 AM
4:00 AM
5:00 AM
9:00 AM
10:00 AM
11:00 AM
12:00 PM
1:00 PM
2:00 PM
3:00 PI
1.2m
Work Order - 00003
Duration: 5 hrs

Figure 5-61. *Creating a new booking alert*

The booking alerts appear in the “Alerts” pane for the dispatcher to review, as shown in Figure 5-62.


Book
Actions
4:00
5:00
6:00
7:
Create Resource Booking
Details
Details
Alerts (2)

Subject: Booking Alert for Resources
Due: 11/06/2018 08:00
Description:

Subject: Booking Alert for 00002
Due: 10/06/2018 23:30
Description:

Figure 5-62. *Alerts pane within the schedule board*

Booking alerts can also be created via a workflow. Automatic creation and update rules, seen in Figure 5-63, can be used to create a subsequent action upon the creation of a new booking alert, which can be used to create related records and more complex business logic.

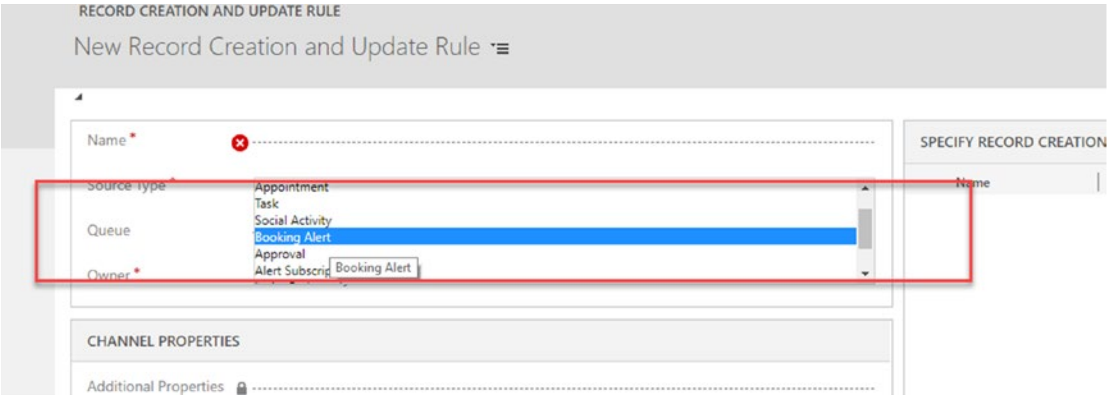

RECORD CREATION AND UPDATE RULE
New Record Creation and Update Rule
Name *
Source Type *
Queue
Owner *
Appointment
Task
Social Activity
Booking Alert
Approval
Alert Subscrip
Booking Alert
SPECIFY RECORD CREATION
Name
CHANNEL PROPERTIES
Additional Properties

Figure 5-63. *Creating an automatic creation and update rule using the booking alert type*

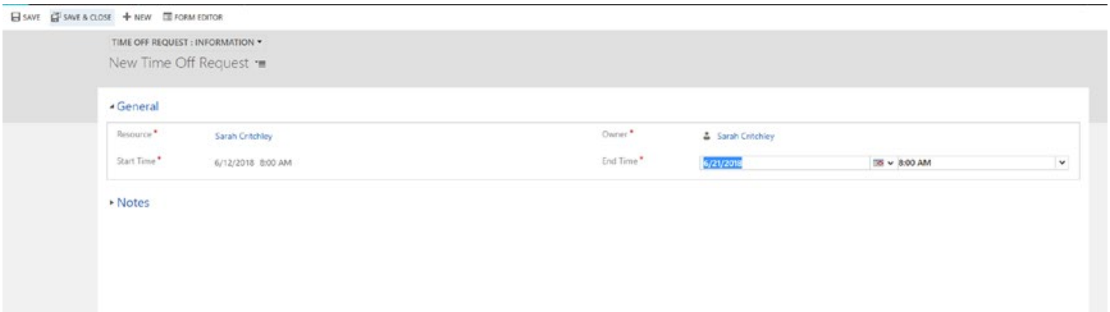
Time-off Requests

Work hours specify the everyday schedule of the resources. It is important to have a way to utilize holiday and time off, which can be scheduled on late notice or in a more ad-hoc way. Time-off requests are part of the Dynamics 365 CE field service solution, which handles these types of events. Within the Resource record at the very start of this chapter, when creating a resource, one of the configuration fields was whether the resource required approval for time-off requests.

Task: Set up time-off requests.

1. Create a new request by navigating to the Field Service App ➤ Time Off Requests and click "New." This can be done via the Classic UI, the Unified Interface, and the mobile application.
2. Set start and end times for when the time-off request is for (Figure 5-64).
3. Click "Save and Close."

The request has been created and will now be visible within the "Time-Off Requests" section of the sitemap, where it can be approved.



New Time Off Request

Resource* Sarah Critchley

Owner* Sarah Critchley

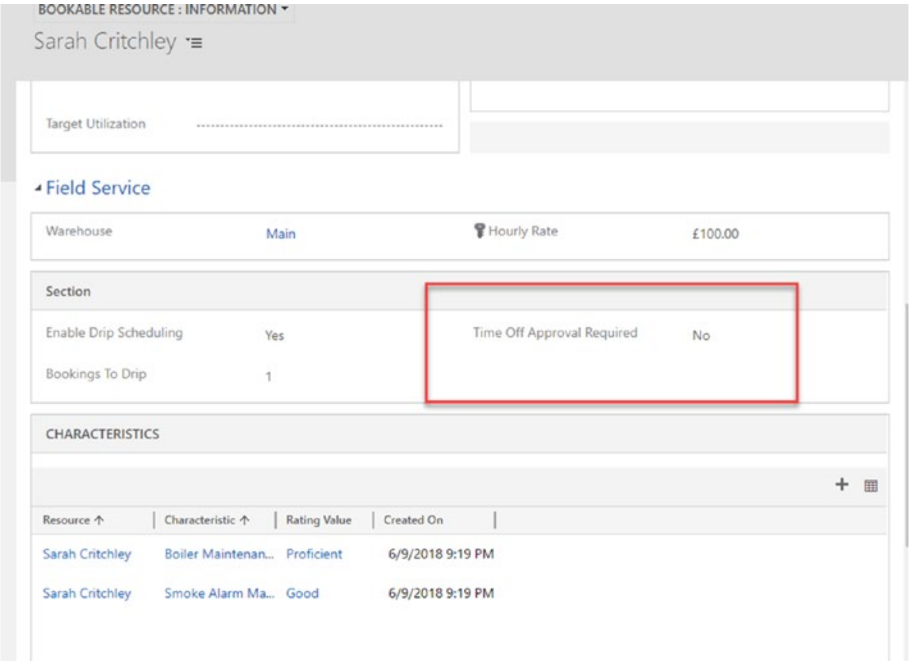
Start Time* 6/12/2018 8:00 AM

End Time* 6/21/2018 8:00 AM

Figure 5-64. *Creating a time-off request*

If a resource does not require approval (set in their Resource record), the request will be automatically deactivated (and set to an inactive status), and the time off will be approved. The time specified will be greyed out in the resource calendar, and the scheduling engine will not incorporate this into suggested times.

As highlighted, approval requirements are configured in the Resource record shown in Figure 5-65. Should the request require approval, the defined manager within Dynamics 365 CE will need to approve it.


BOOKABLE RESOURCE : INFORMATION
Sarah Critchley
Field Service
Section
CHARACTERISTICS

Target Utilization

Warehouse Main

Hourly Rate £100.00

Enable Drip Scheduling Yes

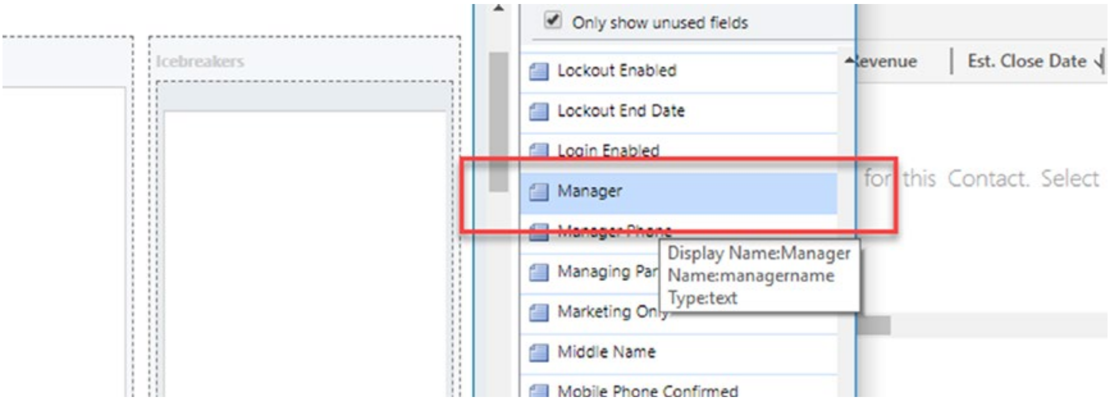
Time Off Approval Required No

Bookings To Drip 1

Resource	Characteristic	Rating Value	Created On
Sarah Critchley	Boiler Maintenan...	Proficient	6/9/2018 9:19 PM
Sarah Critchley	Smoke Alarm Ma...	Good	6/9/2018 9:19 PM

Figure 5-65. *"Time Off Approval Required" set up in the Resource record*

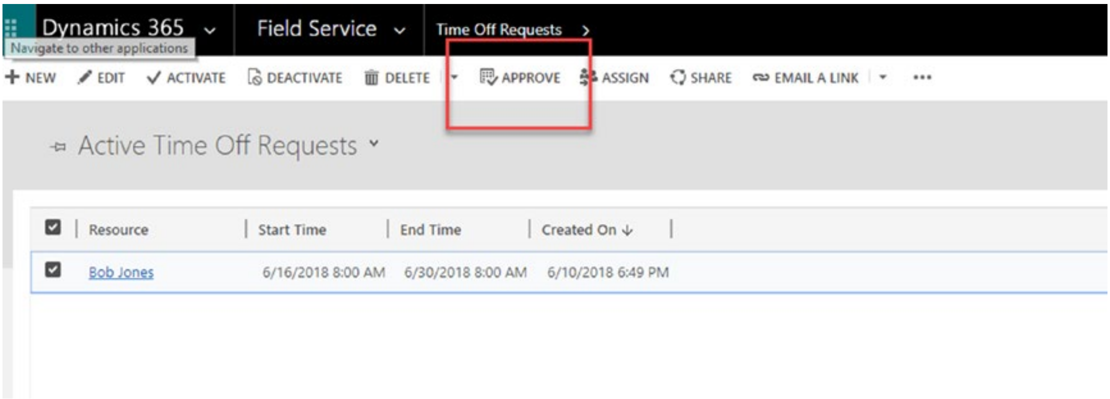
For users, the manager is already on the record. However, a resource can also be other records, such as a Contact record, which doesn't have a "Manager" field by default. You will be pleased to know this field *does* exist; however, it is not on the form by default. It can be dragged onto the form via the "Field Designer" pane (Figure 5-66). This customization will be covered in later chapters.


Icebreakers
☑ Only show unused fields
Lockout Enabled
Lockout End Date
Login Enabled
Manager
Manager Phone
Managing Par
Marketing Only
Middle Name
Mobile Phone Confirmed
Revenue
Est. Close Date
for this Contact. Select

Display Name:Manager
Name:managername
Type:text

Figure 5-66. *The "Manager" field on the other types of resources can be moved onto the form and set*

Unapproved time-off approval records will remain within the Active view until approved (Figure 5-67). All approved time-off requests are deactivated, changing to an inactive status.


Dynamics 365
Navigate to other applications
Field Service
Time Off Requests
NEW
EDIT
ACTIVATE
DEACTIVATE
DELETE
APPROVE
ASSIGN
SHARE
EMAIL A LINK
Active Time Off Requests

☑	Resource	Start Time	End Time	Created On ↓
☑	Bob Jones	6/16/2018 8:00 AM	6/30/2018 8:00 AM	6/10/2018 6:49 PM

Figure 5-67. *Approve time-off request by selecting "Approve" on the selected request*

Customer Preferences

It has been highlighted a few times within this chapter that the Dynamics 365 CE field service scheduling engine has the capability to take into consideration customer preferences. Where these preferences are can be hard to find, as in a previous version of Dynamics 365 CE they were specific fields. This has been updated in later versions, where preferences are set up within a new entity called Resource Preferences that is available on all resource-type records (Figure 5-68).

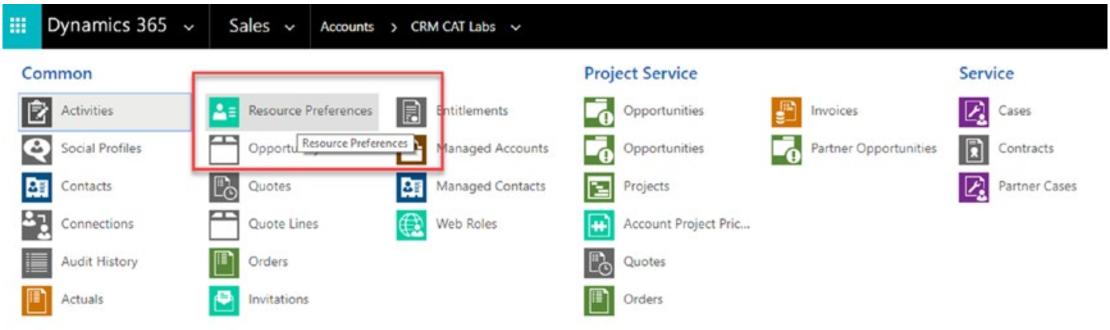
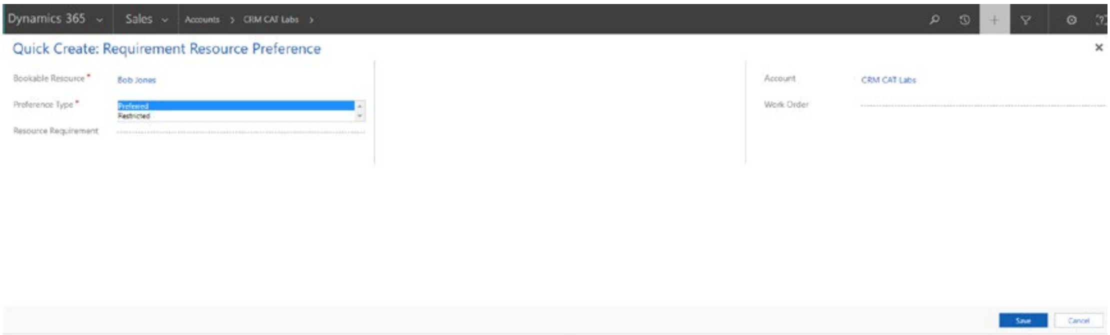

Dynamics 365
Sales
Accounts
CRM CAT Labs
Common
Activities
Social Profiles
Contacts
Connections
Audit History
Actuals
Resource Preferences
Opportu
Resource Preferences
Quotes
Quote Lines
Orders
Invitations
Entitlements
Managed Accounts
Managed Contacts
Web Roles
Project Service
Opportunities
Opportunities
Projects
Account Project Pric...
Quotes
Orders
Invoices
Partner Opportunities
Service
Cases
Contracts
Partner Cases

Figure 5-68. *Navigate to "Resource Preferences" from an Account record*

Task: Set up customer preferences.

1. Navigate to a Customer record and select "Resource Preferences."
2. Create a new resource, as shown in Figure 5-69.
3. Set whether this should be "Preferred" or "Restricted." *Preferred* relates to a preference and a resource the customer wants, and *Restricted* to a resource they do not want, and thus the scheduling engine will avoid them.



Quick Create: Requirement Resource Preference

Bookable Resource * Bob Jones

Preference Type * Preferred

Restricted

Resource Requirement

Account CRM CAT Labs

Work Order

Figure 5-69. *Creating a new Customer Preference record*

4. Once this is set up within the Account ("Service Account" field and record associated with work orders), create a new work order.

The resource preference set up at the Account-record level cascades to the work order and the resource requirement, which is automatically created behind the scenes (this is what is scheduled). This process is shown in Figure 5-70.

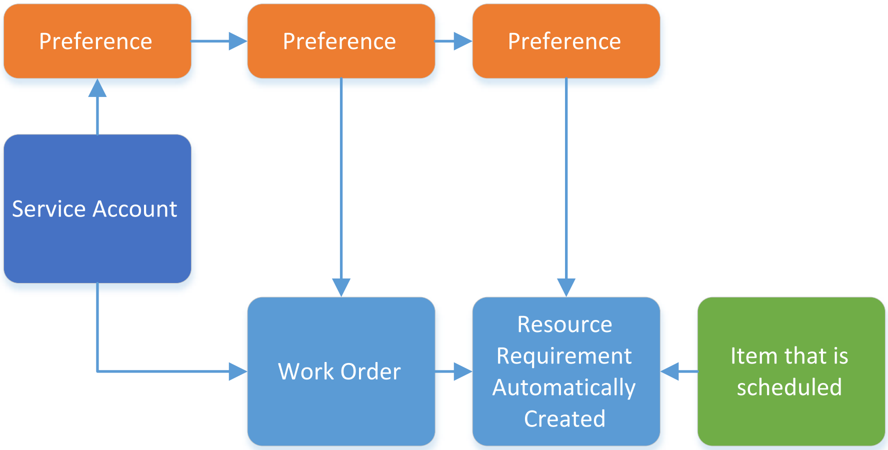
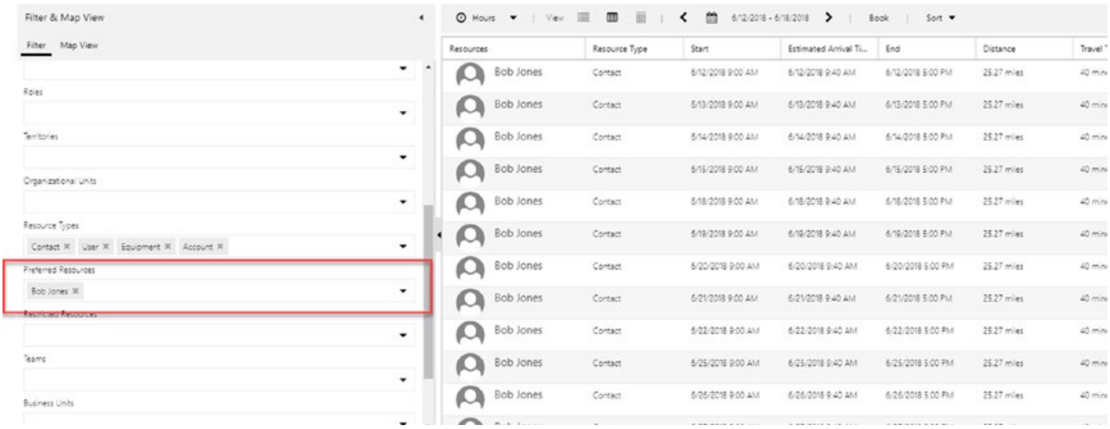


Figure 5-70. *Preference record cascading to related work orders and resource requirements*

This preference is added automatically into the scheduling engine when it searches. Figure 5-71 shows where the resource preference for the resource "Bob Jones" is automatically added and changes the results of the search.



Roles

Territories

Organizational Units

Resource Types: Contact, User, Equipment, Account

Preferred Resources: Bob Jones

Restricted Resources

Teams

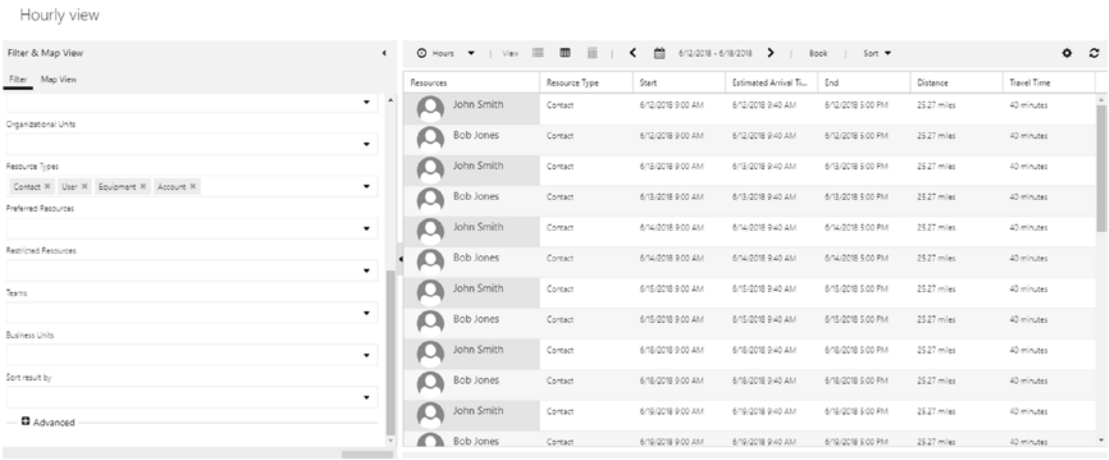
Business Units

Resources	Resource Type	Start	Estimated Arrival Ti...	End	Distance	Travel
Bob Jones	Contact	6/12/2018 9:00 AM	6/12/2018 9:40 AM	6/12/2018 5:00 PM	25.27 miles	40 min
Bob Jones	Contact	6/13/2018 9:00 AM	6/13/2018 9:40 AM	6/13/2018 5:00 PM	25.27 miles	40 min
Bob Jones	Contact	6/14/2018 9:00 AM	6/14/2018 9:40 AM	6/14/2018 5:00 PM	25.27 miles	40 min
Bob Jones	Contact	6/15/2018 9:00 AM	6/15/2018 9:40 AM	6/15/2018 5:00 PM	25.27 miles	40 min
Bob Jones	Contact	6/18/2018 9:00 AM	6/18/2018 9:40 AM	6/18/2018 5:00 PM	25.27 miles	40 min
Bob Jones	Contact	6/19/2018 9:00 AM	6/19/2018 9:40 AM	6/19/2018 5:00 PM	25.27 miles	40 min
Bob Jones	Contact	6/20/2018 9:00 AM	6/20/2018 9:40 AM	6/20/2018 5:00 PM	25.27 miles	40 min
Bob Jones	Contact	6/21/2018 9:00 AM	6/21/2018 9:40 AM	6/21/2018 5:00 PM	25.27 miles	40 min
Bob Jones	Contact	6/22/2018 9:00 AM	6/22/2018 9:40 AM	6/22/2018 5:00 PM	25.27 miles	40 min
Bob Jones	Contact	6/25/2018 9:00 AM	6/25/2018 9:40 AM	6/25/2018 5:00 PM	25.27 miles	40 min
Bob Jones	Contact	6/26/2018 9:00 AM	6/26/2018 9:40 AM	6/26/2018 5:00 PM	25.27 miles	40 min

Figure 5-71. *Preferred resources set automatically within the service-schedule configuration. Bob's record is the only record displayed in the search results*

Figure 5-72 shows the results of a search with the preferences removed. The differences are that the suggested resources are focused around providing the resource specified within the preference.

Should there be multiple preferences at the service-account level, more than one resource would be named within the “Preferred Resource” field. The functionality for “Restricted Resources” works by removing those resources referenced in this field from the search result.



Resource Types: Contact, User, Equipment, Account

6/12/2018 - 6/18/2018

Resources	Resource Type	Start	Estimated Arrival Ti...	End	Distance	Travel Time
John Smith	Contact	6/12/2018 9:00 AM	6/12/2018 9:40 AM	6/12/2018 5:00 PM	25.27 miles	40 minutes
Bob Jones	Contact	6/12/2018 9:00 AM	6/12/2018 9:40 AM	6/12/2018 5:00 PM	25.27 miles	40 minutes
John Smith	Contact	6/13/2018 9:00 AM	6/13/2018 9:40 AM	6/13/2018 5:00 PM	25.27 miles	40 minutes
Bob Jones	Contact	6/13/2018 9:00 AM	6/13/2018 9:40 AM	6/13/2018 5:00 PM	25.27 miles	40 minutes
John Smith	Contact	6/14/2018 9:00 AM	6/14/2018 9:40 AM	6/14/2018 5:00 PM	25.27 miles	40 minutes
Bob Jones	Contact	6/14/2018 9:00 AM	6/14/2018 9:40 AM	6/14/2018 5:00 PM	25.27 miles	40 minutes
John Smith	Contact	6/15/2018 9:00 AM	6/15/2018 9:40 AM	6/15/2018 5:00 PM	25.27 miles	40 minutes
Bob Jones	Contact	6/15/2018 9:00 AM	6/15/2018 9:40 AM	6/15/2018 5:00 PM	25.27 miles	40 minutes
John Smith	Contact	6/18/2018 9:00 AM	6/18/2018 9:40 AM	6/18/2018 5:00 PM	25.27 miles	40 minutes
Bob Jones	Contact	6/18/2018 9:00 AM	6/18/2018 9:40 AM	6/18/2018 5:00 PM	25.27 miles	40 minutes
John Smith	Contact	6/19/2018 9:00 AM	6/19/2018 9:40 AM	6/19/2018 5:00 PM	25.27 miles	40 minutes
Bob Jones	Contact	6/19/2018 9:00 AM	6/19/2018 9:40 AM	6/19/2018 5:00 PM	25.27 miles	40 minutes

Figure 5-72. *No preferred resources selected*

Schedule Multiple Bookings/Recurring Bookings

Dynamics 365 CE gives the capability to set up preventative maintenance scenarios through the Agreement entity record. This record handles the setup for periodic work orders that help an organization take a more proactive approach to maintenance, removing the knee-jerk reaction caused by reactive maintenance. Agreement records are set up for the customer so that they automatically create the work orders based on the agreement schedule set in advance, and not from a case/incident as seen previously.

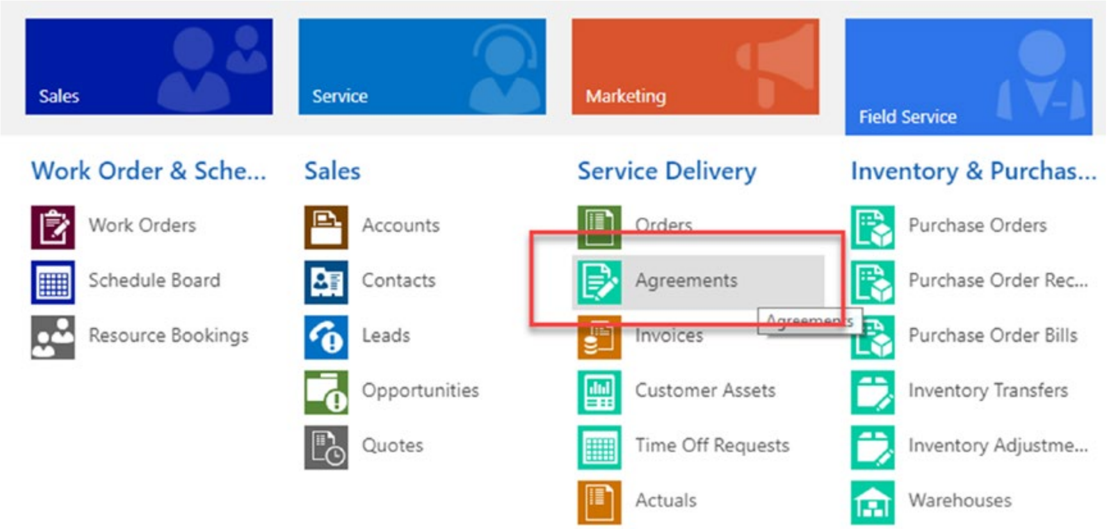
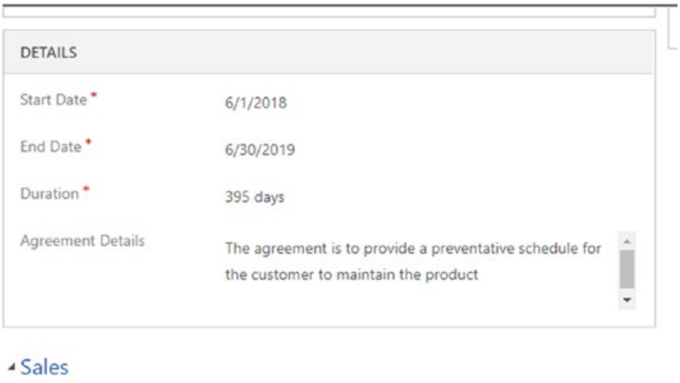

Sales
Service
Marketing
Field Service
Work Order & Sche...
Work Orders
Schedule Board
Resource Bookings
Sales
Accounts
Contacts
Leads
Opportunities
Quotes
Service Delivery
Orders
Agreements
Agreements
Invoices
Customer Assets
Time Off Requests
Actuals
Inventory & Purchas...
Purchase Orders
Purchase Order Rec...
Purchase Order Bills
Inventory Transfers
Inventory Adjustme...
Warehouses

Figure 5-73. Navigate to "Agreements" within the Classic UI

Task: Create an Agreement record.

1. Navigate to the "Agreements" area in the sitemap within the Classic UI and select "New" (Figure 5-73).
2. Complete all the mandatory fields (Figure 5-74).
3. A price list with active products is not required to create a financial element here; this is related to the invoice setup, which is also performed periodically, despite this chapter not focusing on this area. In Chapter 3, products were covered extensively, and you can use the same price list for this example exercise.
4. Complete the start date and end date, ensuring they include today in the time frame so it works straight away when testing it.
5. Save the record.



DETAILS

Start Date * 6/1/2018

End Date * 6/30/2019

Duration * 395 days

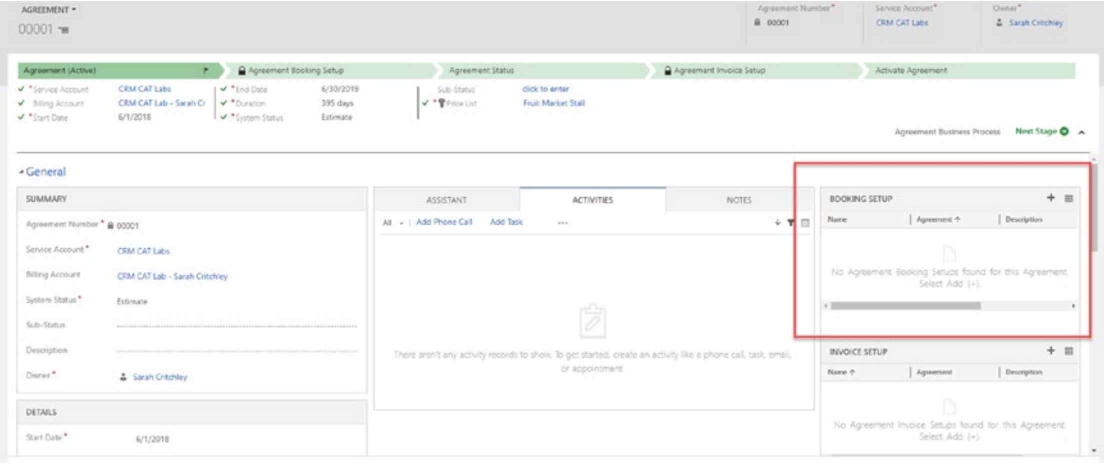
Agreement Details The agreement is to provide a preventative schedule for the customer to maintain the product

Figure 5-74. *Setting up the Agreement details*

6. Once created, on the right-hand side, click the plus icon on the Booking Setup sub-grid as shown in Figure 5-75.

7. This creates an Agreement Booking Setup record, which is the definition for all the work orders automatically generated through this record.

8. Complete all the fields for this record and save it.



AGREEMENT
00001

Agreement Number* 00001
Service Account* CRM CAT Labs
Owner* Sarah Critchley

Agreement (Active)
✓ *Service Account CRM CAT Labs
✓ Billing Account CRM CAT Lab - Sarah Cr
✓ *Start Date 6/1/2018
✓ *End Date 6/30/2019
✓ *Duration 395 days
✓ *System Status Estimate
Sub-Status click to enter
✓ *Price List Fruit Market Stall

General

SUMMARY
Agreement Number * 00001
Service Account * CRM CAT Labs
Billing Account CRM CAT Lab - Sarah Critchley
System Status * Estimate
Sub-Status
Description
Owner * Sarah Critchley

DETAILS
Start Date * 6/1/2018

There aren't any activity records to show. To get started, create an activity like a phone call, task, email, or appointment.

BOOKING SETUP

Name	Agreement ↑	Description

No Agreement Booking Setups found for this Agreement. Select Add (+).

INVOICE SETUP

Name ↑	Agreement	Description

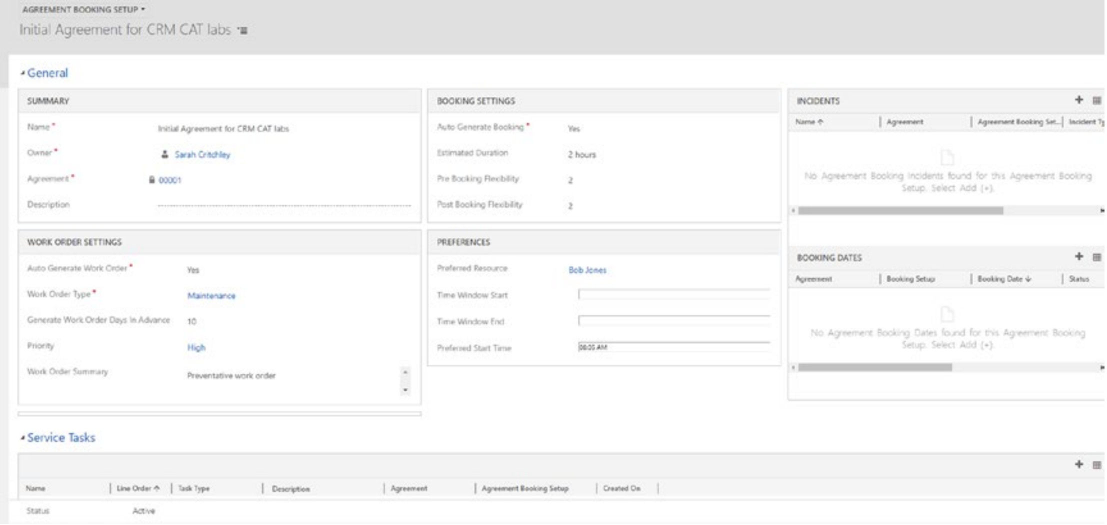
No Agreement Invoice Setups found for this Agreement. Select Add (+).

Agreement Booking Setup
Agreement Status
Agreement Invoice Setup
Activate Agreement
Agreement Business Process
Next Stage
ASSISTANT
ACTIVITIES
NOTES
All
Add Phone Call
Add Task
+

Figure 5-75. *Creating Booking Setup records*

Much of this information on the Agreement record will cascade to the work orders, which are created from this record at a scheduled time. An example of this is that service tasks will be created for each work order as set on the Booking Setup record. The setup can also optionally include an incident type. An incident type specifies the duration that will be associated with the resource requirement booking created from the work order.

Within an Agreement, check the business process flow steps; following this helps to ensure all required actions are completed on the Agreement and associated records.



Initial Agreement for CRM CAT labs

Name *: Initial Agreement for CRM CAT labs
Owner *: Sarah Critchley
Agreement *: 00001
Description:

Auto Generate Booking *: Yes
Estimated Duration: 2 hours
Pre Booking Flexibility: 2
Post Booking Flexibility: 2

Auto Generate Work Order *: Yes
Work Order Type *: Maintenance
Generate Work Order Days In Advance: 10
Priority: High
Work Order Summary: Preventative work order

Preferred Resource: Bob Jones
Time Window Start:
Time Window End:
Preferred Start Time: 08:05 AM

Name	Agreement	Agreement Booking Set...	Incident Ty

No Agreement Booking Incidents found for this Agreement Booking Setup. Select Add (+).

Agreement	Booking Setup	Booking Date	Status

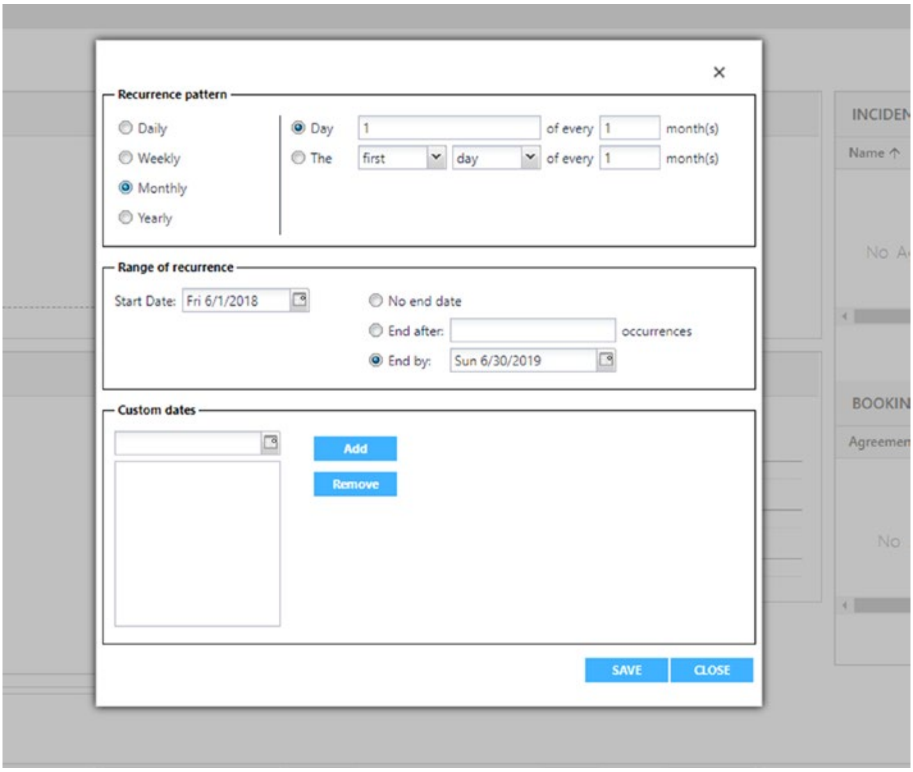
No Agreement Booking Dates found for this Agreement Booking Setup. Select Add (+).

Name	Line Order	Task Type	Description	Agreement	Agreement Booking Setup	Created On

Status: Active

Figure 5-76. *Setting up the agreement schedule ("Booking Setup")*

9. Select the Booking Maintenance button on the ribbon to now schedule the recurrence. The recurrence setup is very similar to the experience in Microsoft Outlook when setting recurring meetings. This is shown in Figure 5-77.



Recurrence pattern

○ Daily
○ Weekly
● Monthly
○ Yearly

● Day 1 of every 1 month(s)
○ The first day of every 1 month(s)

Range of recurrence

Start Date: Fri 6/1/2018
○ No end date
○ End after: occurrences
● End by: Sun 6/30/2019

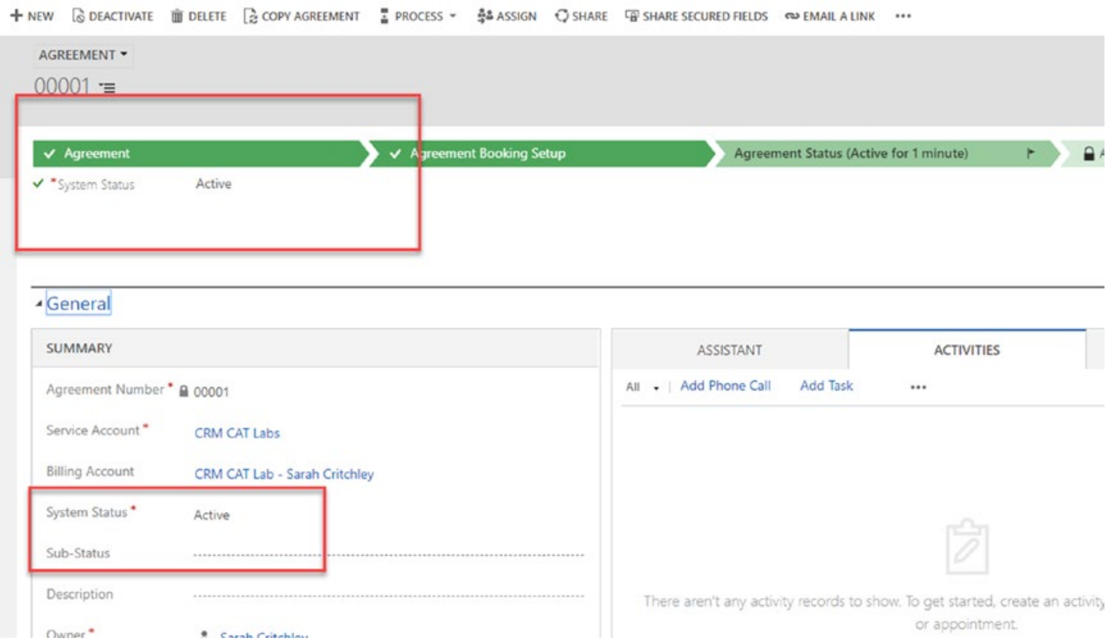
Custom dates

Figure 5-77. *Setting up the booking recurrence*

10. Specify the settings and click the Save button. You also have the option to add custom dates based on the requirement.

11. Once completed, update the status to "Active," as shown in Figure 5-78, either on the business process flow or within the form.

Once activated, a background workflow is triggered for the system that will generate all booking dates based on the recurring schedule which can be seen in the 'Booking Dates' sub-grid.


NEW
DEACTIVATE
DELETE
COPY AGREEMENT
PROCESS
ASSIGN
SHARE
SHARE SECURED FIELDS
EMAIL A LINK
AGREEMENT
00001
Agreement
Agreement Booking Setup
Agreement Status (Active for 1 minute)
General
SUMMARY
ASSISTANT
ACTIVITIES
All
Add Phone Call
Add Task

System Status * Active

Agreement Number * 00001

Service Account * CRM CAT Labs

Billing Account CRM CAT Lab - Sarah Critchley

System Status * Active

Sub-Status

Description

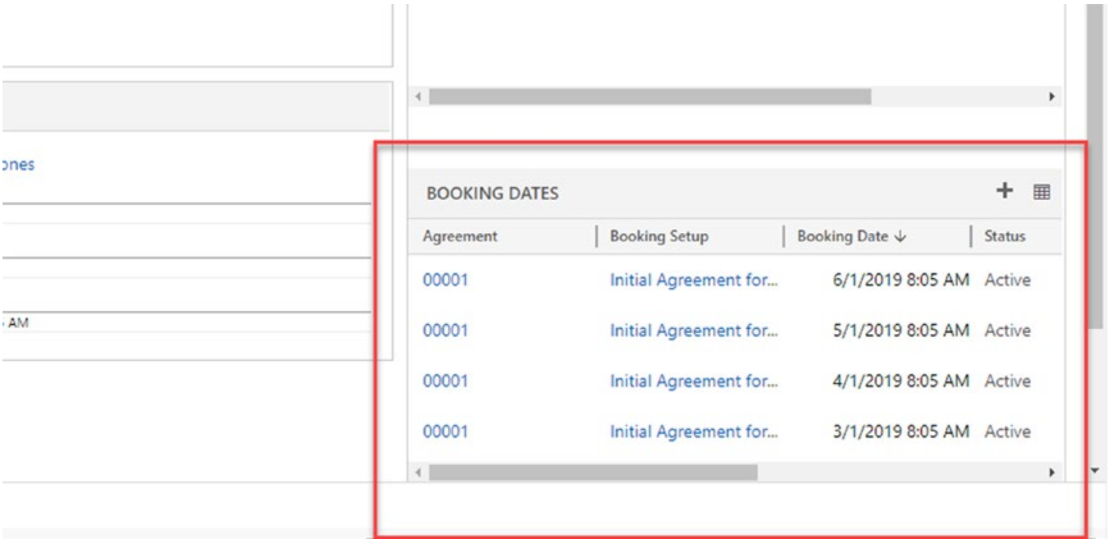
Owner * Sarah Critchley

There aren't any activity records to show. To get started, create an activity or appointment.

Figure 5-78. *Updating the status to "Active" triggers the background process to create the Booking records*

When the "Booking Dates," shown in Figure 5-79, are reached, a work order is generated automatically, which also generates a resource requirement, allowing the order to be scheduled (as opposed to having to wait for manual intervention).

A user could alternatively manually generate a work order, if required, from an agreement booking. This can be done by selecting the Generate Work Order button while on the record. This can be useful, for example, if work needed to be scheduled before the date had been reached.



BOOKING DATES

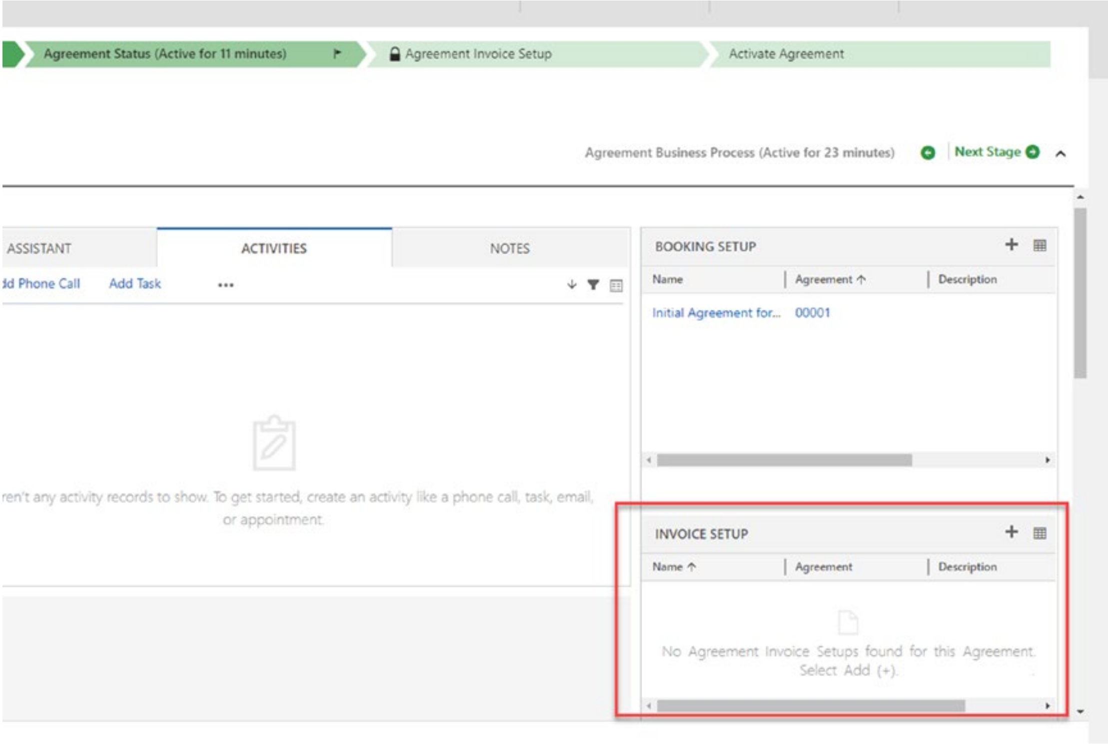
Agreement	Booking Setup	Booking Date ↓	Status
00001	Initial Agreement for...	6/1/2019 8:05 AM	Active
00001	Initial Agreement for...	5/1/2019 8:05 AM	Active
00001	Initial Agreement for...	4/1/2019 8:05 AM	Active
00001	Initial Agreement for...	3/1/2019 8:05 AM	Active

Figure 5-79. *Booking dates are automatically set based on the recurrence settings*

To complete the Agreement, the invoice agreement schedule needs to be set up. This is a similar process to the generation of work orders from the bookings; it automatically generates invoices related to the work being pre-scheduled. The Invoice records are quite limited in what a user can bill for—the related products cannot be dynamic and instead need to be a set product—e.g., a maintenance fee—set within the Agreement record. These invoices are not set up to be dynamic, and, instead, if an organization wants to bill based on the situation while the engineer is on site doing the work, they would need to raise another invoice manually and associate the specific product to this invoice instead.

Task: Set up the invoice agreement schedule.

1. Navigate to the Agreement record created in the previous step.
2. Within the Invoice Setup sub-grid, shown in Figure 5-80, select “New.”
3. Complete the basic information and add a field service product (by selecting this in the Field Service tab when creating the product; remember to publish any products used)


Agreement Status (Active for 11 minutes)
Agreement Invoice Setup
Activate Agreement
Agreement Business Process (Active for 23 minutes)
Next Stage
ASSISTANT
ACTIVITIES
NOTES
dd Phone Call
Add Task
BOOKING SETUP
Name
Agreement
Description
INVOICE SETUP
Name
Agreement
Description

Initial Agreement for... 00001

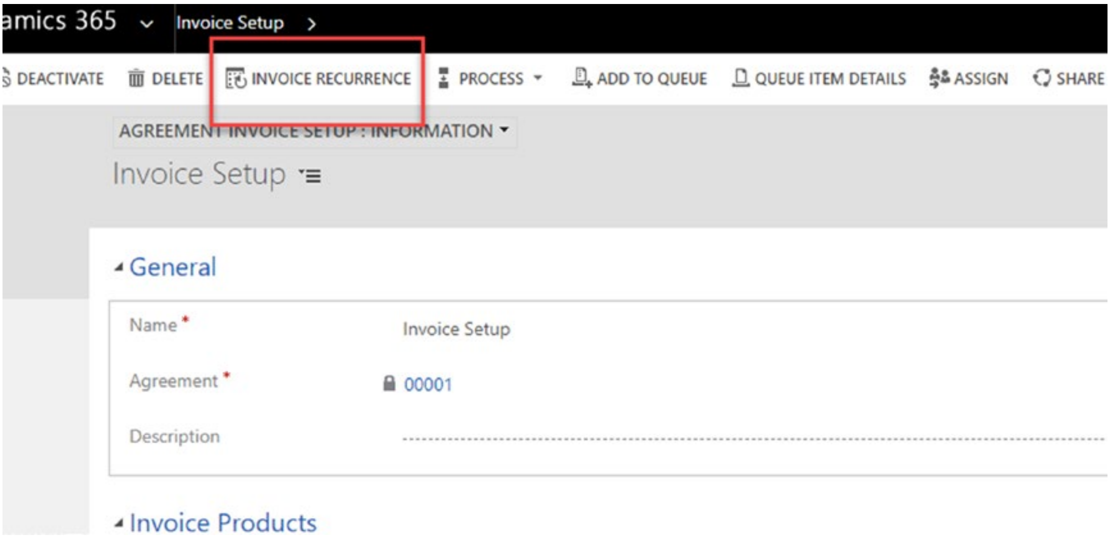
ren't any activity records to show. To get started, create an activity like a phone call, task, email, or appointment.

No Agreement Invoice Setups found for this Agreement. Select Add (+).

Figure 5-80. *Invoice Setup grid on the Agreement record*

4. Once completed, click “Invoice Recurrence” on the ribbon bar, shown in Figure 5-81. Set the recurrence schedule up in the same way as in the previous “Booking Recurrence” functionality.

5. Save the record.


amics 365
Invoice Setup
DEACTIVATE
DELETE
INVOICE RECURRENCE
PROCESS
ADD TO QUEUE
QUEUE ITEM DETAILS
ASSIGN
SHARE
AGREEMENT INVOICE SETUP : INFORMATION
Invoice Setup
General
Invoice Products

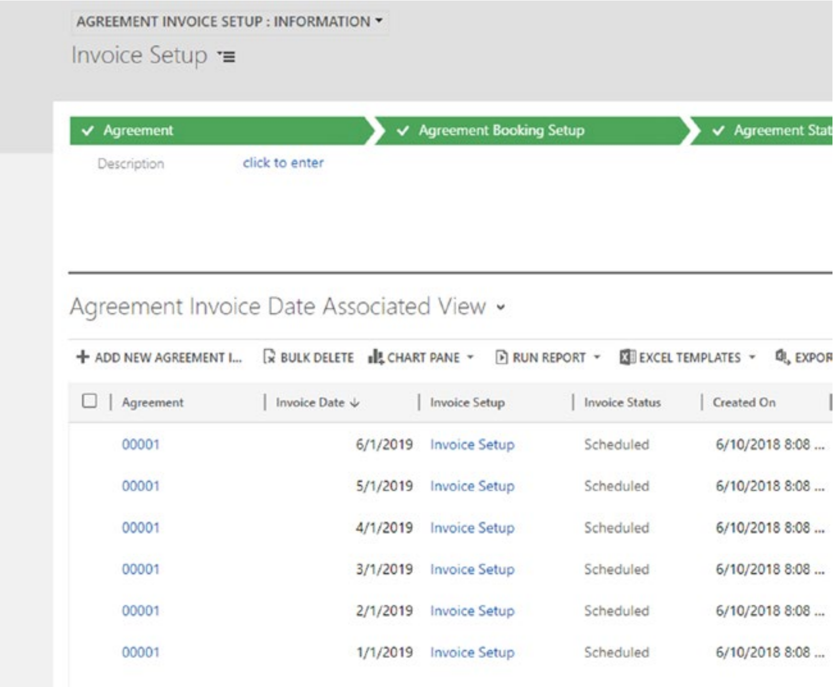
Name * Invoice Setup

Agreement * 00001

Description

Figure 5-81. *Select the "Invoice Recurrence" button*

The invoice dates will have propagated down and will be auto-populated in the same way the bookings did in the previous section. An invoice will be automatically generated once the date is reached, and back-office staff will then take action and post it to the customer (Figure 5-82).


AGREEMENT INVOICE SETUP : INFORMATION ▾
Invoice Setup
✓ Agreement
✓ Agreement Booking Setup
✓ Agreement Stat
Agreement Invoice Date Associated View ▾
+ ADD NEW AGREEMENT I...
BULK DELETE
CHART PANE ▾
RUN REPORT ▾
EXCEL TEMPLATES ▾
EXPOR

Description click to enter

☐	Agreement	Invoice Date ↓	Invoice Setup	Invoice Status	Created On
	00001	6/1/2019	Invoice Setup	Scheduled	6/10/2018 8:08 ...
	00001	5/1/2019	Invoice Setup	Scheduled	6/10/2018 8:08 ...
	00001	4/1/2019	Invoice Setup	Scheduled	6/10/2018 8:08 ...
	00001	3/1/2019	Invoice Setup	Scheduled	6/10/2018 8:08 ...
	00001	2/1/2019	Invoice Setup	Scheduled	6/10/2018 8:08 ...
	00001	1/1/2019	Invoice Setup	Scheduled	6/10/2018 8:08 ...

Figure 5-82. *Agreement invoices created automatically*

Common Issues Experienced with the Resource Scheduler

There are some common issues that can occur when using the Dynamics 365 CE field service application that may lead users to believe things are not properly working, especially with the resource scheduler.

Here is a list of common troubleshooting tasks to complete when the scheduler is showing that no resources are available:

- If the radius on the default map in the field service settings is set to a low amount, try increasing this in the scheduling pane to find out if this is the problem. Configure this within field service settings if required.
- Have the required skills been added to the resource?
- If the Resco field service app is coming up with an error, try synchronizing.

- If the Resco field service app is coming up with a notification that Woodford needs to be installed, follow the instructions in the "Further Reading" section to install the template.
- Check the scheduling board for white space within a resource's timeline to ensure they are available.

Test Data

There is a test-data package provided by Microsoft and available for download that is related to the Dynamics 365 CE field service and project service automation apps. The link for this download can be found within the "Further Reading" section of this chapter under the "Test Data for Field Service and Project Service Automation" item. The download comes with a specific instruction document that must be followed when importing data to ensure it is successful. Installing the data can help with getting started with the field service app, especially by populating the schedule board with a large amount of data.

Summary

This chapter has been an introduction into the "essentials" of the field service application within Dynamics 365 CE. There are still many additional ways to set up and customize the application to suit specific needs. This includes sending notifications and automatically creating records through workflows, as well as the resource scheduling automation available as an extension of field service.

What is commonly discussed when talking about field service for business applications is the ability to perform different types of maintenance. These include reactive, preventative, and predictive types. Reactive maintenance is what has been possible for some time. This includes creating a case when a customer notices a problem, which is then reported and reacted upon. Work orders are scheduled, and an engineer can be booked. The organization is reacting to something happening, normally the customer's notifying them of the issue.

Following that, preventative maintenance occurs through scheduling work orders for future dates based on a custom time frame to prevent the customer-service incident from ever happening. This is similar to yearly car maintenance, where there doesn't have to be anything necessarily wrong. However, the action is carried out to prevent issues from occurring and is used to reduce risk.

This chapter has covered both of these types of field service through the creation of work orders (in some instances, from cases) and scheduling these using the schedule board. Agreements and the automatic scheduling of work orders for future dates are examples of the functionality provided for preventative scheduling within an organization. The additional solution, Resource Schedule Optimization, which is a licensed add-on for Dynamics 365, automates this functionality even more.

The final type of maintenance is predictive maintenance. This is achieved using artificial intelligence (AI) applications such as machine-learning models to create a predictive model for customer assets, the history of the product, and how often they are likely going to require an onsite visit. This can be achieved by extending Dynamics 365 to use machine-learning models, such as Azure ML Services Web APIs.

In between these types, IoT (Internet of Things) technology can be used for both preventative and predictive maintenance scenarios that would allow organizations to obtain real-time data from the asset (e.g., a boiler) through a sensor. This information could include the temperature or movement. Alerts could be created based on certain set threshold values. From these values, actions can be triggered within Dynamics 365 CE, such as the automatic creation of a Work Order record, creating a more preventative model and an increased level of customer service. The data can also be used from the devices to create more accurate predictive models.

In summary, Dynamics 365 CE provides a vast amount of capability for organizations to leverage multiple field-service frameworks, from the most simple to a more complex model, based on the focus of the organization.

Chapter Tasks

At the end of every chapter, there will be a section that gives up to ten suggested tasks for you to complete within Dynamics 365 CE. These tasks will be based around the topics covered within the chapter and are aimed at expanding practical knowledge and application regarding those topics that goes beyond reading about them.

1. Set up a resource role and associated resource skills.
2. Create a resource requirement and access it via the schedule board.

3. Spend time becoming familiar with all the components of the schedule board.
4. Attempt to schedule the resource requirement.
5. Convert a case to a new work order.
6. Schedule the work order.
7. Set up the mobile field service application.
8. Complete a work order from the mobile field service application.
9. Create a new Agreement record, setting it up for recurring bookings and invoices.
10. Create a new time-off request.

Further Reading

Test Data for Field Service and Project Service Automation (Microsoft, 2018). URL: `https://www.microsoft.com/en-us/download/details.aspx?id=56050`

Universal Resource Scheduling (Microsoft, 2018). URL: `https://docs.microsoft.com/en-us/dynamics365/customer-engagement/common-scheduler/schedule-anything-with-universal-resource-scheduling`

Dispatcher Role Within Field Service Scenarios (Microsoft, 2018). URL: `https://docs.microsoft.com/en-us/dynamics365/customer-engagement/field-service/create-work-order`

Resource Optimization (Microsoft, 2018). URL: `https://docs.microsoft.com/en-us/dynamics365/customer-engagement/common-scheduler/resource-scheduling-optimization`

Release Notes for Field Service Feb 2017 (Microsoft, 2018). URL: `https://blogs.msdn.microsoft.com/crm/2017/05/19/dynamics-365-for-field-service-and-project-services-automation-february-2017-updates/`

Setting up the Mobile Field Service App (Microsoft, 2018). URL: `https://docs.microsoft.com/en-us/dynamics365/customer-engagement/field-service/install-the-mobile-app`

CHAPTER 6

Mobile Application

The Unified Interface within Dynamics 365 CE expands its capabilities to give users a seamless experience across desktop and mobile. *Seamless* is a word often used to describe many things within technology, and in this case it reflects the ability to allow a user to use the same thought process whether using the application on a desktop, laptop, or mobile device. This is important because, as a result of restrictions on the number of fields and sections, forms within Dynamics 365 CE previously had to be designed separately depending on the device being used. This will no longer need to be the case with the Unified Interface, which will load forms optimally depending on the screen size of the application.

This functionality gives the application some distinct advantages. It means that, within the Unified Interface, the user experience is the same in any single form factor whether the application is being used on the web (using different screen sizes, the tablet, or the phone) or in a mobile application. User experience is very important across software development and usage. It often determines how much a user enjoys using the application and has a direct influence on their being able to perform an activity within the application, despite user experience being a difficult concept to measure consistently. What can be said to be consistent is that the Dynamics 365 CE application has a single user experience across all the devices it is used on. It has the same UI and, where possible, the same controls; if not, they are optimized to make usage easier (e.g., buttons easy to use with fingers, rather than a mouse click).

For all of this, it is easy to ask what the advantage is of using the downloadable Dynamics 365 CE app versus using the browser on a mobile device. The mobile application has a strong roadmap of features. It is often used for mobile offline use, which is not possible via the web application. This is particularly useful in scenarios where the sales team is traveling and want to update their appointments or review Dynamics 365 CE data without a guaranteed connection. Offline features will be returning to the application in the future and so won't be covered in this edition of the book. The downloadable app also offers an improved experience when switching between other apps on the mobile device, such as Microsoft Outlook, and provides additional unique features, such as

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S. Critchley, *Dynamics 365 CE Essentials*, https://doi.org/10.1007/978-1-4842-3973-5_6

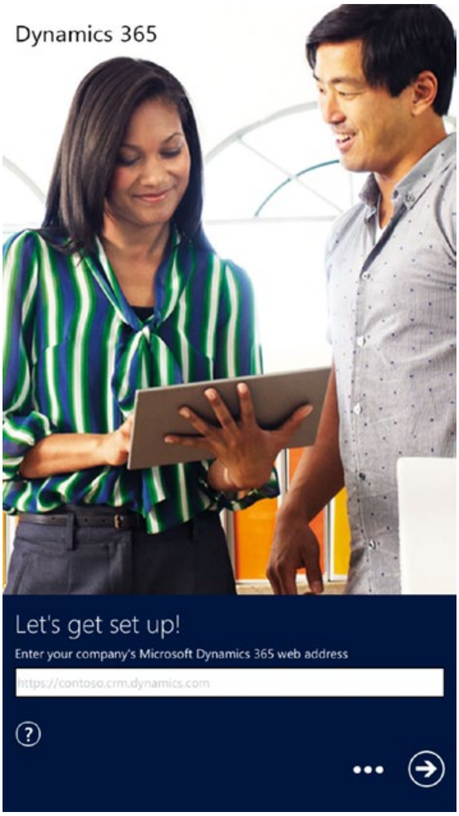
pinch and zoom, easier-to-use navigation, and dedicated system settings. It is, however, personal preference and functionality-based decisions that push users toward using the downloadable app on Windows, iOS, or Android devices or simply using the web browser.

There are specific requirements for the application to run on phones and tablets, which can be found in official Microsoft documentation, referenced in the "Further Reading" section at the end of this chapter.

Setup

To access the mobile application (not the web version of the app on mobile), download the app from the appropriate app store. It can be found by searching for the keyword "Dynamics 365," reading the terms and conditions, and downloading the app to your device.

When the app is opened for the first time, the user needs to enter the URL for the organization and authenticate with their login details, as shown in Figure 6-1.



Let's get set up!

Enter your company's Microsoft Dynamics 365 web address

https://contoso.crm.dynamics.com

Figure 6-1. *Mobile sign-in page*

If you wish to use the Dynamics 365 CE app from the browser on a mobile device instead, navigate to the URLs `home.dynamics.com` or `portal.office.com`, and sign in. There will be a prompt to select the app if `home.dynamics.com` was used. The only interface available for use on mobile devices is the Unified Interface and not the Classic UI. This includes accessing Dynamics 365 CE on the web browser; a user will still not be able to access the Classic UI application, including the full default application. There must be an "app" created that uses the Unified Interface forms or uses the standard "Customer Service Hub" or other related "Hub" apps as part of the current subscription (Figure 6-2).

Once logged in and with the app selected, the application is ready to go. There isn't any further setup required to begin using the mobile client.

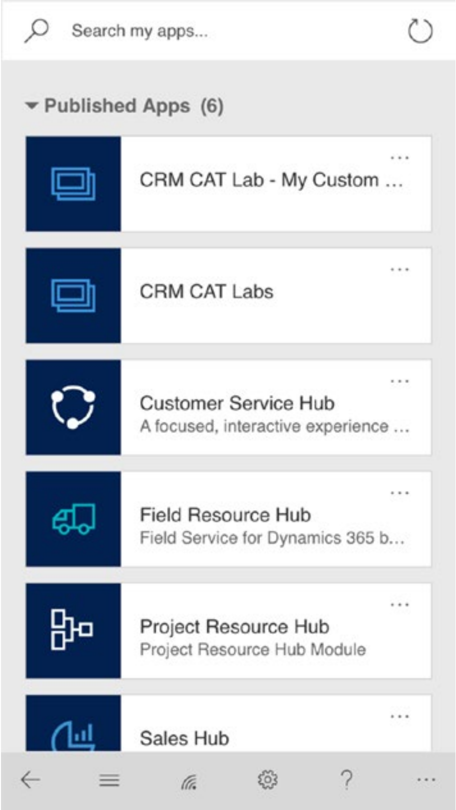

Search my apps...
Published Apps (6)
CRM CAT Lab - My Custom ...
CRM CAT Labs
Customer Service Hub
A focused, interactive experience ...
Field Resource Hub
Field Service for Dynamics 365 b...
Project Resource Hub
Project Resource Hub Module
Sales Hub

Figure 6-2. *App selector on mobile*

Designing Dashboards and Forms for the Mobile Client

The responsive Unified Interface forms within Dynamics 365 CE are flexible and do not require a specific mobile form, as was the case in previous versions of the Dynamics 365 CE application. This gives distinct advantages to customers who wish to modify an existing form or create custom record types, as one form can be created and utilized across different form factors.

This does mean that, depending on the device the form is viewed on, the placement of the form components may look slightly different e.g. could be in less columns in a smaller device as opposed to a larger desktop. The design of the form needs to take this into consideration, and organizations need to take a mobile-first approach to designing dashboards and forms going forward which is a common design approach when looking at a design to an application that needs to be adaptive across multiple form factors as there are often more mobile-specific decisions. Once an application can be used on a mobile, there is often less work to configure or make changes for use on larger devices. A mobile-first approach can be taken by designing the form for mobile use, where the form loads in specific sections left to right before moving down.

It is important to see the difference and the adaptability of the forms. This section looks at the visual differences so as to help in the design of forms and to avoid having to rework them for each different form factor. This awareness will allow the forms to be built to meet the requirements of the application, whichever device is used.

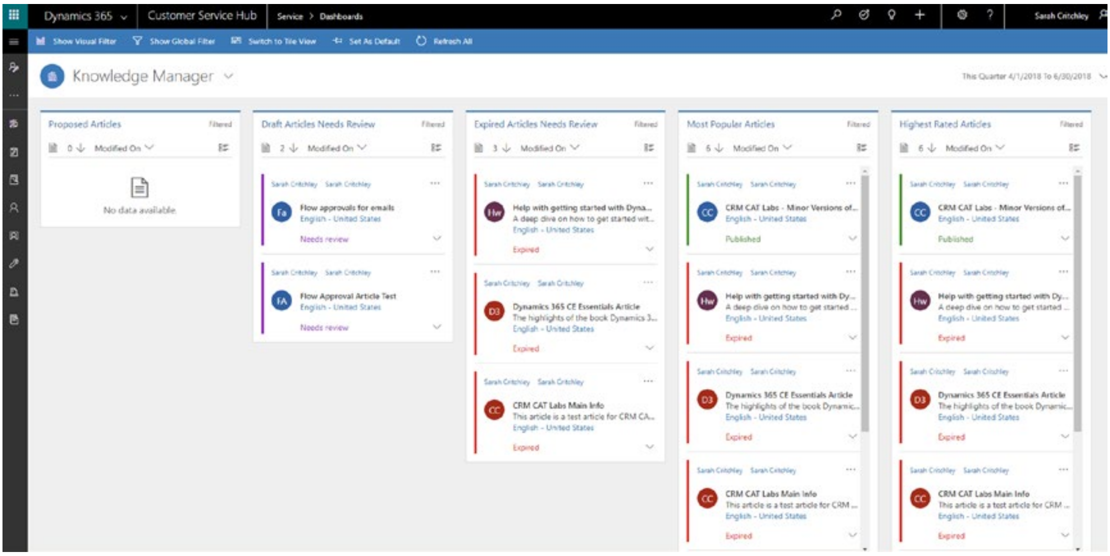

Dynamics 365
Customer Service Hub
Service > Dashboards
Sarah Critchley
Show Visual Filter
Show Global Filter
Switch to Tile View
Set As Default
Refresh All
Knowledge Manager
This Quarter 4/1/2018 To 6/30/2018
Proposed Articles
No data available
Draft Articles Needs Review
Expired Articles Needs Review
Most Popular Articles
Highest Rated Articles
Modified On

Figure 6-3. *Knowledge Manager standard dashboard*

Figure 6-3 displays the Knowledge Manager dashboard within the Customer Service app. This is a dashboard that allows the user to see multiple streams of information and also to click on the Tile view to see an aggregate list of those same records.

When the form is made smaller, the white space is reduced and the controls on the page are reduced in size to give a consistent experience. Once the form is reduced to a mobile screen size, the application “snaps” into place and the form shrinks and adapts to the space, providing the default view of the aggregate Tile view. The same experience is consistent against the mobile app and the web client accessed on mobile. These examples can be seen in Figures 6-5 and 6-6.

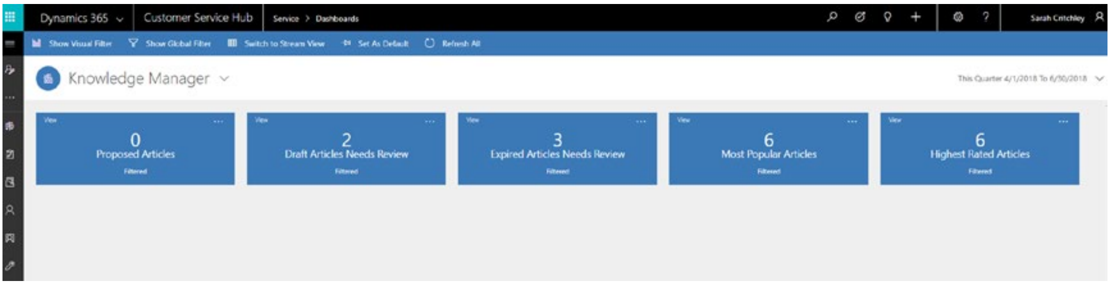

Dynamics 365
Customer Service Hub
Service > Dashboards
Sarah Critchley
Show Visual Filter
Show Global Filter
Switch to Stream View
Set As Default
Refresh All
Knowledge Manager
This Quarter 4/1/2018 To 6/30/2018
0
Proposed Articles
2
Draft Articles Needs Review
3
Expired Articles Needs Review
6
Most Popular Articles
6
Highest Rated Articles

Figure 6-4. *Tile view of the Knowledge Manager dashboard showing aggregates of the streams by clicking on the Tile button*

The Knowledge Manager dashboard viewed in a web browser on a desktop can be reduced to a smaller screen size by adjusting the size of the browser window, shown in Figure 6-5.

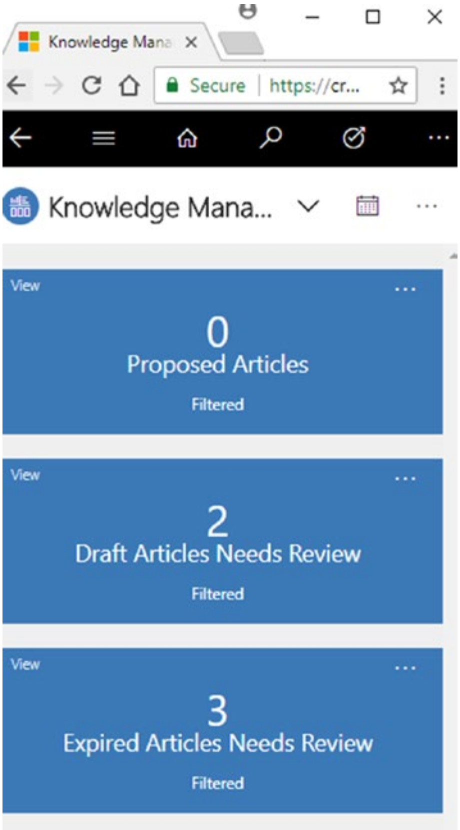

Knowledge Mana
Secure
https://cr...
Knowledge Mana...
View
0
Proposed Articles
Filtered
View
2
Draft Articles Needs Review
Filtered
View
3
Expired Articles Needs Review
Filtered

Figure 6-5. *Desktop Application view on a smaller browser window*

On the mobile application, the same aggregated experience is the default experience due to the limited screen size, seen in Figure 6-6.

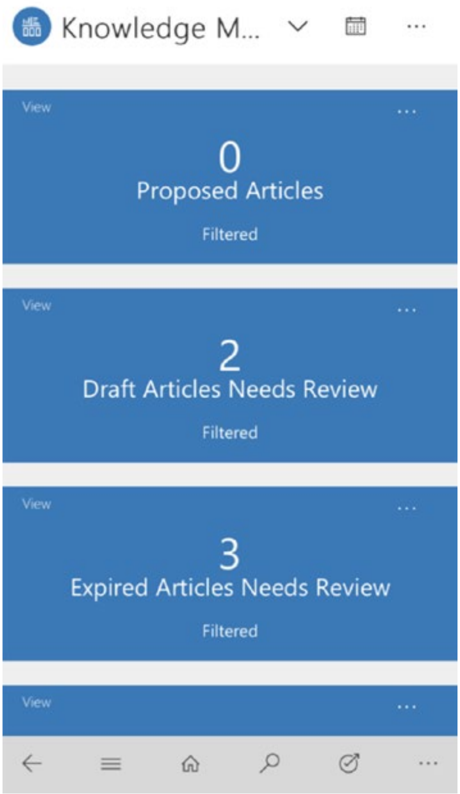

Knowledge M...
View
0
Proposed Articles
Filtered
View
2
Draft Articles Needs Review
Filtered
View
3
Expired Articles Needs Review
Filtered
View

Figure 6-6. *Mobile app default dashboard*

A second relevant example is the Customer Service Performance dashboard, shown in Figure 6-7.

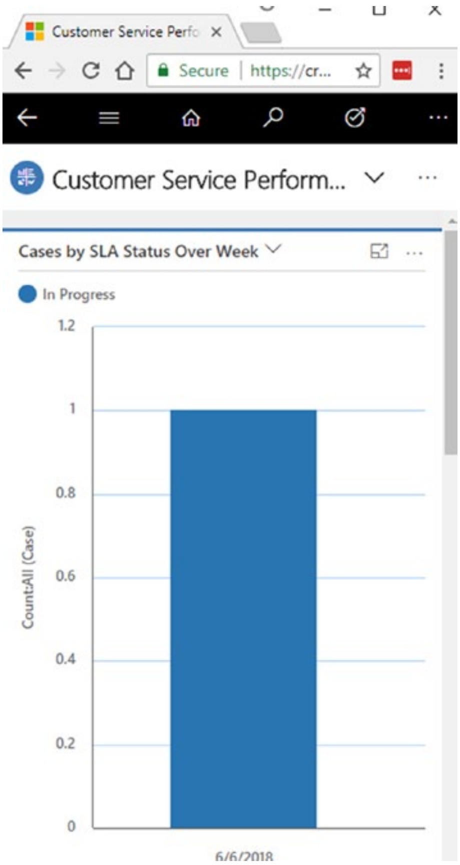

Customer Service Perfo
Secure
https://cr...
Customer Service Perform...
Cases by SLA Status Over Week
In Progress
1.2
1
0.8
0.6
0.4
0.2
0
Count:All (Case)
6/6/2018

***Figure 6-7.** Customer Service Performance dashboard in a small browser window*

This is also the same experience found within the app, as shown in Figure 6-8.

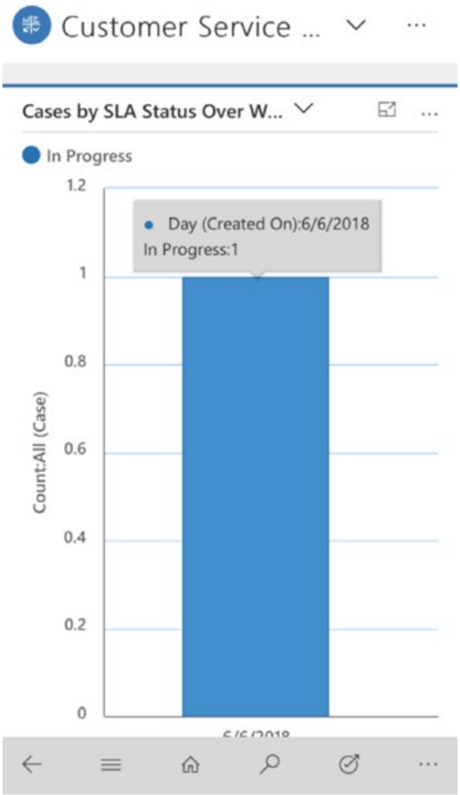

Customer Service ...
Cases by SLA Status Over W...
● In Progress
1.2
1
0.8
0.6
0.4
0.2
0
Count:All (Case)
Day (Created On):6/6/2018
In Progress:1
6/6/2018

Figure 6-8. *The same dashboard in the Mobile App*

Forms behave slightly differently. The sections of the form take up the available horizontal space, and should there not be enough space, they are stacked. This should be taken into consideration when designing forms so that, as a user, if they move from left to right, it would also make sense to move from top to bottom when those respective fields are accessed via mobile. This is visible in Figures 6-9 and 6-10, which display the standard Case form. This shows the sections "General Information," "Description," "Timeline," and "Related." The "General Information" section is loaded, followed by the "Description" section, *before* the "Timeline" and then "Related" sections, which are to the right.

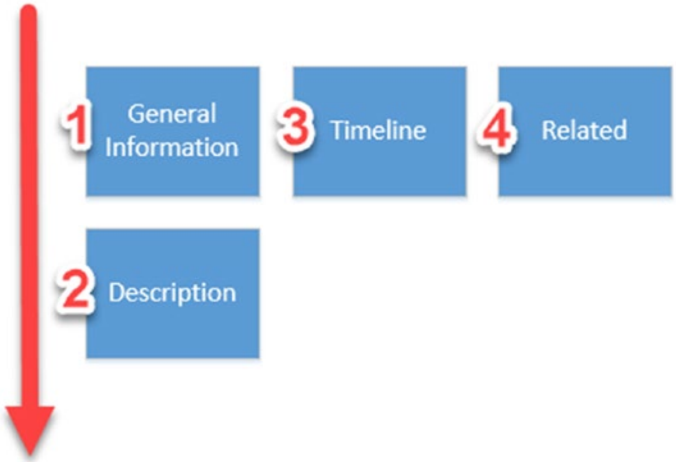
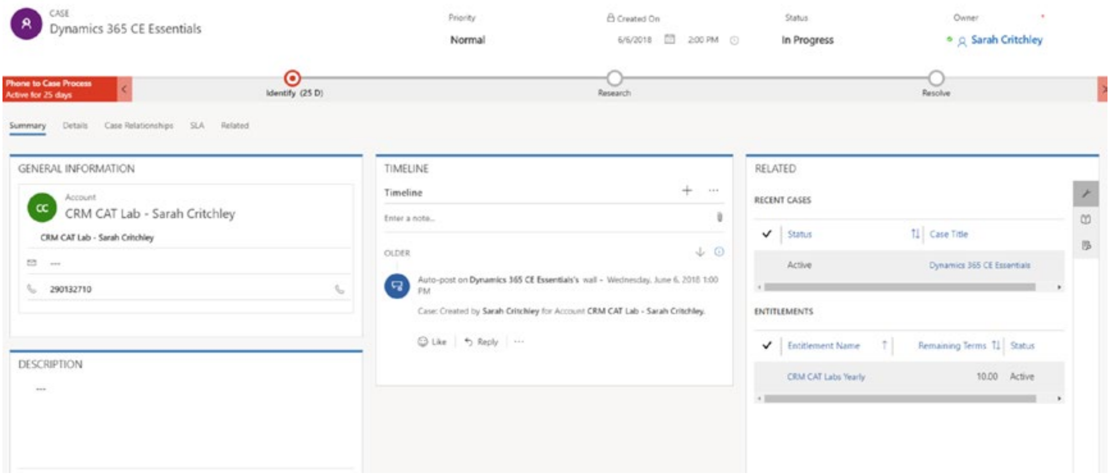

1 General Information
3 Timeline
4 Related
2 Description

Figure 6-9. *The order of the sections within the Case form and how they load on mobile*

The order difference can have an impact on usability and speed of completing and retrieving data. The differences can be seen in Figure 6-10, which displays the same case form with different form factors.


Phone to Case Process
Active for 25 days
Identify (25 D)
Research
Resolve
Summary
Details
Case Relationships
SLA
Related
GENERAL INFORMATION
TIMELINE
Timeline
Enter a note...
OLDER
Like
Reply
RELATED
RECENT CASES
ENTITLEMENTS
DESCRIPTION

CASE
Dynamics 365 CE Essentials

Priority: Normal
Created On: 6/6/2018 2:00 PM
Status: In Progress
Owner: Sarah Critchley

Account: CRM CAT Lab - Sarah Critchley
CRM CAT Lab - Sarah Critchley

290132710

Auto-post on Dynamics 365 CE Essentials's wall - Wednesday, June 6, 2018 1:00 PM
Case: Created by Sarah Critchley for Account CRM CAT Lab - Sarah Critchley.

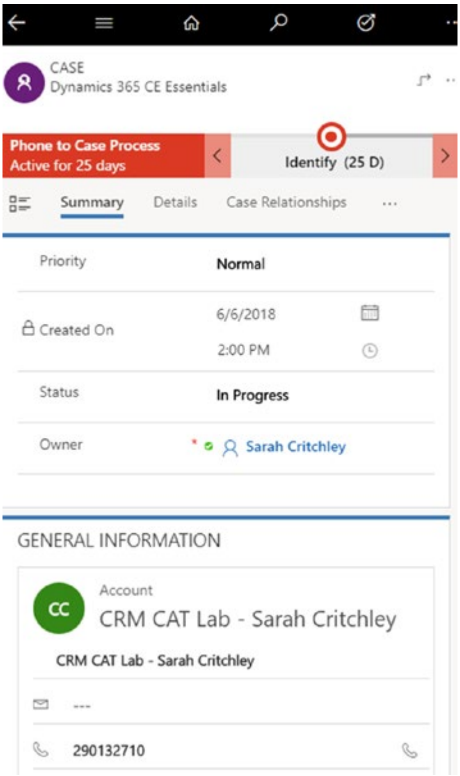
Status	Case Title
Active	Dynamics 365 CE Essentials

Entitlement Name	Remaining Terms	Status
CRM CAT Labs Yearly	10.00	Active

Description: ---

Figure 6-10. *The Case form in the web client on a desktop*

The header fields are visible first, followed by the "General Information" section within the Case, shown in Figure 6-11.


CASE
Dynamics 365 CE Essentials
Phone to Case Process
Active for 25 days
Identify (25 D)
Summary
Details
Case Relationships
GENERAL INFORMATION

Priority: Normal

Created On: 6/6/2018 2:00 PM

Status: In Progress

Owner: Sarah Critchley

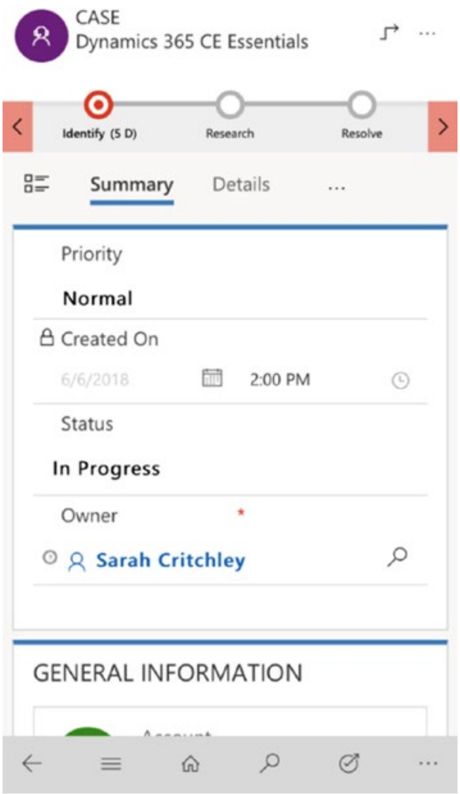
Account: CRM CAT Lab - Sarah Critchley

CRM CAT Lab - Sarah Critchley

290132710

Figure 6-11. *The Case form displayed on a mobile client via the web application*

This is the same as within the app, where the header fields are visible, then "General Information."


CASE
Dynamics 365 CE Essentials

Priority
Normal
Created On
6/6/2018 2:00 PM
Status
In Progress
Owner *
Sarah Critchley

GENERAL INFORMATION

Figure 6-12. *The Case form displayed within the app on mobile*

Figures 6-11 and 6-12 show few differences in the available functionality once the screen size is reduced. This is a result of the smaller space on the form; certain controls are made to be smaller and more easily accessible when using a finger as a pointing device, which doesn't have the precision of a mouse. Aside from that, the forms are almost identical, and it is clear to see that the user experience is the same across the different forms. Even the relationships are viewed in the same way as on the web client by using the Related accessed from the action button, and dynamically loading a sub-grid with the related records.

Some of the differences include the following:

- The user interface for the business process flow – Smaller and doesn't stay open

- The additional "Semantic Zoom" control is available next to the first tab and not available on the web client.
- The number of tabs before the action button is used ("…") is reduced based on the available space.

There is also no longer any limit for displaying some fields on forms.

Dashboards for the Unified Interface Versus Dashboards for the Classic UI

Standard dashboards are available within the Classic UI of Dynamics 365 CE and what users have known in previous versions of the CRM client. They allow embedded web resources, IFrames, Power BI tiles, views, and charts. With the Interactive Service Hub release in version 8, a new type of dashboard was released, referred to as the "interactive experience," which could only be used within the first version of the Interactive Service Hub, a.k.a. the MoCA Client, later referred to as the Unified Interface Client.

In the latest version, the Unified Interface, including mobile, can run both standard dashboards and the more detailed and functional interactive dashboards. Customizers can select these different types when building solutions via the Solution screen or the App designer, as shown in Figure 6-13, where standard, older-style dashboards are referred to as classic dashboards. The Classic UI, however, cannot run the interactive dashboards, which are exclusive to the Unified Interface.

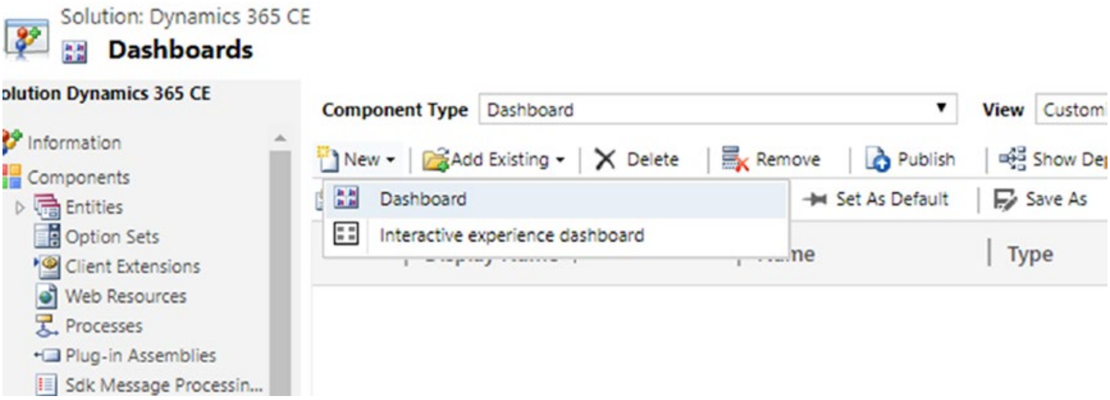

Solution: Dynamics 365 CE
Dashboards
olution Dynamics 365 CE
Information
Components
Entities
Option Sets
Client Extensions
Web Resources
Processes
Plug-in Assemblies
Sdk Message Processin...
Component Type
Dashboard
View
Customi
New
Add Existing
Delete
Remove
Publish
Show De
Dashboard
Interactive experience dashboard
Set As Default
Save As
Type

Figure 6-13. *Selecting the different dashboard types in a solution*

Interactive dashboards offer more functionality, such as being able to perform actions on records within a stream of data and see information by using the charts to filter that data. There are a lot more filter functions available to splice data according to requirements as well as the capacity to see aggregates of the data, which was previously not possible in classic dashboards.

From a mobile perspective, as the Unified Interface can display both classic and interactive dashboard types, this means that classic dashboards can still be used with the mobile client and are still responsive in the same way as the interactive dashboards are, albeit with less functionality (Figure 6-14).

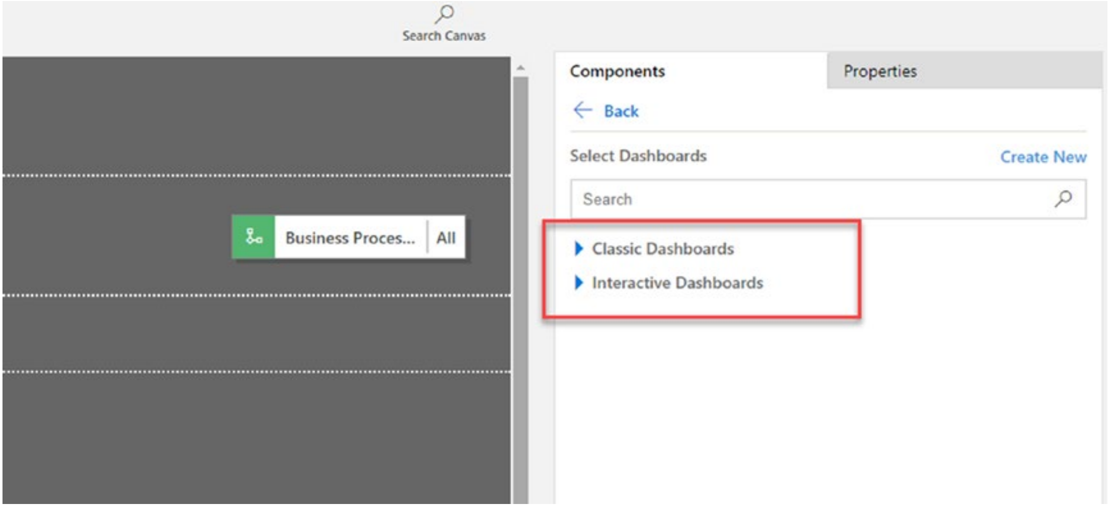


***Figure 6-14.** Dashboards within the app designer*

Task Flows on Unified Interface

Task flows were introduced initially only on mobile in a previous version of Dynamics 365 CE. They are now available within the web application in Unified Interface apps. Task flows are an easy way for users to complete a specific task. A task flow guides the user through the steps associated with that task, triggering automation where required. Task flows are a type of workflow and can be deactivated if they no longer serve a purpose to the users, especially those Task Flows that come as standard. The standard Dynamics 365 CE application has three task flows available as standard: “After Meeting,” “Update Contact,” and “Follow up with Opportunity.”

Start a task flow by selecting the button on the Navigation menu, as highlighted in Figure 6-15 which looks like a tick within a circle shape.

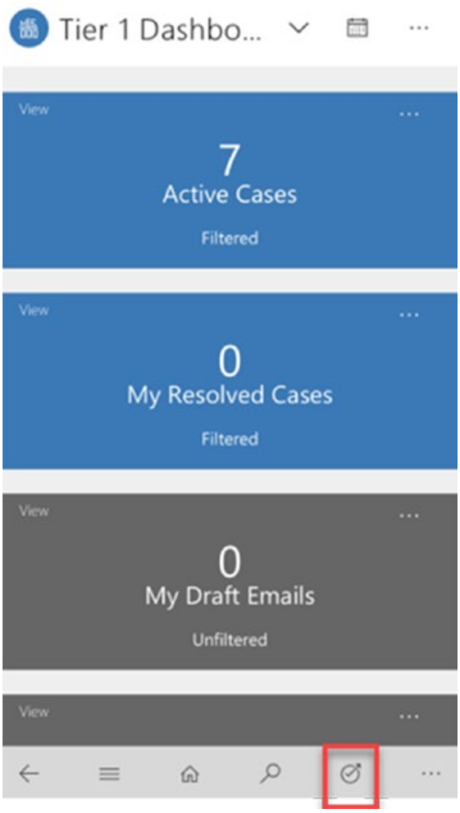
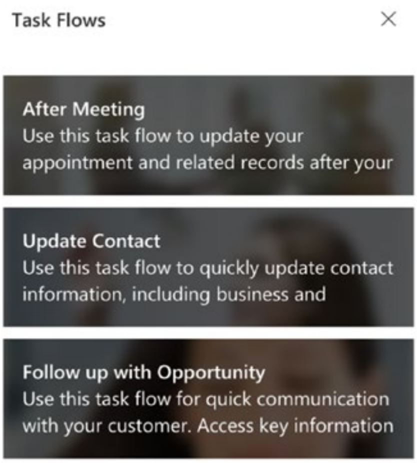

Tier 1 Dashbo...
View
7
Active Cases
Filtered
View
0
My Resolved Cases
Filtered
View
0
My Draft Emails
Unfiltered
View

Figure 6-15. *Task Flow button within the mobile client*

This will take you to the available active task flows, shown in Figure 6-16.



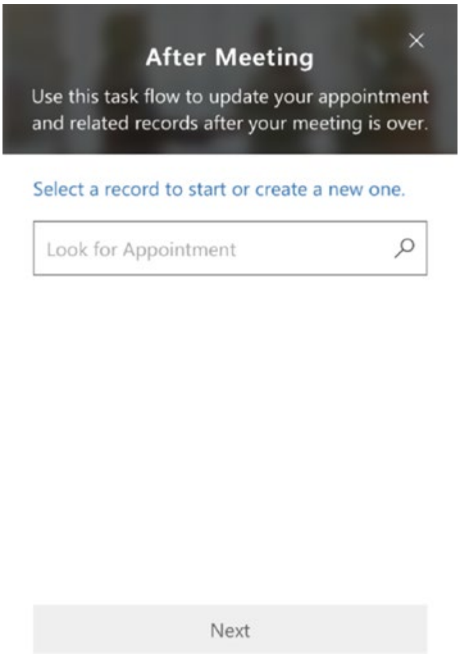
After Meeting
Use this task flow to update your appointment and related records after your

Update Contact
Use this task flow to quickly update contact information, including business and

Follow up with Opportunity
Use this task flow for quick communication with your customer. Access key information

Figure 6-16. *Selection of activated task flows*

Task flows are very useful on a mobile device because the nature of a reduced screen size can sometimes mean the amount of scrolling or selecting a user must do to achieve what they want is increased. Task flows give users an easy guided approach. They also have the added benefit of automating tasks associated with what is required as part of that task flow. The Task Flow icon is always available on the navigational sitemap, making them an effortless process to work into a user's day-to-day work.



After Meeting

Use this task flow to update your appointment and related records after your meeting is over.

Select a record to start or create a new one.

Look for Appointment

Figure 6-17. *Step-by-step follow-up of tasks within a task flow*

Task flows are very similar to another type of process—dialogues. Dialogues are a legacy process type that is due to be deprecated in a later version; they guide a user through a specific set of steps.

To start a task flow, click the icon and select the task flow required. Follow the configured prompts displayed on the task flow, completing the fields when prompted to eventually complete the flow.

Task flows are available when used on a desktop device as well, and are not just a mobile feature. The same icon can be seen on the navigational menu in Figure 6-18.

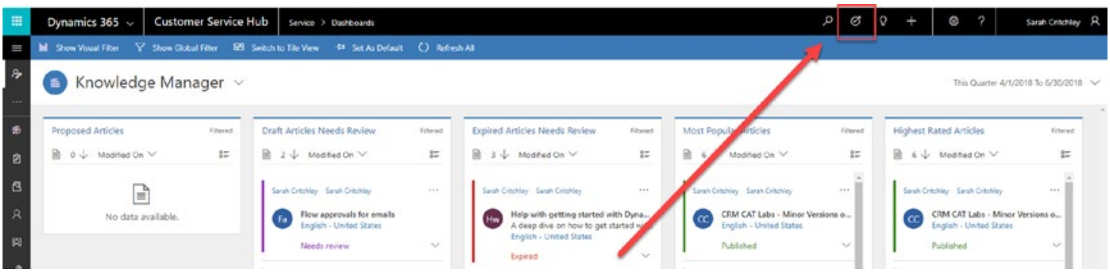
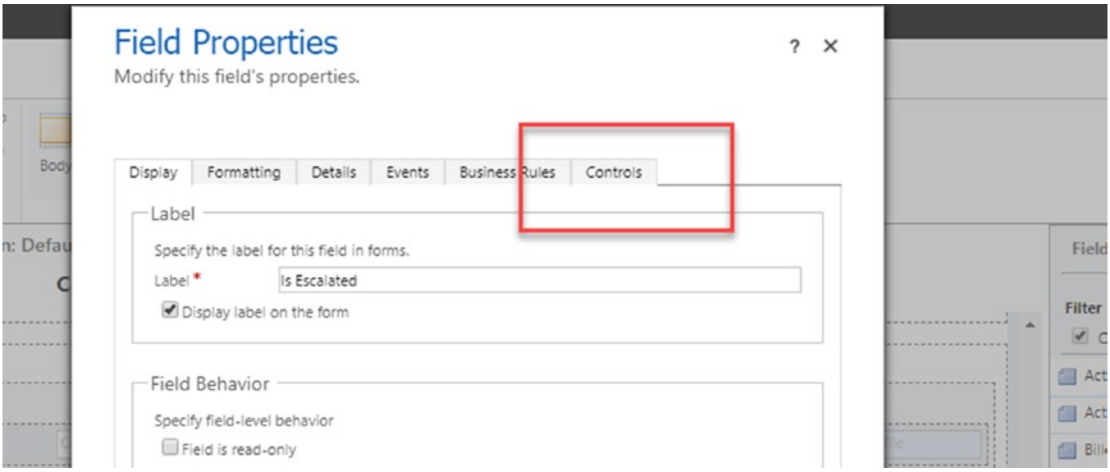

Dynamics 365
Customer Service Hub
Service > Dashboards
Sarah Critchley
Show Visual Filter
Show Global Filter
Switch to Tile View
Set As Default
Refresh All
Knowledge Manager
This Quarter 4/1/2018 To 6/30/2018
Proposed Articles
Draft Articles Needs Review
Expired Articles Needs Review
Most Popular Articles
Highest Rated Articles
Filtered
Modified On
No data available.
Flow approvals for emails
English - United States
Needs review
Help with getting started with Dyna...
A deep dive on how to get started w...
Expired
CRM CAT Labs - Minor Versions o...
Published

Figure 6-18. *Task Flow button in the command bar when used on the desktop*

Control Framework

Dynamics 365 CE incorporates the capability to turn standard field controls on a form into a more mobile- and tablet-friendly control. Having a control that is more appropriate for the pointing device is important, as when using fingers, as opposed to a mouse, the pointing device is a lot bigger on mobile and tablet and we do not have the precision of a mouse. Having this option means that the user interface is much easier to interact with. The bonus is that these extra sets of controls are available on the Unified Interface for Dynamics 365 CE, which means they can be incorporated into the web experience as well and are not just for use on mobile. More details on the control framework can be accessed from the "Further Reading" section at the end of this chapter.

The controls are available based on the specific type of field. This is similar to the controls that have been available in previous versions, such as the pen control on multiple-lines-of-text fields.



Field Properties

Modify this field's properties.

Label

Specify the label for this field in forms.

Label * Is Escalated

☑ Display label on the form

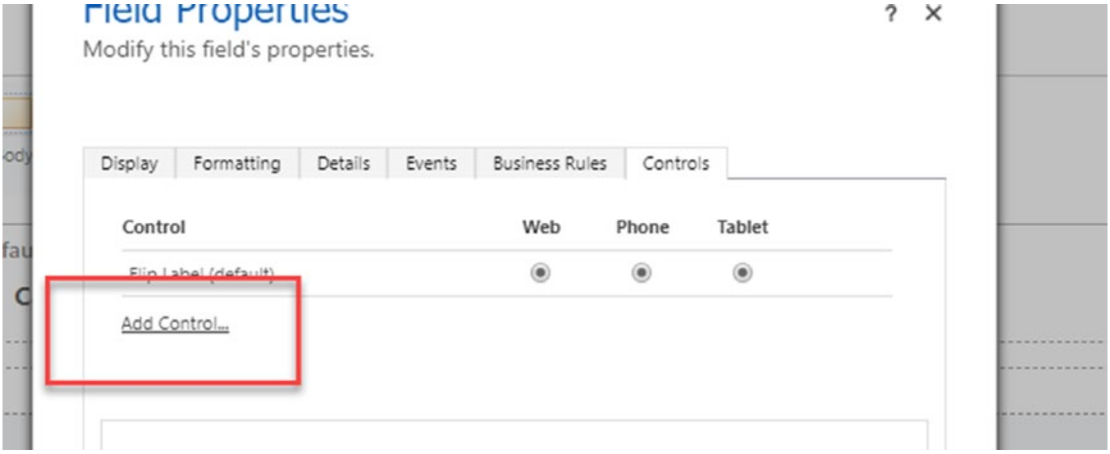
Field Behavior

Specify field-level behavior

☐ Field is read-only

Figure 6-19. *The "Controls" tab on the Field Properties on a Form*

Controls are added and configured in the specific field properties under the Controls tab (Figure 6-19). Customizers can navigate to this and select "Add Control," as shown in Figure 6-20.


Field Properties

Modify this field's properties.

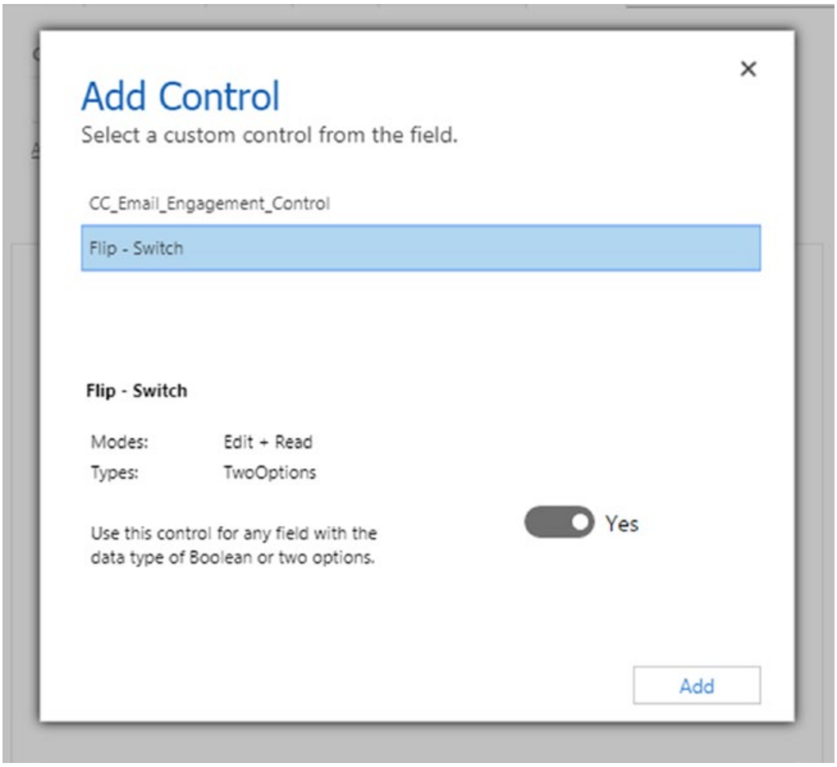
?
×
Display
Formatting
Details
Events
Business Rules
Controls

Control	Web	Phone	Tablet
Flip Label (default)	●	●	●

Add Control...

Figure 6-20. *Select "Add Control"*

The available controls will be visible to add (Figure 6-21). Some controls require additional configuration values to be entered; e.g., the Knob Arc requires min and max values.


Add Control

Select a custom control from the field.

×
CC_Email_Engagement_Control
Flip - Switch

Flip - Switch

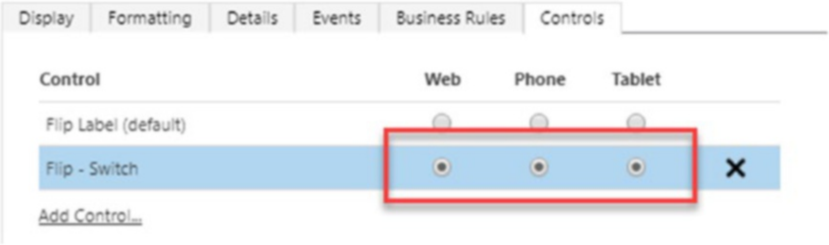
Modes: Edit + Read
Types: TwoOptions

Use this control for any field with the data type of Boolean or two options.

Yes
Add

Figure 6-21. *A list of controls will be available in a list form based on the type of field selected*

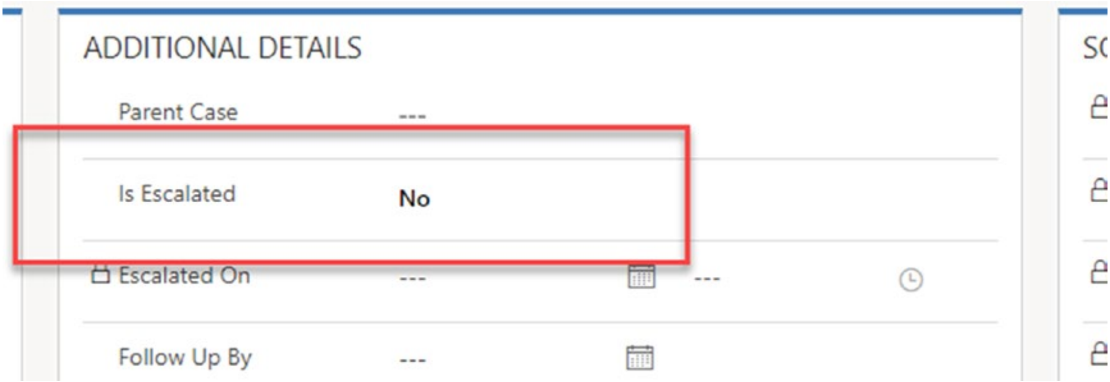
Once the control has been added to the form, most controls give the option to tailor the experience for the user (Figure 6-22). This means the control can be active for the application on the phone and tablet, but not the web.



Control	Web	Phone	Tablet	
Flip Label (default)	○	○	○	
Flip - Switch	●	●	●	✕

Figure 6-22. *The interfaces can be selected as to which the control appears on, giving a tailored approach to customizers*

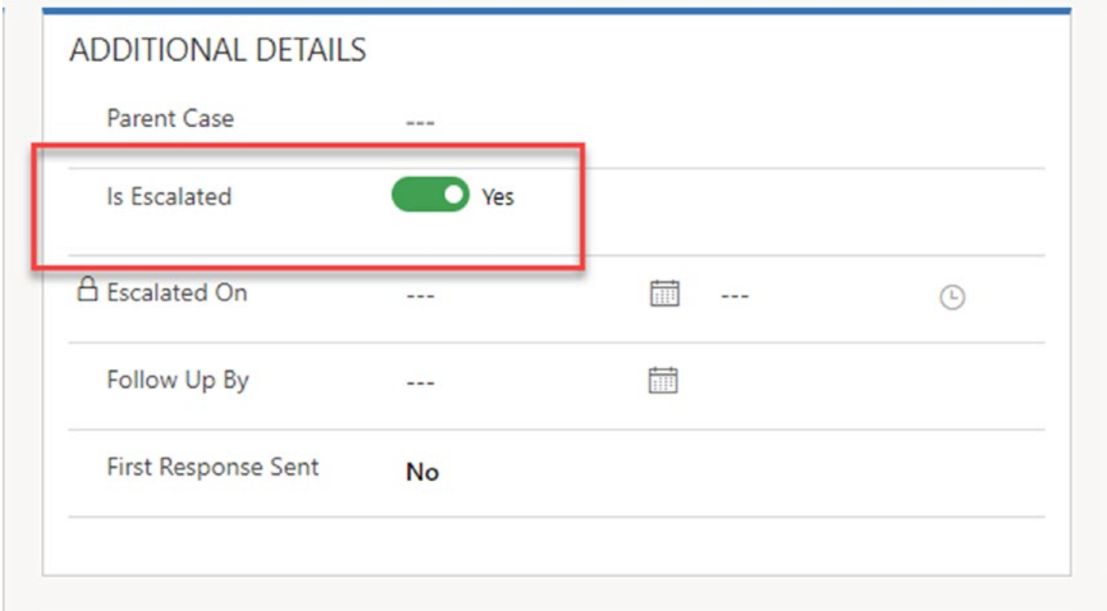
The amended field would be changed from what it originally was. An example would be a "Two Option" field type. This is displayed as a yes/no–type field, which could be kept as text, a checkbox, or a dropdown list where required. This is shown in Figure 6-23 with the "Is Escalated" standard field on the Case entity.



Parent Case	---
Is Escalated	No
Escalated On	--- ---
Follow Up By	---

Figure 6-23. *Standard two-option field type with no control*

With the additional control, this field has been changed into something more visual and color coded so the user can easily see the value of it without even having to read the text, as seen in Figure 6-24, where the "Flip – Switch" control has been added and has replaced the old control.



ADDITIONAL DETAILS

Parent Case ---

Is Escalated Yes

Escalated On --- ---

Follow Up By ---

First Response Sent No

Figure 6-24. *A two-option field with a flip-switch control added*

Table 6-1 summarizes the current matrix of the types of fields and their related controls for quick reference.

Table 6-1. *Field Types and Available Controls*

Field Type	Control Available
Currency, whole number, decimal or floating point	Linear slider, radial knob, bullet graph, number input, linear gauge, arc knob
Option sets	Option-set control (two or three choices)
Two-option	Flip switch
Whole number	Star rating
Single line of text	Website preview (URL field only), auto complete, multimedia (URL only), input mask, barcode scanner
Multiple lines of text	Pen control

Testing the Mobile Application

Testing the mobile application has become much easier. However, it still shouldn't be underestimated when building custom applications. Designing for use on all form factors will allow for a more consistent user experience when a user switches from a laptop to a desktop or mobile. This is a natural experience when using software and, based on the specifications of the app, it should be able to perform all functionality regardless of device.

When testing, ensure test cases include the following:

- Testing across the mobile web interface (accessed via the browser) AND the mobile application
- Test for user experience across multiple users, and whether the information is displayed in the expected order
- Test controls and if they match the availability as specified within the acceptance criteria
- Test the full end-to-end process on a mobile form factor
- If using offline, ensure this is tested and performs as expected and with a reasonable time frame specified by the acceptance criteria

Summary

The Dynamics 365 CE application has come a long way from previous versions to become a mobile-first platform that allows users to work from anywhere and from any device. This chapter has focused on the consistency of the Unified Interface across desktop and mobile applications where specific features can be used within the mobile form factor. It covered task flows, which, especially for mobile, allow users to complete a set of tasks that means a user does not have to navigate to multiple places across the application. It also reviewed the control framework within Dynamics 365 CE, which further adds to the commitment across the Unified Interface to promote using the application on mobile devices, allowing a greater level of control and visibility of the data for the user away from a desktop application.

Chapter Tasks

At the end of every chapter, there will be a section that gives up to ten suggested tasks for you to complete within Dynamics 365 CE. These tasks will be based around the topics covered within the chapter and are aimed at expanding practical knowledge and application regarding those topics that goes beyond reading about them.

1. Download the Dynamics 365 application on mobile.
2. Perform basic tasks on the smartphone within the Customer Service Hub app, such as accessing records, creating new records, and updating fields.
3. Perform the same tasks on the Dynamics 365 web application on the Customer Service Hub app.
4. Reduce the size of the browser window so it is like a smartphone screen size and experiment with this across multiple screen types; e.g., forms and dashboards.
5. Add a new control by changing a "Two-Value" field on the "Escalated" field within the Case entity to a visual "Flip – Switch" control.

Further Reading

Mobile requirements for phones and tablets (Microsoft, 2018). URL: `https://docs.microsoft.com/en-us/dynamics365/customer-engagement/mobile-app/v8/set-up-manage/support`

Controls within the Unified Interface (Microsoft, 2018). URL: `https://docs.microsoft.com/en-us/dynamics365/customer-engagement/customize/additional-controls-for-dynamics-365-for-phones-and-tablets`

CHAPTER 7

Reporting

Dynamics 365 CE can be used by organizations as a system to run any part of their business concerning customer engagement. This can be done through the use of all or a combination of the apps that are available or by using extensions and customizations. Users create new data and updating existing data through the continued use of the application, which creates a large store of transactional data over time. This data provides intelligence to the organization through quantitative and qualitative means. The data can indicate if a company is meeting sales targets and customer service SLAs and can be used to provide insights into trends of how services or products are being used. Data is a large source of potential insight for organizations to help improve their service, maintain their customers, and provide the direction of a company's future.

To obtain this insight, organizations must be able to report on the data available to them. This can be achieved in many ways using Dynamics 365 CE, which this chapter will cover. It is important to understand that the functionality itself is only a small part of being able to analyze and obtain insights from data. Having a clear and documented data model is essential, which can be easily created in Microsoft Excel or another tool. Understanding relationships between the data within Dynamics 365 by creating an entity relationship diagram (ERD) is also helpful. This chapter will review the capabilities and how to get started with the reporting methods available from within the application. When building an effective report, it is recommended that users look at the following actions:

1. Data model is understood—all data is captured or components are available (to perform calculations).
2. Use UML-type diagrams (Unified Modeling Language), such as use-case diagrams and sequence diagrams.
3. Relationships are understood for related information and aggregates.

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S. Critchley, *Dynamics 365 CE Essentials*, https://doi.org/10.1007/978-1-4842-3973-5_7

4. Understand what the business goals or requirements are of the organization.
5. Functionality available within CE is understood.
6. Security requirements are reviewed.
7. Visual requirements are understood; e.g., how that information is presented.
8. Create the report within Dynamics 365 CE and review.
9. Perform iterated testing (Create ➤ Test ➤ Improve)

Using the reporting methods within the Dynamics 365 CE platform, users will be able to see the information as and when they need it. It will be possible to utilize that data to make decisions and report on the company's operations both internally and externally.

Getting Started

This book has often refers to *entities*. Entities are what can be described as a record *type*. In software development terminology, they can be referred to as a class or a table. They are a structure, or a blueprint, that contains descriptive data (metadata) about that object. An example of an entity in Dynamics 365 CE is an *Account* record. There are multiple instances of the Account record, which are represented as rows within a table. The fields within an entity represent columns within the table. Dynamics 365 CE is built upon a relational database structure that links entities using diverse types of relationships (covered in more depth in Chapter 10). There are many external resources through which to learn more about entity and relationship modeling. An older but still popular and useful technique for this is UML (Unified Modeling Language). UML is a way of modeling different diagrams that represent the data of an organization's structure in different states and is an effective way to understand the relationship structure and the functionality of a system.

Securing data is a critical part of the reporting process. Having access to operational data, especially in an aggregated or condensed form, can give insight into the business but can also break data-governance policies if available to users who are not in the correct roles within the organization. Dynamics 365 CE utilizes security roles, covered in Chapter 4, for various reporting functionality, but the functionality itself also has inbuilt mechanisms for security. Security roles allow users to run reports only on records available to them and not on records outside of their security role.

Dynamics 365 CE can include many customizations; however, even if an organization does not modify any processes or add any new custom fields, reviewing the standard views and dashboards is an important task that should be included in all implementations. What is set up as part of the standard platform might not be relevant or important to the organization. It is a small task to perform a review and remove or hide those items. Doing so will ensure the standard CE system will be lean, easy to use, and quick to obtain information.

Dynamics 365 CE provides the capability for embedded Microsoft Power BI tiles within the standard dashboard. This chapter will not cover this functionality, as it introduces the complexity of another product. There are, however, many resources that do. Review the article by Microsoft that introduces this functionality at the end of the chapter found within the ‘Further Reading’ section.

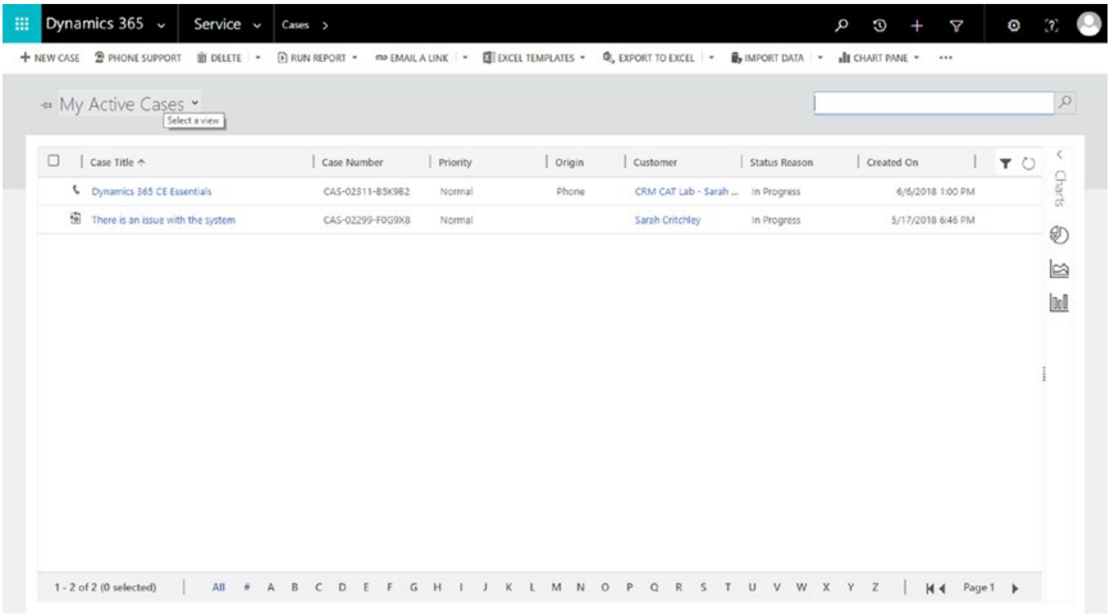
It is important to note that while Power BI integration can offer some benefits, there are also some drawbacks at the time of writing. Power BI capabilities are not yet available in the Unified Interface at time of writing. In addition to that, the security models of Dynamics 365 and Power BI are separate, and by introducing an external component, there is a risk of displaying data to users who may not or should not have access. Take care when looking at integration between these two platforms.

There are currently some reporting features available only within the Classic UI and others only within the Unified Interface client. This will be highlighted in each of the sections. There are new features being released in the October 2018 release of Dynamics 365, in which personal dashboards and charts will become available, and also the ability to run reports.

Views

Dynamics 365 CE use *views* to display a list of records (Figure 7-1). The list is often a filtered list of data; e.g., Active Accounts, where the system obtains all of the Account records available in the system that have their status set to “Active.” Another example could be the Unassigned Cases view, where the “Owner” field on the Case entity is set to a team rather than a user. Views allow for the quick review and retrieval of information, enabling a user to focus on a set of data rather than on hundreds of potentially irrelevant records. A view is made up of columns at the top of the screen in the header from the entity and displays the data that is from the record within the row. Dynamics 365 CE can be customized to change these columns to what is required so only the most relevant information is displayed. Users can also search on the view (based on the Quick Find view), use an A–Z filter, and select records to contextually perform actions on that record, such as Delete, Resolve, Apply Routing Rules, and Add to Queue. Doing this saves the user from having to open the form and click a button instead.

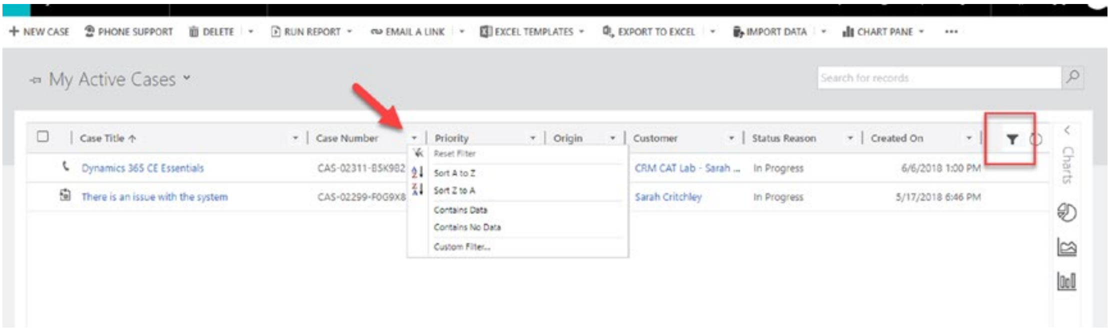
Views are used in dashboards (both classic and interactive types) and are the basis of *streams* on interactive dashboards. They also form the basis for the initial information displayed within a chart, where the chart is driven by the grouping of data within the view that is selected by the user at the time of loading the chart.


Dynamics 365
Service
Cases
NEW CASE
PHONE SUPPORT
DELETE
RUN REPORT
EMAIL A LINK
EXCEL TEMPLATES
EXPORT TO EXCEL
IMPORT DATA
CHART PANE
My Active Cases
Select a view
Charts
1 - 2 of 2 (0 selected)
All # A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
Page 1

Case Title ↑	Case Number	Priority	Origin	Customer	Status Reason	Created On
Dynamics 365 CE Essentials	CAS-02311-B5K9B2	Normal	Phone	CRM CAT Lab - Sarah ...	In Progress	6/6/2018 1:00 PM
There is an issue with the system	CAS-02299-F0G9X8	Normal		Sarah Critchley	In Progress	5/17/2018 6:46 PM

***Figure 7-1.** My Active Cases view within Dynamics 365 CE*

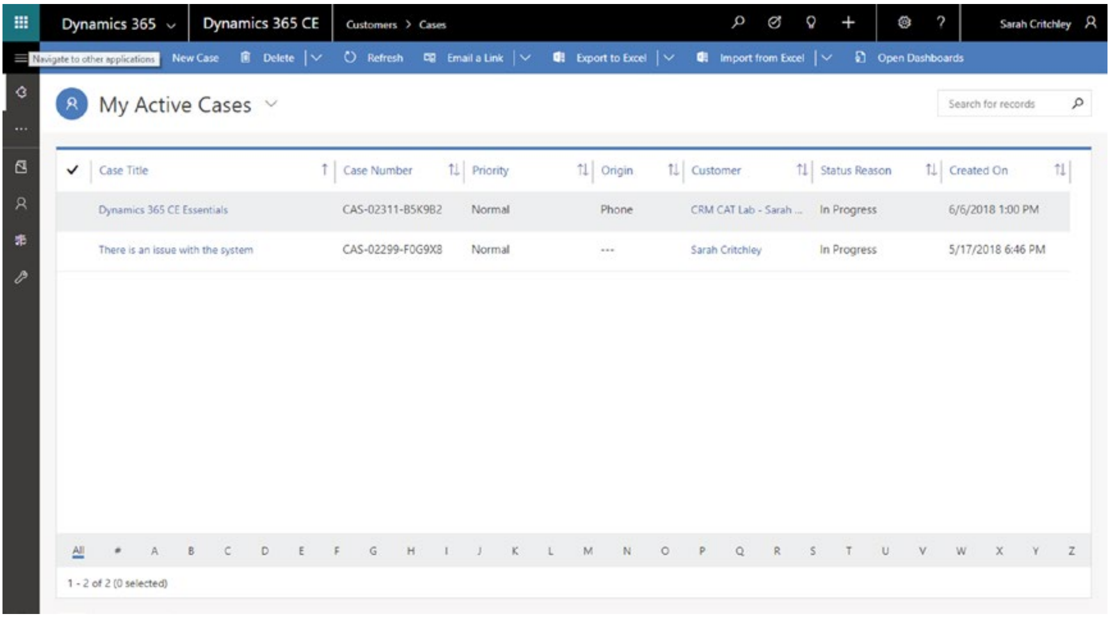
Users can also use filtering on the columns by selecting the Filter and then modifying the criteria of the data to be returned, per column (Figure 7-2). This is very similar to the filter functionality within Microsoft Excel. Examples of filtering include if there is data within this column or not, specific option-sets and also this is where users can choose sorting features.


NEW CASE
PHONE SUPPORT
DELETE
RUN REPORT
EMAIL A LINK
EXCEL TEMPLATES
EXPORT TO EXCEL
IMPORT DATA
CHART PANE
My Active Cases
Search for records
Reset Filter
Sort A to Z
Sort Z to A
Contains Data
Contains No Data
Custom Filter...
Charts

Case Title	Case Number	Priority	Origin	Customer	Status Reason	Created On
Dynamics 365 CE Essentials	CAS-02311-B5K9B2			CRM CAT Lab - Sarah ...	In Progress	6/6/2018 1:00 PM
There is an issue with the system	CAS-02299-F0G9X8			Sarah Critchley	In Progress	5/17/2018 6:46 PM

Figure 7-2. *To use filtering within a view, click the Filter button and then select the dropdown on each of the columns to filter or add a custom filter*

Views look very similar between the Classic UI and the Unified Client. There are styling differences with the command bar and the theme. This is shown in Figure 7-3.


Dynamics 365
Dynamics 365 CE
Customers > Cases
Sarah Critchley
Navigate to other applications
New Case
Delete
Refresh
Email a Link
Export to Excel
Import from Excel
Open Dashboards
My Active Cases
Search for records
All # A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
1 - 2 of 2 (0 selected)

Case Title	Case Number	Priority	Origin	Customer	Status Reason	Created On
Dynamics 365 CE Essentials	CAS-02311-B5K9B2	Normal	Phone	CRM CAT Lab - Sarah ...	In Progress	6/6/2018 1:00 PM
There is an issue with the system	CAS-02299-F0G9X8	Normal	---	Sarah Critchley	In Progress	5/17/2018 6:46 PM

Figure 7-3. *My Active Cases view within the Unified Client*

Views are created and saved as Public, System, or Personal types, as follows:

- **Public Views** are views created by the platform, such as Active Accounts or Inactive Cases. You can create new public views within the App Designer or Solution Explorer, and they would be available for all users given the correct security roles.

- **System Views** are views created and used by the platform and often can be modified to make them more relevant. These include Quick Find, Advanced Find, Lookup, and Associated views. Quick Find is particularly special as it influences what the search results are when searching not only on views but also on Lookup views of that specific entity on record. The first three compatible columns are those that are displayed when the user is selecting an item from the "Lookup" field selector. You cannot create new forms of these types; you can only modify existing ones.
- **Personal Views** are very similar to public views; however, they have been created by a specific user and are either kept with that user's space or shared with another user or team. They can be shared provided the user has "User" level access for the Saved View entity. More information on the differences between the different views can be found in the "Further Reading" section at the end of the chapter.

Users have access to multiple views of data at any one time. They can be selected using the dropdown selector, which is indicated by the name of the view at the top of the screen (Figure 7-4). It is recommended the most often used view is pinned using the pin icon, as seen in Figure 7-4.

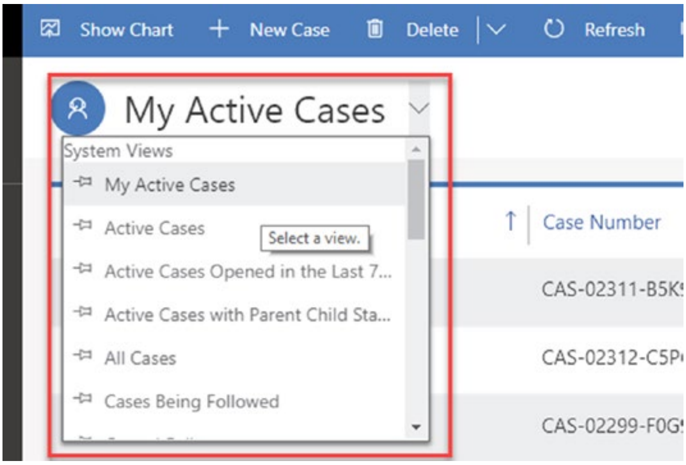

Show Chart
New Case
Delete
Refresh
My Active Cases
System Views
My Active Cases
Active Cases
Select a view.
Active Cases Opened in the Last 7...
Active Cases with Parent Child Sta...
All Cases
Cases Being Followed
Case Number
CAS-02311-B5K
CAS-02312-C5P
CAS-02299-F0G

Figure 7-4. *View selector*

You can also use the Globally Most Recent Used button on the navigation area, which allows a user to pin views and records within the navigation area to avoid having to find them via the main sitemap (Figure 7-5).

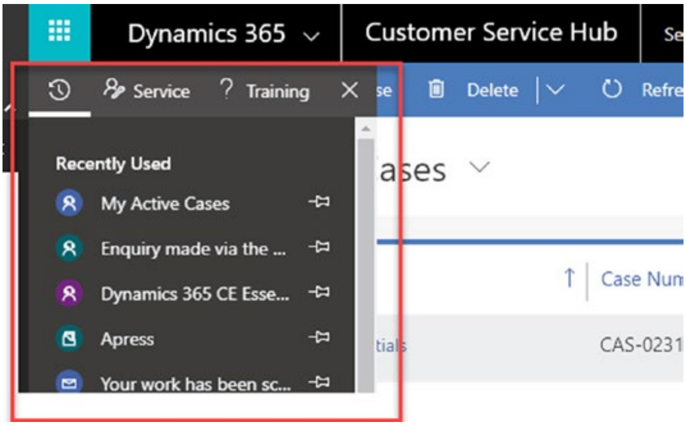

Dynamics 365
Customer Service Hub
Service
Training
Delete
Refre
Recently Used
My Active Cases
Enquiry made via the ...
Dynamics 365 CE Esse...
Apress
Your work has been sc...
ases
Case Num
CAS-0231

Figure 7-5. *Globally Most Recent Used list*

Creating a View

Personal views cannot be created from within the Unified Interface at the time of writing; however, this feature is expected to come in the October 2018 release. They can be created within the Classic UI and the Solution Explorer. Within the Classic UI, views are created using Advanced Find, which allows you to create a filtered query, configure sorting, and edit the columns that are displayed in the view using the Edit Columns button within the feature (Figure 7-8). The view is then saved as a personal view if made as a user, or if it was made via the Solution Explorer it will be saved as a public view.

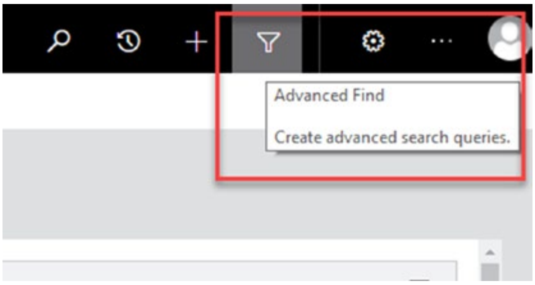

Advanced Find
Create advanced search queries.

Figure 7-6. *Advanced Find button within the Classic UI*

Task: Open Advanced Find in the Classic UI and create a filtered query on the Case entity.

1. To use Advanced Find, click the Advanced Find button on the main navigation bar at the top of the screen, as shown in Figure 7-6.
2. Select the entity to search using the dropdown list called "Look For." In this example, select the Case entity (Figure 7-7).

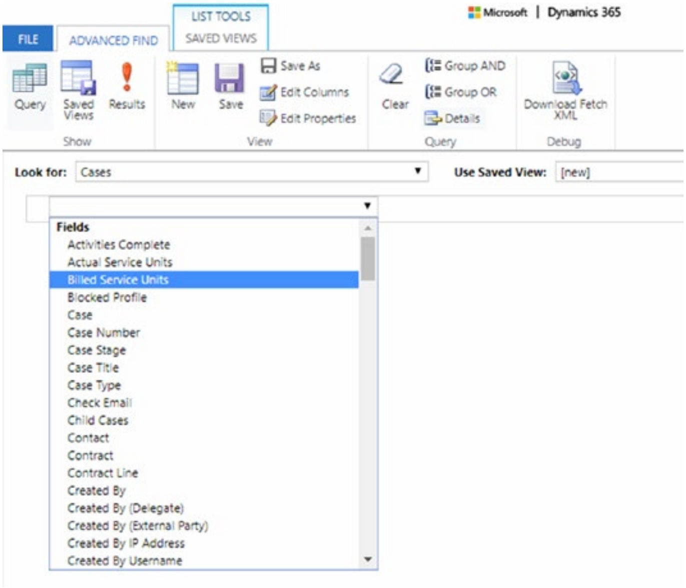
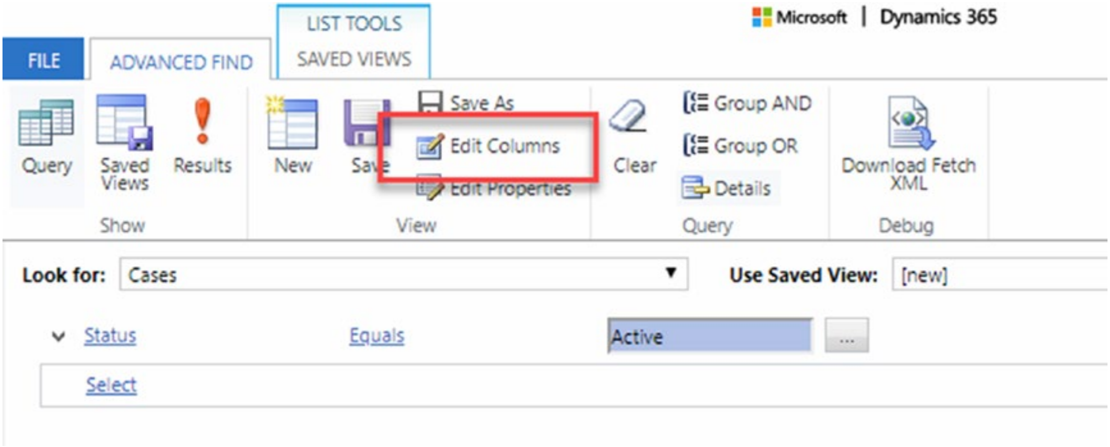

Look for: Cases
Use Saved View: [new]
Microsoft | Dynamics 365
FILE
ADVANCED FIND
LIST TOOLS
SAVED VIEWS
Query
Saved Views
Results
Show
New
Save
Save As
Edit Columns
Edit Properties
View
Clear
Group AND
Group OR
Details
Query
Download Fetch XML
Debug
Fields
Activities Complete
Actual Service Units
Billed Service Units
Blocked Profile
Case
Case Number
Case Stage
Case Title
Case Type
Check Email
Child Cases
Contact
Contract
Contract Line
Created By
Created By (Delegate)
Created By (External Party)
Created By IP Address
Created By Username

Figure 7-7. *Using Advanced Find within the Classic UI*

3. Select the "Status" field from that record type. Once the field is selected, you can perform a number of operators (such as "Equals" or "Contains Data") depending on the field type (such as "Single line of Text" or "Two Options"). You would select a specific value or range where relevant to the operator. In this example, set the "Status" field as "Equals" and "Active" (Figure 7-8).


LIST TOOLS
Microsoft | Dynamics 365
FILE
ADVANCED FIND
SAVED VIEWS
Query
Saved Views
Results
Show
New
Save
Save As
Edit Columns
Edit Properties
View
Clear
Group AND
Group OR
Details
Query
Download Fetch XML
Debug
Status
Equals
Select

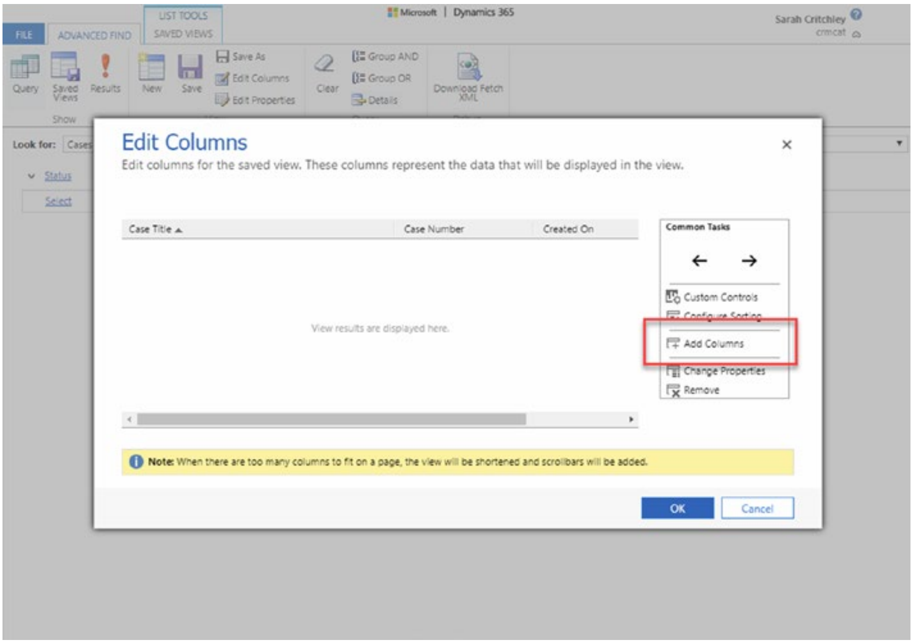
Look for: Cases

Use Saved View: [new]

Status Equals Active

Figure 7-8. *Using Advanced Find to create a new filtered query*

4. Select “Edit Columns” in the command bar in Advanced Find. Select “Add Columns” to add new columns from the list of fields available on the record type, as shown in Figure 7-9. You can change the record type by using the dropdown list in this screen to change it to a related entity and then use data from a related entity in the view if required. (It will appear blank if the relationship is not populated.)


LIST TOOLS
SAVED VIEWS
Microsoft | Dynamics 365
Sarah Critchley
crmcat
FILE
ADVANCED FIND
Query
Saved Views
Results
New
Save
Save As
Edit Columns
Edit Properties
Clear
Group AND
Group OR
Details
Download Fetch XML
Show
Look for:
Cases
Status
Select
Edit Columns
Case Title
Case Number
Created On
Common Tasks
Custom Controls
Configure Sorting
Add Columns
Change Properties
Remove
OK
Cancel

Edit columns for the saved view. These columns represent the data that will be displayed in the view.

View results are displayed here.

Note: When there are too many columns to fit on a page, the view will be shortened and scrollbars will be added.

Figure 7-9. *Adding columns within Advanced Find*

5. Click “OK” and “OK” again to save your column changes. To save the view, click “Save” on the command bar, and the system will prompt you for a name for the view. Enter a descriptive name and continue to save. This view is now available as a personal view if it was created via the main interface, or as a public view if it was created using the Solution Explorer (“Views”).

Advanced Find also allows you to create more-complex queries using related entities defined in lookups. These relations are linked via a 1:N relationship from the entity specified in the “Look For” dropdown under the heading “Related,” as shown in Figure 7-10. This is especially useful where queries are dependent on related data; e.g., accounts where the primary contact lives in London would be set as “Looking for” the Account entity; however, it would be dependent on the related Contact entity as defined in the “Primary Contact” field on the Account record.

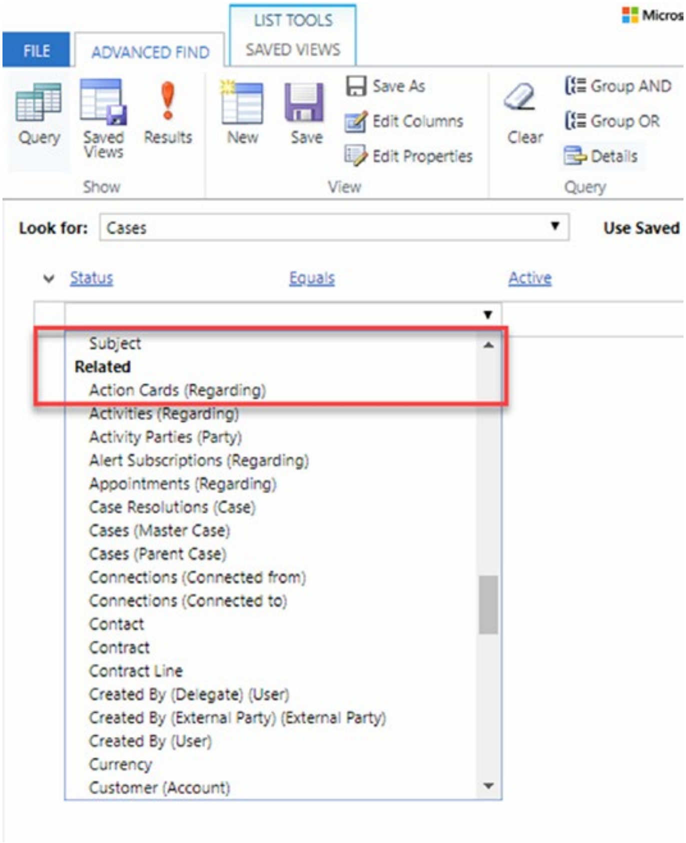
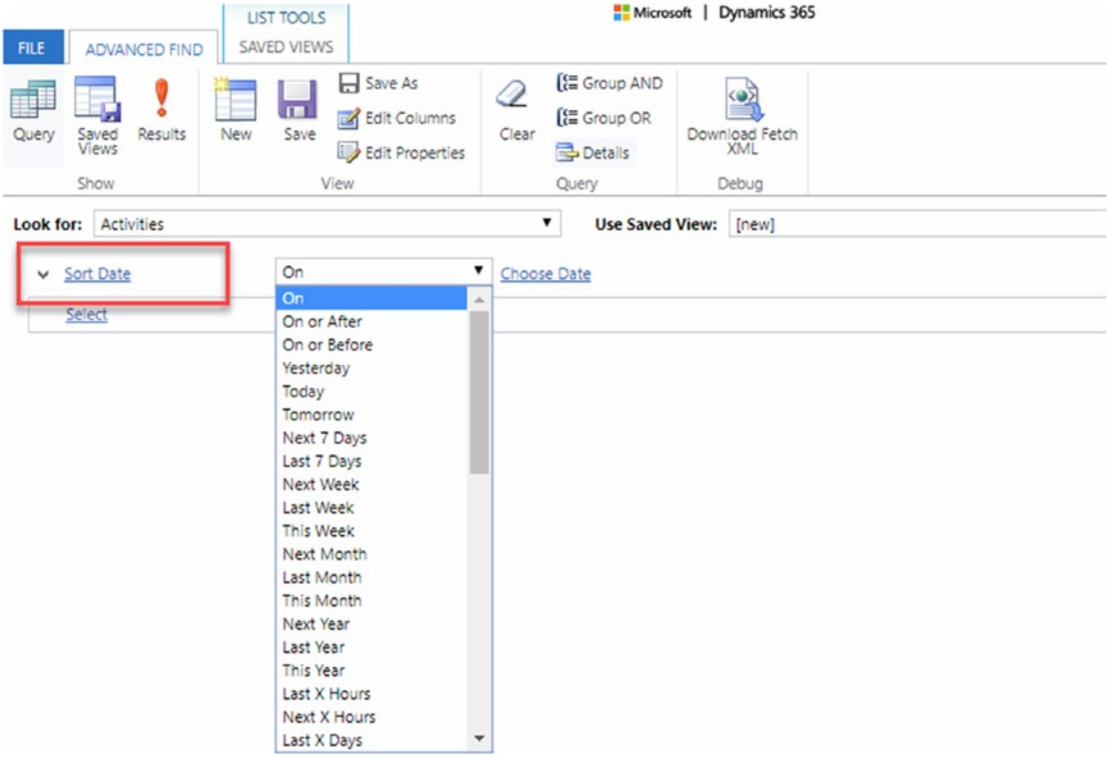

LIST TOOLS
FILE
ADVANCED FIND
SAVED VIEWS
Micros
Query
Saved Views
Results
New
Save
Save As
Edit Columns
Edit Properties
Clear
Group AND
Group OR
Details
Show
View
Query
Look for:
Cases
Use Saved
Status
Equals
Active
Subject
Related
Action Cards (Regarding)
Activities (Regarding)
Activity Parties (Party)
Alert Subscriptions (Regarding)
Appointments (Regarding)
Case Resolutions (Case)
Cases (Master Case)
Cases (Parent Case)
Connections (Connected from)
Connections (Connected to)
Contact
Contract
Contract Line
Created By (Delegate) (User)
Created By (External Party) (External Party)
Created By (User)
Currency
Customer (Account)

Figure 7-10. *Using the “Related” entities from Advanced Find*

Chapter 1 covered activities and discussed using the “Sort Date” to filter on all activities. The “Sort Date” is a special field on the Activity entity that is designed to be populated using customizations (for example, using workflows) so emails, tasks, and other activity types can be populated with the sort date specific to their activity type. The “Sort Date” field provides a single field to sort on within a view, so a priority list can be created at the activity level that includes all Activity-type entities. An example query that uses this field is shown in Figure 7-11; it uses the Activity entity in the “Look For” option and the “Sort Date” in the first line of the query.


LIST TOOLS
SAVED VIEWS
Microsoft | Dynamics 365
FILE
ADVANCED FIND
Query
Saved Views
Results
Show
New
Save
Save As
Edit Columns
Edit Properties
View
Clear
Group AND
Group OR
Details
Query
Download Fetch XML
Debug
Select
Choose Date
On or After
On or Before
Yesterday
Today
Tomorrow
Next 7 Days
Last 7 Days
Next Week
Last Week
This Week
Next Month
Last Month
This Month
Next Year
Last Year
This Year
Last X Hours
Next X Hours
Last X Days

Look for: Activities

Use Saved View: [new]

Sort Date On

Figure 7-11. *Using the “Sort Date”field to filter activities*

There is an alternative to using Advanced Find as a customiser—instead, customisers can use the View Designer feature within the App Designer to create a public view. Personal views must be created using the Classic UI via Advanced Find as of the time of writing. However, it is expected that personal views in the Unified Client will be possible in the October 2018 release. In addition to that, modifications to the Quick Find view need to be completed within the Classic UI and do not appear in the App Designer (other system views do).

Navigate to the App Designer (see Chapter 10 on how to use the App Designer) and click on the "Views" component. From here, you can review the current views and create a new one by selecting "Create New." Views created in this way will be public.

Task: Create a new public view within the App Designer.

1. Open and begin editing an app and select the "Views" component for the Account entity, as shown in Figure 7-12.
2. Click "Create New" on the right-hand pane. The View Designer will open.

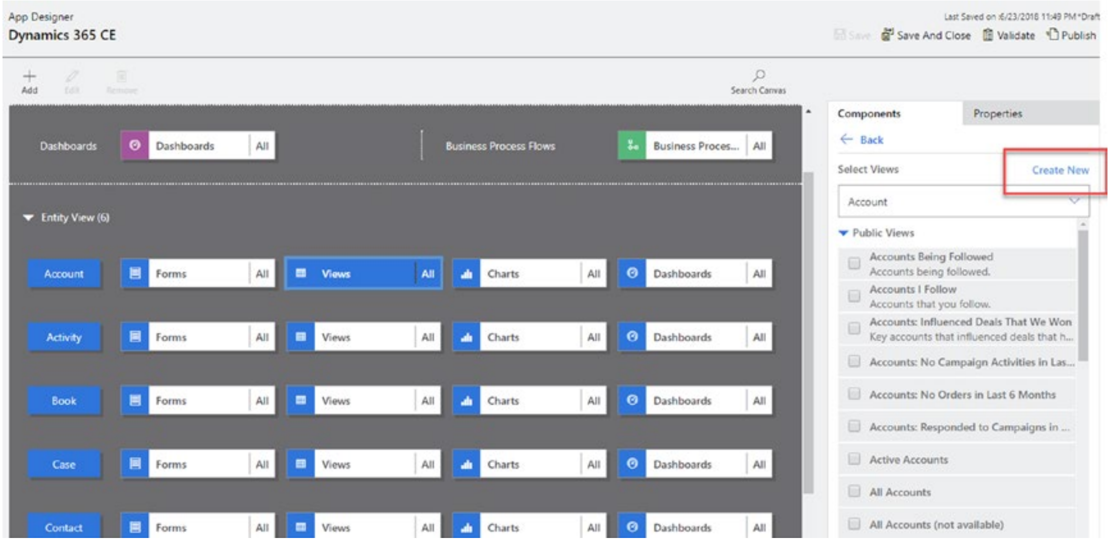
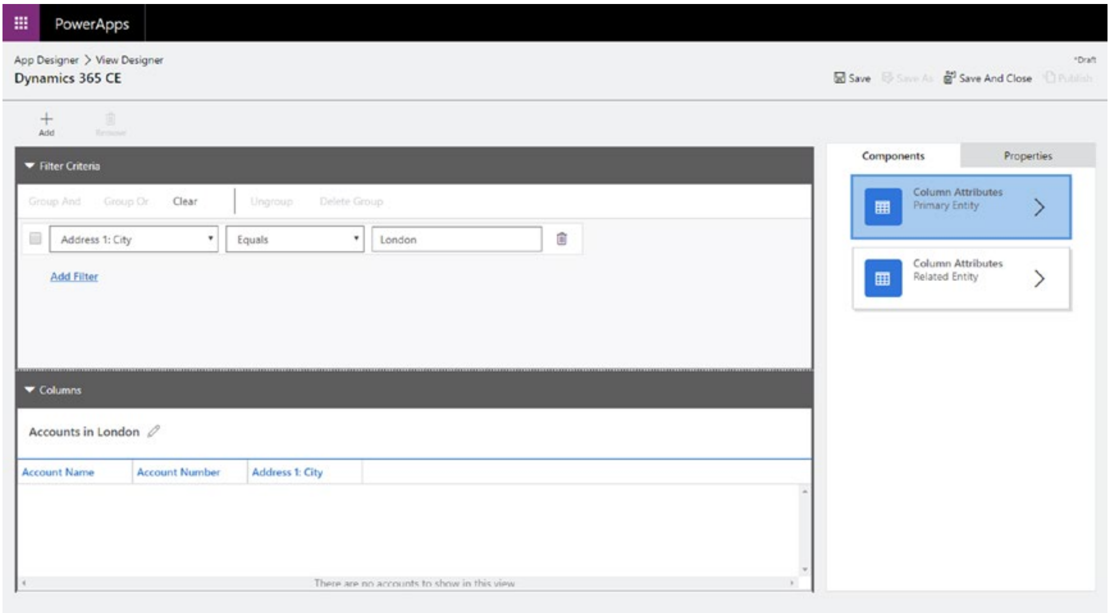

App Designer
Dynamics 365 CE
Last Saved on 6/23/2018 11:49 PM •Draft
Save
Save And Close
Validate
Publish
Add
Edit
Remove
Search Canvas
Dashboards
Dashboards
All
Business Process Flows
Business Proces...
All
Entity View (6)
Account
Activity
Book
Case
Contact
Forms
Views
Charts
Dashboards
All
Components
Properties
Back
Select Views
Create New
Account
Public Views
Accounts Being Followed
Accounts being followed.
Accounts I Follow
Accounts that you follow.
Accounts: Influenced Deals That We Won
Key accounts that influenced deals that h...
Accounts: No Campaign Activities in Las...
Accounts: No Orders in Last 6 Months
Accounts: Responded to Campaigns in ...
Active Accounts
All Accounts
All Accounts (not available)

Figure 7-12. *Creating a new view within the App Designer*

The top pane on the View Designer is the filter criteria (Figure 7-13). Using the filter criteria is the same as creating the filter within Advanced Find and reduces the results of the records found for the user to view.

3. Select "Address 1: City" equals "London." The bottom pane in the View Designer allows the user to change the name of the view and add columns.
4. Click "Column Attributes" on the right-hand side pane and click a field and drag it to the pane. It will stick on the pane.

5. Click “Back” and select “Column Attributes – related entity.” These are fields that can be useful from related entities to display within the view. Do the same and select a field name and drag it into the column. The results of the filter will display in real time within the bottom pane, giving you the opportunity to modify the filter if required.
6. Ensure your view has a name in the bottom pane, or in the “Properties” right-hand side pane, and click “Save” then “Save and Close.”
7. Validate and publish the new view, and it will be available to use.


PowerApps
App Designer > View Designer
Dynamics 365 CE
*Draft
Save
Save As
Save And Close
Publish
Add
Remove
Filter Criteria
Group And
Group Or
Clear
Ungroup
Delete Group
Add Filter
Columns
Components
Properties
Column Attributes
Primary Entity
Column Attributes
Related Entity

Address 1: City | Equals | London

Accounts in London

Account Name	Account Number	Address 1: City

There are no accounts to show in this view

__Figure 7-13.__ View Designer within the App Designer

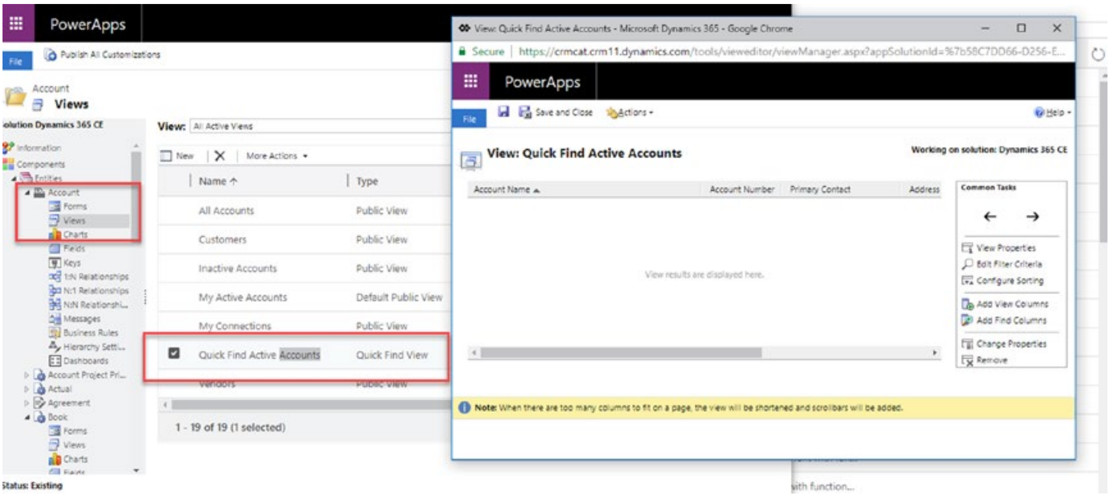
Searching in a View

A Quick Find view is used on views to perform standard searching functionality (the alternative being a relevance search) and is enabled by default. More in-depth detail on Quick Find views can be found in the “Further Reading” section at the end of the chapter. Quick Find View configuration should always be considered in implementations to ensure the find columns (where the search will be performed on) and the view columns (data that will be returned) are correct for the organisation.

When you begin typing in the search box within a view, the columns configured in the Quick Find's "Find" columns are searched for an exact match of the string from beginning to end. A wildcard (*) can be used and added to the search term. The * character can be prefixed, suffixed or both with a search term that then can be searched for within a column and not have to be a direct match from beginning to end. An example of this is that "The Tenth Account" can be found using *Tenth* as the search term. If the wildcards were not used, it would not be found. In addition to that, if the column "Name" was not specified in the Quick Find view, then that column would not be searched.

Task: Configure the Quick Find view for accounts.

1. Navigate to the Solution Explorer and select the Account entity and then "View."
2. Select the Quick Find view. This will open the Quick Find view as in Figure 7-14.


PowerApps
File
Publish All Customizations
Account
Views
olution Dynamics 365 CE
Information
Components
Entities
Account
Forms
Views
Charts
Fields
Keys
1:N Relationships
N:1 Relationships
N:N Relationshi...
Messages
Business Rules
Hierarchy Setti...
Dashboards
Account Project Pri...
Actual
Agreement
Book
Forms
Views
Charts
Fields
Status: Existing
View: All Active Views
New
More Actions
View: Quick Find Active Accounts - Microsoft Dynamics 365 - Google Chrome
Secure
https://crmcat.crm11.dynamics.com/tools/vieweditor/viewManager.aspx?appSolutionId=%7b58C7DD66-D256-E...
PowerApps
File
Save and Close
Actions
Help
View: Quick Find Active Accounts
Working on solution: Dynamics 365 CE
Account Name
Account Number
Primary Contact
Address
View results are displayed here.
Common Tasks
View Properties
Edit Filter Criteria
Configure Sorting
Add View Columns
Add Find Columns
Change Properties
Remove
ith function...

	Name ↑	Type
	All Accounts	Public View
	Customers	Public View
	Inactive Accounts	Public View
	My Active Accounts	Default Public View
	My Connections	Public View
☑	Quick Find Active Accounts	Quick Find View
	Vendors	Public View

1 - 19 of 19 (1 selected)

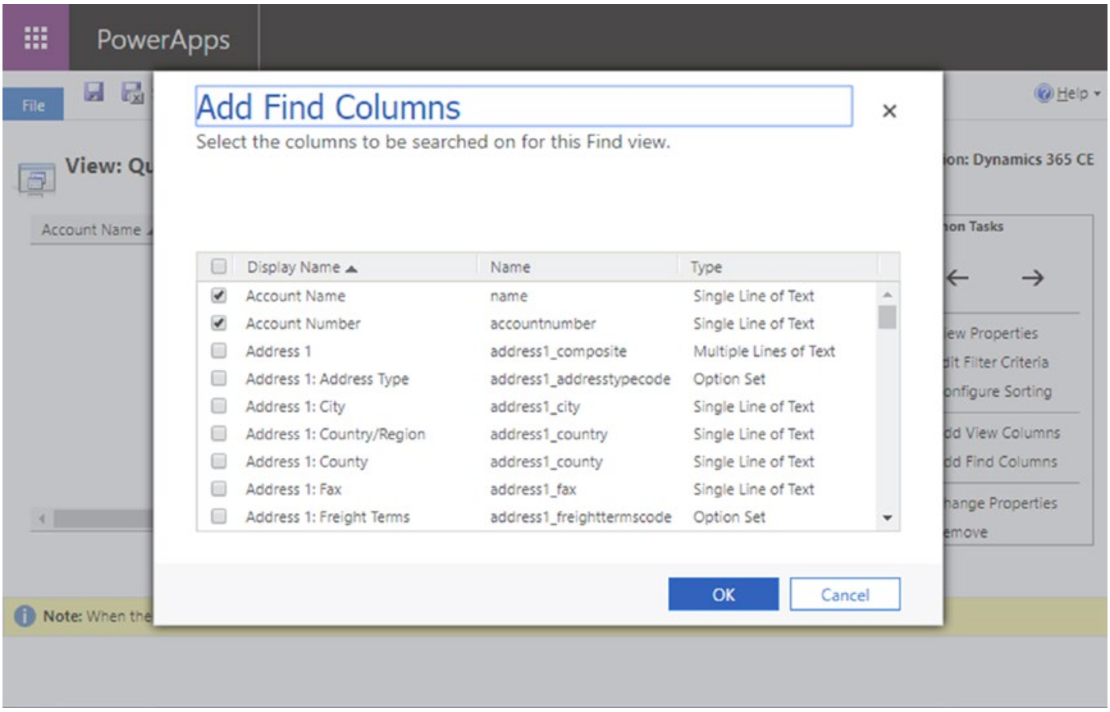
Note: When there are too many columns to fit on a page, the view will be shortened and scrollbars will be added.

Figure 7-14. *Quick Find view within the Solution Explorer*

3. Edit the columns returned by the search by selecting "Add View Columns" to modify the result of the search and the columns being brought back to the user. This can be done by selecting the columns required and clicking "OK." Do the same thing for the find columns, which will modify the columns the search term is matched with. Click "Add Find Columns" and add some new columns to be reviewed against the search term (Figure 7-15).

4. Click the OK button and then click "Save and Close" and "Publish All Customizations."

5. Navigate to the entity and start using the search functionality to see the columns added to the view columns being output in the results of the search.


PowerApps
File
Help
View: Qu
Account Name
ion: Dynamics 365 CE
ion Tasks
iew Properties
dit Filter Criteria
onfigure Sorting
dd View Columns
dd Find Columns
hange Properties
emove
Note: When the
OK
Cancel

Add Find Columns

Select the columns to be searched on for this Find view.

☐	Display Name ▲	Name	Type
☑	Account Name	name	Single Line of Text
☑	Account Number	accountnumber	Single Line of Text
☐	Address 1	address1_composite	Multiple Lines of Text
☐	Address 1: Address Type	address1_addresstypecode	Option Set
☐	Address 1: City	address1_city	Single Line of Text
☐	Address 1: Country/Region	address1_country	Single Line of Text
☐	Address 1: County	address1_county	Single Line of Text
☐	Address 1: Fax	address1_fax	Single Line of Text
☐	Address 1: Freight Terms	address1_freighttermscode	Option Set

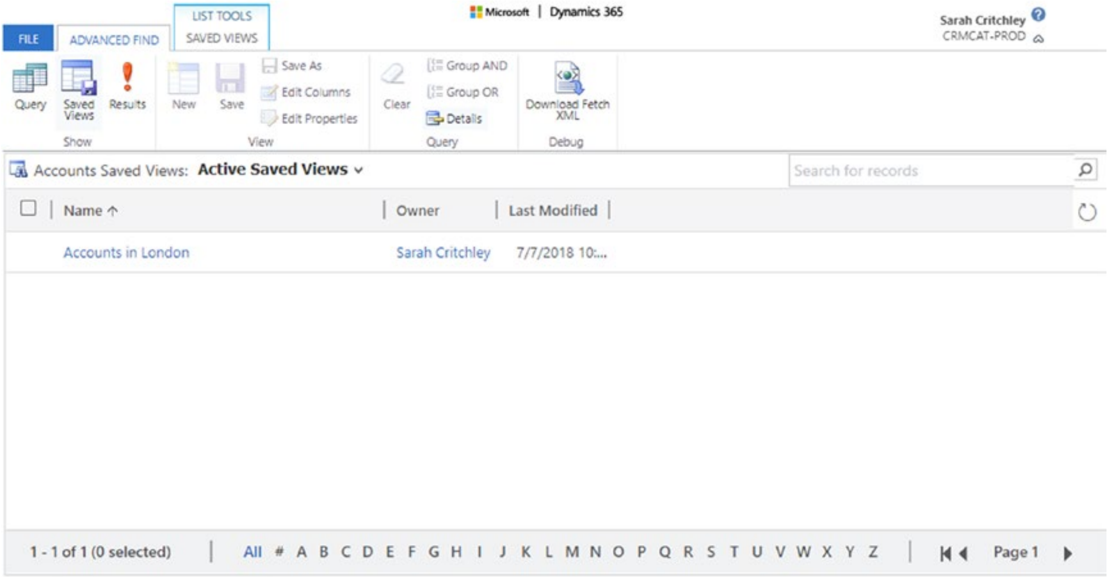
Figure 7-15. *Add find columns within a Quick Find view*

Managing Views

Views are managed by the system administrators and customizers who own the public and system views. Views are managed and edited via the App Designer or Solution Explorer. Users who create personal views via the Classic UI can also manage these views using Advanced Find. Users can edit their personal views (which appear alongside public views) by selecting and performing various operations on them, such as Delete, Assign, or Share.

Task: Review operations available on views.

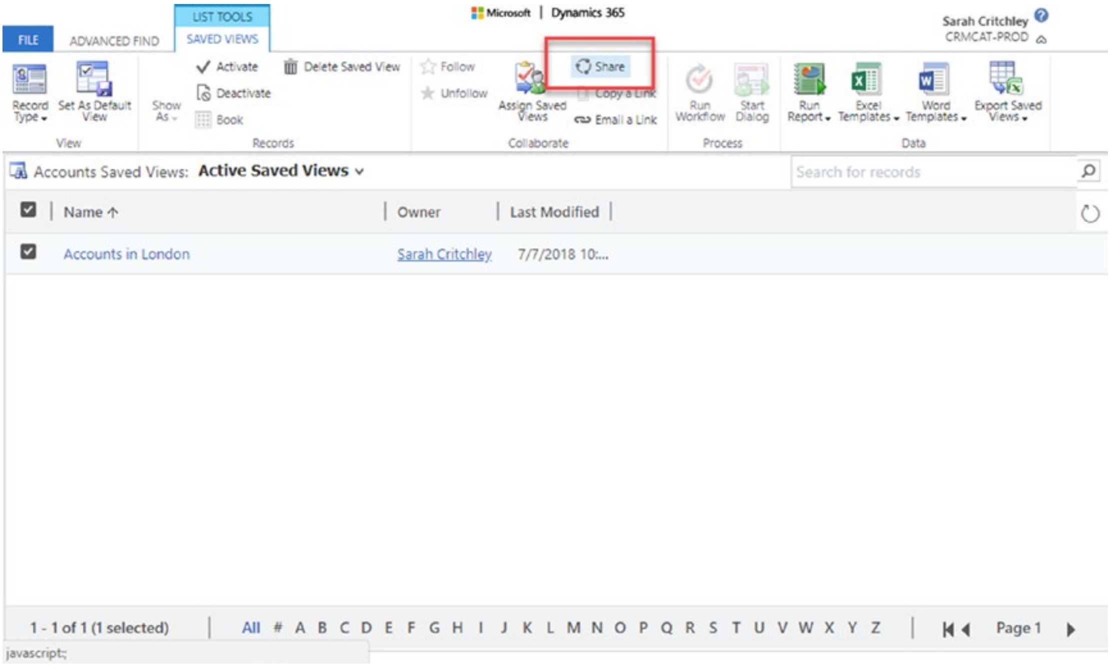
1. Open the Advanced Find tab in the Classic UI and create a simple personal view using Accounts and setting the field “Address: City” to “London” (Figure 7-16).
2. Click “Save As” on the ribbon, name the view, and save it.
3. Select “Saved Views” on the ribbon for the view to appear.
4. Select the view just created and select the Saved View tab at the top of the screen.


LIST TOOLS
SAVED VIEWS
FILE
ADVANCED FIND
Microsoft | Dynamics 365
Sarah Critchley
CRMCAT-PROD
Query
Saved Views
Results
Show
New
Save
Save As
Edit Columns
Edit Properties
View
Clear
Group AND
Group OR
Details
Query
Download Fetch XML
Debug
Accounts Saved Views: Active Saved Views
Search for records
Name
Owner
Last Modified
1 - 1 of 1 (0 selected)
All # A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
Page 1

Name	Owner	Last Modified
Accounts in London	Sarah Critchley	7/7/2018 10:...

Figure 7-16. *Saved personal views can be managed within Advanced Find tab*

Various operations are now available, including Delete and Share. The sharing functionality is the same as sharing a record, which was covered in Chapter 4. The sharing functionality can be seen in Figure 7-17.


Microsoft | Dynamics 365
Sarah Critchley
CRMCAT-PROD
FILE
ADVANCED FIND
LIST TOOLS
SAVED VIEWS
Record Type
Set As Default View
View
Show As
Activate
Deactivate
Book
Delete Saved View
Records
Follow
Unfollow
Assign Saved Views
Share
Copy a Link
Email a Link
Collaborate
Run Workflow
Start Dialog
Process
Run Report
Excel Templates
Word Templates
Export Saved Views
Data
Accounts Saved Views: Active Saved Views
Search for records
1 - 1 of 1 (1 selected)
All # A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
Page 1
javascript;

☑	Name ↑	Owner	Last Modified
☑	Accounts in London	Sarah Critchley	7/7/2018 10:...

Figure 7-17. Use the ribbon to perform various operations on selected saved views, including Delete or Share

Editable Grids in Views

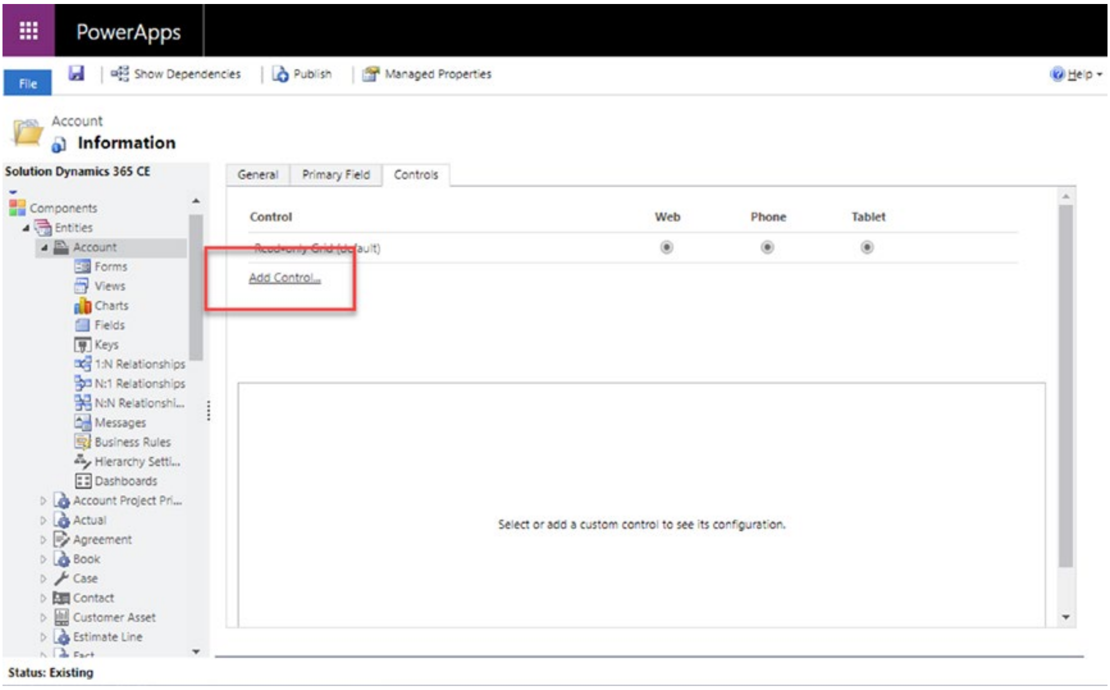
System and personal views have additional functionality to allow users to edit the records within the grid using the editable grid feature. Dynamics 365 CE as standard does not allow users to modify data in line within a view, and it is not until this feature is turned on that this is possible. Editable grids allow for quicker data entry and modification. This is added using the control framework, which is covered in more detail within Chapter 10.

Editable grids require a customizer to set up the editable grid control and modify its properties, including its available view, grouping amendments, and the lookup configurations on the available views.

Task: Add an editable grid to the Account entity.

1. Navigate to the Solution Explorer and select the Accounts entity, ensuring the name "Account" is selected and you are on the Entity Configuration screen.

2. Select the Controls tab as shown in Figure 7-18.


PowerApps
File
Show Dependencies
Publish
Managed Properties
Help
Account
Information
Solution Dynamics 365 CE
Components
Entities
Account
Forms
Views
Charts
Fields
Keys
1:N Relationships
N:1 Relationships
N:N Relationshi...
Messages
Business Rules
Hierarchy Setti...
Dashboards
Account Project Pri...
Actual
Agreement
Book
Case
Contact
Customer Asset
Estimate Line
General
Primary Field
Controls
Control
Web
Phone
Tablet
Read-only Grid (default)
Add Control...
Status: Existing

Select or add a custom control to see its configuration.

Figure 7-18. *Navigate to the Solution Explorer and click Controls tab to add a new control to the entity*

3. Select “Add Control.” On the configuration page, scroll down and select “Editable Grid” making it available for web (Figure 7-19).

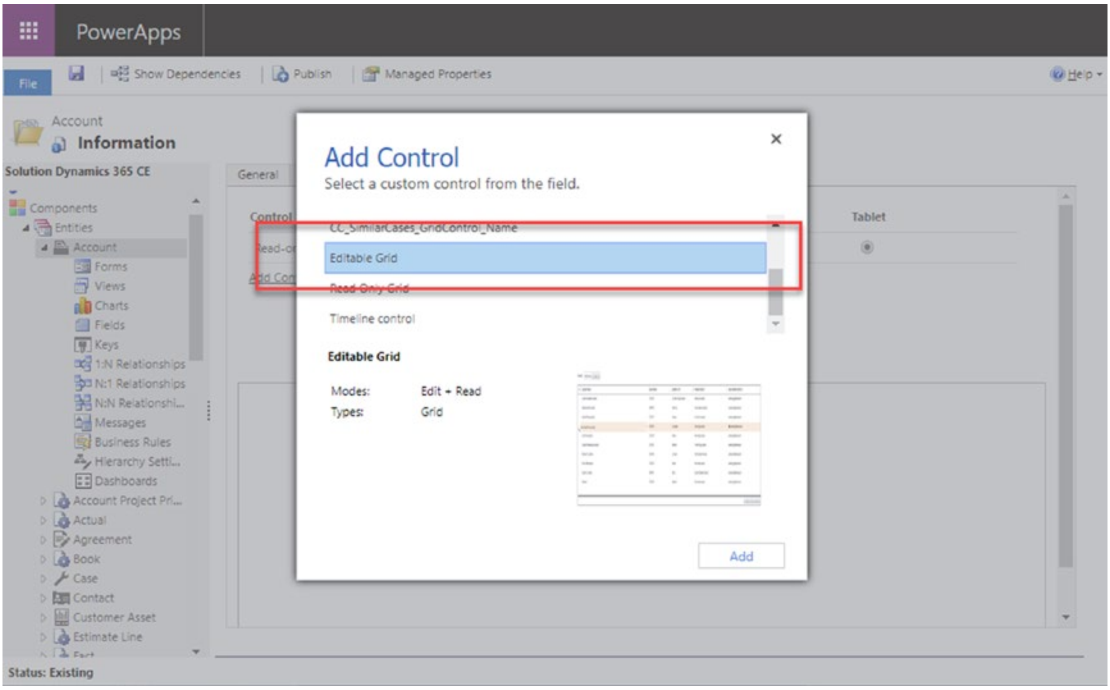
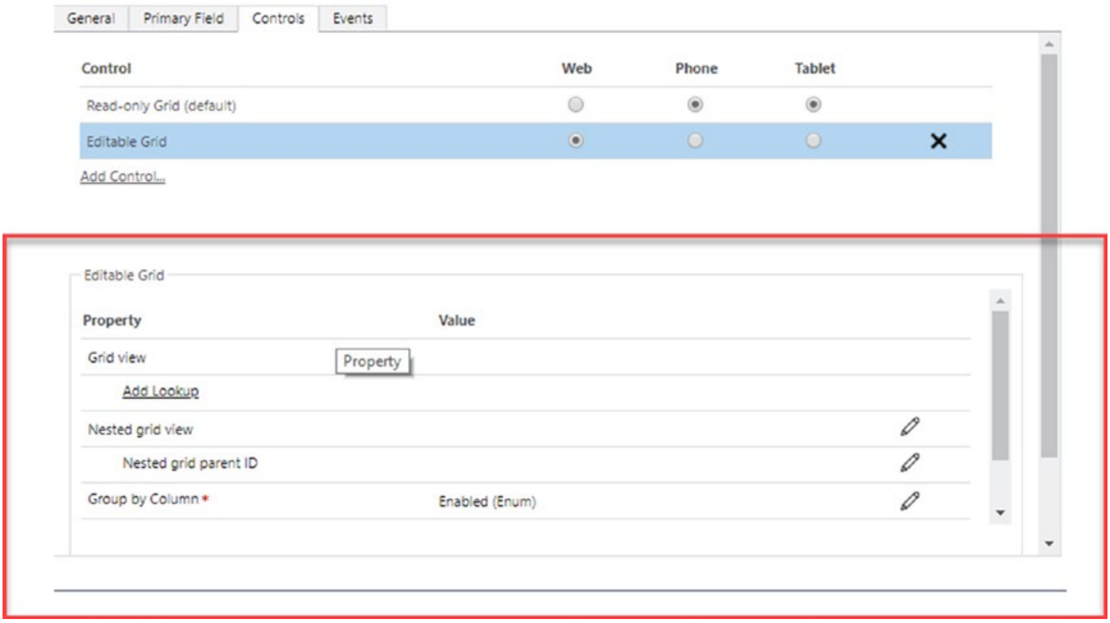

PowerApps
File
Show Dependencies
Publish
Managed Properties
Help
Account
Information
Solution Dynamics 365 CE
Components
Entities
Account
Forms
Views
Charts
Fields
Keys
1:N Relationships
N:1 Relationships
N:N Relationshi...
Messages
Business Rules
Hierarchy Setti...
Dashboards
Account Project Pri...
Actual
Agreement
Book
Case
Contact
Customer Asset
Estimate Line
Status: Existing
General
Control
Tablet
Add Control
Select a custom control from the field.
CC_SimilarCases_GridControl_Name
Editable Grid
Read-Only Grid
Timeline control
Editable Grid
Modes: Edit + Read
Types: Grid
Add

Figure 7-19. *Click "Editable Grid" on the Add Control window*

There is additional configuration required that manages lookups and grouping, highlighted in Figure 7-20.

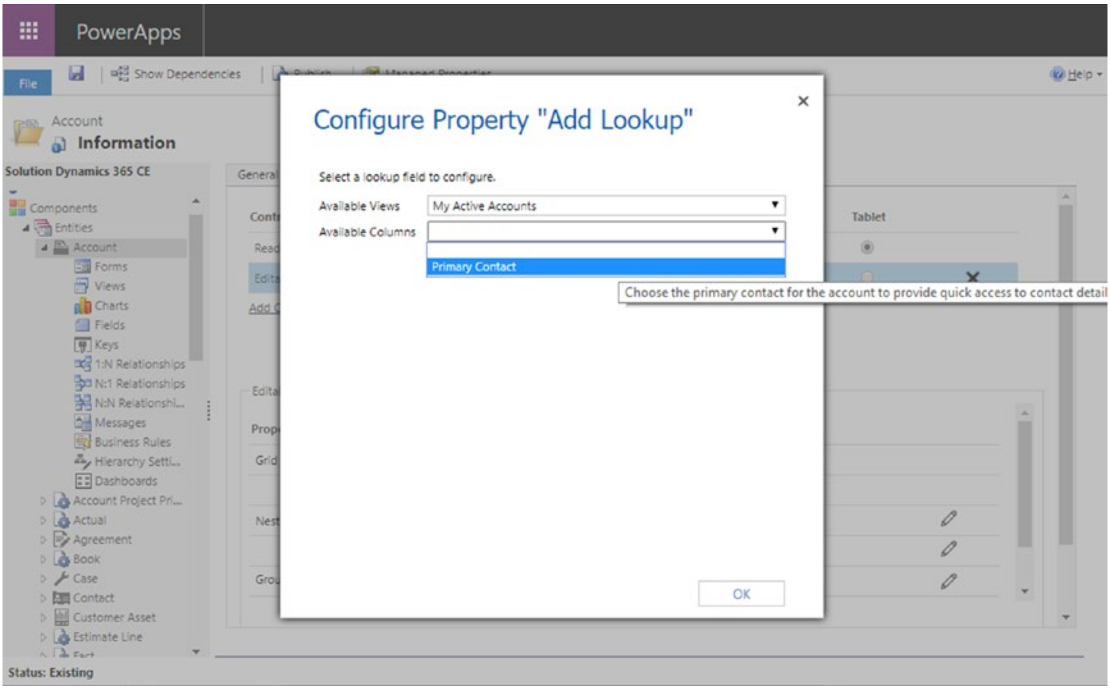


Control	Web	Phone	Tablet	
Read-only Grid (default)	○	●	●	
Editable Grid	●	○	○	✕

Property	Value
Grid view	
Nested grid view	
Nested grid parent ID	
Group by Column *	Enabled (Enum)

Figure 7-20. *Adding lookup fields within the editable grid so they can be used*

4. Select "Add Lookup" on the Grid View property. Select the My Active Accounts view, and then the single lookup column in that view will appear. (If there were more than one lookup type field, they would appear here.) This control allows users to configure lookup-type fields so they are editable within the view configured (Figure 7-21). Select the default view as the only one available ("Contacts Lookup View"). See Figure 7-22. This needs to be configured as a lookup field is configured with a view of records on a form so a user can select from a sub-set of records, the same thing needs to occur on a view.



Configure Property "Add Lookup"

Select a lookup field to configure.

Available Views: My Active Accounts

Available Columns:

Primary Contact

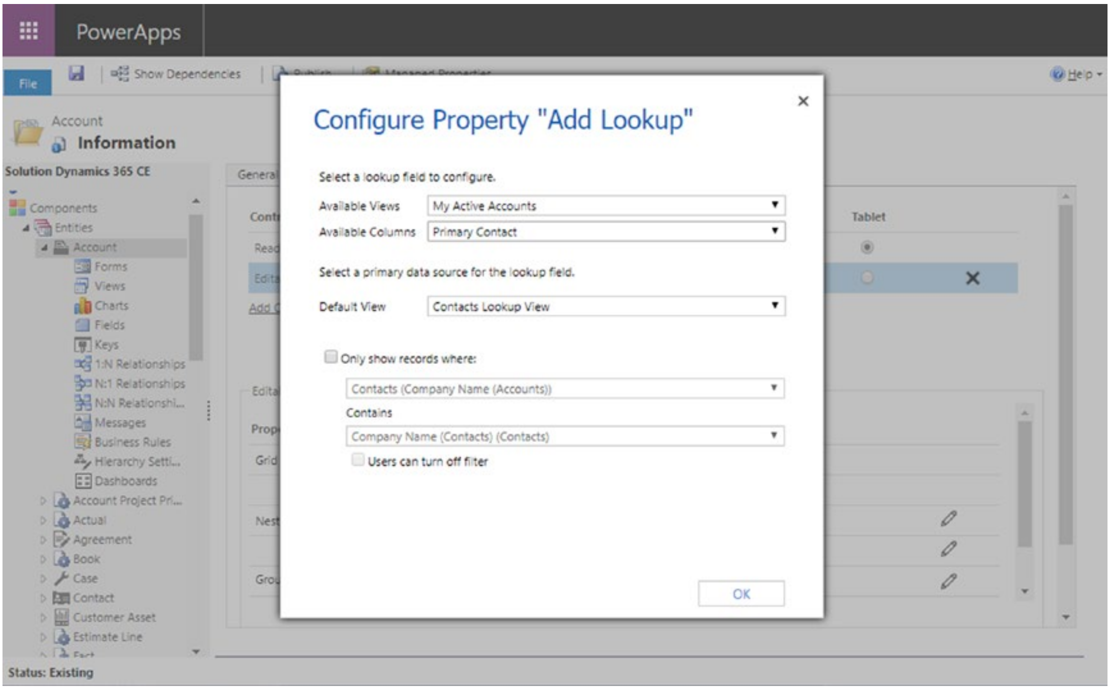
Choose the primary contact for the account to provide quick access to contact detail

PowerApps
File
Show Dependencies
Help
Account
Information
Solution Dynamics 365 CE
Components
Entities
Account
Forms
Views
Charts
Fields
Keys
1:N Relationships
N:1 Relationships
N:N Relationshi...
Messages
Business Rules
Hierarchy Setti...
Dashboards
Account Project Pri...
Actual
Agreement
Book
Case
Contact
Customer Asset
Estimate Line
Tablet
OK
Status: Existing

Figure 7-21. Configuring the lookup fields for the specific views

5. Within the configuration, there is also the functionality to group by column. This can be switched off or enabled. This can be left for now and kept on, allowing the user to group the records by column.

6. Save the changes by selecting the Save button and click “Publish” in the Solution Explorer.


PowerApps
File
Show Dependencies
Help
Account
Information
Solution Dynamics 365 CE
Components
Entities
Account
Forms
Views
Charts
Fields
Keys
1:N Relationships
N:1 Relationships
N:N Relationshi...
Messages
Business Rules
Hierarchy Setti...
Dashboards
Account Project Pri...
Actual
Agreement
Book
Case
Contact
Customer Asset
Estimate Line
Status: Existing
Tablet

Configure Property "Add Lookup"

Select a lookup field to configure.

Available Views: My Active Accounts

Available Columns: Primary Contact

Select a primary data source for the lookup field.

Default View: Contacts Lookup View

☐ Only show records where:

Contacts (Company Name (Accounts))

Contains

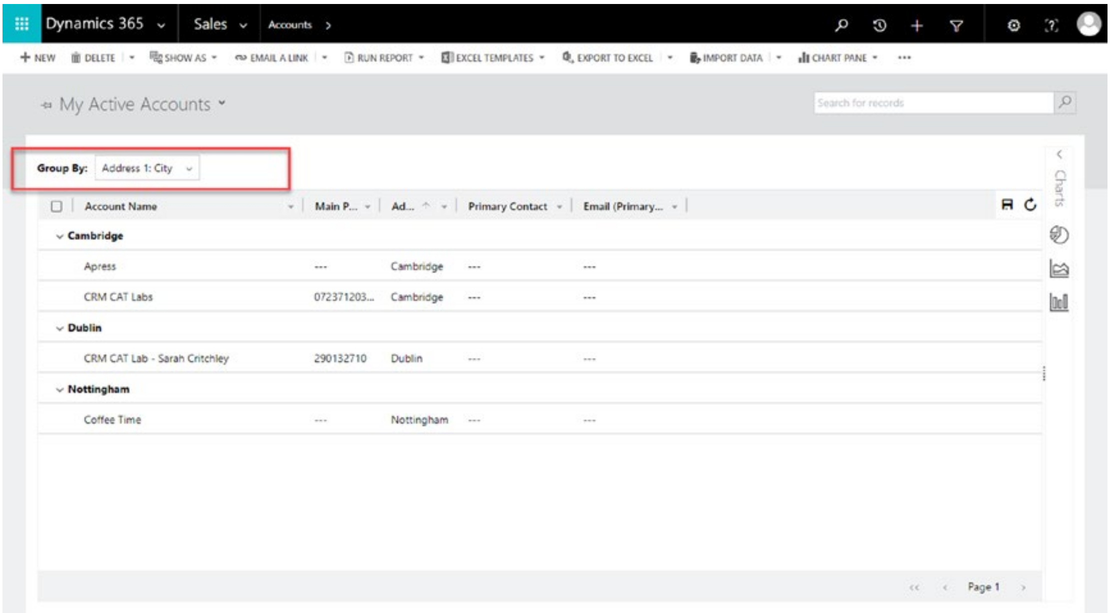
Company Name (Contacts) (Contacts)

☐ Users can turn off filter

OK

Figure 7-22. *Changing the default view for the lookup*

Once published, refresh the application and navigate to the Classic UI to see the new editable grid on the Accounts view. The user interface is different than standard; notice how the columns can now be edited in line without you having to navigate to the record itself. Grouping can also occur within the view of the fields available in the columns. Business rules, discussed in the “Processes” chapter, also run within an editable grid view as all of the fields are present in the view (Figure 7-23).

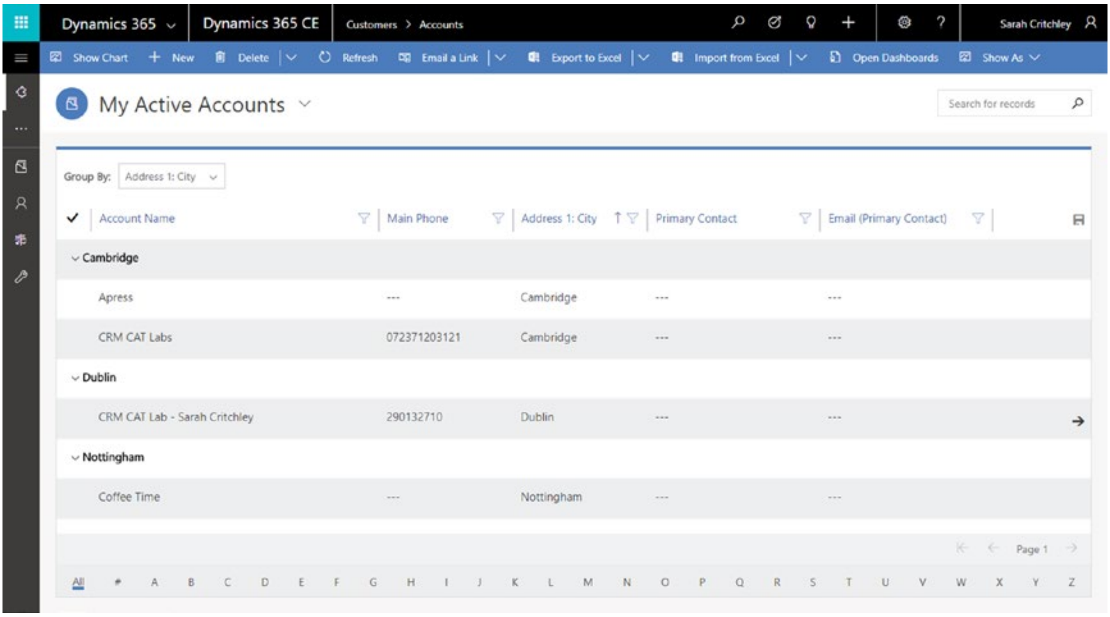

Dynamics 365
Sales
Accounts
NEW
DELETE
SHOW AS
EMAIL A LINK
RUN REPORT
EXCEL TEMPLATES
EXPORT TO EXCEL
IMPORT DATA
CHART PANE
My Active Accounts
Search for records
Charts
Page 1

Group By: Address 1: City

Account Name	Main P...	Ad...	Primary Contact	Email (Primary...
Cambridge				
Apress	---	Cambridge	---	---
CRM CAT Labs	072371203...	Cambridge	---	---
Dublin				
CRM CAT Lab - Sarah Critchley	290132710	Dublin	---	---
Nottingham				
Coffee Time	---	Nottingham	---	---

Figure 7-23. *Editable grid and grouping available on the Accounts view*

Editable grids are available in both the Classic UI and the Unified Interface. The same functionality is presented to the user with the same features across both interfaces, as seen in Figure 7-24.


Dynamics 365
Dynamics 365 CE
Customers > Accounts
Sarah Critchley
Show Chart
New
Delete
Refresh
Email a Link
Export to Excel
Import from Excel
Open Dashboards
Show As
My Active Accounts
Search for records
Group By: Address 1: City
Page 1
All # A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

Account Name	Main Phone	Address 1: City	Primary Contact	Email (Primary Contact)
Cambridge				
Apress	---	Cambridge	---	---
CRM CAT Labs	072371203121	Cambridge	---	---
Dublin				
CRM CAT Lab - Sarah Critchley	290132710	Dublin	---	---
Nottingham				
Coffee Time	---	Nottingham	---	---

Figure 7-24. *The editable grid within the Unified Interface provides the same features as the Classic UI*

Charts

Dynamics 365 CE allows for visualizations to be made that are based on a record type and a related view, creating a visual representation of a list based on the filtered information. This chart can be displayed while on the list view for the entity, embedded into a form, or seen from within dashboards. Charts can be created within the App Designer or the Solution Explorer, or personal charts can be created within the Classic UI (soon to be available within the Unified Interface in the October 2018 release).

Charts have two types, as follows:

- **System:** A system chart is created in the same way as system views, which is by customizers via Solution Explorer or the App Designer.
- **Personal:** Personal charts are created via the Classic UI in the Chart Designer available from the Chart pane (Figure 7-25).

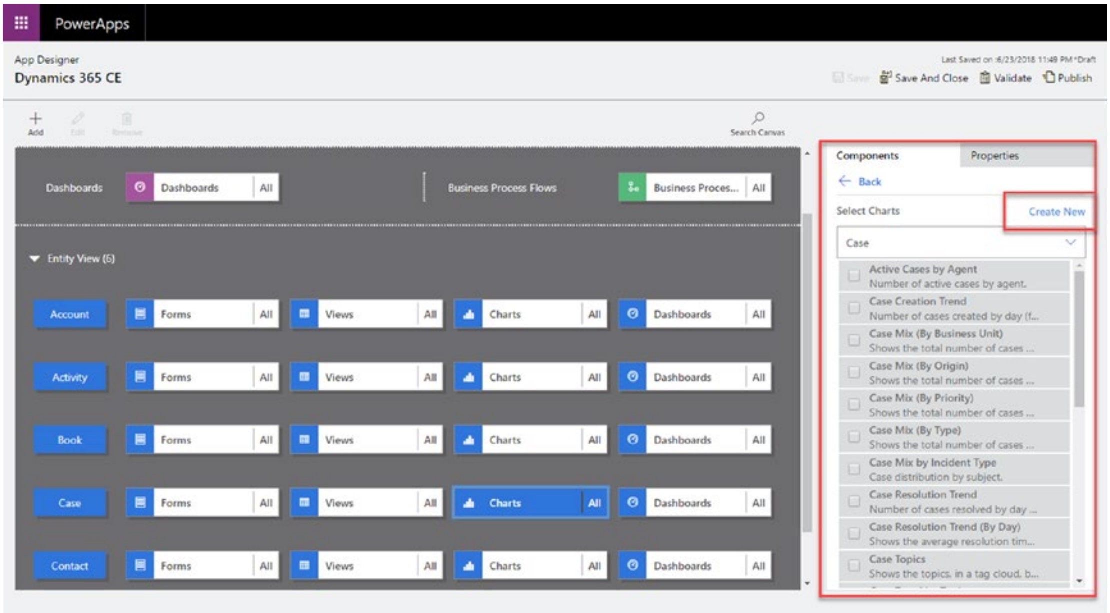
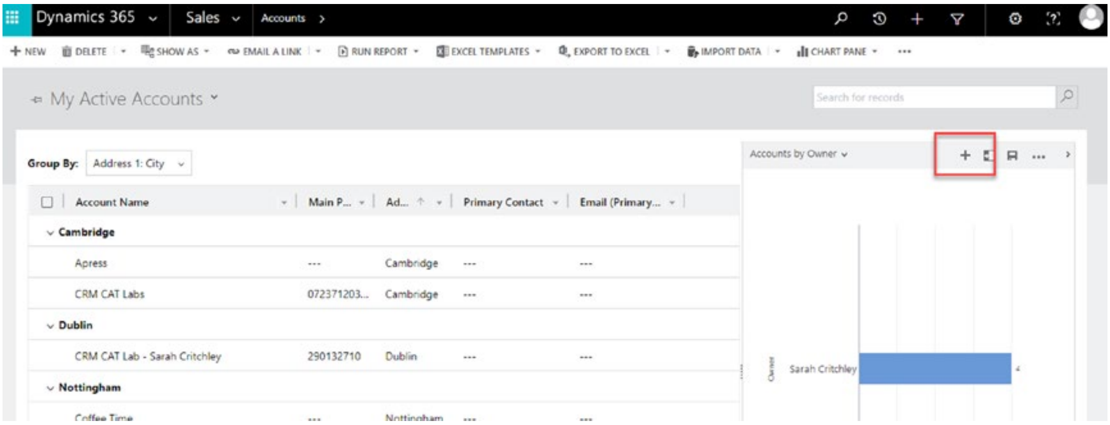

PowerApps
App Designer
Dynamics 365 CE
Last Saved on 6/23/2018 11:49 PM *Draft
Save
Save And Close
Validate
Publish
Add
Edit
Remove
Search Canvas
Dashboards
Dashboards
All
Business Process Flows
Business Proces...
All
Entity View (6)
Account
Activity
Book
Case
Contact
Forms
Views
Charts
Dashboards
All
Components
Properties
Back
Select Charts
Create New
Case
Active Cases by Agent
Number of active cases by agent.
Case Creation Trend
Number of cases created by day (f...
Case Mix (By Business Unit)
Shows the total number of cases ...
Case Mix (By Origin)
Shows the total number of cases ...
Case Mix (By Priority)
Shows the total number of cases ...
Case Mix (By Type)
Shows the total number of cases ...
Case Mix by Incident Type
Case distribution by subject.
Case Resolution Trend
Number of cases resolved by day ...
Case Resolution Trend (By Day)
Shows the average resolution tim...
Case Topics
Shows the topics, in a tag cloud, b...

Figure 7-25. *Charts within the App Designer can be created when the "Chart" component is selected*

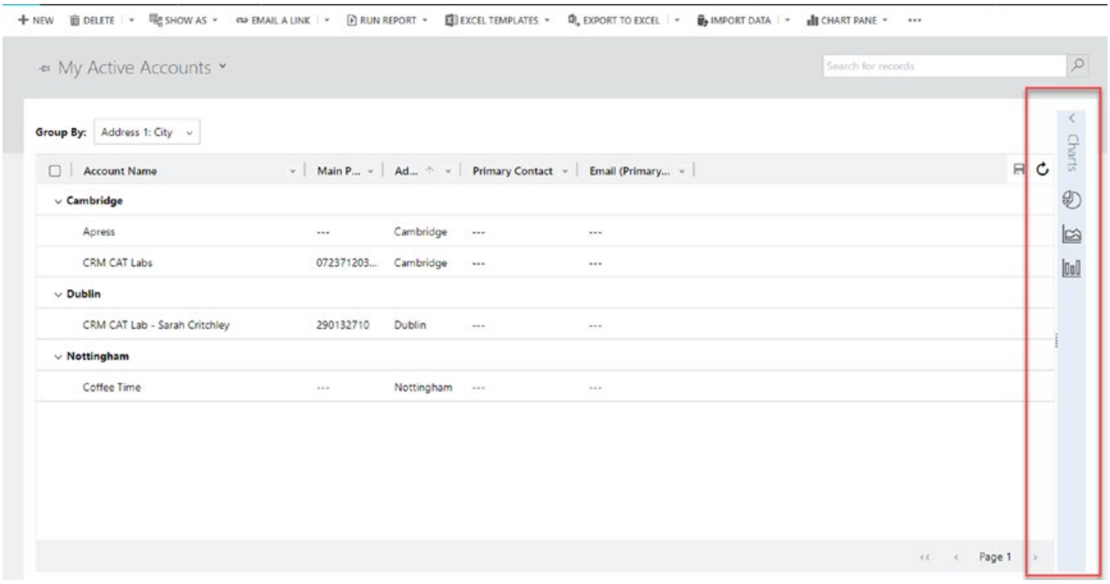
Charts can be created from the Chart pane within the Classic UI, as seen on the right-hand side of the screen while on a view, as seen in Figure 7-27.

Like views, more than one chart can be created per record type, and a dropdown list of available system and personal charts is available from the chart selector (Figure 7-26).


Dynamics 365
Sales
Accounts
NEW
DELETE
SHOW AS
EMAIL A LINK
RUN REPORT
EXCEL TEMPLATES
EXPORT TO EXCEL
IMPORT DATA
CHART PANE
My Active Accounts
Search for records
Group By:
Address 1: City
Accounts by Owner
Owner
Sarah Critchley
4

Account Name	Main P...	Ad...	Primary Contact	Email (Primary...
Cambridge				
Apress	---	Cambridge	---	---
CRM CAT Labs	072371203...	Cambridge	---	---
Dublin				
CRM CAT Lab - Sarah Critchley	290132710	Dublin	---	---
Nottingham				
Coffee Time	---	Nottingham	---	---

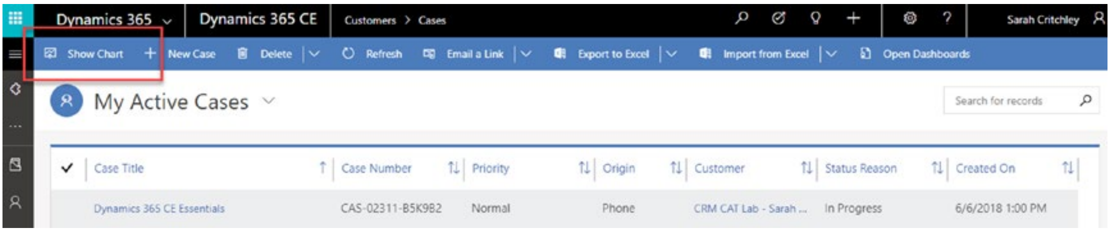
Figure 7-26. *Charts can be created within the Chart pane in the Classic UI by expanding the pane and selecting the plus icon*


+ NEW
DELETE
SHOW AS
EMAIL A LINK
RUN REPORT
EXCEL TEMPLATES
EXPORT TO EXCEL
IMPORT DATA
CHART PANE
My Active Accounts
Search for records
Group By: Address 1: City
Charts
Page 1

Account Name	Main P...	Ad...	Primary Contact	Email (Primary...
Cambridge				
Apress	---	Cambridge	---	---
CRM CAT Labs	072371203...	Cambridge	---	---
Dublin				
CRM CAT Lab - Sarah Critchley	290132710	Dublin	---	---
Nottingham				
Coffee Time	---	Nottingham	---	---

***Figure 7-27.** Chart pane within the Classic UI sits on the far-right side of the screen*

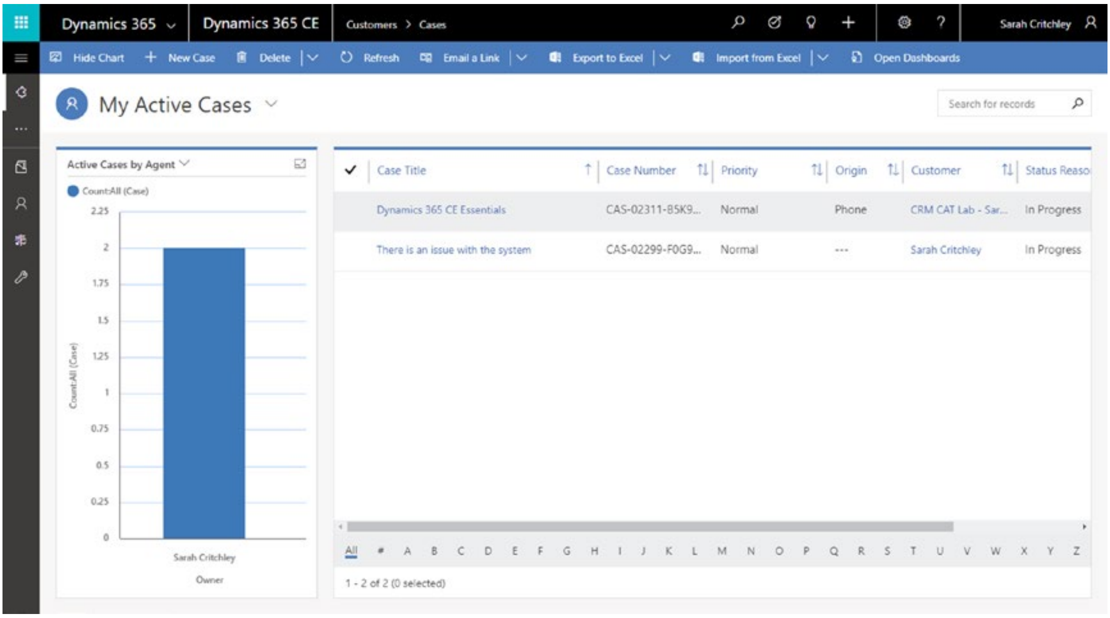
Charts can be accessed from the Unified Interface by selecting “Show Chart,” on the view screen, shown in Figure 7-28.


Dynamics 365
Dynamics 365 CE
Customers > Cases
Sarah Critchley
Show Chart
+ New Case
Delete
Refresh
Email a Link
Export to Excel
Import from Excel
Open Dashboards
My Active Cases
Search for records

Case Title	Case Number	Priority	Origin	Customer	Status Reason	Created On
Dynamics 365 CE Essentials	CAS-02311-B5K9B2	Normal	Phone	CRM CAT Lab - Sarah ...	In Progress	6/6/2018 1:00 PM

***Figure 7-28.** In the Unified Interface, click a view and then “Show Chart” to see charts*

The Chart pane appears and a user can select from the dropdown list of available charts for that record type (Figure 7-29). At the time of writing, new charts cannot be made from the Unified Interface; however, this functionality is expected in the October 2018 release.

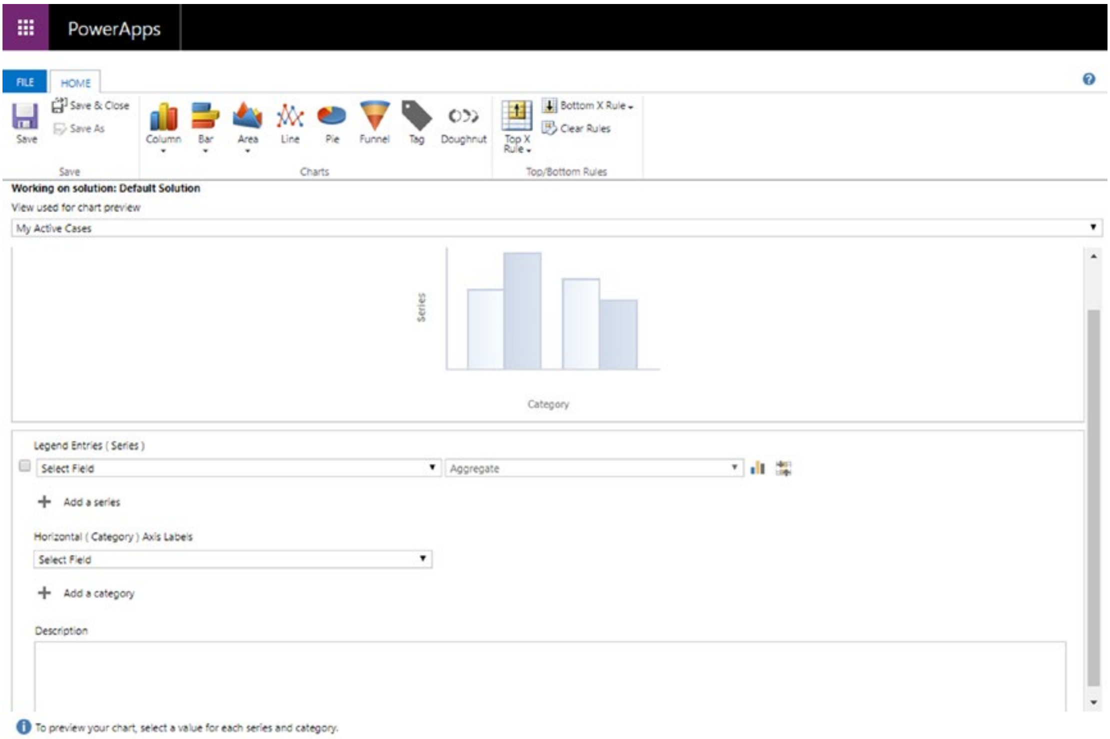

Dynamics 365
Dynamics 365 CE
Customers > Cases
Sarah Critchley
Hide Chart
New Case
Delete
Refresh
Email a Link
Export to Excel
Import from Excel
Open Dashboards
My Active Cases
Search for records
Active Cases by Agent
Count:All (Case)
2.25
2
1.75
1.5
1.25
1
0.75
0.5
0.25
0
Count:All (Case)
Sarah Critchley
Owner
All # A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
1 - 2 of 2 (0 selected)

Case Title	Case Number	Priority	Origin	Customer	Status Reaso
Dynamics 365 CE Essentials	CAS-02311-B5K9...	Normal	Phone	CRM CAT Lab - Sar...	In Progress
There is an issue with the system	CAS-02299-F0G9...	Normal	---	Sarah Critchley	In Progress

Figure 7-29. *Chart visible on a view within the Unified Interface*

Charts are built using the Chart Designer in Dynamics 365 CE for both system and public charts. The Chart Designer can be seen in Figure 7-30. The type of chart is selected from the ribbon bar.

Note Tag and Doughnut type charts are only available to display within the Unified Interface and will not display within the Classic UI.


PowerApps
FILE
HOME
Save
Save & Close
Save As
Save
Column
Bar
Area
Line
Pie
Funnel
Tag
Doughnut
Charts
Top X Rule
Bottom X Rule
Clear Rules
Top/Bottom Rules
Series
Category
Legend Entries (Series)
Select Field
Aggregate
Add a series
Horizontal (Category) Axis Labels
Select Field
Add a category
Description

Working on solution: Default Solution

View used for chart preview: My Active Cases

To preview your chart, select a value for each series and category.

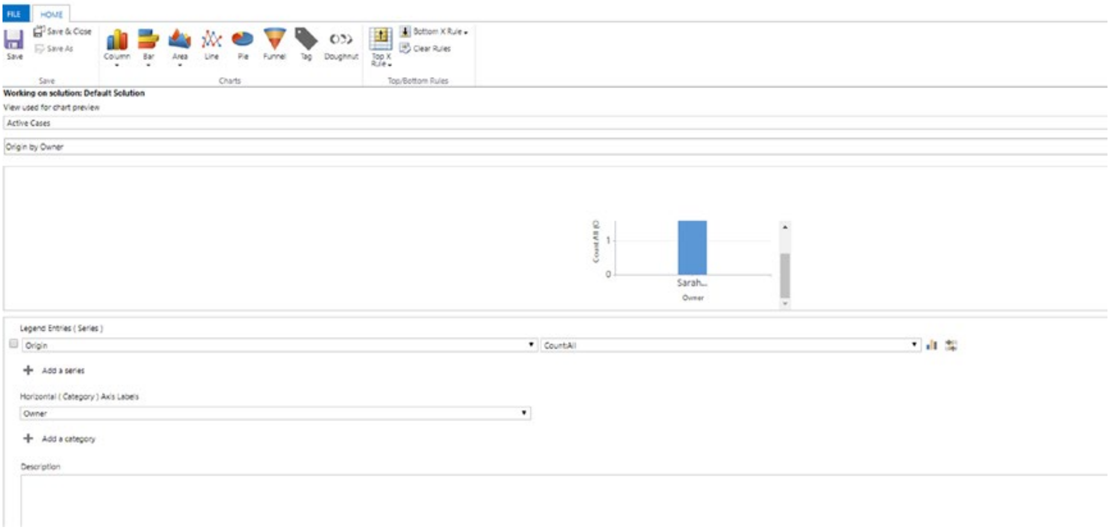
Figure 7-30. Chart Designer

The controls on the ribbon also allow for you to specify the "Top" and "Bottom" rules of a chart. This feature filters the results of a chart such that only the top or bottom 5, 3, or N number of records are used.

Task: Create a new chart.

1. Navigate to the App Designer or Solution Explorer and select "New Chart."
2. Name the chart (or leave it blank to be auto-populated by the fields used).
3. Select the view to be used by default and for preview purposes.
4. Add the legend or series for the vertical axis. This is normally a numerical type field, so it can perform an aggregate function. If a non-numerical type field is used, only the functions "Count: All" or "Count: Non-Empty" are available. Use the "On Hold Time" in the Account entity as an example. This is a numerical field that can perform the "Sum" aggregation shown in Figure 7-31.

5. Add the category for the horizontal axis. This will be the cross-relationship based on the series selected in the previous step; e.g., “On Hold Time” by “Modified On” date would display the sum of the total hold time cross-referenced by the Modified On date by month. This could potentially indicate spikes where accounts have had excessive amounts of hold time, in months.


FILE
HOME
Save
Save & Close
Save As
Column
Bar
Area
Line
Pie
Funnel
Tag
Doughnut
Top X Rule
Bottom X Rule
Clear Rules
Save
Charts
Top/Bottom Rules
Count:All (C)
1
0
Sarah...
Owner
Add a series
Add a category

Working on solution: Default Solution

View used for chart preview

Active Cases

Origin by Owner

Legend Entries (Series)

Origin CountAll

Horizontal (Category) Axis Labels

Owner

Description

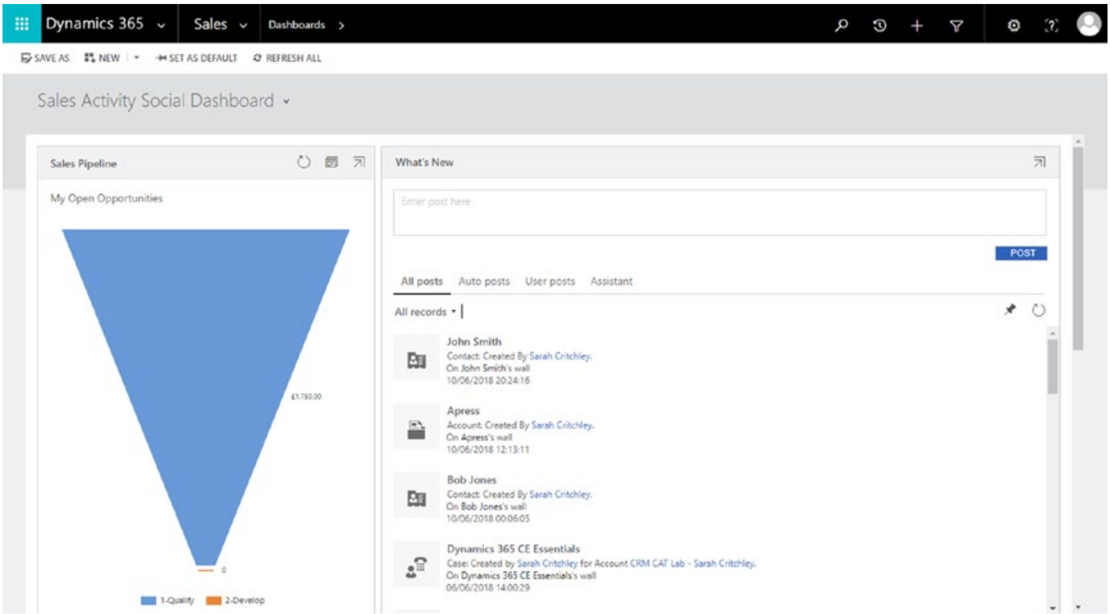
Figure 7-31. Adding legend and category to the Chart Designer

6. Save the chart and exit the Chart Designer.
7. Navigate to the entity selected (Cases, if the example was followed), expand the Chart pane, and select the chart from the list of charts.

Dashboards

Dashboards bring together views and charts to provide a single-screen experience for the user. A dashboard allows users to see information presented in a list format and perform operations on those records without having to navigate to the full record. It displays aggregates through tiles and visualization through charts, all while remaining in context with the records presented in the views.

Dynamics 365 CE has two types of dashboards at the time of writing. Classic dashboards are available in both the Classic UI and the Unified Interface (Figure 7-32). They allow a user to embed views, charts, Iframes, and web resources (e.g., HTML) within the dashboard itself. The creation of these types of dashboards can be achieved using the App Designer or Solution Explorer in the same way as views and charts are created. Classic dashboards also come in personal and system types. Classic personal dashboards can also be built by users within the Classic UI under the “Dashboards” area of the sitemap and by selecting “New.”


Dynamics 365
Sales
Dashboards
SAVE AS
NEW
SET AS DEFAULT
REFRESH ALL
Sales Activity Social Dashboard
Sales Pipeline
My Open Opportunities
£1,750.00
0
1-Qualify
2-Develop
What's New
Enter post here
POST
All posts
Auto posts
User posts
Assistant
All records

John Smith
Contact: Created By Sarah Critchley.
On John Smith's wall
10/06/2018 20:24:16

Apress
Account: Created By Sarah Critchley.
On Apress's wall
10/06/2018 12:13:11

Bob Jones
Contact: Created By Sarah Critchley.
On Bob Jones's wall
10/06/2018 00:06:05

Dynamics 365 CE Essentials
Case: Created by Sarah Critchley for Account CRM CAT Lab - Sarah Critchley.
On Dynamics 365 CE Essentials's wall
06/06/2018 14:00:29

Figure 7-32. *Classic dashboard within the Classic UI*

Interactive dashboards were introduced to Dynamics 365 CE in a previous version. They are now available exclusively within the Unified Interface (Figure 7-33). They provide an enhanced dashboard experience compared to classic dashboards by displaying more contextual and modifiable information to the user, allowing them to action items and filter information through tiles, views, and charts. Interactive dashboards are only available to be created at a system level at the time of writing; however, it is expected that personal dashboard functionality will be available after the October 2018 release. Before that happens, interactive dashboards need to be created via the App Designer or the Solution Explorer.

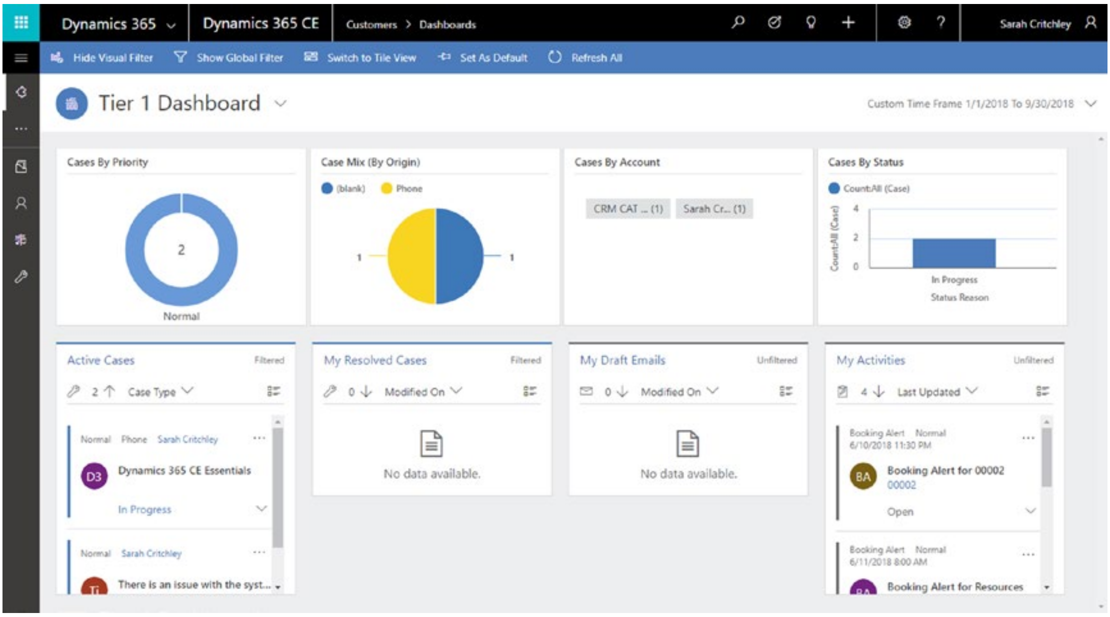

Dynamics 365
Dynamics 365 CE
Customers > Dashboards
Sarah Critchley
Hide Visual Filter
Show Global Filter
Switch to Tile View
Set As Default
Refresh All
Tier 1 Dashboard
Custom Time Frame 1/1/2018 To 9/30/2018
Cases By Priority
2
Normal
Case Mix (By Origin)
(blank)
Phone
1
1
Cases By Account
CRM CAT ... (1)
Sarah Cr... (1)
Cases By Status
Count:All (Case)
4
2
0
In Progress
Status Reason
Active Cases
Filtered
2
Case Type
Normal
Phone
Sarah Critchley
D3
Dynamics 365 CE Essentials
In Progress
Normal
Sarah Critchley
There is an issue with the syst...
My Resolved Cases
Filtered
0
Modified On
No data available.
My Draft Emails
Unfiltered
0
Modified On
No data available.
My Activities
Unfiltered
4
Last Updated
Booking Alert
Normal
6/10/2018 11:30 PM
BA
Booking Alert for 00002
00002
Open
Booking Alert
Normal
6/11/2018 8:00 AM
Booking Alert for Resources

Figure 7-33. Interactive dashboard within the Unified Interface

This chapter will focus on the second type—interactive dashboards; however, for more information on classic dashboards, please see the "Further Reading" section at the end of this chapter.

Building an Interactive Dashboard

Interactive dashboards are available in multi-stream or single-stream types:

- **Multi-stream dashboards** allow for "streams" of information that are based on views or queues that are embedded and are based on any and multiple entities; e.g., Accounts, Contacts, Opportunities, etc. They include buttons for the user to switch to a tile view, providing aggregates, or the user can open the visual filter to display visualizations on top of the streams.
- **Single-stream dashboards** are confined to one single entity and can include charts within the single page as well as aggregate tiles without needing to select extra buttons.

In both types, the charts are interactive and can be used to filter the records in streams. The user simply clicks on certain segments of the chart to allow the data to refresh in real time.

More details on the specifics of dashboards can be found at the end of this chapter within the “Further Reading” section.

Task: Create an interactive multi-stream dashboard

1. Navigate to the App Designer and select the “Dashboard” component.
2. Click “Create New” in the right-hand pane and select “Interactive Dashboards” (Figure 7-34).

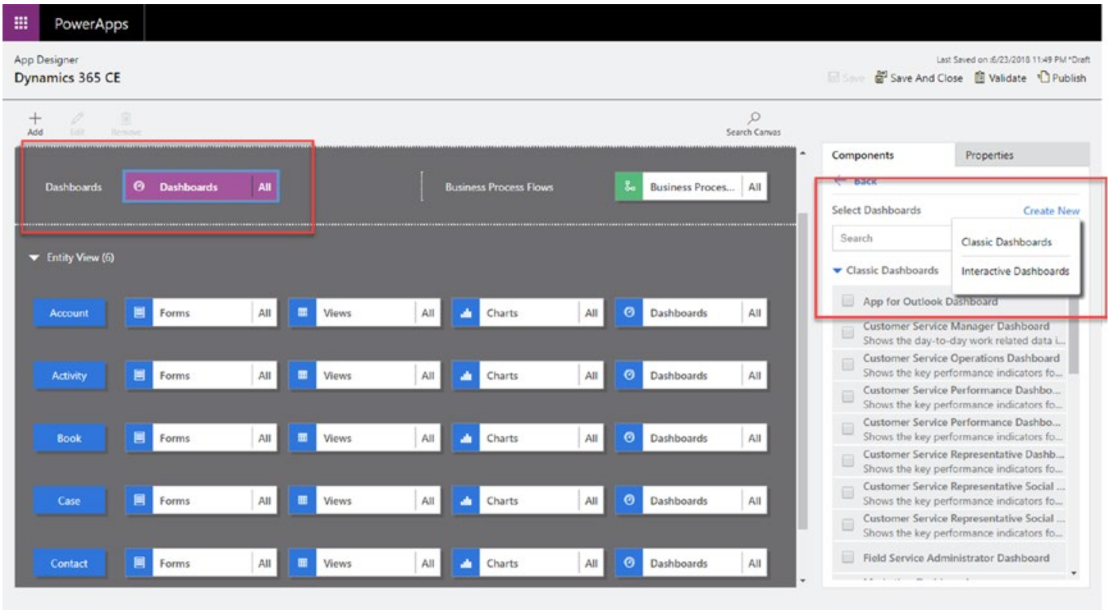
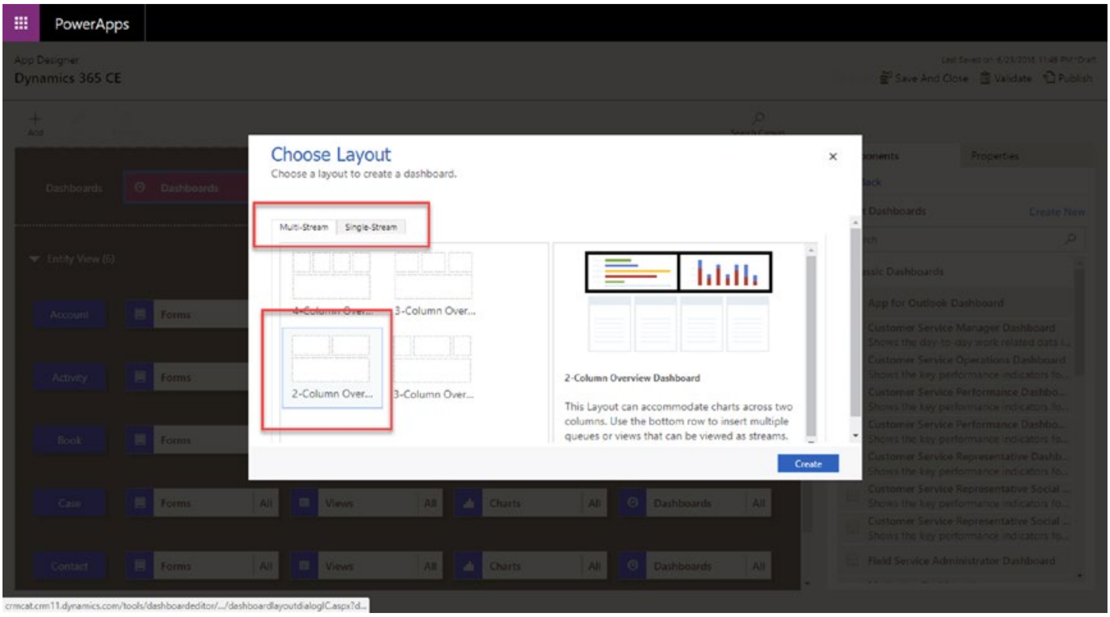

PowerApps
App Designer
Dynamics 365 CE
Last Saved on :6/23/2018 11:49 PM *Draft
Save
Save And Close
Validate
Publish
Add
Edit
Remove
Search Canvas
Dashboards
Dashboards
All
Business Process Flows
Business Proces...
All
Entity View (6)
Account
Activity
Book
Case
Contact
Forms
All
Views
All
Charts
All
Dashboards
All
Components
Properties
Back
Select Dashboards
Create New
Search
Classic Dashboards
Interactive Dashboards
Classic Dashboards
App for Outlook Dashboard
Customer Service Manager Dashboard
Shows the day-to-day work related data i...
Customer Service Operations Dashboard
Shows the key performance indicators fo...
Customer Service Performance Dashbo...
Shows the key performance indicators fo...
Customer Service Performance Dashbo...
Shows the key performance indicators fo...
Customer Service Representative Dashb...
Shows the key performance indicators fo...
Customer Service Representative Social ...
Shows the key performance indicators fo...
Customer Service Representative Social ...
Shows the key performance indicators fo...
Field Service Administrator Dashboard

Figure 7-34. *App Designer “Dashboard” component*

3. Click the Multi-Stream tab and then “2 Column Overview,” as shown in Figure 7-35. This dashboard is designed to have multiple streams and two charts.
4. Select “Create” for the Dashboard Designer to open.
5. Select the dashboard to be created for the Case entity.

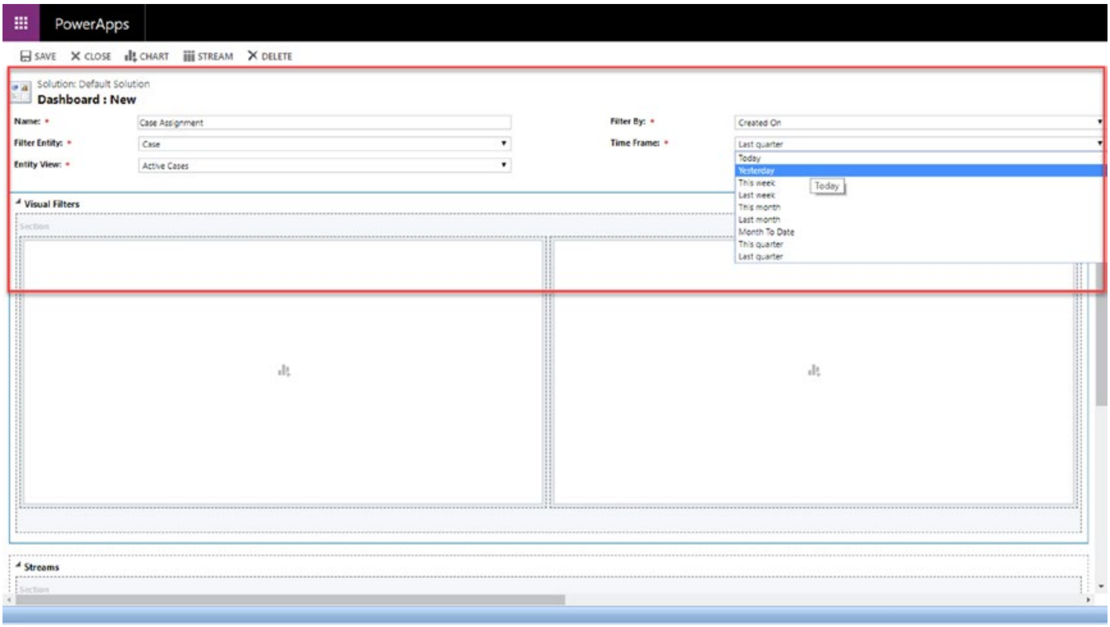

PowerApps
App Designer
Dynamics 365 CE
Save And Close
Validate
Publish
Choose Layout
Choose a layout to create a dashboard.
Multi-Stream
Single-Stream
4-Column Over...
3-Column Over...
2-Column Over...
3-Column Over...
2-Column Overview Dashboard
Create
Dashboards
Forms
Views
Charts
All

This Layout can accommodate charts across two columns. Use the bottom row to insert multiple queues or views that can be viewed as streams.

Figure 7-35. Multi-stream and single-stream dashboard selectors

6. There are three stages of creating a dashboard. Stage one includes setting up the initial information, which can be seen in the properties at the top of the screen, shown in Figure 7-36:

- **Name:** Enter the name of the dashboard.
- **Filter Entity:** The charts are based on this entity.
- **Entity View:** The view of the selected entity
- **Filter By:** The field to filter on
- **Time Frame:** The time frame of the filtered field; this can be modified by the user in real time. (Note - be aware of this field, it can make it appear as if there is no data within the dashboard)

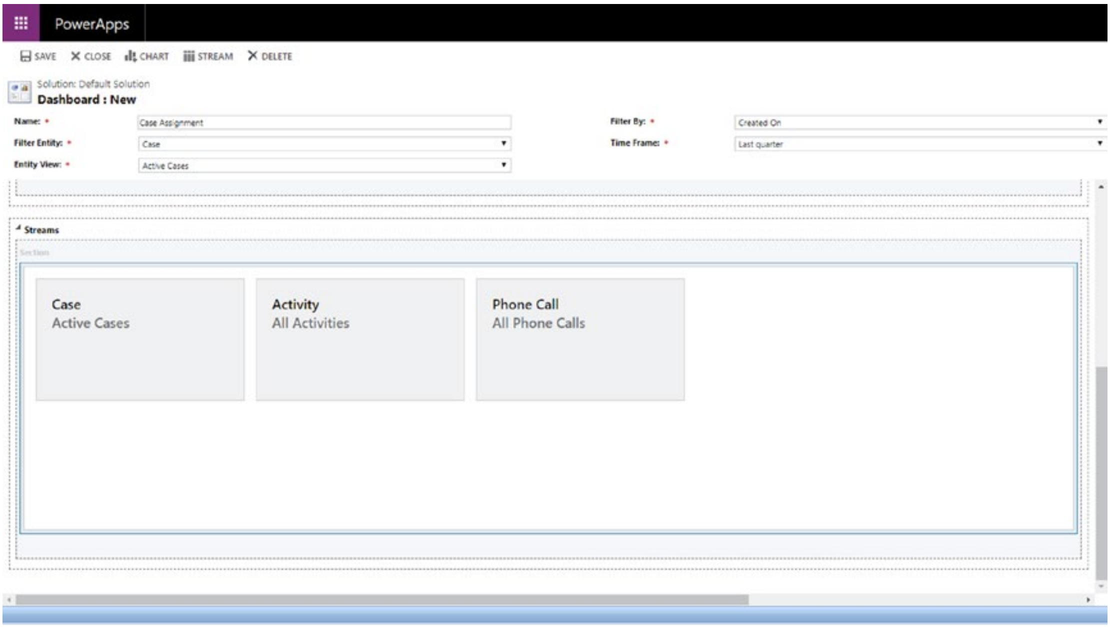

PowerApps
SAVE
CLOSE
CHART
STREAM
DELETE
Today
Yesterday
This week
Last week
This month
Last month
Month To Date
This quarter
Last quarter
Today
Visual Filters
Section
Streams
Section

Solution: Default Solution
Dashboard : New

Name: * Case Assignment
Filter Entity: * Case
Entity View: * Active Cases
Filter By: * Created On
Time Frame: * Last quarter

Figure 7-36. *Multi-stream Dashboard Designer*

7. The second step is to add add the "streams" of information, which are represented by views and queues. Select the "Streams" space at the bottom half of the designer for the stream selector to appear. Select if it is based on a view or a queue (view, in this example) and select which entity. Examples in Figure 7-37 are Active Cases (View), All Activities (View), and All Phone Calls (View).



Solution: Default Solution

Dashboard : New

Name: * Case Assignment

Filter Entity: * Case

Entity View: * Active Cases

Filter By: * Created On

Time Frame: * Last quarter

Streams

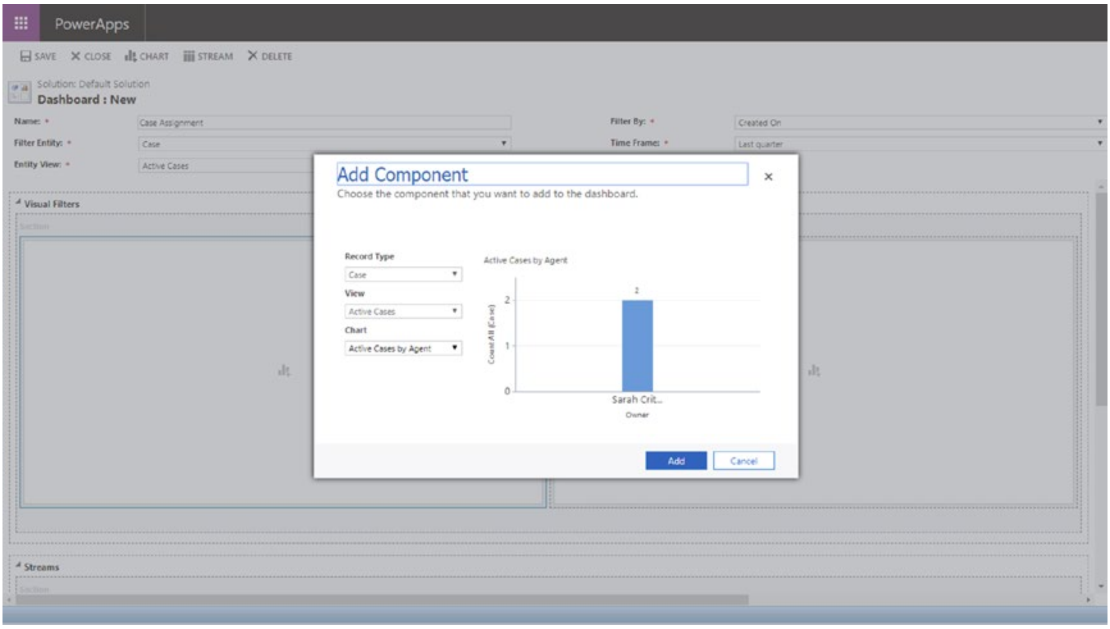
Case
Active Cases

Activity
All Activities

Phone Call
All Phone Calls

Figure 7-37. Add streams within the dashboard

8. Select the Visual Filters tab for the last step. Selecting the Chart button on the Dashboard Designer opens the chart selector. This will be locked as the same record type and view as for the “Filter Entity” selected in the dashboard configuration. Select the charts from the standard charts available for the Case entity by selecting ‘Add’. Visual filters, or charts, are used to filter down the records within the views selected (Figure 7-38).


PowerApps
SAVE
CLOSE
CHART
STREAM
DELETE
Visual Filters
Section
Streams
Section
×
Active Cases by Agent
Count All (Case)
2
1
0
2
Sarah Crit...
Owner
Add
Cancel

Solution: Default Solution
Dashboard : New

Name: * Case Assignment
Filter Entity: * Case
Entity View: * Active Cases
Filter By: * Created On
Time Frame: * Last quarter

Add Component
Choose the component that you want to add to the dashboard.

Record Type: Case
View: Active Cases
Chart: Active Cases by Agent

Figure 7-38. Adding visual filters

9. Once completed, click “Save,” “Validate,” and then “Close,”
10. Ensure the dashboard is selected to be included in the app (or all of them) and click “Save” and “Publish” on the App Designer.
11. Refresh the app, and the dashboard will then be visible to users.

Using Interactive Dashboards

When a dashboard is open, there is various functionality available from the single-page view. This functionality can assist in performing operations and tasks quickly without having to click to navigate to a view or even a record. Some basic functions are listed here (Figure 7-39):

- Select the Show Visual Filter button on the ribbon to display the charts in the multi-stream dashboard based on the Filter entity.
- Select the Show Global Filter button on the ribbon to filter on the records, like in Microsoft Excel.
- Select the Switch to Tile View button on the ribbon to see an aggregated view of the streams.

- The Set as Default button sets the dashboard as the default so that this is the dashboard that appears first when the dashboard area is selected in the sitemap.
- The Refresh All button refreshes all the data contained within the dashboard rather than using the browser button.

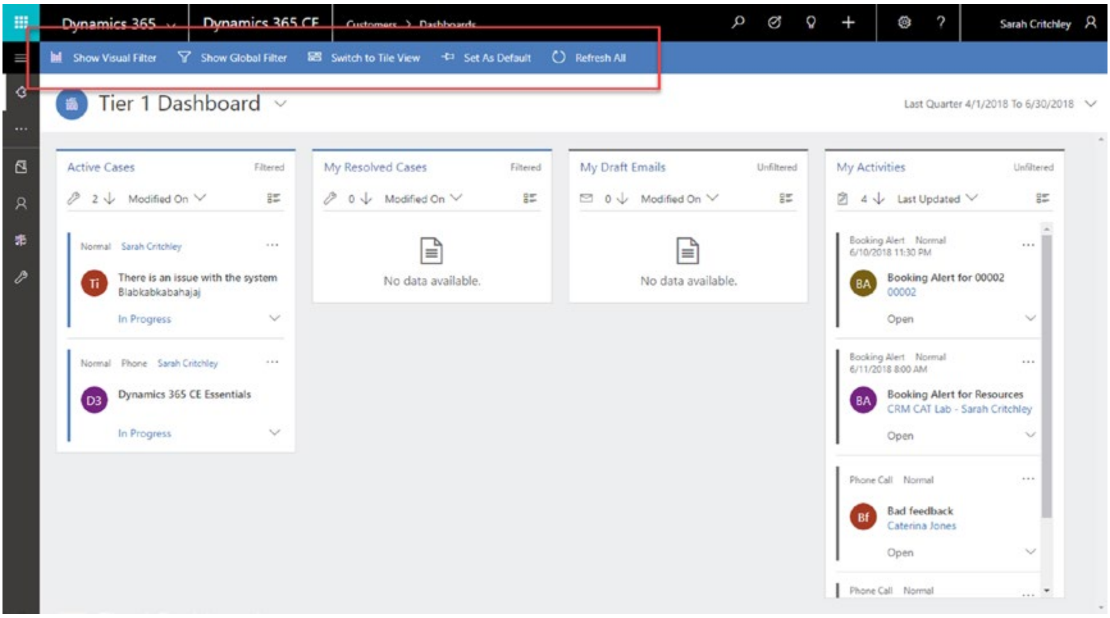

Dynamics 365
Dynamics 365 CE
Customers > Dashboards
Sarah Critchley
Show Visual Filter
Show Global Filter
Switch to Tile View
Set As Default
Refresh All
Tier 1 Dashboard
Last Quarter 4/1/2018 To 6/30/2018
Active Cases
Filtered
2 Modified On
Normal Sarah Critchley
There is an issue with the system
Blabkabkabahajaj
In Progress
Normal Phone Sarah Critchley
Dynamics 365 CE Essentials
In Progress
My Resolved Cases
Filtered
0 Modified On
No data available.
My Draft Emails
Unfiltered
0 Modified On
No data available.
My Activities
Unfiltered
4 Last Updated
Booking Alert Normal
6/10/2018 11:30 PM
Booking Alert for 00002
00002
Open
Booking Alert Normal
6/11/2018 8:00 AM
Booking Alert for Resources
CRM CAT Lab - Sarah Critchley
Open
Phone Call Normal
Bad feedback
Caterina Jones
Open
Phone Call Normal

Figure 7-39. *Using dashboards: the ribbon control*

You can click on the action button on a card view to perform various actions on a single record or on multiple records at one time, as shown in Figure 7-40.

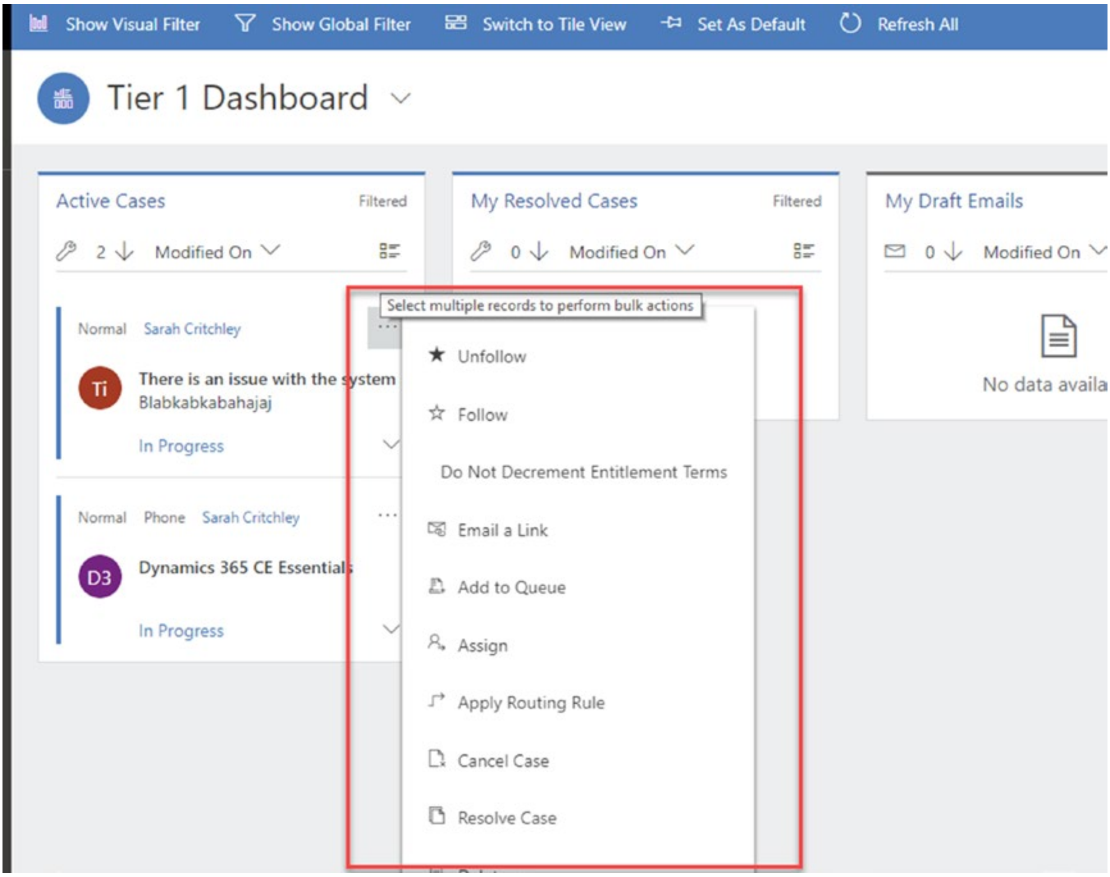

Show Visual Filter
Show Global Filter
Switch to Tile View
Set As Default
Refresh All
Tier 1 Dashboard
Active Cases
Filtered
2
Modified On
Normal
Sarah Critchley
Ti
There is an issue with the system
Blabkabkabahajaj
In Progress
Normal
Phone
Sarah Critchley
D3
Dynamics 365 CE Essentials
In Progress
My Resolved Cases
Filtered
0
Modified On
My Draft Emails
0
Modified On
No data availa
Select multiple records to perform bulk actions
Unfollow
Follow
Do Not Decrement Entitlement Terms
Email a Link
Add to Queue
Assign
Apply Routing Rule
Cancel Case
Resolve Case

Figure 7-40. *Select the action button on a card view to perform operations*

Interactive dashboards by default have a filter date set against it upon creation. This can be modified or changed to a custom time frame to load the records within that range (Figure 7-41). The custom time frame cannot be saved within the properties of the dashboard at the time of writing.

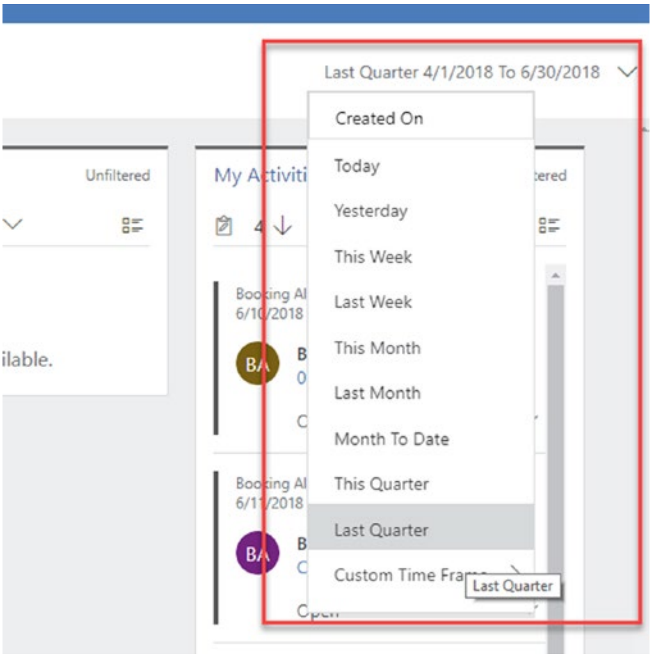

Last Quarter 4/1/2018 To 6/30/2018
Created On
Today
Yesterday
This Week
Last Week
This Month
Last Month
Month To Date
This Quarter
Last Quarter
Custom Time Frame
Last Quarter
Unfiltered
My Activiti
Booking Al
6/10/2018
BA
ilable.

Figure 7-41. Changing the Date filter in interactive dashboards

Using visual filters (charts) allows you to filter records within a stream based on those charts, removing unnecessary data and allowing you to focus on data you are reviewing or searching for (Figure 7-42).

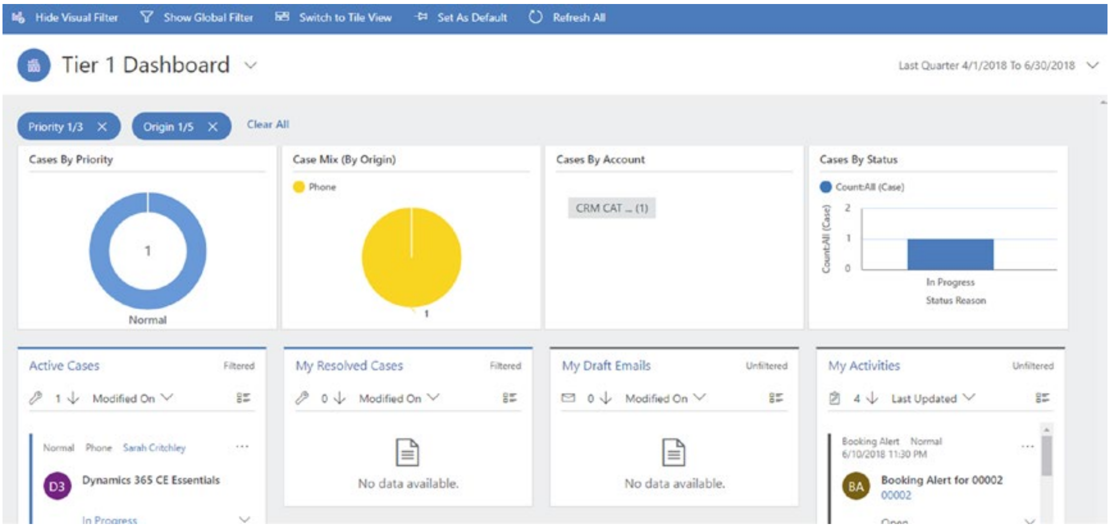

Hide Visual Filter
Show Global Filter
Switch to Tile View
Set As Default
Refresh All
Tier 1 Dashboard
Last Quarter 4/1/2018 To 6/30/2018
Priority 1/3
Origin 1/5
Clear All
Cases By Priority
1
Normal
Case Mix (By Origin)
Phone
1
Cases By Account
CRM CAT ... (1)
Cases By Status
CountAll (Case)
2
1
0
In Progress
Status Reason
Active Cases
Filtered
1
Modified On
Normal Phone Sarah Critchley
D3
Dynamics 365 CE Essentials
In Progress
My Resolved Cases
Filtered
0
Modified On
No data available.
My Draft Emails
Unfiltered
0
Modified On
No data available.
My Activities
Unfiltered
4
Last Updated
Booking Alert Normal
6/10/2018 11:30 PM
BA
Booking Alert for 00002
00002
Open

Figure 7-42. Use the visual filter and click on the charts to filter the records within the streams

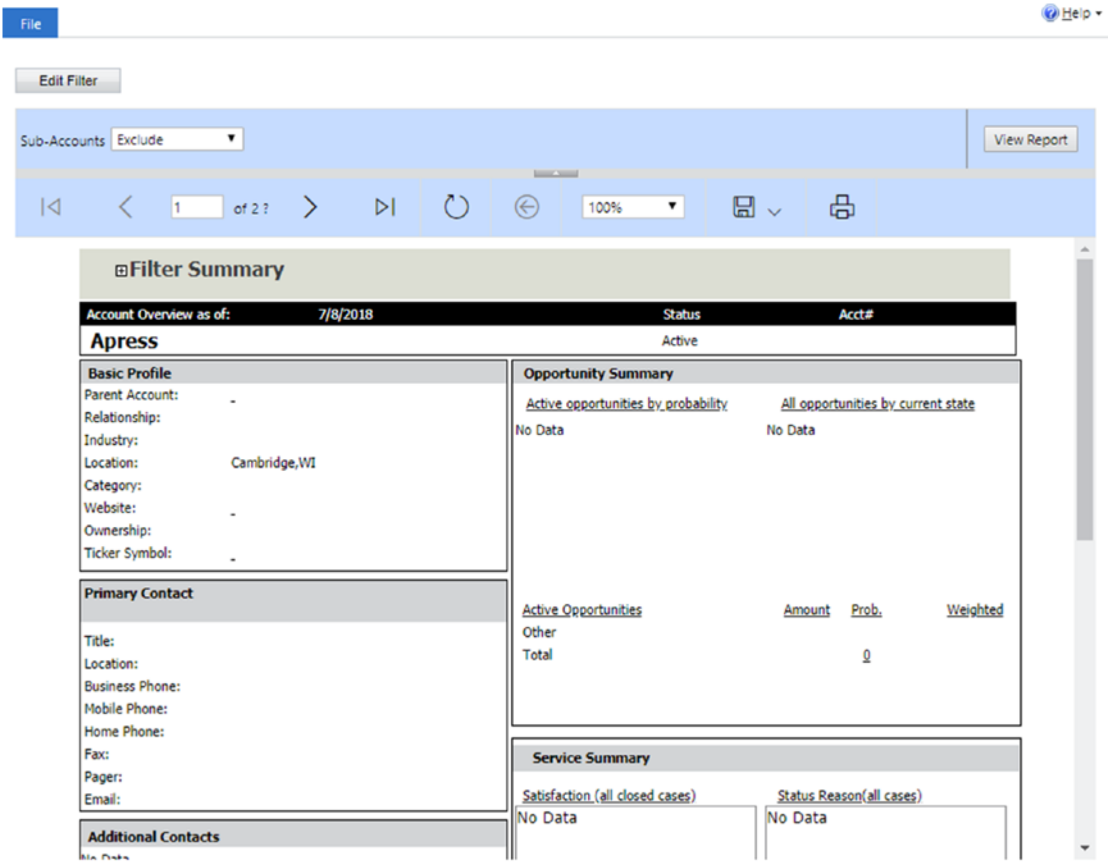
Reports

Reports within Dynamics 365 CE are based on SSRS (SQL Server Reporting Services) reports that are accessible via the application interface within the platform. A small set of reports are available as standard, and users can also create custom reports through a wizard process. Reports are similar to views and charts, where they are visible to all users or offer personal visibility when the report has been created by a user or shared (Figure 7-43).

Reports operate as a "report card" style of reporting that is designed to be printed or distributed—e.g., as a PDF—to other members of the organization. This could be because users who need to see the report do not have access to the system, for example. Custom SSRS reports can be created and imported into Dynamics 365 CE to create enhanced visuals. This is achieved using extension packages within Visual Studio and requires development knowledge. Reports at the time of writing can be created using the Classic UI only; however, support to run reports is planned within the Unified Interface after the October 2018 release.

The "Run reports" feature generates an output that can be a table- or chart-style report, and a user can then save or print the report. Dynamics 365 CE Online does not allow for the scheduling of reports as standard. However, this has been made possible using Microsoft Flow. Reports do not use the same style of charts as seen in the charts functionality covered in the previous section. It was previously a fantastic way for grouping records; however, since editable grids were made available, this feature has been used less.

More information on reports can be found at the end of the chapter in "Further Reading."



Sub-Accounts Exclude

1 of 2 ?

100%

⊞Filter Summary

Account Overview as of: 7/8/2018 Status Acct#

Apress Active

Basic Profile

Parent Account: -
Relationship:
Industry:
Location: Cambridge,WI
Category:
Website: -
Ownership:
Ticker Symbol: -

Opportunity Summary

Active opportunities by probability
No Data

All opportunities by current state
No Data

Active Opportunities	Amount	Prob.	Weighted
Other			
Total		0	

Primary Contact

Title:
Location:
Business Phone:
Mobile Phone:
Home Phone:
Fax:
Pager:
Email:

Service Summary

Satisfaction (all closed cases)
No Data

Status Reason(all cases)
No Data

Additional Contacts

Figure 7-43. *An example report within Dynamics 365 CE*

Building a Report Using the Report Wizard

Reports are created by following the Report Wizard process within the Classic UI, which guides users through all the required steps to create a report.

Task: Create a report using the Report Wizard.

1. Navigate to the “Sales” section of the sitemap within the Classic UI (Figure 7-44).
2. Click “Reports” and click “New” on the view. (Note: This is also where users would navigate to run reports from this view.) The New Report dialog window will open.

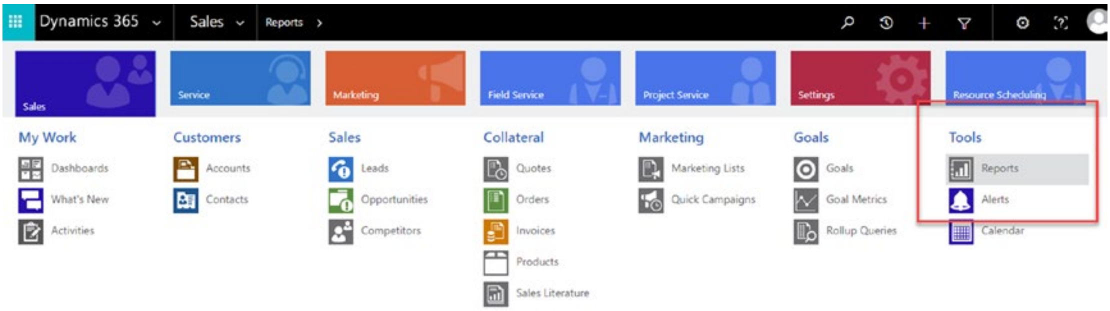
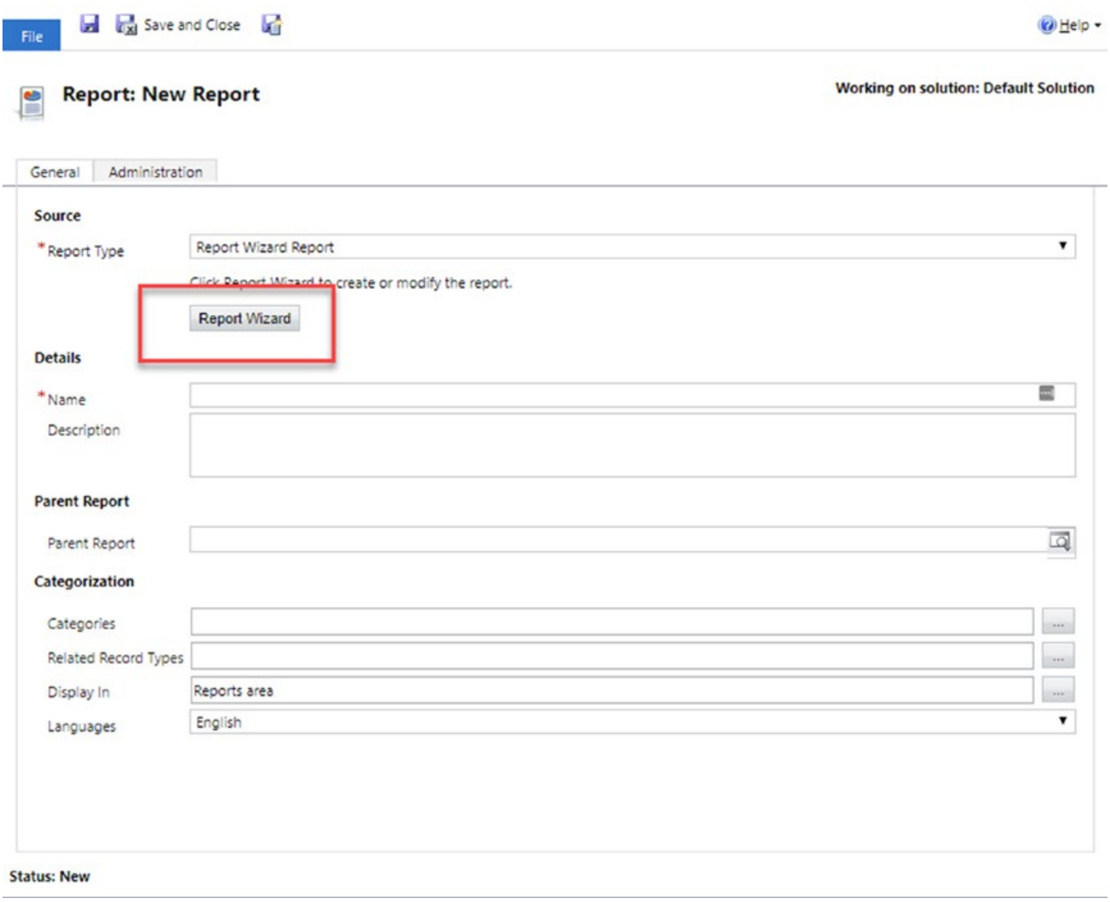

Dynamics 365
Sales
Reports
Sales
Service
Marketing
Field Service
Project Service
Settings
Resource Scheduling
My Work
Dashboards
What's New
Activities
Customers
Accounts
Contacts
Sales
Leads
Opportunities
Competitors
Collateral
Quotes
Orders
Invoices
Products
Sales Literature
Marketing
Marketing Lists
Quick Campaigns
Goals
Goals
Goal Metrics
Rollup Queries
Tools
Reports
Alerts
Calendar

Figure 7-44. *Reports area of the Classic UI*

3. Select "Report Wizard."

4. Select "Start from a new report," as shown in Figure 7-45. (Note: Existing reports can be used as a basis to save time in some cases, which can be done by selecting "Start from Existing Report." To overwrite and edit the existing report, ensure the "Overwrite" option is selected.)



Report: New Report

Working on solution: Default Solution

Source

*Report Type: Report Wizard Report

Click Report Wizard to create or modify the report.

Details

*Name

Description

Parent Report

Parent Report

Categorization

Categories

Related Record Types

Display In: Reports area

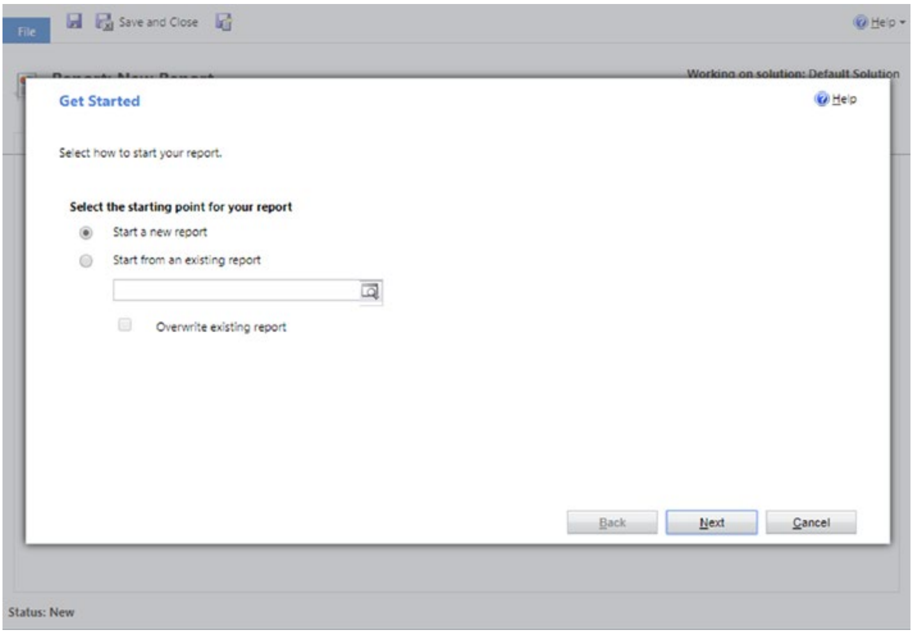
Languages: English

Status: New

Figure 7-45. *Click “Report Wizard” on the New Report dialog—no need to enter any information at this stage*

5. Set the report name and the entity the report is based on. An example can be “Case Overview” and “Cases,” as seen in Figure 7-46.

6. If there is no other information available from related entities to set as the primary record type in this example, leave this blank and click “Next.”


File
Save and Close
Help
Working on solution: Default Solution
Help
Back
Next
Cancel
Status: New

Get Started

Select how to start your report.

Select the starting point for your report

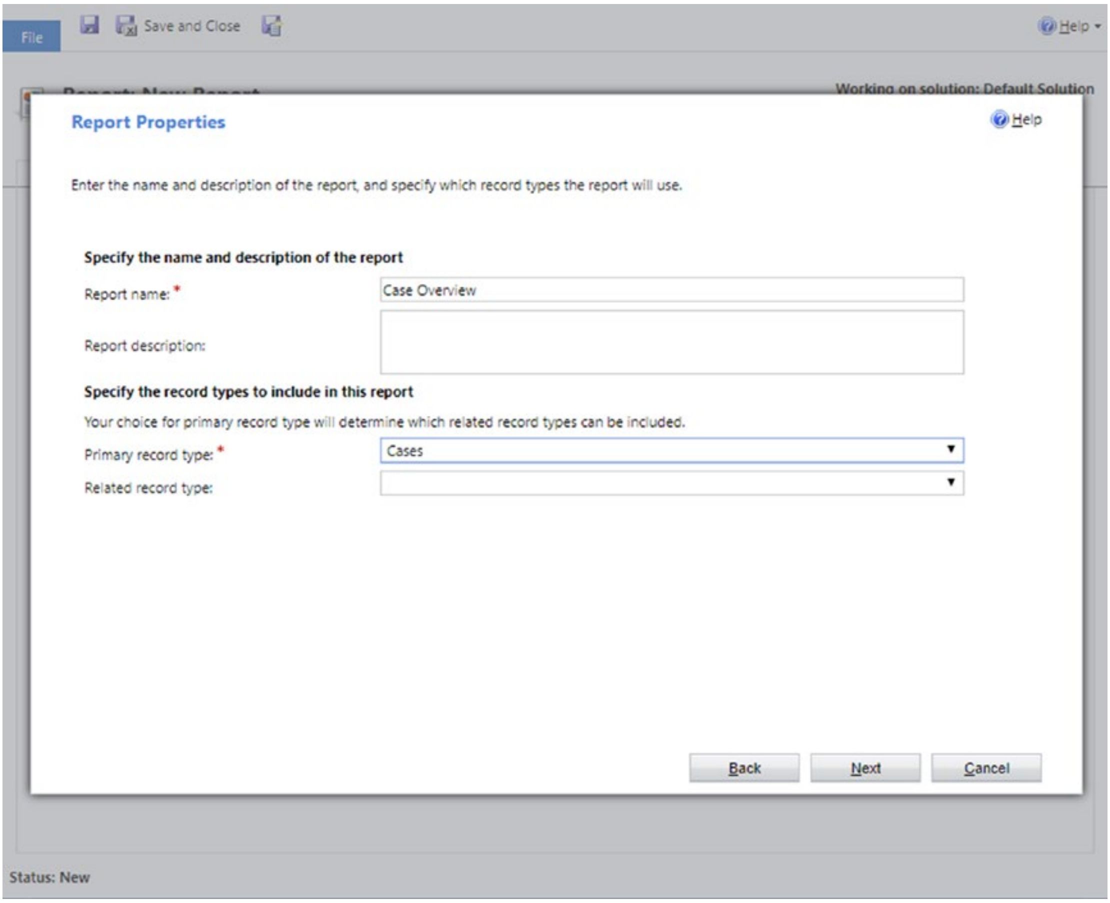
● Start a new report

○ Start from an existing report

☐ Overwrite existing report

Figure 7-46. Creating a report: Select "Start a new report"

Adding related record types allows the report to be more diverse in the data available to be added within the report; however, it is not essential (Figure 7-47).



Working on solution: Default Solution

Report Properties

Enter the name and description of the report, and specify which record types the report will use.

Specify the name and description of the report

Report name: * Case Overview

Report description:

Specify the record types to include in this report

Your choice for primary record type will determine which related record types can be included.

Primary record type: * Cases

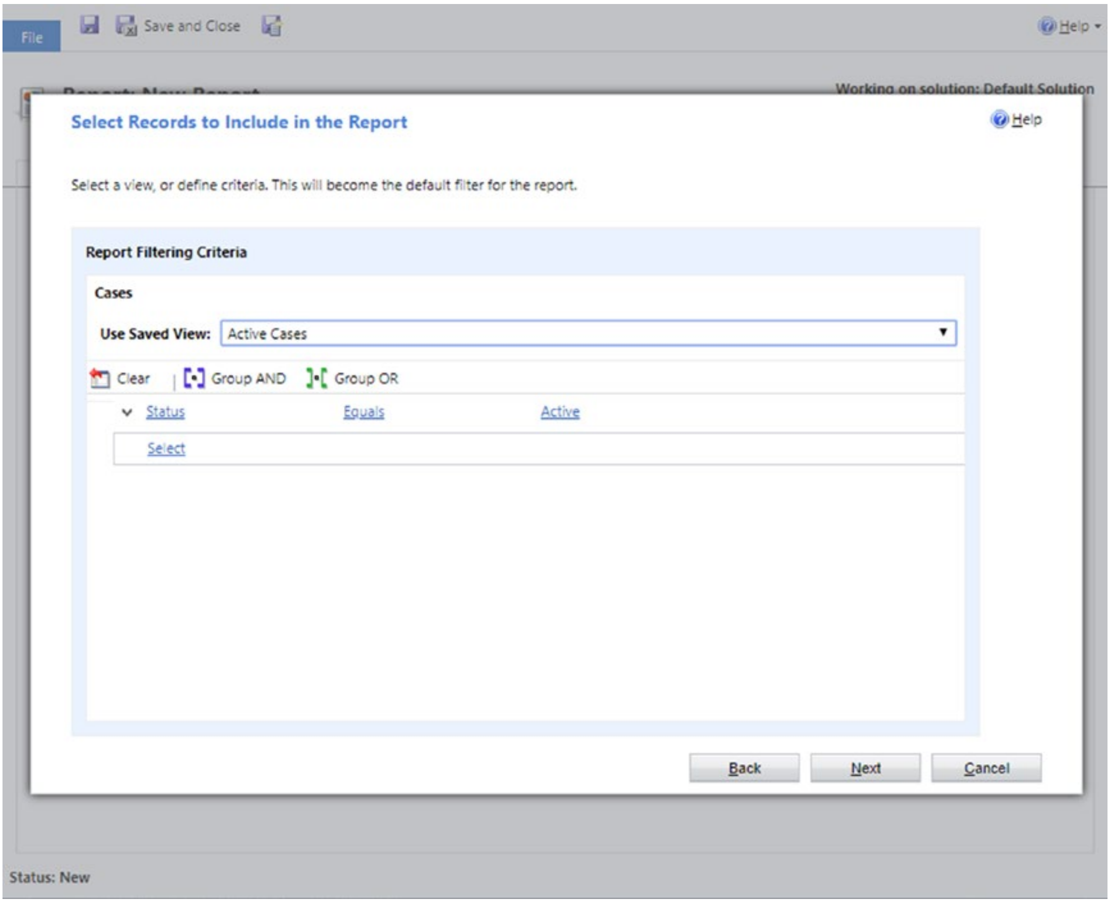
Related record type:

Status: New

Figure 7-47. *Add the name and primary record type*

7. Select a filter for the data to be used when running the report (Figure 7-48). Keep this simple for now by selecting a saved view, such as Active Cases. Complex filters can be created here using the Advanced Find–style interface covered previously in this chapter.

8. Click "Next."


File
Save and Close
Help
Working on solution: Default Solution
Help
Clear
Group AND
Group OR
Select
Back
Next
Cancel
Status: New

Select Records to Include in the Report

Select a view, or define criteria. This will become the default filter for the report.

Report Filtering Criteria

Cases

Use Saved View: Active Cases

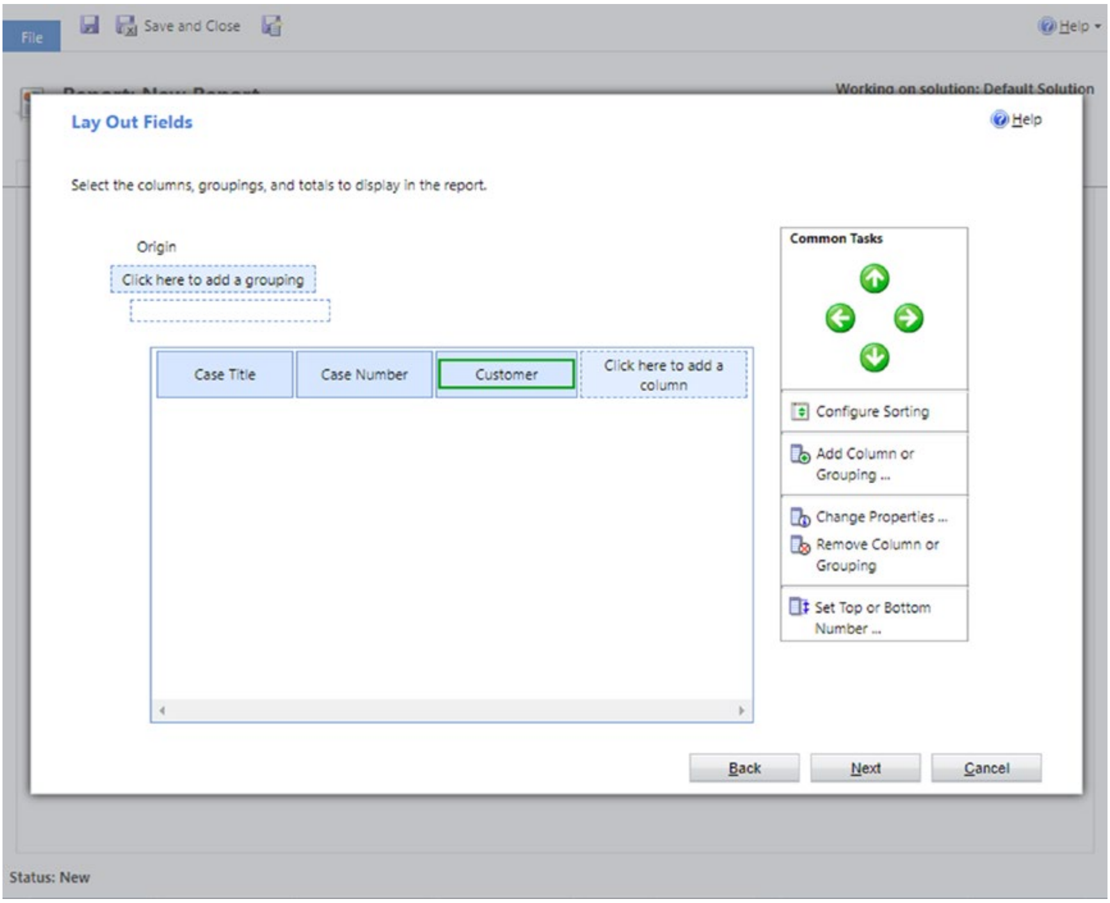
Status Equals Active

Figure 7-48. *Creating a report: Adding a filter*

The next page of the Report Wizard defines the visual appearance and the grouping filter for the report table. Use the grouping hierarchy at the top of the wizard to set groupings based on the fields available from the selected primary or related entities. Adding grouping will group the returned records from the filter into the groups based on the data in those fields, in the same way as the editable grid does within views.

9. As shown in Figure 7-49, build the table in this task using the columns in the entities by selecting “Add Column or Grouping” or clicking directly on the column header where specified. Change

the sorting criteria—for example, Ascending or Descending—by selecting “Configure Sorting.” Properties of the columns, such as width, can be modifiedby selecting “Change Properties.”



Lay Out Fields

Select the columns, groupings, and totals to display in the report.

Working on solution: Default Solution

Status: New

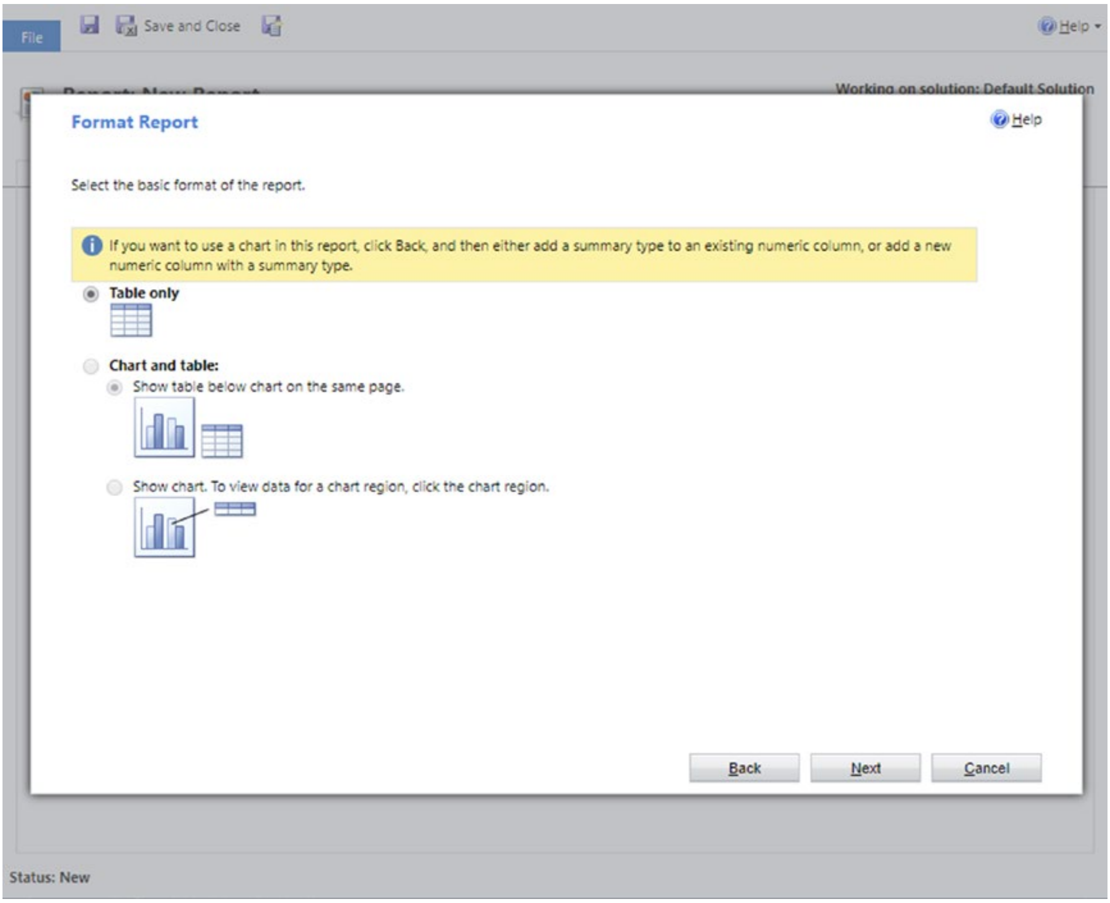
File
Save and Close
Help
Help
Origin
Click here to add a grouping
Case Title
Case Number
Customer
Click here to add a column
Common Tasks
Configure Sorting
Add Column or Grouping ...
Change Properties ...
Remove Column or Grouping
Set Top or Bottom Number ...
Back
Next
Cancel

Figure 7-49. *Setting up grouping and columns for the table*

10. Set the “Grouping” field to group by origin by clicking on the “Click here to add a grouping” section in the wizard.

11. Add basic fields within the report, such as “Case Title,” “Case Number,” and “Customer,” and click the Next button. As the columns in the example did not specify any numerical type fields, charts cannot be added on this occasion; if they did, they would be added at this stage in the wizard (Figure 7-50).

12. Complete the wizard process and save the report. The report is now finished and can be run. This is done by selecting the Run Report button in the report view.



Format Report

Select the basic format of the report.

If you want to use a chart in this report, click Back, and then either add a summary type to an existing numeric column, or add a new numeric column with a summary type.

● **Table only**

○ **Chart and table:**

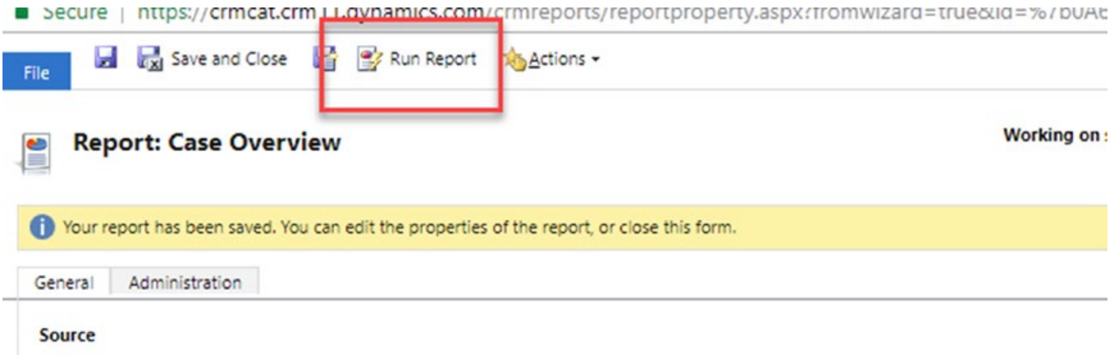
● Show table below chart on the same page.

○ Show chart. To view data for a chart region, click the chart region.

Status: New

Figure 7-50. Adding a table or chart when using numerical fields

Reports can also be run from views themselves, where the Run Report button is filtered to only show reports based on the entities of that specific view (Figure 7-51). This feature is in the Classic UI only at the time of writing; however, it is expected to be in the Unified Interface following the October 2018 release.

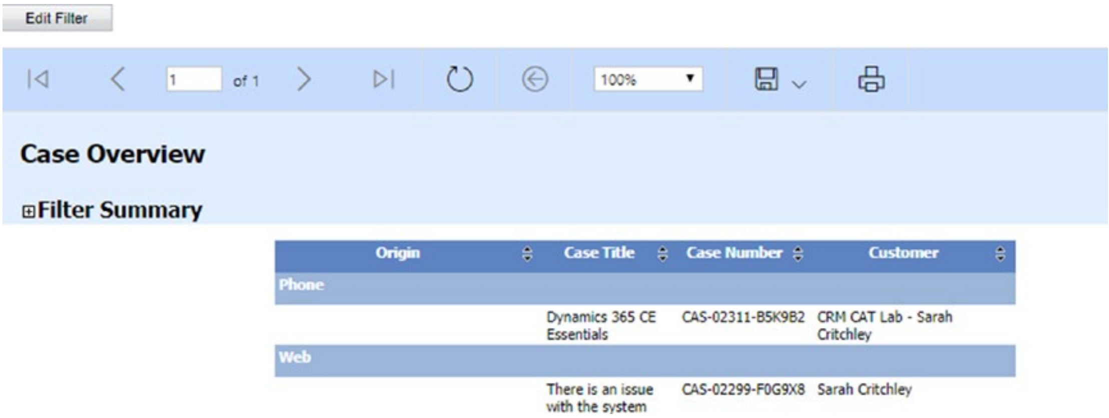


Report: Case Overview

Your report has been saved. You can edit the properties of the report, or close this form.

Figure 7-51. Running a report from the Report record

The finished look of the report is a basic table visualization of the data, as seen in Figure 7-52. The reporting functionality is an older-style form of reporting but is still useful to be able to export data from within the system in a more defined way than in Excel. It requires little further action upon the data and gives users access to a read-only format of data they would otherwise not be able to see.



Case Overview

Filter Summary

Origin	Case Title	Case Number	Customer
Phone			
	Dynamics 365 CE Essentials	CAS-02311-B5K9B2	CRM CAT Lab - Sarah Critchley
Web			
	There is an issue with the system	CAS-02299-F0G9X8	Sarah Critchley

Figure 7-52. The completed report created using the Report Wizard

Summary

This chapter has reviewed the core functionality surrounding reporting on data within Dynamics 365 CE. It covered how to create filtered queries, known as views, to allow users to focus on the right data where required. Then, it went on to cover how to use views in charts and build basic charts that can be viewed alongside data in a view, embedded into forms, and used within dashboards. Dashboards are critical for organizations to be able to offer a single-page view of more than one stream of data, see visualizations alongside the data, and filtering data so users can focus on small subsets of data where required. Being able to modify how the data is displayed to users across the organization is critical to using Dynamics 365 CE effectively. This chapter has covered how to get started in this area to help you learn the core principles of modifying views, charts, and dashboards to display data in the most effective way.

Chapter Tasks

At the end of every chapter, there will be a section that gives up to ten suggested tasks for you to complete within Dynamics 365 CE. These tasks will be based around the topics covered within the chapter and the further resources referenced at the end. They are aimed at expanding practical knowledge and application regarding those topics that goes beyond reading about them.

1. Create a new view.
2. Modify an existing view, changing the columns and sorting criteria.
3. Create a new chart.
4. Create a classic dashboard.
5. Create a multi-stream interactive dashboard.
6. Create a single-stream interactive dashboard.
7. Become familiar with all the components of using an interactive dashboard.
8. Create a new report using the Report Wizard.

Further Reading

Standard Entities and exporting the ERD of the standard Dynamics 365 CE System (Microsoft, 2018). URL: `https://docs.microsoft.com/en-us/dynamics365/customer-engagement/developer/use-metadata-generate-entity-diagrams`

Power BI Integration with Dashboards (Microsoft, 2018). URL: https://docs.microsoft.com/en-us/dynamics365/unified-operations/dev-itpro/analytics/power-bi-integration

Quick Find Search vs Relevance Search (Microsoft, 2018). URL: https://docs.microsoft.com/en-us/dynamics365/customer-engagement/basics/relevance-search-results

Classic and Interactive Dashboards (Microsoft, 2018). URL: https://docs.microsoft.com/en-us/dynamics365/customer-engagement/basics/start-your-day-dashboard-chart

Interactive Dashboard features (Microsoft, 2018). URL: https://docs.microsoft.com/en-us/dynamics365/customer-engagement/customize/configure-interactive-dashboards

Reporting within Dynamics 365 using the Report Wizard (Microsoft, 2018). URL: https://docs.microsoft.com/en-us/dynamics365/customer-engagement/basics/create-edit-copy-report-wizard

Personal Views and Sharing (Microsoft, 2018). URL: https://docs.microsoft.com/en-us/dynamics365/customer-engagement/customize/create-edit-views

PART II

CONFIGURATION

CHAPTER 8

Processes

Processes are a way to implement custom business logic within Dynamics 365 CE. This business logic can include automation and business process flows that are built within the application and that can be achieved often in a drag-and-drop control without the need for external tools or development. Using these tools to customize the system allows organizations to add operational value and provides the opportunity for more implementation of business processes, often reducing large maintenance overheads and the requirement for organizations to have development knowledge.

It is considered best practice within Dynamics 365 CE to review the standard features of the platform, then the capabilities of customization, before considering development for building more complex automation and processes. One of the best and most important practices when customizing the platform is to review the routes by which a requirement can be achieved using these three practices. Of course, custom code is not the enemy, and certainly a complex string of processes should not be created to prevent a plugin that may be achieved using a few lines of code. All this is shown in Figure 8-1.

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S. Critchley, *Dynamics 365 CE Essentials*, https://doi.org/10.1007/978-1-4842-3973-5_8

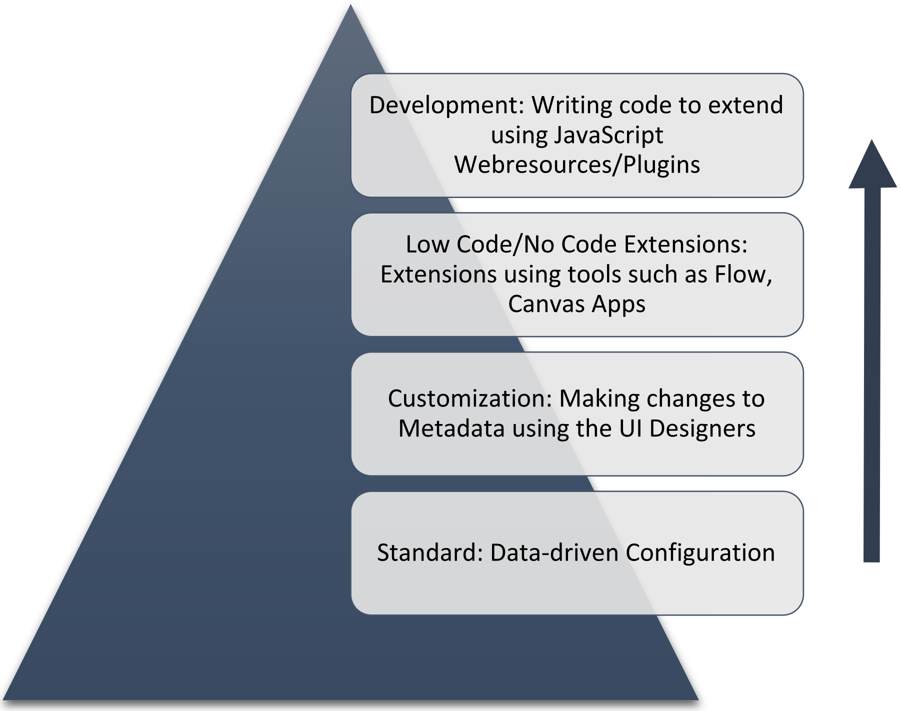
Development: Writing code to extend using JavaScript Webresources/Plugins
Low Code/No Code Extensions: Extensions using tools such as Flow, Canvas Apps
Customization: Making changes to Metadata using the UI Designers
Standard: Data-driven Configuration

Figure 8-1. *Customizing Dynamics 365 CE*

The processes covered in this chapter are configurable within the user interface of Dynamics 365 CE. They have an initial learning curve to begin using and maintaining them within the system. That said, the complexity is not the tools available but instead the implementation of the business logic. While Dynamics 365 CE provides a vast number of tools with which to implement powerful processing for businesses with relatively small amounts of effort, the business logic itself still requires thought, planning, documentation, and testing after implementation. The process should still be treated as a software project using implementation methodologies.

Starting with Processes

The types of processes covered in this chapter are as follows:

- **Business Process Flows** – Used to create guided processes for the user
- **Workflows** – Used to create real-time or background automation

- **Actions** – Used to create platform operations and implement reusable logic used in workflows and business process flows
- **Business Rules** – Implement field-level-based logic
- **Task Flows –** Used to create a wizard-like process that a user follows and that can utilize automation logic

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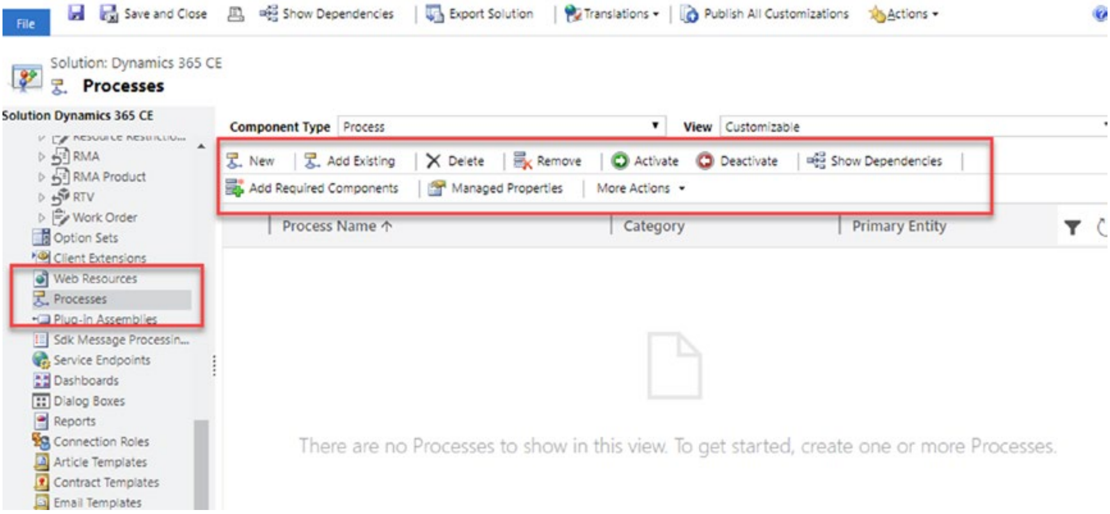
Dialogs are a process within Dynamics 365 CE; however, Microsoft has announced they will be deprecated. Look at using business process flows, task flows, or canvas apps to implement this type of workflow.

Most of these processes can be found within the "Processes" area within the Solution Explorer in the Classic UI (Figure 8-2).


File
Save and Close
Show Dependencies
Export Solution
Translations
Publish All Customizations
Actions
Solution: Dynamics 365 CE
Processes
Solution Dynamics 365 CE
Resource Restrictio...
RMA
RMA Product
RTV
Work Order
Option Sets
Client Extensions
Web Resources
Processes
Plug-in Assemblies
Sdk Message Processin...
Service Endpoints
Dashboards
Dialog Boxes
Reports
Connection Roles
Article Templates
Contract Templates
Email Templates
New
Add Existing
Delete
Remove
Activate
Deactivate
Show Dependencies
Add Required Components
Managed Properties
More Actions
Process Name
Category
Primary Entity

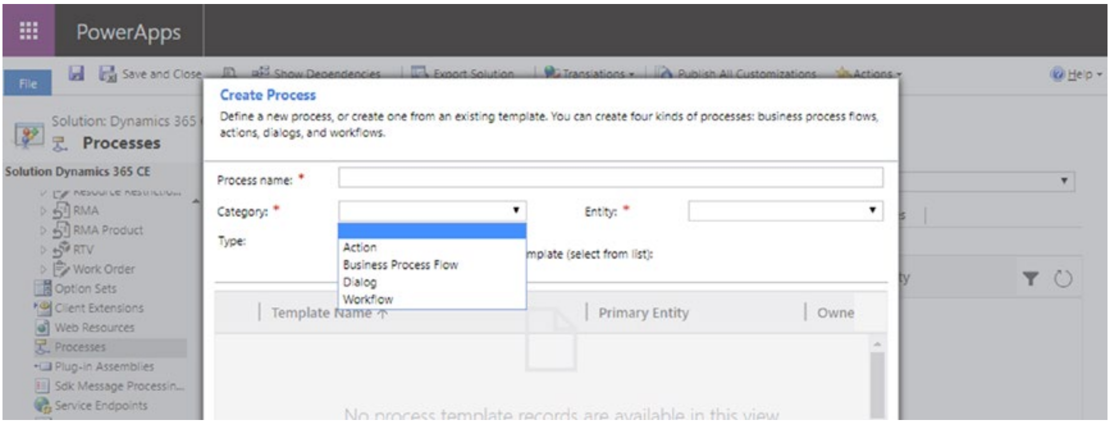
Component Type: Process

View: Customizable

There are no Processes to show in this view. To get started, create one or more Processes.

Figure 8-2. *"Processes" area within the Solution Explorer view*

Figure 8-3 shows how to choose the type.


PowerApps
File
Save and Close
Show Dependencies
Export Solution
Translations
Publish All Customizations
Actions
Help
Solution: Dynamics 365
Processes
Solution Dynamics 365 CE
RMA
RMA Product
RTV
Work Order
Option Sets
Client Extensions
Web Resources
Processes
Plug-in Assemblies
Sdk Message Processin...
Service Endpoints
Create Process

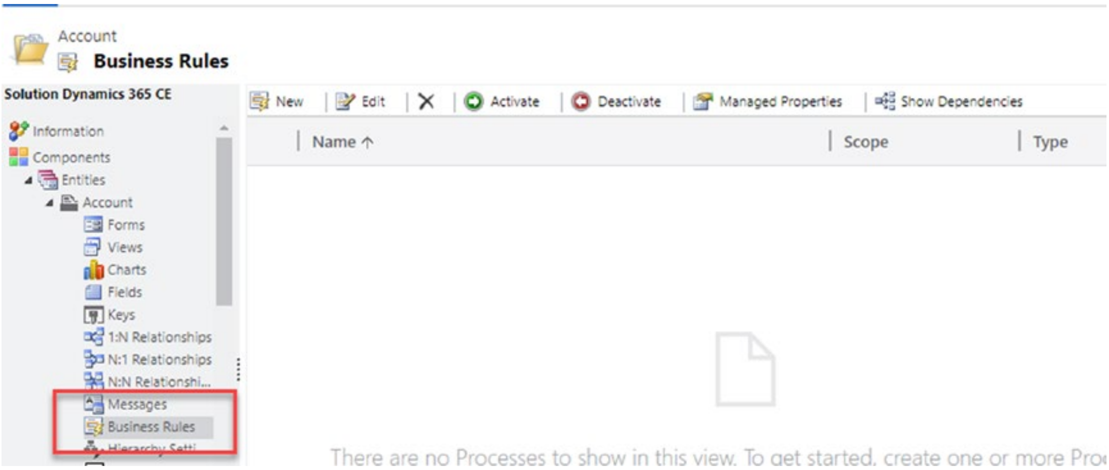
Define a new process, or create one from an existing template. You can create four kinds of processes: business process flows, actions, dialogs, and workflows.

Process name: *
Category: *
Entity: *
Type:
Action
Business Process Flow
Dialog
Workflow
mplate (select from list):
Template Name ↑
Primary Entity
Owne

No process template records are available in this view.

Figure 8-3. *Creating a new Process: Action, Business Process Flow, Dialog, and Workflow types can be selected*

The process that sits outside of this area is *business rules*. Business rules operate at the entity level or field level and can be found either at the entity metadata level or within the form or field configuration itself (Figure 8-4).


Account
Business Rules
Solution Dynamics 365 CE
Information
Components
Entities
Account
Forms
Views
Charts
Fields
Keys
1:N Relationships
N:1 Relationships
N:N Relationshi...
Messages
Business Rules
Hierarchy Setti...
New
Edit
Activate
Deactivate
Managed Properties
Show Dependencies
Name ↑
Scope
Type

There are no Processes to show in this view. To get started, create one or more Pro

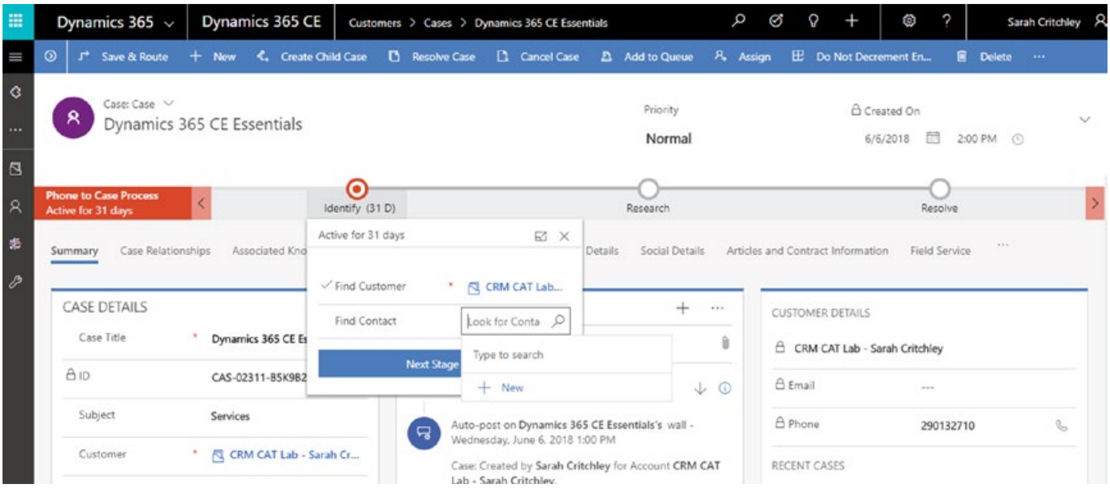
Figure 8-4. *Business rules are available from the entity or form/field levels*

This chapter will cover the five main types of configurable processes and how to create each type of process, their properties, and considerations using examples.

Business Process Flows

Business process flows are a guided process that allows users to be prompted for certain information required at specific steps in the process. Business process flows can include mandatory fields so that it becomes a gated process where such fields must be completed before allowing a user to move on to the next stage.

There are many business process flows already in the system being used for standard processes. These include the Case entity, the Lead-to-Opportunity process, and Opportunity management. The standard Case entity business process flow can be seen in Figure 8-5. Business process flows are available on both the Classic UI and the Unified Interface with minor cosmetic and functional differences.


Dynamics 365
Dynamics 365 CE
Customers > Cases > Dynamics 365 CE Essentials
Sarah Critchley
Save & Route
New
Create Child Case
Resolve Case
Cancel Case
Add to Queue
Assign
Do Not Decrement En...
Delete
Case: Case
Phone to Case Process
Active for 31 days
Identify (31 D)
Research
Resolve
Summary
Case Relationships
Associated Kno
Details
Social Details
Articles and Contract Information
Field Service
Next Stage
Type to search
New
RECENT CASES

Dynamics 365 CE Essentials

Priority: Normal

Created On: 6/6/2018 2:00 PM

Active for 31 days

✓ Find Customer * CRM CAT Lab...

Find Contact: Look for Conta

CASE DETAILS

Case Title * Dynamics 365 CE Es

ID CAS-02311-B5K9B2

Subject Services

Customer * CRM CAT Lab - Sarah Cr...

Auto-post on Dynamics 365 CE Essentials's wall - Wednesday, June 6, 2018 1:00 PM

Case: Created by Sarah Critchley for Account CRM CAT Lab - Sarah Critchley.

CUSTOMER DETAILS

CRM CAT Lab - Sarah Critchley

Email ---

Phone 290132710

Figure 8-5. *Standard business process flows within Dynamics 365 CE Unified Interface*

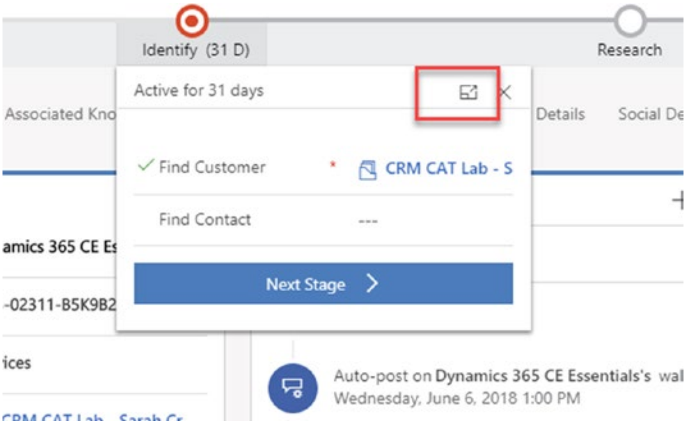
To use a business process flow, fill in the fields required at each named stage (in the Unified Interface the stage name needs to be selected). In the example of the Case entity, the “Identify” stage is asking for the “Customer” field to be completed, and also “Contact” if required. You would complete these, with the minimum being the “Customer,” then click the Next Stage button. The Next Stage button moves the Business Process flow’s active stage to the next stage; in the Case example, to “Research.”

Business process flows can branch based on the type of data entered within the fields. You can get directed to different stages based on the data entered, presenting you with additional or various stages based on this. You do not have to be aware of the change in the branches themselves and can continue using the business process flow based on the information required at the stage presented to you at the time. Related records can also be used within the business process flow. An example of this is the standard Lead-to-Opportunity process flow, which uses both the Lead and the Opportunity entities, guiding the user from one to the other within a single screen. This experience can be created for up to five other standard or custom enabled entities.

Within a record, you can utilize more than one business process flow at once. You can use the Switch Process button (under the “Process” dropdown in some forms) and change to another active business process flow available for your security role. This means you can begin in one business process flow, switch to another, and move back and forth as required so that more than one process is running at the same time. The first business process flow you will see on a record will always be the first one in the list by default, even if you have switched to another instance. Business process flows are based on an entity. When they are created, a reciprocating entity is created in the background, and when you begin a business process flow on a record, an instance of the Business Process Flow entity is created. This instance stores information related to the current state of the business process flow.

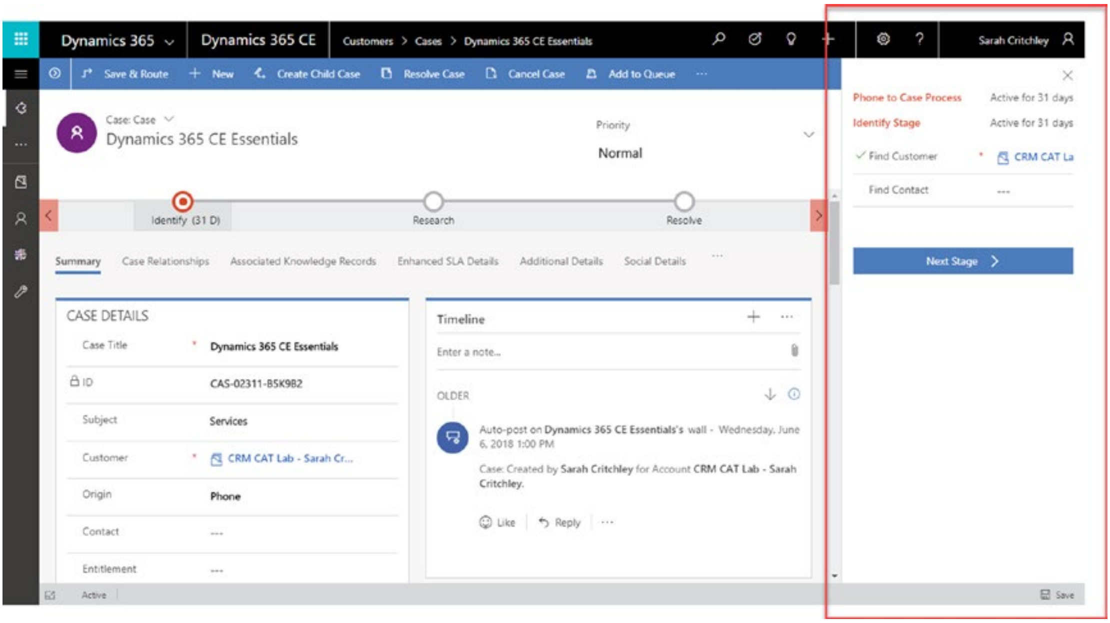
Business process flows are finished once they reach the end and the user clicks “Finish.” Various information is available for reporting on business process flows, including the current stage, the time the process has taken to complete, and the time within each stage. This information can be found on the specific instances and can be used to trigger further automation processes, such as workflows or the basis of an organizational SLA.

One of the main operational differences in the Unified Interface is you can click the “popout” button in a business process flow, which opens a pane on the right-hand side of the window, which you can use in the “docked” state (Figure 8-6). This reduces the need to keep clicking the stage name to check the fields, and you can review the form while having the stage information and fields locked in the right-hand side pane (Figure 8-7).


Identify (31 D)
Research
Active for 31 days
Associated Kno
Details
Social De
Find Customer
CRM CAT Lab - S
Find Contact

Next Stage
amics 365 CE Es
-02311-B5K9B2
ices
Auto-post on Dynamics 365 CE Essentials's wal
Wednesday, June 6, 2018 1:00 PM

Figure 8-6. *"Popout" button within the Dynamics 365 Unified Interface*


Dynamics 365
Dynamics 365 CE
Customers > Cases > Dynamics 365 CE Essentials
Sarah Critchley
Save & Route
New
Create Child Case
Resolve Case
Cancel Case
Add to Queue
Case: Case
Dynamics 365 CE Essentials
Priority
Normal
Identify (31 D)
Research
Resolve
Summary
Case Relationships
Associated Knowledge Records
Enhanced SLA Details
Additional Details
Social Details
CASE DETAILS
Timeline
Enter a note...
OLDER
Like
Reply
Active
Save
Phone to Case Process
Active for 31 days
Identify Stage
Active for 31 days
Find Customer
CRM CAT La
Find Contact

Next Stage

Case Title: Dynamics 365 CE Essentials
ID: CAS-02311-B5K9B2
Subject: Services
Customer: CRM CAT Lab - Sarah Cr...
Origin: Phone
Contact: ---
Entitlement: ---

Auto-post on Dynamics 365 CE Essentials's wall - Wednesday, June 6, 2018 1:00 PM
Case: Created by Sarah Critchley for Account CRM CAT Lab - Sarah Critchley.

Figure 8-7. *The docked business process flow within the UCI*

Action steps can be embedded within business process flows. Action steps are displayed as a button available within the business process flow stage for you to select. They can also optionally prompt you to complete information to complete the step. The completion of the step could normally trigger further business logic from within the action. Action steps, at the time of writing, are a preview feature and need to be enabled in the System Settings of Dynamics 365 CE.

Manual workflows can also be triggered within business process flows when you enter or exit a stage in the process. The next section will look at how to create them, add workflows, and utilize action steps.

Creating Business Process Flows

The creation of business process flows begins with creating the process definition within Dynamics 365 CE. This can be achieved in two ways, either via the App Designer or from the Solution Explorer (Figure 8-8). Both route the user to the same creation wizard screen, as shown in Figure 8-9, where the user is prompted to enter the name, category (Business Process Flow), and record type (Case, for example). Choosing the App Designer removes the option to create it as a task flow, however, which this chapter will look at later.

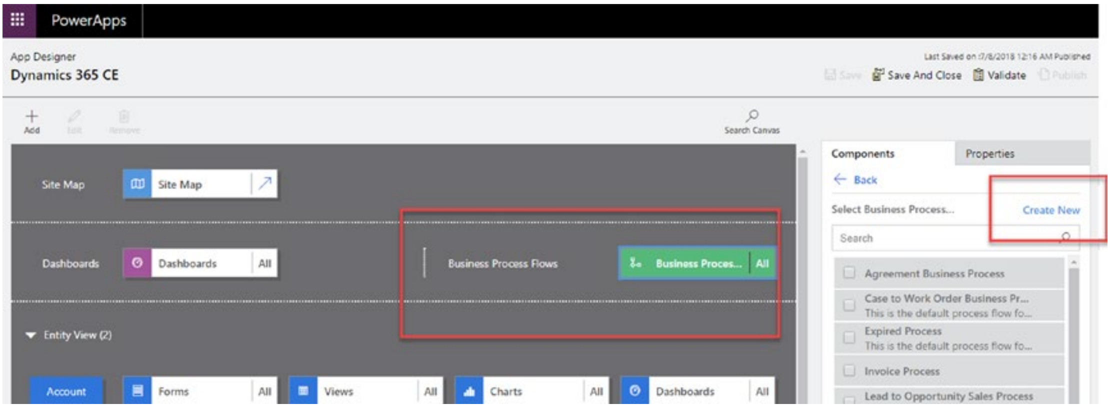
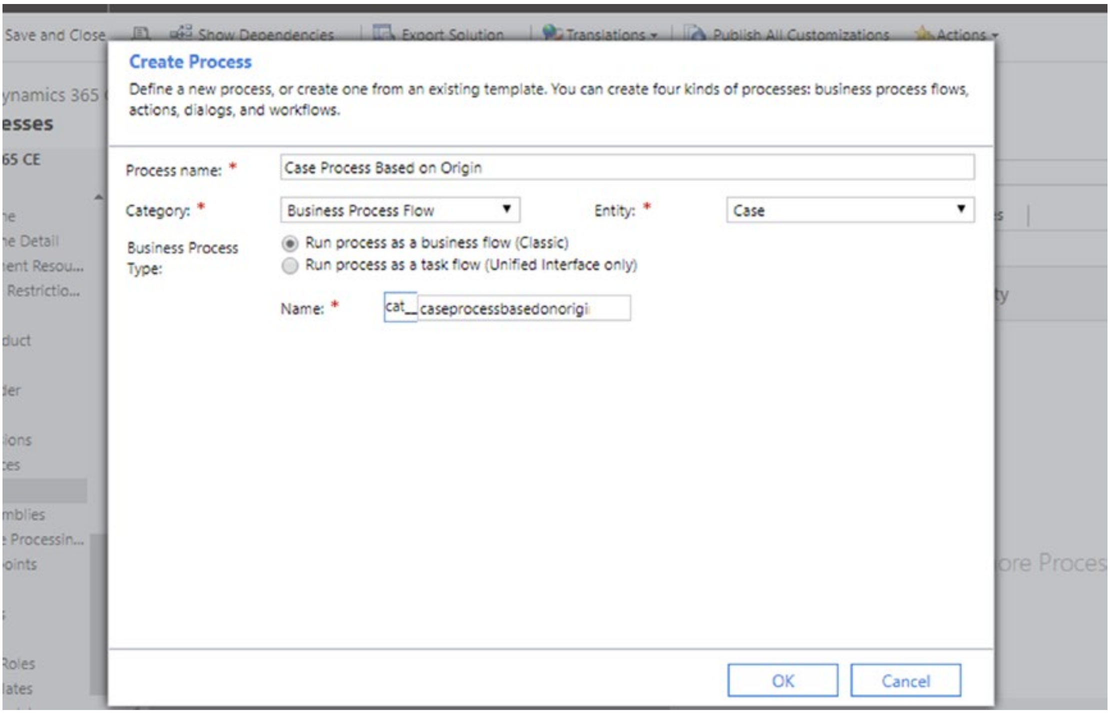

PowerApps
App Designer
Dynamics 365 CE
Last Saved on 7/8/2018 12:16 AM Published
Save
Save And Close
Validate
Publish
Add
Edit
Remove
Search Canvas
Site Map
Site Map
Dashboards
Dashboards
All
Business Process Flows
Business Proces...
All
Entity View (2)
Account
Forms
All
Views
All
Charts
All
Dashboards
All
Components
Properties
Back
Select Business Process...
Create New
Search
Agreement Business Process
Case to Work Order Business Pr...
This is the default process flow fo...
Expired Process
This is the default process flow fo...
Invoice Process
Lead to Opportunity Sales Process

Figure 8-8. *Creating business process flows from within the App Designer*

When a new business process flow is made, a new entity is created behind the scenes. This can be seen in Figure 8-9, where the name of the entity is visible and can be modified. Instances of the Business Process Flow entity are created when a user begins a business process flow or uses the switch process to select it. Information about that specific instance of business process flow is then stored on that record.



Save and Close
Show Dependencies
Export Solution
Translations
Publish All Customizations
Actions
OK
Cancel

Create Process

Define a new process, or create one from an existing template. You can create four kinds of processes: business process flows, actions, dialogs, and workflows.

Process name: * Case Process Based on Origin

Category: * Business Process Flow

Entity: * Case

Business Process Type:
● Run process as a business flow (Classic)
○ Run process as a task flow (Unified Interface only)

Name: * cat_ caseprocessbasedonorigi

Figure 8-9. *Process Creation wizard using the Solution Explorer*

Task: Create a new business process flow.

1. Navigate to an app, click on the “Business Process Flow” component, and in the right-hand side pane, click “New.”
2. Name the process and set the type to “Business Process Flow” and the “Entity” field to “Case” for this example.
3. Click “OK.”

   The Business Process Flow Designer should open, as seen in Figure 8-10.

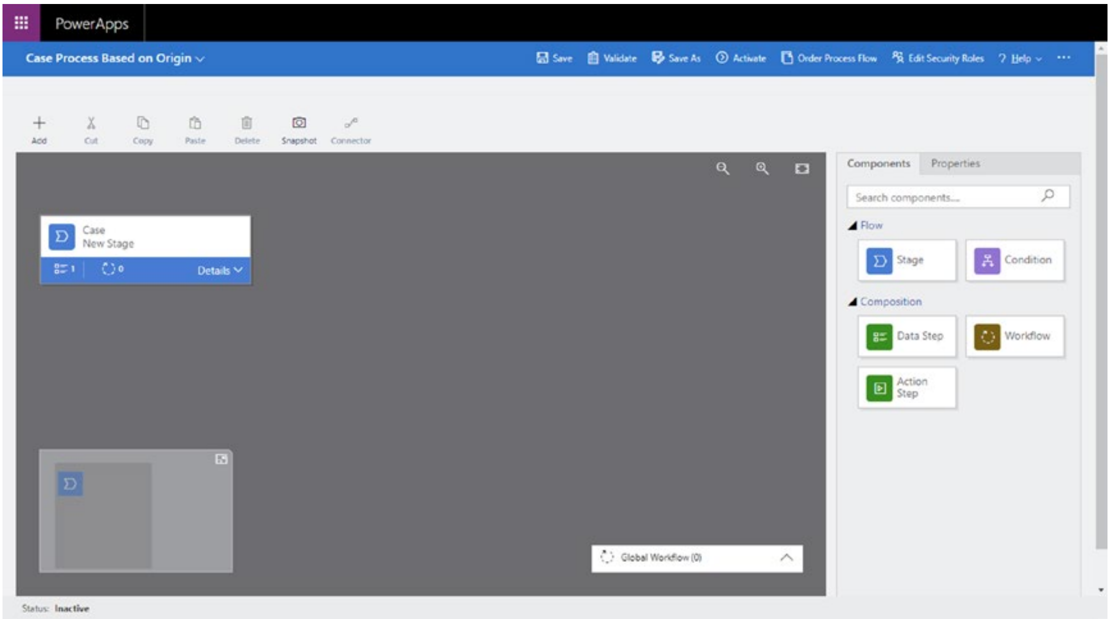

PowerApps
Case Process Based on Origin
Save
Validate
Save As
Activate
Order Process Flow
Edit Security Roles
Help
Add
Cut
Copy
Paste
Delete
Snapshot
Connector
Case
New Stage
Details
Components
Properties
Search components...
Flow
Stage
Condition
Composition
Data Step
Workflow
Action Step
Global Workflow (0)
Status: Inactive

Figure 8-10. Business Process Flow Designer

The diagram shown in Figure 8-11 displays a breakdown of the main components of the Business Process Flow Designer.

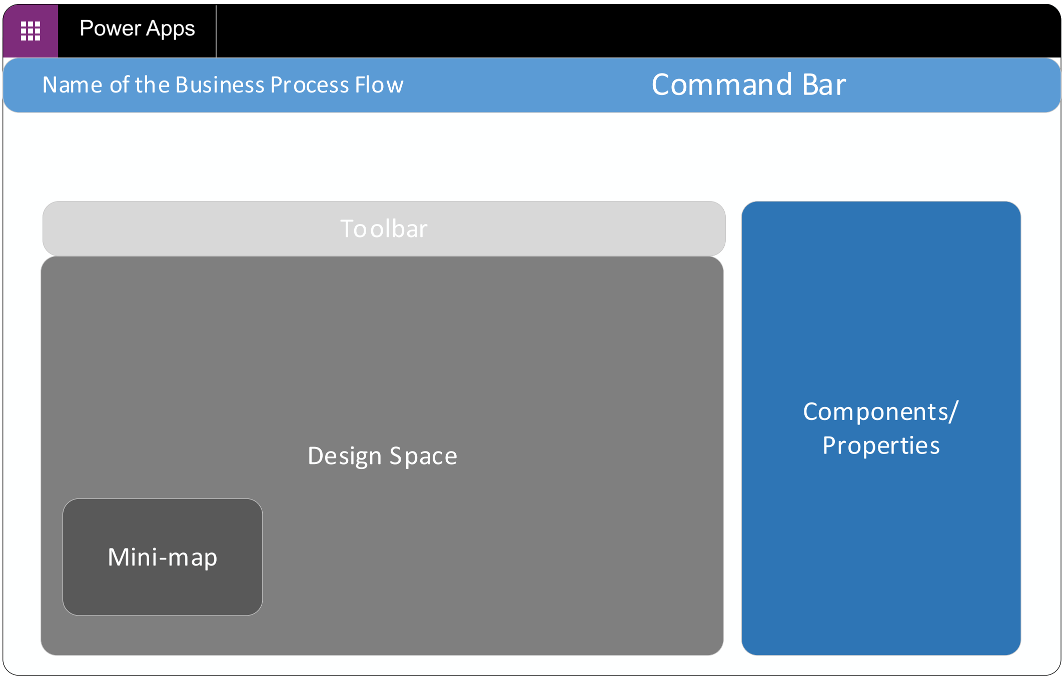

Power Apps
Name of the Business Process Flow
Command Bar
Toolbar
Design Space
Mini-map
Components/
Properties

Figure 8-11. Business Process Flow Designer overview

- The command bar is where operations such as “Save,” “Validate,” and “Edit Security Roles” are.
- The toolbar is where operations such as “Add” and “Copy” and “Paste” are. A component normally has to be selected for these operations to be available.
- The design space is where components are added and where the business process flow is created.
- The pane on the right is the “Components and Properties” pane. The two elements are separated by tabs. Components are stages and conditions that perform the “outline” process flow and also include composition elements such as data steps (fields), workflows, and action steps. All these components are clicked and dragged onto the design space. The properties are the configurable definitions of the composition elements within the design space and are dynamically displayed depending on the one selected.
- The *minimap* allows for a high level of visibility, which is useful for more complex or large business process flows.

To begin business process flow design, click and drag the components from the toolbar onto the design space, first at the stage level, including any conditional components, to create a “flow” that the user of the process will be guided through (Figure 8-12). Inside these stages, data steps are added, which are dragged into the step from the toolbar, configured, and matched to reference fields within the stage. The order in which they are added is the order in which they are displayed to the user. Action steps and workflows work in the same way and are dragged into the specific stage required. Once all of the stages have the right components, the final step should include defining the properties on each one to ensure they are named correctly and are correct to the design specification.

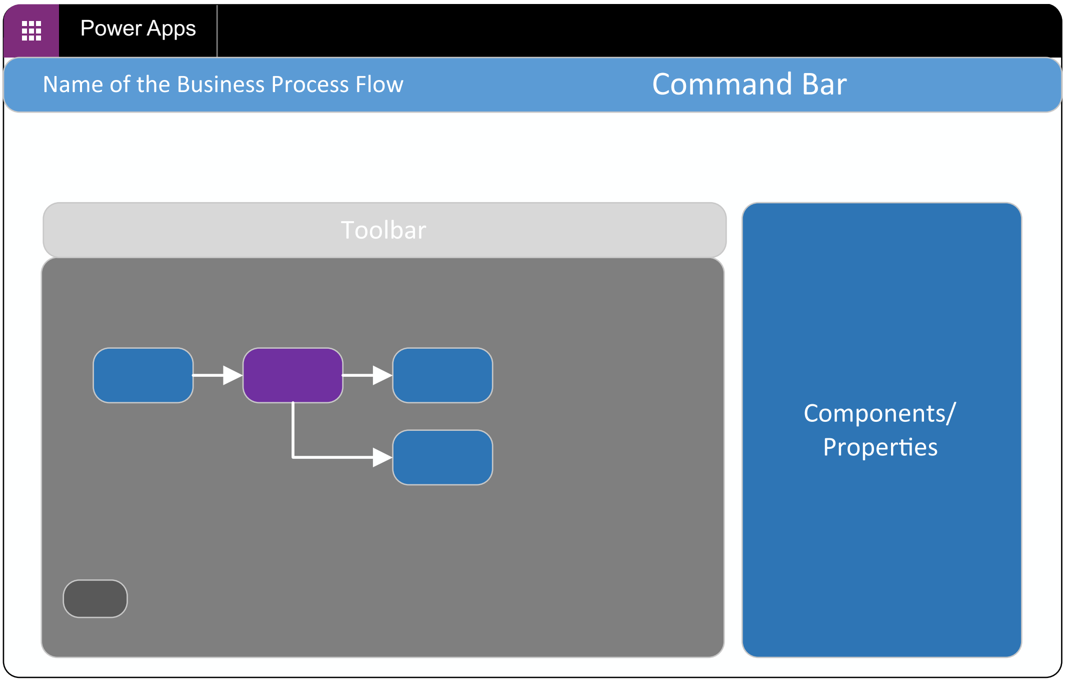

Power Apps
Name of the Business Process Flow
Command Bar
Toolbar
Components/
Properties

Figure 8-12. *Business process flow components added to the design space*

4. The designer has one stage set up at the time of creation. Click on the Components tab.

5. Click and drag the "Condition" component into the design area and connect it with the stage by dropping it onto the plus icon (Figure 8-13). The plus icon displays when a component is dragged into the design area to indicate the connecting points for a component and where they can be added.

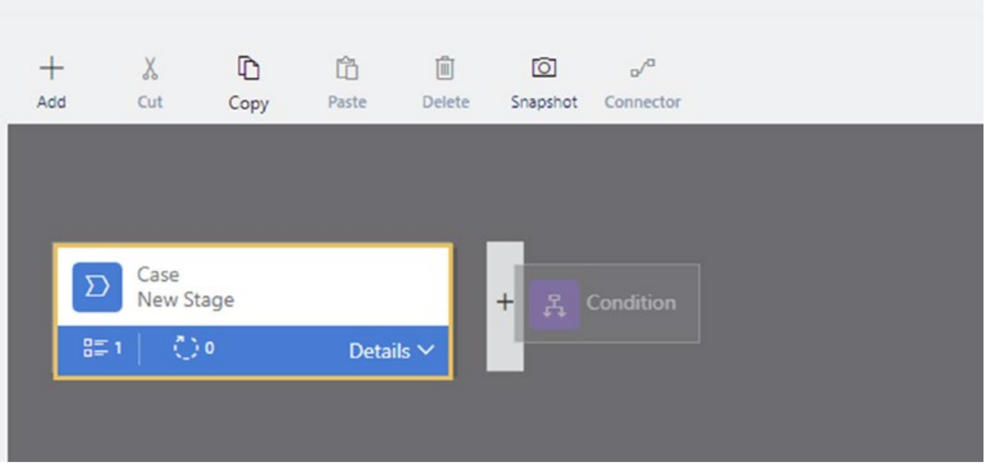

Add
Cut
Copy
Paste
Delete
Snapshot
Connector
Case
New Stage
1
0
Details
Condition

Figure 8-13. *Adding a "Condition" component on a business process flow*

6. Add two more stages for the positive and negative exit points to the condition by dragging the "Stage" components into the design area. There is no need to name or define any attributes yet. This stage simply defines the outline of the business process flow, and you will modify the attribute definitions in the next step.

   The process flow should currently look as shown in Figure 8-14.

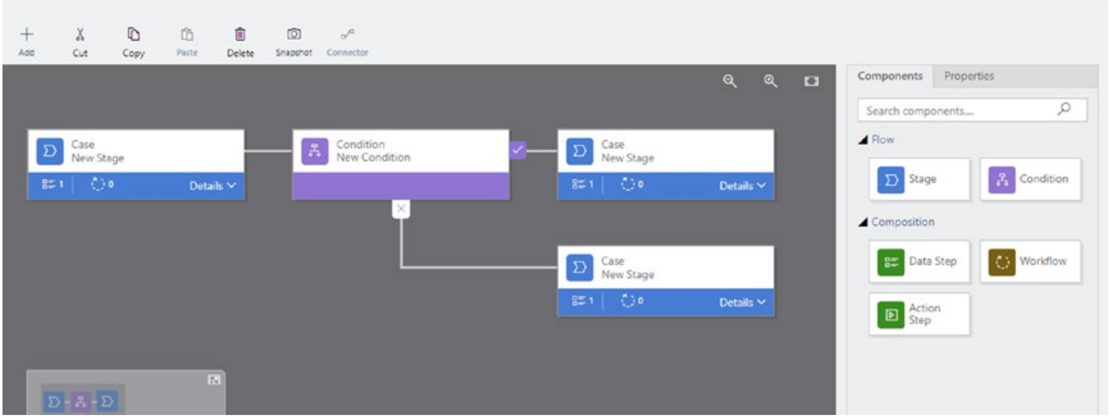
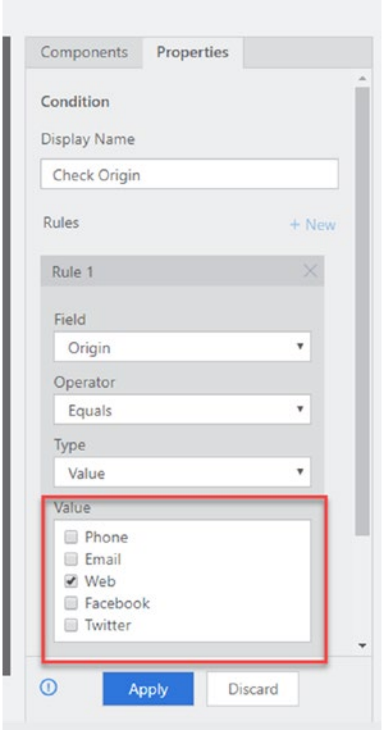

Add
Cut
Copy
Paste
Delete
Snapshot
Connector
Case
New Stage
1
0
Details
Condition
New Condition
Case
New Stage
Details
Case
New Stage
Details
Components
Properties
Search components...
Flow
Stage
Condition
Composition
Data Step
Workflow
Action Step

Figure 8-14. *A basic business process flow with a conditional component branch*

7. Enter the conditional business logic on the “Condition” component as “If Origin” equals “Value” of “Web,” as shown in Figure 8-15. The purpose of this logic is to offer a different processing route for those cases that are created via the web so that another team can manage them. The business logic should display that if the “Origin” field is equal to “Web” then the success criteria should operate, and if not, the failure criteria should operate, indicated by the 'cross' on the routing line from the condition.

8. Update the names of the stages as “Case Creation” ➤ “Check Origin” ➤ “Respond on Portal” and, for the negative conditional outcome, “Email Follow Up.”



Condition

Display Name: Check Origin

Field: Origin

Operator: Equals

Type: Value

Value:
☐ Phone
☐ Email
☑ Web
☐ Facebook
☐ Twitter

Figure 8-15. *Adding conditional logic*

9. The stages will have a single data step (field) already created within them automatically. Add the fields for the user to complete per stage. The same process occurs where the "Data Step" component is dragged, but this time they get dragged into the stage itself. Click and drag, and the stage will have the same plus icons as the larger stage components did when connecting the condition.
10. Move two data step components into the "Case Creation" stage, the "Respond on Portal" stage, and also the "Email Follow Up" stage (Figure 8-16).

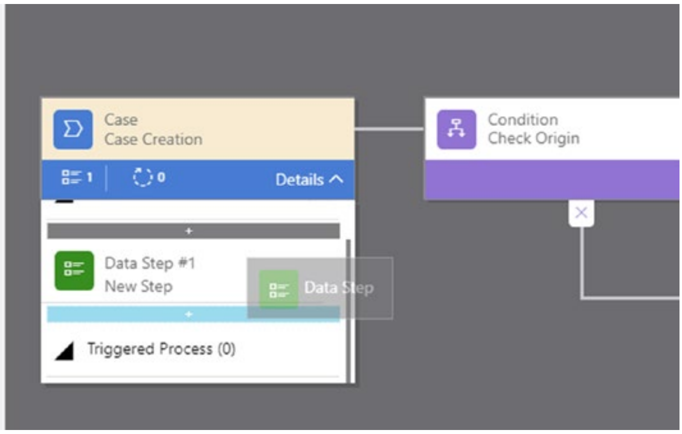
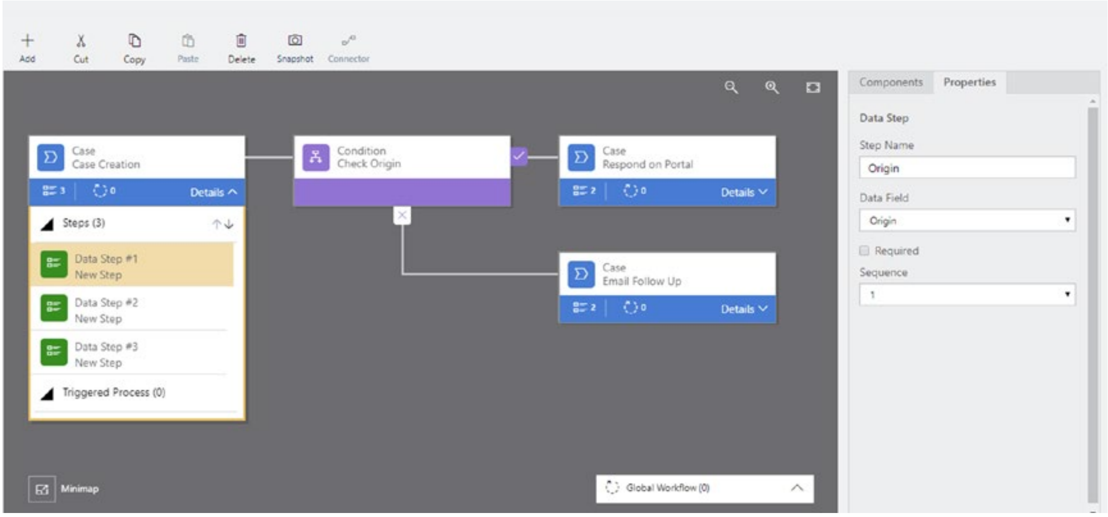


Figure 8-16. *Adding data steps*

11. Data steps are defined as a reference to the linked field on the selected record type. Configuration for the field in the business process flow is completed within the "Properties" pane on the right-hand side. Select "Data Field" and select the field from the dropdown list; e.g., The "Origin" and "Step Name" fields are automatically populated with the same name (Figure 8-17). It can be modified as required, often because a shorter name or a task-based label is needed. If the field is required and the user must be prevented from moving forward until this is complete, set "Required" to "Yes." The order can be changed using the "Sequence" dropdown without having to drag and move them.


Add
Cut
Copy
Paste
Delete
Snapshot
Connector
Case
Case Creation
Details
Steps (3)
Data Step #1
New Step
Data Step #2
New Step
Data Step #3
New Step
Triggered Process (0)
Condition
Check Origin
Case
Respond on Portal
Details
Case
Email Follow Up
Details
Minimap
Global Workflow (0)
Components
Properties
Data Step

Step Name: Origin

Data Field: Origin

☐ Required

Sequence: 1

Figure 8-17. *Configuring the "Data Step" fields in the properties*

Important! If the field is changed from the one originally set, the step name does not change.

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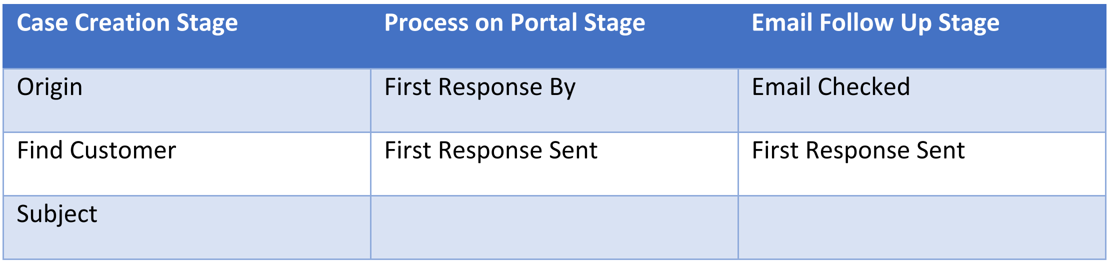
12. Complete the field definitions as shown in the table in Figure 8-18.



Case Creation Stage	Process on Portal Stage	Email Follow Up Stage
Origin	First Response By	Email Checked
Find Customer	First Response Sent	First Response Sent
Subject		

Figure 8-18. *Business process flow field reference*

The business process flow design and definition are now completed. Workflows and action steps can be added in the same way as the data steps, where they are clicked and dragged from the right-hand side panel onto the definition in the design space (Figure 8-19).

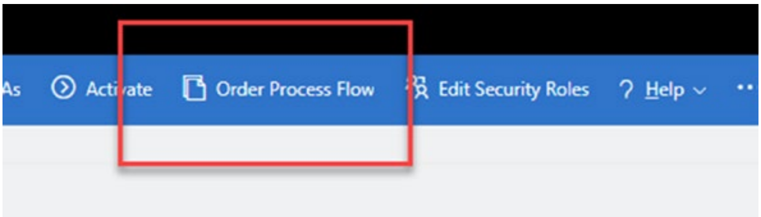
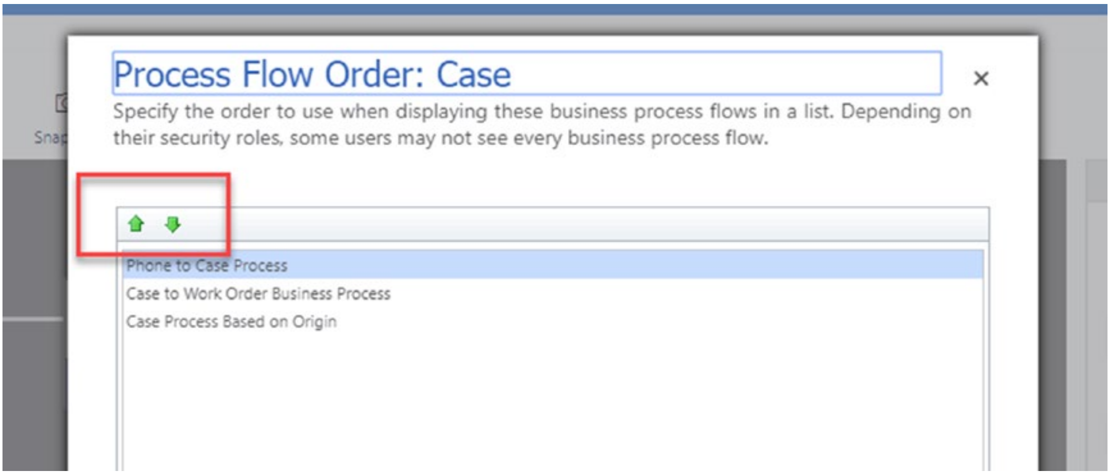


Figure 8-19. *Using order process flow to define the default order of business process flows for users*

The order of business process flows can be prioritized on a single entity. This works in conjunction with security roles. The user will see the business process flow highest on the list first (which will be their "default") based on their available security role. To move the business process flows higher or lower, use the up and down arrows on the dialog box (Figure 8-20).


Process Flow Order: Case

Specify the order to use when displaying these business process flows in a list. Depending on their security roles, some users may not see every business process flow.

Phone to Case Process
Case to Work Order Business Process
Case Process Based on Origin

Figure 8-20. *Use the up and down arrows to configure the default order.*

The business process flow designer also includes a shortcut to the security role list if you need to modify the security roles and control which roles have access to this entity. The business process flow must be saved, validated, and activated before the its name will correctly display in the Business Process Flow list within the security role.

Click the “Edit Security Role” button and select the security role to modify (Figure 8-21). Navigate to the Business Process Flows tab within the security role to see the process with the name just created, modify the security privileges as required, and save the role (Figure 8-22).

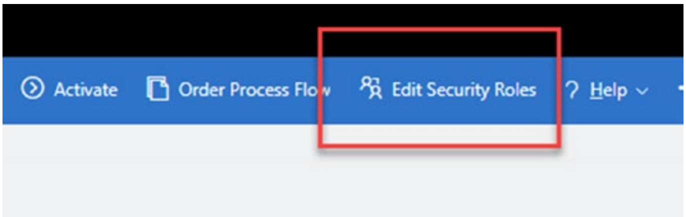
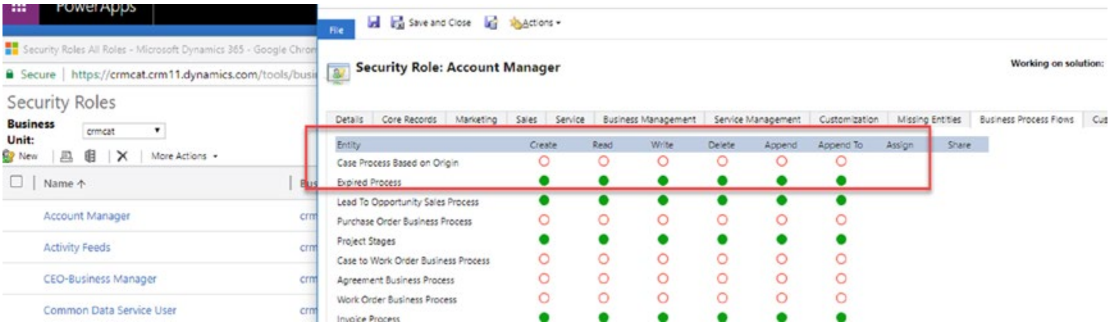

Activate
Order Process Flow
Edit Security Roles
Help

Figure 8-21. *Click “Edit Security Roles” to configure the security role and security for the business process flow just created*


PowerApps
Security Roles All Roles - Microsoft Dynamics 365 - Google Chrome
Secure | https://crmcat.crm11.dynamics.com/tools/busi
Security Roles
Business Unit: crmcat
New
More Actions
Name ↑
Account Manager
Activity Feeds
CEO-Business Manager
Common Data Service User
File
Save and Close
Actions
Working on solution:
Details
Core Records
Marketing
Sales
Service
Business Management
Service Management
Customization
Missing Entities
Business Process Flows

Security Role: Account Manager

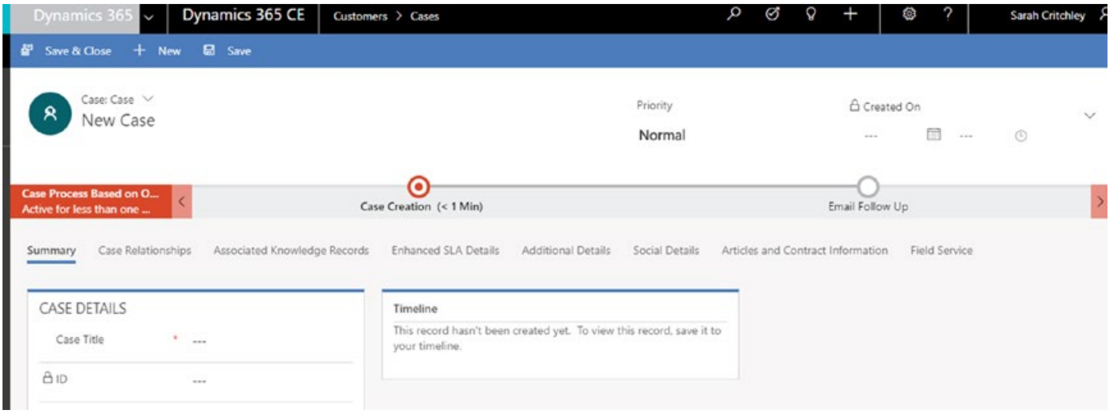
Entity	Create	Read	Write	Delete	Append	Append To	Assign	Share
Case Process Based on Origin	○	○	○	○	○	○		
Expired Process	●	●	●	●	●	●		
Lead To Opportunity Sales Process	●	●	●	●	●	●		
Purchase Order Business Process	○	○	○	○	○	○		
Project Stages	●	●	●	●	●	●		
Case to Work Order Business Process	○	○	○	○	○	○		
Agreement Business Process	○	○	○	○	○	○		
Work Order Business Process	○	○	○	○	○	○		
Invoice Process	●	●	●	●	●	●		

Figure 8-22. *The business process is defined as an entity and privileges can be defined within the security role definition under the Business Process Flows tab*

For single-entity business process flows, Create, Read, and Write privileges are required within a security role. Delete is required if an instance of a business process flow (where one has been started) needs to be deleted. Append and Append To privileges are used for using cross-entity business process flows that utilize more than one entity. For more information on security, please see Chapter 4.

13. Save and publish the Business process flow and navxigate to the app and the Case entity.

14. Create a new Case entity to see the business process flow in action (Figure 8-23). (If it is not displaying, ensure it is included within the app.)


Dynamics 365
Dynamics 365 CE
Customers > Cases
Sarah Critchley
Save & Close
New
Save
Case: Case
New Case
Case Process Based on O...
Active for less than one ...
Case Creation (< 1 Min)
Email Follow Up
Summary
Case Relationships
Associated Knowledge Records
Enhanced SLA Details
Additional Details
Social Details
Articles and Contract Information
Field Service
CASE DETAILS
Timeline

Priority: Normal

Created On: ---

Case Title *: ---

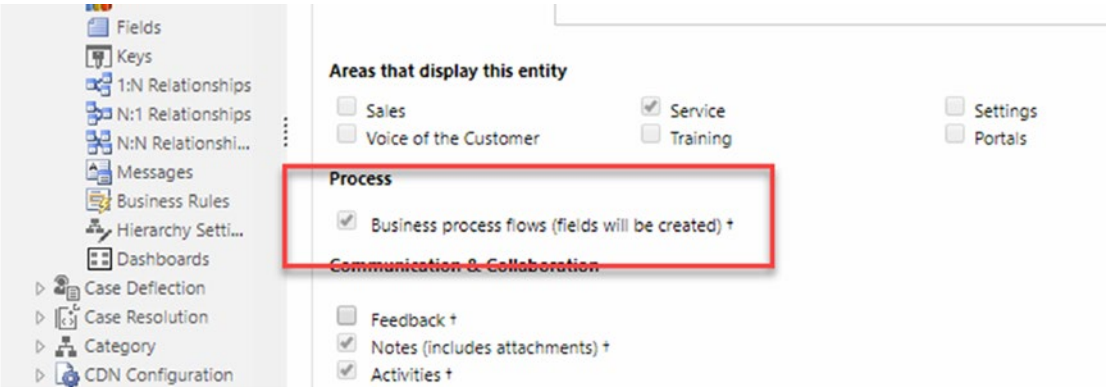
ID: ---

This record hasn't been created yet. To view this record, save it to your timeline.

Figure 8-23. *Example business process flow displaying as the default within the Case form*

15. Add a title for the Case and, once saved, set the “Origin” field and watch it modify the stage based on if the value is “Web” or not. Change between the field values to see the stage name change in real time.

Business process flows are available for standard entities and also custom entities. The “Business Flow” flow option needs to be selected within the entity metadata (Figure 8-24). Once this option is selected it cannot be turned off.


Fields
Keys
1:N Relationships
N:1 Relationships
N:N Relationshi...
Messages
Business Rules
Hierarchy Setti...
Dashboards
Case Deflection
Case Resolution
Category
CDN Configuration

Areas that display this entity

☐ Sales
☐ Voice of the Customer
☑ Service
☐ Training
☐ Settings
☐ Portals

Process

☑ Business process flows (fields will be created) †

Communication & Collaboration

☐ Feedback †
☑ Notes (includes attachments) †
☑ Activities †

Figure 8-24. *Configuring an entity to use business process flows*

This section has covered what business process flows are, how to use them, and how to get started building a new business process flow. Business process flows can be created for custom or existing entities, and their ordering and security roles defined, giving organizations the capability to manage users in different departments and display the correct process. They are an excellent way of implementing custom guided processes that can include mandatory gateways and conditional branching.

Workflows

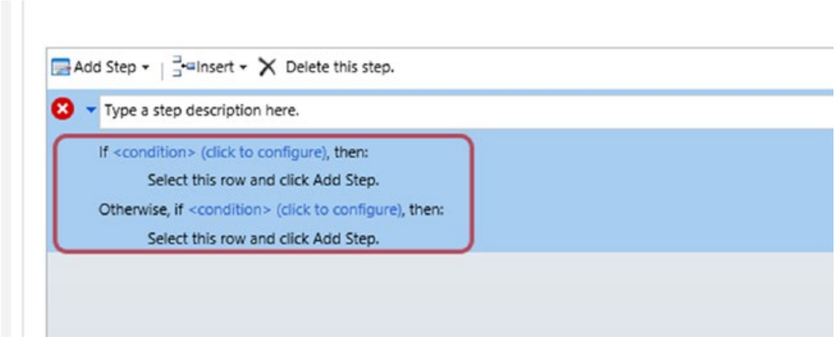
Workflows are a type of process within Dynamics 365 CE that allows users to create automated business logic in real time or within the background of the application. Workflows are created via the Solution Explorer (not the App Designer, at time of writing) and can contain conditional steps and perform actions based on contextual data from the record it was triggered from.

Workflows can be executed from the actions a user performs within the system, which are as follows:

- Creation of a record
- Update of a record and update of specific fields (including status changes and assignment)
- Deletion of a record

Workflows can also be run via business process flows automatically on stage entry and exit. They can be triggered manually by a user using the “Run Workflow” operation (this is only available in the Classic UI at time of writing; however, it will be available in the Unified Interface as part of the October 2018 release).

Complex nested conditional business logic can be achieved using workflows, including the concept of scheduled workflows’ using background workflows that have “wait” conditions (Figure 8-25).



Type a step description here.

If <condition> (click to configure), then:

Select this row and click Add Step.

Otherwise, if <condition> (click to configure), then:

Select this row and click Add Step.

Figure 8-25. *Example conditional logic within a workflow*

Workflow templates can be made where business logic is created within the workflow and saved as a template against the entity. This is a very similar process to creating email templates. It is a great way to create complex reusable business logic, saving effort in the long term.

Dynamics 365 CE has an operational way of processing data within workflows and actions. The operations of the platform can be summarized into the following areas:

- Pre-operation
- Database Operation
- Post-operation

The "operation" can be a Create, Update, or Delete. There is the concept of a state *before* the change, the change itself, and the state *after* the change (Figure 8-26). The important part is that the states before the change and after the change are likely to be different. Having this information and being able to utilize this in custom operations is important. Workflows can also perform database operations, such as Create and Update. The main limitation of workflows is that they are unable to perform a Retrieve Multiple function. This drawback is often a reason for using extensions by third parties or implementing custom code using plugins.

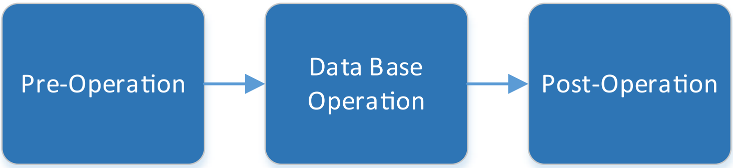


Figure 8-26. *Platform operation overview*

When creating a new workflow or modifying an existing one, you have the option to define the workflow as either "real-time" or "background." Background workflows are often attributed to better performance as they allow the system to determine when the resources become available within a timeframe to operate (normally between 1 and 2 minutes). See Figure 8-27.

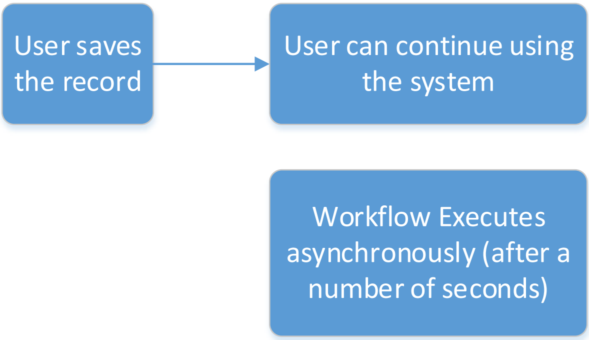

User saves the record
User can continue using the system
Workflow Executes asynchronously (after a number of seconds)

Figure 8-27. *Background workflows trigger action*

Real-time workflows are advantageous as the action defined within the workflow happens instantaneously (Figure 8-28). Real-time workflows will result in a user having to wait until the action is completed before the screen refreshes and the save is completed. This also means that you see any changes that the workflow has made to the current record or related records within sub-grids. There are some advantages and disadvantages to each of the types, which are summarized in Table 8-1.

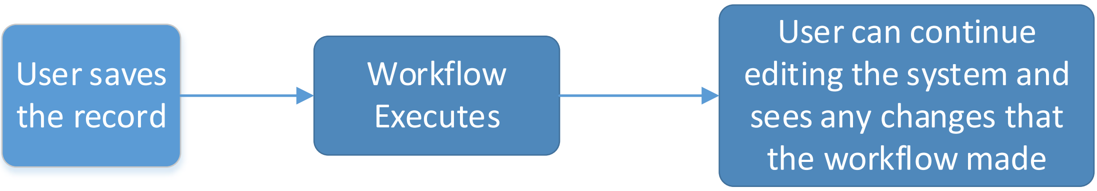

User saves the record
Workflow Executes
User can continue editing the system and sees any changes that the workflow made

Figure 8-28. *Real-time workflows trigger action*

Table 8-1. *Advantages and Disadvantages of Workflow Types*

Background Workflows	Real-Time Workflows
Can perform "Wait" operations	Cannot perform "Wait" operations
Cannot operate before a Save operation	Can perform logic before a Save operation (pre-operation)
Can fail silently	Cancelling an operation is possible
Can be attributed to better performance	Can display an error to a user
The order cannot be guaranteed.	The order can be better managed with linked real-time and background workflows.
The user does not have to wait for the workflow to complete before they can continue editing the record after the save.	

There is no right or wrong answer when it comes to which type of workflow is better. It depends entirely on the business logic required, if there are any dependencies, and what user experience is required (e.g., is the user expecting the information immediately).

Workflows also run within a "scope" of privileges. These can be summarized as follows:

- **User** – Workflow will only run on records owned by the same owner as the workflow.
- **Business Unit** – Workflow will only run on records owned by a user in the same business unit as the owner of the workflow.
- **Parent–Child Business Unit** - The workflow will only run on records owned by a user in the same business unit or child business unit of that of the owner of the workflow.
- **Organization** – Any user can execute the workflow.

The most restrictive is keeping the scope to a user. However, most of the time this is too restrictive for organizations and instead they set it to the Business Unit or Parent–Child Business Unit if these are being utilized. The Organization scope is the least restrictive. With this in mind, there are some security considerations of workflows, as seen in Figure 8-29.

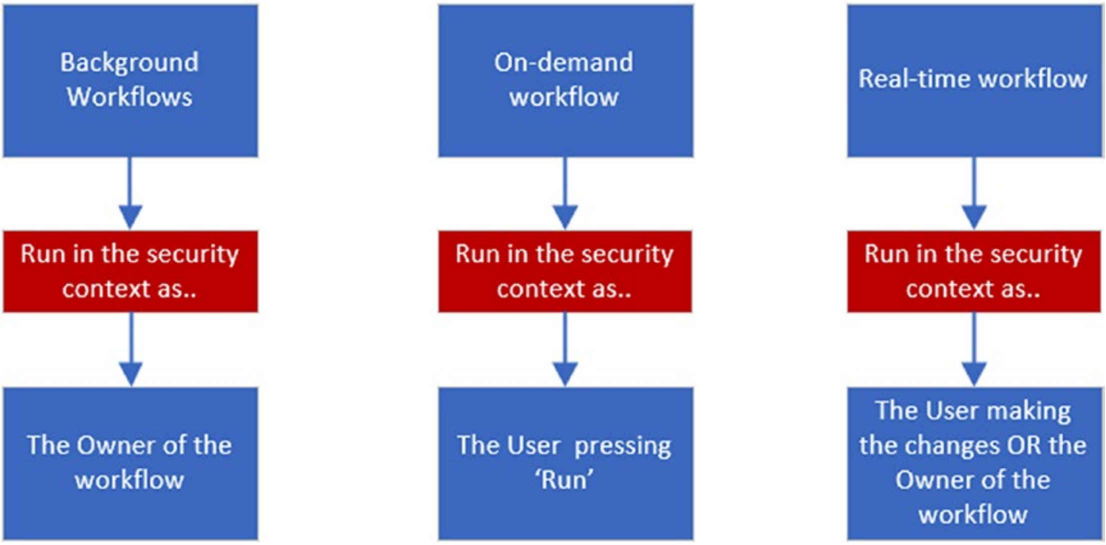

Background Workflows
Run in the security context as..
The Owner of the workflow
On-demand workflow
Run in the security context as..
The User pressing 'Run'
Real-time workflow
Run in the security context as..
The User making the changes OR the Owner of the workflow

Figure 8-29. *Security considerations for the context of workflows*

There are also different options available for the background and real-time workflows for the available triggers. The main difference is the option of "Execute As" for real-time workflows. This option allows the use of "impersonation" of another user and their security roles and is not necessarily the user executing the changes or the owner of the workflow. Impersonation is where an operation is run in the context of another user who is normally not the user who has triggered the operation. This is often used to get around the security constraints of the implemented organizational security without having to modify the structure itself.

Real-time workflows and background workflows have different trigger points available, as shown in Figures 8-30 and 8-31. Background workflows only have the option for after the operation has happened within the database. Real-time workflows have the option for after and also before the database operation to have access to the "pre-operation" stage of the platform.

Record is Created	Start when = AFTER
Record Status Changes	Start when = AFTER
Record is Assigned	Start when = AFTER
Record Field Changes	Start when = AFTER
Record is Deleted	Start when = AFTER

Figure 8-30. *Available triggers for background workflows*

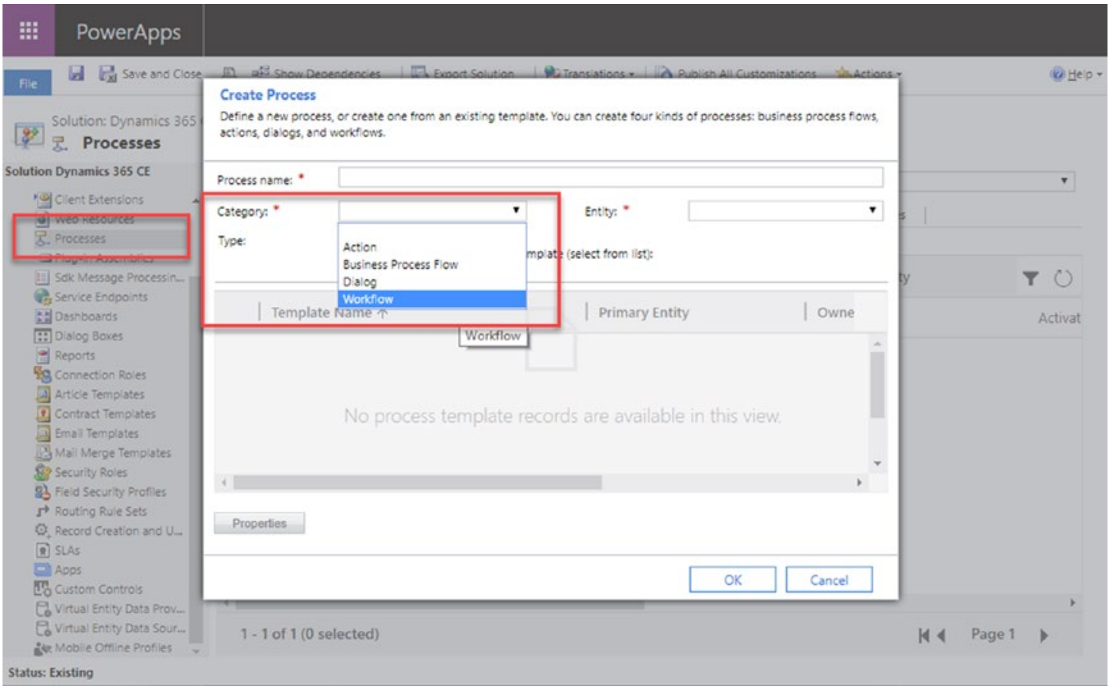
This is important and the only stage available in the “Delete” trigger, as once the record is deleted there is no post-operation available (as the record is deleted!). Reasons for requiring the pre-operation data would be to perform data-validation checks and to add in conditional logic to perform operations if the values of data are not correct.

Record is Created	Start when = AFTER
Record Status Changes	Start when = AFTER or BEFORE
Record is Assigned	Start when = AFTER or BEFORE
Record Field Changes	Start when = AFTER or BEFORE
Record is Deleted	Start when = BEFORE
Execute As	Owner of the Workflow or The user who made the changes

Figure 8-31. *Available triggers for real-time workflows*

Creating Workflows

Workflows are created from the Classic UI within the Solution Explorer (Figure 8-32).


PowerApps
File
Save and Close
Show Dependencies
Export Solution
Translations
Publish All Customizations
Actions
Help
Solution: Dynamics 365
Processes
Solution Dynamics 365 CE
Client Extensions
Web Resources
Processes
Plug-in Assemblies
Sdk Message Processin...
Service Endpoints
Dashboards
Dialog Boxes
Reports
Connection Roles
Article Templates
Contract Templates
Email Templates
Mail Merge Templates
Security Roles
Field Security Profiles
Routing Rule Sets
Record Creation and U...
SLAs
Apps
Custom Controls
Virtual Entity Data Prov...
Virtual Entity Data Sour...
Mobile Offline Profiles
Status: Existing
Create Process
Process name: *
Category: *
Entity: *
Type:
Action
Business Process Flow
Dialog
Workflow
mplate (select from list):
Template Name
Primary Entity
Owne
Activat
Properties
OK
Cancel
1 - 1 of 1 (0 selected)
Page 1

Define a new process, or create one from an existing template. You can create four kinds of processes: business process flows, actions, dialogs, and workflows.

No process template records are available in this view.

Figure 8-32. Creating a workflow within the Solution Explorer

Once the workflow is created, and the scope, triggers, and type of the workflow have been defined, the business logic needs to be built. Workflows have a large level of available business logic available to them. This chapter will review the functionality available that is essential to get started with workflows.

These questions should be the starting point when constructing business logic within the platform:

- What does it need to do?
- Are there conditions or requirements I need to enforce?
- What are the record types involved?

The answers to these three questions will give you enough information to get started building a workflow.

Workflows are made up of steps, as shown in Figure 8-33. The step that was used previously normally defines the next required step (Figure 8-34). Steps are built upon one another, especially when using conditions, so “branching” and conditional branching can occur.

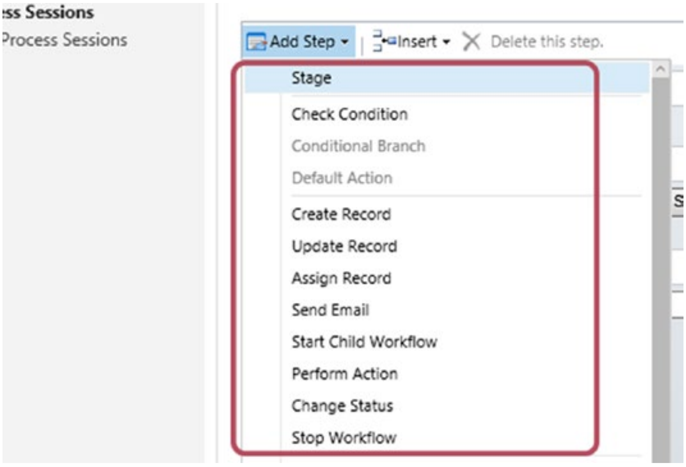
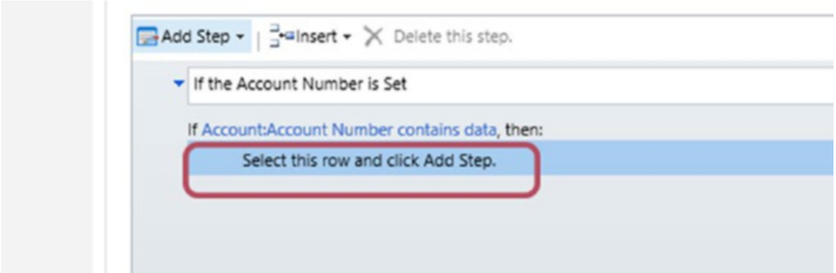

ss Sessions
Process Sessions
Add Step
Insert
Delete this step.
Stage
Check Condition
Conditional Branch
Default Action
Create Record
Update Record
Assign Record
Send Email
Start Child Workflow
Perform Action
Change Status
Stop Workflow

Figure 8-33. Steps available within workflows


Add Step
Insert
Delete this step.

If the Account Number is Set

If Account:Account Number contains data, then:

Select this row and click Add Step.

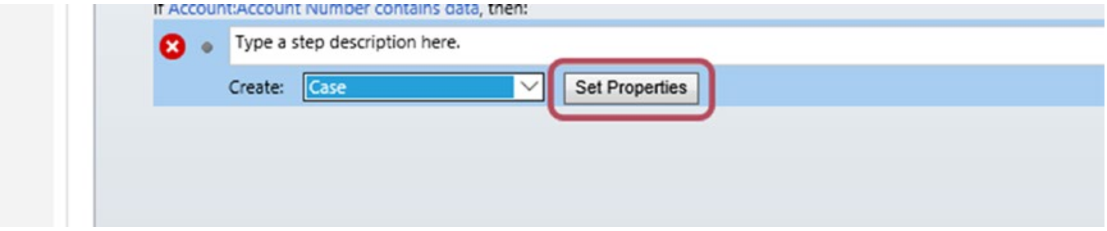
Figure 8-34. Selecting the next line beneath a step to add a next step in the flow

The available steps and their functionality are summarized here:

- **Stage** – Used to organize your business logic into sections
- **Check Condition (If, Then)** – Adds a conditional statement *(If x is true, do this)*
- **Conditional Branch (Otherwise, If Then)** – Used directly after a check condition *(if x is true, do this, otherwise if x is true, do this)*
- **Default Action (Otherwise)** – Inserts logic for action if the condition or conditional branch fails *(if x is true, do this, otherwise if x is true, do this, else, do this)*

- **Wait** – Waits until a condition is met, then performs the step. Not available in real-time workflows
- **Parallel Wait Branch** – Adds a wait branch that is running at the same time as your previous wait branch
- **Create Record** – Allows the creation of an entity, or related entity, record (can use dynamic values)
- **Update Record** – Allows the update of an entity or related entity (can use dynamic values)
- **Assign Record** – Assigns the entity
- **Sent Email** – Creates an email activity in CRM and sends it
- **Start Child Workflow** – Starts a child workflow (normally a different entity)
- **Change Status** – Changes the status of the entity record
- **Stop Workflow** – Stops the workflow with a completed or cancelled status. In real-time workflows this reason is reported to the user in the user interface and the save does not take place.

When a record is created or updated, the properties of that operation must be set (Figure 8-35). This includes populating mandatory fields; for example, in a "Create" operation. Using these operations allows the use of dynamic data from within the operation of the workflow so that a workflow can retrieve values from another area of the system linked to the context and populate it within the entity being created or updated.



If Account:Account Number contains data, then:

Type a step description here.

Create: Case

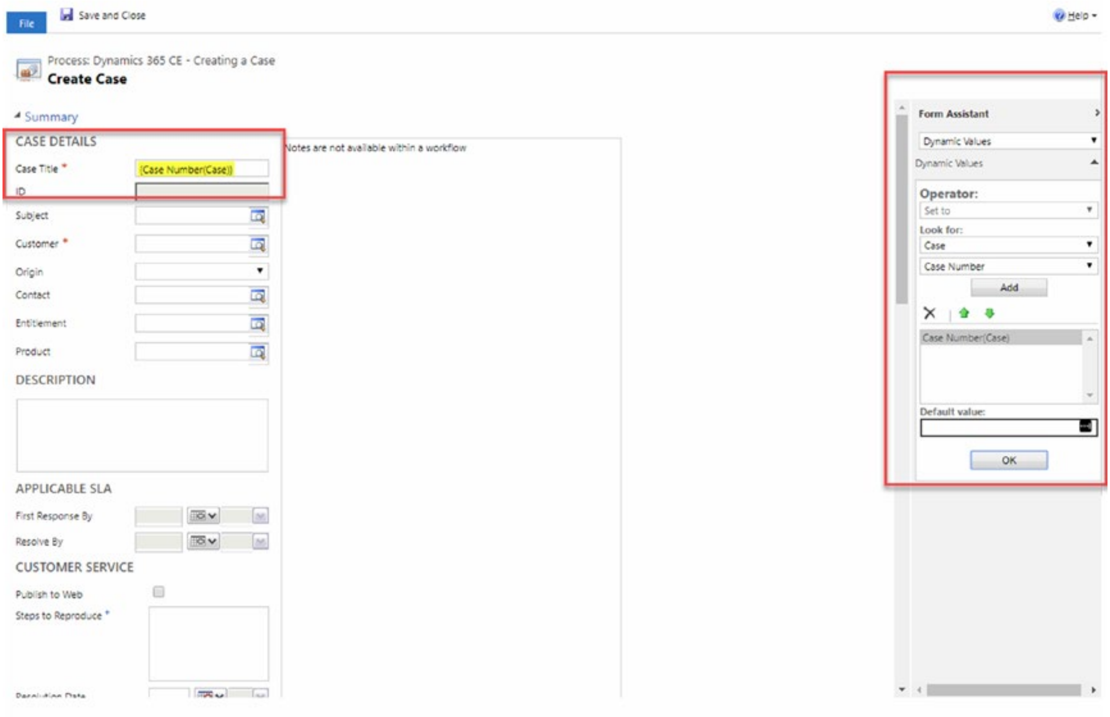
Figure 8-35. *Select "Set Properties" to define the data to be used in operations performed by the workflow*

Workflows have a concept of *context*. The context is created from the trigger point. In the example that follows, it is the Account that has triggered the workflow. From the start of that operation, the information from the Account record available when the workflow was triggered (not after) is available to use and to perform conditional business logic, that is what the context is. In addition to that, related entities defined in lookup values on the Account can be utilized within that business logic, also within its operational context.

Workflows can also trigger *child workflows*. Child workflows are available for background and real-time workflows. They allow workflows to be "chained" together so the initial triggering context can be retained and expanded upon through multiple different entities that may not be available in the initial workflow.

When a user navigates to the properties of an entity definition, they will see what looks like a new, blank record. The frame is not based on any form and contains all of the visible fields on forms, including those that are not visible on the forms near the bottom. There is a pane on the right-hand side called "Form Assistant" that allows a user to use the following:

- **Operation Functionality** – This allows the user to set numerical values and dates dynamically; e.g., +2 days or +12 months.
- **Dynamic Data using "Look For"** – Via the parent and child entities, field data can be retrieved and then selected to be used within the fields. This operation adds the dynamic value within the field in yellow highlight in Figure 8-36.


File
Save and Close
Help
Process: Dynamics 365 CE - Creating a Case
Create Case
Summary
CASE DETAILS
ID
Subject
Customer
Origin
Contact
Entitlement
Product
DESCRIPTION
APPLICABLE SLA
First Response By
Resolve By
CUSTOMER SERVICE
Publish to Web
Steps to Reproduce
Form Assistant
Dynamic Values
Add
Default value:
OK

Case Title * {Case Number(Case)}

Notes are not available within a workflow

Operator: Set to

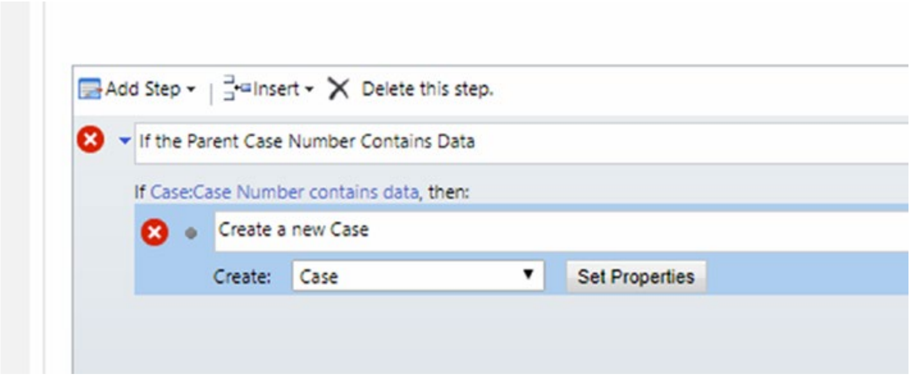
Look for: Case

Case Number

Case Number(Case)

Figure 8-36. *Using the Form Assistant to set dynamic values within the entity in a workflow*

Where all steps are not completed for the workflow to be activated, errors will appear. Errors are indicated within workflow creation by the red "x" that appears next to a step (Figure 8-37).


Add Step
Insert
Delete this step.
Set Properties

If the Parent Case Number Contains Data

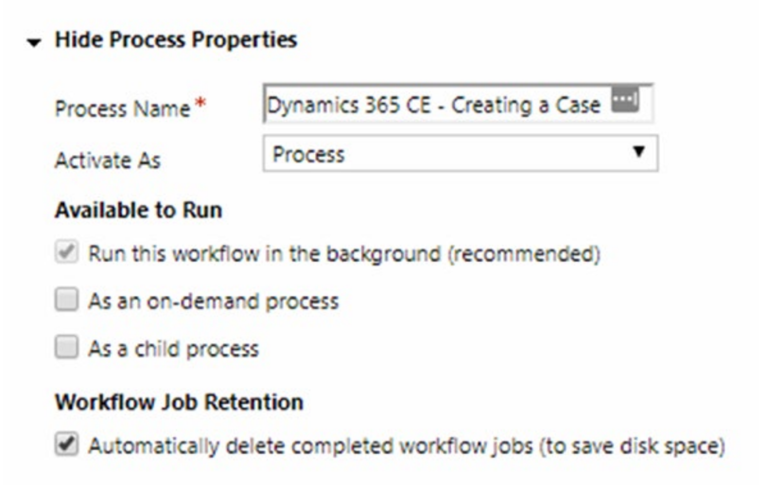
If Case:Case Number contains data, then:

Create a new Case

Create: Case

Figure 8-37. *Selecting the next line beneath a step to add a next step in the flow*

The workflow properties are where you configure the name, type of process, and when the workflow should be available to run. This is where the workflow can be set as a manual workflow by checking “As an on-demand process” or configured as a child process to be used in other workflows (Figure 8-38).



▾ **Hide Process Properties**

Process Name* Dynamics 365 CE - Creating a Case

Activate As Process

Available to Run

☑ Run this workflow in the background (recommended)

☐ As an on-demand process

☐ As a child process

Workflow Job Retention

☑ Automatically delete completed workflow jobs (to save disk space)

Figure 8-38. *Workflow properties*

You cannot change the type of workflow from the “Available to run” configuration; instead, you need to select the button on the command bar to change back and forth between a background and a real-time workflow, as shown in Figure 8-39.

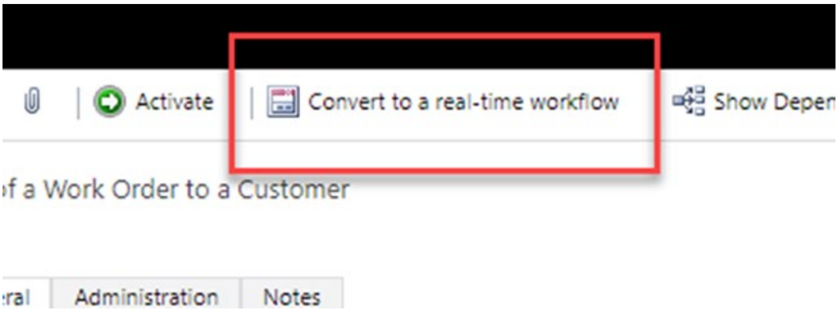
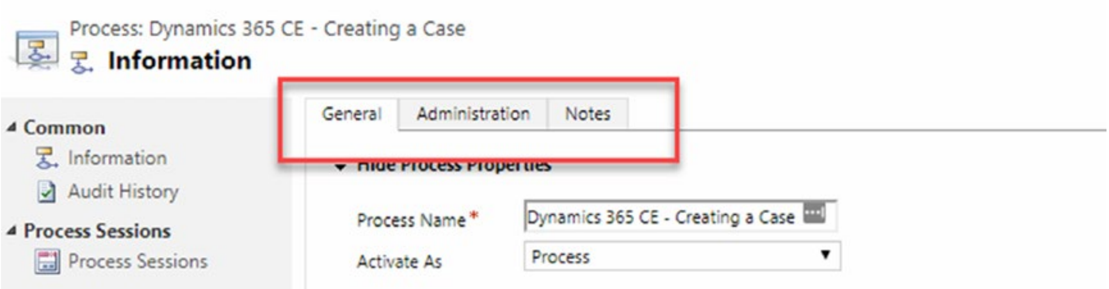

Activate
Convert to a real-time workflow
Show Depen
f a Work Order to a Customer
ral
Administration
Notes

Figure 8-39. *Use the button to change between the workflow types*

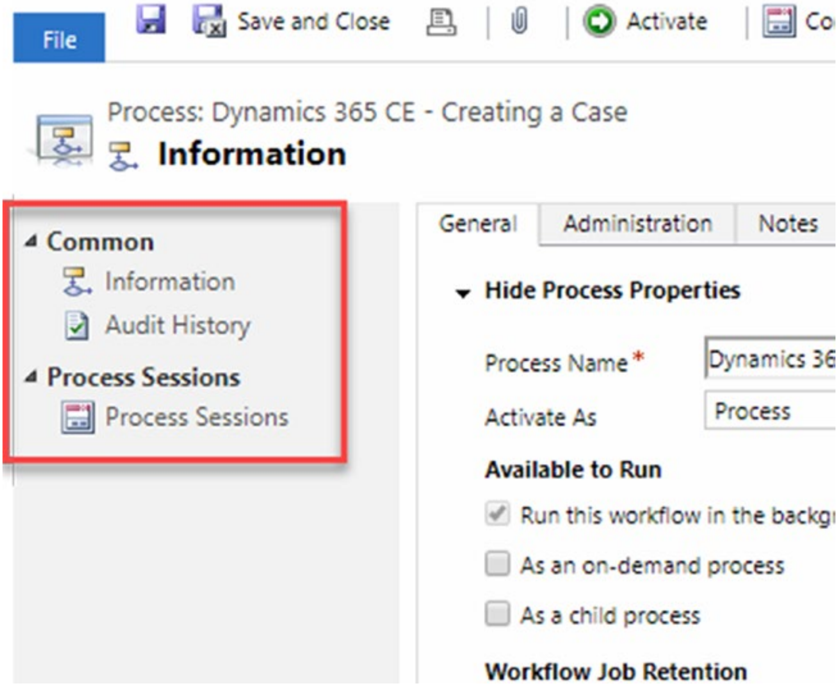
The additional tabs along the top of the workflow definition are where an owner of the workflow is defined (under the Administration tab), and the Notes tab allows customers to add notes relating to the workflow (Figure 8-40). At the left-hand side of the pane within a workflow definition, the Process Sessions tab allows users to see the sessions that are running or have run in the past (Figure 8-41).


Process: Dynamics 365 CE - Creating a Case
Information
Common
Information
Audit History
Process Sessions
Process Sessions
General
Administration
Notes
Hide Process Properties

Process Name* Dynamics 365 CE - Creating a Case

Activate As Process

Figure 8-40. *Administrative tabs within the workflow defintion*


File
Save and Close
Activate
Co
Process: Dynamics 365 CE - Creating a Case
Information
Common
Information
Audit History
Process Sessions
Process Sessions
General
Administration
Notes
Hide Process Properties
Available to Run
Workflow Job Retention

Process Name* Dynamics 36

Activate As Process

☑ Run this workflow in the backg

☐ As an on-demand process

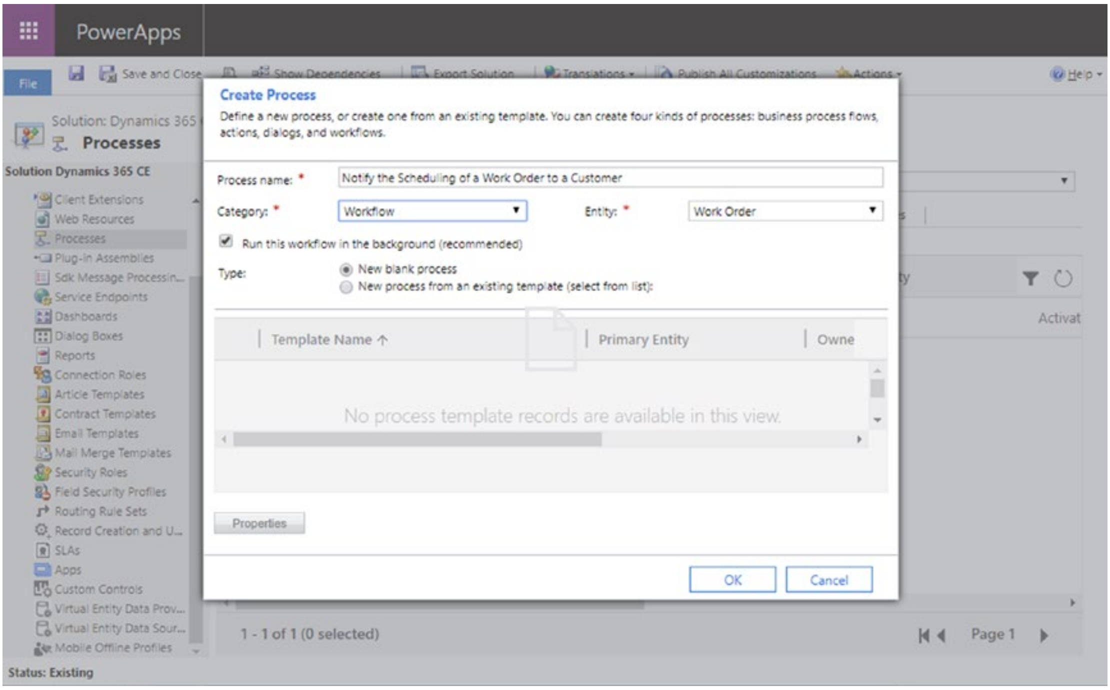
☐ As a child process

Figure 8-41. *Process Session tab within the workflow definition*

By default, the workflow job retention option is automatically set to delete the workflow jobs, but this can be unchecked. System jobs that are in an error state or pending will be visible from this area under 'Process Sessions'.

The next step is to get started and begin building a new workflow. The workflow task within this chapter walks you through how to create an email notification that is sent to the customer when a work order is set to “Scheduled.”

Task: Create a background workflow (Figure 8-42).


PowerApps
File
Save and Close
Show Dependencies
Export Solution
Translations
Publish All Customizations
Actions
Help
Solution: Dynamics 365
Processes
Solution Dynamics 365 CE
Client Extensions
Web Resources
Processes
Plug-in Assemblies
Sdk Message Processin...
Service Endpoints
Dashboards
Dialog Boxes
Reports
Connection Roles
Article Templates
Contract Templates
Email Templates
Mail Merge Templates
Security Roles
Field Security Profiles
Routing Rule Sets
Record Creation and U...
SLAs
Apps
Custom Controls
Virtual Entity Data Prov...
Virtual Entity Data Sour...
Mobile Offline Profiles
Status: Existing
Template Name
Primary Entity
Owne
Properties
OK
Cancel
Activat
1 - 1 of 1 (0 selected)
Page 1

Create Process

Define a new process, or create one from an existing template. You can create four kinds of processes: business process flows, actions, dialogs, and workflows.

Process name: * Notify the Scheduling of a Work Order to a Customer

Category: * Workflow

Entity: * Work Order

☑ Run this workflow in the background (recommended)

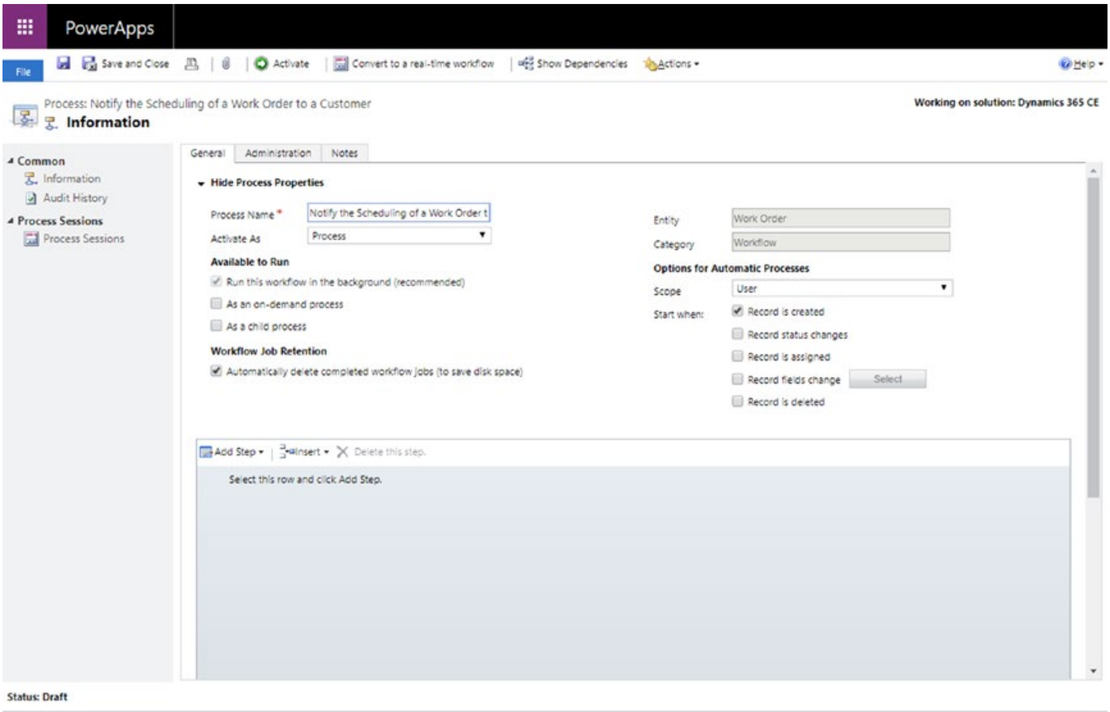
Type:
● New blank process
○ New process from an existing template (select from list):

No process template records are available in this view.

Figure 8-42. *Creating the workflow via the Solution Explorer*

1. Create a new workflow by navigating to the Solution Explorer, clicking “Processes,” and selecting “New.” The workflow created as part of this task will notify the customer of a new work order being scheduled.

2. Name the process appropriately and select “Workflow” as the category and set the entity as “Work Order.” Keep the type as a blank process, leaving it as a background workflow. Click “OK.” A blank workflow definition will appear (Figure 8-43).


PowerApps
File
Save and Close
Activate
Convert to a real-time workflow
Show Dependencies
Actions
Help
Common
Information
Audit History
Process Sessions
Process Sessions
General
Administration
Notes
Add Step
Insert
Delete this step.
Select

Process: Notify the Scheduling of a Work Order to a Customer

Information

Working on solution: Dynamics 365 CE

Hide Process Properties

Process Name * Notify the Scheduling of a Work Order t

Activate As Process

Available to Run

☑ Run this workflow in the background (recommended)

☐ As an on-demand process

☐ As a child process

Workflow Job Retention

☑ Automatically delete completed workflow jobs (to save disk space)

Entity Work Order

Category Workflow

Options for Automatic Processes

Scope User

Start when:

☑ Record is created

☐ Record status changes

☐ Record is assigned

☐ Record fields change

☐ Record is deleted

Select this row and click Add Step.

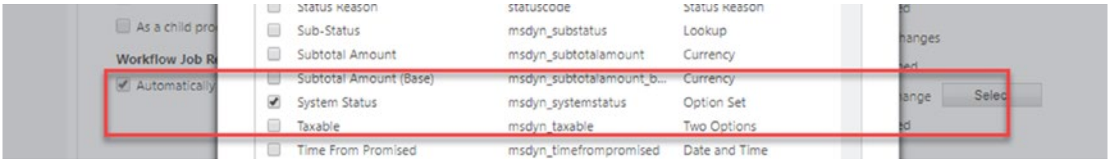
Status: Draft

Figure 8-43. Empty workflow definition is created

3. The next step is to configure the scope and trigger and to confirm the type of workflow to be used (real time or background).

4. The scope should be configured for "Organization," as any user can trigger this workflow and it is not security restricted (in this fictional scenario).

5. The trigger for the workflow occurs on change of the status field on the Work Order entity. Change the "Start When" field to "Record Fields Change" and click "Select" to open a popup. Select the "System Status" field and then click "OK" (Figure 8-44). Notice a value has not been specified. This will need to be specified within the condition to ensure the business logic is set up correctly.



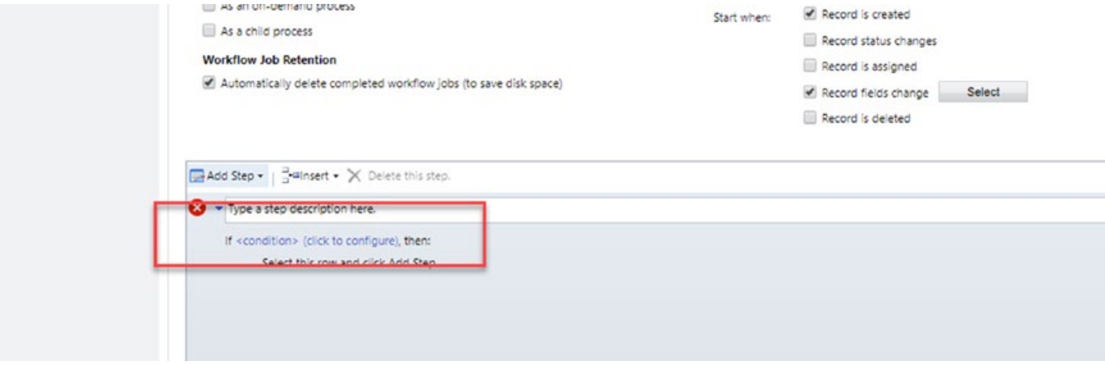
☐	Status Reason	statuscode	Status Reason
☐	Sub-Status	msdyn_substatus	Lookup
☐	Subtotal Amount	msdyn_subtotalamount	Currency
☐	Subtotal Amount (Base)	msdyn_subtotalamount_b...	Currency
☑	System Status	msdyn_systemstatus	Option Set
☐	Taxable	msdyn_taxable	Two Options
☐	Time From Promised	msdyn_timefrompromised	Date and Time

Figure 8-44. *Change the "System Status" field to be the trigger*

This workflow is going to be a background workflow as it is not a requirement for the user to see the email being sent and it wouldn't affect the user within the system.

6. The workflow is not going to be used as a manual workflow or a child workflow, so those options will remain unchecked.

The next step is to add in a condition to check the value of the "System Status" field on the work order to see if it equals "Scheduled" (Figure 8-45).



☐ As an on-demand process
☐ As a child process

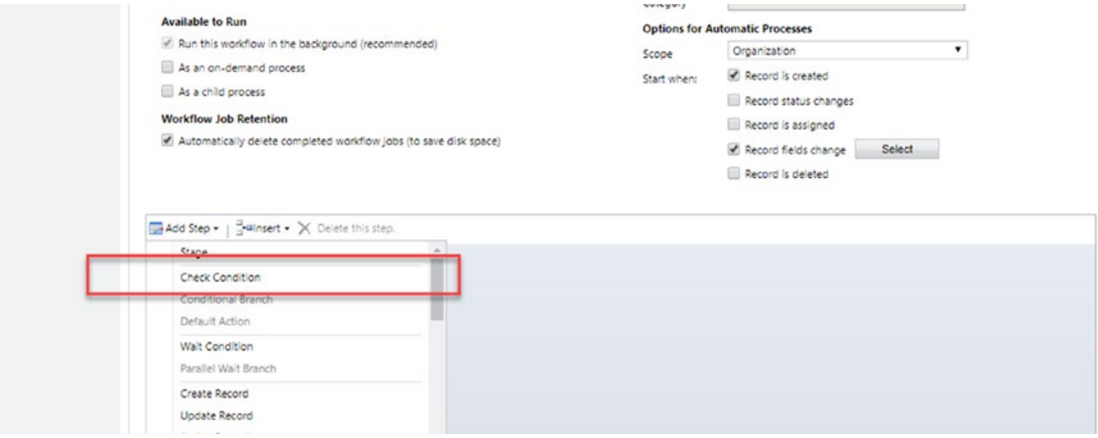
Workflow Job Retention
☑ Automatically delete completed workflow jobs (to save disk space)

Start when:
☑ Record is created
☐ Record status changes
☐ Record is assigned
☑ Record fields change
☐ Record is deleted

Type a step description here.
If <condition> (click to configure), then:
Select this row and click Add Step.

Figure 8-45. *Select the empty condition to configure it*

7. Click "Add Step" and select "Check Condition" (Figure 8-46). This will add an empty conditional clause with an empty condition.



Available to Run

☑ Run this workflow in the background (recommended)

☐ As an on-demand process

☐ As a child process

Workflow Job Retention

☑ Automatically delete completed workflow jobs (to save disk space)

Options for Automatic Processes

Scope: Organization

Start when:

☑ Record is created

☐ Record status changes

☐ Record is assigned

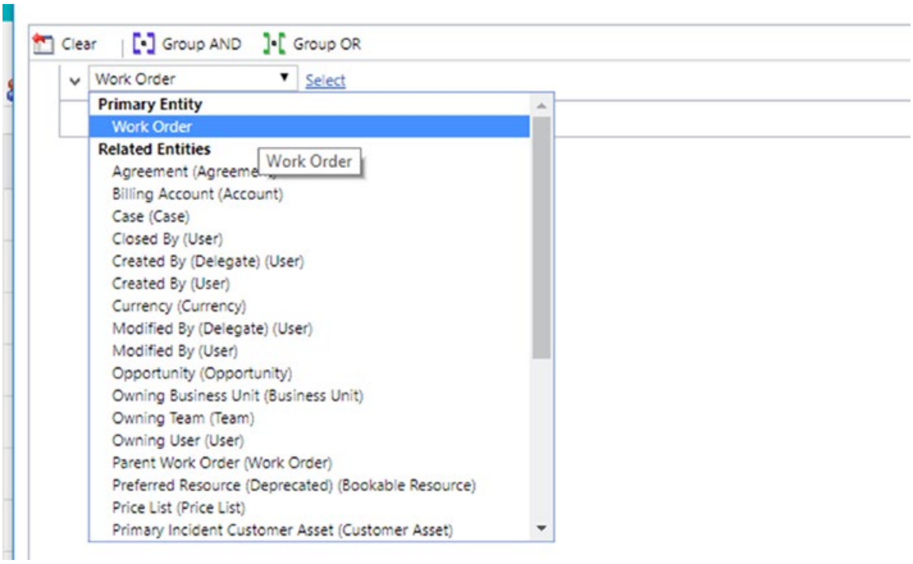
☑ Record fields change

☐ Record is deleted

Select
Add Step
Insert
Delete this step.
Stage
Check Condition
Conditional Branch
Default Action
Wait Condition
Parallel Wait Branch
Create Record
Update Record

Figure 8-46. *Click "Check Condition" to add this step*

8. Click on the empty condition name to open a popup window. The window will look very similar to Advanced Find (Figure 8-47). The purpose of this window is to select the entity and the field followed by the operator and what the values available will be based on the operator. It is possible from here to not select the primary entity—e.g., the work order in this case—and select related entities.

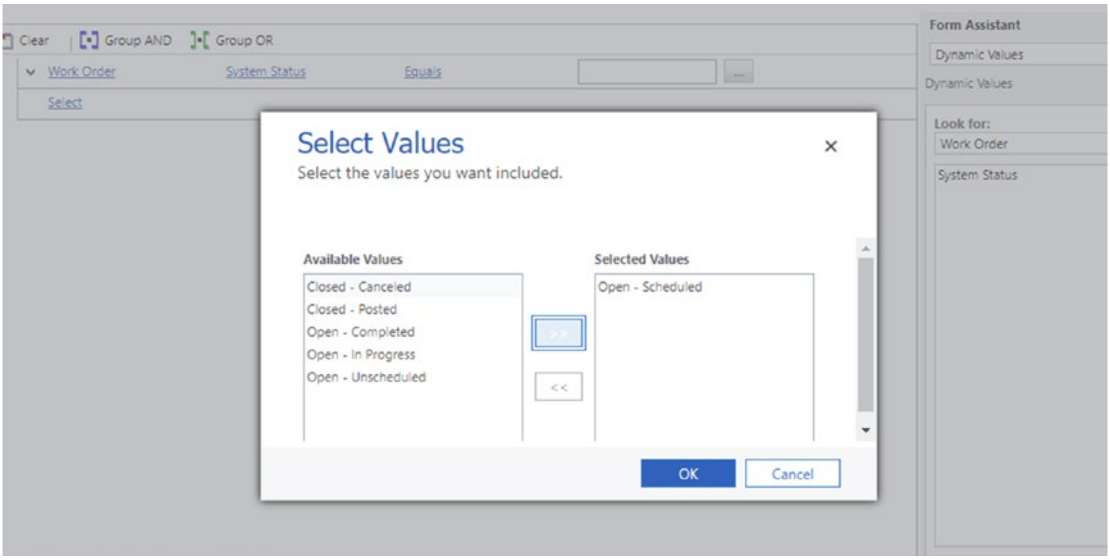


Clear
Group AND
Group OR
Work Order
Select
Primary Entity
Work Order
Related Entities
Agreement (Agreeme...
Work Order
Billing Account (Account)
Case (Case)
Closed By (User)
Created By (Delegate) (User)
Created By (User)
Currency (Currency)
Modified By (Delegate) (User)
Modified By (User)
Opportunity (Opportunity)
Owning Business Unit (Business Unit)
Owning Team (Team)
Owning User (User)
Parent Work Order (Work Order)
Preferred Resource (Deprecated) (Bookable Resource)
Price List (Price List)
Primary Incident Customer Asset (Customer Asset)

Figure 8-47. *Build the condition using an Advanced Find–like editor*

In addition, the condition can be built up of multiple lines, which all must equal true for the business logic specified beneath. "OR" clauses can be used in addition to the default "AND" to perform more advanced logic within the conditional lines.

9. Create a condition where the Work Order ➤ System Status ➤ Equals ➤ Open – Scheduled - ensuring the values are moved to the right-hand side under "Selected Values" as displayed in Figure 8-48. Click "OK," and the condition should then be visible in the designer view.



Work Order System Status Equals

Select

Dynamic Values

Dynamic Values

Look for:

Work Order

System Status

Select Values

Select the values you want included.

Available Values

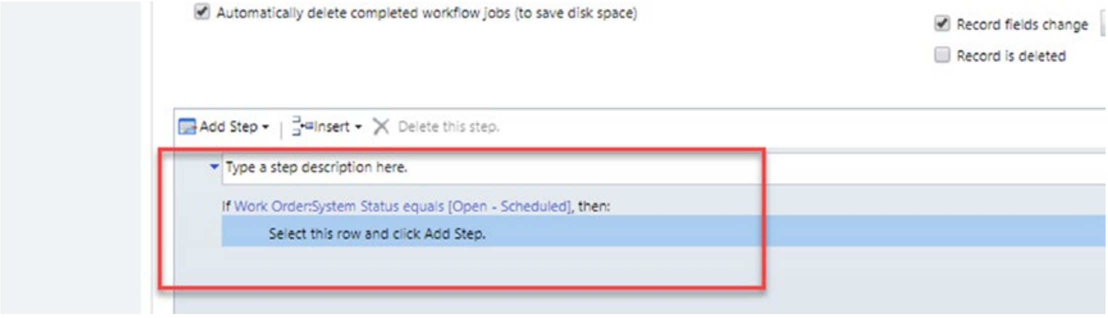
Closed - Canceled
Closed - Posted
Open - Completed
Open - In Progress
Open - Unscheduled

Selected Values

Open - Scheduled

Figure 8-48. *Selecting the values within an option-set on the operator*

The condition will appear within the designer, as shown in Figure 8-49, ready for the next step.



☑ Automatically delete completed workflow jobs (to save disk space)

☑ Record fields change

☐ Record is deleted

Type a step description here.

If Work Order:System Status equals [Open - Scheduled], then:

Select this row and click Add Step.

Figure 8-49. *Select the next row and add the next step*

10. Select the next row, where the text “Select this row and click Add Step” is selected in blue, and select “Add Step.” Now that the condition has been added, the workflow definition needs to create the email record to send.

11. Select ‘Send Email’. This will create a new block (Figure 8-50).

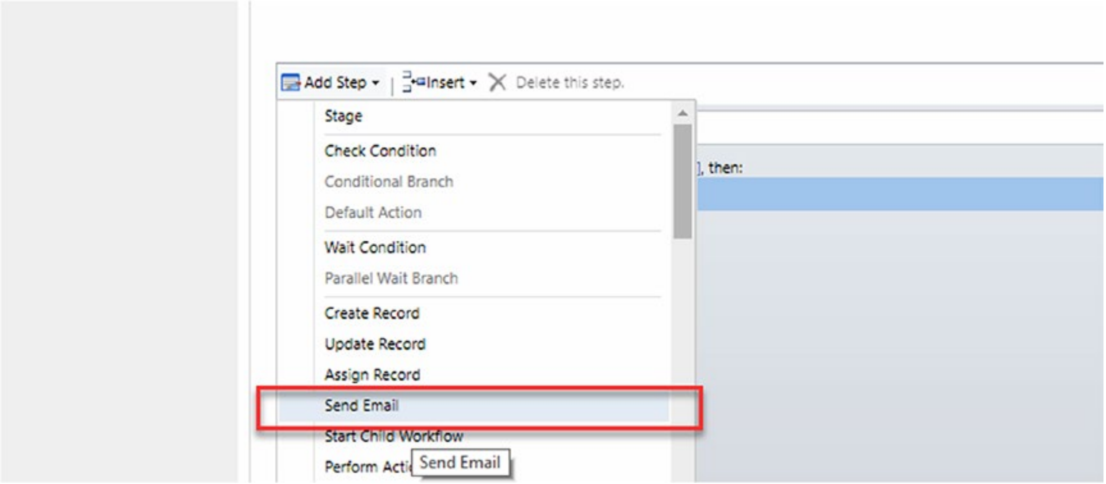
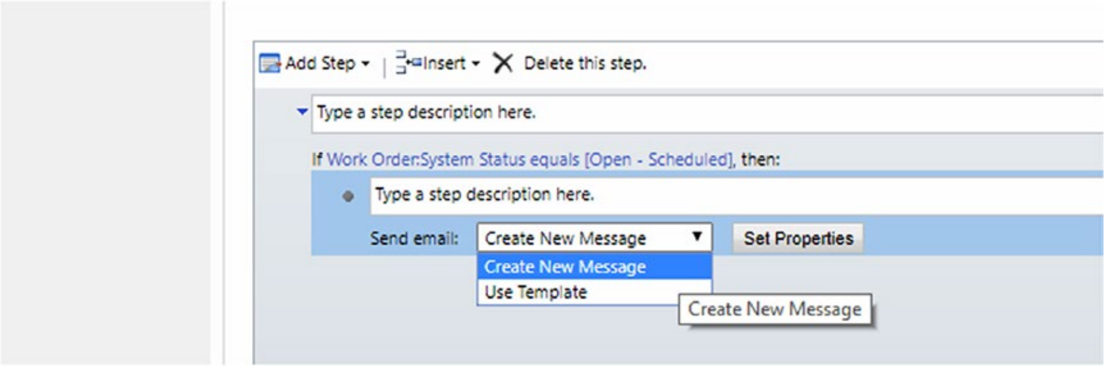

Add Step
Insert
Delete this step.
Stage
Check Condition
Conditional Branch
Default Action
Wait Condition
Parallel Wait Branch
Create Record
Update Record
Assign Record
Send Email
Start Child Workflow
Perform Acti
Send Email
], then:

Figure 8-50. ***Figure 8-50.*** *Click ‘Send Email’ to create a new email to send from Dynamics 365 CE*

12. Select ‘Create New Message’ from the dropdown. This is where you can also choose to select an Email Template (Figure 8-51).


Add Step
Insert
Delete this step.
Type a step description here.
Type a step description here.
Set Properties
Create New Message
Use Template
Create New Message

If Work Order:System Status equals [Open - Scheduled], then:

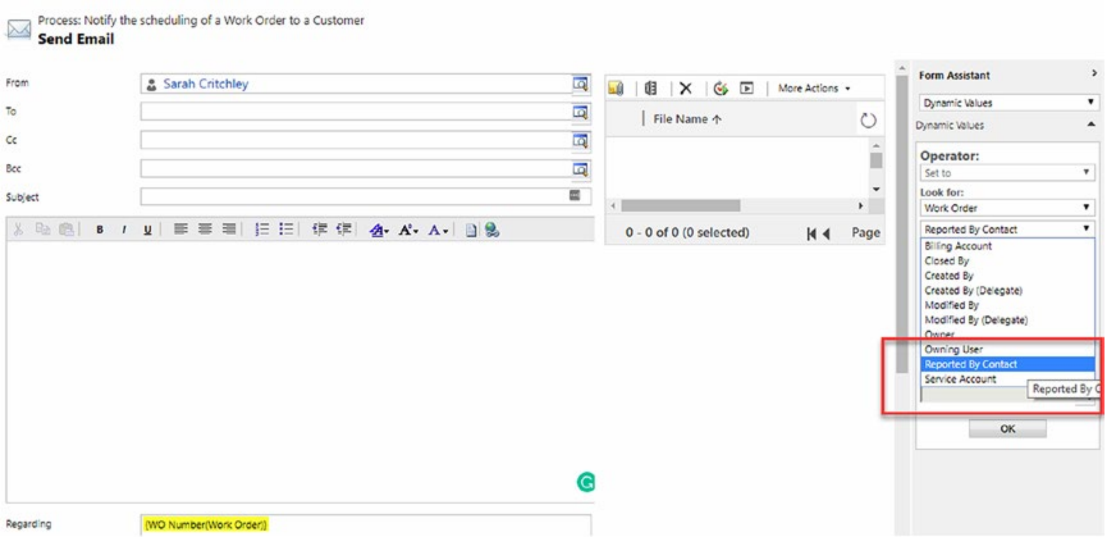
Send email: Create New Message

Figure 8-51. *Configure the Email Send options and properties on the ‘Send Email’ Step*

With a blank instance of the Email record open, the "Form Assistant" appears on the right-hand side. This pane gives users the functionality to add dynamic data in the fields selected within the entity frame.

On the entity frame, you can click into the field. Depending on the field type—e.g., text, number, etc.—the availability of the "Operator" function becomes available within the Form Assistant. You can add numerical values or date values to dynamically set the value of the date depending on what field type is selected. Below this area, on the Form Assistant, the "Look For" function and field selector are available. This allows you to select fields from the primary or related entities and select a field matching the one the user has selected in the wireframe. You can use these fields to automatically populate the new or updated entity wireframe with the data that resides in these fields at runtime of the workflow.

13. Set the 'From' to the user record within Dynamics 365 CE using the lookup.
14. Select the 'To' field and click on the Form Assistant to the right hand side, selecting 'Look For' ➤ 'Work Order' and select the field 'Reported By Contact'.
15. Select 'Ok' and it will now appear in blue in the box below, as shown in Figure 8-53. This is often referred to as a 'Dynamic Field' and will be based on data within the record that the workflow is run from (Figure 8-52).


Process: Notify the scheduling of a Work Order to a Customer

Send Email

From: Sarah Critchley

To

Cc

Bcc

Subject

Regarding: {WO Number(Work Order)}

More Actions
File Name
0 - 0 of 0 (0 selected)
Page
Form Assistant
Dynamic Values
Dynamic Values

Operator: Set to

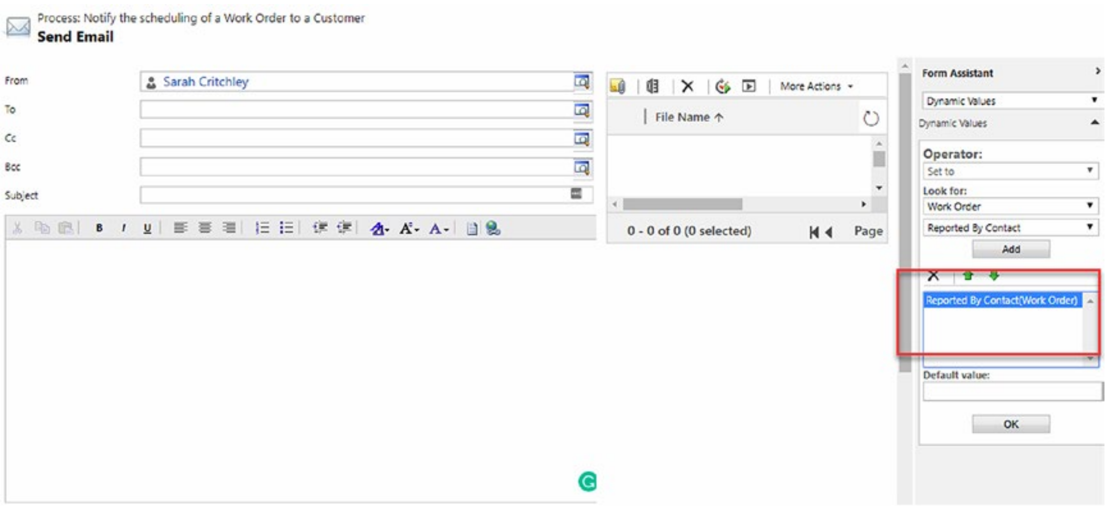
Look for: Work Order

Reported By Contact

Billing Account
Closed By
Created By
Created By (Delegate)
Modified By
Modified By (Delegate)
Owner
Owning User
Reported By Contact
Service Account
Reported By C
OK

Figure 8-52. Form Assistant within the email sent action in a workflow definition

16. Select the blue highlighted text ‘Reported By Contact’ and click ‘Ok’ – It will now appear in the ‘To’ field in a yellow highlight (Figure 8-53). The yellow highlight shows this is a dynamic field and is retrieving the data from the related information held in the context of the workflow.


Process: Notify the scheduling of a Work Order to a Customer

Send Email

From: Sarah Critchley

To

Cc

Bcc

Subject

More Actions
File Name
0 - 0 of 0 (0 selected)
Page
Form Assistant
Dynamic Values
Dynamic Values

Operator: Set to

Look for: Work Order

Reported By Contact

Add

Reported By Contact(Work Order)

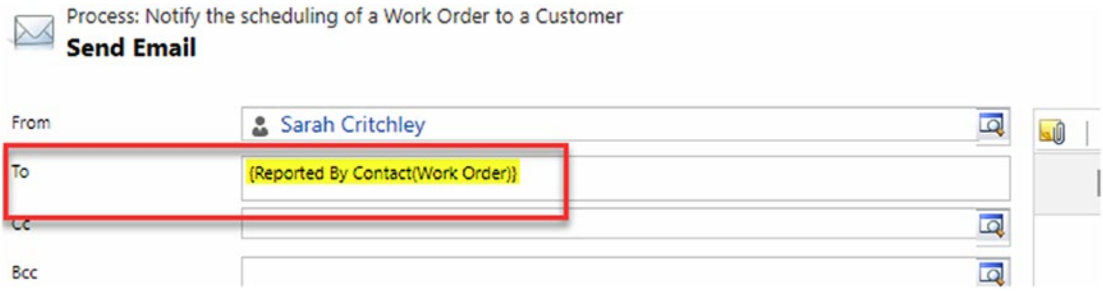
Default value:

OK

Figure 8-53. Select the ‘Reported By Contact’ field so it is blue and click ‘Ok’ to use this value in the Email action

Adding dynamic fields to a new or existing records is a great way to take advantage and automate processes within the system, personalising communications.

When editing workflows, they are easily identifiable by the yellow highlight in the blank entity form, as seen in Figure 8-54.



Process: Notify the scheduling of a Work Order to a Customer

Send Email

From: Sarah Critchley

To: {Reported By Contact(Work Order)}

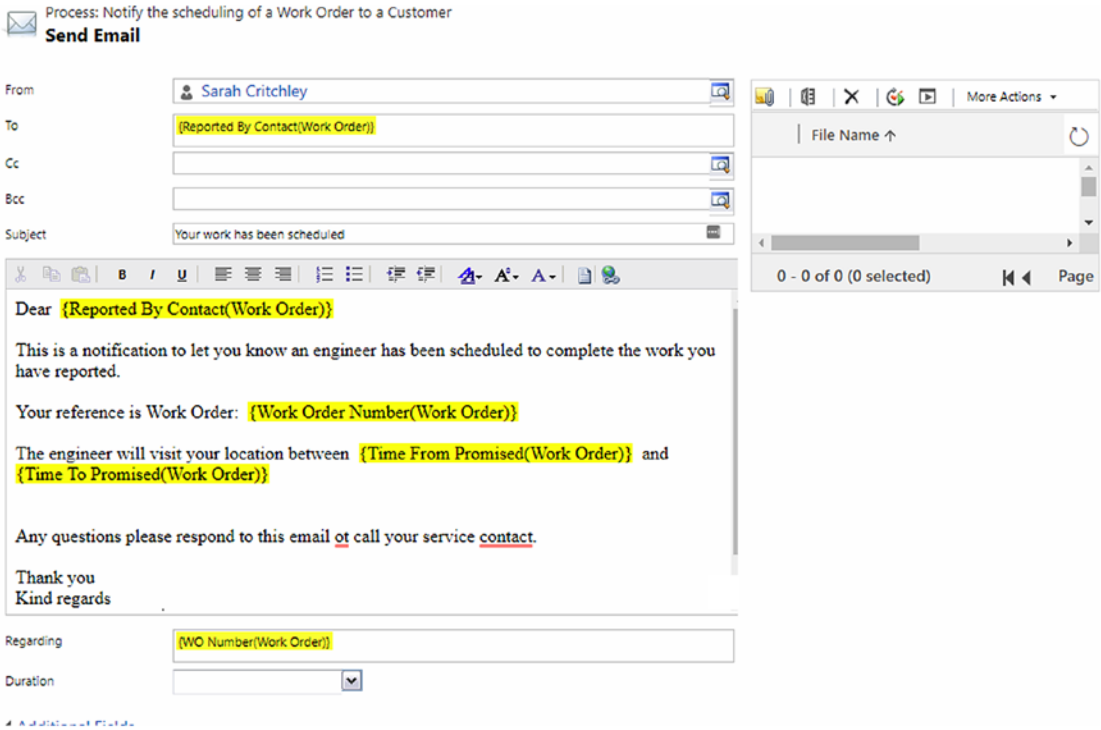
Figure 8-54. *Yellow highlight indicates this field will be populated with data from the primary or related entity field at runtime*

17. Enter “Your Work Order has been Scheduled” in the “Subject” field.

    In the body of the email, you can also use dynamic values just as the previous task did for the “To” field. Within an Email record, dynamic values are denoted by curly braces and not yellow highlight.

18. Create an email body that uses dynamic data, including the fields from the work order in the same way as in the previous step (Figure 8-55):

    - “Reported By Contact”
    - “Word Order Number”
    - “Time To Promised”


Process: Notify the scheduling of a Work Order to a Customer

Send Email

From: Sarah Critchley

To: {Reported By Contact(Work Order)}

Cc:

Bcc:

Subject: Your work has been scheduled

Dear {Reported By Contact(Work Order)}

This is a notification to let you know an engineer has been scheduled to complete the work you have reported.

Your reference is Work Order: {Work Order Number(Work Order)}

The engineer will visit your location between {Time From Promised(Work Order)} and {Time To Promised(Work Order)}

Any questions please respond to this email ot call your service contact.

Thank you
Kind regards

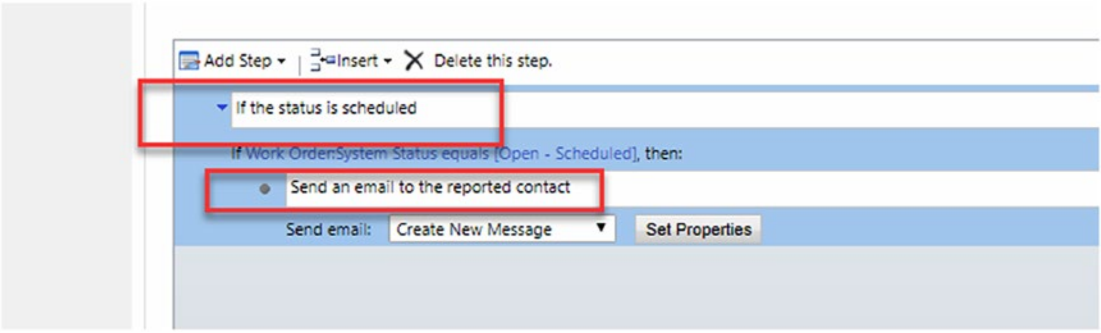
Regarding: {WO Number(Work Order)}

Duration:

Figure 8-55. Creating an email using dynamic data within a workflow

19. Once completed, select 'Save and Close' to close the email record.

20. Add in comments for each of the logic blocks within the workflow. The comments should describe simply what is happening within that step. This is to help other customizers know what that step is intended to be doing (Figure 8-56).


If the status is scheduled

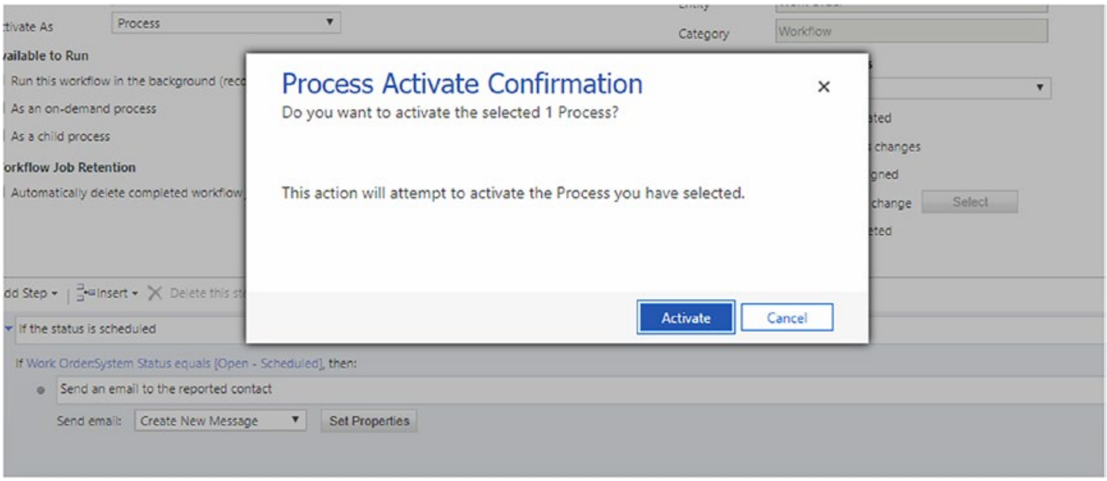
If Work Order:System Status equals [Open - Scheduled], then:

Send an email to the reported contact

Send email: Create New Message

Figure 8-56. Adding comments within a workflow

21. Save the workflow. Select the 'Activate' button and activate the workflow to make it live. This now enables it to test (Figure 8-57).



Process Activate Confirmation

Do you want to activate the selected 1 Process?

This action will attempt to activate the Process you have selected.

If the status is scheduled

If Work Order:System Status equals [Open - Scheduled], then:

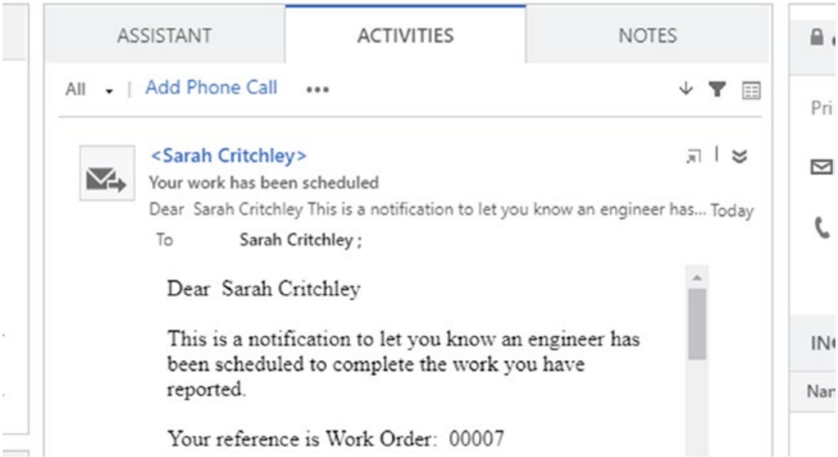
Send an email to the reported contact

Send email: Create New Message

Process
Category
Workflow
Run this workflow in the background
As an on-demand process
As a child process
Automatically delete completed workflow
Insert
Delete this st
Select
Set Properties
×
Activate
Cancel

Figure 8-57. Activate the Workflow

To test the workflow, create a new work order, complete the basic details, including the "Reported By Contact," the "Time To Promised," and any other fields used within the workflow. If there is no data within dynamic data fields used within the workflow definition, the related fields will be blank. This could look unprofessional for external communications, such as emails, if there are placeholder texts and empty spaces. To deal with this, you can add a fallback value in the value selector so that if the first value is null, the fallback value will be used. Change the work order to "Scheduled" by booking it manually (which is the easiest way to change the status) on the schedule board. This will trigger the workflow, and in a few moments, something like Figure 8-58 should appear in the Activities.


ASSISTANT
ACTIVITIES
NOTES
All
Add Phone Call

<Sarah Critchley>
Your work has been scheduled
Dear Sarah Critchley This is a notification to let you know an engineer has... Today
To Sarah Critchley ;

Dear Sarah Critchley

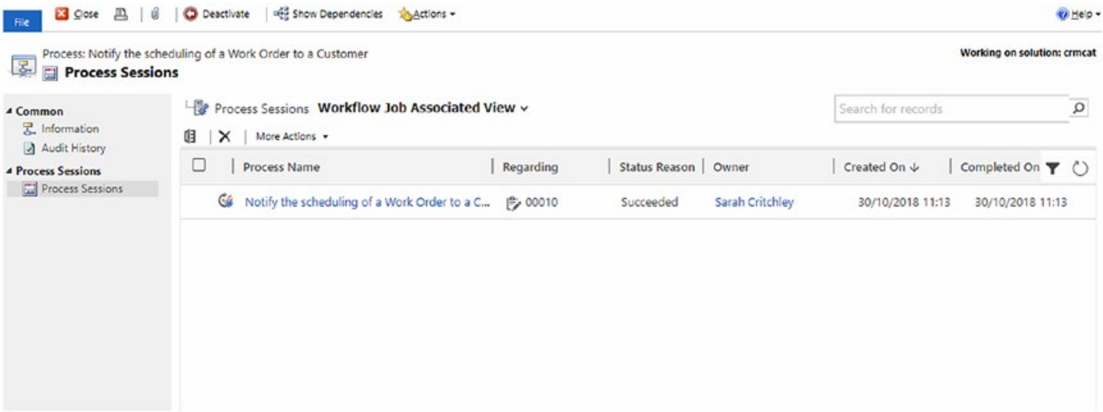
This is a notification to let you know an engineer has been scheduled to complete the work you have reported.

Your reference is Work Order: 00007

Figure 8-58. *Email activity within the "Activities" of the work order*

Troubleshooting

When a workflow is triggered, it creates a system job record. The system job record contains information about the process and the business logic. For background workflows, the system job can be seen in its waiting state under the Process Sessions tab within the workflow definition. Here, you can see the business logic and what step the current process is at. This is a great way to review workflows paused or stopped due to errors, as they would also be displayed here if an error occurred (Figure 8-59).


File
Close
Deactivate
Show Dependencies
Actions
Help
Common
Information
Audit History
Process Sessions
Process Sessions
More Actions
Search for records

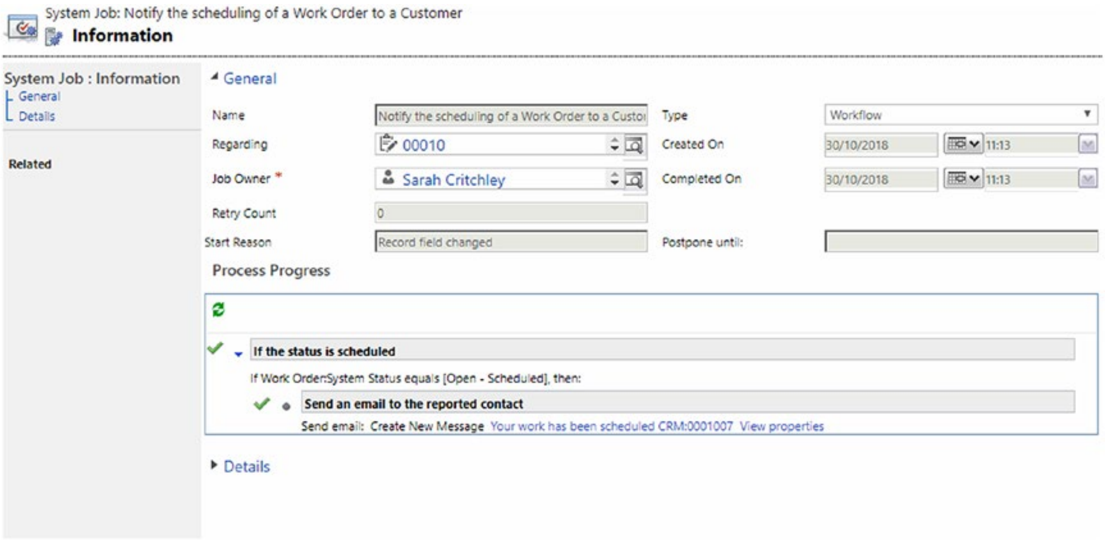
Process: Notify the scheduling of a Work Order to a Customer
Process Sessions
Working on solution: crmcat
Process Sessions Workflow Job Associated View

Process Name	Regarding	Status Reason	Owner	Created On	Completed On
Notify the scheduling of a Work Order to a C...	00010	Succeeded	Sarah Critchley	30/10/2018 11:13	30/10/2018 11:13

Figure 8-59. *Accessing process sessions of the workflow within the definition*

If the checkbox “Delete Completed Workflow Jobs” is checked, there is a limited time to see the successful job, as it will be removed to save on storage. Unsuccessful processes will remain here until removed by the system or a user.

As seen in Figure 8-60, workflows display green ticks where the platform has successfully executed the steps. When a record is created or updated, the record instance can be accessed from the link within the process for that specific run.



System Job: Notify the scheduling of a Work Order to a Customer

Information

Name	Notify the scheduling of a Work Order to a Custo	Type	Workflow
Regarding	00010	Created On	30/10/2018 11:13
Job Owner *	Sarah Critchley	Completed On	30/10/2018 11:13
Retry Count	0		
Start Reason	Record field changed	Postpone until:	

✓ **If the status is scheduled**

If Work Order:System Status equals [Open - Scheduled], then:

✓ ● **Send an email to the reported contact**

Send email: Create New Message Your work has been scheduled CRM:0001007 View properties

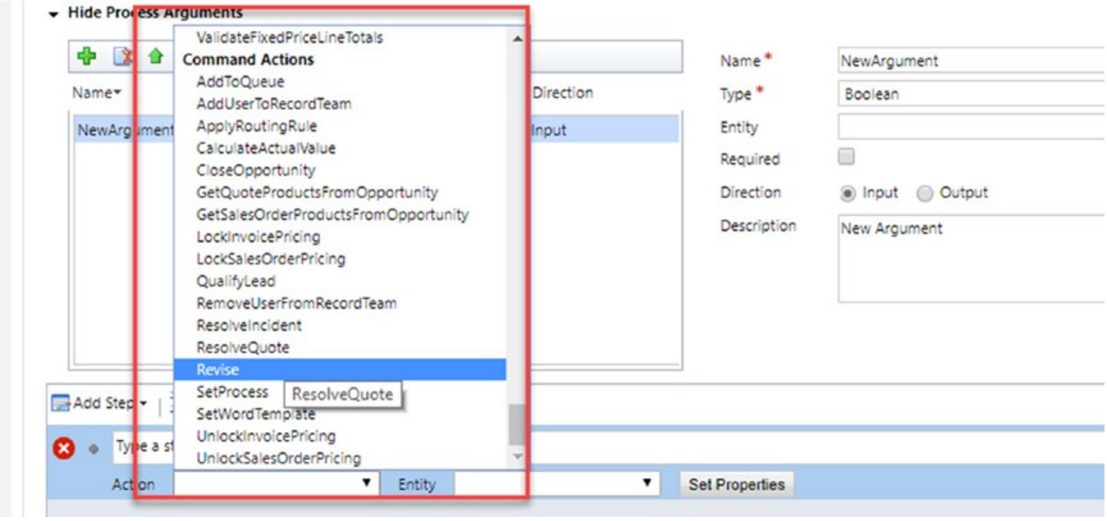
Figure 8-60. *Accessing the system job within the workflow definition and reviewing the steps*

Actions

Actions within Dynamics 365 CE are a type of process that acts as a reusable component to be utilized by workflows and business process flows. Actions can optionally take an input, perform business logic, and produce an output. Custom actions can be built using the UI or can perform more complex business logic within code and be saved and imported into the platform to be used within workflows. Actions are particularly useful because they are an encapsulated piece of business logic that can then be used by customizers of the system without ever having to use the code. For this reason, they are a great investment to utilize within projects.

Actions, unlike workflows, have no trigger. Actions are the input, logic, and output only and are expected to be used within other processes like workflows and business process flows that do have a trigger. What is useful about actions is that the more generic they are, the more they can be utilized within the platform.

There are a set of standard action processes that are available with Dynamics 365 CE as standard and can be used by customizers right away. They can be found within the "Perform Action" step within a workflow under the heading "Command Actions," as shown in Figure 8-61. These actions are the same actions utilized with the functionality of many of the standard processes of Dynamics 365 CE, such as "ResolveQuote" and "QualifyLead."

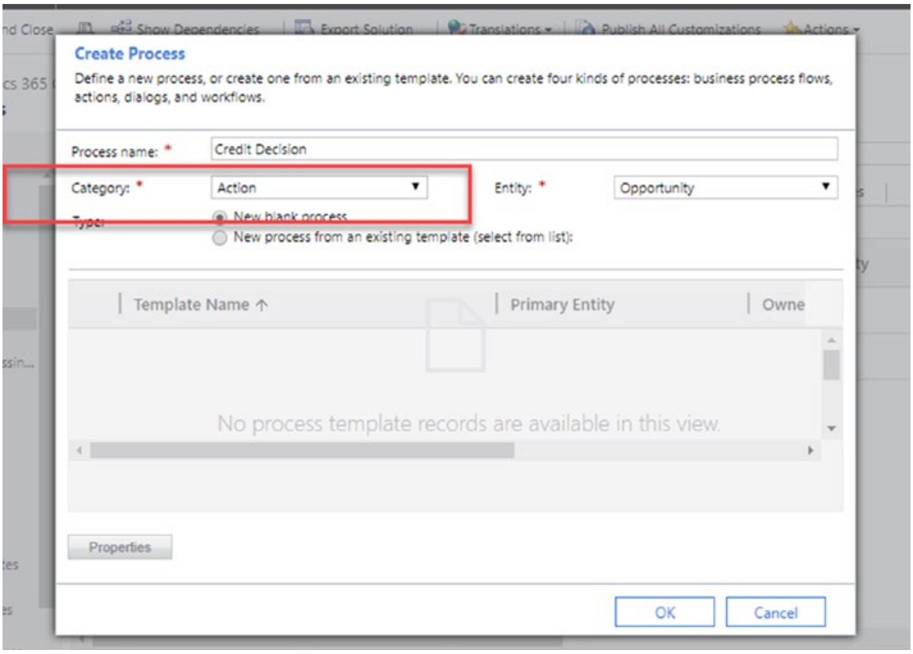

Name * NewArgument
Type * Boolean
Entity
Required ☐
Direction ● Input ○ Output
Description New Argument

Hide Process Arguments
Name
Direction
NewArgument
Input
ValidateFixedPriceLineTotals
Command Actions
AddToQueue
AddUserToRecordTeam
ApplyRoutingRule
CalculateActualValue
CloseOpportunity
GetQuoteProductsFromOpportunity
GetSalesOrderProductsFromOpportunity
LockInvoicePricing
LockSalesOrderPricing
QualifyLead
RemoveUserFromRecordTeam
ResolveIncident
ResolveQuote
Revise
SetProcess
ResolveQuote
SetWordTemplate
UnlockInvoicePricing
UnlockSalesOrderPricing
Add Step
Type a st
Action
Entity
Set Properties

Figure 8-61. *Standard actions available within the system*

Creating Custom Actions

To begin creating an action, the category of a new process needs to be set to "Action," and the entity needs to be specified, as shown in Figure 8-62. This opens the Action Designer and the definition.



Create Process

Define a new process, or create one from an existing template. You can create four kinds of processes: business process flows, actions, dialogs, and workflows.

Process name: * Credit Decision

Category: * Action

Entity: * Opportunity

Type:
● New blank process
○ New process from an existing template (select from list):

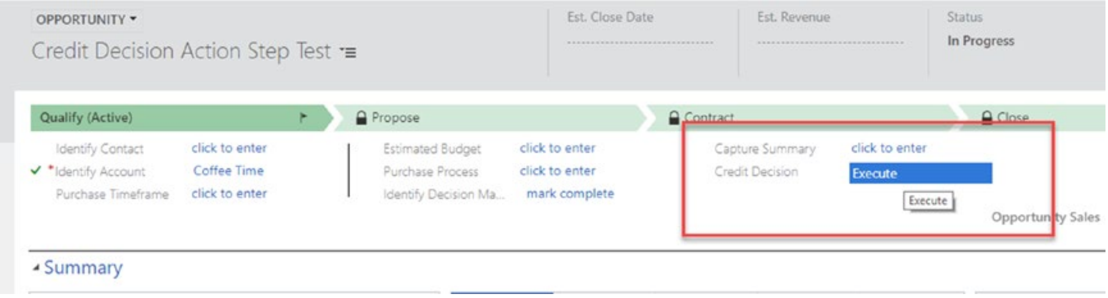
Template Name ↑	Primary Entity	Owne

No process template records are available in this view.

Figure 8-62. Creating a new action within the Solution Explorer

What makes an action different to other processes is the input and output parameters. They have different properties and also process arguments. The properties are very basic, with nothing much to change aside from if you wish to define the action as an action step as shown in Figure 8-64.

Action steps are a feature that allows for an action to be embedded inside a button in a business process flow stage (Figure 8-63). When selected, a dialog window opens presenting the input parameters to the user to be completed. This is especially useful for incorporating manual processes within a guided business process flow, with the “trigger” being manual. The output and follow-up action are self-contained within the action rather than reliant on a secondary process, such as a workflow, to finish the work.



OPPORTUNITY
Est. Close Date
Est. Revenue
Qualify (Active)
Propose
Contract
Close
Execute
Opportunity Sales
Summary

Credit Decision Action Step Test

Status: In Progress

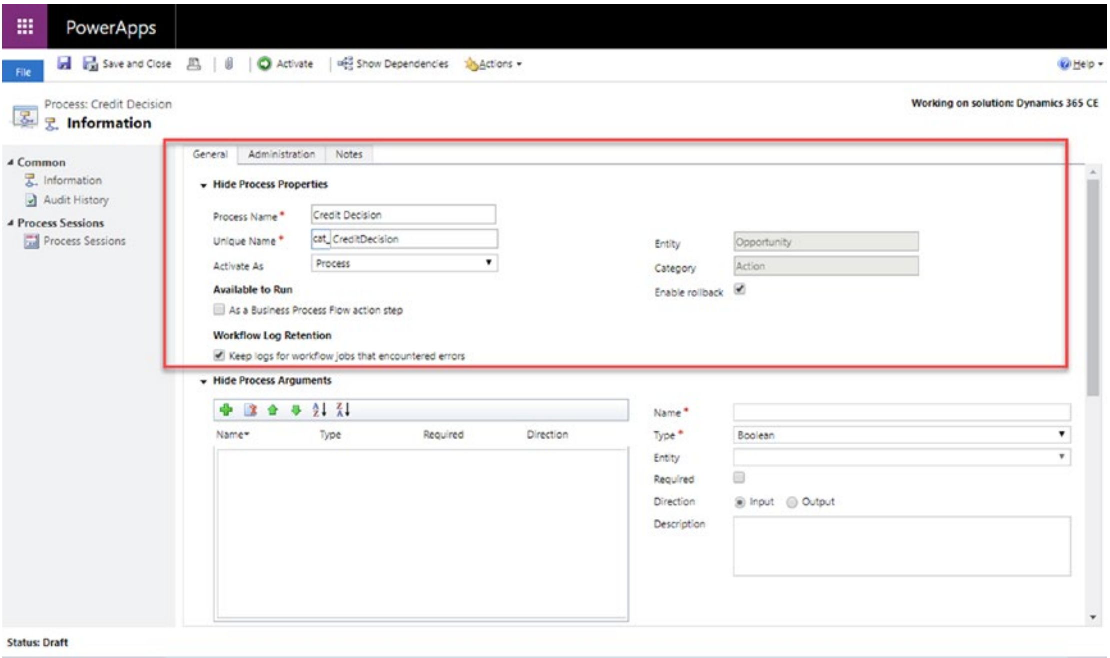
Identify Contact: click to enter
✓ *Identify Account: Coffee Time
Purchase Timeframe: click to enter

Estimated Budget: click to enter
Purchase Process: click to enter
Identify Decision Ma...: mark complete

Capture Summary: click to enter
Credit Decision: Execute

Figure 8-63. *Action step within a business process flow*

The process arguments within an action are specified as an object, which can be an input or an output, and also have a type (Figure 8-64). The type is very similar to the type of the fields within Dynamics 365; for example, text and numerical (for more information on fields, see the chapter on UI configurations).



PowerApps
File
Save and Close
Activate
Show Dependencies
Actions
Help
Information
Common
Information
Audit History
Process Sessions
Process Sessions
General
Administration
Notes
Hide Process Properties
Available to Run
Workflow Log Retention
Hide Process Arguments
Name
Type
Required
Direction

Process: Credit Decision

Working on solution: Dynamics 365 CE

Process Name*: Credit Decision
Unique Name*: cat_CreditDecision
Activate As: Process
☐ As a Business Process Flow action step
☑ Keep logs for workflow jobs that encountered errors

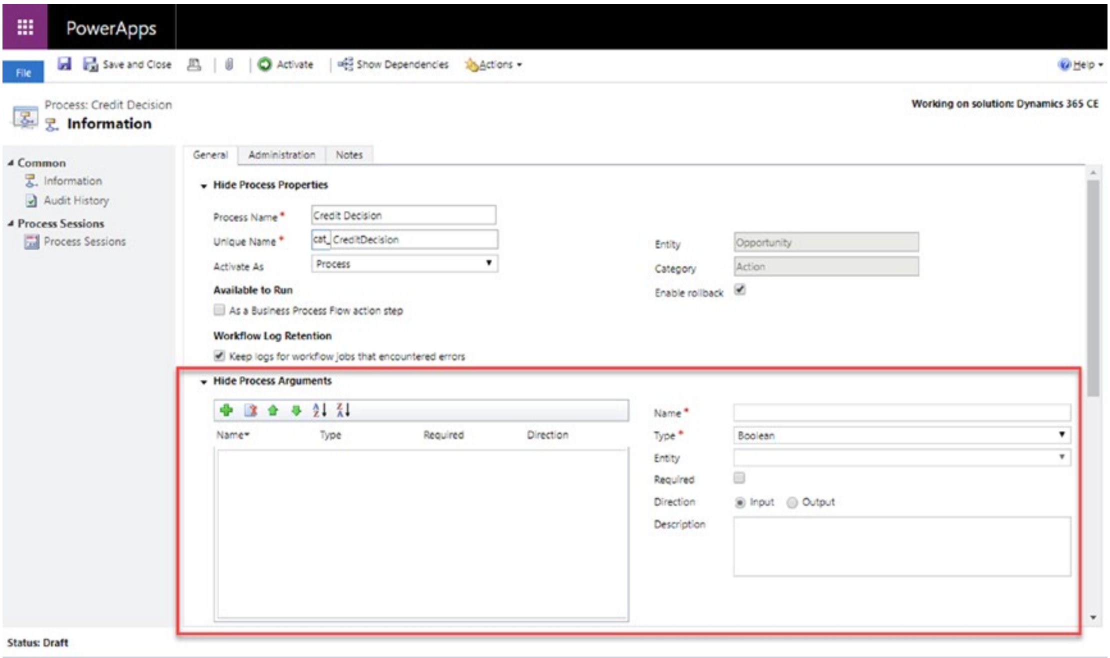
Entity: Opportunity
Category: Action
Enable rollback: ☑

Name*:
Type*: Boolean
Entity:
Required: ☐
Direction: ● Input ○ Output
Description:

Status: Draft

Figure 8-64. *Process properties within an action*

Other configuration elements can be added, including if the argument is required and the description. The arguments are used to store information either entered by the user as input or to perform operations on within the business logic and then be provided as an output to the user (Figure 8-65).


PowerApps
File
Save and Close
Activate
Show Dependencies
Actions
Help
General
Administration
Notes
Common
Information
Audit History
Process Sessions
Process Sessions
Hide Process Properties
Hide Process Arguments
Name
Type
Required
Direction
Entity
Description

Process: Credit Decision

Information

Working on solution: Dynamics 365 CE

Process Name * Credit Decision

Unique Name * cat_CreditDecision

Activate As Process

Available to Run

☐ As a Business Process Flow action step

Workflow Log Retention

☑ Keep logs for workflow jobs that encountered errors

Entity Opportunity

Category Action

Enable rollback ☑

Type * Boolean

Required ☐

Direction ● Input ○ Output

Status: Draft

Figure 8-65. *Process arguments within an action workflow*

The Business Logic Designer is very similar to the Workflow Designer where it has a similar interface and step builder, but also you build the business logic based on the inputs, the requirement specifications of the action, and what should be presented as an output to the user (Figure 8-66).

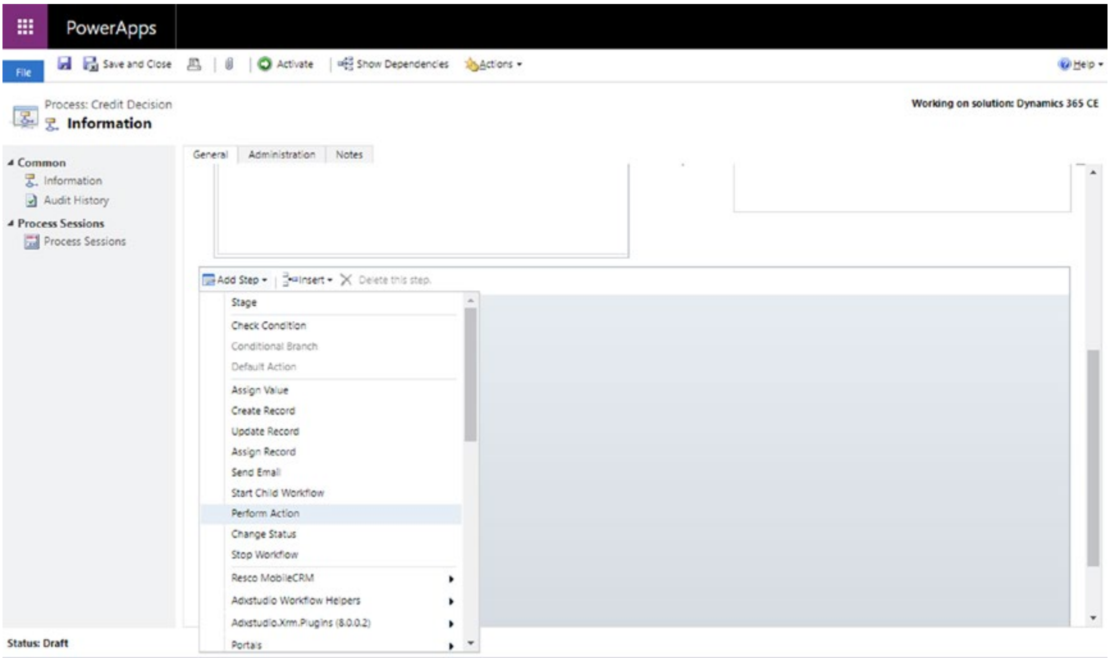

PowerApps
File
Save and Close
Activate
Show Dependencies
Actions
Help
Process: Credit Decision
Information
Working on solution: Dynamics 365 CE
Common
Information
Audit History
Process Sessions
Process Sessions
General
Administration
Notes
Add Step
Insert
Delete this step.
Stage
Check Condition
Conditional Branch
Default Action
Assign Value
Create Record
Update Record
Assign Record
Send Email
Start Child Workflow
Perform Action
Change Status
Stop Workflow
Resco MobileCRM
Adxstudio Workflow Helpers
Adxstudio.Xrm.Plugins (8.0.0.2)
Portals
Status: Draft

Figure 8-66. *Steps available within an Action Designer differ slightly from the Workflow Designer*

Arguments specified within the process are available to be used, as seen in Figure 8-67, to perform conditional checks and within updates to records.

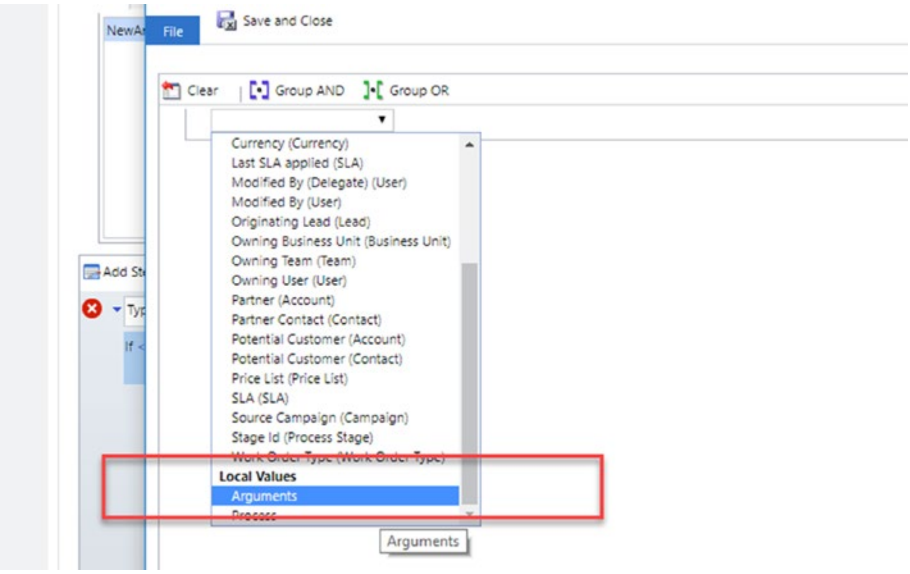
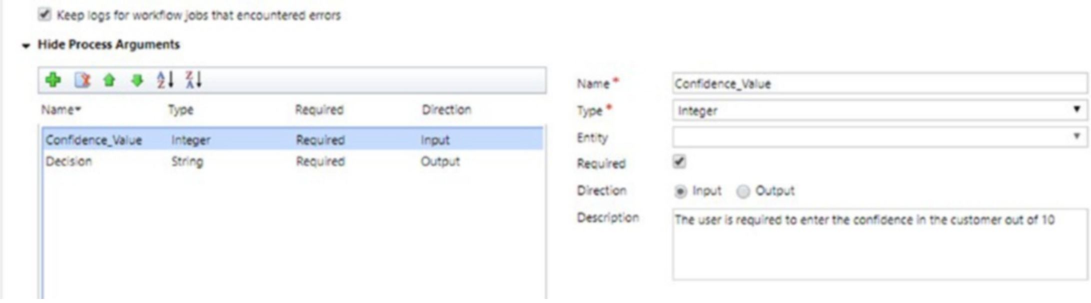

NewA
File
Save and Close
Clear
Group AND
Group OR
Currency (Currency)
Last SLA applied (SLA)
Modified By (Delegate) (User)
Modified By (User)
Originating Lead (Lead)
Owning Business Unit (Business Unit)
Owning Team (Team)
Owning User (User)
Partner (Account)
Partner Contact (Contact)
Potential Customer (Account)
Potential Customer (Contact)
Price List (Price List)
SLA (SLA)
Source Campaign (Campaign)
Stage Id (Process Stage)
Work Order Type (Work Order Type)
Local Values
Arguments
Process
Arguments
Add St
Typ
If

Figure 8-67. *Arguments are available within the Process Designer under "Local Values"*

Task: Create a custom action.

1. To create the action within the following example, add two new fields on the Account entity form:
   - “External Credit Score” (Whole Number)
   - “Credit Used” (Currency)
2. Add the field “Credit Decision” (Single line of Text) on the Opportunity entity. Add all the new fields to the forms of the entities. For more information on adding fields to entities, see Chapter 10, “UI Customizations.”
3. Create a new blank process called “Credit Decision” with an “Action” type.
4. Click “OK” and create a process argument input called “Confidence_Value,” which is an integer type and required.
5. Select “Available to Run” as an action step in the properties (Figure 8-68).



☑ Keep logs for workflow jobs that encountered errors

Hide Process Arguments

Name	Type	Required	Direction
Confidence_Value	Integer	Required	Input
Decision	String	Required	Output

Name * Confidence_Value

Type * Integer

Entity

Required ☑

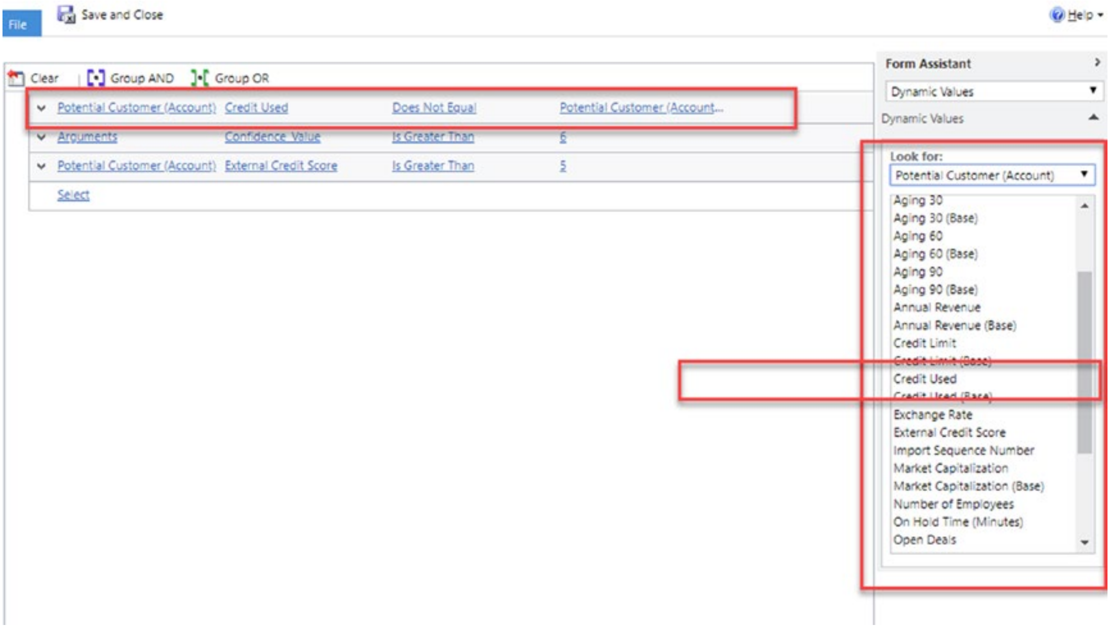
Direction ● Input ○ Output

Description The user is required to enter the confidence in the customer out of 10

Figure 8-68. *Creating process arguments within an action definition*

6. Click “Add Step” and select “Condition.” Build the condition as follows:
   - The first line is a check for the “Credit Used” field on the related account (Potential Customer (Account)) against the “Credit Limit” standard field on the account.

- The second line is a check that the argument “Confidence_Value” is greater than 6.
- The third line is to check that the external credit score for the related account is greater than 5. See Figure 8-69.

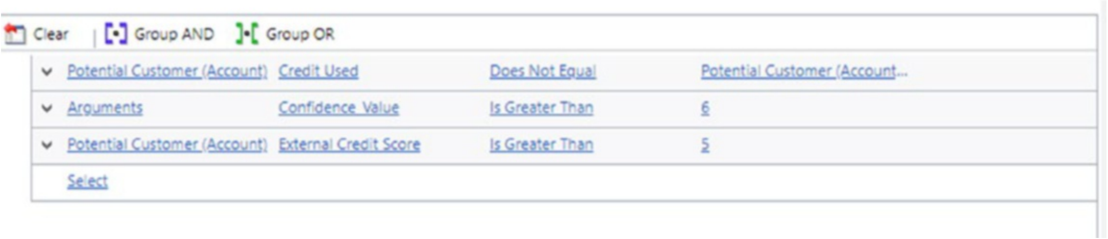

File
Save and Close
Help
Clear
Group AND
Group OR
Form Assistant
Dynamic Values
Dynamic Values
Look for:
Potential Customer (Account)

Potential Customer (Account)	Credit Used	Does Not Equal	Potential Customer (Account...
Arguments	Confidence_Value	Is Greater Than	6
Potential Customer (Account)	External Credit Score	Is Greater Than	5
Select			

Aging 30
Aging 30 (Base)
Aging 60
Aging 60 (Base)
Aging 90
Aging 90 (Base)
Annual Revenue
Annual Revenue (Base)
Credit Limit
Credit Limit (Base)
Credit Used
Credit Used (Base)
Exchange Rate
External Credit Score
Import Sequence Number
Market Capitalization
Market Capitalization (Base)
Number of Employees
On Hold Time (Minutes)
Open Deals

Figure 8-69. *Use the Form Assistant to add dynamic values into the “Value” field on the first line*

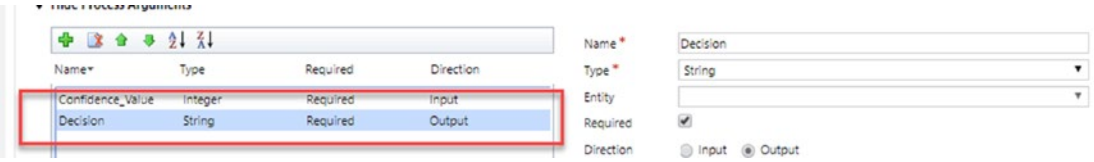
All of the lines have to equal true for the next business logic to execute, as shown in Figure 8-70.


Clear
Group AND
Group OR

Potential Customer (Account)	Credit Used	Does Not Equal	Potential Customer (Account...
Arguments	Confidence_Value	Is Greater Than	6
Potential Customer (Account)	External Credit Score	Is Greater Than	5
Select			

Figure 8-70. *The final condition should appear in three lines*

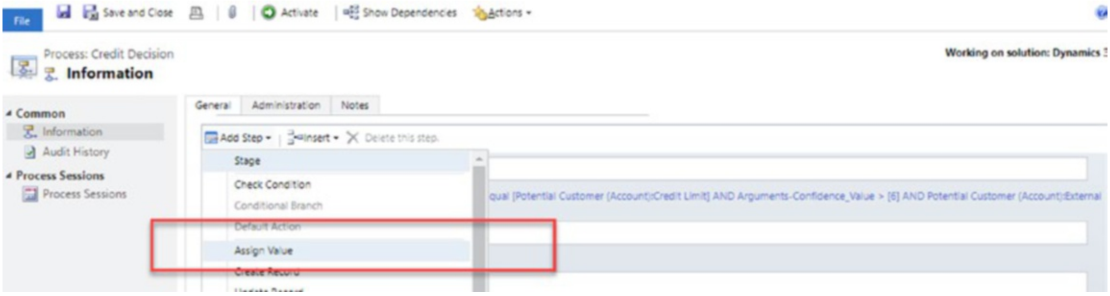
7. Create a new argument that is an output argument of type string called "Decision" (Figure 8-71). Click on "Add Step" and select the "Assign Value" step (Figure 8-72).



Name	Type	Required	Direction
Confidence_Value	Integer	Required	Input
Decision	String	Required	Output

Name * Decision
Type * String
Entity
Required ☑
Direction ○ Input ● Output

Figure 8-71. *Creating a new argument*

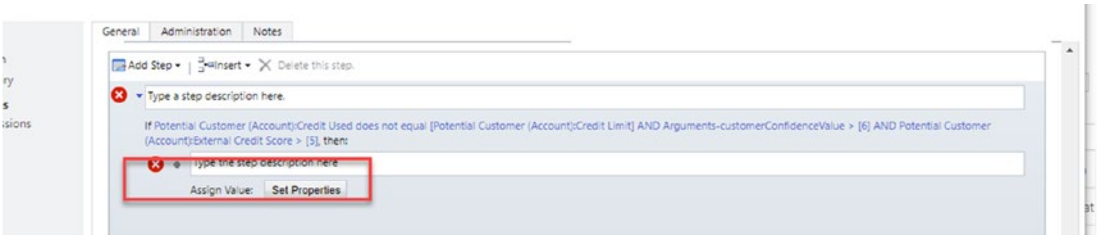


File
Save and Close
Activate
Show Dependencies
Actions
Process: Credit Decision
Information
Working on solution: Dynamics
Common
Information
Audit History
Process Sessions
Process Sessions
General
Administration
Notes
Add Step
Insert
Delete this step.
Stage
Check Condition
Conditional Branch
Default Action
Assign Value
Create Record
qual [Potential Customer (Account):Credit Limit] AND Arguments-Confidence_Value > [6] AND Potential Customer (Account):External

Figure 8-72. *Select "Assign Value" from the steps within the Process Designer*

This step allows the business logic to set the value of an argument. This is going to be the output argument for the Action called "Decision."

8. Click "Set Properties" (Figure 8-73).



General
Administration
Notes
Add Step
Insert
Delete this step.
Type a step description here.
Type the step description here
Assign Value:
Set Properties

If Potential Customer (Account):Credit Used does not equal [Potential Customer (Account):Credit Limit] AND Arguments-customerConfidenceValue > [6] AND Potential Customer (Account):External Credit Score > [5], then:

Figure 8-73. *Set properties of the value within the Process Designer*

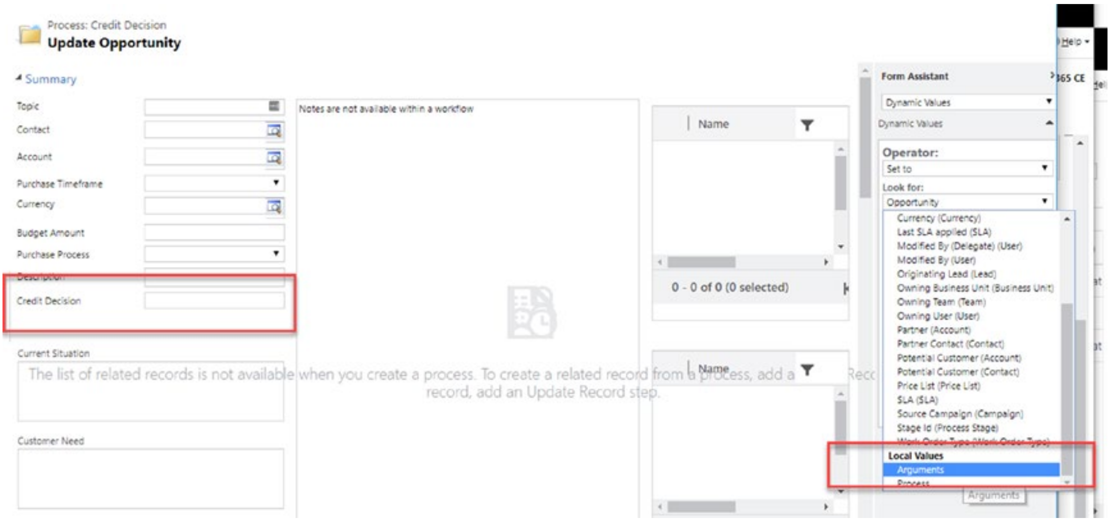
9. A new window will appear in which to configure the properties of the value. Name it “Statement Label” and enter the value for the argument as “Passed.” The “Name” field is a dropdown of all the arguments of the type “output” defined within the action.

   At this point in the design, the action process could be finished and then utilized in a workflow. The workflow would “call” the action and enter the input decision in its properties, and then the action would have an output decision that the workflow could then use and update a record with. The action created here as an example can be utilized within a workflow by selecting “Perform Action” on a workflow definition that is linked to the Opportunity entity (or related entity).

   When the action is used in other areas, such as action steps, it can hold the extra steps so as to update the opportunity with the value from the output argument. The next steps in this walkthrough add in follow-up actions.

10. Click “Update Record” and “Set Properties” on the Opportunity record.

11. On the Form Assistant, click on “Look For” and then “Local Values” and “Arguments” (Figure 8-74).


Process: Credit Decision
Update Opportunity
Summary
Topic
Contact
Account
Purchase Timeframe
Currency
Budget Amount
Purchase Process
Description
Credit Decision
Current Situation
Customer Need
Name
0 - 0 of 0 (0 selected)
Name
Help
365 CE
Form Assistant
Dynamic Values
Dynamic Values
Currency (Currency)
Last SLA applied (SLA)
Modified By (Delegate) (User)
Modified By (User)
Originating Lead (Lead)
Owning Business Unit (Business Unit)
Owning Team (Team)
Owning User (User)
Partner (Account)
Partner Contact (Contact)
Potential Customer (Account)
Potential Customer (Contact)
Price List (Price List)
SLA (SLA)
Source Campaign (Campaign)
Stage Id (Process Stage)
Work Order Type (Work Order Type)
Local Values
Arguments
Process
Arguments

Notes are not available within a workflow

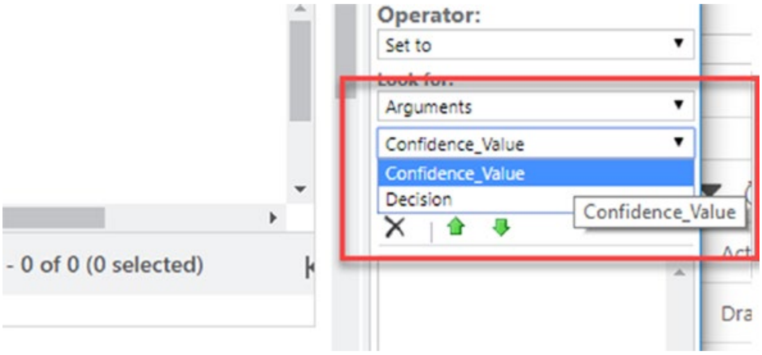
The list of related records is not available when you create a process. To create a related record from a process, add a ... record, add an Update Record step.

Operator: Set to

Look for: Opportunity

Figure 8-74. *Update the record with the dynamic values from “Local Values” within the Form Assistant*

The arguments available are "Decision" and also the input argument "Confidence_Value" (Figure 8-75).



Operator:
Set to

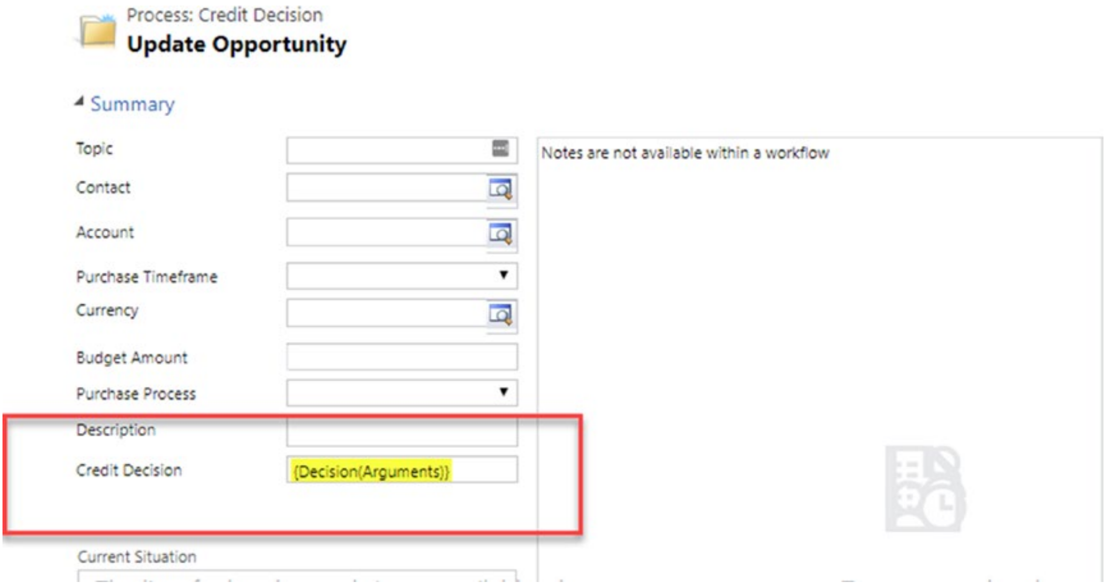
Look for:
Arguments
Confidence_Value

Confidence_Value
Decision
Confidence_Value
- 0 of 0 (0 selected)
Act
Dra

Figure 8-75. *Both arguments are available in the "Local Values" area of the action*

12. Click the "Decision" value and select "OK."

13. Move the cursor into the "Credit Decision" field on the Opportunity form and then select "OK" on the form assistant to add the dynamic value into the field (Figure 8-76).



Process: Credit Decision
Update Opportunity

Credit Decision: {Decision(Arguments)}

Notes are not available within a workflow

Summary
Topic
Contact
Account
Purchase Timeframe
Currency
Budget Amount
Purchase Process
Description
Current Situation

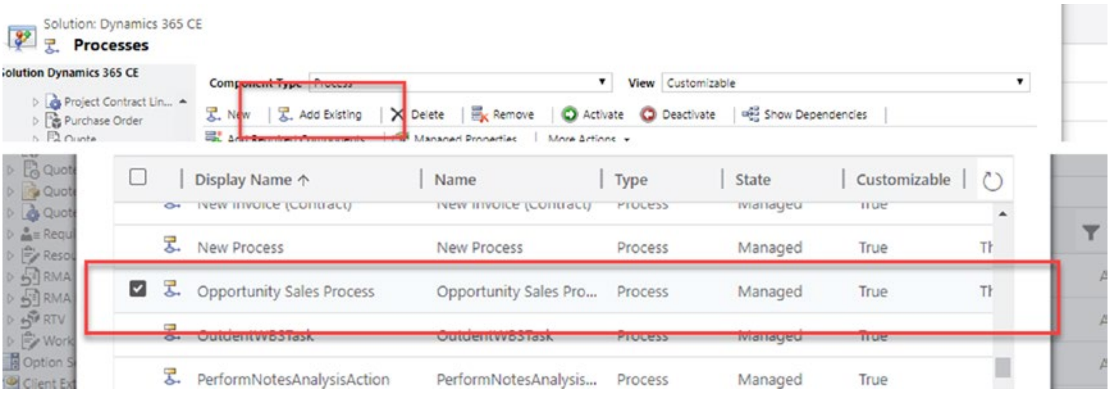
Figure 8-76. *The argument's value can be utilized as a dynamic value within a Create or Update step*

14. Save and close the properties and activate the action.

Task: Add the action into a business process flow as an action step.

This section will take the action made in the previous steps and add it into an existing business process flow.

1. In the solution, under “Processes,” click “Add Existing” and select “Opportunity Sales Process” (Figure 8-77).


Solution: Dynamics 365 CE
Processes
Solution Dynamics 365 CE
Project Contract Lin...
Purchase Order
Component Type
View Customizable
New
Add Existing
Delete
Remove
Activate
Deactivate
Show Dependencies
More Actions

☐	Display Name ↑	Name	Type	State	Customizable
	New Process	New Process	Process	Managed	True
☑	Opportunity Sales Process	Opportunity Sales Pro...	Process	Managed	True
	PerformNotesAnalysisAction	PerformNotesAnalysis...	Process	Managed	True

Figure 8-77. *Select an existing process to add into the solution via the Solution Explorer*

2. Open the 'Opportunity Sales Process' business process flow and expand the “Opportunity: Qualify” stage.

3. Drag the “Action Step” component over to the stage from the component list, as shown in Figure 8-78.

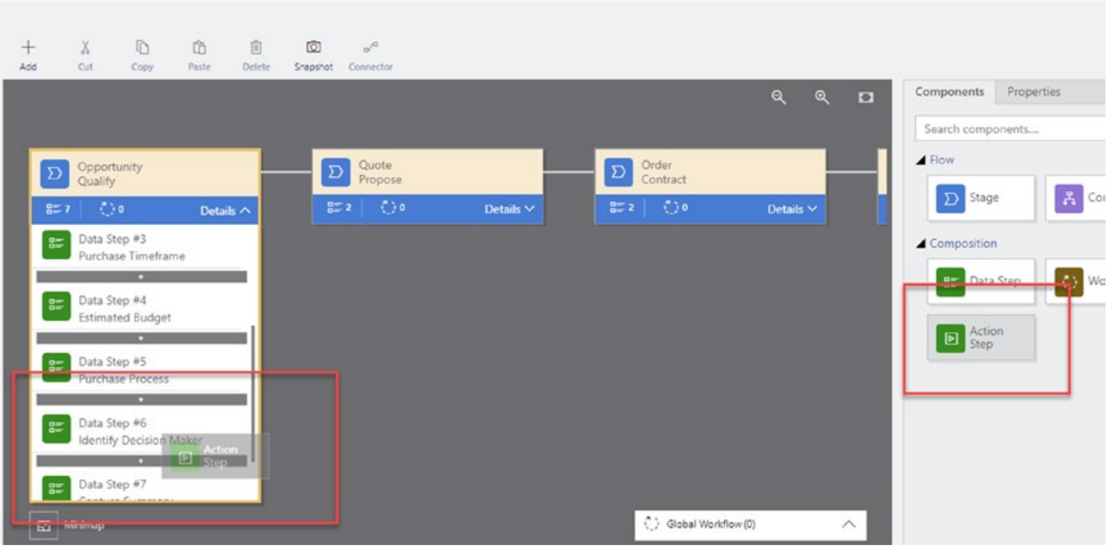
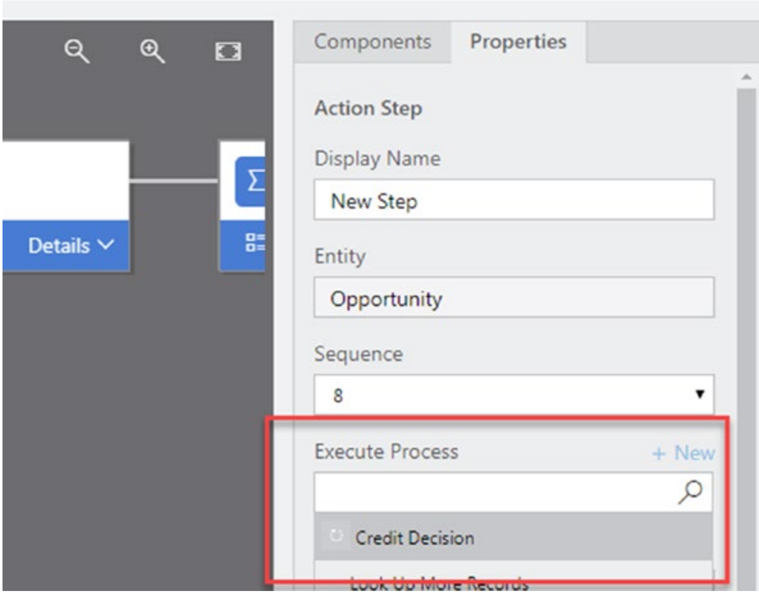

Add
Cut
Copy
Paste
Delete
Snapshot
Connector
Opportunity
Qualify
7
0
Details
Data Step #3
Purchase Timeframe
Data Step #4
Estimated Budget
Data Step #5
Purchase Process
Data Step #6
Identify Decision Maker
Action
Step
Data Step #7
Minimap
Quote
Propose
2
0
Details
Order
Contract
2
0
Details
Global Workflow (0)
Components
Properties
Search components...
Flow
Stage
Co
Composition
Data Step
Wo
Action
Step

Figure 8-78. Add an "Action Step" component within the existing business process flow

4. On the properties of the action step, name the component "Credit Decision," which will be the name that appears to the user.

5. Select the action made in the earlier step within the "Execute Process" lookup (Figure 8-79).


Components
Properties
Details
+ New
Look Up More Records

Action Step

Display Name: New Step

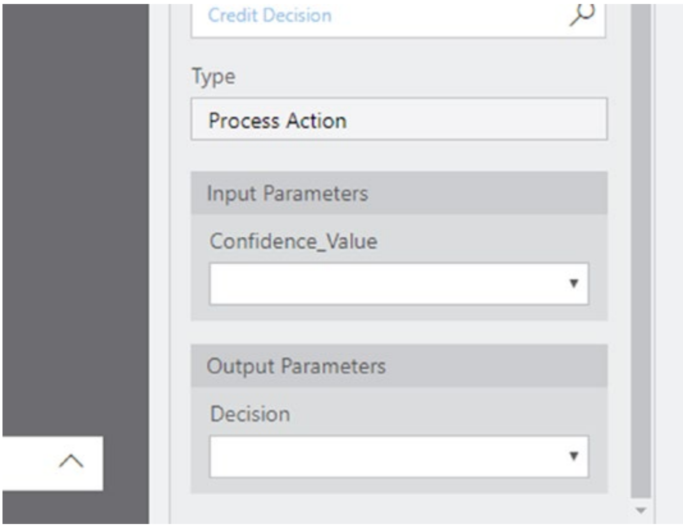
Entity: Opportunity

Sequence: 8

Execute Process: Credit Decision

Figure 8-79. Add the Credit Decision action within the "Execute Process" field

6. Do not manually enter any input or output arguments; leave them empty, as shown in Figure 8-80.



Credit Decision
Type
Process Action
Input Parameters
Confidence_Value
Output Parameters
Decision

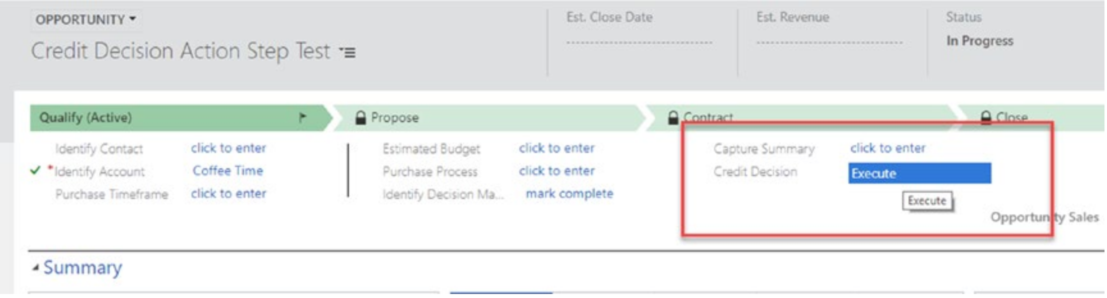
Figure 8-80. *Leave the input and output parameters for the action blank*

7. Update the business process flow by selecting "Update."

Task: Test the action step.
This last section will cover testing the action step.

1. Open an Account record and add the following details into the custom fields added at the start of this section:
    - "Credit Limit" – 2,000
    - "Credit Used" – 100
    - "External Credit Score" – 9
2. Save the record.
3. Create a new Opportunity record and associate the Account record, naming the Opportunity record and saving it.

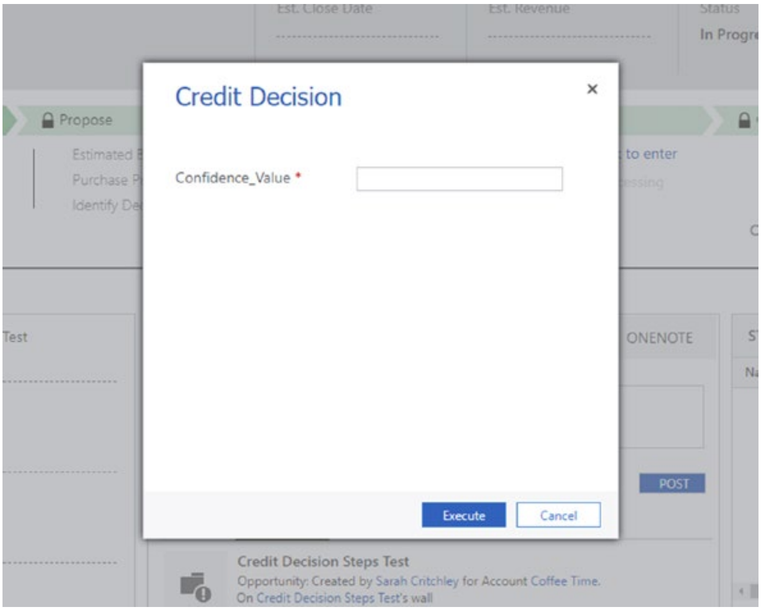
4. Within the first stage of the business process flow should be an action step called “Credit Decision.” Click “Execute,” and the input parameter dialog should appear requesting the input (Figure 8-81).


OPPORTUNITY
Credit Decision Action Step Test
Est. Close Date
Est. Revenue
Status
In Progress
Qualify (Active)
Propose
Contract
Close
Execute
Opportunity Sales
Summary

Identify Contact click to enter
*Identify Account Coffee Time
Purchase Timeframe click to enter
Estimated Budget click to enter
Purchase Process click to enter
Identify Decision Ma... mark complete
Capture Summary click to enter
Credit Decision Execute

Figure 8-81. *The action step has been added within the business process flow*

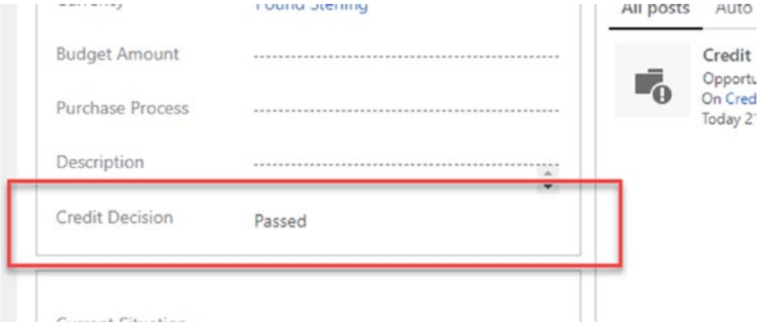
5. Enter “8” in the 'Confidence_Value field when this is prompted and click “Execute” (Figure 8-82).


Credit Decision
Confidence_Value *
Execute
Cancel
Est. Close Date
Est. Revenue
Status
In Progr
Propose
ONENOTE
POST

Credit Decision Steps Test
Opportunity: Created by Sarah Critchley for Account Coffee Time.
On Credit Decision Steps Test's wall

Figure 8-82. *Selecting the action step opens the input dialog request for the user to complete*

6. The “Credit Decision” field should now be updated to “Passed,” as shown in Figure 8-83.


Budget Amount

Purchase Process

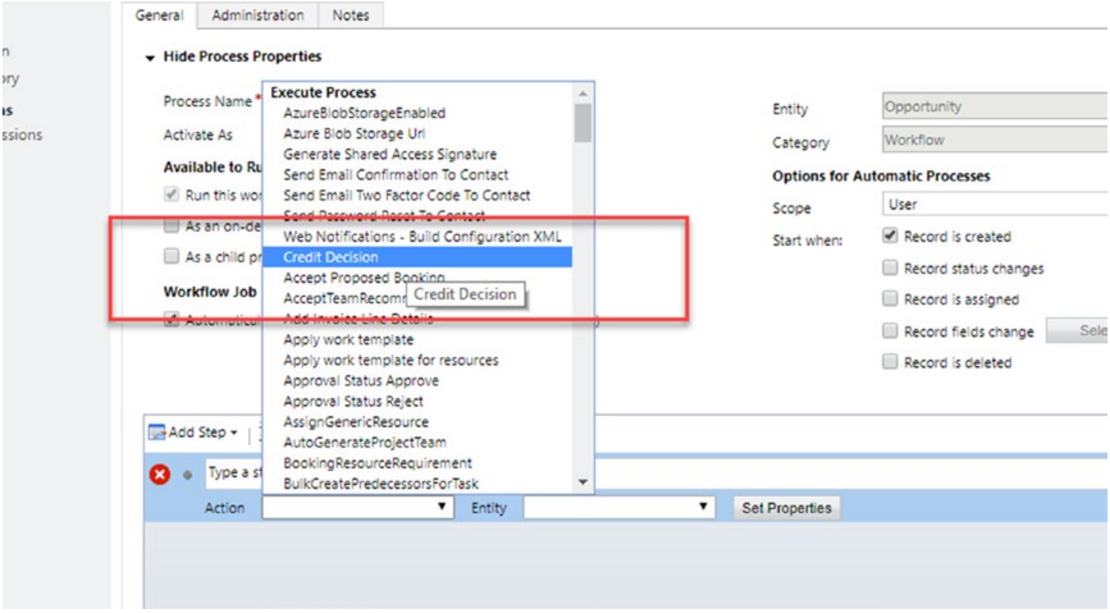
Description

Credit Decision Passed

All posts
Auto
Credit
Opportu
On Cred
Today 2

***Figure 8-83.** Completing the action performs the final logic and updates the “Credit Decision” field*

Action steps are a robust way to add processes that require a manual input into a business process flow (Figure 8-84). At the time of writing, they are still in preview and are not supported in production environments. Actions allow organizations to create encapsulated business logic so that it can be reused by other processes.


General
Administration
Notes
Hide Process Properties
Process Name *
Activate As
Available to Ru
Run this wor
As an on-de
As a child pr
Workflow Job
Automatical
Execute Process
AzureBlobStorageEnabled
Azure Blob Storage Url
Generate Shared Access Signature
Send Email Confirmation To Contact
Send Email Two Factor Code To Contact
Send Password Reset To Contact
Web Notifications - Build Configuration XML
Credit Decision
Accept Proposed Booking
AcceptTeamRecomm
Credit Decision
Add Invoice Line Details
Apply work template
Apply work template for resources
Approval Status Approve
Approval Status Reject
AssignGenericResource
AutoGenerateProjectTeam
BookingResourceRequirement
BulkCreatePredecessorsForTask
Add Step
Type a st
Action
Entity
Set Properties

Entity Opportunity

Category Workflow

Options for Automatic Processes

Scope User

Start when:

☑ Record is created

☐ Record status changes

☐ Record is assigned

☐ Record fields change

☐ Record is deleted

***Figure 8-84.** Using the action within a workflow using the “Perform Action” step*

Business Rules

Business rules are not strictly a type of "process" within Dynamics 365 CE. That said, they are a component of the platform that allows you to create business logic at the form level. Form-level business logic allows organizations to implement instant logic and can help guide the user with decisions or prevent errors that would normally be implemented by custom scripting. Using business rules enables a no-code approach that can be adopted and owned by more people within the organization and is often quicker to change should it need to be.

Users can use the same Process Designer as was used for business process flows to create business logic on fields that allow the following:

- Fields to be set with values or cleared
- Set requirements (mandatory)
- Show or hide fields
- Validate and check data
- Display error messages
- Provide recommendations
- Lock/unlock fields

Business rules, like workflows, have the concept of a "scope." It is different from the workflow-type scope. Instead, a user can set a business rule to run under one of the following:

- Entity
- All Forms
- Specific Forms

The scopes for "All Forms" and "Specific Forms" will restrict the business logic to only operate at the specified form level, and also will only operate client-side when the form is being used. This is especially useful if you need to hide fields or display recommendations or errors. The "Entity" scope allows the business rule to operate on the server side and also on the form side. This means the business rules will operate on any operation that involves updating that entity. In addition to that, the "Entity"-scoped business rules operate in real time, which means the changes will apply to the form instantly for the user to see. It is important that all the fields that a business rule uses are available on the form so they are able to trigger. In the same way as if you were using an editable grid, all fields need to be available on the view used in order for a business rule to activate.

Business rules can be created from the solution metadata or via the form or field itself, as shown in Figures 8-85 and 8-86.

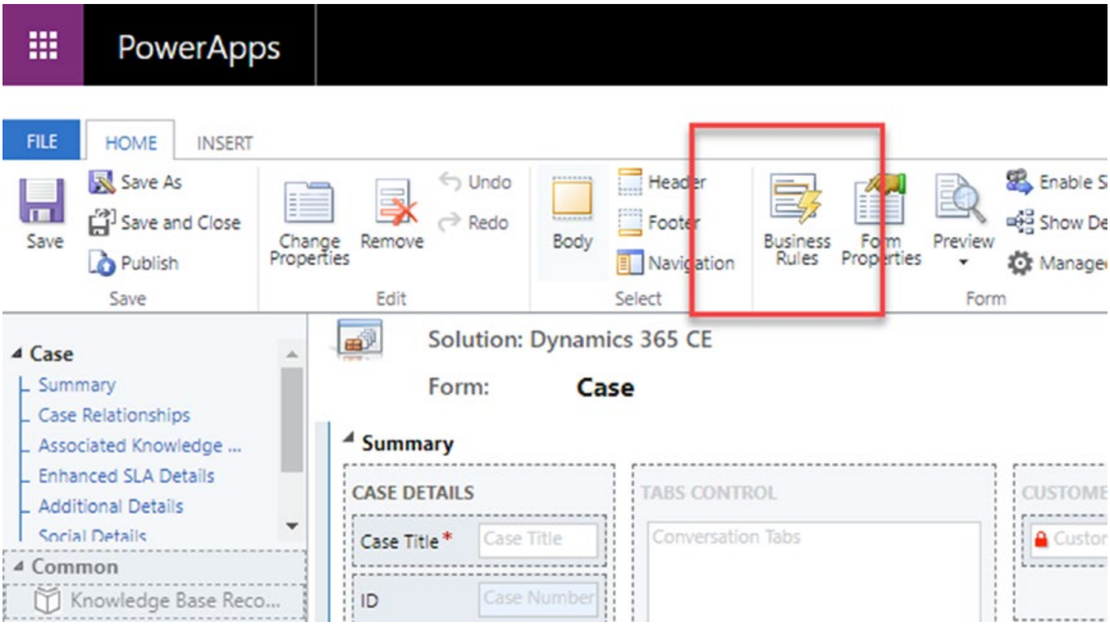
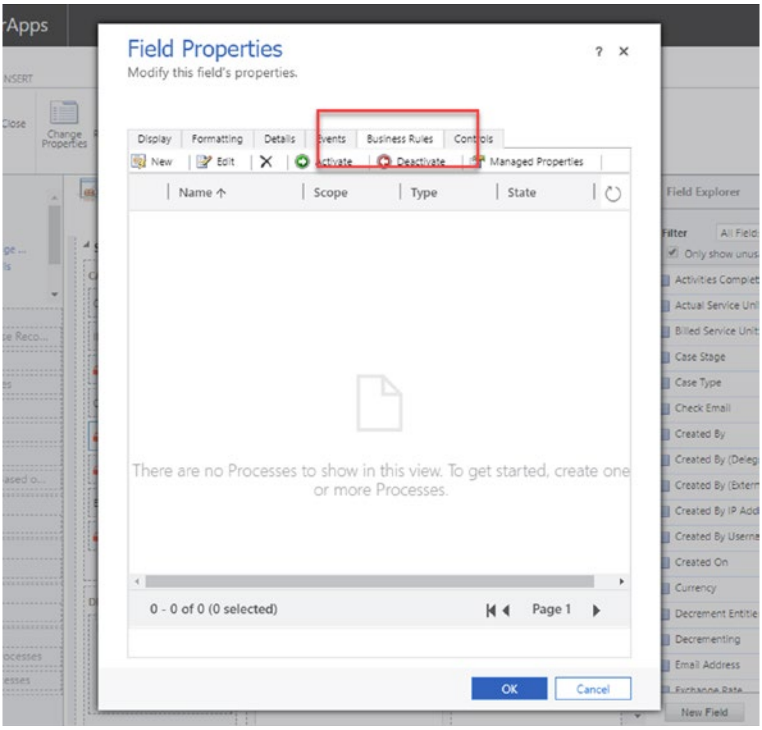

PowerApps
FILE
HOME
INSERT
Save
Save As
Save and Close
Publish
Save
Change Properties
Remove
Undo
Redo
Edit
Body
Header
Footer
Navigation
Select
Business Rules
Form Properties
Preview
Enable S
Show De
Manage
Form
Case
Summary
Case Relationships
Associated Knowledge ...
Enhanced SLA Details
Additional Details
Social Details
Common
Knowledge Base Reco...
Solution: Dynamics 365 CE
Form: Case
Summary
CASE DETAILS
Case Title *
Case Title
ID
Case Number
TABS CONTROL
Conversation Tabs
CUSTOME
Custor

Figure 8-85. Adding business rules via the form


Field Properties
Modify this field's properties.
Display
Formatting
Details
Events
Business Rules
Controls
New
Edit
Activate
Deactivate
Managed Properties
Name
Scope
Type
State
0 - 0 of 0 (0 selected)
Page 1
OK
Cancel
Field Explorer
Filter
Only show unus
Activities Complet
Actual Service Uni
Billed Service Unit
Case Stage
Case Type
Check Email
Created By
Created By (Deleg
Created By (Extern
Created By IP Add
Created By Userna
Created On
Currency
Decrement Entitle
Decrementing
Email Address
New Field
Change Properties
Close

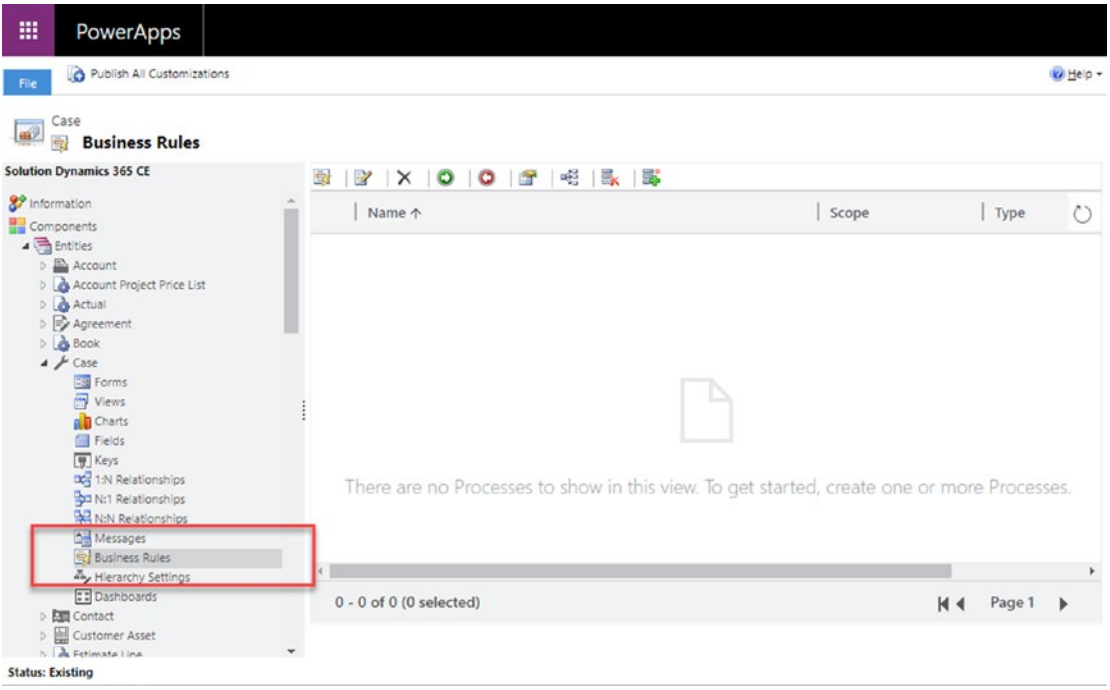
There are no Processes to show in this view. To get started, create one or more Processes.

Figure 8-86. *Adding business rules via the field*

Task: Create a new business rule from the Solution Explorer.

The following example will add a basic condition on the Case form to set the "Resolution" field as mandatory if a resolution date has been set.

1. Navigate to the Solution Explorer and expand the Case entity metadata, as shown in Figure 8-87.


PowerApps
File
Publish All Customizations
Help
Case
Business Rules
Solution Dynamics 365 CE
Information
Components
Entities
Account
Account Project Price List
Actual
Agreement
Book
Case
Forms
Views
Charts
Fields
Keys
1:N Relationships
N:1 Relationships
N:N Relationships
Messages
Business Rules
Hierarchy Settings
Dashboards
Contact
Customer Asset
Estimate Line
Name ↑
Scope
Type
Page 1

There are no Processes to show in this view. To get started, create one or more Processes.

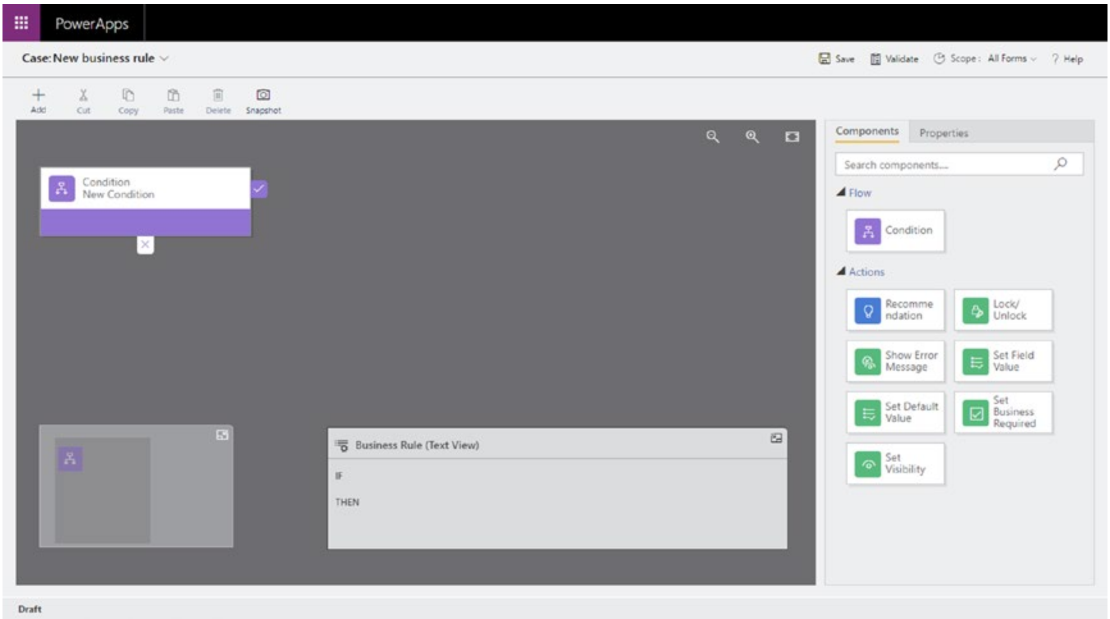
0 - 0 of 0 (0 selected)

Status: Existing

Figure 8-87. *Create a new business rule from the Solution Explorer*

2. Click “New” to create a new blank business rule.

3. The empty Process Designer will open, as shown in Figure 8-88. This is the same designer as the Business Process Flow Designer. For a more detailed explanation of the user interface, please refer to the previous section in this chapter, which covers it in depth.

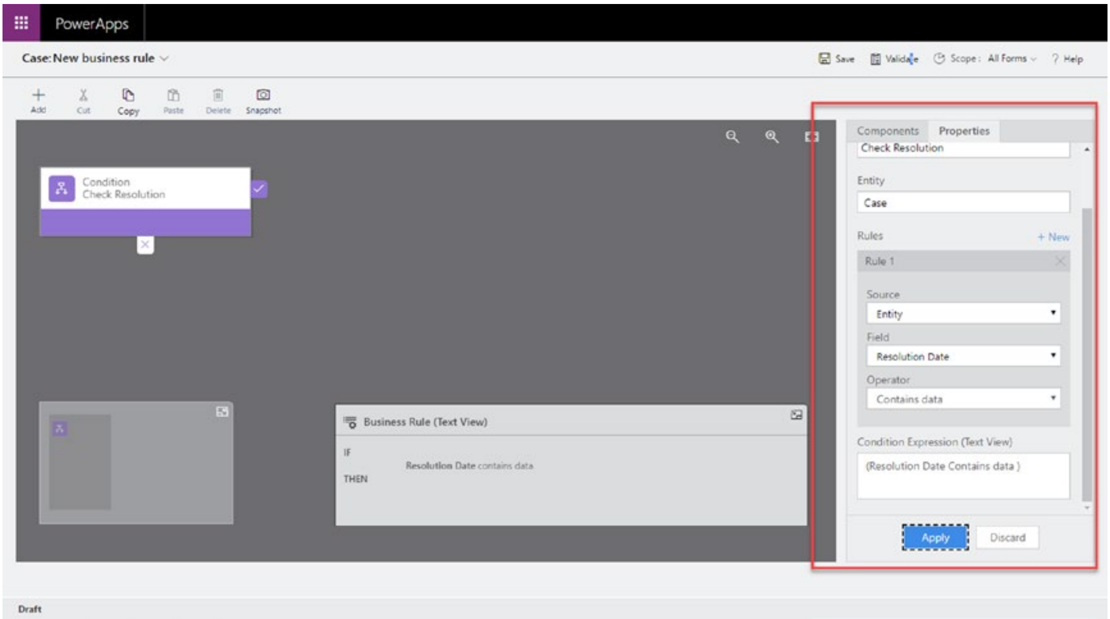

PowerApps
Case: New business rule
Save
Validate
Help
Add
Cut
Copy
Paste
Delete
Snapshot
Condition
New Condition
Business Rule (Text View)
IF
THEN
Components
Properties
Search components....
Flow
Condition
Actions
Recommendation
Lock/Unlock
Show Error Message
Set Field Value
Set Default Value
Set Business Required
Set Visibility
Draft

Scope : All Forms

Figure 8-88. *Business Rule Designer*

4. Set the business rule scope to “Entity” by changing the “Scope” dropdown field in the top right-hand corner of the Process Designer.

5. Set the condition on whether the “Resolution Date” field contains data (Figure 8-89). Add this condition using the “Properties” pane on the right-hand side, with the condition block selected in the design space.


PowerApps
Save
Validate
Scope : All Forms
Help
Add
Cut
Copy
Paste
Delete
Snapshot
Components
Properties
+ New
Apply
Discard
Draft

Case: New business rule

Condition
Check Resolution

Check Resolution

Entity: Case

Rules

Rule 1

Source: Entity

Field: Resolution Date

Operator: Contains data

Condition Expression (Text View): (Resolution Date Contains data)

Business Rule (Text View)

IF Resolution Date contains data

THEN

Figure 8-89. *Adding in the condition for the business rule in the "Properties" pane*

6. Add a name to the business rule by selecting the dropdown next to the name.
7. Click on the Components tab and drag the "Set Business Required" component onto the design space, attaching it to the positive output of the condition. This is shown in Figure 8-90.

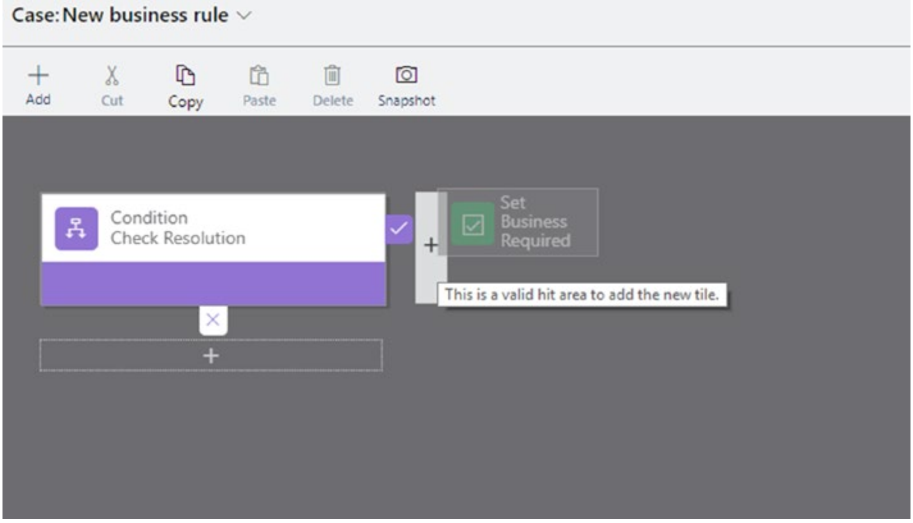
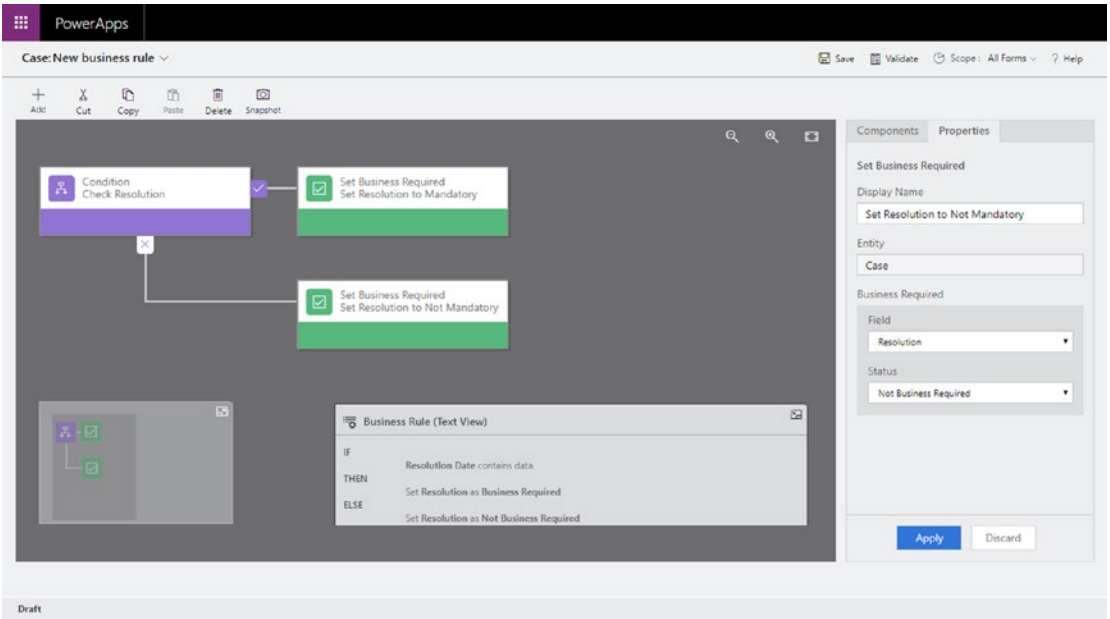

Case: New business rule
Add
Cut
Copy
Paste
Delete
Snapshot
Condition
Check Resolution
Set
Business
Required
This is a valid hit area to add the new tile.

Figure 8-90. *Dragging a "Set Business Required" property into the Business Rule Designer*

8. Do this a second time and attach it to the negative output of the condition. These will set the field to "Business Required" for the positive case and to "Optional" for the negative case.
9. Click on the components in the design space and set the properties so the field is related to the "Resolution" field for both components and the status is set to "Business Required" and the negative outcome of the condition is set to "Not Buisness Required". (Figure 8-91).


PowerApps
Case: New business rule
Save
Validate
Scope: All Forms
Help
Add
Cut
Copy
Paste
Delete
Snapshot
Condition
Check Resolution
Set Business Required
Set Resolution to Mandatory
Set Business Required
Set Resolution to Not Mandatory
Components
Properties
Apply
Discard
Draft

Business Rule (Text View)

IF Resolution Date contains data

THEN Set Resolution as Business Required

ELSE Set Resolution as Not Business Required

Set Business Required

Display Name: Set Resolution to Not Mandatory

Entity: Case

Business Required

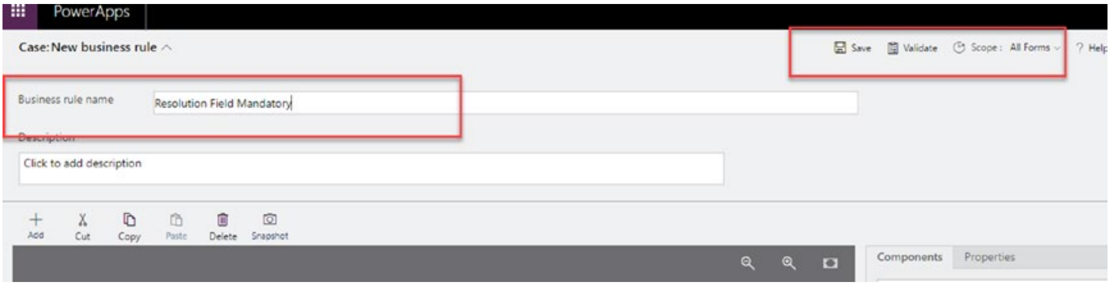
Field: Resolution

Status: Not Business Required

Figure 8-91. *Defining the condition for the Business Required action in the "Properties" pane*

10. Ensure the display names of all components are descriptive for action they are performing.

11. Name the business rule by selecting the "Business Rule Name" field at the top of the screen and entering the name, as shown in Figure 8-92.


PowerApps
Case: New business rule
Save
Validate
Scope: All Forms
Help
Add
Cut
Copy
Paste
Delete
Snapshot
Components
Properties

Business rule name: Resolution Field Mandatory

Description: Click to add description

Figure 8-92. *Naming the business rule*

12. Click “Save” then “Validate.” Validation checks for any errors within the process and will highlight them in an error list at the top of the design space.

13. Click “Activate” (Figure 8-93).

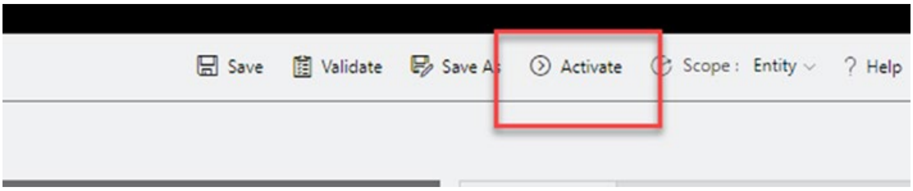
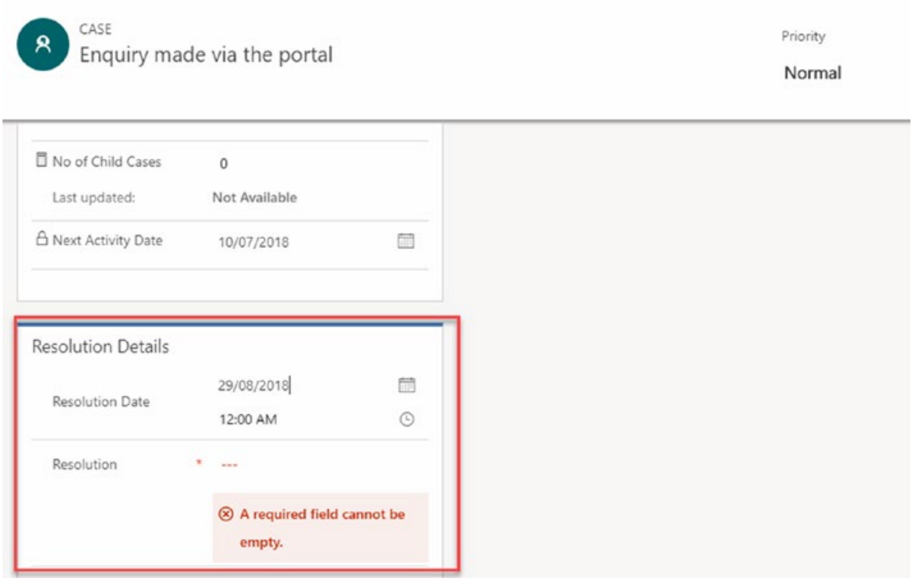


Figure 8-93. *Select “Activate” in the Business Rule Designer*

Task: Test the business rule.

1. Open a Case entity in which to test the field in action. Once a resolution date is entered, the field “Resolution” now becomes mandatory. If the “Resolution Date” field is empty and contains no data, the resolution date now is no longer mandatory (Figure 8-94).



CASE
Enquiry made via the portal

Priority
Normal

No of Child Cases 0
Last updated: Not Available
Next Activity Date 10/07/2018

Resolution Details

Resolution Date 29/08/2018 12:00 AM

Resolution * ---

A required field cannot be empty.

Figure 8-94. *Testing the business rule*

This section has reviewed Business Rules and what they are capable of. The example above would have normally required scripting within the platform, and business rules allow this to be done using basic logic.

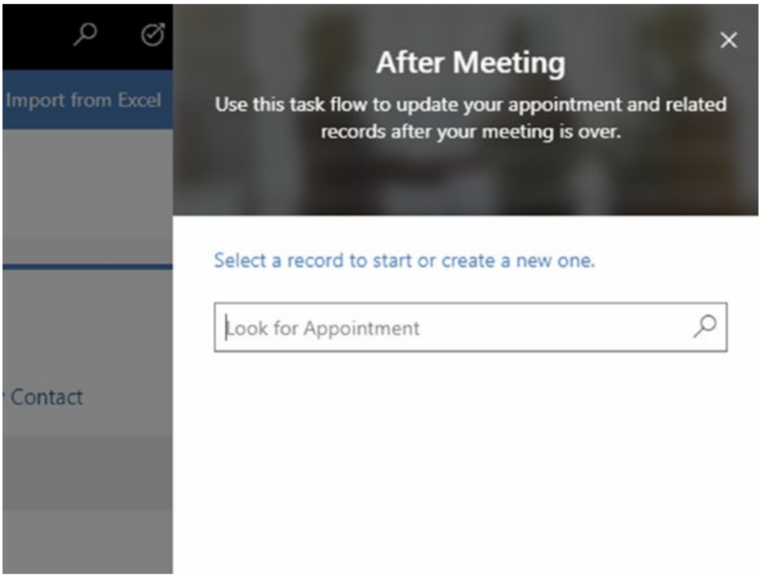
Task Flows

Task flows were introduced in the Chapter 6 that covered mobile features and are classified in Dynamics 365 CE as a type of process. Task flows are only available in Unified Interface apps and are found within the category "Business Process Flow." They are a great way to quickly perform follow-up actions without having to navigate around the application or find records within larger views.

Task flows should be designed to be a processes that a user can complete quickly. One of the benefits of task flows is that they can be started from any location within Dynamics 365 CE, as the Task Flow button is available on the main navigation in the Unified Interface.

In contrast to Quick Create forms, task flows provide a different experience to users that goes beyond being able to create a new record. Task flows have a more guided process and are able to utilize more than one entity within a single process, which Quick Create forms cannot do.

Task flows begin with asking a user to enter the record, as seen in Figure 8-95, so the details entered in the following pages update that record, or if one does not yet exist it will prompt the user to create a new record and use that record in the next pages.



After Meeting

Use this task flow to update your appointment and related records after your meeting is over.

Select a record to start or create a new one.

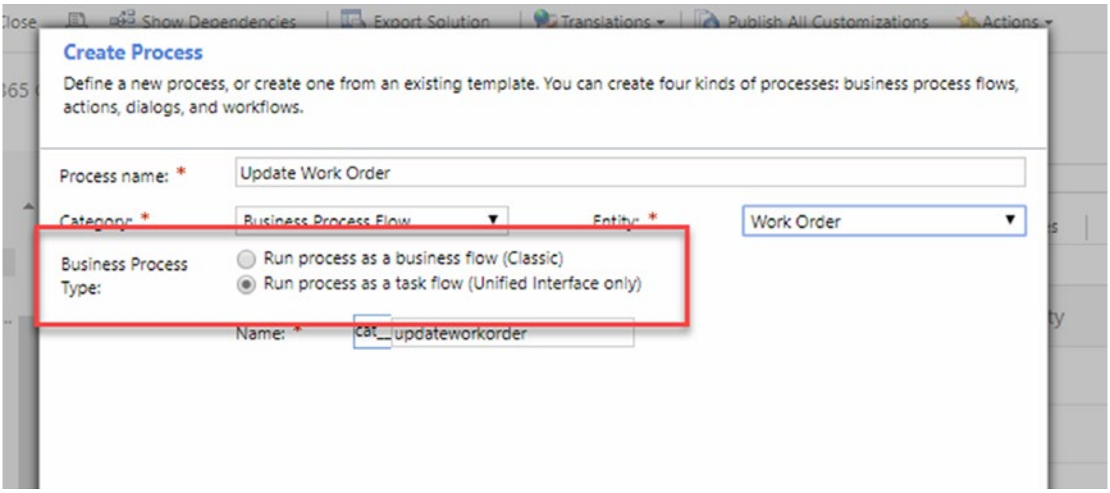
Figure 8-95. *Standard "After Meeting" task flow prompting for the Appointment record*

Task flows have a number of core components, as follows:

- **Pages** – The "page" a user navigates to and from as part of the process
- **Conditions** – Conditional operators, similar to business process flows, that can enable branching
- **Section Labels** – Headings as part of the page
- **Labels** – Headings above the field to assist the user
- **Fields** – Fields on the task flow linked to entity fields

Task: Create a task flow.

1. Navigate to a solution and create a new process called "Update Work Order." Specify the category as "Business Process Flow" and the entity as "Work Order."
2. Ensure the business process type is set to "Task Flow," as shown in Figure 8-96.



Create Process

Define a new process, or create one from an existing template. You can create four kinds of processes: business process flows, actions, dialogs, and workflows.

Process name: * Update Work Order

Category: * Business Process Flow

Entity: * Work Order

Business Process Type:
○ Run process as a business flow (Classic)
● Run process as a task flow (Unified Interface only)

Name: * cat_ updateworkorder

Figure 8-96. *Create a new task flow process*

3. Click “OK,” which opens up the Business Process Designer—the same designer used by business process flows and business rules.

4. There will be a single “Page” component by default in the designer, and a “Field” component inside this, as shown in Figure 8-97. Add “Section Label” and “Label” components to this stage and name them accordingly.

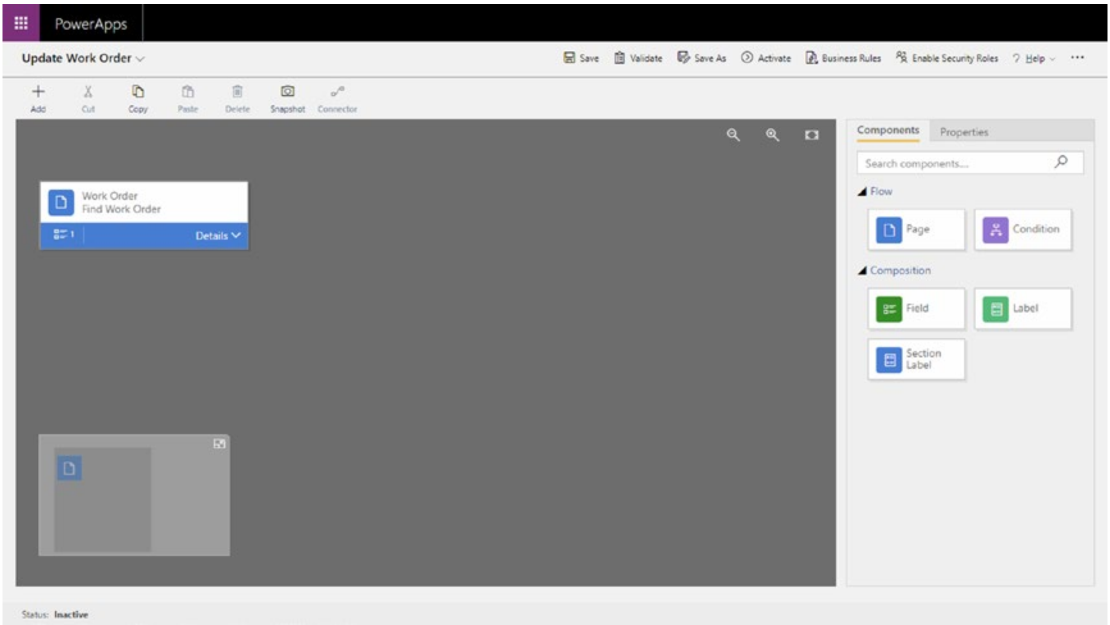
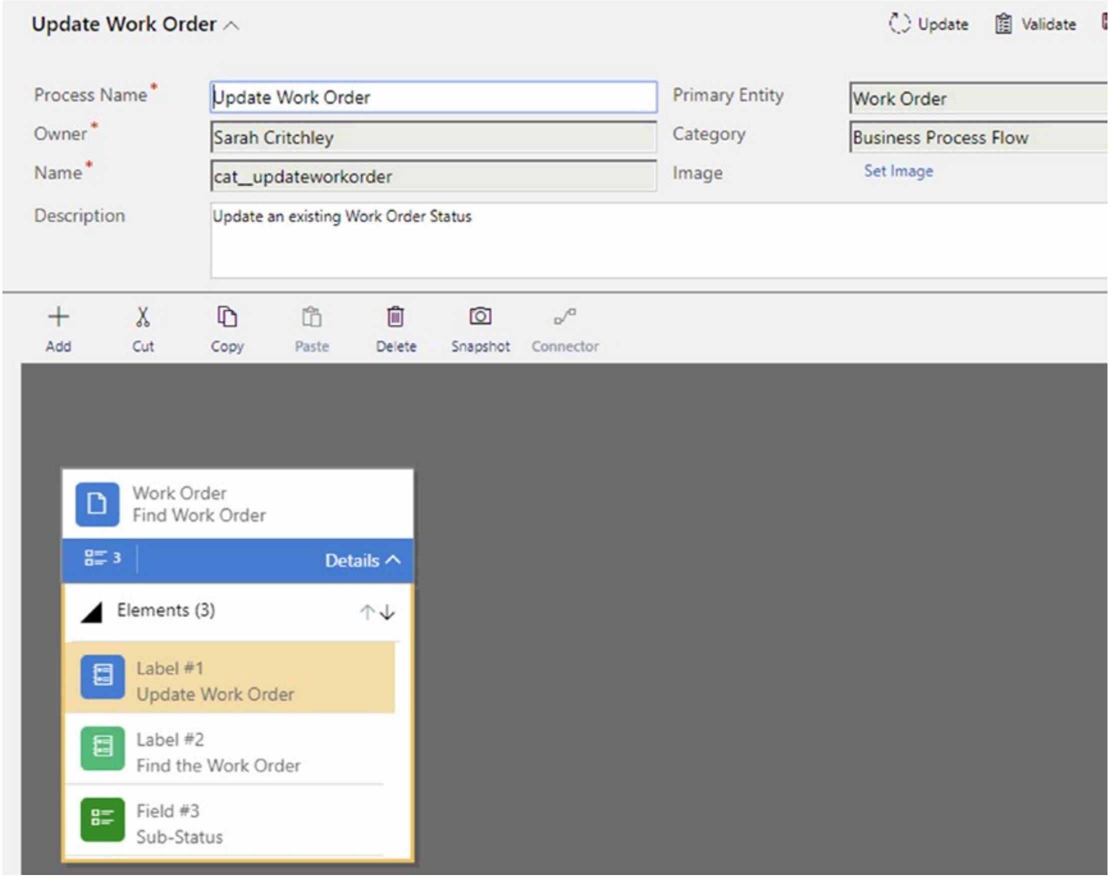

PowerApps
Update Work Order
Save
Validate
Save As
Activate
Business Rules
Enable Security Roles
Help
Add
Cut
Copy
Paste
Delete
Snapshot
Connector
Work Order
Find Work Order
Details
Components
Properties
Search components...
Flow
Page
Condition
Composition
Field
Label
Section Label
Status: Inactive

Figure 8-97. *A new task flow process*

5. Update the description of the process, as this is displayed on the first page to the user (Figure 8-98).


Update Work Order
Update
Validate
Add
Cut
Copy
Paste
Delete
Snapshot
Connector
Details
Elements (3)

Process Name*: Update Work Order
Owner*: Sarah Critchley
Name*: cat_updateworkorder
Description: Update an existing Work Order Status
Primary Entity: Work Order
Category: Business Process Flow
Image: Set Image

Work Order
Find Work Order
3
Label #1
Update Work Order
Label #2
Find the Work Order
Field #3
Sub-Status

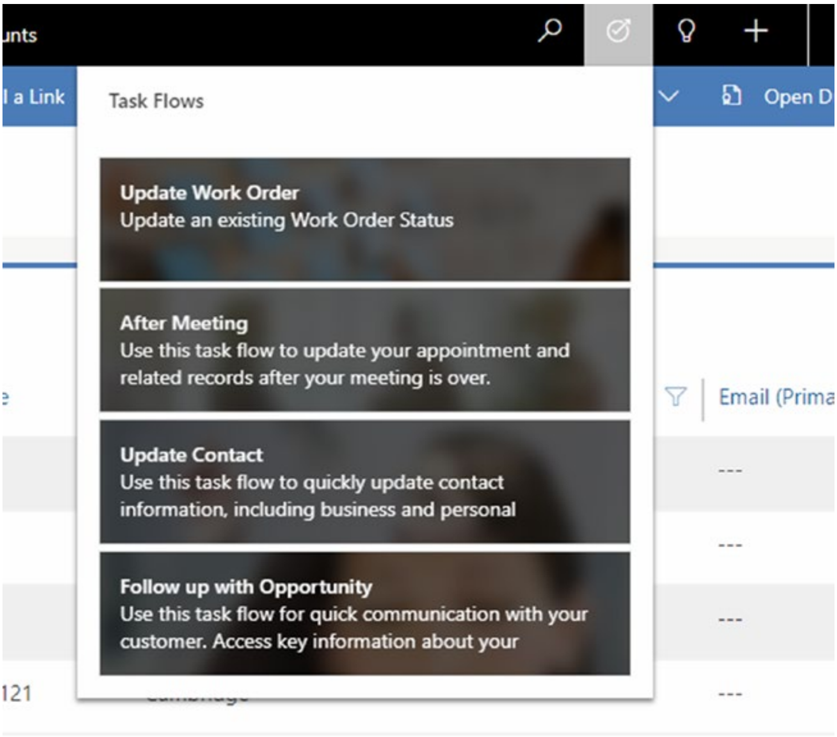
Figure 8-98. *Updating the description of the task flow*

6. Link the "Field" component in the "Page" component to the "Sub-Status" field in the work order.
7. Click "Save."
8. Click "Validate."
9. Click "Activate."

The task flow will now be enabled for the Unified Interface client. Task flows do not need to be added to apps, and instead all active task flows will be available from all apps via the Task Flow button on the main navigation bar at the top of the screen.

Task: Test the new task flow process.

1. Navigate to a Unified Interface app.
2. Click the Task Flow button as shown in Figure 8-99. The new task flow should appear, called "Update Work Order."


Task Flows

Update Work Order
Update an existing Work Order Status

After Meeting
Use this task flow to update your appointment and related records after your meeting is over.

Update Contact
Use this task flow to quickly update contact information, including business and personal

Follow up with Opportunity
Use this task flow for quick communication with your customer. Access key information about your

Figure 8-99. Selecting the new task flow "Update Work Order"

3. Click the task flow "Update Work Order."
4. You should be prompted to find an existing work order. Select any record for now and click "Next."
5. The custom page in the process should now appear with the Section Label, Label, and Field to change the status, as shown in Figure 8-100.

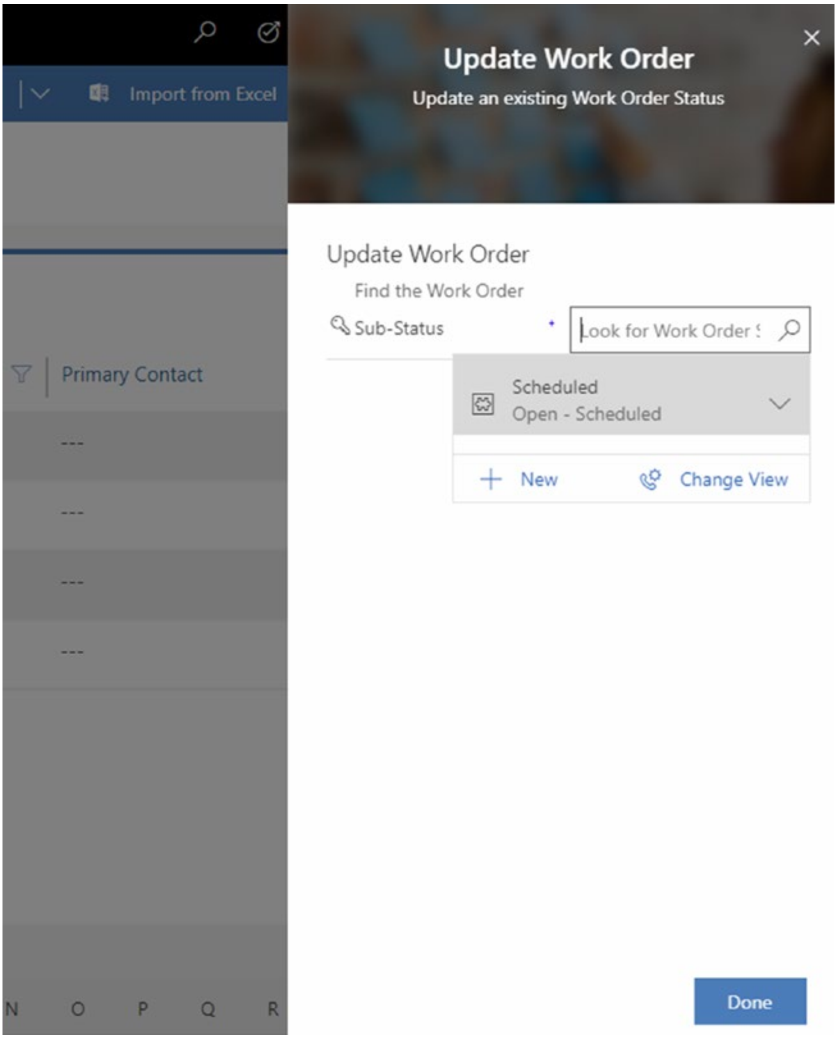

Import from Excel
Update Work Order
Update an existing Work Order Status
Primary Contact
Update Work Order
Find the Work Order
Sub-Status
Look for Work Order S
Scheduled
Open - Scheduled
New
Change View
N
O
P
Q
R
Done

Figure 8-100. Selecting the "Sub-Status" field in the task flow

6. Change the sub-status of the work order by selecting from the dropdown list.
7. Select "Done" on the task flow.

Task flows are a great way to create a process for users of Dynamics 365 CE that can quickly update records without their having to navigate around the system or find records in other ways. They can be simple or more complex depending on the requirement, often utilizing more than one entity type within a single task flow.

Summary

This chapter has covered the core processes within Dynamics 365 CE. Processes provide easy-to-use functionality to customize the system to suit the requirements of organizations. Being able to create complex business processes using just the user interface gives organizations a large amount of capability, ownership of the platform and the capability to change those processes as and when they change within the organization itself. Business process flows and task flows offer a guided process for users to follow prompts step-by-step, with added business rules where required to automate tasks even further. Workflows offer an extensive capability to provide external and internal automation, which can be performed in the background or in real time, displaying changes immediately to the user. Finally, business rules offer an extra layer of processing, which can be on both the client and server side of the application, offering the capability to perform error checking and various other tasks to speed up data entry and enforce rules where required. This chapter has covered these core processes within Dynamics 365 CE to allow you to get started implementing more customized and specific business logic to the platform.

Chapter Tasks

At the end of every chapter, there will be a section that gives up to ten suggested tasks for you to complete within Dynamics 365 CE. These tasks will be based around the topics covered within the chapter and the further resources referenced at the end. They are aimed at expanding practical knowledge and application regarding those topics that goes beyond reading about them.

1. Create a new business process flow.
2. Create a new business process flow across more than one entity.
3. Create a business rule
4. Design and create a new background workflow.
5. Design and create a new real-time workflow
6. Create a new action.
7. Use the action within a business process flow as an action step.
8. Use the action within a workflow.
9. Create a new task flow.

Further Reading

Workflows in more depth (Microsoft, 2018). URL: https://docs.microsoft.com/en-us/dynamics365/customer-engagement/customize/workflow-processes

Business Rules (Microsoft, 2018). URL: https://docs.microsoft.com/en-us/windows/desktop/secauthz/business-rules

A guide to Actions (Microsoft, 2018). URL: https://docs.microsoft.com/en-us/dynamics365/customer-engagement/customize/actions

CHAPTER 9

UI Customizations

This chapter will cover the core UI customizations available within Dynamics 365 CE. Customizing the user interface gives users the capability to modify how data is displayed, which, in turn, influences how they update the information as well. In addition to that, understanding how the records are connected to each other through relationships gives greater understanding of the information held within Dynamics 365 CE, empowering users to get more value out of the system by using reporting and navigational features.

Forms are used within Dynamics 365 CE to display fields to users (Figure 9-1). They hold information about where fields are placed, the format in which they are viewed and are one of the main areas where a user will interact directly with data. Forms are used by both the Classic UI and Unified Interface. It is important to understand the different terminology involved in creating forms, how to create new fields, relationships, adding components to forms, and the different types available. This chapter will focus on these topics to ensure you can design a positive user experience where users can add data and retrieve data from the system with ease.

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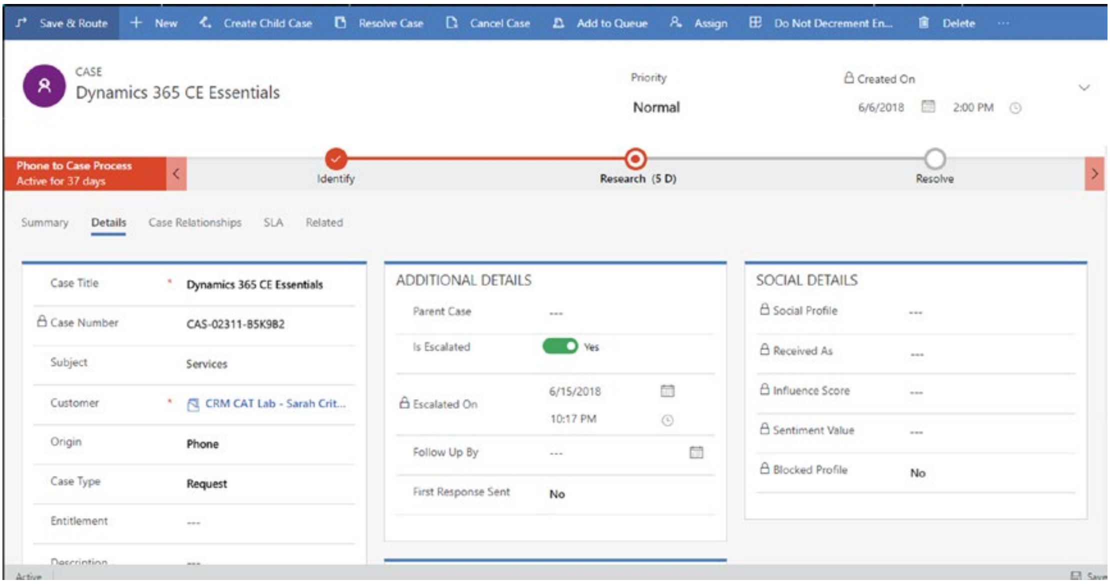
S. Critchley, *Dynamics 365 CE Essentials*, https://doi.org/10.1007/978-1-4842-3973-5_9



CASE
Dynamics 365 CE Essentials
Priority: Normal
Created On: 6/6/2018 2:00 PM
Phone to Case Process
Active for 37 days

Case Title *: Dynamics 365 CE Essentials
Case Number: CAS-02311-B5K9B2
Subject: Services
Customer *: CRM CAT Lab - Sarah Crit...
Origin: Phone
Case Type: Request
Entitlement: ---
Description: ---

ADDITIONAL DETAILS
Parent Case: ---
Is Escalated: Yes
Escalated On: 6/15/2018 10:17 PM
Follow Up By: ---
First Response Sent: No

SOCIAL DETAILS
Social Profile: ---
Received As: ---
Influence Score: ---
Sentiment Value: ---
Blocked Profile: No

Figure 9-1. *An example of a form on a Case record*

Entities and Fields

As discussed in the first chapter, record types are often referred to as *entities* within Dynamics 365 CE. Entities are used to categorize types of records, and in database terms are the same as a table within a database. Users and processes create records of that type either within the user interface or programmatically, creating rows within that table. Entities have related metadata linked to them, such as fields, views, and forms. Fields are columns within the database linked to the entity and are the descriptive information that is stored within the row. Dynamics 365 CE comes with many entities already pre-created and used within defined business processes, such as the Account and Contact entities. There is also the ability to create custom entities that can be used to support existing processes or, instead, to create entirely new processes.

Entities and related information, such as fields, are added through *solutions* within the Solution Explorer in the Classic UI (Solutions are covered in more depth in Chapter 10). Fields represent data within the system and, from a database point of view, represent at least one column within the Dynamics 365 CE database. The standard record types, such as Case, Account, Contact, and Opportunity, all come with fields already created against the record types. New fields can be created if required. Fields are added to a form; however, not all fields have to be added to a form (Figure 9-2). A form provides the user experience and the ability for the user to enter data. The form is also used operationally for business processes, such as workflows, and for business rules to operate, including where form scripts, such as JavaScript, are added. Entities can have multiple forms that users can switch between when viewing a record. Multiple forms can be added via the App Designer for a single record type—for example, a Case—and users can switch between the forms available. A field can then exist on any number of forms within the record type.

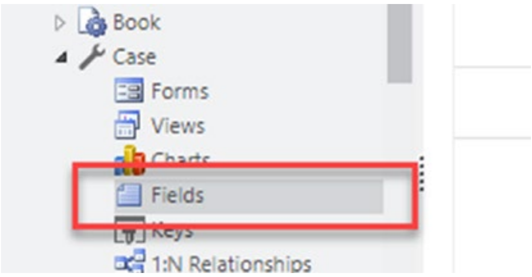


Figure 9-2. *Where fields can be added within a solution (fields can also be added into a form from a solution directly)*

Task: Create a new entity within Dynamics 365 CE.

1. Navigate to a solution within the Solution Explorer and open it. (Solutions are covered in depth in Chapter 10.)
2. Click on "Components" in the left-hand side panel and select "New" and "Entity," as shown in Figure 9-3.
3. A new window will open, which will be a blank Entity window. Complete the following details, as shown in Figure 9-4:
    - **Display Name** – This is the name as it appears in Dynamics 365 CE.
    - **Plural Name** – This is the name as it appears in views and areas where there is more than one record.
    - **Ownership** – If this entity should be owned by a user or a team or by an organization (organization ownership is outside of the security role structure)
    - **Description** – A short description of the entity

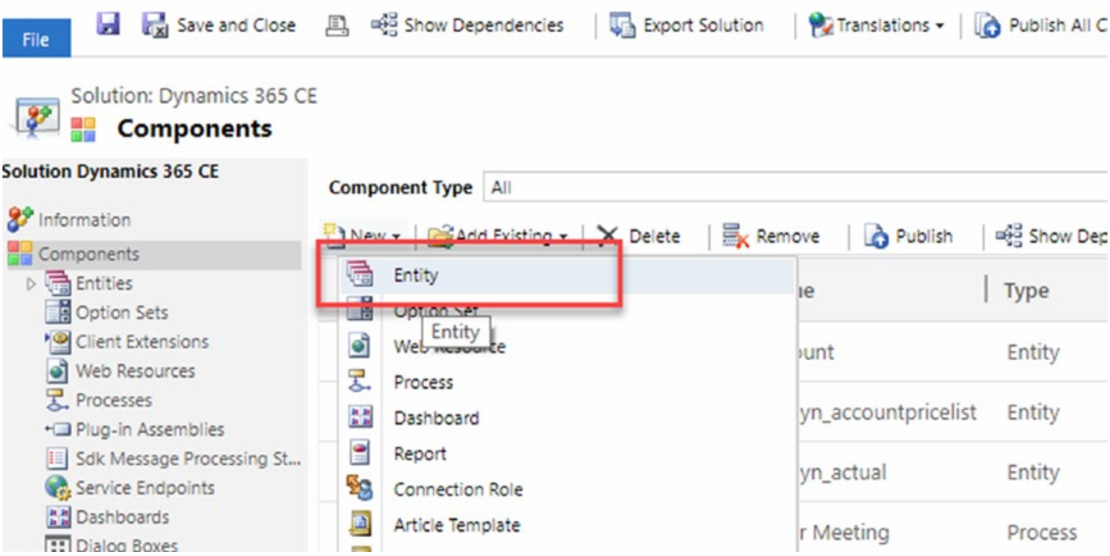
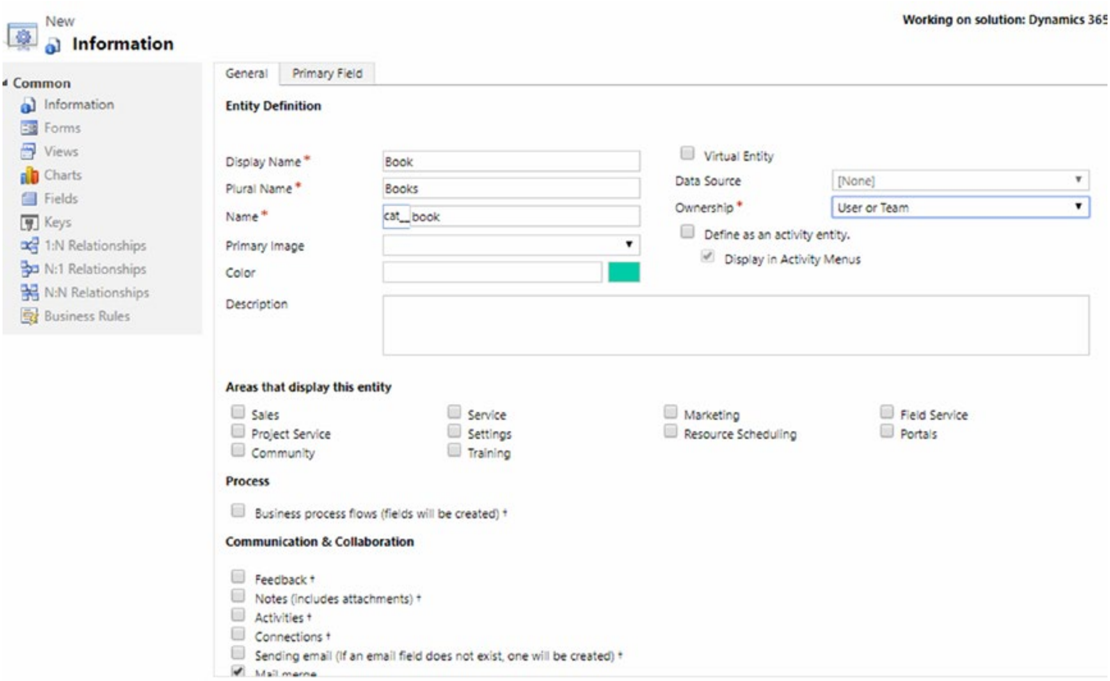

File
Save and Close
Show Dependencies
Export Solution
Translations
Publish All C
Solution: Dynamics 365 CE
Components
Solution Dynamics 365 CE
Information
Components
Entities
Option Sets
Client Extensions
Web Resources
Processes
Plug-in Assemblies
Sdk Message Processing St...
Service Endpoints
Dashboards
Dialog Boxes
Component Type
All
New
Add Existing
Delete
Remove
Publish
Show Dep
Entity
Option Set
Web Resource
Process
Dashboard
Report
Connection Role
Article Template
Type
Entity
yn_accountpricelist
yn_actual
Meeting
Process

Figure 9-3. *Creating a new custom entity*

There are some areas on the Entity Configuration screen that are notable at this stage, as follows (Figure 9-4):

- **Virtual Entity (Checkbox)** – This defines if the entity should be marked as virtual. Virtual entities are often used for data-integration scenarios and represent records from external systems without taking up database space. Check out the “Further Reading” section at the end of the chapter for more information.
- **Primary Image** – Used to display an image type field and enable images in the entity
- **Name** – Autopopulated based on the publisher prefix in the solution and the display name
- **Define as an Activity entity** – Defining an entity as an Activity entity means it will be a child of the Activity Pointer entity and will be available to create from the timeline in all other entities.
- **Color** – The color of the entity icon background used in the Classic UI

- **Areas that display this entity** – The sitemap for the Classic UI and where the entity should display. This is not linked to the Unified Interface client and is instead designed in the Sitemap Designer.


New
Information
Common
Information
Forms
Views
Charts
Fields
Keys
1:N Relationships
N:1 Relationships
N:N Relationships
Business Rules
General
Primary Field

Working on solution: Dynamics 365

Entity Definition

Display Name *	Book
Plural Name *	Books
Name *	cat_ book
Primary Image	
Color	🟩
Description	

☐ Virtual Entity
Data Source: [None]
Ownership *: User or Team
☐ Define as an activity entity.
☑ Display in Activity Menus

Areas that display this entity

☐ Sales
☐ Project Service
☐ Community
☐ Service
☐ Settings
☐ Training
☐ Marketing
☐ Resource Scheduling
☐ Field Service
☐ Portals

Process

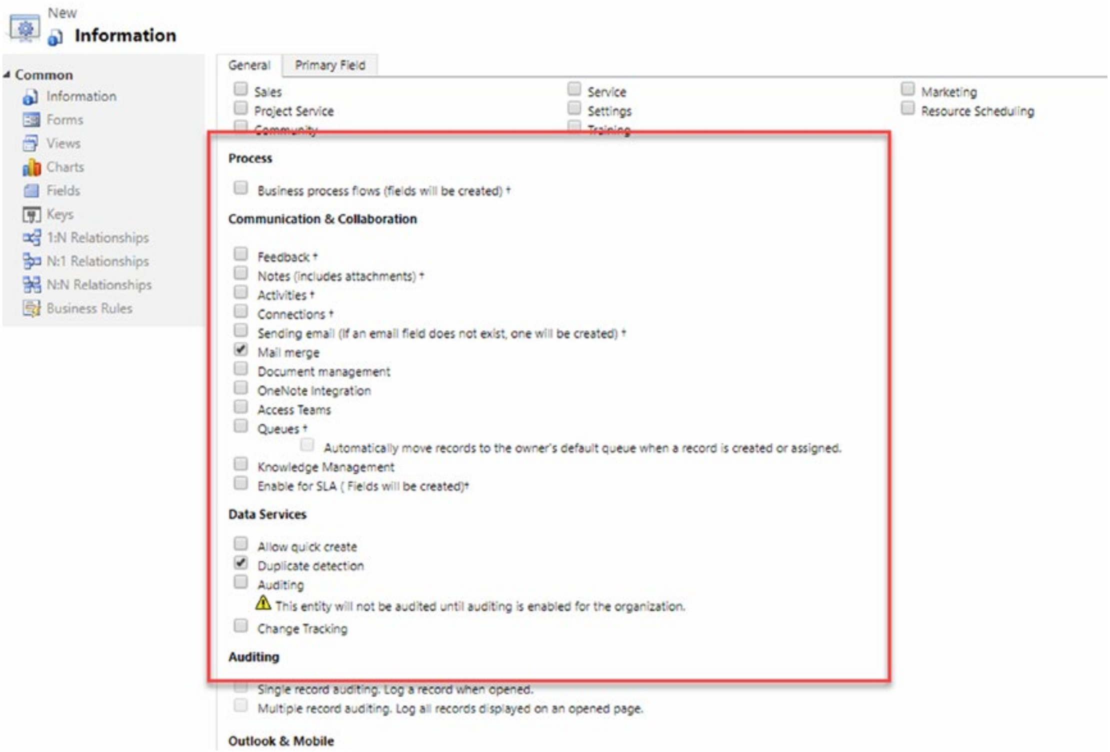
☐ Business process flows (fields will be created) †

Communication & Collaboration

☐ Feedback †
☐ Notes (includes attachments) †
☐ Activities †
☐ Connections †
☐ Sending email (If an email field does not exist, one will be created) †
☑ Mail merge

Figure 9-4. *Configuring a new custom entity*

There are a number of configuration fields for the entity, shown in Figure 9-5. These options are sometimes enabled and cannot be disabled, such as "Business Process Flow" fields. This area is where the entity is enabled for many out-of-the-box functionalities, such as feedback, activities, and business process flows. For more information on all of these options, see the "Further Reading" list at the end of this chapter.


New
Information
Common
Information
Forms
Views
Charts
Fields
Keys
1:N Relationships
N:1 Relationships
N:N Relationships
Business Rules
General
Primary Field

☐ Sales
☐ Project Service
☐ Community
☐ Service
☐ Settings
☐ Training
☐ Marketing
☐ Resource Scheduling

Process

☐ Business process flows (fields will be created) †

Communication & Collaboration

☐ Feedback †
☐ Notes (includes attachments) †
☐ Activities †
☐ Connections †
☐ Sending email (If an email field does not exist, one will be created) †
☑ Mail merge
☐ Document management
☐ OneNote Integration
☐ Access Teams
☐ Queues †
☐ Automatically move records to the owner's default queue when a record is created or assigned.
☐ Knowledge Management
☐ Enable for SLA (Fields will be created)†

Data Services

☐ Allow quick create
☑ Duplicate detection
☐ Auditing
⚠ This entity will not be audited until auditing is enabled for the organization.
☐ Change Tracking

Auditing

☐ Single record auditing. Log a record when opened.
☐ Multiple record auditing. Log all records displayed on an opened page.

Outlook & Mobile

Figure 9-5. *Entity configuration options*

4. Do not add any extra configuration options to the entity definition, and click "Save." The entity will be created in the system and may take a moment to load.

5. Once saved, the options on the left-hand pane will become available, such as forms, views, and charts.

To update the icon for the entity, use the "Update Icons" option within the command bar in the entity definition, as shown in Figure 9-6.

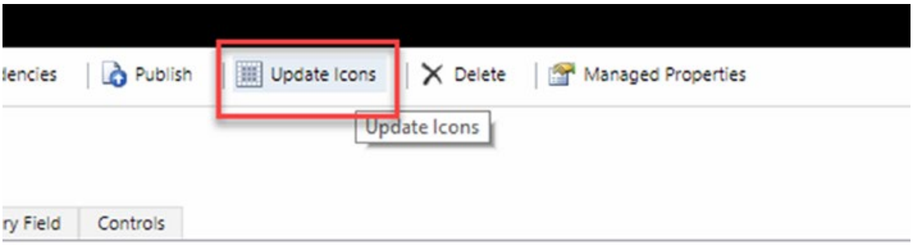
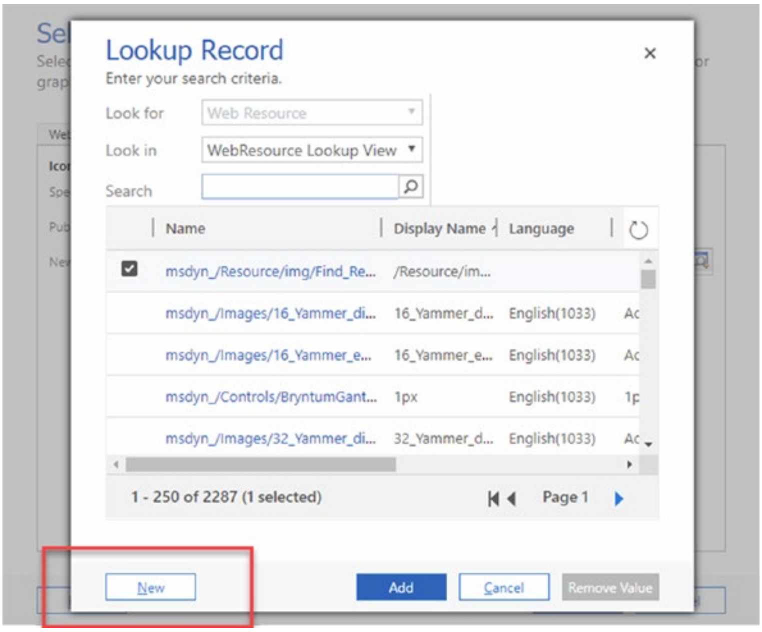

lencies
Publish
Update Icons
Delete
Managed Properties
Update Icons
ry Field
Controls

Figure 9-6. *Editing icons for entities*

A window will load with two tabs, one for the Classic UI (Web Client) and another for the Unified Interface. Upload images to Dynamics 365 CE by adding a web resource (image type) either via "Web Resources" within the solution or by clicking "New" in the lookup option, shown in Figure 9-7. Once saved, select the image to be used as the icon and publish the changes.



Lookup Record

Enter your search criteria.

Look for: Web Resource

Look in: WebResource Lookup View

Search:

	Name	Display Name	Language	
☑	msdyn_/Resource/img/Find_Re...	/Resource/im...		
	msdyn_/Images/16_Yammer_di...	16_Yammer_d...	English(1033)	Ac
	msdyn_/Images/16_Yammer_e...	16_Yammer_e...	English(1033)	Ac
	msdyn_/Controls/BryntumGant...	1px	English(1033)	1p
	msdyn_/Images/32_Yammer_di...	32_Yammer_d...	English(1033)	Ac

1 - 250 of 2287 (1 selected)

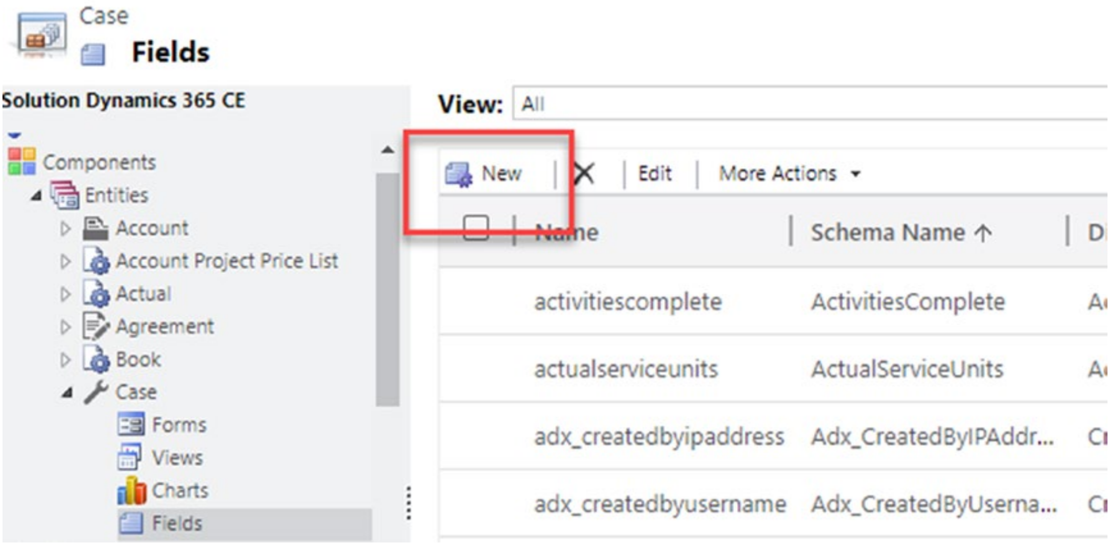
Figure 9-7. Adding a web resource image for entity icons

The new entity should now be created, with an optional icon. Icons add a professional look and feel to records, as a puzzle piece or cog icon can look "unfinished" to a user of the system, especially when it is used multiple times for custom entities within an app. It is best practice to upload an icon for all entities that is relevant to what it represents within the system.

The following sections will look at creating new fields and other entity components.

Task: Create a new field.

1. To add new fields to an entity, navigate to "Fields" within the Solution Explorer, underneath the entity you wish to modify, and select "New" (Figure 9-8).

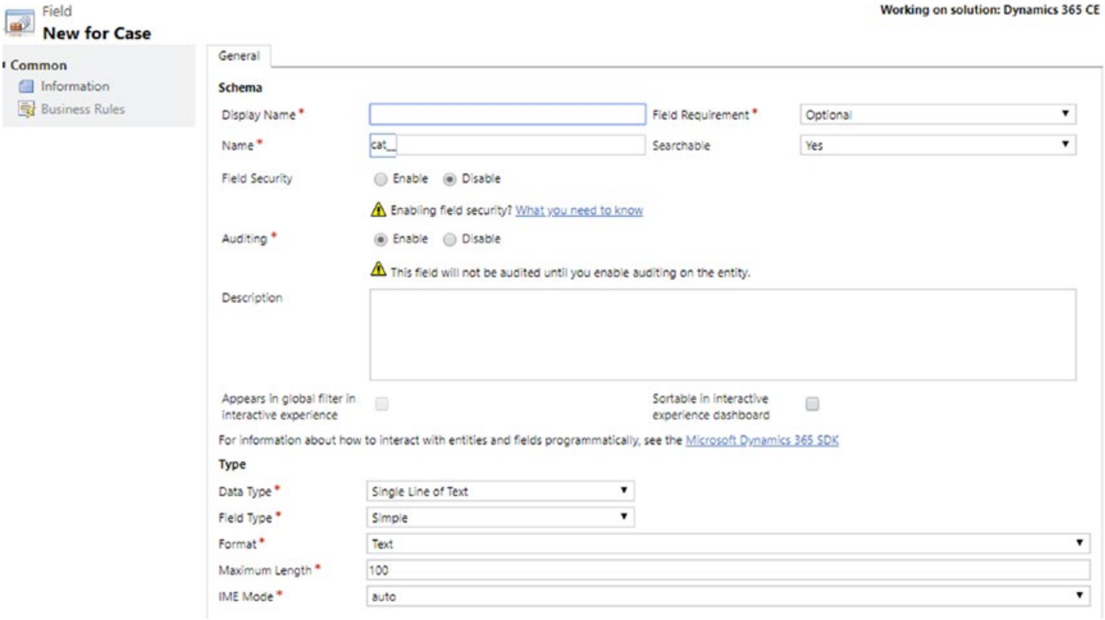

Case
Fields
Solution Dynamics 365 CE
Components
Entities
Account
Account Project Price List
Actual
Agreement
Book
Case
Forms
Views
Charts
Fields
New
Edit
More Actions

View: All

Name	Schema Name ↑	D
activitiescomplete	ActivitiesComplete	A
actualserviceunits	ActualServiceUnits	A
adx_createdbyipaddress	Adx_CreatedByIPAddr...	C
adx_createdbyusername	Adx_CreatedByUserna...	C

Figure 9-8. *Adding a new field*

A window will open for the blank definition of a field, as shown in Figure 9-9.


Field
New for Case
Common
Information
Business Rules
General

Working on solution: Dynamics 365 CE

Schema

Display Name *
Field Requirement *: Optional
Name *: cat_
Searchable: Yes
Field Security: ○ Enable ● Disable

Enabling field security? What you need to know

Auditing *: ● Enable ○ Disable

This field will not be audited until you enable auditing on the entity.

Description

Appears in global filter in interactive experience ☐
Sortable in interactive experience dashboard ☐

For information about how to interact with entities and fields programmatically, see the Microsoft Dynamics 365 SDK

Type

Data Type *: Single Line of Text
Field Type *: Simple
Format *: Text
Maximum Length *: 100
IME Mode *: auto

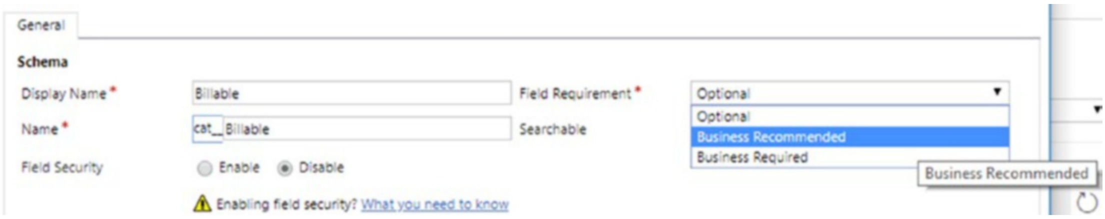
Figure 9-9. *New blank field definition*

Fields have multiple names, and it is important to know where they are displayed within the system. See the following:

- **Display Name** – This is displayed within Advanced Find and views and by default on forms, if not overridden.
- **Name** – This is the schema name and is a name referenced by code, for example in plugins. This is always prefixed with the publisher of the solution.

A field has a requirement level (Figure 9-10). The requirement level can be one of the following:

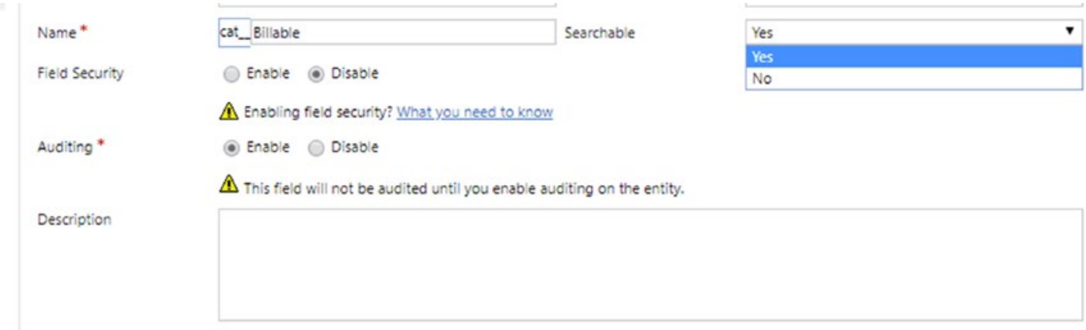
- **Optional** – The user can choose to input data or not. If not, it is left empty.
- **Business Required** – On the form, this is a required field and must be entered. It is displayed with a red asterisk.
- **Business Recommended** – This displays with a blue asterisk next to the field name and is used to prompt the user that they should fill it in but are not required to. If not, it is left empty.



Display Name* Billable
Name* cat_Billable
Field Security ○ Enable ● Disable
Enabling field security? What you need to know
Field Requirement* Optional
Searchable

Figure 9-10. *Field definition options*

The field can be set as "Searchable," which means this field is displayed within Advanced Find and can be used on Quick Find views. The field can also be switched on for field security (see Chapter 4 for more information) and also auditing. The record type itself must be switched on at the entity-definition level for auditing to be enabled. You also have the opportunity to add a description, which appears as a "Tooltip" to the user to give them more description about what the field is used for when the cursor hovers over the field within the form (Figure 9-11).



Name * cat_Billable

Searchable Yes

Field Security ○ Enable ● Disable

⚠ Enabling field security? What you need to know

Auditing * ● Enable ○ Disable

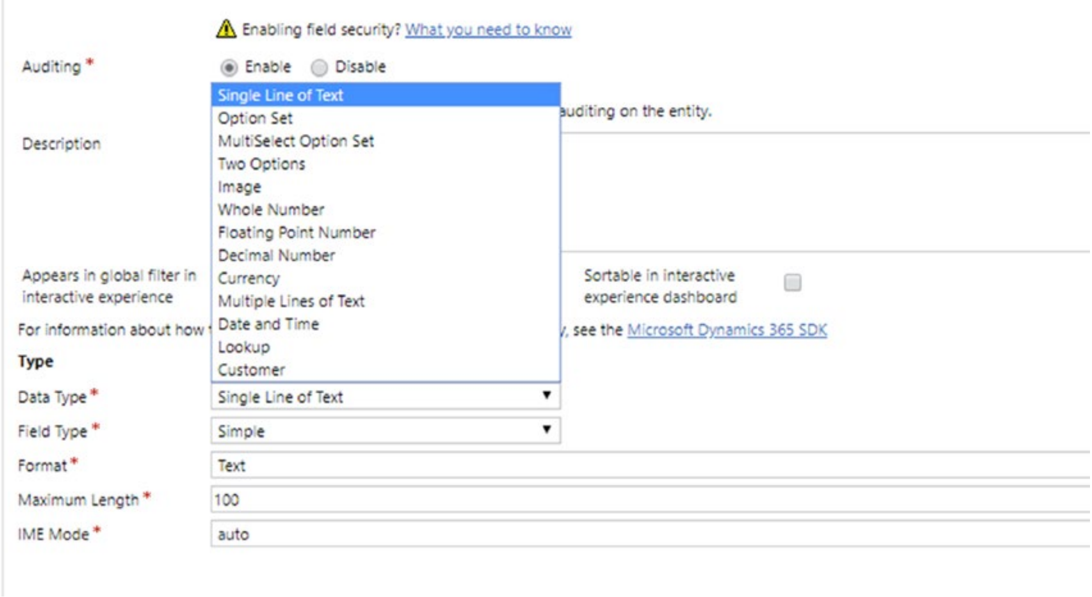
⚠ This field will not be audited until you enable auditing on the entity.

Description

***Figure 9-11.** Additional field definition options*

Fields have a data type, which refers to the type of data the field holds and can be entered within the field (Figure 9-12). Table 9-1 briefly explains the data types; however, for more information, see the "Further Reading" section at the end of this chapter.

Depending on the selected data type—for example, Single Line of Text—the types of field types and format available are determined. Maximum length should be considered for text-based fields as this limit will prevent a user from entering any more data (and also if used programmatically).



⚠ Enabling field security? What you need to know

Auditing * ● Enable ○ Disable

uditing on the entity.

Description

Appears in global filter in interactive experience

Sortable in interactive experience dashboard ☐

For information about how , see the Microsoft Dynamics 365 SDK

Type

Data Type * Single Line of Text

Field Type * Simple

Format * Text

Maximum Length * 100

IME Mode * auto

Single Line of Text
Option Set
MultiSelect Option Set
Two Options
Image
Whole Number
Floating Point Number
Decimal Number
Currency
Multiple Lines of Text
Date and Time
Lookup
Customer

***Figure 9-12.** Types of fields*

Use the following reference table to review the different types of fields available within Dynamics 365 CE.

Table 9-1. *Field Data Types*

Data Type	Brief Description
Single Line of Text	Used for brief text entry, often referred to as a “string,” and can be numerical and alphabetical
Option-Set	A defined list of option-set values that are created by the user. Local or global option-sets are available. Global is often used where the values are needed in more than one field. Only one option can be selected.
Multi-Select Option-Set	Same as previous except more than one option can be selected
Two Options	Often referred to as a “Boolean,” this is the type of field that is a “yes/no” type field; however, any two options can be defined, and not necessarily yes and no.
Image	Used to configure the image of the entity if it supports images
Whole Number	Integers with a value between -2,147,483,648 and 2,147,483,647 can be in this field.
Floating Point Number	Up to five decimal points of precision can be used for values between -100,000,000,000 and -100,000,000,000 in this field.
Decimal Point Number	Up to ten decimal points of precision can be used for values between -100,000,000,000 and -100,000,000,000 in this field
Currency	Displays values as money in the default currency. This creates four fields, which include the base currency value as well as the currency value entered by the user, transaction currency field, and exchange rate field.
Multiple Lines of Text	Same as a single line of text except the maximum length of this field is longer, different controls can be added, and the text box or area can be made into multiple lines on the form it is used on
Date and Time	Displays a date picker with an optional time picker. Can be date-only and also has many options for the local time zone
Lookup	A lookup field that references another record
Customer	A type of lookup field that references both a contact and an account

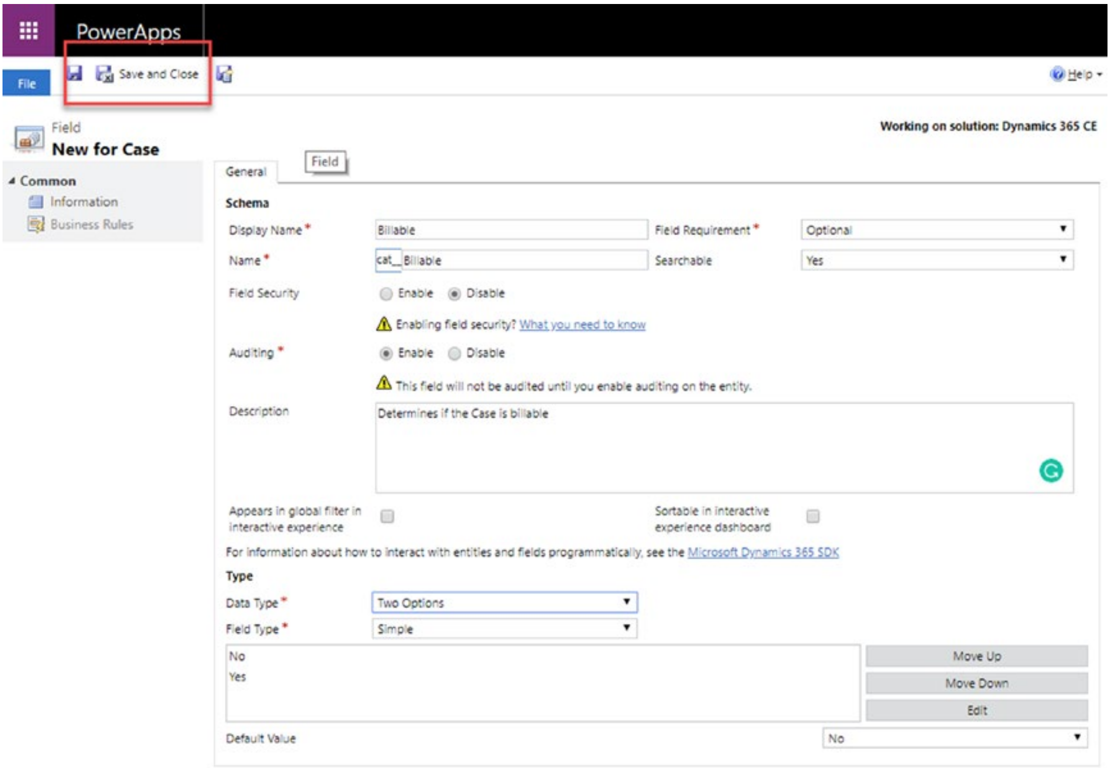
There are also additional types of fields called “calculated” and “rollup” fields, which are types of fields available on specific data types (Table 9-2). Calculated and rollup fields rely on extra definitions to operate successfully. These will be covered in the next section.

Table 9-2. *Field Type Reference for Calculated and Rollup Fields*

Type	Where available
Calculated Field Type	A single line of text, options, whole number, currency, date time, Boolean (two options), decimal number
Rollup Field Type	Decimal number, currency, date time, whole number

3. Select the type and related options for a field, such as 'Two Options' and once all the options have been selected, and the field has been configured, select “Save and Close.” The field is now ready to use on a form (Figure 9-13).

Fields can also be created from within the form itself. If this route is used, always remember to open a form directly from a solution and not from the default solution accessible from within the application for administrators. This is so the prefix is correctly assigned for the field and is not “new_.” Solutions are covered in more depth later in the book.



Schema

Display Name * Billable

Field Requirement * Optional

Name * cat_Billable

Searchable Yes

Field Security ○ Enable ● Disable

Enabling field security? What you need to know

Auditing * ● Enable ○ Disable

This field will not be audited until you enable auditing on the entity.

Description Determines if the Case is billable

Appears in global filter in interactive experience ☐

Sortable in interactive experience dashboard ☐

For information about how to interact with entities and fields programmatically, see the Microsoft Dynamics 365 SDK

Type

Data Type * Two Options

Field Type * Simple

No
Yes

Default Value No

Figure 9-13. *Save the new field by clicking “Save and Close”*

Rollup Fields

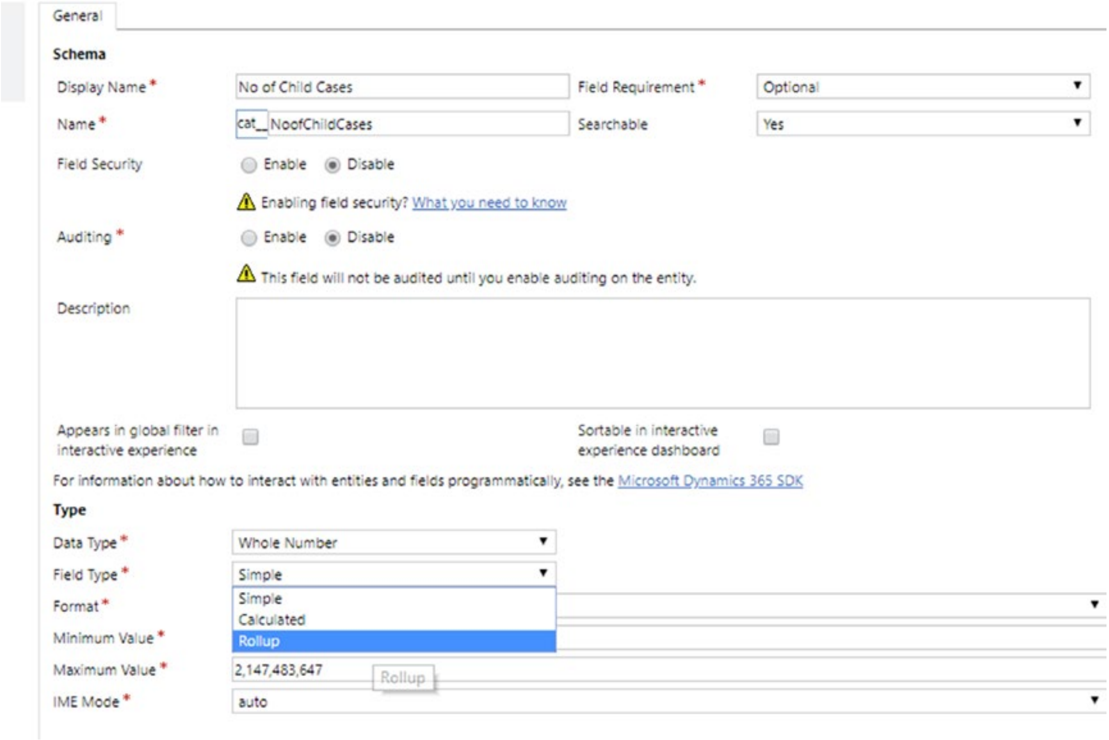
Rollup fields are a special type of field that allows you to create aggregate functions of related child records. Child records and relationship types are covered more in the next section; however, briefly, child records are where there are multiple records (N) associated with one parent record (1) in a hierarchical relationship. An example of this is found in the Case record and some of its standard functionality. The case has a self-referential relationship, which is a 1-to-Many type. One Case record acts as a “parent” while others can be associated with the Case record as its “child,” creating a “child-case”-like structure. This type of relationship infers a relevancy that the child records have to the parent.

Different types of aggregation can be performed, such as sum, count, min, max, and average. Examples of rollup fields are the last activity date on a Case record could be related to an Activity entity and be the max of the associated activity. Another example, which the following walkthrough covers, could be a count of the child cases related to a parent case that does not exist as standard (but the relationship does).

Using these fields in views and dashboards can display important overview data within a parent record, which will be useful at a glance, removing the need for a user to navigate to a record and count associated records.

Task: Create a rollup field.

1. Create a new field of type "Whole Number" on the Case entity, naming it "No of Child Cases" (Figure 9-14). Do not save the record.



General

Schema

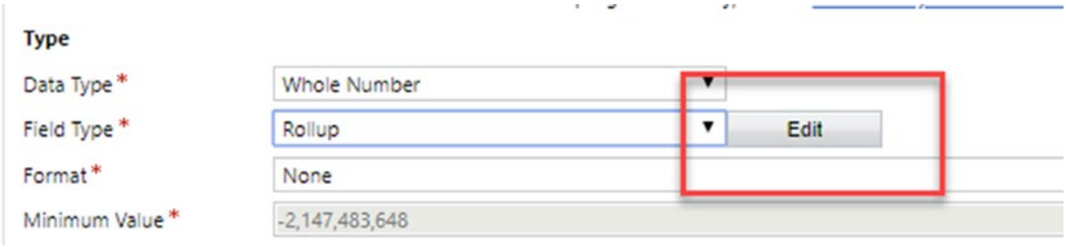
Display Name * No of Child Cases
Field Requirement * Optional
Name * cat_NoofChildCases
Searchable Yes
Field Security ○ Enable ● Disable
⚠ Enabling field security? What you need to know
Auditing * ○ Enable ● Disable
⚠ This field will not be audited until you enable auditing on the entity.
Description
Appears in global filter in interactive experience ☐
Sortable in interactive experience dashboard ☐
For information about how to interact with entities and fields programmatically, see the Microsoft Dynamics 365 SDK

Type

Data Type * Whole Number
Field Type * Simple
Format *
Minimum Value *
Maximum Value * 2,147,483,647
IME Mode * auto

***Figure 9-14.** Create a new field where the "Field Type" field is "Rollup"*

2. Select the "Field Type" as "Rollup." A new button will appear next to the "Field Type" field called "Edit," as shown in Figure 9-15. It is important to note that selecting this button saves the record, so be sure to be happy with the schema name and the current configuration of the field before pressing the Edit button, which opens the rollup Field Designer, as you cannot change the schema name once saved.



Type

Data Type * Whole Number

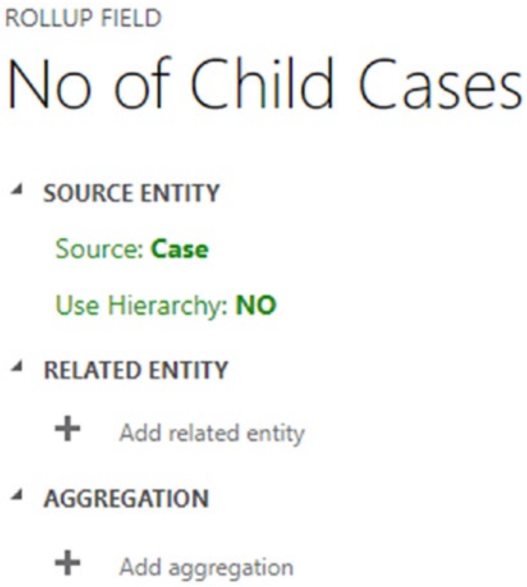
Field Type * Rollup

Format * None

Minimum Value * -2,147,483,648

Figure 9-15. *Creating a new rollup field definition*

The Field Designer will open (Figure 9-16). The "Hierarchy" option refers to the ability to aggregate beyond just one record deep, such as in the example of child records to a parent, including *all* records within a hierarchy of up to ten; e.g., accounts and sub-accounts.



ROLLUP FIELD

No of Child Cases

SOURCE ENTITY

Source: Case

Use Hierarchy: NO

RELATED ENTITY

AGGREGATION

Figure 9-16. *Defining the rollup configuration*

3. Leave the "Hierarchy" setting as "No."
4. Set the "Related Entity" to "Case" by selecting the plus icon (Figure 9-17). The field that defines this relationship is called "Cases (Parent Case)." All child relationships define the parent by using a lookup field that references the parent record, and this

field has a name. The name of this is “Parent Case.” This defines the relationship we are using for the aggregate.

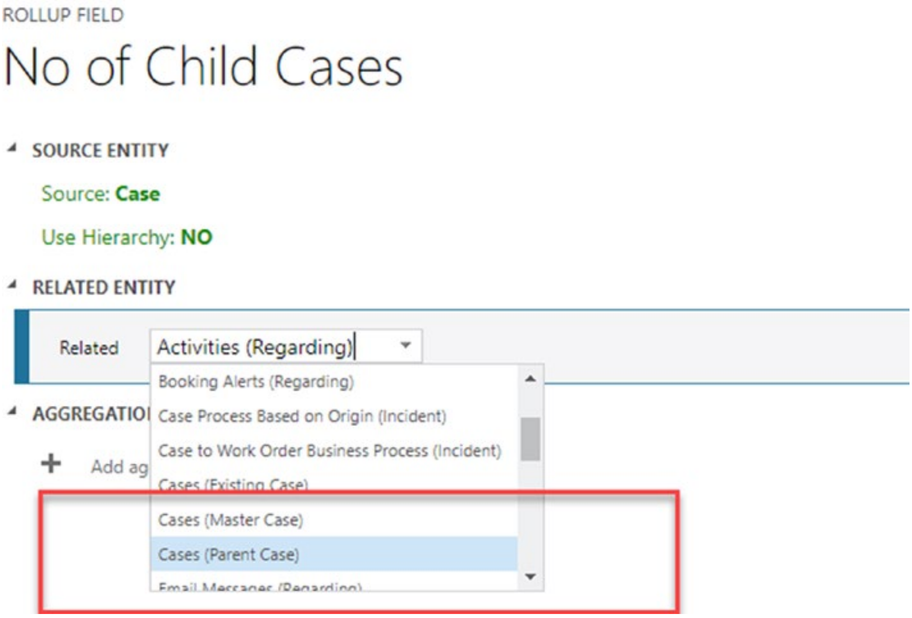
5. Click the checkbox on the right-hand side of the logic block to continue to confirm this edit to the field business logic definition.

6. Now define the aggregate function (Figure 9-18). Select the plus icon and select “COUNT.” The case will be the only value available for the related entity. There is the option to add filters within the definition. This is particularly useful if the aggregate function should only be looking at cases with a particular value, such as status, subject, or case type.

7. Select the checkbox on the right-hand side of the logic block. There will be a yellow warning that mentions the rollup field at the bottom of the Field Definition window referring to how these fields are calculated.

   Rollup fields “rollup” and calculate initially 12 hours after creation, then every hour after that. This is to ensure the rollup job is not impacting the user experience or the performance of the system as the system could potentially be counting through lots of records to perform the defined function. Having multiple types of these fields could cause issues if they were all operating at the same time. A system job is created for each rollup field that can process up to 50,000 records and updates two new fields created behind the scenes in addition to the field itself displayed to the user. These extra fields define the last date and time it was updated and the state the aggregation is in; e.g., running.

   You can manually update rollup fields’ scheduled time runs, which is normally advisable so as to run out of operating hours if possible. To do this, navigate to the system job menu and locate the name of the job. Select it and edit its configuration through the user interface.



ROLLUP FIELD

No of Child Cases

SOURCE ENTITY

Source: Case

Use Hierarchy: NO

RELATED ENTITY

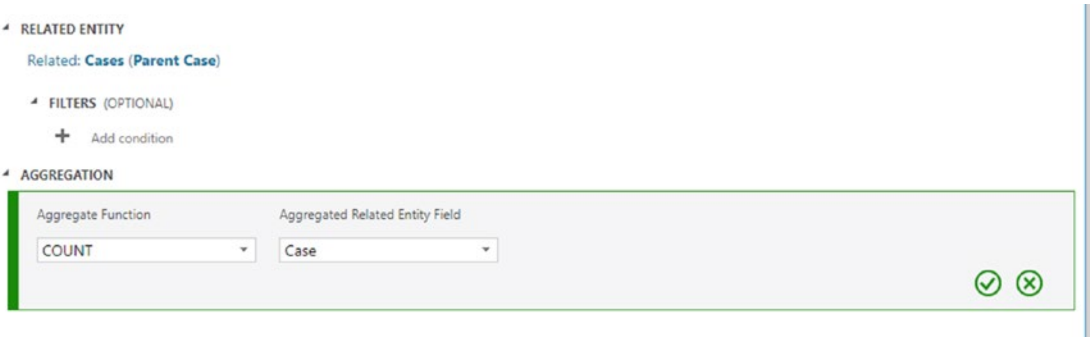
Related: Activities (Regarding)

Booking Alerts (Regarding)
Case Process Based on Origin (Incident)
Case to Work Order Business Process (Incident)
Cases (Existing Case)
Cases (Master Case)
Cases (Parent Case)
AGGREGATIO
Add ag

Figure 9-17. *Adding the related entity in the Field Designer for a rollup field*

8. Click "Save and Close" on the Field Definition window and also "Save and Close" on the Field window.

The rollup field has now been made and can be added to a form.



RELATED ENTITY

Related: Cases (Parent Case)

FILTERS (OPTIONAL)

Add condition

AGGREGATION

Aggregate Function: COUNT

Aggregated Related Entity Field: Case

Figure 9-18. *Configuring the aggregation business logic for the rollup field*

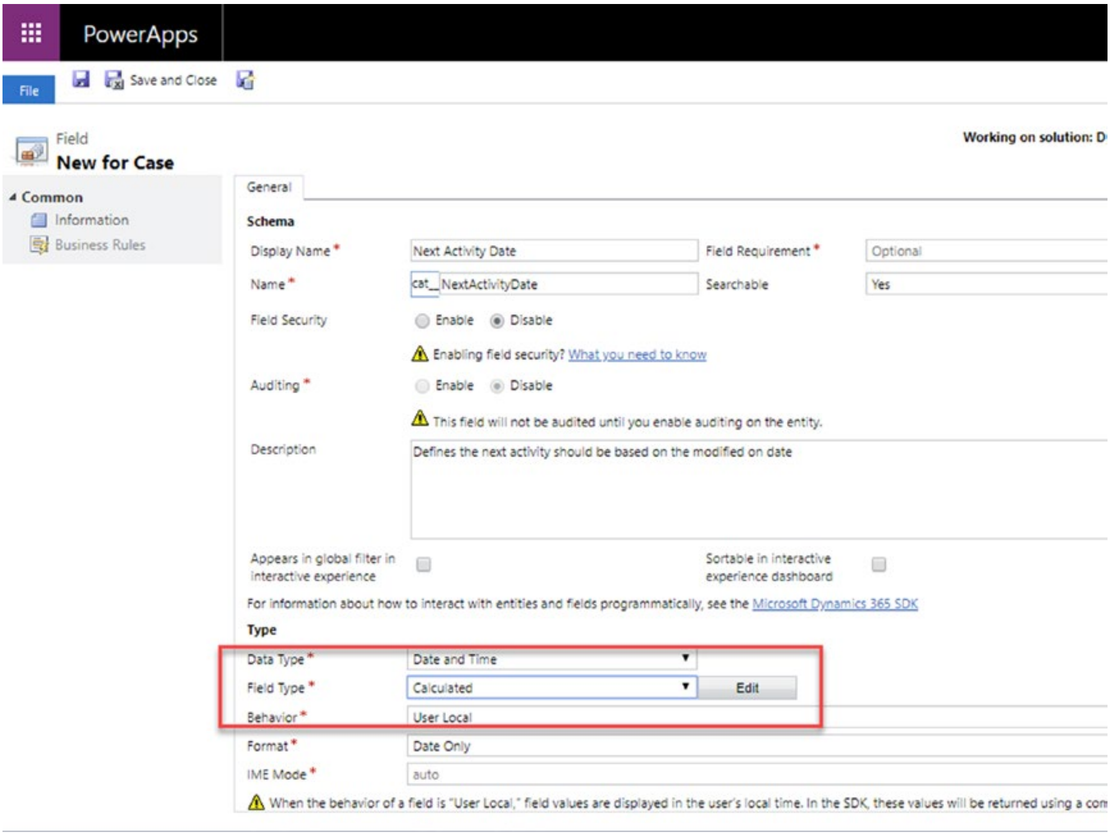
Calculated Fields

Calculated fields allow you to add business logic within a field definition that performs calculations or operational logic—for example, to add days and hours to the values contained within a field—to create a more useful or relevant value that is displayed to the user. Calculated type fields can often replace custom code and are a great way to add in operational-type business logic.

In the walkthrough that follows, a new calculated field will be created that will set the "Next Activity Date" to +2 days from the "Modified On" date from the Case entity. This will give users a target date to always provide a follow-up activity by and also allow users to sort on that field in columns, allowing the prioritization of cases based on interactions, preventing cases from going "stale."

Task: Create a calculated field.

1. Create a new field of type "Date Time" on the Case entity and name it "Next Activity Date." Ensure this is a "Date Only" type field by selecting this option in the "Format" field. ("Date Only" type fields remove the "Time" portion of the field from the user interface.) Do not save the field just yet.
2. Set the "Field Type" to "Calculated" and click the Edit button (Figure 9-19).



Field
New for Case

Working on solution: D

Schema

Display Name * Next Activity Date
Field Requirement * Optional
Name * cat_NextActivityDate
Searchable Yes
Field Security ○ Enable ● Disable
⚠ Enabling field security? What you need to know
Auditing * ○ Enable ● Disable
⚠ This field will not be audited until you enable auditing on the entity.
Description Defines the next activity should be based on the modified on date
Appears in global filter in interactive experience ☐
Sortable in interactive experience dashboard ☐

For information about how to interact with entities and fields programmatically, see the Microsoft Dynamics 365 SDK

Type

Data Type * Date and Time
Field Type * Calculated Edit
Behavior * User Local
Format * Date Only
IME Mode * auto
⚠ When the behavior of a field is "User Local," field values are displayed in the user's local time. In the SDK, these values will be returned using a com

Figure 9-19. *Creating a new calculated field*

The same Field Designer appears in which you can configure the business logic as part of the field, with some modified options available, as shown in Figure 9-20.

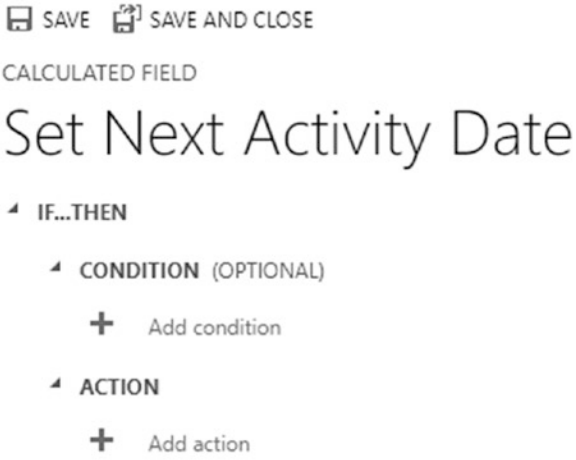

SAVE
SAVE AND CLOSE
CALCULATED FIELD
Set Next Activity Date
IF...THEN
CONDITION (OPTIONAL)
Add condition
ACTION
Add action

Figure 9-20. *Calculated field definition*

Optional conditional "if" operators can be added if the field should only be operating under certain circumstances. Complex branches can be created should there need to be. In this walkthrough, there is no requirement to add any conditional operators.

3. Select "plus" in the "Action" heading, and a number of operations will become available (Figure 9-21). It is a good idea to become familiar with these types of formulas as they define the functional scope of calculated fields and what can be achieved, such as Add Hours, Add Days, and Add Weeks. For a more comprehensive list, see the "Further Reading" section at the end of this chapter.

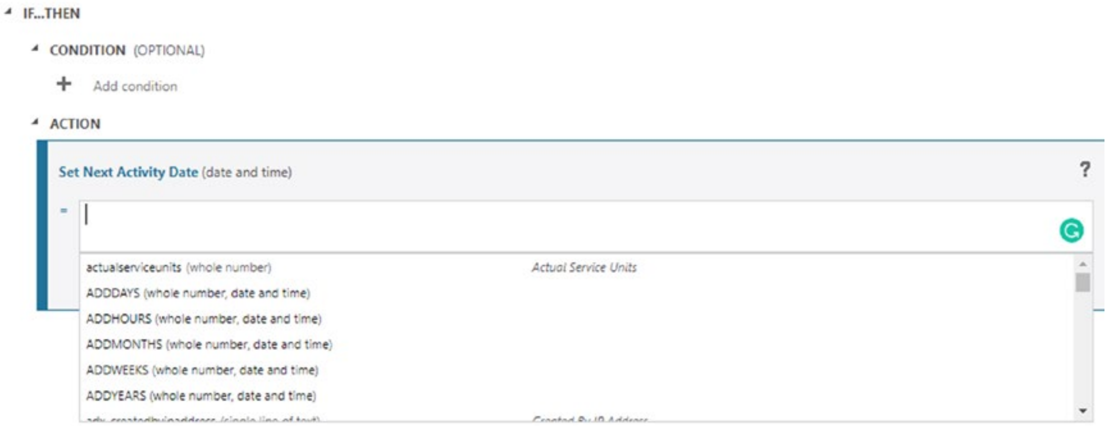
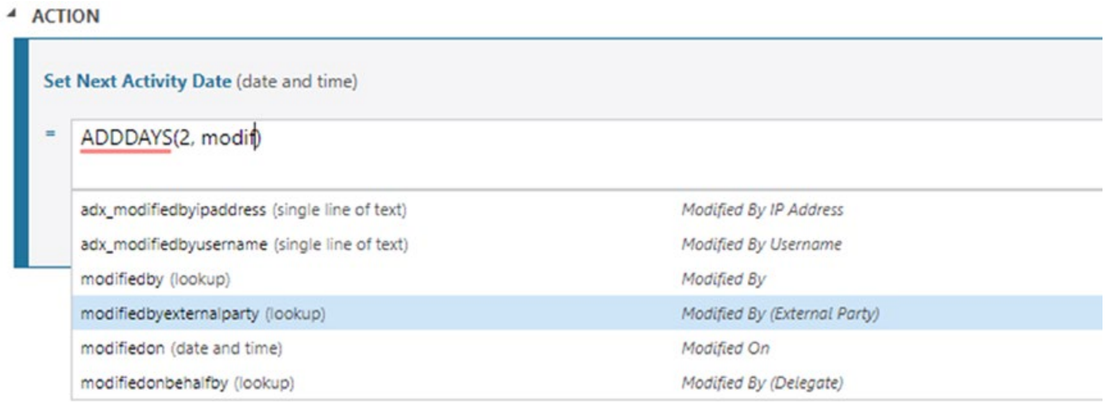

IF...THEN
CONDITION (OPTIONAL)
+ Add condition
ACTION
Set Next Activity Date (date and time)
?
=
actualserviceunits (whole number)
Actual Service Units
ADDDAYS (whole number, date and time)
ADDHOURS (whole number, date and time)
ADDMONTHS (whole number, date and time)
ADDWEEKS (whole number, date and time)
ADDYEARS (whole number, date and time)

Figure 9-21. *Selecting the action for the calculated field*

4. The format of the operation is the function name and, in brackets, the input values. For this example, use “ADDDAYS (whole number, date and time)”—the whole number, which is the number of days to add, and the target date and time. The input can be specifically defined values—e.g., 2—or it can be dynamically based on fields in the context of the record the calculated field is placed upon. To use field names, start typing the display name of the field to see it appear within the action dropdown. For this example, select “ADDDAYS,” enter “2,” and then start typing “modified” for the field “Modified By” to appear, then select it. It should automatically be enclosed in brackets. See Figure 9-22 for reference.



ACTION

Set Next Activity Date (date and time)

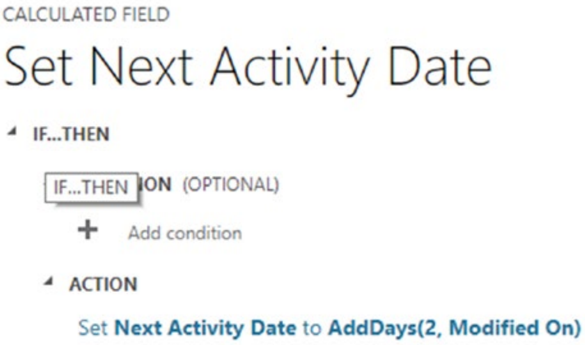
= ADDDAYS(2, modif)

adx_modifiedbyipaddress (single line of text)	Modified By IP Address
adx_modifiedbyusername (single line of text)	Modified By Username
modifiedby (lookup)	Modified By
modifiedbyexternalparty (lookup)	Modified By (External Party)
modifiedon (date and time)	Modified On
modifiedonbehalfby (lookup)	Modified By (Delegate)

Figure 9-22. *Completing the parameters required for the function within the calculated field*

5. The formula is now finished, so click the checkbox on the right-hand side of the block to confirm. If the input for the formula is incorrect, an error will occur here and notify the user as to why the issue has occurred and advising to fix it before it can be saved.

6. Click “Save and Close,” then “Save and Close” again on the Field window, and the field is now ready to be used on a form (Figure 9-23).



CALCULATED FIELD

Set Next Activity Date

IF...THEN

IF...THEN ION (OPTIONAL)

+ Add condition

ACTION

Set **Next Activity Date** to **AddDays(2, Modified On)**

Figure 9-23. *Completed Calculated Field Definition*

Relationships

Dynamics 365 CE is built upon a standard relational database structure. There are many resources on relational databases available on the internet; however, this section will briefly discuss the types of relationships available within the platform and how they are represented to the Dynamics user.

There are three types of relationships visible from the Solution Explorer under the entity metadata (Figure 9-24):

- 1:N – One-to-Many
- N:1 – Many-to-One
- N:N – Many-to-Many

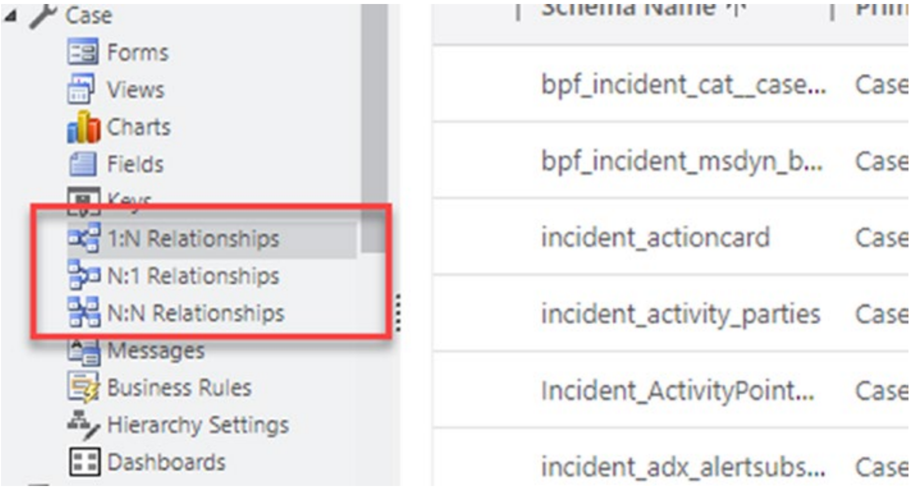

Case
Forms
Views
Charts
Fields
Keys
1:N Relationships
N:1 Relationships
N:N Relationships
Messages
Business Rules
Hierarchy Settings
Dashboards
Schema Name
Prim
bpf_incident_cat_case...
Case
bpf_incident_msdyn_b...
Case
incident_actioncard
Case
incident_activity_parties
Case
Incident_ActivityPoint...
Case
incident_adx_alertsubs...
Case

Figure 9-24. *Relationships available to create and review in the Solution Explorer*

1:N and N:1 are the same relationship, but with the primary entity switched around depending on the perspective that is being looked at (e.g., the one or the many). To see this in action, select 1:N within the Solution Explorer for the Case entity and look for a relationship. The column “Primary entity” will always be the Case. Click on the N:1, and the primary entity will be the referred-to entity, and the Case entity is the inferred entity (Figure 9-25).

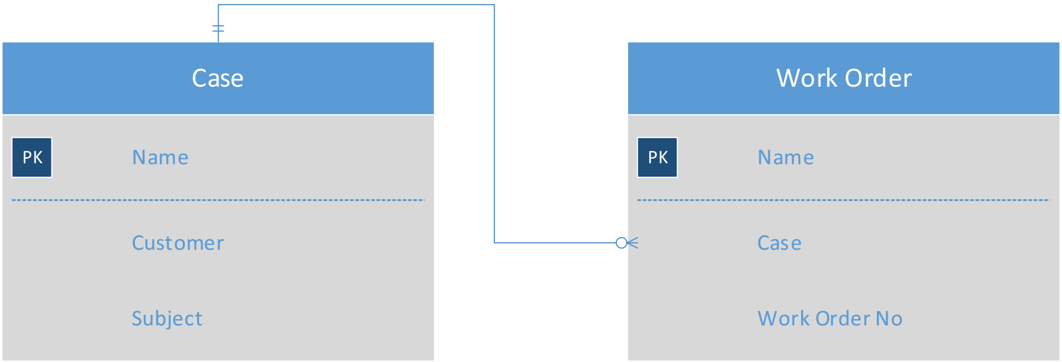
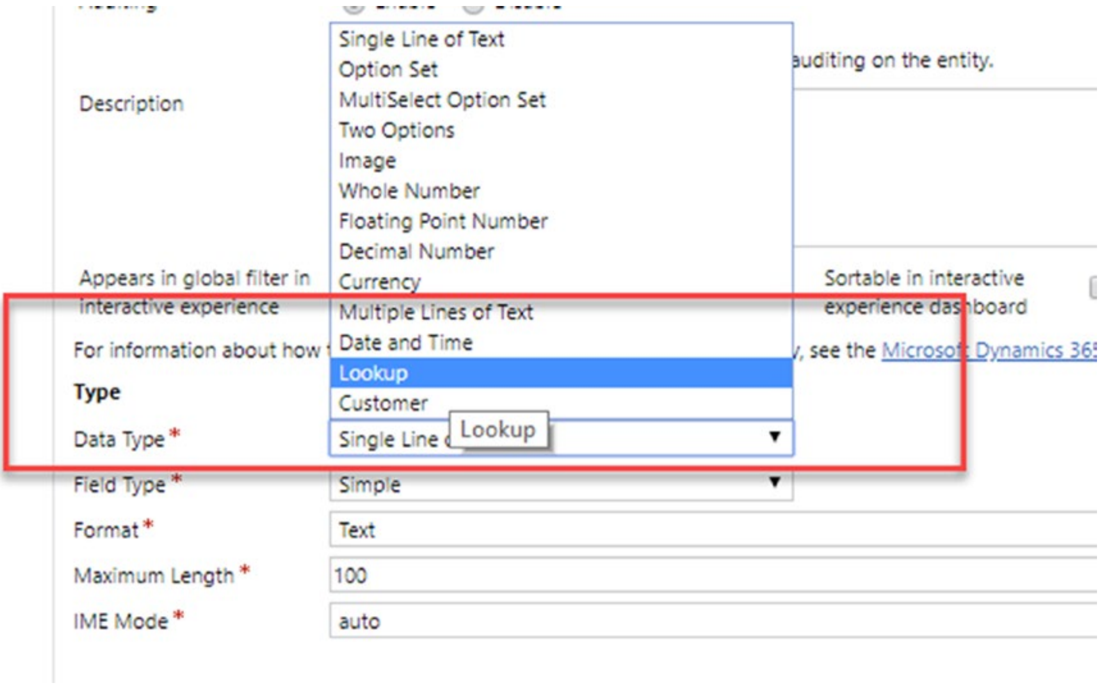

Case
PK
Name
Customer
Subject
Work Order
PK
Name
Case
Work Order No

Figure 9-25. *An ERD or "Crow's Foot" diagram of a 1:N relationship of a case and a work order*

A 1:N relationship is defined as a lookup field, as shown in Figure 9-26, and is visible to the user as a lookup field on a form from the referred-to entity. The referred-to entity is visible on the parent or primary entity, on the navigational area of the form under the "related" section or can be made available within a sub-grid, as there can be more than one related record and must be displayed as a list.


Single Line of Text
Option Set
MultiSelect Option Set
Two Options
Image
Whole Number
Floating Point Number
Decimal Number
Currency
Multiple Lines of Text
Date and Time
Lookup
Customer
Lookup

Description

auditing on the entity.

Appears in global filter in interactive experience

Sortable in interactive experience dashboard

For information about how

, see the Microsoft Dynamics 36

Type

Data Type * Single Line

Field Type * Simple

Format * Text

Maximum Length * 100

IME Mode * auto

Figure 9-26. *A lookup field, which creates the relationship automatically*

This type of relationship infers that one entity can be referred to by many other entities. The related entities can only refer to one primary entity.

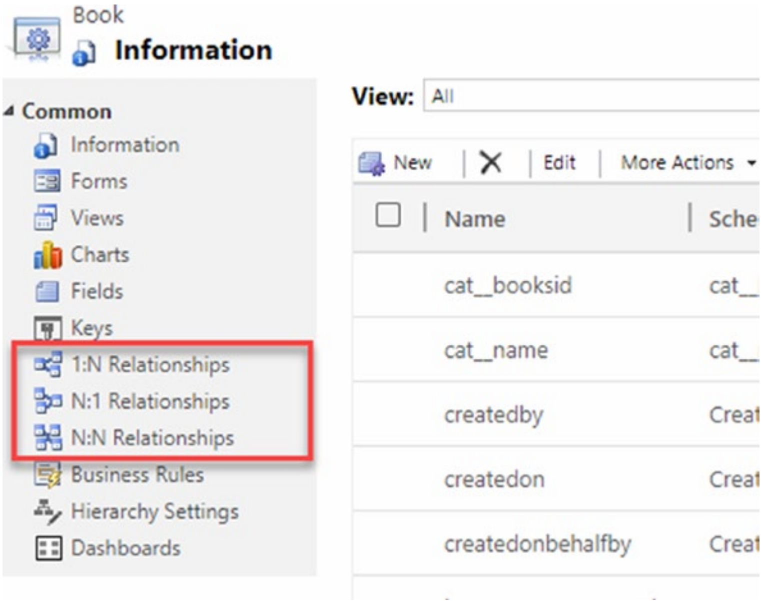
The second type of relationship is a many-to-many type. This type of relationship is not available as a field and is instead only available under the "Related items" within the tab menu on the UCI or within the extended menu in the Classic UI.

Many-to-many (N:N) relationships are where an entity can be linked to any number of secondary entities, and the second entity can be linked to any number of primary entities, and there is no constraint on the number. It is important to note that for one-to-many relationships, it will have a specific relationship name and reference reason. A commonly referenced example in software development is authors and books. Authors would have an N:N relationship with books, as there could be more than one author to a book; however, it would not be defined as a 1:N as it would be restricting the author to only writing one book. Lookups are restricted to only one record. Another example of a many-to-many relationship is where doctors have many patients and patients have many doctors.

When a many-to-many relationship is created in the Dynamics 365 CE user interface, an intersect entity is created within the database that is not visible to the user. This makes these types of relationships harder to report on than those with a 1:N relationship. It is often a design consideration to make two 1:N relationships and manually create an "Intersect" table to ensure reporting can be achieved by the user with ease. Examples of manual intersect entities within the standard system include Order Products and Opportunity Products entities, which are intersect entities between the Product and the Opportunity and Order entities.

Creating and Modifying Relationships

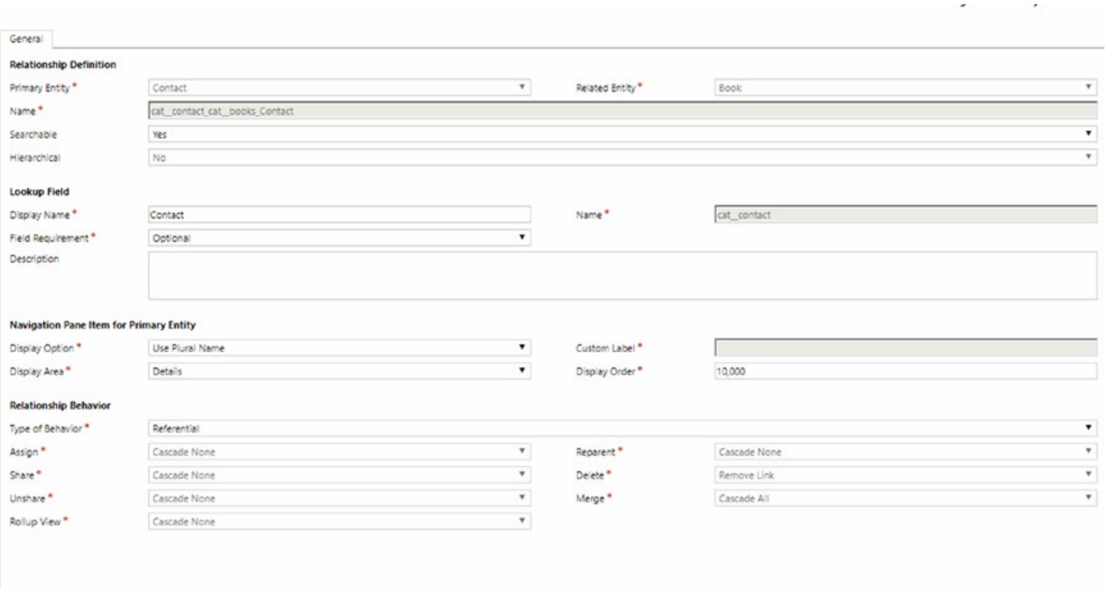
In the previous section, field creation was covered, which can include lookup type fields. 1:N and N:1 relationships can also be created via the Solution Explorer within the entity metadata, as shown in Figure 9-27.


Book
Information
Common
Information
Forms
Views
Charts
Fields
Keys
1:N Relationships
N:1 Relationships
N:N Relationships
Business Rules
Hierarchy Settings
Dashboards
View: All
New
Edit
More Actions

☐	Name	Sche
	cat__booksid	cat__
	cat__name	cat__
	createdby	Creat
	createdon	Creat
	createdonbehalfby	Creat

Figure 9-27. *Entity metadata and where to create relationships*

While they can be created within a lookup field, relationships have defined behavior that in some cases can be modified. These settings can be found under the relationship within the Solution Explorer, within the correct type, as highlighted in Figure 9-28.



Relationship Definition

Primary Entity *: Contact
Related Entity *: Book
Name *: cat_contact_cat_books_Contact
Searchable: Yes
Hierarchical: No

Lookup Field

Display Name *: Contact
Name *: cat_contact
Field Requirement *: Optional
Description:

Navigation Pane Item for Primary Entity

Display Option *: Use Plural Name
Custom Label *:
Display Area *: Details
Display Order *: 10,000

Relationship Behavior

Type of Behavior *: Referential
Assign *: Cascade None
Reparent *: Cascade None
Share *: Cascade None
Delete *: Remove Link
Unshare *: Cascade None
Merge *: Cascade All
Rollup View *: Cascade None

Figure 9-28. *Relationship configuration*

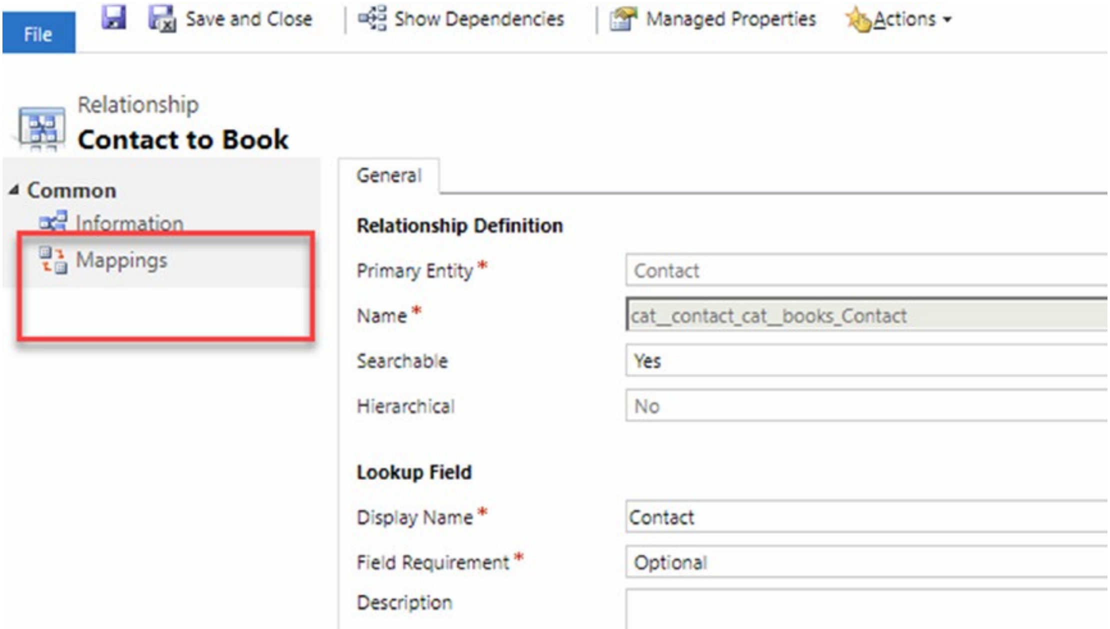
Relationship configuration can vary depending on the type of relationship. An overview:

- **Searchable** – Available in Advanced Find
- **Hierarchical** – Used to define hierarchy visualizations in a 1:N relationship (configured in Hierarchy Settings within the entity metadata)
- **Type of Behavior**:
    - **Parental** – An action performed cascades to its children
    - **Referential** – Not directly linked and only referred
    - **Referential, Restrict Delete** – Not directly linked; however, delete is restricted if there are child entities
    - **Configurable Cascading** – Custom settings

The types of behavior operate on an action that is performed within the system—for example, when a record of this type is "assigned" or "re-parented"—and define what behavior should happen in this scenario. The types of behavior are covered extensively in the "Further Reading" section of the chapter.

Modifying the behavior of a relationship is critical as it determines what happens to related records, especially child records, if a parent is deleted. In parental-type relationships, a cascade delete occurs, which means child records are deleted along with their parent. It is recommended that relationships are reviewed when created to ensure the configured behavior is as expected.

Relationships can also be used to map fields when new records are created within the context of another. An example of this is when an Opportunity record is created as part of the lead-to-opportunity business process flow, or when a child record is created directly from a sub-grid. Configuring the mappings, as shown in Figure 9-29, allows you to configure which fields are automatically copied from the parent record to the new record being created, reducing manual data entry and errors.


File
Save and Close
Show Dependencies
Managed Properties
Actions
Relationship
Contact to Book
Common
Information
Mappings
General

Relationship Definition

Primary Entity * Contact

Name * cat_contact_cat_books_Contact

Searchable Yes

Hierarchical No

Lookup Field

Display Name * Contact

Field Requirement * Optional

Description

Figure 9-29. Relationship mapping

Task: Create a N:N relationship.

1. Navigate to the entity metadata for the custom entity created earlier in this chapter.
2. Select "N:N Relationships."
3. Click "New Many-to-Many Relationship," as shown in Figure 9-30.

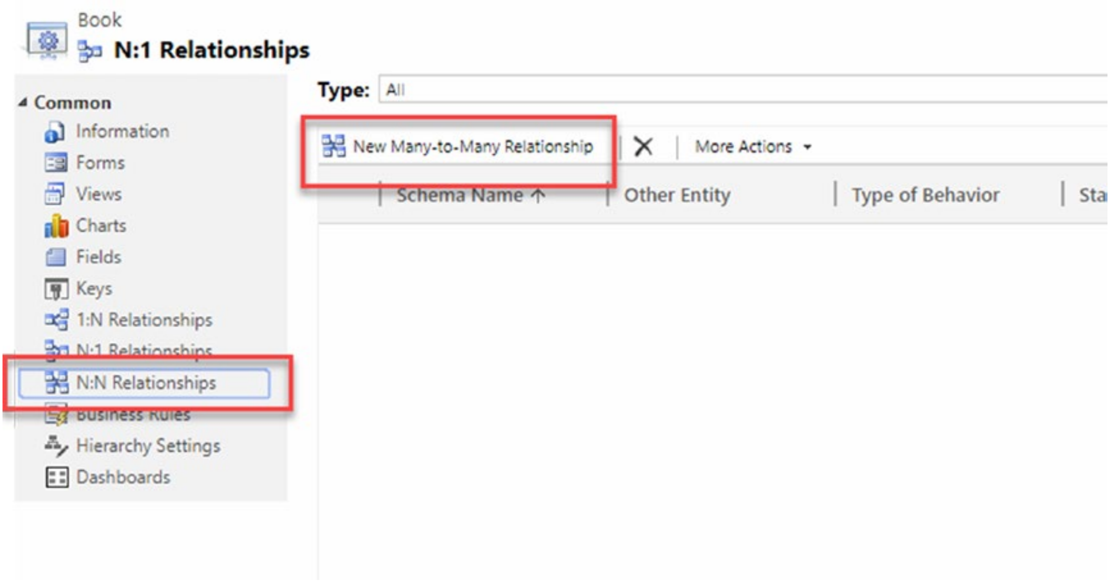

Book
N:1 Relationships
Common
Information
Forms
Views
Charts
Fields
Keys
1:N Relationships
N:1 Relationships
N:N Relationships
Business Rules
Hierarchy Settings
Dashboards
Type:
All
New Many-to-Many Relationship
More Actions
Schema Name
Other Entity
Type of Behavior
Sta

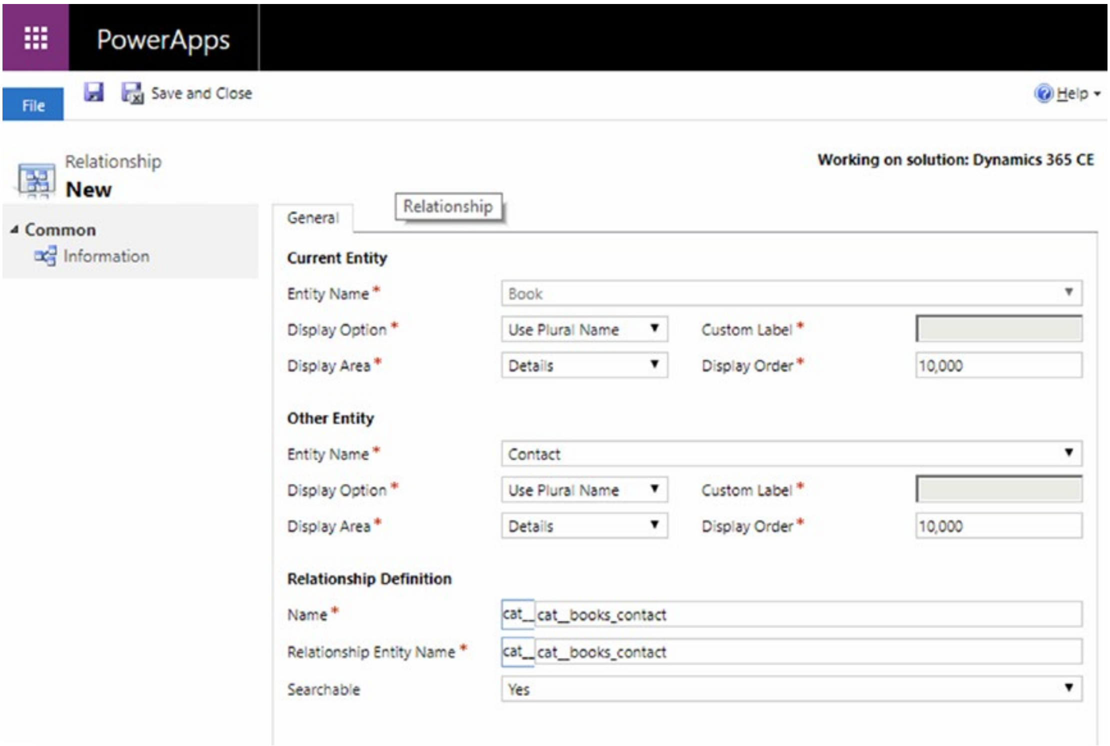
Figure 9-30. *Creating a new many-to-many relationship*

4. Complete the "Other Entity" details with a second entity with which to create the many-to-many relationship, as shown in Figure 9-31.

5. Set the display options to use the plural names of the entities.

6. Select "Save and Close."

The relationship has now been made and can be used within the system.



Working on solution: Dynamics 365 CE

Current Entity

Entity Name * Book

Display Option * Use Plural Name

Custom Label *

Display Area * Details

Display Order * 10,000

Other Entity

Entity Name * Contact

Display Option * Use Plural Name

Custom Label *

Display Area * Details

Display Order * 10,000

Relationship Definition

Name * cat_ cat_books_contact

Relationship Entity Name * cat_ cat_books_contact

Searchable Yes

Figure 9-31. Creating a new many-to-many relationship

For more information on relationship configuration, see the “Further Reading” section at the end of this chapter.

Forms

Forms within Dynamics 365 CE are the visual representation of the data fields. They also allow for other controls and visuals to be created. Their primary purpose is to display data and allow data to be created and modified by the user.

There are four main types of forms available (Figure 9-32). Entities can have multiple forms, and they are defined within the given app module.

Form types include the following:

- **Main form** – A form that can be used to display the full record
- **Quick View form** – A smaller form designed to display fields from a parent entity (1:N) field referenced on the form

- **Quick Create form** – A form used by the Quick Create button on the navigation (the plus button) or using sub-grids from related entities
- **Card form** – A UCI client–only form used to configure how the "cards" appear within dashboards in the Unified Interface

For more information and a deep dive on forms, see the "Further Reading" section at the end of this chapter.

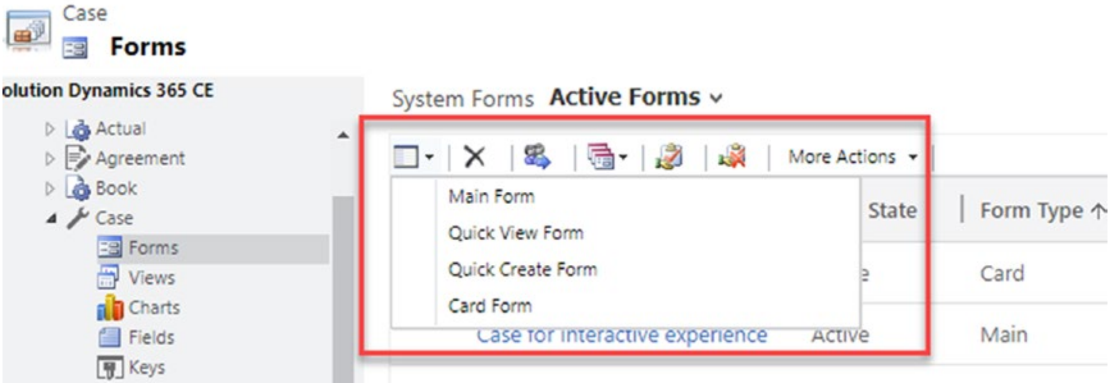
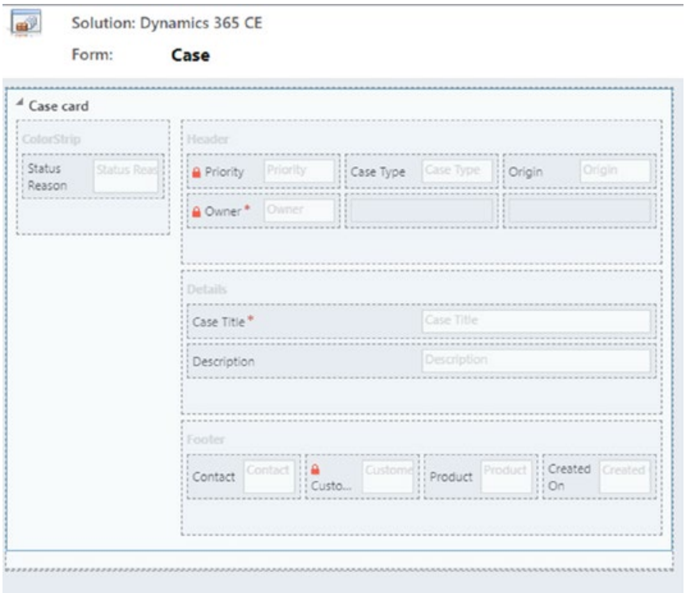

Case
Forms
olution Dynamics 365 CE
Actual
Agreement
Book
Case
Forms
Views
Charts
Fields
Keys
System Forms
Active Forms
More Actions
Main Form
Quick View Form
Quick Create Form
Card Form
State
Form Type
Card
Case for interactive experience
Active
Main

Figure 9-32. *Creating new types of forms from within the Solution Explorer*

The form design experience is the same type of experience for each type of form. However, the design itself should be different depending on the type. The design for Quick Create forms, for example, should contain fewer fields for users to complete given that the purpose of the Quick Create form is to quickly create records as opposed to providing the full main form. The Card form, as it is used in dashboards, should only contain a small number of entities for high-level visibility as it is not meant to be used as a "full form" experience.

The standard Case entity has all of these form types configured. They can be reviewed in the following screenshots to compare how the form design translates to the form experience within the web client for the user.



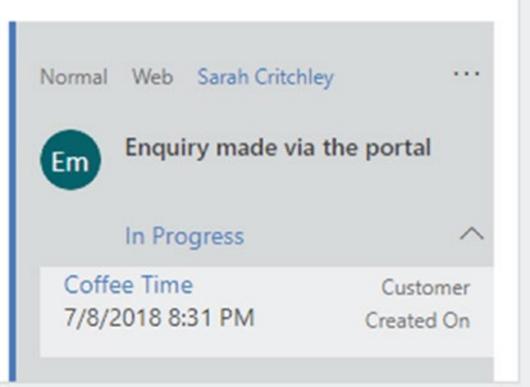
Solution: Dynamics 365 CE

Form: **Case**

Case card
ColorStrip
Status Reason
Status Reas
Header
Priority
Priority
Case Type
Case Type
Origin
Origin
Owner *
Owner
Details
Case Title *
Case Title
Description
Description
Footer
Contact
Contact
Custo...
Custome
Product
Product
Created On
Created

Figure 9-33. *The Card form definition for the Case record type*

The Card form type is aimed at displaying a high-level overview of information to a user, as shown in Figures 9-33 and 9-34. This is used on dashboards, for example.



Normal Web Sarah Critchley

Em Enquiry made via the portal

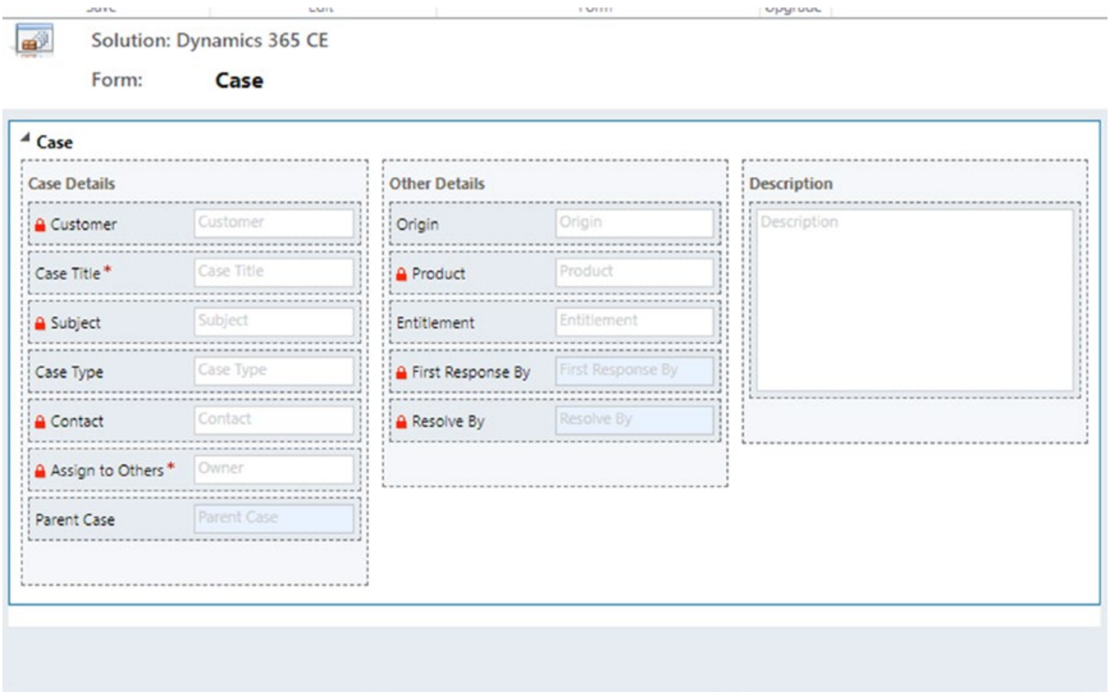
In Progress

Coffee Time Customer

7/8/2018 8:31 PM Created On

Figure 9-34. *The Card form in the web client*

The Quick Create form definition is slightly larger compared to the Card form, and is designed for users to quickly enter information (Figure 9-35).



Solution: Dynamics 365 CE

Form: **Case**

Case

Case Details

Customer	Customer
Case Title*	Case Title
Subject	Subject
Case Type	Case Type
Contact	Contact
Assign to Others*	Owner
Parent Case	Parent Case

Other Details

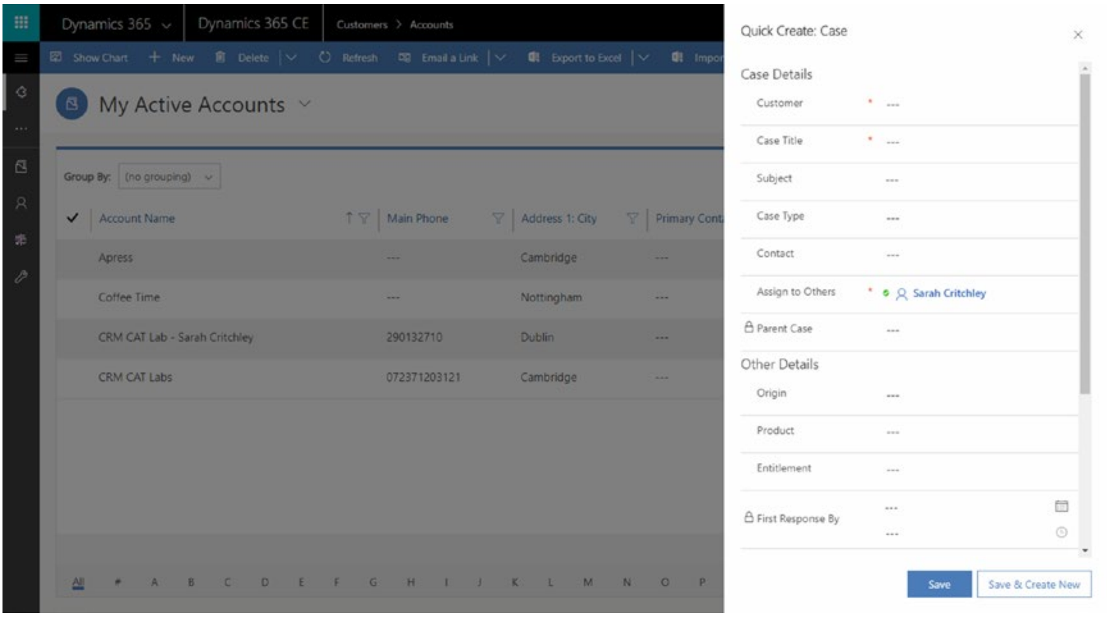
Origin	Origin
Product	Product
Entitlement	Entitlement
First Response By	First Response By
Resolve By	Resolve By

Description

Description

Figure 9-35. Quick Create form definition

The Quick Create form can be used from the main navigation screen to quickly create new records, as shown in Figure 9-36 in the Unified Interface.


Dynamics 365
Dynamics 365 CE
Customers > Accounts
Show Chart
New
Delete
Refresh
Email a Link
Export to Excel
Impor
All
#
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
Save
Save & Create New

My Active Accounts

Group By: (no grouping)

Account Name	Main Phone	Address 1: City	Primary Cont
Apress	---	Cambridge	---
Coffee Time	---	Nottingham	---
CRM CAT Lab - Sarah Critchley	290132710	Dublin	---
CRM CAT Labs	072371203121	Cambridge	---

Quick Create: Case

Case Details

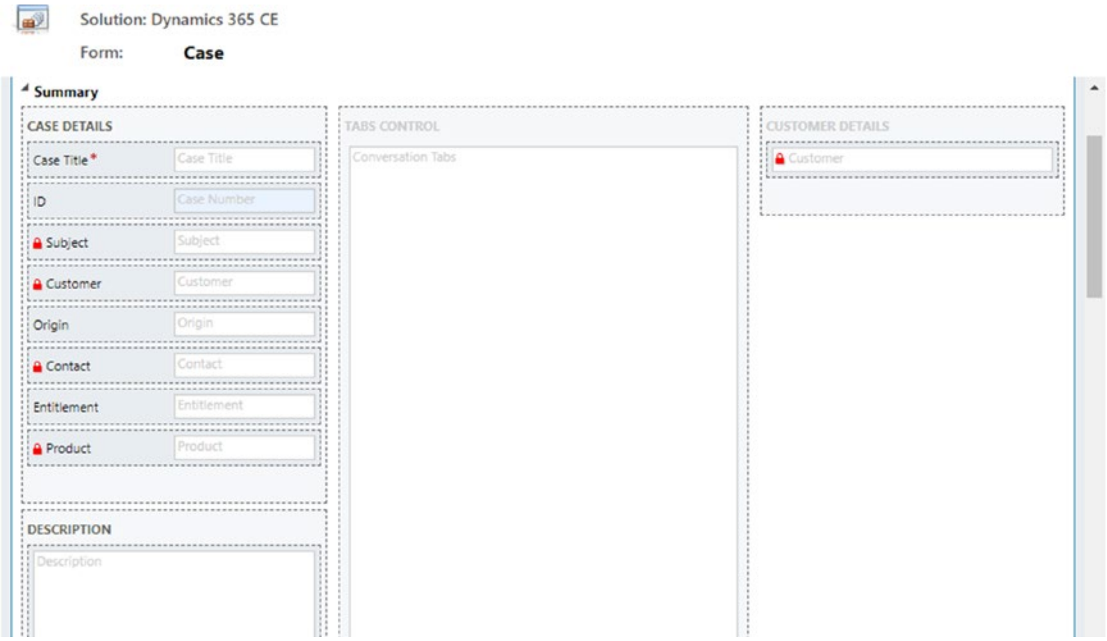
Customer *	---
Case Title *	---
Subject	---
Case Type	---
Contact	---
Assign to Others *	Sarah Critchley
Parent Case	---

Other Details

Origin	---
Product	---
Entitlement	---
First Response By	--- ---

Figure 9-36. Quick Create form on the Unified Interface

The Main form type is used to display the full details of a record, as shown in Figure 9-37.


TABS CONTROL
Conversation Tabs

Solution: Dynamics 365 CE

Form: **Case**

Summary

CASE DETAILS

Case Title *	Case Title
ID	Case Number
Subject	Subject
Customer	Customer
Origin	Origin
Contact	Contact
Entitlement	Entitlement
Product	Product

DESCRIPTION

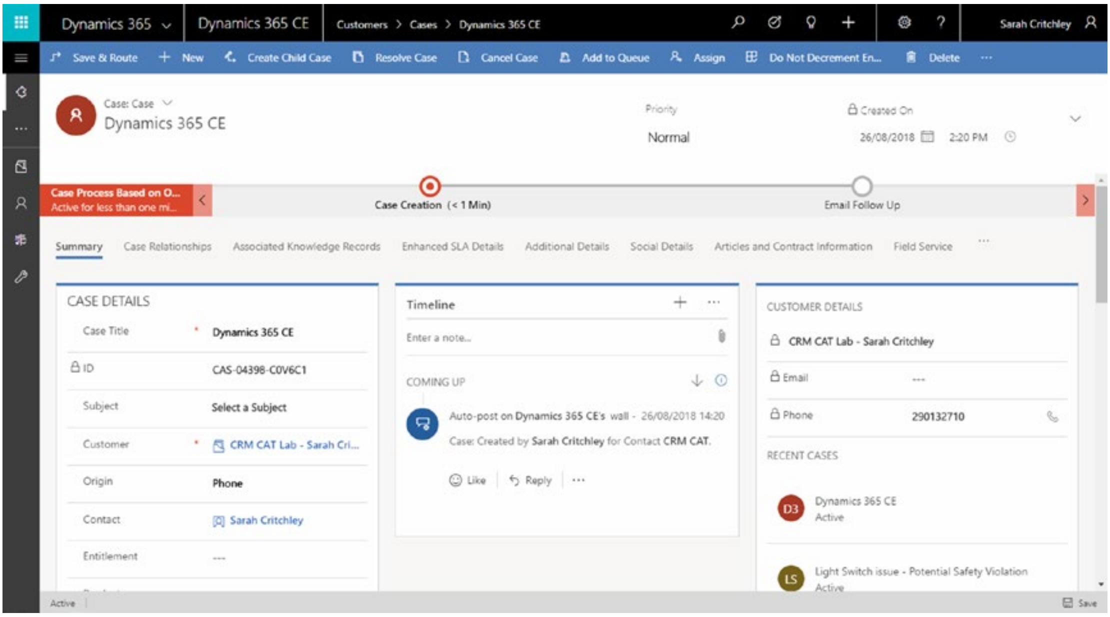
Description

CUSTOMER DETAILS

Customer

Figure 9-37. A Main form of the Case entity

Figure 9-38 displays much more information in a single screen as compared to the Quick Create form, for example. The Main form types are designed to see the full record and edit more details.


Dynamics 365
Dynamics 365 CE
Customers > Cases > Dynamics 365 CE
Sarah Critchley
Save & Route
New
Create Child Case
Resolve Case
Cancel Case
Add to Queue
Assign
Do Not Decrement En...
Delete
Case Process Based on O...
Active for less than one mi...
Case Creation (< 1 Min)
Email Follow Up
Summary
Case Relationships
Associated Knowledge Records
Enhanced SLA Details
Additional Details
Social Details
Articles and Contract Information
Field Service
Timeline
COMING UP
Like
Reply
CUSTOMER DETAILS
RECENT CASES
Active
Save

Case: Case
Dynamics 365 CE
Priority: Normal
Created On: 26/08/2018 2:20 PM

CASE DETAILS
Case Title: Dynamics 365 CE
ID: CAS-04398-C0V6C1
Subject: Select a Subject
Customer: CRM CAT Lab - Sarah Cri...
Origin: Phone
Contact: Sarah Critchley
Entitlement: ---

Enter a note...

Auto-post on Dynamics 365 CE's wall - 26/08/2018 14:20
Case: Created by Sarah Critchley for Contact CRM CAT.

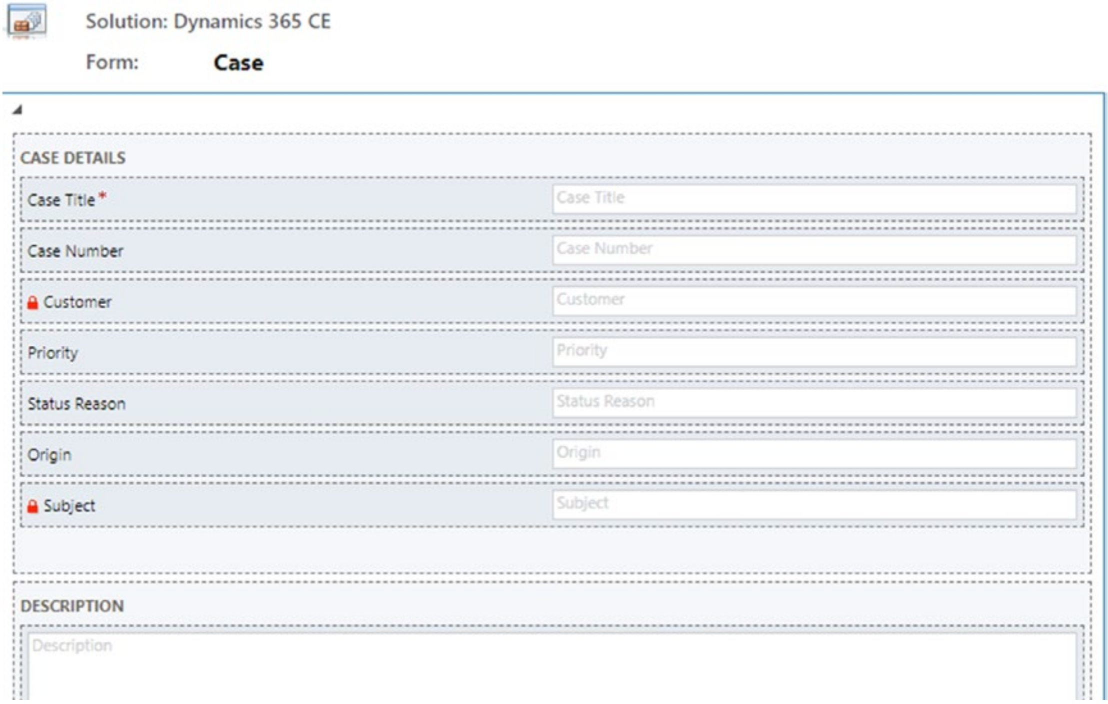
CRM CAT Lab - Sarah Critchley
Email: ---
Phone: 290132710

D3 Dynamics 365 CE
Active

LS Light Switch issue - Potential Safety Violation
Active

Figure 9-38. *A Main form of the Case entity on the Unified Interface*

The Quick View form is designed to also be smaller and display a collated view of details of a related record (Figure 9-39).


Solution: Dynamics 365 CE
Form: Case

CASE DETAILS

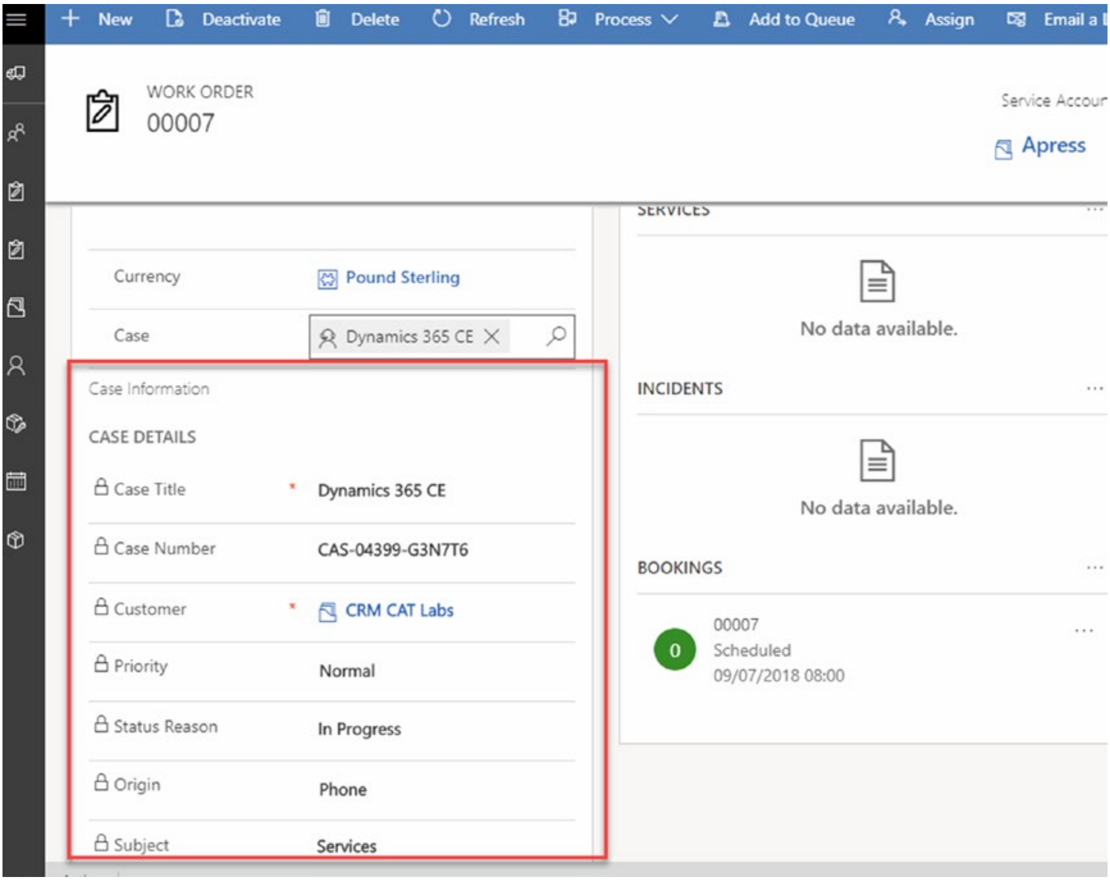
Case Title *	Case Title
Case Number	Case Number
🔒 Customer	Customer
Priority	Priority
Status Reason	Status Reason
Origin	Origin
🔒 Subject	Subject

DESCRIPTION

Description

Figure 9-39. *Quick View form definition of a Case record*

The Case Quick View form has been added to the Work Order form in the following example, as seen in Figure 9-40. This is so a small but important amount of information can be seen for the related Case without having to navigate to the record from the work order.


New
Deactivate
Delete
Refresh
Process
Add to Queue
Assign
Email a l
SERVICES
INCIDENTS
BOOKINGS
Case Information
CASE DETAILS

WORK ORDER
00007

Service Accour
Apress

Currency: Pound Sterling
Case: Dynamics 365 CE

Case Title * Dynamics 365 CE
Case Number CAS-04399-G3N7T6
Customer * CRM CAT Labs
Priority Normal
Status Reason In Progress
Origin Phone
Subject Services

No data available.

No data available.

00007
Scheduled
09/07/2018 08:00

Figure 9-40. *Quick View form of the Case record on a work order*

Creating and Modifying Forms

This section will walk through how to create and modify forms in Dynamics 365 CE.

Task: Review and modify an existing form.

1. Open the “Case for Interactive Experience” Main form on the Case entity. There are four main areas of the Form Designer to be aware of, as follows (Figure 9-41):

    - **Ribbon Bar** – This is where all of the options are located to add components to the form wireframe; they are spread across the Home and Insert tabs.

- **Navigation Pane** – This is used to display the N (many) related entities part of 1:N relationships and define what is visible and available for a user to select under the Related tab.
- **Field Explorer** – This is where the fields are dragged and dropped onto the form wireframe. Users can select "All Fields" or "Custom Fields" and also filter fields that are unused or not on the form.
- **Form Designer/Wireframe** – This is the form and how it will be visible within the user interface but in a designer/wireframe model. This is composed of tabs and sections.

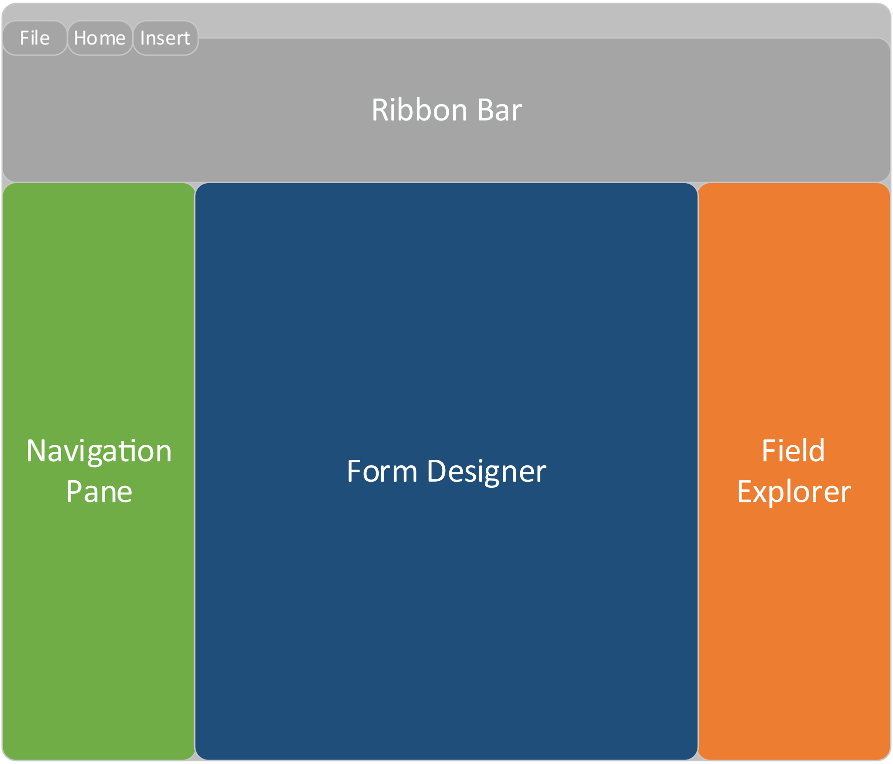


***Figure 9-41.** Diagram of the Form Designer components*

Within the Form Designer section, there are tabs and sections (Figure 9-42).

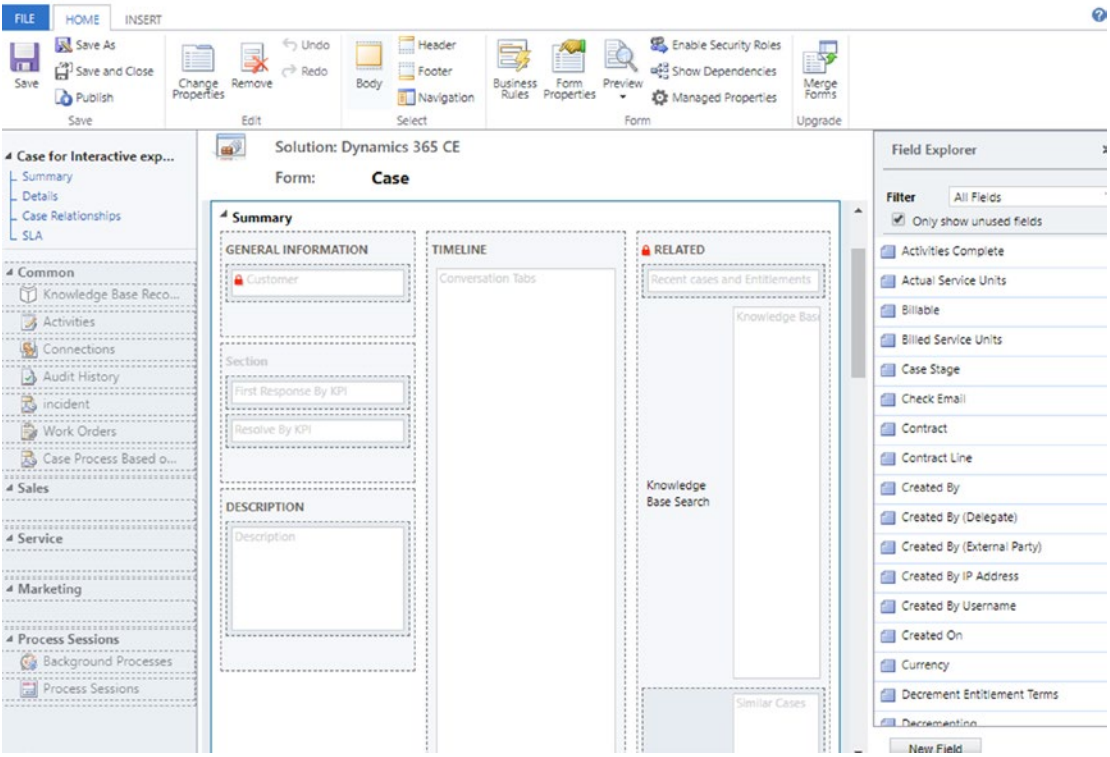

FILE
HOME
INSERT
Save
Save As
Save and Close
Publish
Save
Change Properties
Remove
Undo
Redo
Edit
Body
Header
Footer
Navigation
Select
Business Rules
Form Properties
Preview
Enable Security Roles
Show Dependencies
Managed Properties
Form
Merge Forms
Upgrade
Case for Interactive exp...
Summary
Details
Case Relationships
SLA
Common
Knowledge Base Reco...
Activities
Connections
Audit History
incident
Work Orders
Case Process Based o...
Sales
Service
Marketing
Process Sessions
Background Processes
Process Sessions
Solution: Dynamics 365 CE
Form: Case
Summary
GENERAL INFORMATION
Customer
Section
First Response By KPI
Resolve By KPI
DESCRIPTION
Description
TIMELINE
Conversation Tabs
RELATED
Recent cases and Entitlements
Knowledge Base
Knowledge Base Search
Similar Cases
Field Explorer
Filter
All Fields
☑ Only show unused fields
Activities Complete
Actual Service Units
Billable
Billed Service Units
Case Stage
Check Email
Contract
Contract Line
Created By
Created By (Delegate)
Created By (External Party)
Created By IP Address
Created By Username
Created On
Currency
Decrement Entitlement Terms
Decrementing
New Field

Figure 9-42. *The Form Designer in Dynamics 365 CE*

Tabs in the Unified Interface are displayed at the top of every form, as shown in Figure 9-43, and split the form into easy-to-use areas for users to move left and right to quickly access information relevant to them at any time.

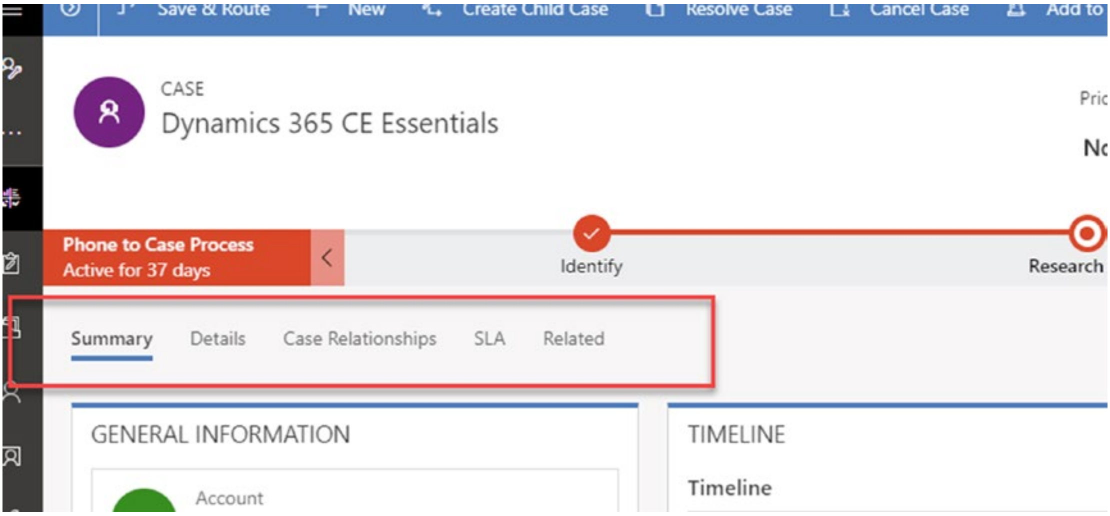

Save & Route
New
Create Child Case
Resolve Case
Cancel Case
Add to
CASE
Dynamics 365 CE Essentials
Pric
Nc
Phone to Case Process
Active for 37 days
Identify
Research
Summary
Details
Case Relationships
SLA
Related
GENERAL INFORMATION
TIMELINE
Timeline
Account

Figure 9-43. *Tabs displayed in the UCI client*

2. Select the Insert tab, which is where you can add tabs, shown in Figure 9-44, which have either one column, two columns, or three columns. They can be displayed differently as far as the size of the columns and rows within each tab.

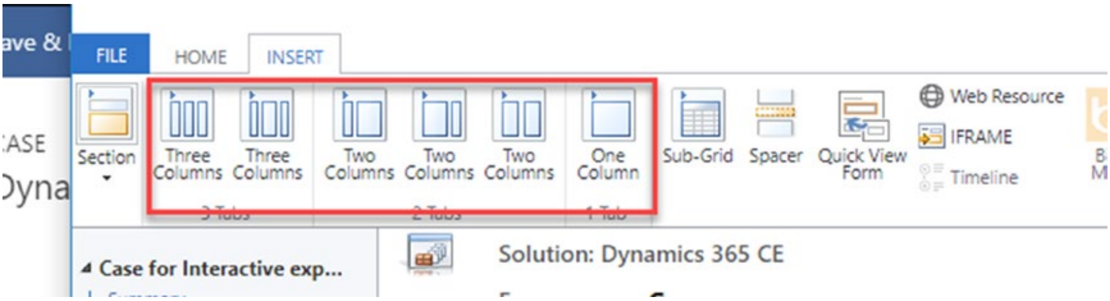

FILE
HOME
INSERT
Section
Three Columns
Three Columns
Two Columns
Two Columns
Two Columns
One Column
3 Tabs
2 Tabs
1 Tab
Sub-Grid
Spacer
Quick View Form
Web Resource
IFRAME
Timeline
Case for Interactive exp...
Solution: Dynamics 365 CE

Figure 9-44. *Adding tabs with specific column numbers and widths to the form design*

Figure 9-45 displays how a tab, in green, would display different columns within the tab that are equally split across the user's screen.

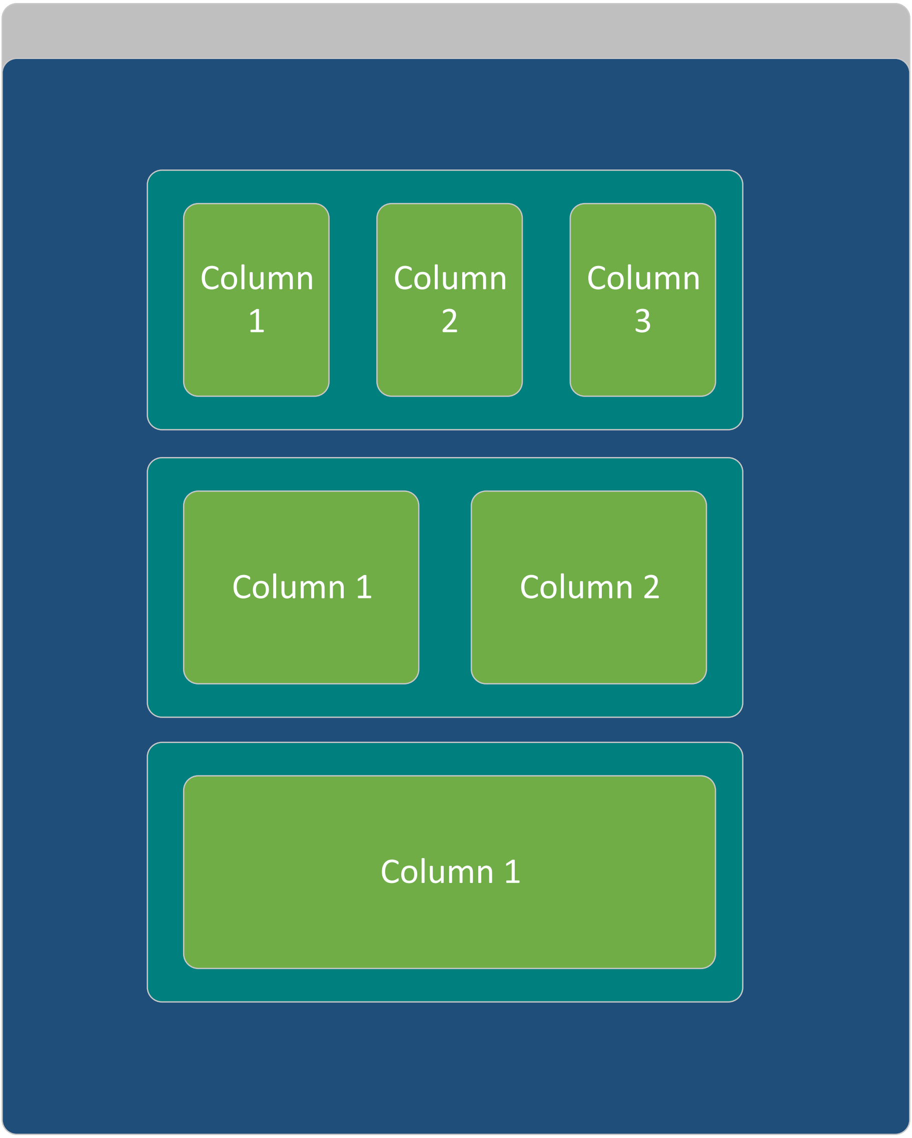

Column 1
Column 2
Column 3
Column 1
Column 2
Column 1

Figure 9-45. *How columns are broken up in tabs*

A column has sections within it. A section can be split into one, two, three, or four more columns, which each can hold columns of fields (Figure 9-46).

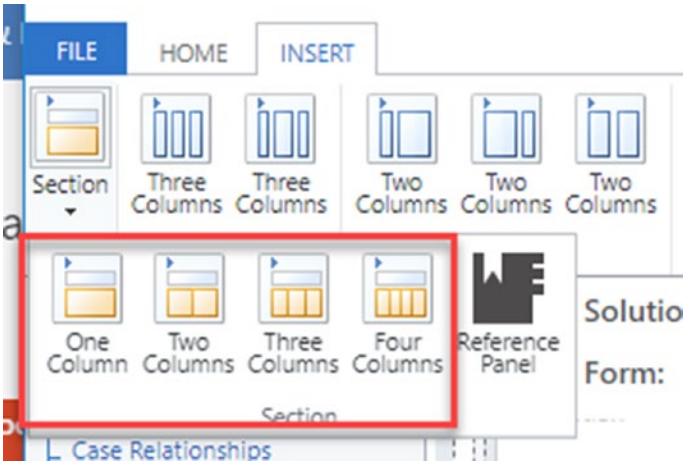

FILE
HOME
INSERT
Section
Three Columns
Three Columns
Two Columns
Two Columns
Two Columns
One Column
Two Columns
Three Columns
Four Columns
Section
Reference Panel
Solutio
Form:
Case Relationships

Figure 9-46. *Adding sections in the ribbon bar of the Form Designer*

While this is what is represented in the Form Designer, and what would be true for the Classic UI, it is not the same for the Unified Interface. The UCI client will only display one-column sections and will stack all fields within a section of two, three, or four columns if they are used and if the form is used in an app that uses the Unified Interface.

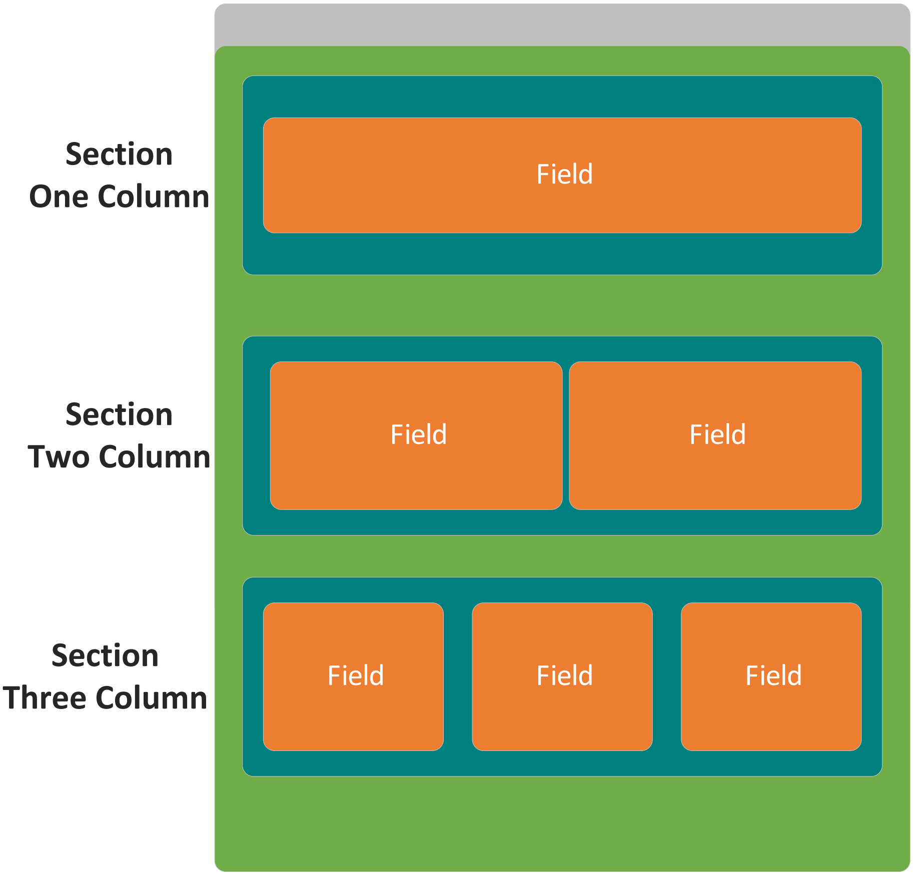

Section
One Column
Field
Section
Two Column
Field
Field
Section
Three Column
Field
Field
Field

Figure 9-47. *Sections within the wireframe*

The example shown in Figure 9-47 where it representations a Column, and the sections and fields broken down within it is shown comparatively within the Form Designer in Figure 9-48.

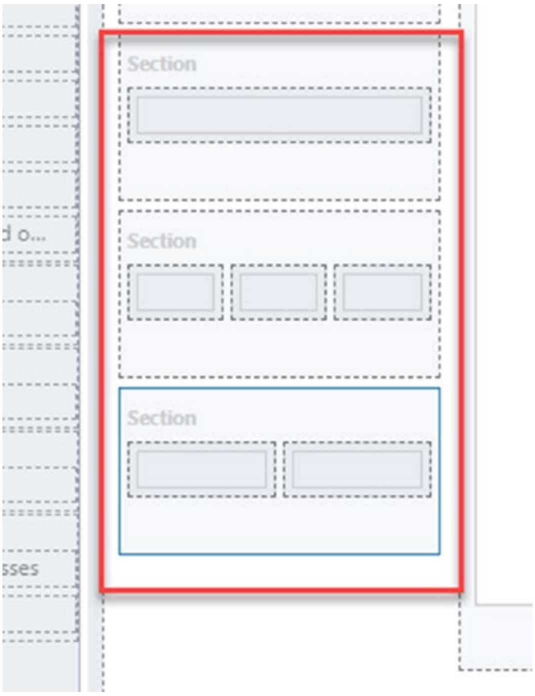


Figure 9-48. Different sections within the column display as holding one, two, three, or four additional columns of fields

This walkthrough will add the fields created in the previous steps—“Billable,” “No of Child Cases,” and “Next Activity Date”—into a new section of your choice. (Any three fields can be used, however.)

3. Add a section at a space within the form by going to the ribbon bar and clicking Section ➤ One Column.

4. Locate the field in the Field Explorer on the right-hand side of the Form Designer (Note: You can make it quicker by selecting “Custom Fields” on the filter) and click and drag the field into the space on the wireframe.

   Repeat this process for the remaining two fields. See Figure 9-49, which displays all of the fields in different configurations in the sections.

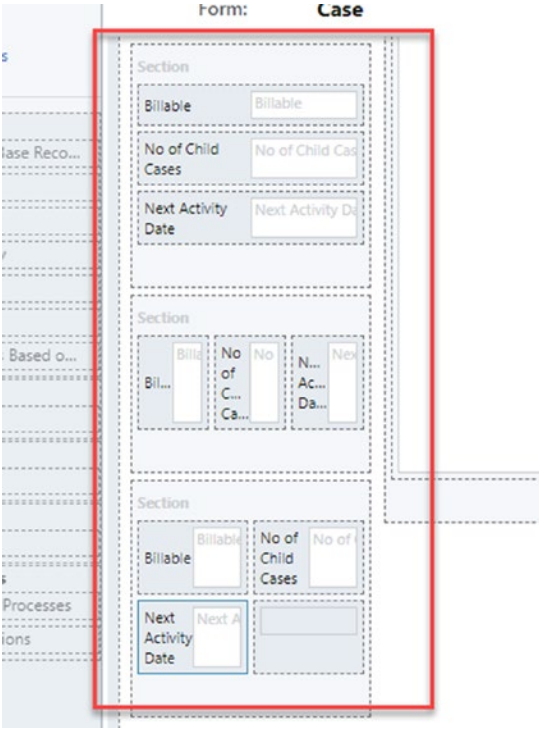
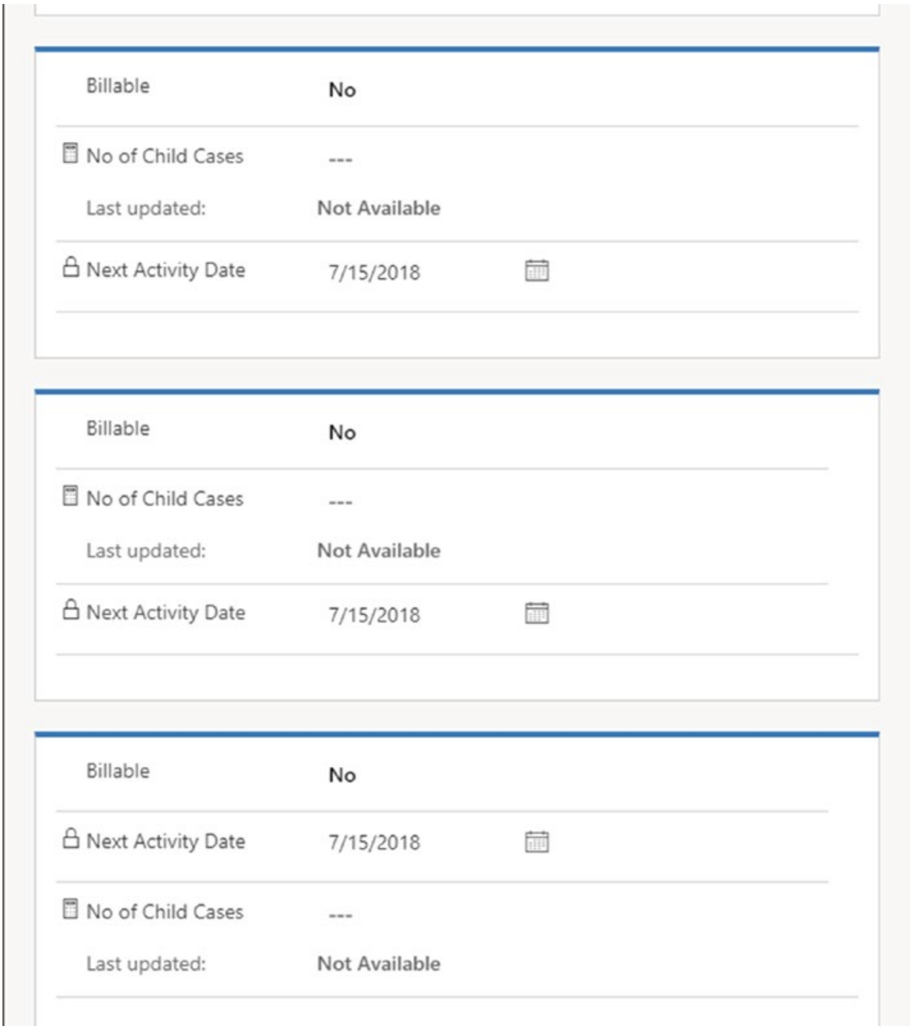

Form: Case
Section
Billable
No of Child Cases
Next Activity Date
Section
Bil...
No of C... Ca...
N... Ac... Da...
Section
Billable
No of Child Cases
Next Activity Date
ase Reco...
Based o...
Processes
ions

Figure 9-49. ***Configuring fields into an existing form and new sections in the Form Designer***

5. To see the changes, click “Save” and then “Publish.”
6. Add the form to an app within the Unified Interface to see the fields within the form.



Billable No

No of Child Cases ---

Last updated: Not Available

Next Activity Date 7/15/2018

Billable No

No of Child Cases ---

Last updated: Not Available

Next Activity Date 7/15/2018

Billable No

Next Activity Date 7/15/2018

No of Child Cases ---

Last updated: Not Available

Figure 9-50. *How the fields display in the Unified Interface*

In previous examples, different sections have been used for one column, two columns, and three columns. Figure 9-50 displays all of these sections in a single-column section with just a slight change in order based on how the fields are stacked in the designer (left-hand column first on the two-column section). Be aware of this difference when designing forms for the Unified Interface.

Tabs, sections, and fields all have additional "Form" properties that can be accessed by double-clicking the field component on the Form Designer. Naming and display options appear, including different formatting options. The available configurations are extensive, so it is recommended to review each of these as a separate task in the

Dynamics 365 CE system to see what is available and how it displays on the form. Further details to assist with this can be found in the "Further Reading" section at the end of this chapter.

Common options available in these areas include the following:

- Changing the width of a field
- Changing the form display name of fields
- Adding the name of tabs or sections
- Changing the column and field label alignment
- Making a field read-only
- Adding custom events on fields
- Adding business rules on fields
- Adding custom controls on fields
- Adding events on tabs (this is for developers using JavaScript)

To add a new form, navigate to "Forms" and click "New," using the dropdown to select which type (Figure 9-51). An almost-empty form will open, allowing you to add in fields from the Form Designer in the same way as in the previous section.

Sometimes it is quicker to use the "Save As" function on an existing form, especially when you need to make a form similar to one that exists already. If this is done, be aware of any Events/Scripting that will be copied over to the new form. Always check the 'Form Properties' and review them when using 'Save As'.

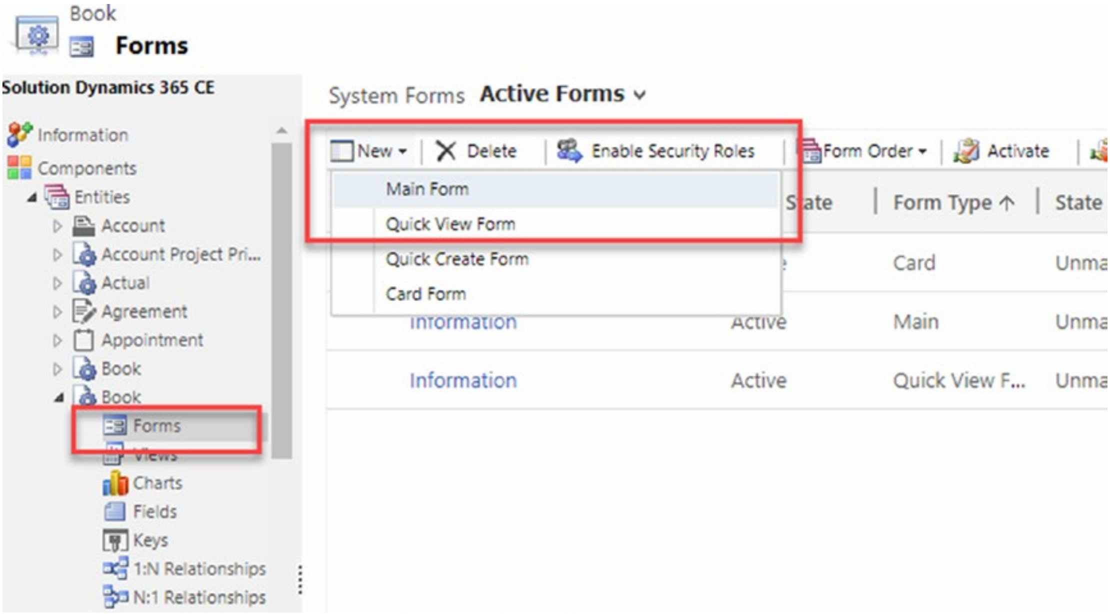

Book
Forms
Solution Dynamics 365 CE
Information
Components
Entities
Account
Account Project Pri...
Actual
Agreement
Appointment
Book
Book
Forms
Views
Charts
Fields
Keys
1:N Relationships
N:1 Relationships
System Forms Active Forms
New
Delete
Enable Security Roles
Form Order
Activate
Main Form
Quick View Form
Quick Create Form
Card Form
State
Form Type
State
Card
Unma
Information
Active
Main
Unma
Information
Active
Quick View F...
Unma

Figure 9-51. Creating a new form

Additional Form Controls

There is a range of different controls on the form that enable you to add other data and operations.

The options "Body," "Header," "Footer," and "Navigation" allow you to go to those areas of the designer (Figure 9-52). Only one area is active and editable at once. You must click the respective area on the ribbon for it to be active and editable.

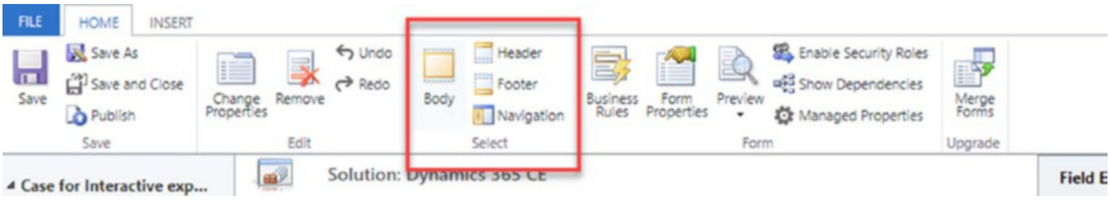

FILE
HOME
INSERT
Save
Save As
Save and Close
Publish
Save
Change Properties
Remove
Undo
Redo
Edit
Body
Header
Footer
Navigation
Select
Business Rules
Form Properties
Preview
Enable Security Roles
Show Dependencies
Managed Properties
Form
Merge Forms
Upgrade
Case for Interactive exp...
Solution: Dynamics 365 CE
Field E

Figure 9-52. Changing the "active" areas of a form

You can add a sub-grid using the Insert tab and "Sub-grid" component (Figure 9-53). Sub-grids allow you to see related child records and can display specific views and configurations. This can help users review related records and perform actions upon them without having to open the individual records, potentially saving them large amounts of time. Sub-grids can also be made into "editable" grids. (For more information on editable grids, see the "Reporting" chapter).

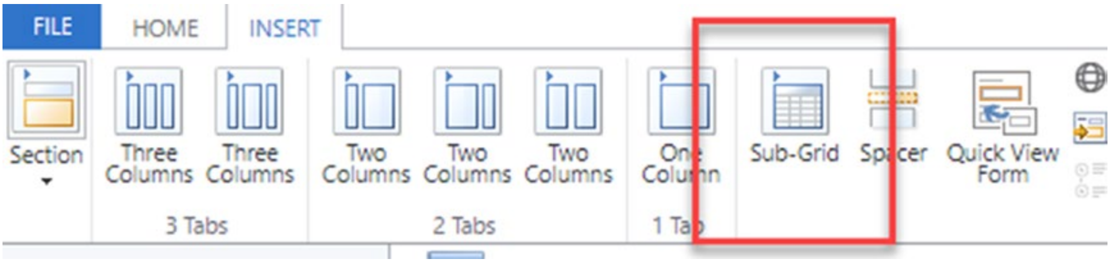
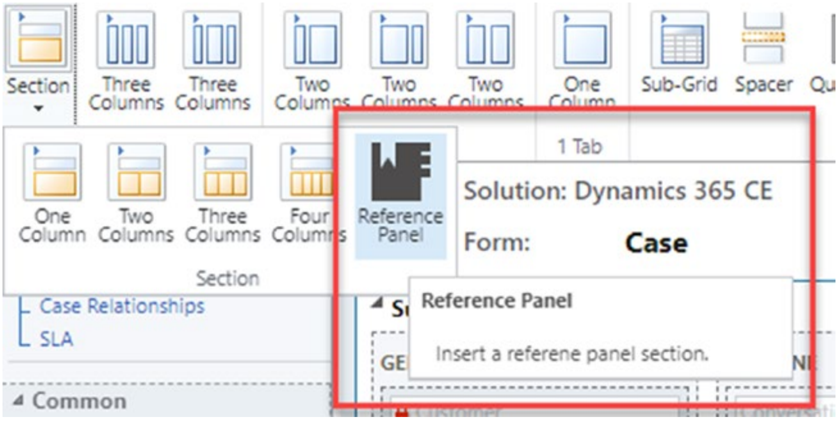

FILE
HOME
INSERT
Section
Three Columns
Three Columns
3 Tabs
Two Columns
Two Columns
Two Columns
2 Tabs
One Column
1 Tab
Sub-Grid
Spacer
Quick View Form

Figure 9-53. Adding a sub-grid component

You can also add reference panels, which are very similar to sub-grids but are a "stacked" feature in the Unified Interface that allows for a single sub-grid with interchangeable icons for clicking different related record types. Reference panels take up less space than sub-grids, which are a single space per grid. To see an example of a reference panel, navigate to the Case record under the Summary tab, as shown in Figure 9-54. Only one reference panel is allowed per form.


Section
Three Columns
Three Columns
Two Columns
Two Columns
Two Columns
One Column
Sub-Grid
Spacer
1 Tab
One Column
Two Columns
Three Columns
Four Columns
Reference Panel
Section
Case Relationships
SLA
Common

Solution: Dynamics 365 CE

Form: **Case**

Reference Panel

Insert a referene panel section.

Figure 9-54. Add a reference panel

To build a reference panel, open the Form Designer for an entity and navigate to the Insert tab. Click on the "Section" option, and there is a "Reference Panel" option. Select this to insert it into the form. Each sub-grid that gets inserted into the reference panel will be utilized using the icon that is set within the sub-grid configuration (Figure 9-55).

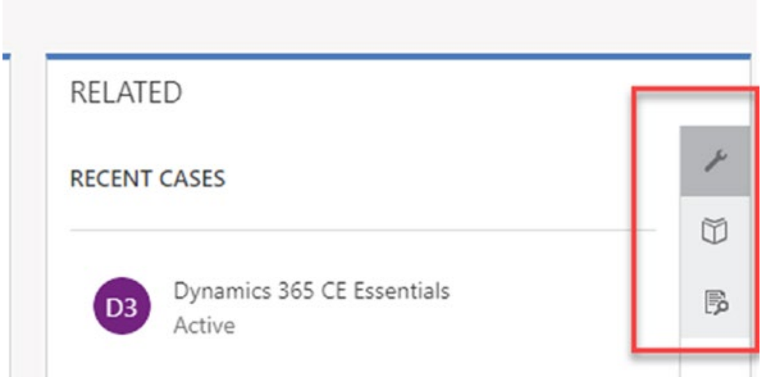


Figure 9-55. *A reference form within the Case entity as standard*

Other types of components that can be added into a form are as follows (Figure 9-56):

- **Bing Maps** – Adds in Bing Maps component. A Bing Maps Key needs to be added, and this is enabled in the General tab in System Settings.
- **Navigation Link** – Available when the user is in the "Navigation" area. Adds a web resource or external URL to the navigation items.
- **Social Insights** – Requires social engagement integration, and this is turned on in the Administrative Settings. Allows the user to specify social insights functionality for particular feeds.
- **Knowledge Base Search** – Add the Knowledge Base search for any entity enabled for knowledge management (includes custom entities).
- **ACI Control** – Previously Azure Customer Insights; not usable at the time of writing
- **Relationship Assistant** – Add the relationship assistant control to forms. See Chapter 1.

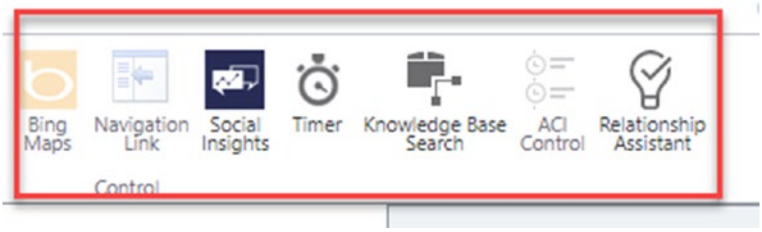

Bing Maps
Navigation Link
Social Insights
Timer
Knowledge Base Search
ACI Control
Relationship Assistant
Control

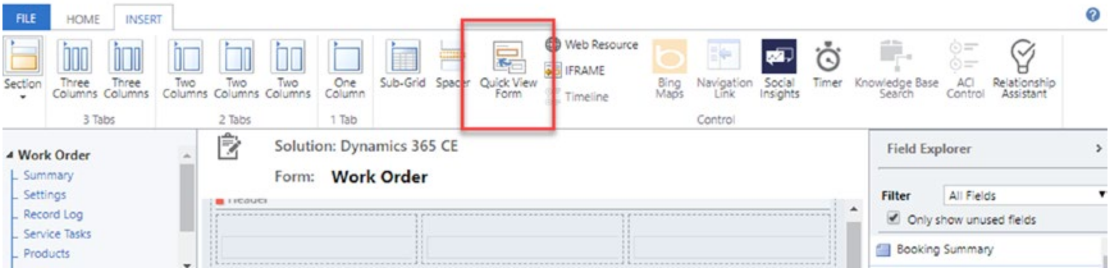
Figure 9-56. Additional form components can be added

Quick View Forms

Quick View forms are designed to be embedded into a related entity's form where there is a lookup to a parent record from a 1:N relationship. They allow a user to see related fields from the record within the lookup field without having to select the record and load the form. The fields are displayed in a read-only state. The forms are particularly useful for quick reference and are normally designed with a small number of fields to give the user a snapshot of information.

Task: Add a Quick View form to a record.

1. Create the Quick View form for the related record that is being referenced (or use an existing one; for example, from the Case entity).
2. Add a lookup field to make the reference to the record on the related entity; e.g., work order. This is the entity that will show the form.


FILE
HOME
INSERT
Section
Three Columns
Three Columns
3 Tabs
Two Columns
Two Columns
Two Columns
2 Tabs
One Column
1 Tab
Sub-Grid
Spacer
Quick View Form
Web Resource
IFRAME
Timeline
Bing Maps
Navigation Link
Social Insights
Timer
Knowledge Base Search
ACI Control
Relationship Assistant
Control
Work Order
Summary
Settings
Record Log
Service Tasks
Products
Field Explorer
Booking Summary

Solution: Dynamics 365 CE

Form: Work Order

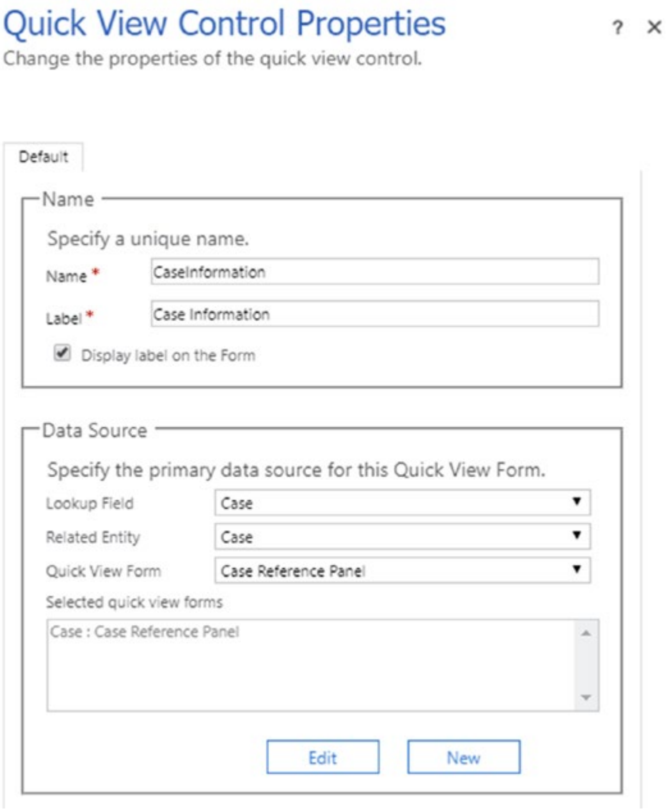
Filter: All Fields

☑ Only show unused fields

Figure 9-57. Quick View form control on the Form Designer

3. Once this has been created, while in the related entity's form, select the "Quick View Form" button from the ribbon in the Form Designer, as shown in Figure 9-57.

4. Configure the name of the component, the referring entity (Case), and the name of the Quick View form from that entity. Click "OK" and "Save and Close" (Figure 9-58).



Quick View Control Properties

Change the properties of the quick view control.

Name

Specify a unique name.

Name * CaseInformation

Label * Case Information

☑ Display label on the Form

Data Source

Specify the primary data source for this Quick View Form.

Lookup Field: Case

Related Entity: Case

Quick View Form: Case Reference Panel

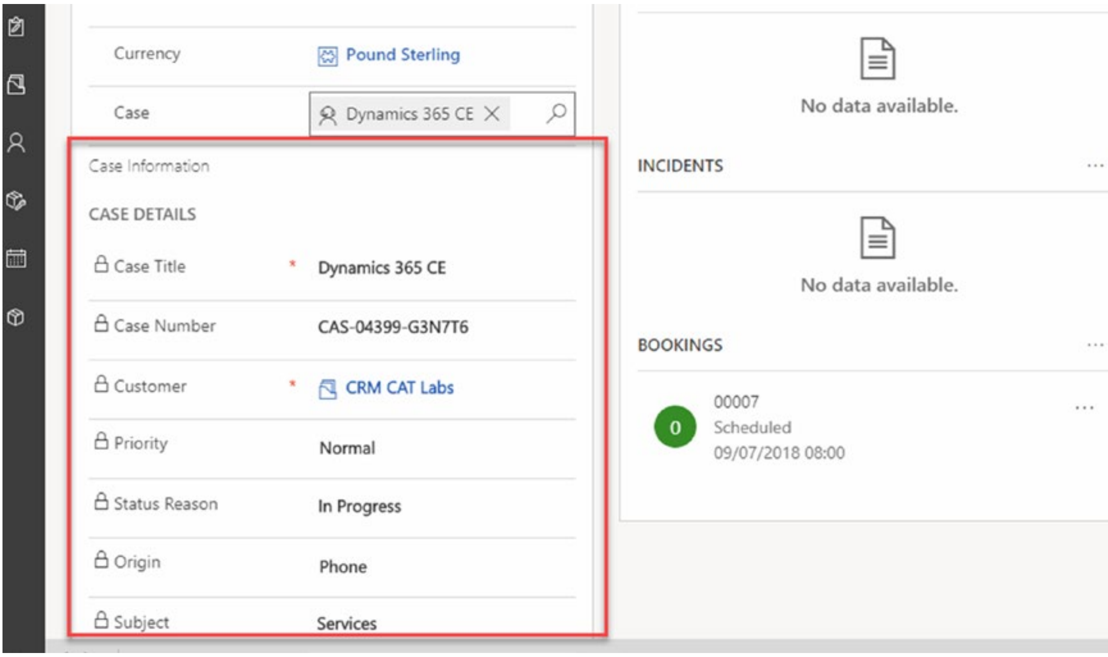
Selected quick view forms

Case : Case Reference Panel

***Figure 9-58.** Configuring a Quick View control on a form*

5. Publish all customizations before navigating to the entity and seeing the Quick View form in action, as shown in Figure 9-59.

Quick View forms are empty and are not visible until the referencing lookup field holds a value.



Currency	Pound Sterling
Case	Dynamics 365 CE

Case Information

CASE DETAILS

Case Title *	Dynamics 365 CE
Case Number	CAS-04399-G3N7T6
Customer *	CRM CAT Labs
Priority	Normal
Status Reason	In Progress
Origin	Phone
Subject	Services

No data available.

INCIDENTS

No data available.

BOOKINGS

00007
Scheduled
09/07/2018 08:00

Figure 9-59. *A Quick View form record and how it is displayed on a form*

Navigation Pane and Related Items

The navigation pane on the left-hand side of the Form Designer allows you to change what users see under the Related tab within a form. When a user clicks the Related tab, they see the list of the entities visible in the navigation in a tab. These are the "many" records that are referencing the "one" record in a relationship (and equally can also include N:N) and are displayed in a list form when they are selected in this tab.

In the transition between the Classic UI and the Unified Interface, some record types are not visible in the navigation menu. This includes Audit History and Business Process Flow records. (In the screenshots that follow of the standard Case entity, three of the items are not visible. See Figures 9-60 and 9-61.)

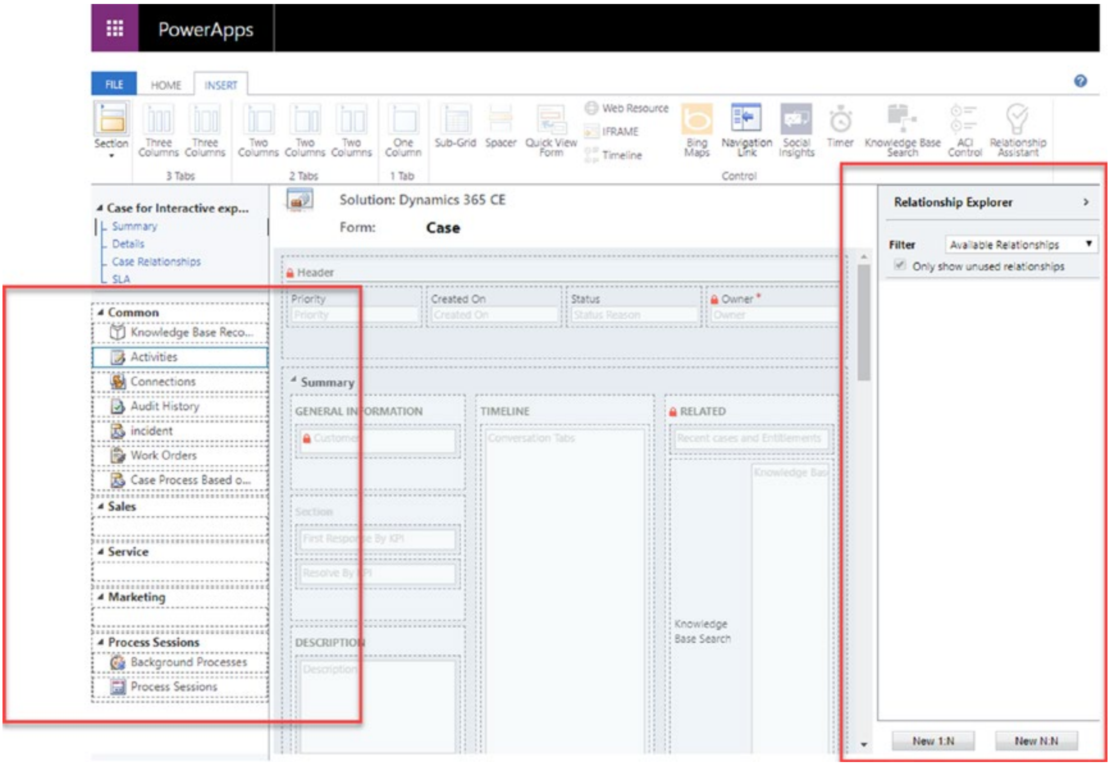
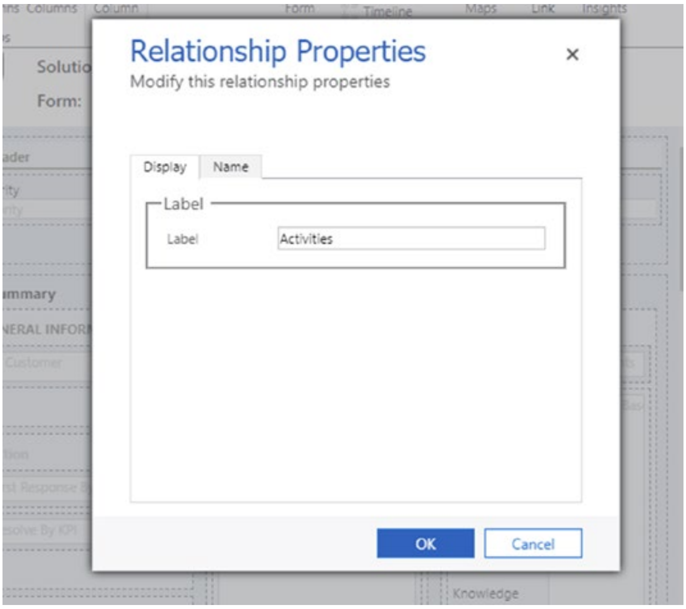

PowerApps
FILE
HOME
INSERT
Section
Three Columns
Three Columns
3 Tabs
Two Columns
Two Columns
Two Columns
2 Tabs
One Column
1 Tab
Sub-Grid
Spacer
Quick View Form
Web Resource
IFRAME
Timeline
Bing Maps
Navigation Link
Social Insights
Timer
Knowledge Base Search
ACI Control
Relationship Assistant
Control
Case for Interactive exp...
Summary
Details
Case Relationships
SLA
Common
Knowledge Base Reco...
Activities
Connections
Audit History
incident
Work Orders
Case Process Based o...
Sales
Service
Marketing
Process Sessions
Background Processes
Process Sessions
Solution: Dynamics 365 CE
Form: Case
Header
Priority
Created On
Status
Owner
Summary
GENERAL INFORMATION
TIMELINE
RELATED
Recent cases and Entitlements
Knowledge Base Search
DESCRIPTION
Relationship Explorer
Filter
Available Relationships
Only show unused relationships
New 1:N
New N:N

Figure 9-60. *The Navigation and Relationship panes in the Form Designer*

In the Form Designer, you can double-click the navigational component—e.g., “Activities”—and change the name of how it is displayed in the “Related” dropdown view. This is particularly useful to add a display name relevant to the business function.



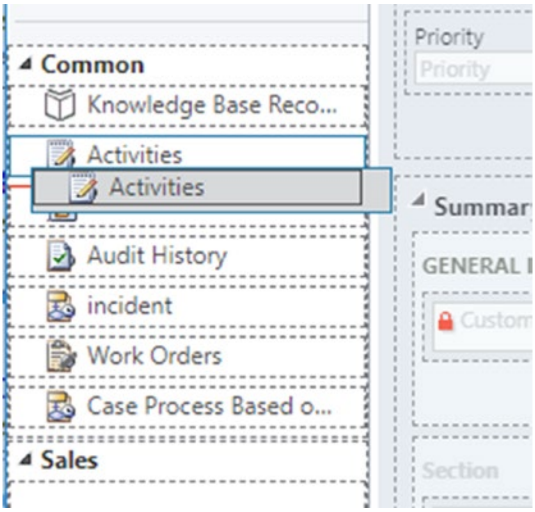
Relationship Properties

Modify this relationship properties

Display
Name
Label
Label
Activities
OK
Cancel

Figure 9-61. *Double-click the navigational item to change the display name and how it appears to users*

The components can also be clicked and dragged to change the order, as shown in Figure 9-62.



Common
Knowledge Base Reco...
Activities
Activities
Audit History
incident
Work Orders
Case Process Based o...
Sales
Priority
Priority
Summar
GENERAL I
Custom
Section

Figure 9-62. *Drag and move the navigational components*

On the right-hand side of the Form Designer is the Relationship Explorer. This pane allows users to create a new 1:N relationship (with the primary entity being the main entity the user is on) or an N:N relationship. Users can also select from available relationships that are not being used to add to the navigation pane. Relationships can only be used once on the navigational area and cannot be duplicated.

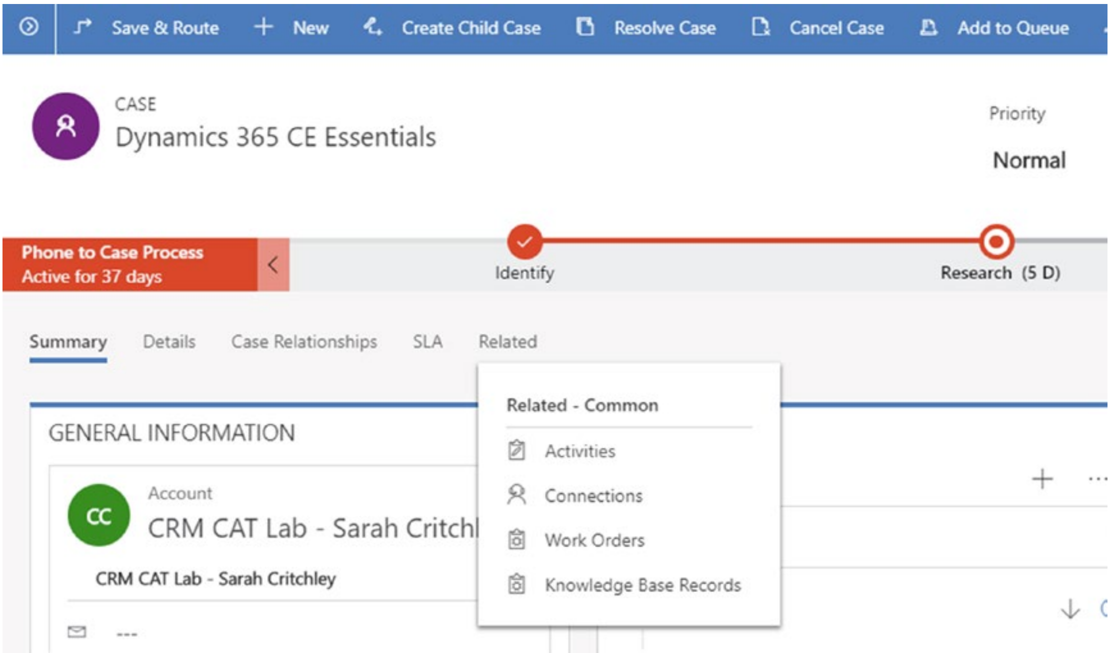

Save & Route
New
Create Child Case
Resolve Case
Cancel Case
Add to Queue
CASE
Dynamics 365 CE Essentials
Priority
Normal
Phone to Case Process
Active for 37 days
Identify
Research (5 D)
Summary
Details
Case Relationships
SLA
Related
Related - Common
Activities
Connections
Work Orders
Knowledge Base Records
GENERAL INFORMATION
Account
CC
CRM CAT Lab - Sarah Critchl
CRM CAT Lab - Sarah Critchley

Figure 9-63. *The navigational list displays on the Related tab within the UCI client*

Updating the navigation is important to ensure a user navigating on the form has access to the most relevant related records and that these are positioned near the top of the list for easy access.

Summary

UI customizations within Dynamics 365 CE have the potential to influence how a user interacts with the data within the system. This chapter has covered the numerous ways the user interface can be modified using the features of the platform. It covered creating new entities to store data, how to add new fields to those entities, and the extensive types of data that can be stored within Dynamics 365 CE, as well as the different types of forms that can present that data to the user and what controls can be added to make it easier to review and add data. Relationships and navigation between related records can assist users in how they see information that can influence decision making and the next action a user takes, influencing the end customer experience. In summary, this chapter has covered ways to get started with the available UI customizations within Dynamics 365 CE to create a positive user experience for users of the platform and also the end customers.

Chapter Tasks

At the end of every chapter, there will be a section that gives up to ten suggested tasks for you to complete within Dynamics 365 CE. These tasks will be based around the topics covered within the chapter and the further resources referenced at the end. They are aimed at expanding practical knowledge and application regarding those topics that goes beyond reading about them.

1. Create a new custom entity.
2. Create a range of new fields for the custom entity that includes all of the different field types.
3. Create a rollup field.
4. Create a calculated field.
5. Create a new form.
6. Modify an existing form.
7. Create a new N:N relationship.
8. Configure a 1:N relationship.
9. Add a reference panel to a form.
10. Add a sub-grid to a form.

Further Resources

Virtual Entities (Microsoft, 2018). URL: https://docs.microsoft.com/en-us/dynamics365/customer-engagement/developer/virtual-entities/get-started-ve

Entities in Dynamics 365 CE (Microsoft, 2018). URL: https://docs.microsoft.com/en-us/dynamics365/customer-engagement/customize/create-entities

Types of Field (Microsoft, 2018). URL: https://docs.microsoft.com/en-us/dynamics365/customer-engagement/customize/types-of-fields

Rollup Field Reference (Microsoft, 2018). URL: https://docs.microsoft.com/en-us/dynamics365/customer-engagement/customize/define-rollup-fields#rollup-calculations

Calculated Field Reference (Microsoft, 2018). URL: https://docs.microsoft.com/en-us/dynamics365/customer-engagement/customize/define-calculated-fields

Relationship Behavior (Microsoft, 2018). URL: https://docs.microsoft.com/en-us/dynamics365/customer-engagement/developer/entity-relationship-behavior#BKMK_CascadingBehavior

Types of Forms (Microsoft, 2018). URL: https://docs.microsoft.com/en-us/dynamics365/customer-engagement/customize/main-form-presentations

CHAPTER 10

App Modules

App modules within Dynamics 365 CE allow for the encapsulation of a collection of assets into a single application. That application can then be made available for those users with specific security roles at the app level. Using apps to design Dynamics 365 functionality is commonly referred to as model-driven apps or app modules. They give organizations the ability to create focused applications without the need to hide irrelevant items on the sitemap or create a complex security model as we have had to do previously. Having the sitemap, forms, and dashboards reduced to only what the users need to have access to is a focused way of designing an application rather than giving them a large application and going through extensive training. The core application is split into first-party apps covering sales, customer service, marketing, field service, and project service.

Dynamics 365 CE gives scope for not just model-driven applications such as first-party apps and custom apps, but also purpose-built applications referred to as canvas apps. Canvas apps are built using the Canvas App designer.

Starting with App Modules

This chapter will focus on app modules within Dynamics 365 CE and not on canvas apps. App modules are built either on the Classic UI or the Unified Interface (Figure 10-1). Apps built on the Unified Interface can also run on the mobile native app; however, Classic UI apps cannot.

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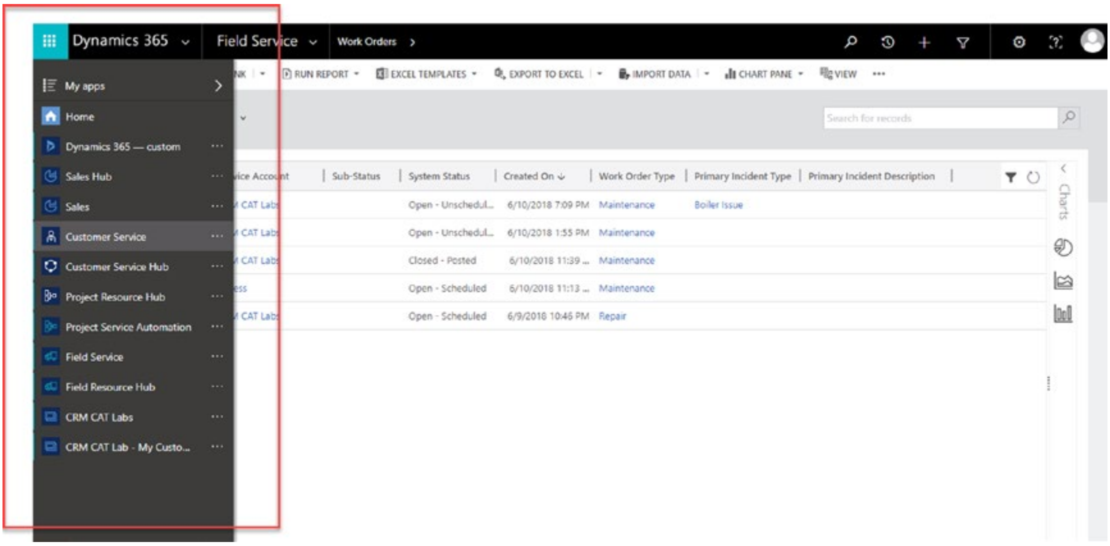
S. Critchley, *Dynamics 365 CE Essentials*, https://doi.org/10.1007/978-1-4842-3973-5_10


Dynamics 365
Field Service
Work Orders
RUN REPORT
EXCEL TEMPLATES
EXPORT TO EXCEL
IMPORT DATA
CHART PANE
VIEW
Search for records
My apps
Home
Dynamics 365 — custom
Sales Hub
Sales
Customer Service
Customer Service Hub
Project Resource Hub
Project Service Automation
Field Service
Field Resource Hub
CRM CAT Labs
CRM CAT Lab - My Custo...
Charts

ice Account	Sub-Status	System Status	Created On	Work Order Type	Primary Incident Type	Primary Incident Description
CAT Lab		Open - Unschedul...	6/10/2018 7:09 PM	Maintenance	Boiler Issue	
CAT Lab		Open - Unschedul...	6/10/2018 1:55 PM	Maintenance		
CAT Lab		Closed - Posted	6/10/2018 11:39 ...	Maintenance		
ess		Open - Scheduled	6/10/2018 11:13 ...	Maintenance		
CAT Lab		Open - Scheduled	6/9/2018 10:46 PM	Repair		

Figure 10-1. *App selector on the navigational menu within Dynamics 365 CE*

An app module is a slice through solution components such as dashboards, views, and charts so each app module can be specific to a role or job function. App modules will then be made visible with a specific set of security roles. App modules can contain the following (see Figure 10-2):

- A sitemap
- Dashboards
- Business process flows
- Entities
    - Forms
    - Views
    - Charts
    - Dashboards

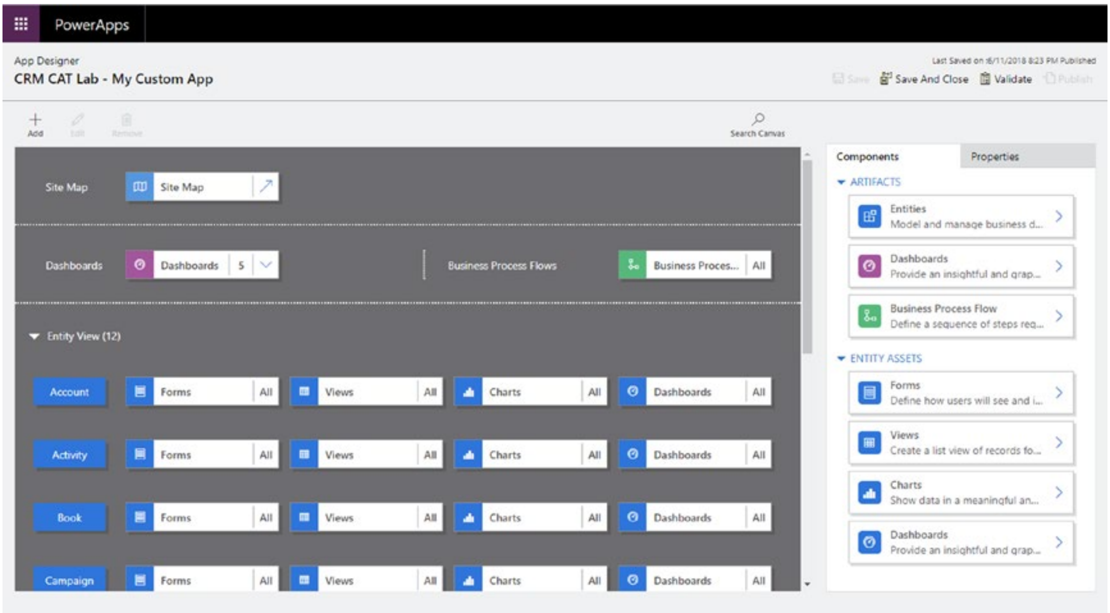
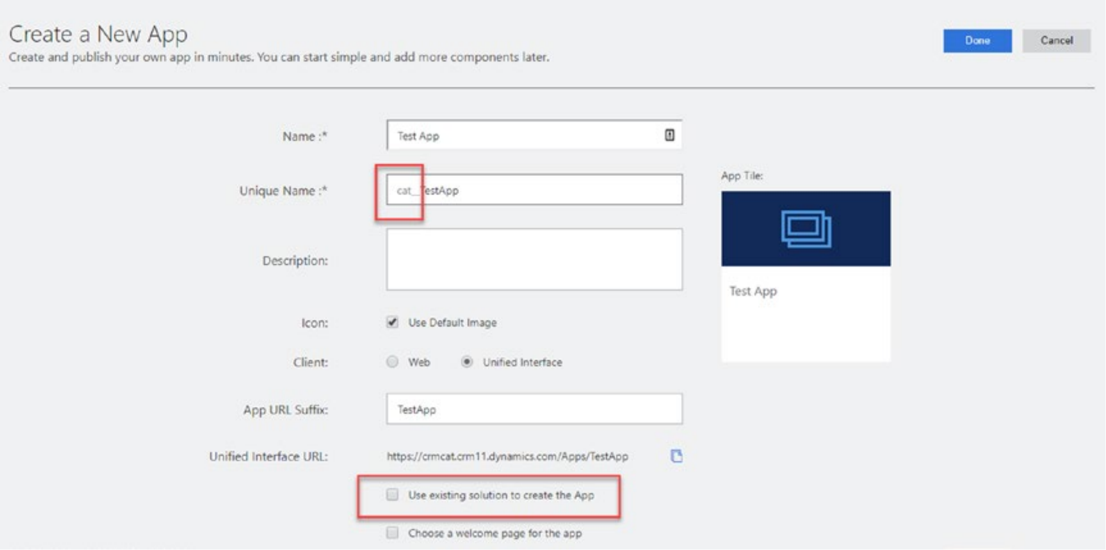

PowerApps
App Designer
CRM CAT Lab - My Custom App
Last Saved on 6/11/2018 8:23 PM Published
Save
Save And Close
Validate
Publish
Add
Edit
Remove
Search Canvas
Site Map
Site Map
Dashboards
Dashboards
5
Business Process Flows
Business Proces...
All
Entity View (12)
Account
Activity
Book
Campaign
Forms
All
Views
All
Charts
All
Dashboards
All
Components
Properties
ARTIFACTS
Entities
Model and manage business d...
Dashboards
Provide an insightful and grap...
Business Process Flow
Define a sequence of steps req...
ENTITY ASSETS
Forms
Define how users will see and i...
Views
Create a list view of records fo...
Charts
Show data in a meaningful an...
Dashboards
Provide an insightful and grap...

***Figure 10-2.** The App Designer in Dynamics 365 CE*

Solutions

App modules are solution aware. This means that the app can be exported and imported between environments; e.g., development, QA, and production using a 'Solution' package. Makers of apps have the option to create an app based on the default solution or on an existing solution. It is recommended to use an existing solution, and the associated prefix is created before an app. A solution is linked to a publisher, which has a specific prefix, such as "Dynamics365CEEssentials_" or the name of the company or release. Prefixing allows other customizers to know which publisher has created the solution and is used to create unique names for fields and other assets. The app can be created from within the solution or from the "Apps" area within the sitemap and linked to the solution by selecting the option "Use the existing solution to create this App" at time of creation (Figure 10-3). The app is then created under this prefix, which allows a user to create additional items under that specific app. Prefixes are discussed in more depth in the next section.


Create a New App

Create and publish your own app in minutes. You can start simple and add more components later.

Name :* Test App

Unique Name :* cat_TestApp

Description:

Icon: ☑ Use Default Image

Client: ○ Web ● Unified Interface

App URL Suffix: TestApp

Unified Interface URL: https://crmcat.crm11.dynamics.com/Apps/TestApp

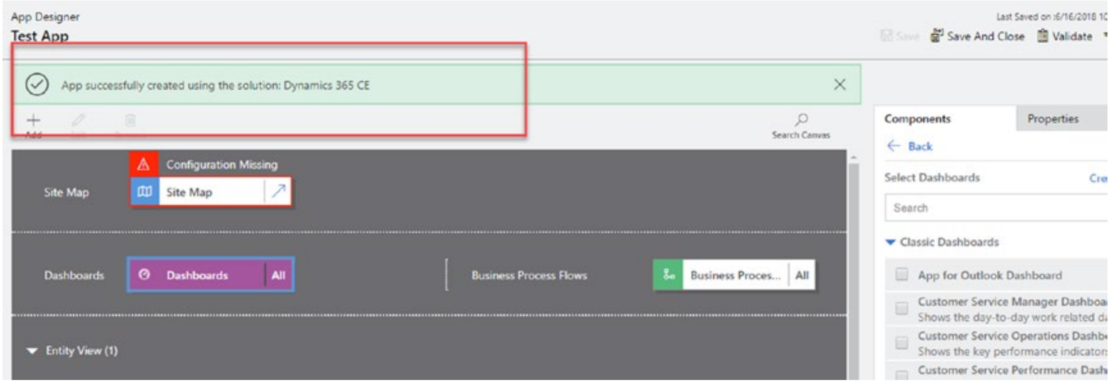
☐ Use existing solution to create the App

☐ Choose a welcome page for the app

Done
Cancel
App Tile:
Test App

Figure 10-3. Creating a new app from within a solution that has a publisher

The App Designer can select which specific items to include in the app. It also gives users the capability to create additional items such as forms that can be created within the App Designer itself. When creating these items, if not created within a specific solution, it is easy to accidentally create them within the default solution. This means the prefix of any additional item will be created with “new_” and will not be linked to the correct publisher. To avoid this, the app needs to be created within a solution and the option selected at time of creation to ensure the prefix of a solution is linked to the app (Figure 10-4).


App Designer

Test App

App successfully created using the solution: Dynamics 365 CE

Last Saved on :6/16/2018 10
Save
Save And Close
Validate
Add
Search Canvas
Components
Properties
Back
Select Dashboards
Cre
Search
Classic Dashboards
App for Outlook Dashboard
Customer Service Manager Dashboa
Shows the day-to-day work related d
Customer Service Operations Dashb
Shows the key performance indicator
Customer Service Performance Dash
Configuration Missing
Site Map
Site Map
Dashboards
Dashboards
All
Business Process Flows
Business Proces...
All
Entity View (1)

Figure 10-4. Notification within the App Designer when successfully linked to the solution

Solution Layering

In the previous section, solutions were highlighted as a great starting point for building an app and using it within the App Designer. Solutions are a great way of compartmentalizing functionality or releases, grouping components together to release to other environments as part of the software development lifecycle. There is a significant importance to not editing the default solution, which is the “base” solution within Dynamics 365 CE, and including customizations within it. This can be seen in Figure 10-5 where the ‘system solution’ begins as the base for the user’s experience.

The default solution is a combination of all the unmanaged and managed type solutions available within the system. As highlighted earlier, a new solution made by an organisation is linked to a publisher, which has a specific prefix, such as “Dynamics365CEEssentials_” or sometimes something meaningful, such as the name of the company or release. Prefixing allows other customizers to know which publisher has created the solution and is used to create unique names for fields and other assets. Any changes made outside of this solution management method and within the default solution are hard to track and can also make releasing to other environments difficult (this is because the default solution would need to be exported and imported successfully in one go, which is normally unlikely to be successful).

There are also different types of solutions: managed solutions and unmanaged solutions (Figure 10-5). Many independent solution vendors (ISVs) use managed solutions as they provide extra capability to prevent target environments of the solution from modifying the components added by the solution. Solutions become managed by exporting the solution as a managed solution and installing that solution into an environment. It can then be patched and updated, or it can be deleted, taking all of its components with it. Unmanaged solution behavior is different from this. It is a reference to components within the default solution. When deleting an unmanaged solution, it does not delete the referenced components, and they remain within the default solution. To summarise, every Dynamics 365 CE system has a default solution, there are managed solutions (which are uneditable) and unmanaged solutions both of which have publishers and specific prefix’s which are linked to new entities and fields within Dynamics 365. It is not good practice to make edits within the default solution directly for the reasons stated above. The different types of solutions and the order in which they are installed influences how the platform is displayed to users. The next section looks at this layering in more depth.

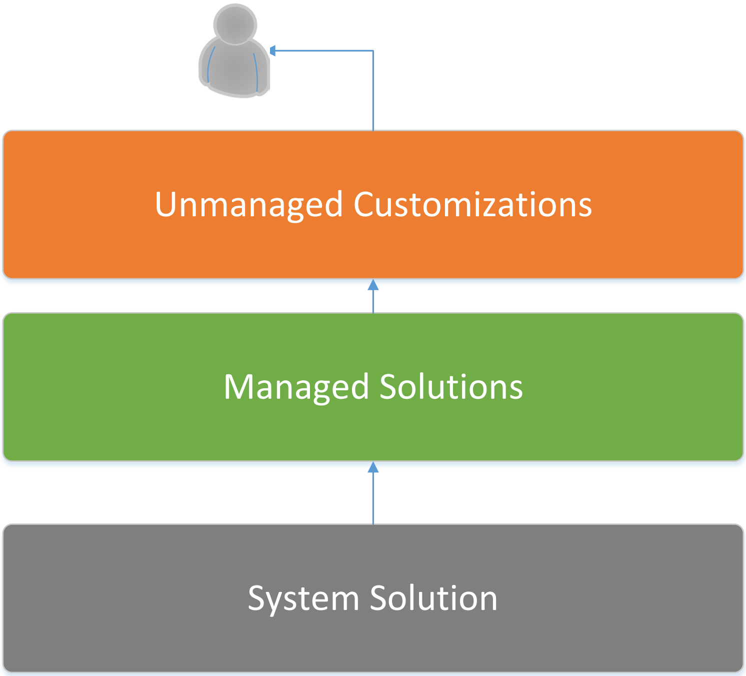


Figure 10-5. *The ordering of the application behavior, which is built upon unmanaged and managed components*

Solutions also have an influence on the application behavior that the user experiences. This can be seen in Figure 10-5 & Figure 10-6. Managed solutions are loaded after the system solution, but before unmanaged solutions, which means a component can be edited in a managed solution and then an unmanaged customization and application behavior would show the last edit from the unmanaged customization.

The installation order of managed solutions also affects the application behavior. The latest managed solution installed is the solution that is loaded last out of the managed solutions before unmanaged customizations are loaded. More information on this layering can be found in the “Further Resources” section at the end of the chapter.

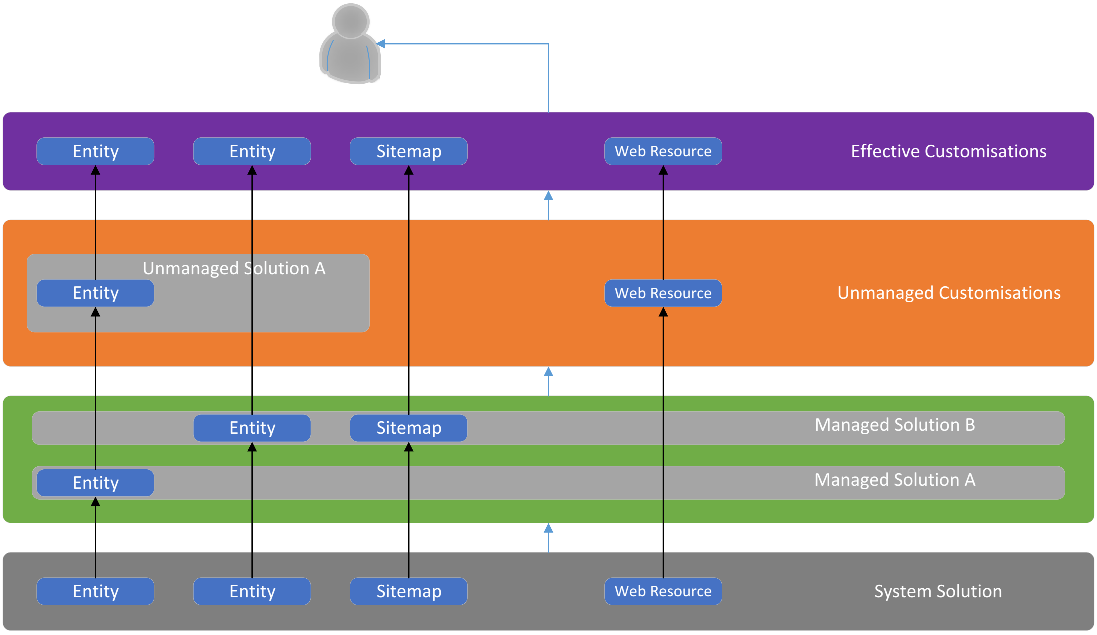

Entity
Entity
Sitemap
Web Resource
Effective Customisations
Unmanaged Solution A
Entity
Web Resource
Unmanaged Customisations
Entity
Sitemap
Managed Solution B
Entity
Managed Solution A
Entity
Entity
Sitemap
Web Resource
System Solution

Figure 10-6. *A more detailed diagram displaying the segmented solutions and components within the unmanaged and managed layers building up to provide the application behavior*

Creating a Solution and Publisher

This next section will provide the steps to create a new Solution.

1. To create a new Solution, navigate to 'Solutions' in the Classic UI via Settings
2. Click 'New'
3. Enter a 'Display Name' of your choice
4. Select the Publisher lookup and select 'Lookup More Records'
5. Select 'New' on the new dialog window
6. Enter a display name
7. Enter a prefix. This prefix will be added to all new field names and entities within Dynamics 355 CE
8. Click Save and Close

9. Select ‘Add’ to add the new Publisher to the Solution
10. Add a Version Number as required
11. Select ‘Save’ to save the solution. Once saved, you can begin adding existing and new components under the ‘Components’ heading within this Solution **(Often referred to as the ‘Solution Explorer’)**.

Creating a New App

This section covers how to create a new app.

Task: Create an app.

1. Navigate to the Classic Interface and go to “Settings” and “My Apps” under the Application group. This will open all of the published and unpublished (in progress) apps (Figure 10-7).

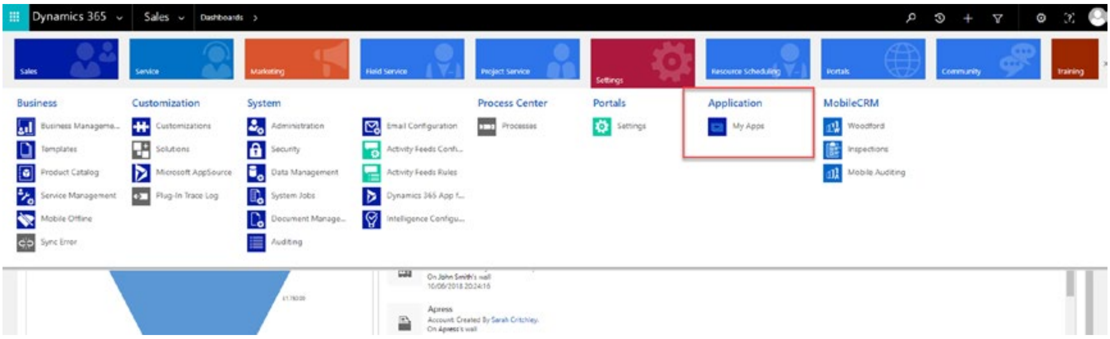

Dynamics 365
Sales
Dashboards
Sales
Service
Marketing
Field Service
Project Service
Settings
Resource Scheduling
Portals
Community
Training
Business
Business Manageme...
Templates
Product Catalog
Service Management
Mobile Offline
Sync Error
Customization
Customizations
Solutions
Microsoft AppSource
Plug-In Trace Log
System
Administration
Security
Data Management
System Jobs
Document Manage...
Auditing
Email Configuration
Activity Feeds Confi...
Activity Feeds Rules
Dynamics 365 App f...
Intelligence Configu...
Process Center
Processes
Portals
Settings
Application
My Apps
MobileCRM
Woodford
Inspections
Mobile Auditing
On John Smith's wall
10/06/2018 20:24:16
Apress
Account Created By Sarah Critchley.
On Apress's wall

Figure 10-7. Navigate to “My Apps” within the Classic Interface

2. To create a new application, click on “Create New App” at the top right of the screen or within the “Unpublished Apps” area (Figure 10-8). A new window opens the App Configuration screen for new applications, where the application needs configuration details to be entered for the initial setup.
3. Follow the following points and enter related information for the app being created.

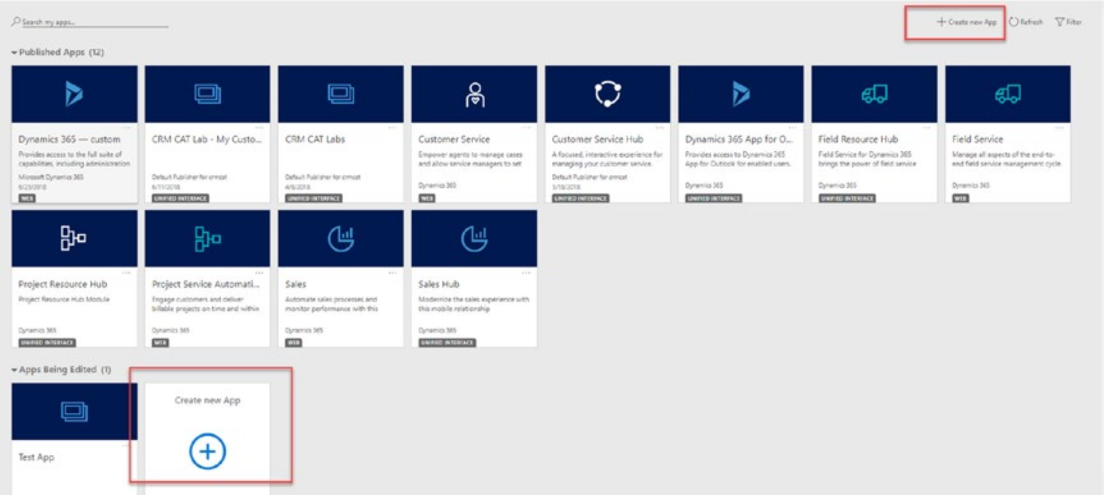
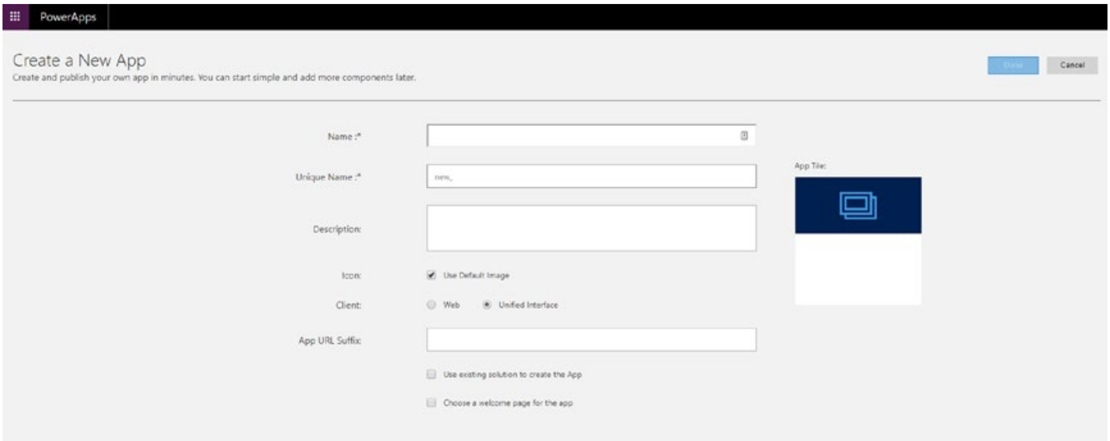

Search my apps...
+ Create new App
Refresh
Filter
Published Apps (12)
Dynamics 365 — custom
CRM CAT Lab - My Custo...
CRM CAT Labs
Customer Service
Customer Service Hub
Dynamics 365 App for O...
Field Resource Hub
Field Service
Project Resource Hub
Project Service Automati...
Sales
Sales Hub
Apps Being Edited (1)
Test App
Create new App

Figure 10-8. *Create a new application within the "Unpublished Apps" area or at the top of the screen in the app selector*

When creating an application, the following information is needed (Figure 10-9):

- **Name** – Manually enter the name of your app.
- **Unique Name** – Automatically populates using the new_ prefix or the prefix of the publisher used in the solution selected in the "existing solution" step that follows
- **Description** – A short description of the application
- **Icon** – Use the default icon or an existing web resource image.
- **Client** – Classic Interface (web) or Unified Interface (available on mobile too)
- **App URL Suffix** – prepopulated based on the name. Used for the app URL
- **Use an existing solution** – Use this for changing the prefix and telling new items made within the app designer to use that prefix. Select it for this walkthrough.
- **Choose a welcome page** – Option to add in HTML web page as the welcome page when a new user opens the app



Create a New App

Create and publish your own app in minutes. You can start simple and add more components later.

Name :*

Unique Name :* new_

Description:

Icon: ☑ Use Default Image

Client: ○ Web ● Unified Interface

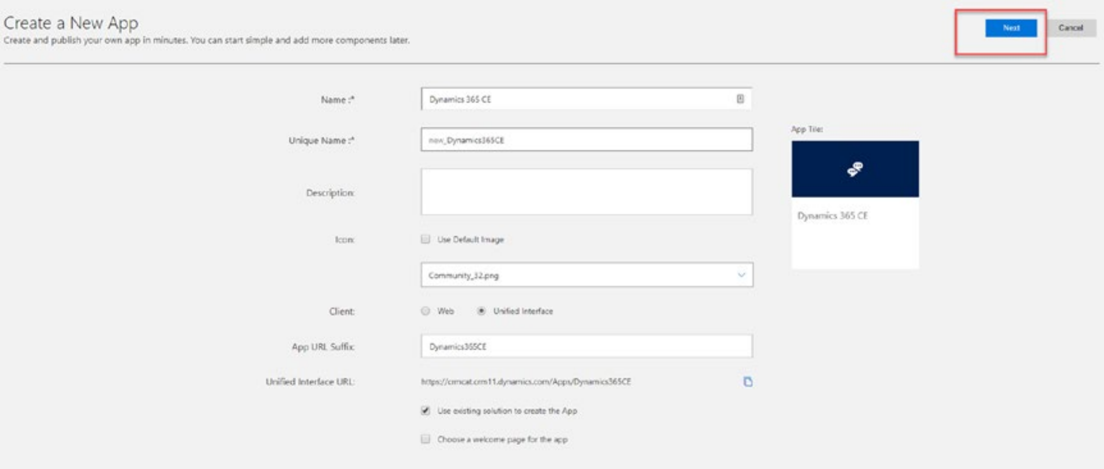
App URL Suffix:

☐ Use existing solution to create the App

☐ Choose a welcome page for the app

Figure 10-9. *Configuration details being entered for a new app*

Click the Next button once the initial app details have been completed, as shown in Figure 10-10.



Create a New App

Create and publish your own app in minutes. You can start simple and add more components later.

Name :* Dynamics 365 CE

Unique Name :* new_Dynamics365CE

Description:

Icon: ☐ Use Default Image

Community_32.png

Client: ○ Web ● Unified Interface

App URL Suffix: Dynamics365CE

Unified Interface URL: https://crmcat.crm11.dynamics.com/Apps/Dynamics365CE

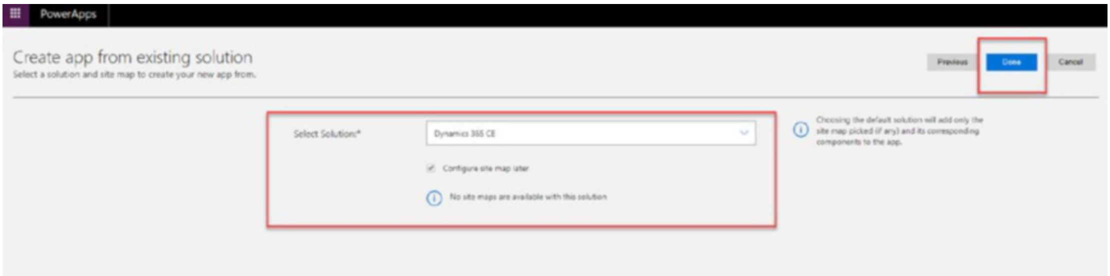
☑ Use existing solution to create the App

☐ Choose a welcome page for the app

Figure 10-10. *Configuration details completed for the initial app information*

4. As the "Use Existing Solution" option was selected, the next page will be a solution-selection prompt. If you have a sitemap component in the selected solution, you can choose to select this for the initial sitemap of the app and don't need to set it up within the App Designer, as it would be already made.

5. Once the solution has been selected, as shown in Figure 10-11, click “Done”.



Create app from existing solution
Select a solution and site map to create your new app from.

Select Solution*: Dynamics 365 CE

☑ Configure site map later

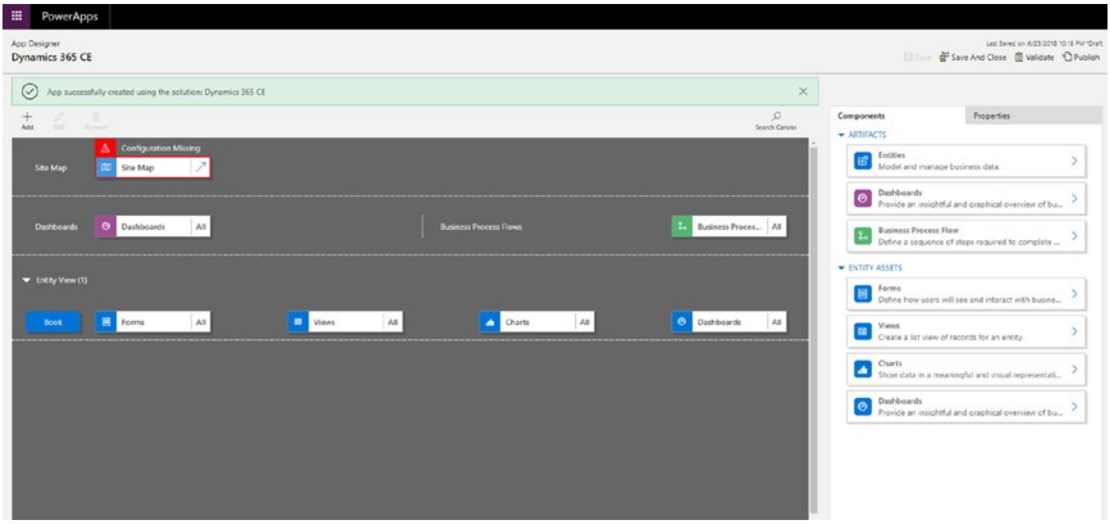
No site maps are available with this solution

Choosing the default solution will add only the site map picked (if any) and its corresponding components to the app.

PowerApps
Previous
Done
Cancel

Figure 10-11. *Select the solution used to create the app*

This will create the app and load the App Designer, as shown in Figure 10-12, giving a success message that the solution has been used.



App Designer
Dynamics 365 CE

App successfully created using the solution: Dynamics 365 CE

PowerApps
Save
Save And Close
Validate
Publish
Add
Edit
Remove
Search Canvas
Configuration Missing
Site Map
Site Map
Dashboards
Dashboards
All
Business Process Flows
Business Proces...
All
Entity View (1)
Book
Forms
All
Views
All
Charts
All
Dashboards
All
Components
Properties
ARTIFACTS
Entities
Model and manage business data.
Dashboards
Provide an insightful and graphical overview of bu...
Business Process Flow
Define a sequence of steps required to complete ...
ENTITY ASSETS
Forms
Define how users will see and interact with busine...
Views
Create a list view of records for an entity.
Charts
Show data in a meaningful and visual representati...
Dashboards
Provide an insightful and graphical overview of bu...

Figure 10-12. *A new app created within Dynamics 365 with no components yet configured*

Sitemap Designer

In a newly created app, the sitemap will display a warning that the "Configuration is Missing," as shown in Figure 10-13. This warning means that the app cannot be published since a sitemap does not yet exist, and one is required in order for a user to use the application; it must now be configured. Adding the sitemap should be the first task you complete in a newly built app because it saves time. By configuring the sitemap to include the components, such as entities, it automatically adds them to the application.

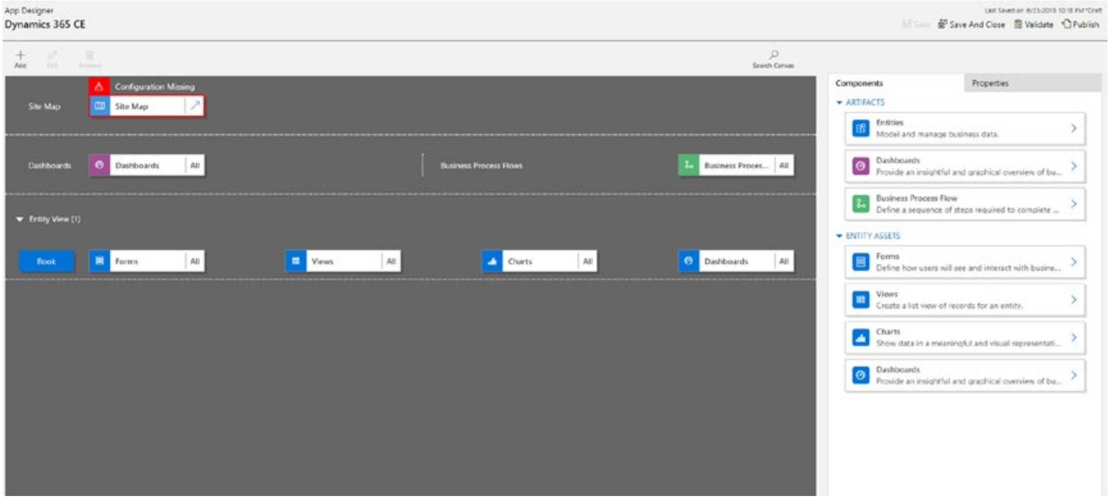

App Designer
Dynamics 365 CE
Save And Close
Validate
Publish
Add
Search Canvas
Configuration Missing
Site Map
Site Map
Dashboards
Dashboards
All
Business Process Flows
Business Proces...
All
Entity View (1)
Book
Forms
All
Views
All
Charts
All
Dashboards
All
Components
Properties
ARTIFACTS
Entities
Model and manage business data.
Dashboards
Provide an insightful and graphical overview of bu...
Business Process Flow
Define a sequence of steps required to complete ...
ENTITY ASSETS
Forms
Define how users will see and interact with busine...
Views
Create a list view of records for an entity.
Charts
Show data in a meaningful and visual representati...
Dashboards
Provide an insightful and graphical overview of bu...

Figure 10-13. *"Configuration Missing" warning in the App Designer for the sitemap*

1. Click the diagonal arrow on the Sitemap component within the App Designer, shown in Figure 10-14, to open the Sitemap Designer. This will allow users to configure the initial records to include in the navigational area of the app.

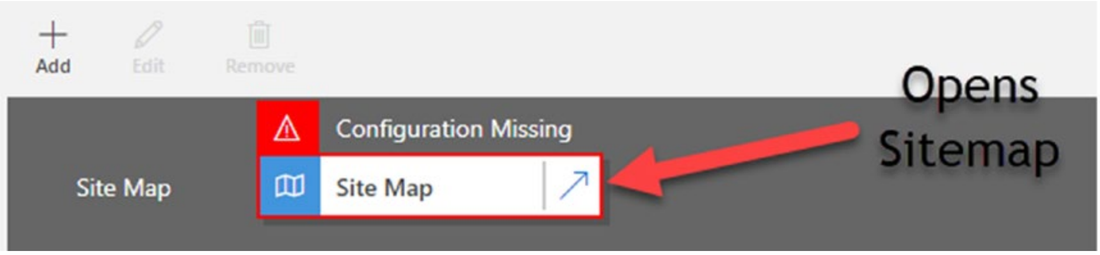
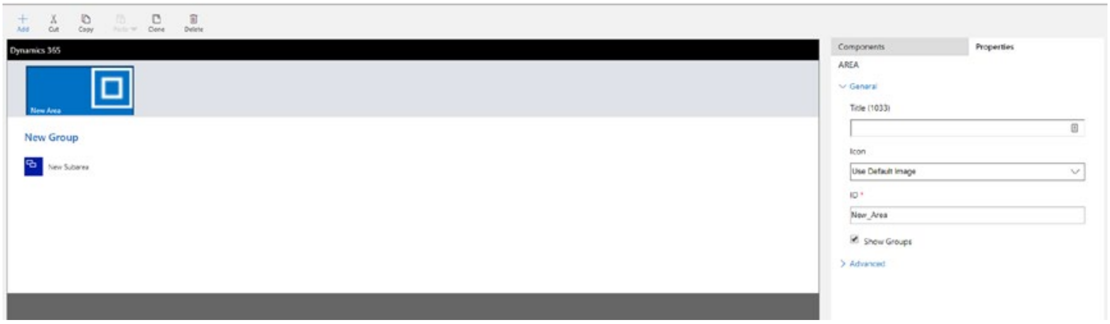

Add
Edit
Remove
Configuration Missing
Site Map
Site Map
Opens
Sitemap

Figure 10-14. *Open the sitemap*

Clicking the diagonal arrow will open the Sitemap Designer so you can start adding components that users will be able to use to navigate the solution. The Sitemap Designer is displayed in the format of the Classic Interface, but for those apps that are configured using the Unified Client it will be displayed differently, using a horizontal format. See the diagram later in this chapter for a comparison of the Classic Interface sitemap versus the Unified Interface sitemap in Figures 10-22 to 10-28.

The sitemap allows the user to configure the following (Figure 10-15):

- **Areas** – These are the top-level "folders" that reveal the groups and sub-areas.
- **Groups** – These are collections of sub-areas that live under an area. There can be many groups in an area.
- **Sub-area** – A clickable item such an entity type or dashboard



Title (1033)

Icon: Use Default Image

ID *: New_Area

☑ Show Groups

Figure 10-15. *Sitemap Designer with a single area, group, and sub-area*

When the sitemap first opens, it contains a single area, group, and sub-area. The Sitemap Designer is a drag-and-drop interface similar to the Process Designer. You can select the Components tab on the right-hand side, hold down a left-mouse click on a component, and drag it onto the next available space for that component type (Figure 10-16).

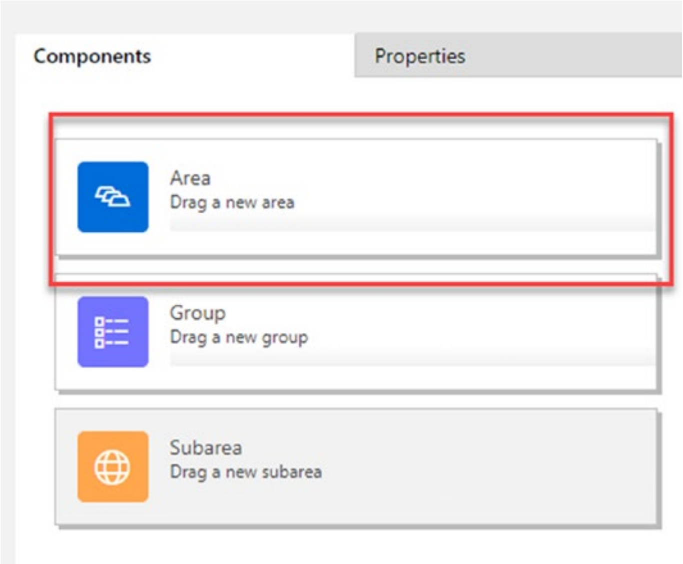
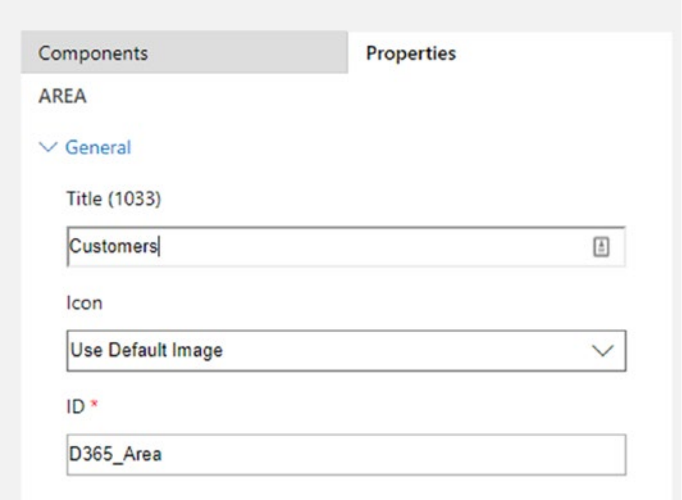


Figure 10-16. *Selecting a component in the Component tab on the right-hand side panel within the Sitemap Designer*

The minimum amount of information required when configuring an area or a group is the title on the right-hand side under "Properties" (Figure 10-17). When you configure a sub-area you need to specify if that sub-area is a dashboard, entity, web resource, or URL. Here is a brief description of these types:

- **Entities** – All available entities are available for selection.
- **Dashboard** – Select a dashboard as well as which dashboard the item would take the user to by default when they select it
- **Web Resource** (e.g., an HTML page) – You must select the web resource. Parameters can be passed to it; e.g. scripts.
- ***URL*** – A URL to another site or internal site to Dynamics 365 CE (e.g., another app, should the user have permissions). Parameters can also be passed here.


Components
Properties
AREA
General

Title (1033): Customers

Icon: Use Default Image

ID *: D365_Area

Figure 10-17. *Configuring a component's properties within the "Properties" pane on the right-hand side of the designer*

You can also use the toolbar at the top of the Sitemap Designer to edit and add components to the sitemap rather than using the drag-and-drop tool, as shown in Figure 10-18. In particular, the Clone and Copy/Paste tools are useful when editing larger sitemaps.

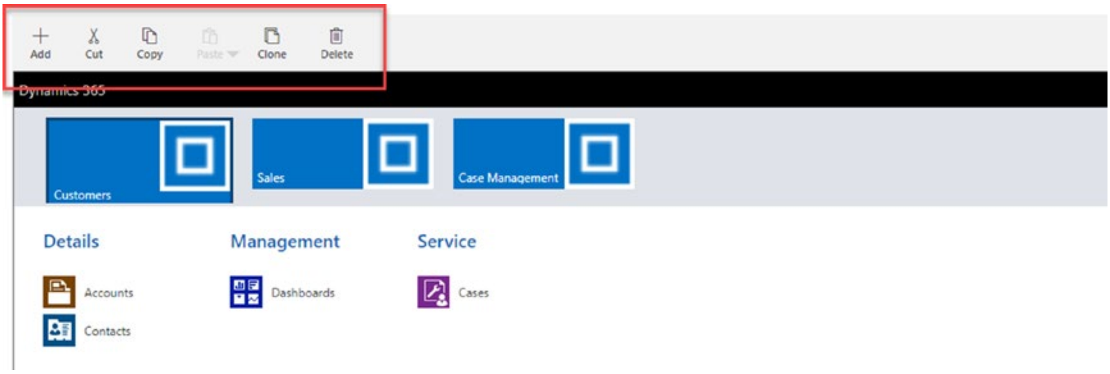

Add
Cut
Copy
Paste
Clone
Delete
Dynamics 365
Customers
Sales
Case Management
Details
Accounts
Contacts
Management
Dashboards
Service
Cases

Figure 10-18. *Toolbar within the Sitemap Designer*

The Clone and Copy/Paste functions offer very similar functionality; however, Clone will copy and paste a group or sub-area in one click to the right or bottom of the selected item. Copy/Paste allows a user more control over where the pasted item will go, as seen in Figure 10-19.

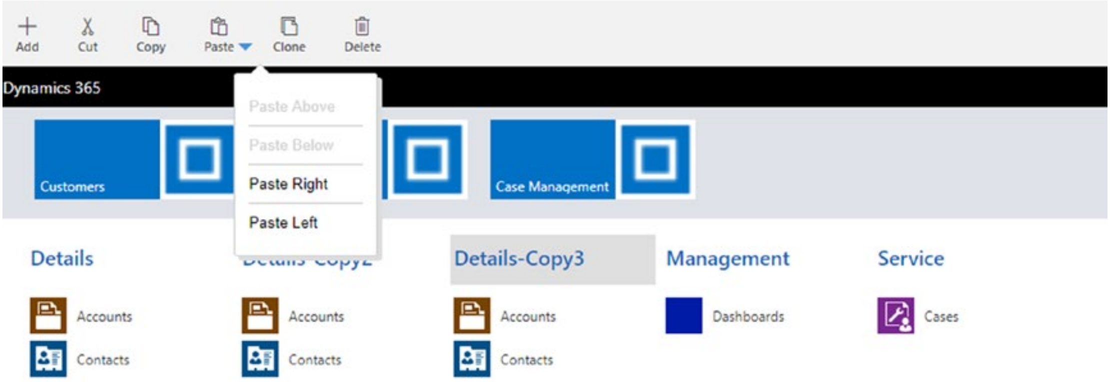

Add
Cut
Copy
Paste
Clone
Delete
Dynamics 365
Paste Above
Paste Below
Paste Right
Paste Left
Customers
Case Management
Details
Details-Copy2
Details-Copy3
Management
Service
Accounts
Contacts
Accounts
Contacts
Accounts
Contacts
Dashboards
Cases

Figure 10-19. *Using Copy and Paste functions within the toolbar of the Sitemap Designer*

2. Configure three areas.
3. Configure a group per area.
4. Add two entities per group.
5. Once completed, click “Save” and then click “Publish” (Figure 10-20). Note: Even if the designer displays “published,” this still needs to be done when edits have been made.

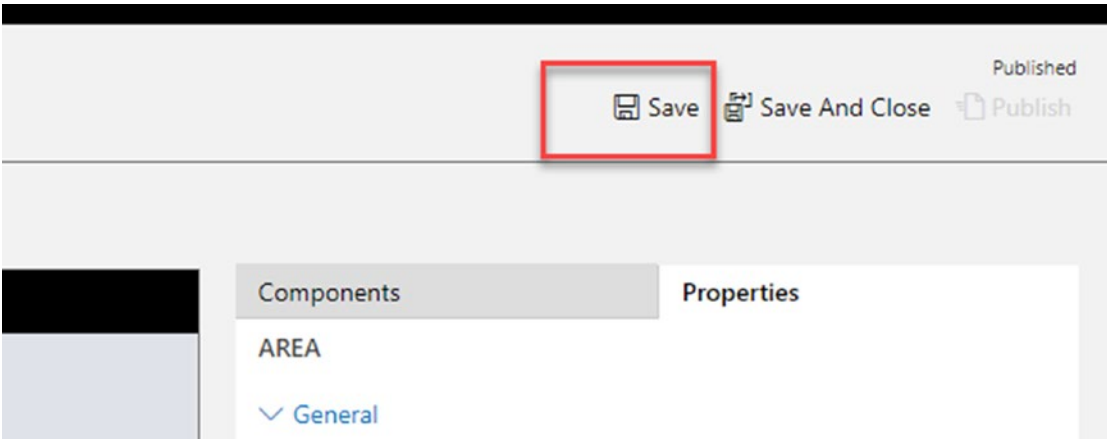

Published
Save
Save And Close
Publish
Components
Properties
AREA
General

Figure 10-20. *Save and publish the sitemap in the top-right corner of the screen*

Once the sitemap has been published and then closed, the App Designer remains open. The components that were selected in the Sitemap Designer but were not already within the app are now included within the Entity view, shown in Figure 10-21.

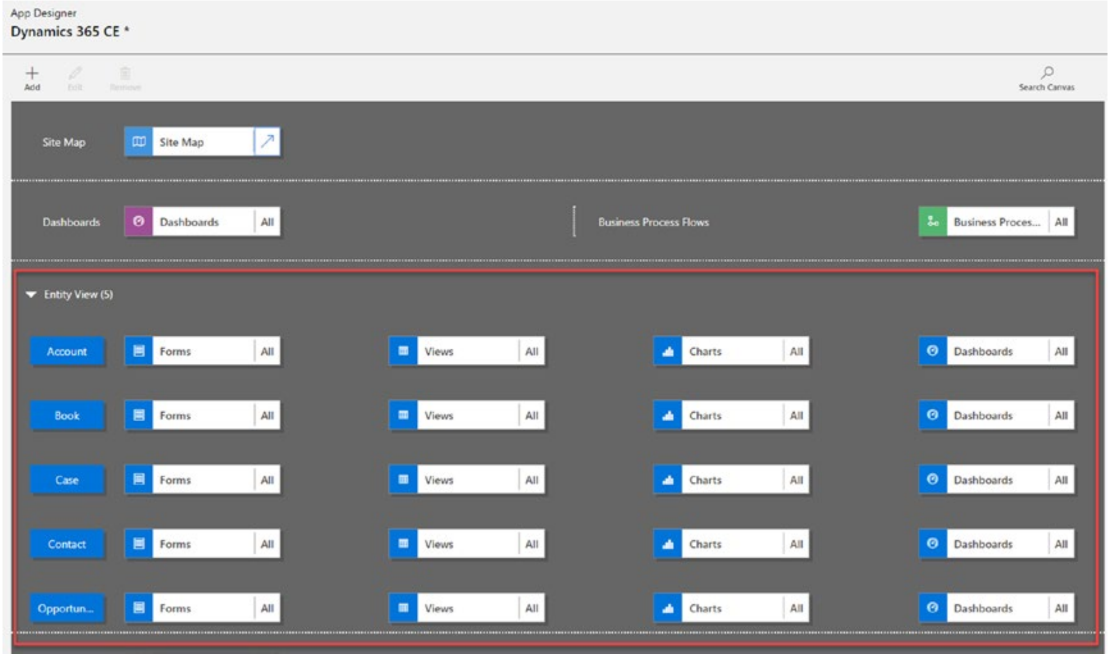

App Designer
Dynamics 365 CE *
Add
Edit
Remove
Search Canvas
Site Map
Site Map
Dashboards
Dashboards
All
Business Process Flows
Business Proces...
All
Entity View (5)
Account
Book
Case
Contact
Opportun...
Forms
All
Views
All
Charts
All
Dashboards
All

Figure 10-21. *Additional components added within the App Designer from the configuration of the sitemap*

Classic Sitemap Versus Unified Interface Sitemap

The sitemaps in the Classic UI and the Unified Interface look different. This section details how the Sitemap Designer and Unified Client display the area, group, and sub-area components to the user. This will be a particularly useful reference when designing apps.

Areas

Areas are displayed horizontally within the Sitemap Designer (Figure 10-22).

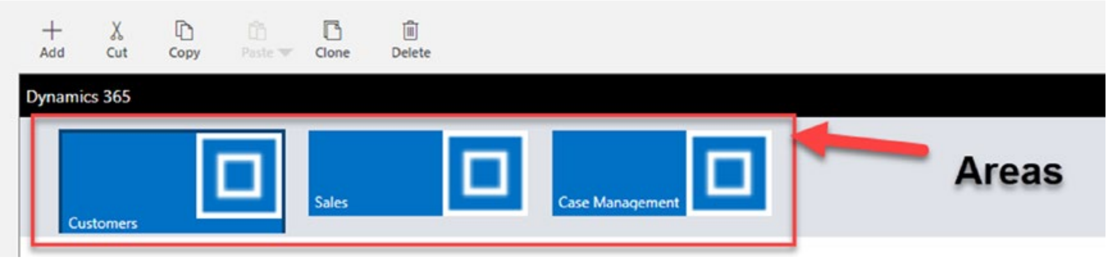
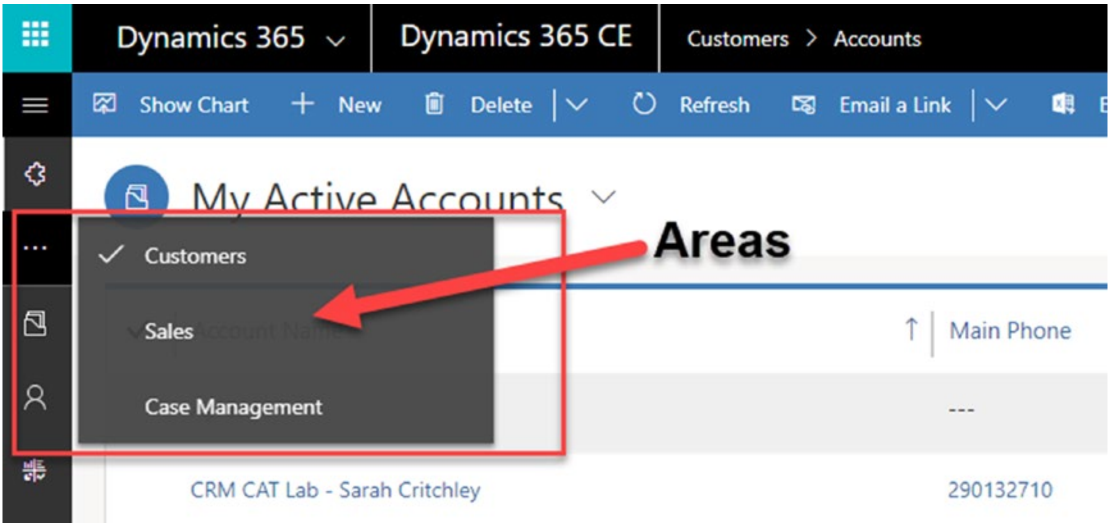

Add
Cut
Copy
Paste
Clone
Delete
Dynamics 365
Customers
Sales
Case Management
Areas

Figure 10-22. Areas within the Sitemap Designer

They are displayed vertically under the "..." button within the vertical sitemap in the Unified Interface (Figure 10-23).


Dynamics 365
Dynamics 365 CE
Customers > Accounts
Show Chart
New
Delete
Refresh
Email a Link
My Active Accounts
Areas
Customers
Sales
Case Management
Main Phone

CRM CAT Lab - Sarah Critchley
290132710

Figure 10-23. Areas displayed in the Unified Interface

Groups

Groups are displayed in columns within the specific area within the Sitemap Designer (Figure 10-24).

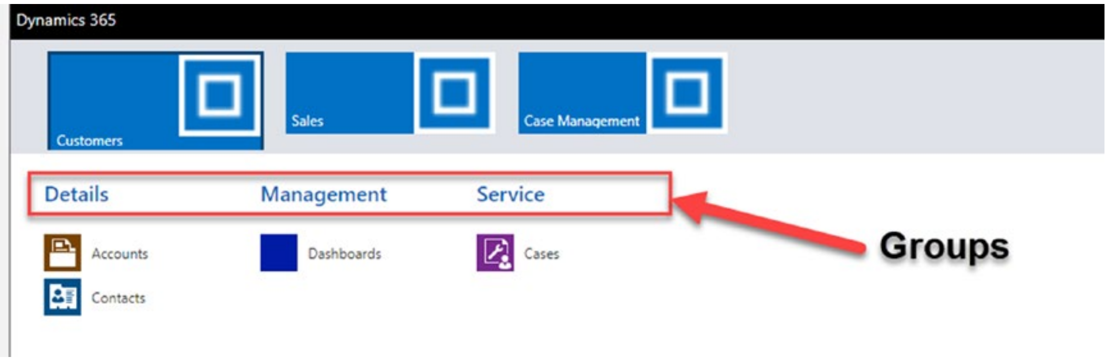

Dynamics 365
Customers
Sales
Case Management
Details
Management
Service
Accounts
Contacts
Dashboards
Cases
Groups

Figure 10-24. *Groups displayed in the Sitemap Designer*

Groups are displayed in bolded headings within each selected area in the Unified Interface, as seen in Figure 10-25.

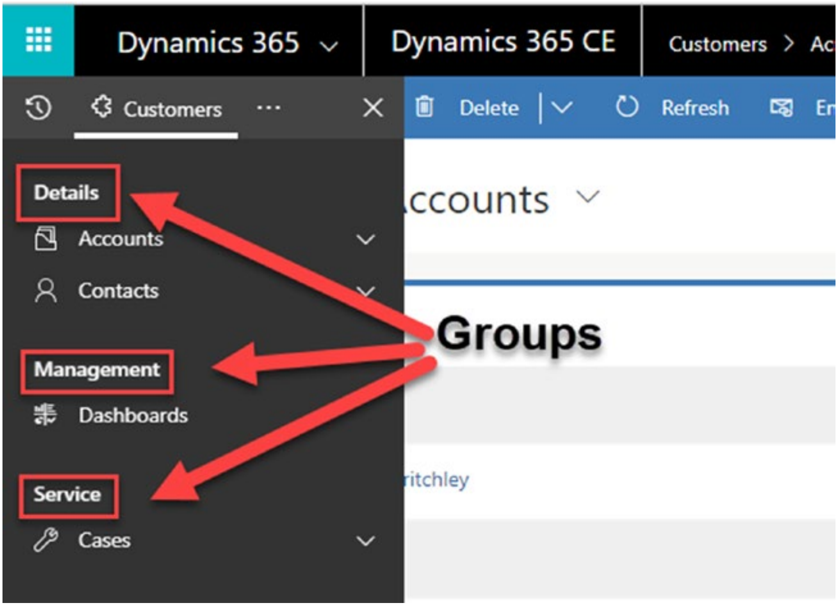

Dynamics 365
Dynamics 365 CE
Customers > Ac
Customers
Delete
Refresh
Details
Accounts
Contacts
Management
Dashboards
Service
Cases
ccounts
Groups
ritchley

Figure 10-25. *Groups displayed in the Unified Interface*

Sub-areas

Sub-areas are specific items within each group that lead, normally, to an entity and are displayed within the Group column in the Sitemap Designer (Figure 10-26).

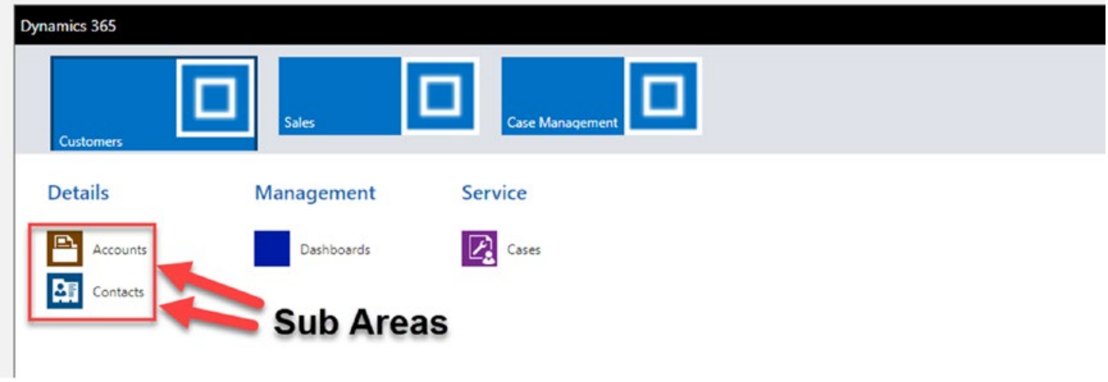

Dynamics 365
Customers
Sales
Case Management
Details
Management
Service
Accounts
Contacts
Dashboards
Cases
Sub Areas

Figure 10-26. Sub-areas defined in the Sitemap Designer

Sub-areas are displayed under the group within the Unified Interface sitemap, as shown in Figure 10-27.

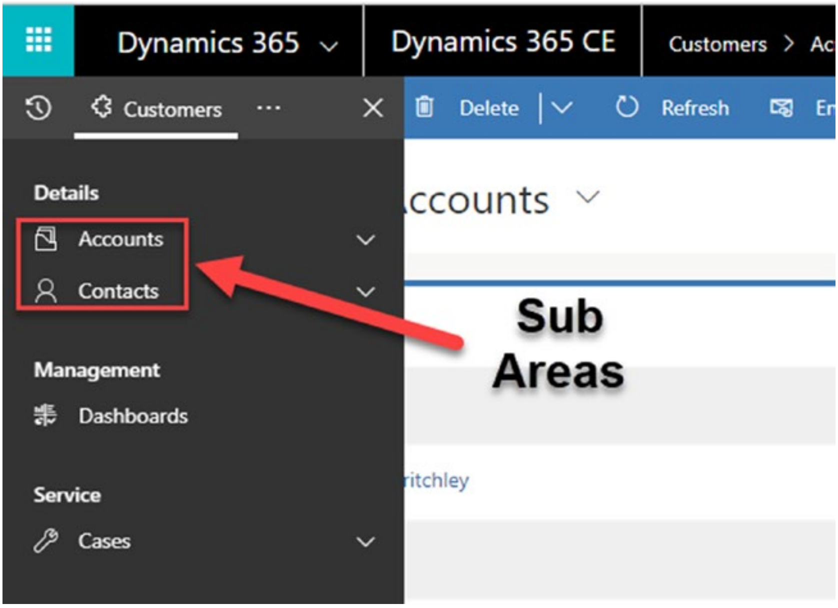
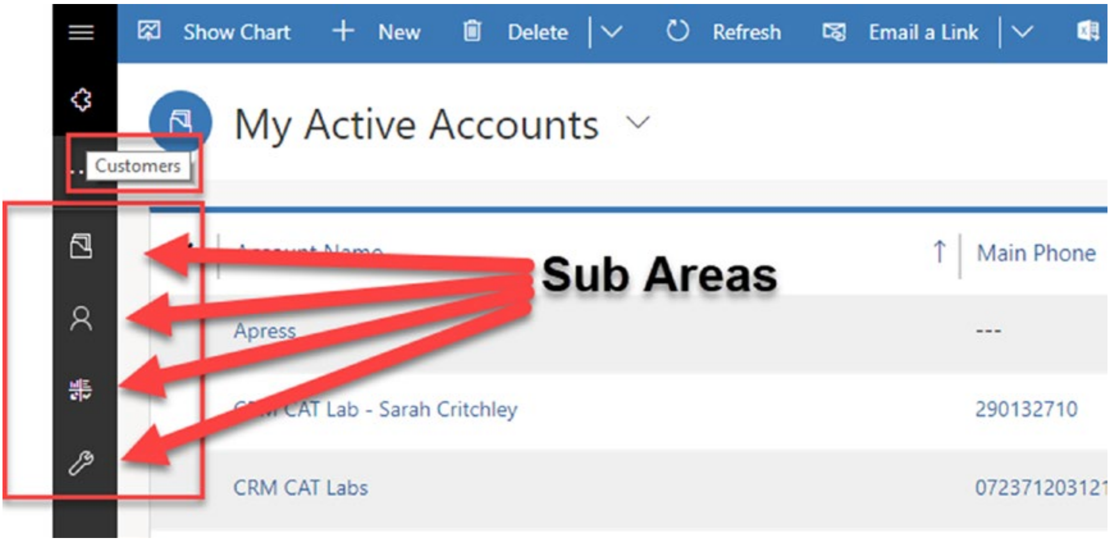

Dynamics 365
Dynamics 365 CE
Customers > Ac
Customers
Delete
Refresh
Er
ccounts
Details
Accounts
Contacts
Management
Dashboards
Service
Cases
Sub Areas
ritchley

Figure 10-27. Sub-areas displayed in the sitemap in the Unified Interface

Sub-areas can also be found as their icon, as defined in the entity definition, within the vertical navigation in the Unified Interface, shown in Figure 10-28.


Show Chart
New
Delete
Refresh
Email a Link
My Active Accounts
Customers
Sub Areas
Account Name
Main Phone
Apress

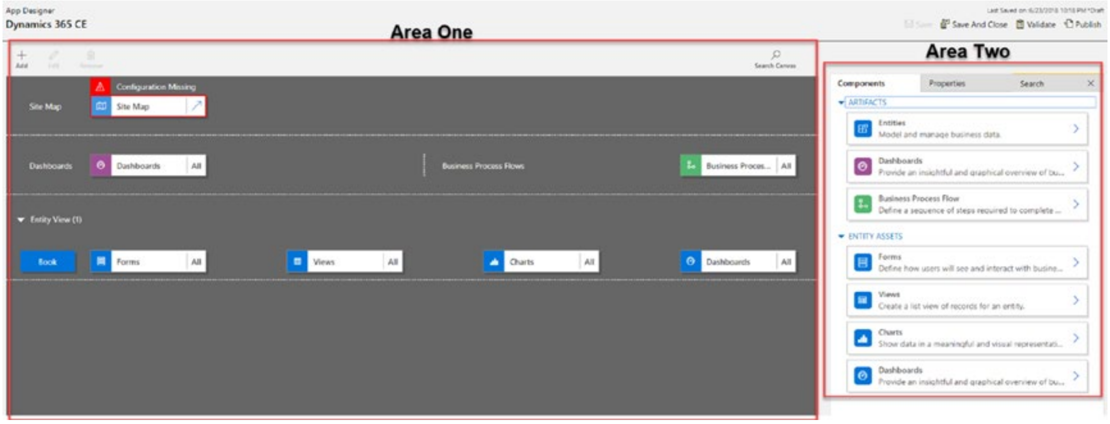
CRM CAT Lab - Sarah Critchley
290132710
CRM CAT Labs
07237120312

Figure 10-28. *Sub-areas are also displayed vertically within the Unified Interface*

Configuring an App

Once the sitemap is created, other tasks include adding additional components such as entities, dashboards, and business process flows. There are two main ways to do this within the App Designer, shown in Figure 10-29 as "Area One" and "Area Two." Area One is the app-design area, where you can use controls such as the toolbar options and components to drive the component configuration. Area Two is the app-defintion area, where you can select items from Area One, such as entitles, dashboards or business process flows, and then select specific components to add or modify, such as the forms and views of what a user of the app would be able to use (Figure 10-30).

The toolbox available in Area One is the only area in which the entity definition can be edited, achieved by selecting the entity name on the App Designer board. Area Two is the only area where a new item can be created directly from the component area.


App Designer
Dynamics 365 CE
Area One
Last Saved on 6/23/2018 10:18 PM *Draft
Save
Save And Close
Validate
Publish
Area Two
Add
Edit
Remove
Search Canvas
Configuration Missing
Site Map
Site Map
Dashboards
Dashboards
All
Business Process Flows
Business Proces...
All
Entity View (1)
Book
Forms
All
Views
All
Charts
All
Dashboards
All
Components
Properties
Search
ARTIFACTS
Entities
Dashboards
Business Process Flow
ENTITY ASSETS
Forms
Views
Charts
Dashboards

Entities: Model and manage business data.
Dashboards: Provide an insightful and graphical overview of bu...
Business Process Flow: Define a sequence of steps required to complete ...
Forms: Define how users will see and interact with busine...
Views: Create a list view of records for an entity.
Charts: Show data in a meaningful and visual representati...
Dashboards: Provide an insightful and graphical overview of bu...

Figure 10-29. *App Designer breakdown*

The “Edit” and “Remove” options within the toolbox in Area One are available only when selecting an entity name itself so you can edit the definition of the entity. (Note: Any changes made change it for all apps where this is available, not just the app being edited.)

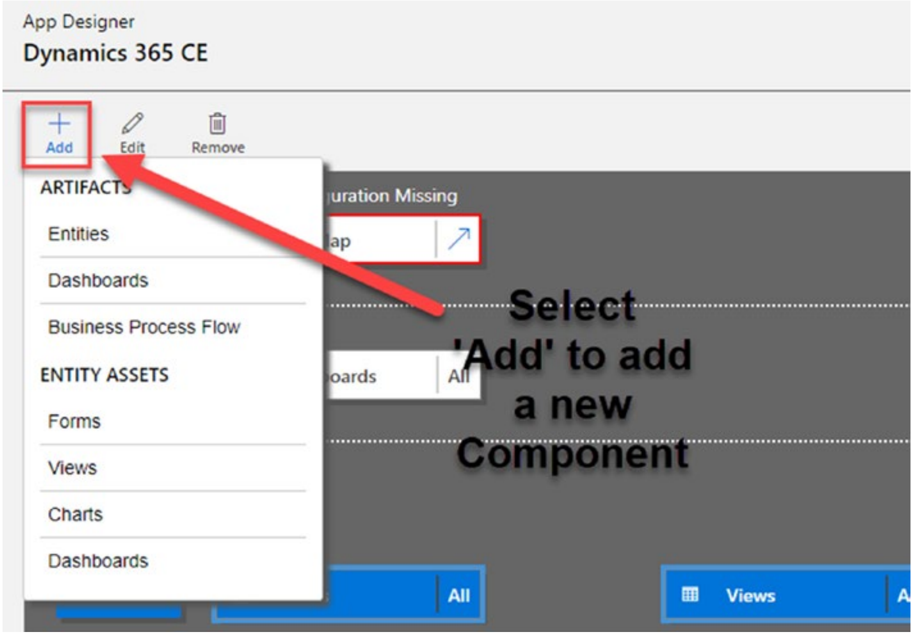
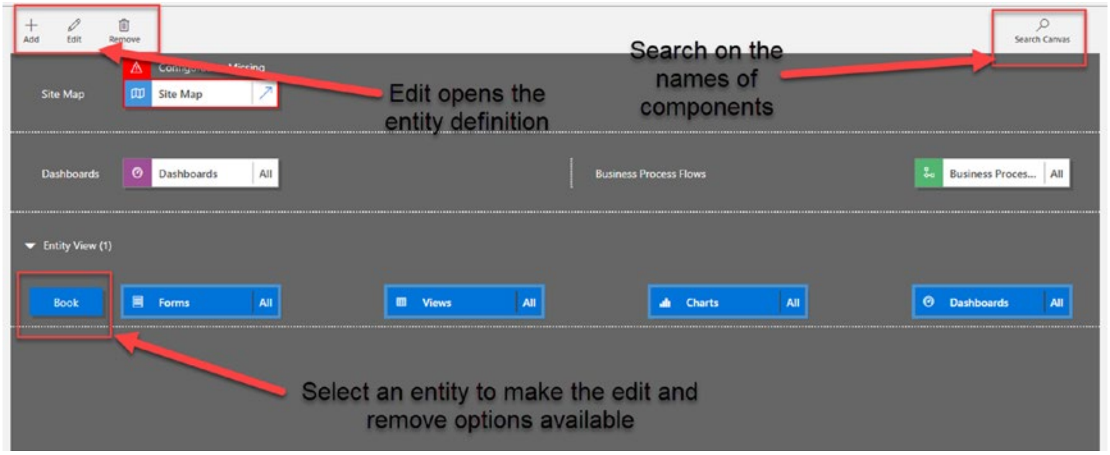

App Designer
Dynamics 365 CE
Add
Edit
Remove
ARTIFACTS
Entities
Dashboards
Business Process Flow
ENTITY ASSETS
Forms
Views
Charts
Dashboards
uration Missing
ap
oards
All
All
Views
A
Select 'Add' to add a new Component

Figure 10-30. *Adding items to an app*

Users can select components in Area One, such as dashboards, business process flows, forms, views, charts, and dashboards, to then edit the components in the right-hand side of Area Two. This is shown in Figure 10-31.


Add
Edit
Remove
Search Canvas
Site Map
Site Map
Dashboards
Dashboards
All
Business Process Flows
Business Proces...
All
Entity View (1)
Book
Forms
All
Views
All
Charts
All
Dashboards
All

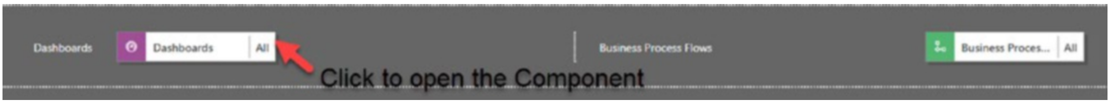
Edit opens the entity definition

Search on the names of components

Select an entity to make the edit and remove options available

Figure 10-31. *Modifying components within an app*

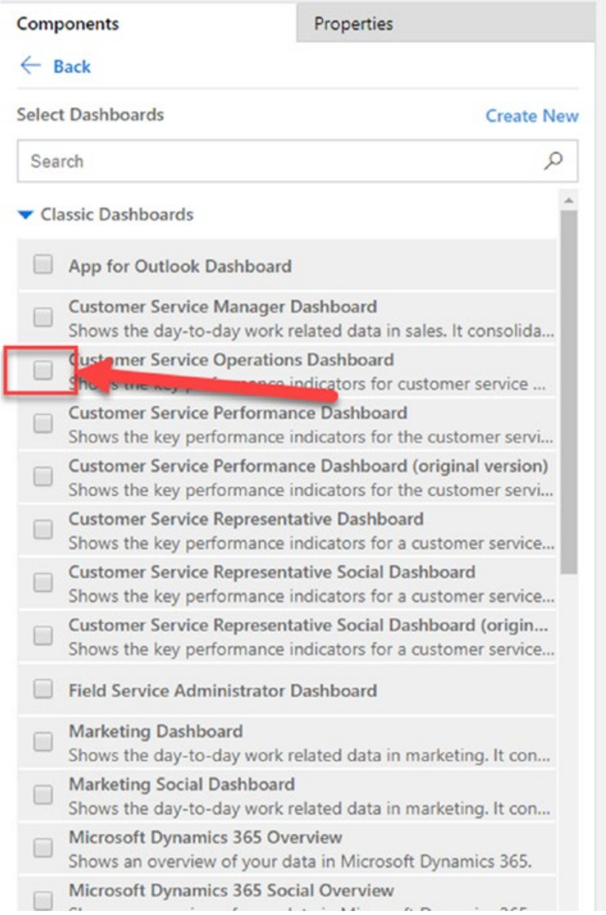
Selecting a component, seen in Figure 10-32, opens a checklist, where you can select what will be included within the app (Figure 10-33). From here, an additional item of that type (e.g., a view) can be created by selecting "Create New" and will be made within the solution that was selected at the time of app creation (including the prefix of the publisher within that solution). For example, a user can select "Forms" on the Account entity within the app and click "Create New" on the right-hand side panel. This will create a new type of form under the Account entity within the solution linked to the app.


Dashboards
Dashboards
All
Business Process Flows
Business Proces...
All

Click to open the Component

Figure 10-32. *Selecting a component*

The right-hand side pane in the App Designer, Area Two, allows a user to add new artefacts and assets. Selecting the arrows under these areas allows you to add and edit items of this type within the app.



Components | Properties

Back

Select Dashboards

Create New

Search

Classic Dashboards

☐ App for Outlook Dashboard

☐ Customer Service Manager Dashboard
Shows the day-to-day work related data in sales. It consolida...

☐ Customer Service Operations Dashboard
Shows the key performance indicators for customer service ...

☐ Customer Service Performance Dashboard
Shows the key performance indicators for the customer servi...

☐ Customer Service Performance Dashboard (original version)
Shows the key performance indicators for the customer servi...

☐ Customer Service Representative Dashboard
Shows the key performance indicators for a customer service...

☐ Customer Service Representative Social Dashboard
Shows the key performance indicators for a customer service...

☐ Customer Service Representative Social Dashboard (origin...
Shows the key performance indicators for a customer service...

☐ Field Service Administrator Dashboard

☐ Marketing Dashboard
Shows the day-to-day work related data in marketing. It con...

☐ Marketing Social Dashboard
Shows the day-to-day work related data in marketing. It con...

☐ Microsoft Dynamics 365 Overview
Shows an overview of your data in Microsoft Dynamics 365.

☐ Microsoft Dynamics 365 Social Overview

Figure 10-33. *Selecting items to be included within the app*

Task: Add various components to your app.

Using the information in the previous section, add more components to your app using the App Designer.

1. Add a business process flow to your app.
2. Add an extra entity to your app.
3. Add two forms to your entity.

   Once the edits have been completed, it is recommended to review the sitemap once more to ensure the user experience is correct and contains all the record types and required components.

4. On the App Designer screen, select “Save” (Figure 10-34). The screen will go grey for a moment while the app saves.

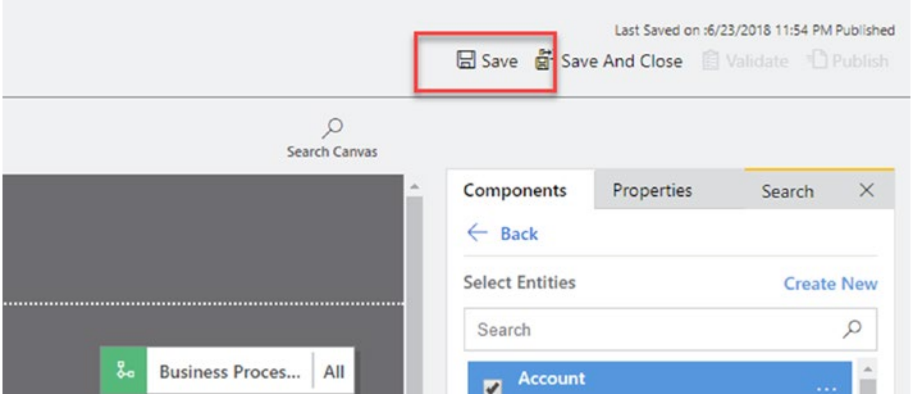

Last Saved on :6/23/2018 11:54 PM Published
Save
Save And Close
Validate
Publish
Search Canvas
Components
Properties
Search
Back
Select Entities
Create New
Search
Account
Business Proces...
All

Figure 10-34. *Saving your app*

If the App Designer is closed at this point, the app will be available to edit under the “Unpublished” section of “My Apps” within the Classic UI.

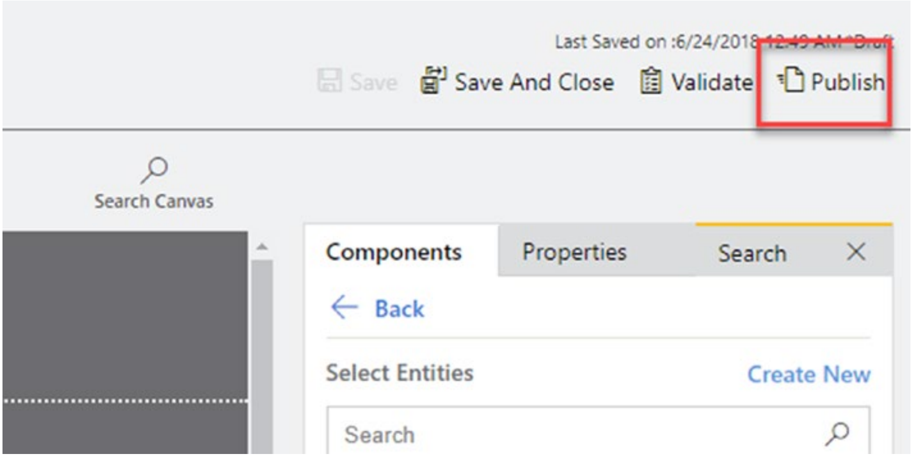
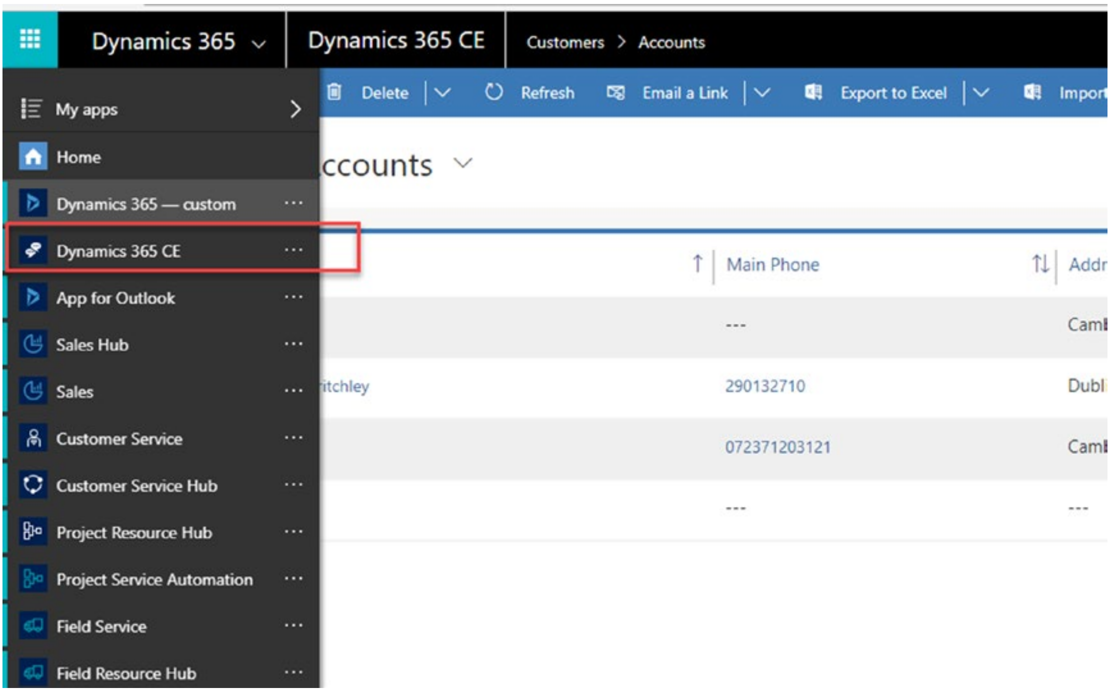

Last Saved on :6/24/2018 12:49 AM *Draft
Save
Save And Close
Validate
Publish
Search Canvas
Components
Properties
Search
Back
Select Entities
Create New
Search

Figure 10-35. *Ensure the app is published for use by users of the system*

5. Once saved, the app can be published for use by other users. This can be done by clicking "Publish" (Figure 10-35). The app will now be available for use under the "Published Apps" section or the main sitemap in the Custom Client (Figure 10-36).


Dynamics 365
Dynamics 365 CE
Customers > Accounts
Delete
Refresh
Email a Link
Export to Excel
Impor
My apps
Home
Dynamics 365 — custom
Dynamics 365 CE
App for Outlook
Sales Hub
Sales
Customer Service
Customer Service Hub
Project Resource Hub
Project Service Automation
Field Service
Field Resource Hub
ccounts
Main Phone
Addr

Cam
itchley
290132710
Dubl
072371203121
Cam

Figure 10-36. *Once published, the app is available in the app selector on the main sitemap*

App Security

When an app is in either an unpublished or published state, the security can be configured for the app from the App Designer screen.

Task: Configure security roles for an app.

1. Navigate to the Classic Interface and the "My Apps" area via Settings.

2. Locate the app created in the previous section to configure and select "Manage Roles," which can be found on the action menu ("...") as shown in Figure 10-37.

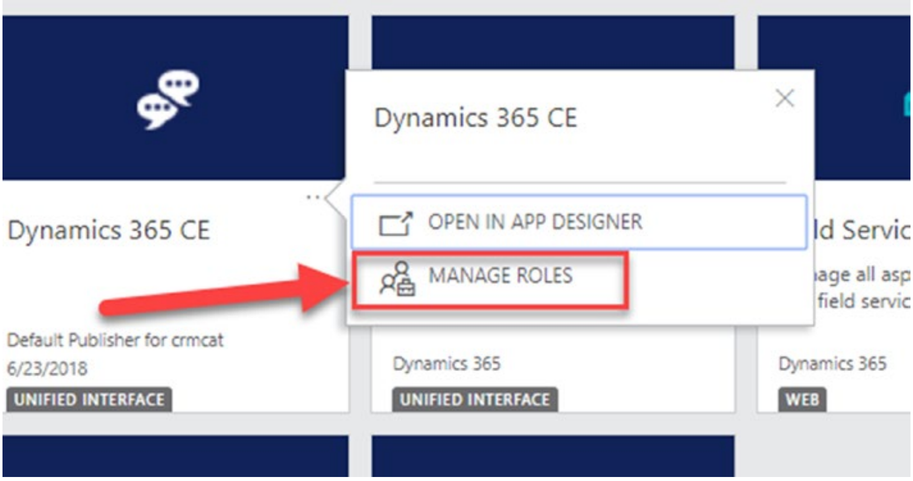
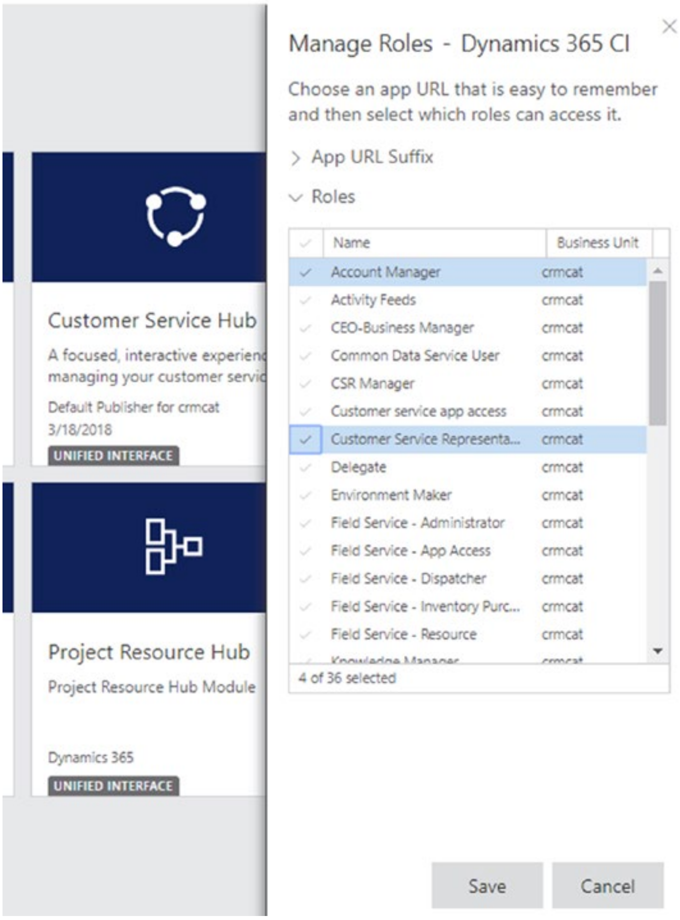

Dynamics 365 CE
Dynamics 365 CE
OPEN IN APP DESIGNER
MANAGE ROLES
Default Publisher for crmcat
6/23/2018
UNIFIED INTERFACE
Dynamics 365
UNIFIED INTERFACE
Dynamics 365
WEB

Figure 10-37. *Click "Managed Roles" to modify the security roles that have access to the app*

The Security Role list opens on the right-hand side of the screen and is where security roles can be granted access to the app (Figure 10-38). If a user has at least one of the security roles selected, the app will be made available to the user. If the user does not have "Read" access to any of the entities within the app, they will not see those entities—the same security privileges and access apply. For more information on security and functionality within this area, see Chapter 5, "Security."

3. Select a security role for the user to allow access to the app and click "Save."



Manage Roles - Dynamics 365 CI

Choose an app URL that is easy to remember and then select which roles can access it.

> App URL Suffix

Roles

✓	Name	Business Unit
✓	Account Manager	crmcat
	Activity Feeds	crmcat
	CEO-Business Manager	crmcat
	Common Data Service User	crmcat
	CSR Manager	crmcat
	Customer service app access	crmcat
✓	Customer Service Representa...	crmcat
	Delegate	crmcat
	Environment Maker	crmcat
	Field Service - Administrator	crmcat
	Field Service - App Access	crmcat
	Field Service - Dispatcher	crmcat
	Field Service - Inventory Purc...	crmcat
	Field Service - Resource	crmcat
	Knowledge Manager	crmcat

4 of 36 selected

Customer Service Hub
A focused, interactive experien
managing your customer servic
Default Publisher for crmcat
3/18/2018
UNIFIED INTERFACE
Project Resource Hub
Project Resource Hub Module
Dynamics 365
UNIFIED INTERFACE
Save
Cancel

Figure 10-38. *Select from the list of security roles on the right-hand side pane and save the changes*

Apps on Mobile

In version 9.0 of Dynamics 365 CE, the only apps available on mobile are those built on the Unified Interface client. This is inclusive of the mobile app downloaded from the device store—for example, the Play store—and of when the application is accessed on the browser via the mobile device.

Editing an Existing App

To edit an existing app, navigate to “My Apps” from the Classic Client under the “Settings” area or navigate to the App Selector in the Unified Client and select the action “...” button in the app to open a sub-menu with the option “Open in App Designer” (Figure 10-39). Select this option to open the App Designer for the selected app. The app can be edited in the same way as it was created, where it was created and modified. Remember to publish any changes. At the time of writing, there is no way to clone or version an app.

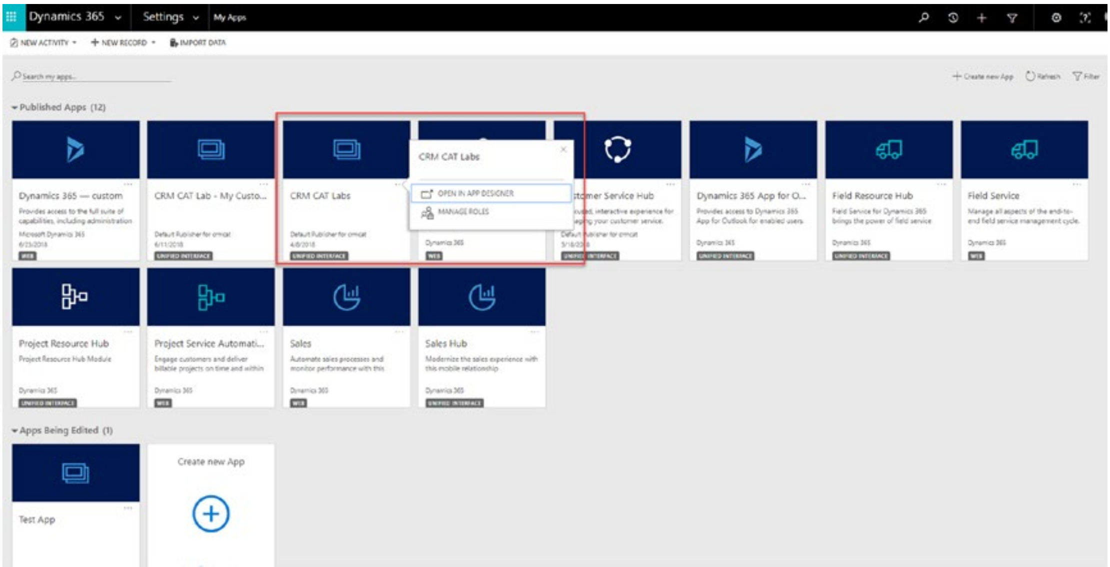

Dynamics 365
Settings
My Apps
NEW ACTIVITY
NEW RECORD
IMPORT DATA
Search my apps...
Create new App
Refresh
Filter
Published Apps (12)
Dynamics 365 — custom
CRM CAT Lab - My Custo...
CRM CAT Labs
CRM CAT Labs
OPEN IN APP DESIGNER
MANAGE ROLES
stomer Service Hub
Dynamics 365 App for O...
Field Resource Hub
Field Service
Project Resource Hub
Project Service Automati...
Sales
Sales Hub
WEB
UNIFIED INTERFACE
Apps Being Edited (1)
Test App
Create new App

Figure 10-39. *Select an app and click “Open in App Designer” to modify*

Summary

App modules within Dynamics 365 CE are an exciting feature that allow for functionality to be encapsulated into purpose-built applications that can be enabled based on the organization’s security model. First-party apps, such as those for sales and customer service, are presented in the same way as custom-built app modules, giving users a consistent experience across Dynamics 365 CE. This chapter has covered the essentials of how to get started with app modules, how to add in components, and the comparability of the sitemaps between the Classic UI and the Unified Interface, making it a useful reference when creating app modules.

Chapter Tasks

At the end of every chapter, there will be a section that gives up to ten suggested tasks for you to complete within Dynamics 365 CE. These tasks will be based around the topics covered within the chapter and the further resources referenced at the end. They are aimed at expanding practical knowledge and application regarding those topics that go beyond reading about them.

1. Create a new unmanaged solution (and publisher).
2. Create a new app, linking the solution.
3. Modify and create a sitemap, using all the components.
4. Add more components into the app.
5. Publish the app.
6. Modify the security within the app.
7. Test the app.

Further Resources

Solutions in Dynamics 365 CE (Microsoft, 2018). URL: `https://docs.microsoft.com/en-us/dynamics365/customer-engagement/developer/package-distribute-extensions-use-solutions`

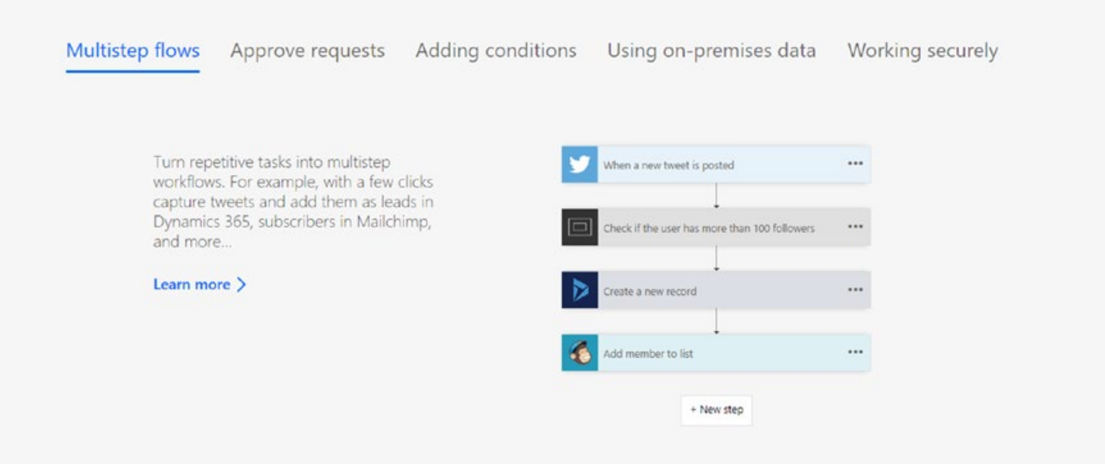
App Designer (Microsoft, 2018). URL: `https://docs.microsoft.com/en-us/dynamics365/customer-engagement/customize/design-custom-business-apps-using-app-designer`

Model Driven Apps (Microsoft, 2018). URL: `https://docs.microsoft.com/en-us/dynamics365/customer-engagement/customize/create-edit-app`

CHAPTER 11

Microsoft Flow

Microsoft Flow is a workflow tool that allows for the event-to-action-style automation of processes inside and outside of the Microsoft 365 suite of technologies. It offers external connectors and the capability for custom external connectors to be built to and from other technologies (Figure 11-1). This chapter will review the basics of Microsoft Flow and how to get started.


Multistep flows
Approve requests
Adding conditions
Using on-premises data
Working securely

Turn repetitive tasks into multistep workflows. For example, with a few clicks capture tweets and add them as leads in Dynamics 365, subscribers in Mailchimp, and more...

Learn more
When a new tweet is posted
Check if the user has more than 100 followers
Create a new record
Add member to list
+ New step

Figure 11-1. *Microsoft Flow*

Microsoft Flow can automate small tasks owned by the user as well as larger organizational tasks that are based around software implementations involving platforms such as Dynamics 365 CE (Figure 11-2). There is a large amount of flexibility within Microsoft Flow due to its capability to allow users to automate tasks, such as when an email is flagged to create a to-do item or even to send a notification to the user's phone when an email is received from their manager. Equally, utilizing it to perform more complex tasks, such as send HTTP requests and manage the response messages or connect to third-party providers such as MailChimp or Twitter, allows for a wider application of services, including using it in the context of Dynamics 365 CE.

© Sarah Critchley 2018
S. Critchley, *Dynamics 365 CE Essentials*, https://doi.org/10.1007/978-1-4842-3973-5_11

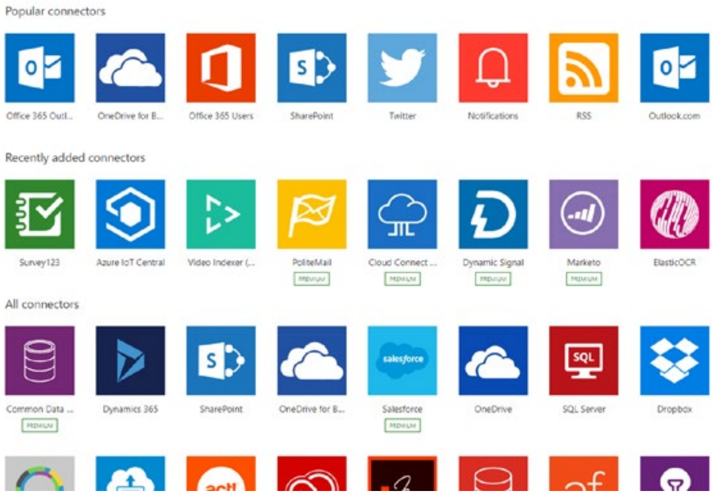

Popular connectors
Office 365 Outl...
OneDrive for B...
Office 365 Users
SharePoint
Twitter
Notifications
RSS
Outlook.com
Recently added connectors
Survey123
Azure IoT Central
Video Indexer (...
PoliteMail
PREMIUM
Cloud Connect ...
PREMIUM
Dynamic Signal
PREMIUM
Marketo
PREMIUM
ElasticOCR
All connectors
Common Data ...
PREMIUM
Dynamics 365
SharePoint
OneDrive for B...
Salesforce
PREMIUM
OneDrive
SQL Server
Dropbox

Figure 11-2. *Microsoft Flow has a vast number of connectors available*

Microsoft Flow is built on top of Azure Logic Apps. Readers who are aware of Logic Apps can bring their existing knowledge and easily get up to speed on using Flow with a minimal learning curve. The core differences between the two are the licensing models, the run limits, and the availability of connectors in different plans for Microsoft Flow.

A flow begins with a trigger, very similar to the workflow processes reviewed in Chapter 8. The trigger can be a manual trigger, where a user selects a button within the application or on their mobile. Alternatively, a trigger can also be an event within an application, such as an email is received or a record is created. The trigger kicks off an action. An action would normally either connect to another service to get information, post information, or otherwise do something. Before, after, or during the action, conditional modifiers can be added for each loop for managing multiple records and other logic to create more complex automation within the application. There are also actions that convert information to different formats. An example of this is “Parse JSON,” which converts JSON-formatted data, often used over HTTP requests, into fields that can be used in Flow. Various mathematical functions can also be performed on the data outside of the action context and within the context of the content blocks being used within the flow logic (Figure 11-3).

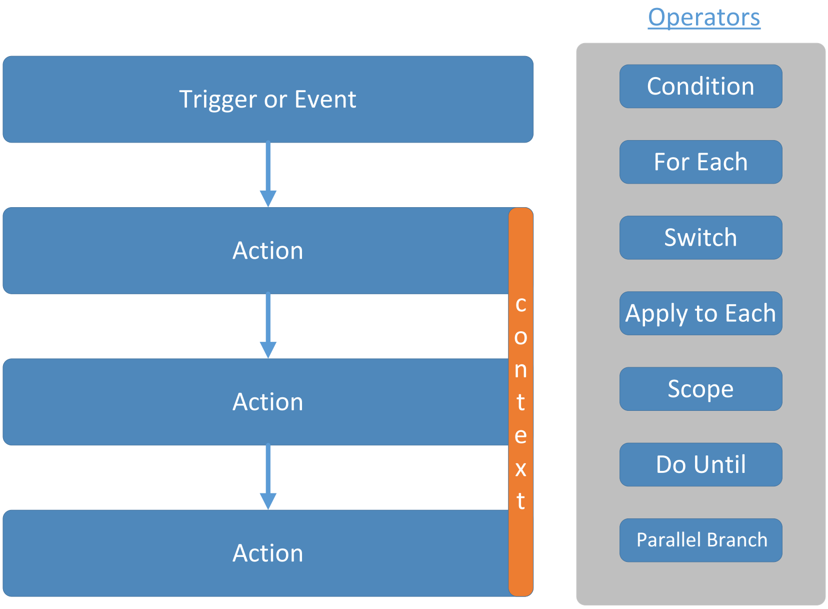


Figure 11-3. *Overview of a flow and what can be achieved within*

You can create a blank flow and start building business logic from scratch. Alternatively, you can use a pre-defined template, where the trigger, action, and sometimes a follow-up action have already been defined and only minor pieces of setup information require configuration.

Microsoft Flow also includes Flow approvals. Approvals allow for a self-contained “approval board” that displays pending approval items that have been assigned to that Office 365 user (normally a user or team). Within a flow, an approval item can be created and assigned to a user. The user can get a notification on their email, approval board, or phone (provided they have the Microsoft Flow mobile app) and approve the item with a small number of clicks. Business logic and rules can be added around the approval creation once it has been approved to further automate the process. For example, approval can trigger actions within Dynamics 365 CE, Outlook, or other systems that can then lead to further processes. Flow approvals simplify the mechanism of functionality for approving something within any scenario or industry and allow simple to more complex approval workflows to be built and easily modified should business requirements change over time.

The goal of Flow is to automate tasks that take time up for users and organizations in order to connect applications that would otherwise take development effort and possibly substantial amounts of time.

Microsoft Flow and Dynamics 365 CE

Microsoft Flow works together with Dynamics 365 CE to connect it to other applications, both those part of the Microsoft suite and those not. It improves the connectivity between the applications beyond that of the standard workflow processes within Dynamics 365 CE covered in Chapter 8. Dynamics 365 CE has introduced functionality to run flows from the application's UI itself. This feature is available only in specific countries at the time of writing; for more information, see the "Further Resources" section at the end of this chapter. It is expected to be expanded to include all geographical areas in time. Being able to run flows from within the Dynamics 365 CE experience allows users to quickly automate processes and expand the functionality using data from other applications or services that can assist them in their day-to-day tasks. This can include simple but powerful flows that automate their document management capabilities, get approvals for permission and sign off, or even trigger the retrieval of data and iterate upon collections of information. The ability to utilize flows within Dynamics 365 CE is enabled using the security privileges for the user's role and also by turning this feature on or off within System Settings.

At the time of writing, Microsoft Flow (and Canvas Apps) cannot be added to an app or a solution to export it as a single package of customizations or import it into other environments. This can hinder processes for moving customizations between development, QA, and production environments. There is currently, at the time of writing, functionality to export the .zip file of the flow and transition it from one environment to the other, albeit disconnected from the other customizations done within Dynamics 365 CE or the Common Data Service for Apps. The update scheduled for release in October 2018 will see this change and the capability for solution management for Microsoft Flow and PowerApps will be enabled, allowing them to be added into solutions together with other Dynamics 365 CE components, which would greatly increase the functionality and capability for organizations to deploy customizations containing flows or canvas apps.

Use Cases for Flow Within Dynamics 365 CE

It has been highlighted in this chapter that Microsoft Flow can be used for individual productivity, such as flagging emails as high priority from external triggers. It can also be used for organizational productivity and automation to enhance Dynamics 365 implementations. Dynamics 365 implementations often don't include just the customer engagement platform, but also other Microsoft products, such as SharePoint, OneNote, OneDrive, PowerBI, and Azure. For example, Flow can be used to enhance document management within SharePoint and OneDrive, such as creating an approval item when a new SharePoint item is created. A similar use case could be that, within Dynamics 365 CE, when a new record (of any type) requires approval, it triggers an action. Flow does not exclusively work for Microsoft-based applications. It has available external connectors to other products, such as DropBox, Gmail, Twitter, Google Sheets, and more. Use of the external connectors can expand the reach and capability of the Dynamics 365 CE application to provide more value and more data within the system from other sources across the internet and organization. This results in increased productivity by saving time usually spent performing actions manually and reducing the errors of those manual actions. It can also provide more useful information and empower users in their roles to quickly identify trends and provide an improved level of service to customers by having more information from multiple areas together in a single place.

Microsoft Flow also expands the capability through enhancing what is possible using workflow automation. Examples in this area are actions such as HTTP requests. These types of requests allow Flow to connect to external services or serverless components such as Azure Functions that would otherwise need to be developed using code. There are also functions and parsing functionality that can be achieved using Flow as well as generation of audio using Microsoft Translator and other third parties, such as Marketo, Basecamp, and WordPress. These features further enhance the capability to enable loosely coupled integrations. For enterprise integrations, it is the recommendation to use Logic Apps as an integrator or developer for advanced integration scenarios; further resources on this comparison can be found within "Further Resources" at the end of this chapter.

Beyond integrations, another great example of a flow within the realm of document management is one that copies files from one folder to another within SharePoint. Microsoft Flow can be used to automate actions within the same application. This generates the question of whether organizations should use Microsoft Flow or the workflow process functionality as part of the native Dynamics 365 platform, covered in Chapter 8. Workflows within Dynamics 365 have some advantages, and they have been part of the functionality of the system for a very long time. This means knowledge is already available, and an awareness of the capabilities of workflows is widespread. That said, despite Flow being newer within the suite of technologies, it does have some distinct advantages over workflows within Dynamics. Workflows are unable to, without custom solutions, retrieve and iterate on a collection of records. Microsoft Flow can do this and can also retrieve records where the GUID or the unique identifier is passed in. In addition to that, Flow has the ability to make HTTP requests within the functionality and other connectivity to applications outside of the Dynamics 365 CE platform of model-driven applications, compared to the workflow processes, which do not.

In summary, there are many different use cases that can be met using Microsoft Flow, such as using it to enhance document management solutions, to connect to HTTP endpoints, and to approve items within Dynamics 365 CE. It should be considered when creating Dynamics 365 CE solutions and reviewed as to whether it can add value compared to another functionality.

Getting Started with Microsoft Flow: Environments

Flow customizations do not appear to be within the Dynamics 365 CE environment we are used to working with. The environment framework that Flow utilizes is the Common Data Service for Apps (Figure 11-4). This layer of the Dynamics 365 platform is a reference to the data model behind Dynamics 365 CE's model-driven apps.

For every Dynamics 365 CE environment that is created (not a tenant; this is per environment), a reciprocating Common Data Service for Apps layer is created. The Dynamics 365 CE environment references the Common Data Service for Apps and the model it is based upon. The Common Data Service for Apps environment can be separate from a Dynamics 365 environment, as a Common Data Service for Apps environment can exist without having a referencing Dynamics 365 CE subscription and can use other services, such as Canvas Apps. It would still exist as a data model within its database, the database that would be the same database used by Dynamics 365 CE if they were to both be subscribed to. Creating a database model within the Common Data Service for Apps, at the time of writing, creates a core instance of Dynamics 365 with no other apps in it and is only the extensible custom layer.

Microsoft Flow does not require a Common Data Service for Apps database. Canvas-driven apps are not solely reliant on the data model within it and can connect to third-party services or databases instead. Model-driven apps, however, are dependent on the database and require this to be created.

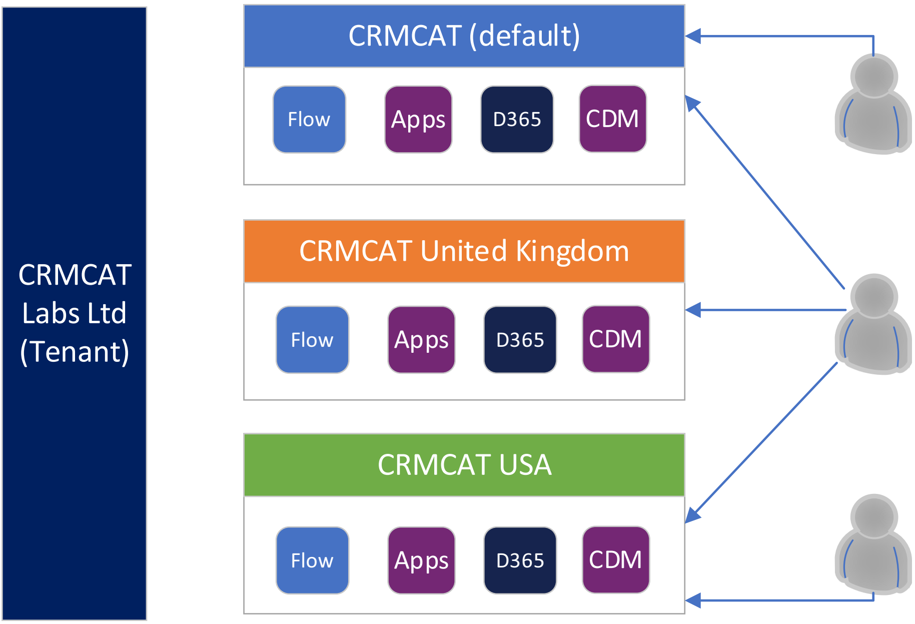
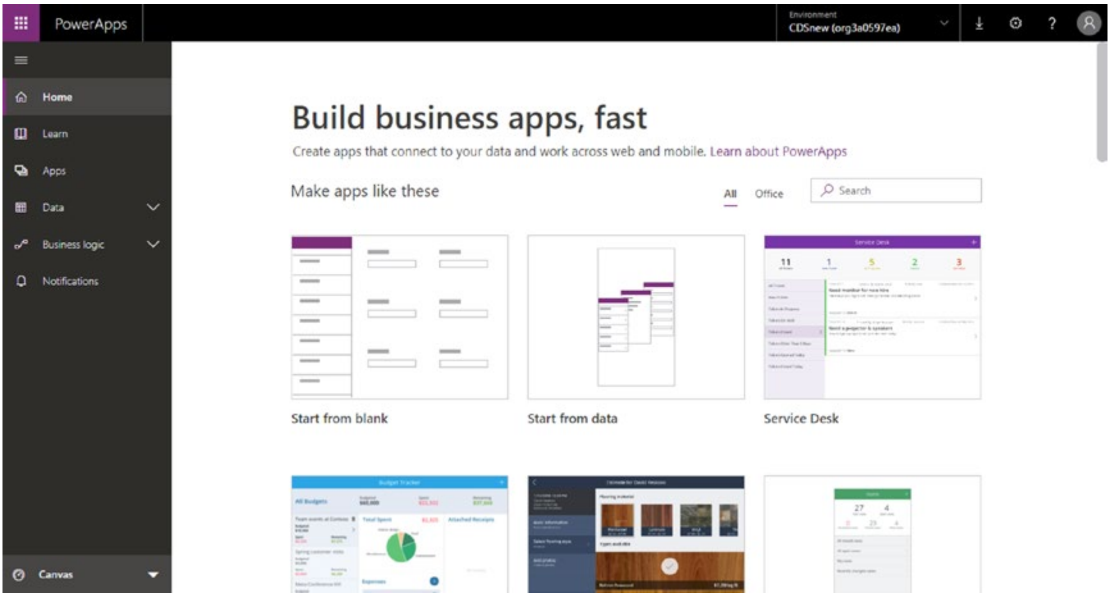

CRMCAT
Labs Ltd
(Tenant)
CRMCAT (default)
Flow
Apps
D365
CDM
CRMCAT United Kingdom
Flow
Apps
D365
CDM
CRMCAT USA
Flow
Apps
D365
CDM

Figure 11-4. Overview of Dynamics 365 CE and Common Data Service for Apps environments

Within the environment, depending on the version of the platform, users can switch, in the bottom left corner, between light and dark mode, which changes between canvas apps and model-driven apps or they can proceed to creating a new app and select from the dropdown menu. (Figure 11-5).

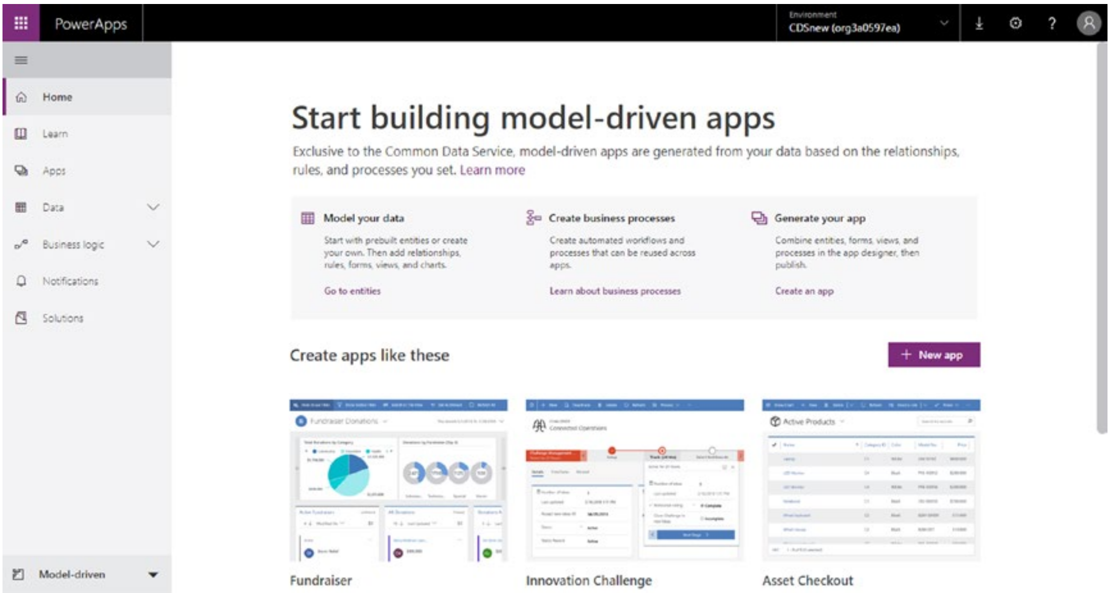

PowerApps
Environment
CDSnew (org3a0597ea)
Home
Learn
Apps
Data
Business logic
Notifications
Canvas
Make apps like these
All
Office
Search
Start from blank
Start from data
Service Desk

Build business apps, fast

Create apps that connect to your data and work across web and mobile. Learn about PowerApps

Figure 11-5. *Dynamics 365 CE canvas app builder*

Model-driven apps, as seen in Figure 11-6, allow a user to be redirected to the App Designer, which was covered in Chapter 10.


PowerApps
Environment
CDSnew (org3a0597ea)
Home
Learn
Apps
Data
Business logic
Notifications
Solutions
Model-driven
Create apps like these
New app
Fundraiser
Innovation Challenge
Asset Checkout

Start building model-driven apps

Exclusive to the Common Data Service, model-driven apps are generated from your data based on the relationships, rules, and processes you set. Learn more

Model your data

Start with prebuilt entities or create your own. Then add relationships, rules, forms, views, and charts.

Go to entities

Create business processes

Create automated workflows and processes that can be reused across apps.

Learn about business processes

Generate your app

Combine entities, forms, views, and processes in the app designer, then publish.

Create an app

Figure 11-6. *Dynamics 365 CE Light model-driven app builder*

Canvas apps are apps that are not reliant on the Dynamics 365 CE interface and instead are a way to rapidly create desktop, tablet, and mobile applications with the potential to combine the model from the Common Data Service for Apps together with Flow to create functional, purpose-built applications that extend the capability of the Microsoft Dynamics platform.

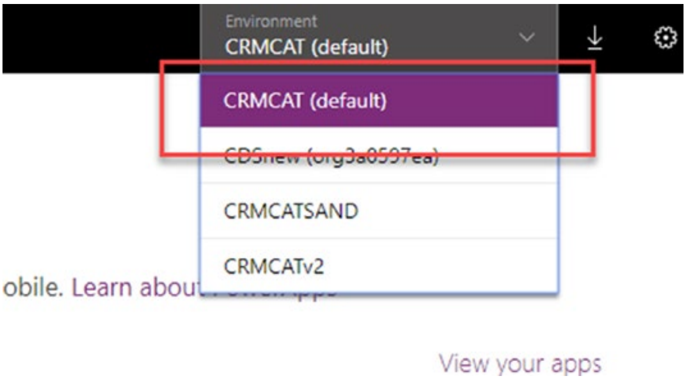


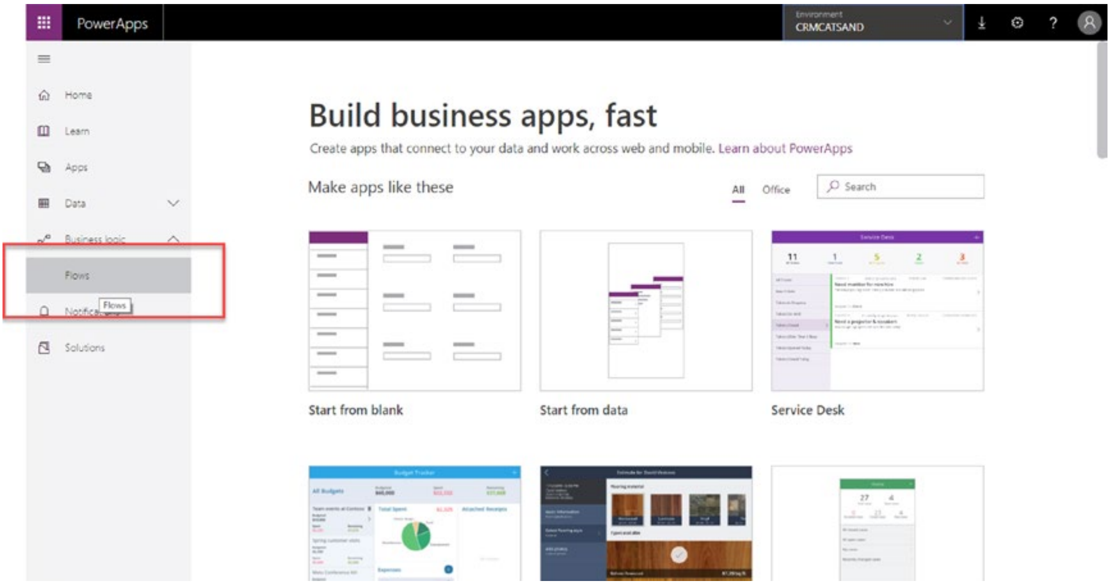
Figure 11-7. Switching environments

There can be more than one environment (Figure 11-7). For Dynamics 365 CE users, a new environment is created for every instance that is available. Users can create more trial and production environments, which create additional environments themselves. The environments that are decoupled from Dynamics 365 CE are the environments that contain only the Microsoft Flow and Canvas Apps experience and are not available for the model-driven app experience unless additionally licensed.

There is also the concept of a default environment. A default environment is normally the main production environment of Common Data Service for Apps created when a subscription is created. At the time of writing, this does not appear to have the switcher for the Canvas or Model-Driven App selector, despite still having a database and the ability to customize the data model and create both canvas-driven apps (via "Apps") and model-driven apps (via the Dynamics 365 CE interface). Flows can also be created within this environment.

Flows can be created from the model-driven or canvas-driven experience within the Common Data Service for Apps environment for those flows within the context of a canvas app. They can be found on the left-hand side of the screen, under the heading "Business Logic." Expand this tab to find "Flows" within the tab. The full flow experience is found on `flow.microsoft.com` for flows disconnected from the canvas- and model-driven experiences and can be created by simply using connectors of any kind. The area also includes the capability to export the flow to use within different environments.

An important point on environments is that model-driven, canvas-driven, and flows are all self-contained within a specific environment or "instance." They must be exported out of that application via the Common Data Service for Apps (for flow and canvas-driven) or via the Solution Explorer (for model-driven apps) and imported into another environment via the solution or the specific .zip file. This will be changing in a release due in October 2018 that allows flows and canvas apps to be added into a separate Solution tab, which can be seen in Figure 11-8.


Build business apps, fast

Create apps that connect to your data and work across web and mobile. Learn about PowerApps

PowerApps
Environment
CRMCATSAND
Home
Learn
Apps
Data
Business logic
Flows
Notifications
Flows
Solutions
Make apps like these
All
Office
Search
Start from blank
Start from data
Service Desk

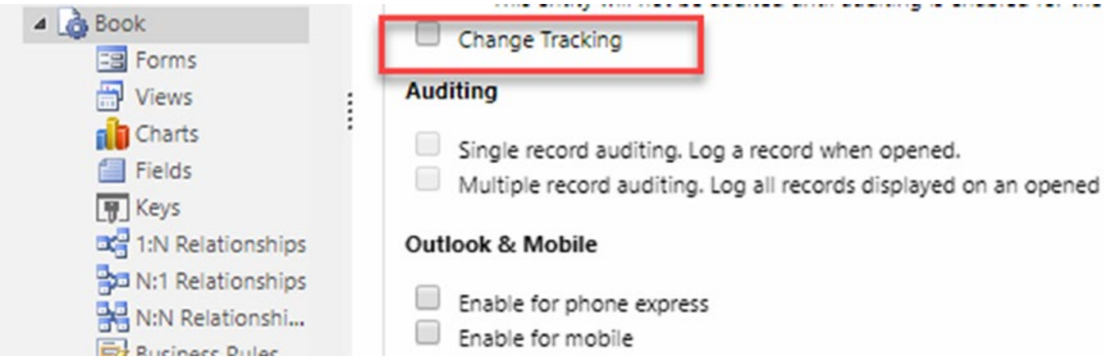
Figure 11-8. *Flows within the Common Data Service for Apps*

Getting Started with Flow: How to Create a Flow (Basic)

This section will walk through how to create a basic flow using Microsoft Flow and Dynamics 365 CE. Ensure there is at least a trial subscription of Dynamics 365 CE and Microsoft Flow active on the environment.

Before we get started, an important note on change tracking in Dynamics 365 CE: Microsoft Flow requires the option "Change Tracking" to be turned on for entities within

Dynamics 365 when it is triggering on updates to records or when a record is deleted (Figure 11-9). Change tracking allows for an easy way to know when data has changed. Standard entities are configured for change tracking; however, custom entities need to be enabled. More information can be found on this functionality in the “Further Resources” section at the end of this chapter. Also, to avoid any confusion, this chapter uses the 'Dynamics 365' Connector when there is also the 'Common Data Service' (CDS) connector available in Flow. The CDS connector is still in development at time of writing and may not be able to provide full feature parity with Dynamics 365. That said, it does give the extra functionality of being able to set the 'scope' of a Flow in the same way as existing Workflows.



☐ Change Tracking

Auditing

☐ Single record auditing. Log a record when opened.
☐ Multiple record auditing. Log all records displayed on an opened

Outlook & Mobile

☐ Enable for phone express
☐ Enable for mobile

Figure 11-9. *Change tracking in Dynamics 365 CE*

Task: Create a basic flow.

1. Navigate to `flow.microsoft.com` or go to `portal.office.com` and click the Microsoft Flow app.
2. Check the top right of the screen to ensure you are in the correct environment and select “My Flows” on the navigation bar (Figure 11-10).

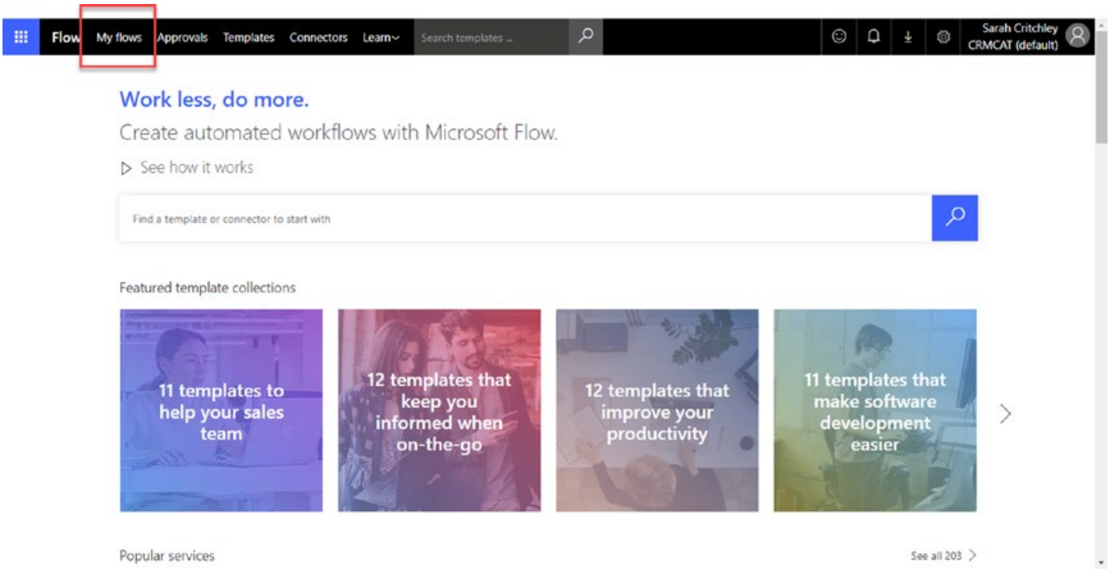
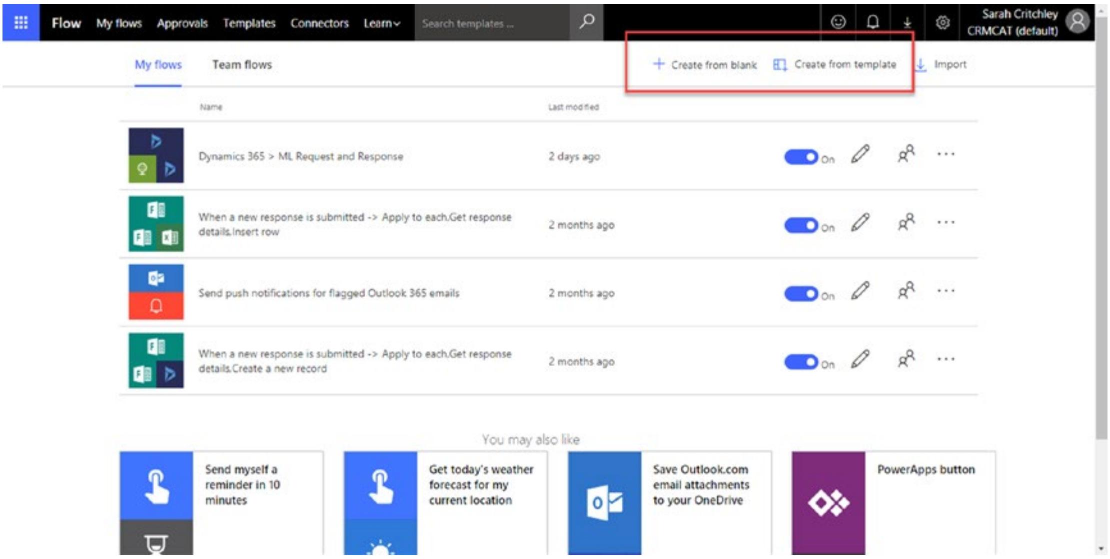

Flow
My flows
Approvals
Templates
Connectors
Learn
Search templates ...
Sarah Critchley
CRMCAT (default)
Work less, do more.
Create automated workflows with Microsoft Flow.
See how it works
Find a template or connector to start with
Featured template collections
11 templates to help your sales team
12 templates that keep you informed when on-the-go
12 templates that improve your productivity
11 templates that make software development easier
Popular services
See all 203

Figure 11-10. *Select "My Flows" from the flow.microsoft.com homepage*

If this is the very first time using flow in the subscription, it is likely there will be some short tutorials and information about using Microsoft Flow. If it is not the first time navigating to this page, there will be a list of all the flows contained within this environment.

3. There will be two buttons near the top of the screen. One button will be captioned "Create from Blank" and the other "Create from Template," as shown in Figure 11-11.



Flow
My flows
Approvals
Templates
Connectors
Learn
Search templates ...
Sarah Critchley
CRMCAT (default)
My flows
Team flows
+ Create from blank
Create from template
Import
On
You may also like
Send myself a reminder in 10 minutes
Get today's weather forecast for my current location
Save Outlook.com email attachments to your OneDrive
PowerApps button

Name	Last modified
Dynamics 365 > ML Request and Response	2 days ago
When a new response is submitted -> Apply to each.Get response details.Insert row	2 months ago
Send push notifications for flagged Outlook 365 emails	2 months ago
When a new response is submitted -> Apply to each.Get response details.Create a new record	2 months ago

Figure 11-11. *Select "Create from Template"*

4. In this walkthrough we will cover how to create a basic flow using an existing template, so click on the "Create from Template" option.

5. A list of available templates categorized into the type of service they provide will load on the next page. Type "Dynamics 365" in the search box and click the template from the results called "Add notes to a Dynamics 365 contact" (Figure 11-12).

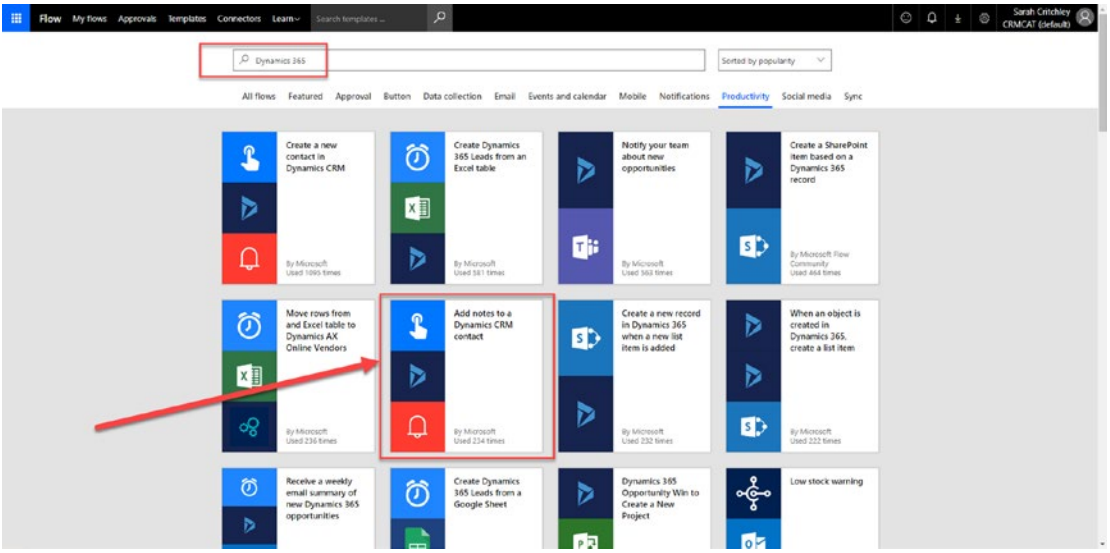

Flow
My flows
Approvals
Templates
Connectors
Learn
Search templates ...
Sarah Critchley
CRMCAT (default)
Dynamics 365
Sorted by popularity
All flows
Featured
Approval
Button
Data collection
Email
Events and calendar
Mobile
Notifications
Productivity
Social media
Sync
Create a new contact in Dynamics CRM
Create Dynamics 365 Leads from an Excel table
Notify your team about new opportunities
Create a SharePoint item based on a Dynamics 365 record
Move rows from and Excel table to Dynamics AX Online Vendors
Add notes to a Dynamics CRM contact
Create a new record in Dynamics 365 when a new list item is added
When an object is created in Dynamics 365, create a list item
Receive a weekly email summary of new Dynamics 365 opportunities
Create Dynamics 365 Leads from a Google Sheet
Dynamics 365 Opportunity Win to Create a New Project
Low stock warning

Figure 11-12. *Select "Add notes to a Dynamics CRM contact"*

6. Select "Continue." The blank Flow template will be visible; it contains a manual trigger with data entry as well as the action of a note being created in Dynamics 365 to a contact found with the same details originally entered (Figure 11-13). This type of flow is useful on mobile using the Microsoft Flow app and can be triggered straight from there.

   This walkthrough will go through this template step-by-step as each block is completed.

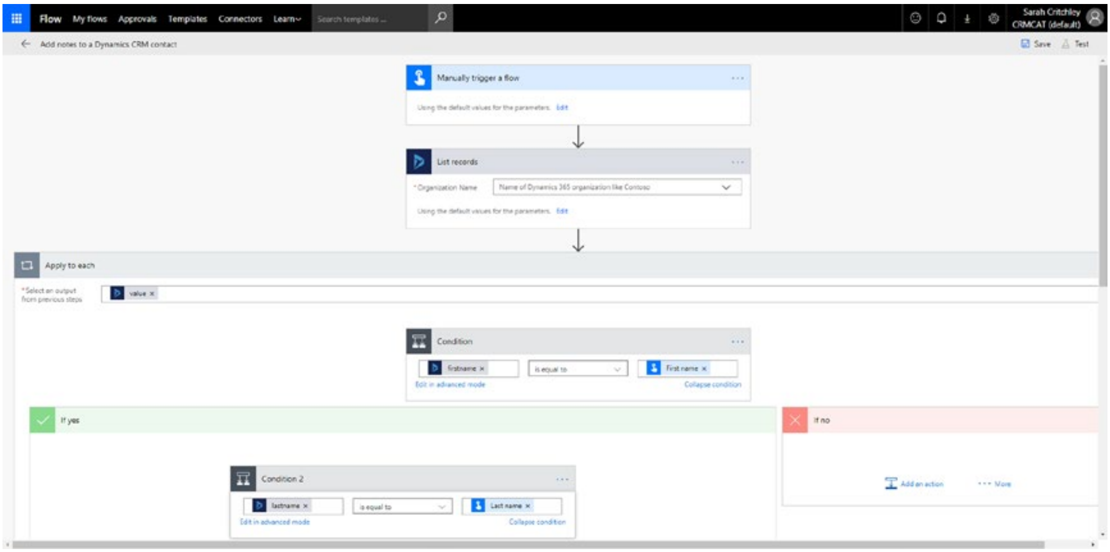

Flow
My flows
Approvals
Templates
Connectors
Learn
Search templates ...
Sarah Critchley
CRMCAT (default)
Add notes to a Dynamics CRM contact
Save
Test
Manually trigger a flow
Using the default values for the parameters. Edit
List records
*Organization Name
Name of Dynamics 365 organization like Contoso
Using the default values for the parameters. Edit
Apply to each
*Select an output from previous steps
value
Condition
firstname
is equal to
First name
Edit in advanced mode
Collapse condition
If yes
Condition 2
lastname
is equal to
Last name
Edit in advanced mode
Collapse condition
If no
Add an action
More

Figure 11-13. *The blank Flow template generated and ready for configuration*

When using a template, the blocks from the template are created automatically, saving the user from doing this manually. This is a major advantage of using templates as the flow's business logic is already created and reduces the workload, leaving only the configuration of environments within the block and data to be completed. You can use templates as is, or they can be used to reduce the work of creating complex flows—you can modify the blocks and add more to suit your needs. The business logic for the Flow template "Add notes to a Dynamics 365 contact" is visible in Figure 11-14 in the same order as the blocks are created in Flow from the template.

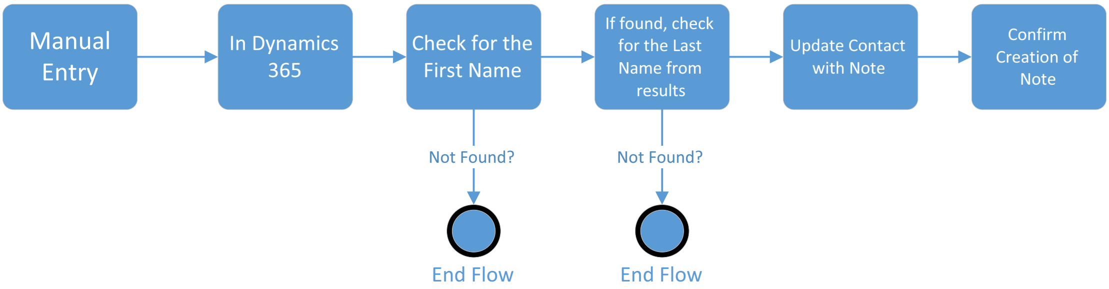
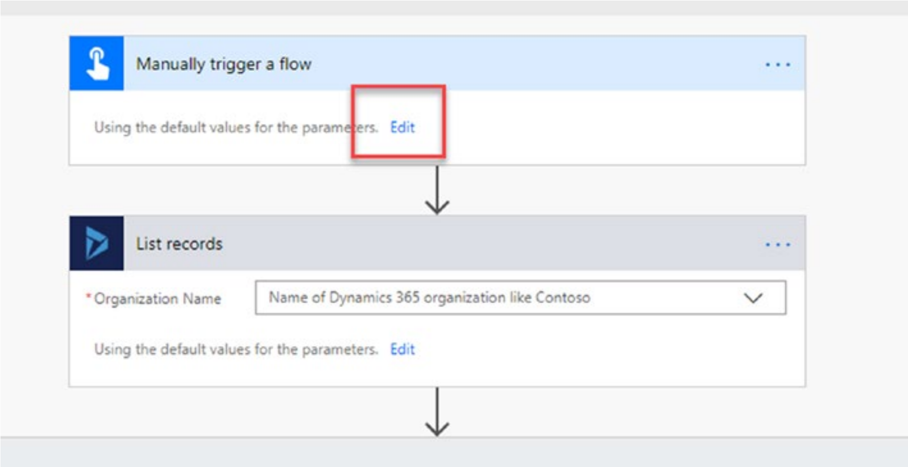

Manual Entry
In Dynamics 365
Check for the First Name
If found, check for the Last Name from results
Update Contact with Note
Confirm Creation of Note
Not Found?
Not Found?
End Flow
End Flow

Figure 11-14. *Business logic from the Flow template*

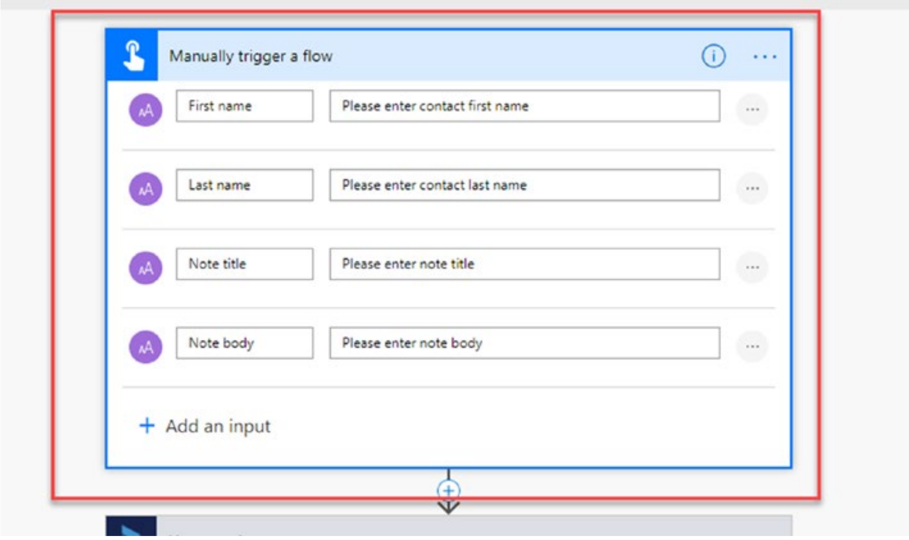
7. Check the fields that the manual-entry block is asking the user to complete. Click “Edit” on the first block to open this definition. The expanded block reveals the user will be asked to complete “First Name,” “Last Name,” “Note Title,” and “Note Body” fields when this flow is triggered. This is shown in Figures 11-15 and 11-16.



Manually trigger a flow
...
Using the default values for the parameters. Edit
List records
...
*Organization Name
Name of Dynamics 365 organization like Contoso
Using the default values for the parameters. Edit

Figure 11-15. *Click “Edit” in the “Manually trigger a flow” block*

While you will not be changing any of the details here, it is always good to review the whole template to ensure it is understood and you know what it is doing at each step.



Manually trigger a flow

First name: Please enter contact first name

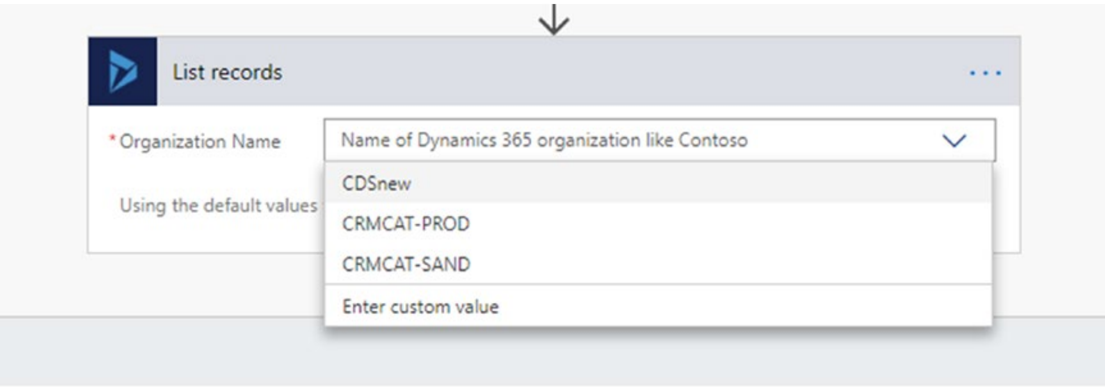
Last name: Please enter contact last name

Note title: Please enter note title

Note body: Please enter note body

Figure 11-16. *The fields a user will be asked to complete within the "Manually trigger a flow" block*

8. Move onto the next block, "List Records." This block requires the organization's name within Dynamics 365.
9. Select the instance from the list the flow should connect to (Note: The organization list visible within your flow will be different than that which appears in Figure 11-17).



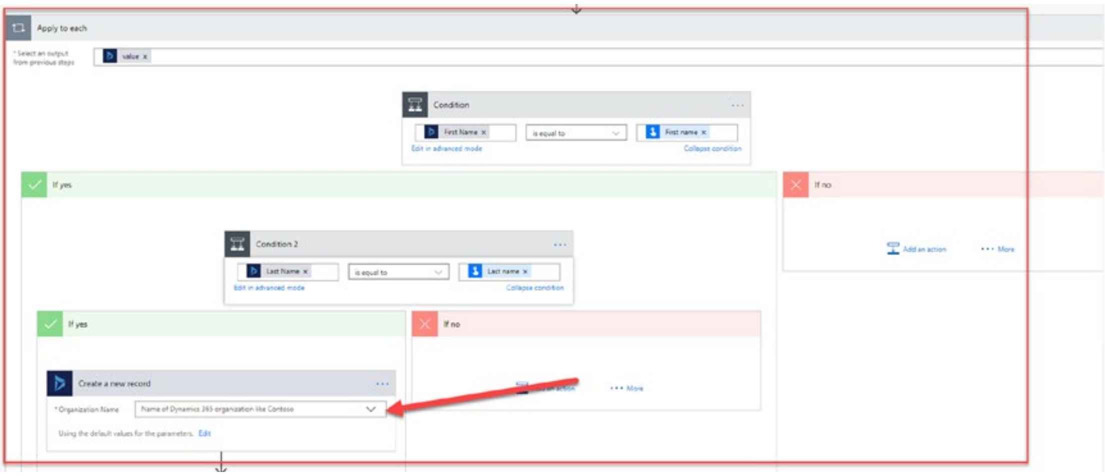
List records

*Organization Name: Name of Dynamics 365 organization like Contoso

Using the default values

Figure 11-17. *Select the name of the Dynamics 365 instance to connect to*

There is one more step to perform the same task near the bottom of the flow within the last "If yes" section. Set the instance dropdown selection to the same value in the list as you did for the block in the last step (Figure 11-18).



* Select an output from previous steps: value

First Name is equal to First name

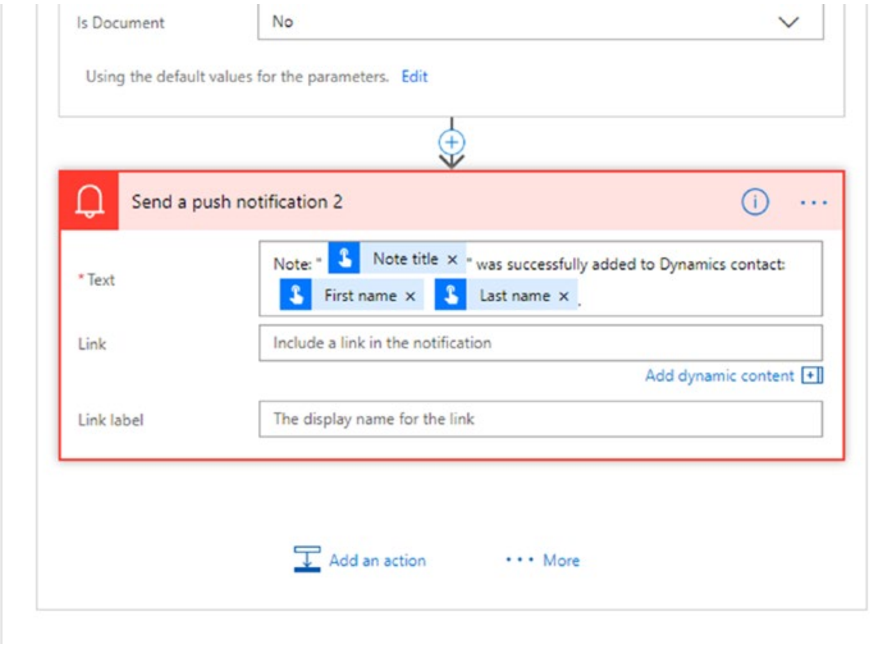
Last Name is equal to Last name

* Organization Name: Name of Dynamics 365 organization like Contoso

Using the default values for the parameters. Edit

Figure 11-18. *Configure the "Create a new record" block to the same organization*

Reviewing the blocks within the flow from the "Condition 2" block, the "First name" field is evaluated to see if this is within the contact list in the Dynamics 365 environment. If true, the "Last name" field is evaluated on those records found. For all records found, a note is added in Dynamics 365 and the title and body information from the manual data-entry step at the beginning are used to create this record. The final block is for if the user is using the Microsoft Flow mobile app, in which case it sends a push notification to the phone to notify the user when the note has been successfully added (Figure 11-19).


Is Document: No

Using the default values for the parameters. Edit

Send a push notification 2

*Text: Note: " Note title " was successfully added to Dynamics contact: First name Last name .

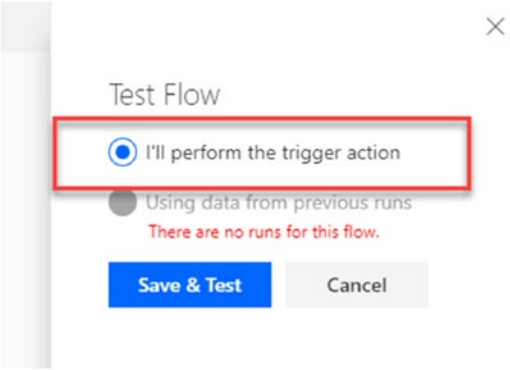
Link: Include a link in the notification

Link label: The display name for the link

Figure 11-19. *Sending a push notification using the mobile app*

10. Save the flow using the Save button in the top-right corner or near the bottom of the screen on the designer.

11. Click "Test." It is important to test the flow to ensure it performs the business logic that is expected. Within a project, it is also important to ensure all branches of the flow, like workflows, are tested for the same reason.


Test Flow

● I'll perform the trigger action

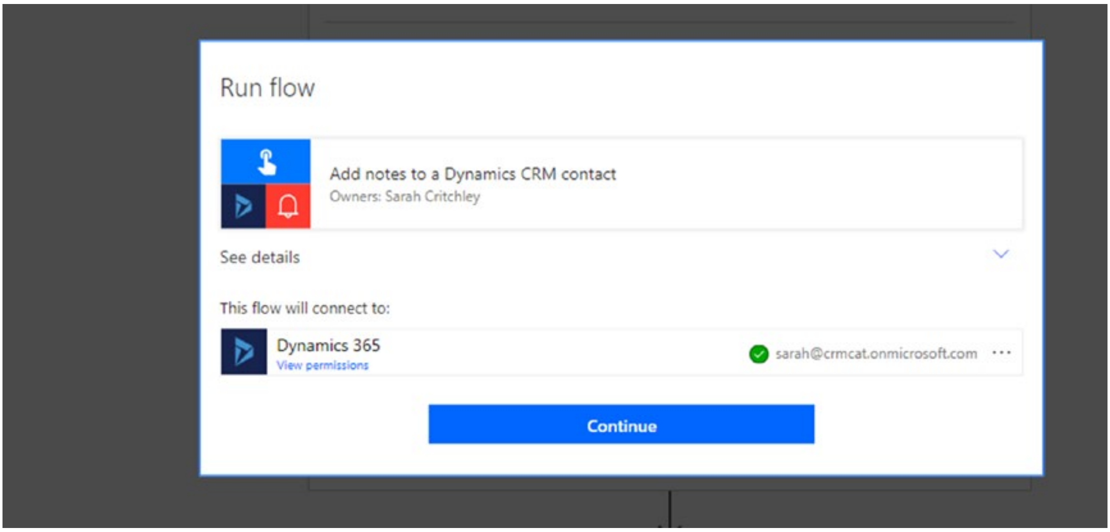
○ Using data from previous runs

There are no runs for this flow.

Figure 11-20. *Click "Test" and select "I'll perform the trigger action"*

12. Select “I’ll perform the trigger action” as shown in Figure 11-20.

13. Click “Save and Test” and then “Continue.” If this were an existing flow with previous successful runs, real data could be used to test using the second option.



Run flow

Add notes to a Dynamics CRM contact
Owners: Sarah Critchley

This flow will connect to:

Dynamics 365 — sarah@crmcat.onmicrosoft.com

Figure 11-21. *The manual popup will ask for the user to continue and enter the details in the first manual step*

14. The manual trigger will begin (Figure 11-21). The tester is asked to complete the “First Name,” “Last Name,” “Note Title,” and “Note Body” fields. Enter the name of a contact that exists within the system to test the positive branch in this scenario (Figure 11-22).

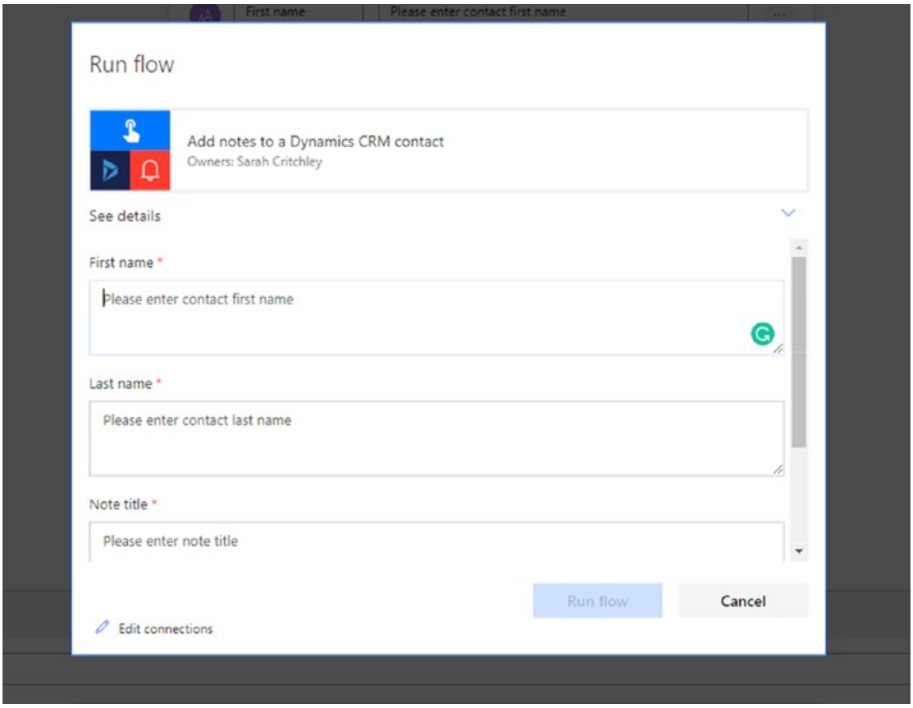
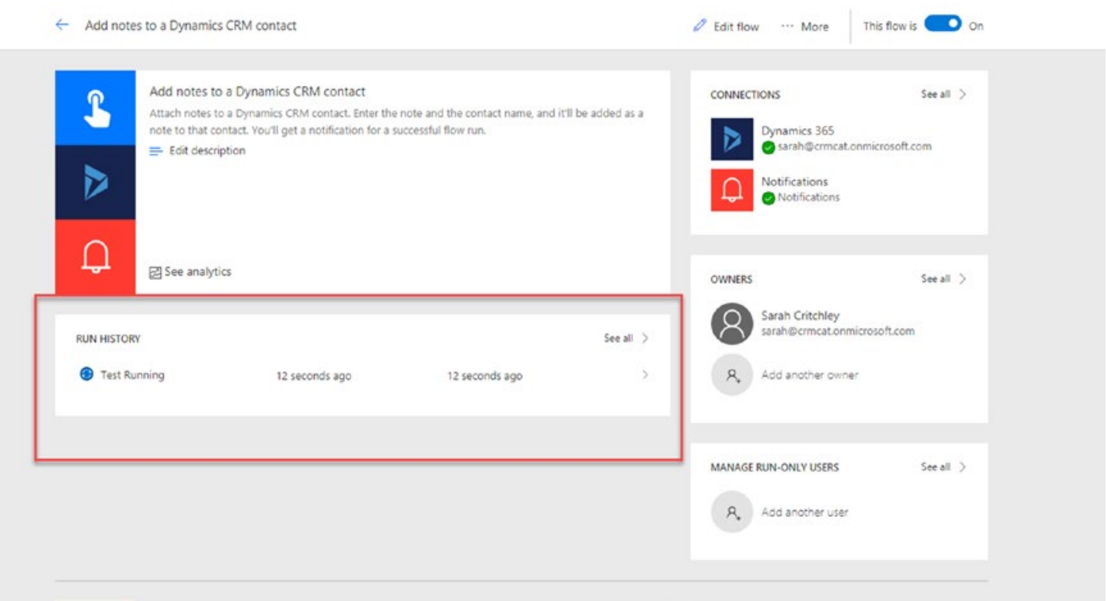

First name
Please enter contact first name
Run flow
Add notes to a Dynamics CRM contact
Owners: Sarah Critchley
See details
First name *
Please enter contact first name
Last name *
Please enter contact last name
Note title *
Please enter note title
Run flow
Cancel
Edit connections

Figure 11-22. *Enter the test data within the manual prompt*

15. Click the Run Flow button. The flow will begin in 1–2 minutes and will begin to check for the name of the contact within Dynamics 365 for a match of the first name, then the last name. For those contacts found to match, a note will be added and a notification will be sent to your mobile device. (Again, ensuring you have the Microsoft Flow app installed and logged in).



Add notes to a Dynamics CRM contact

Attach notes to a Dynamics CRM contact. Enter the note and the contact name, and it'll be added as a note to that contact. You'll get a notification for a successful flow run.

RUN HISTORY

Test Running 12 seconds ago 12 seconds ago

CONNECTIONS

Dynamics 365 sarah@crmcat.onmicrosoft.com

Notifications Notifications

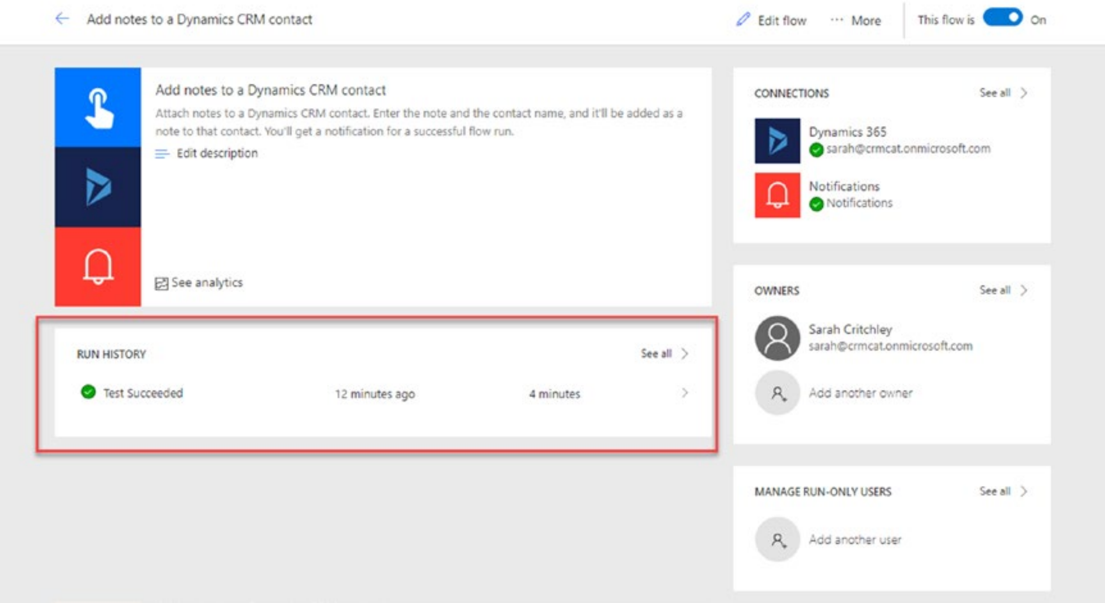
OWNERS

Sarah Critchley sarah@crmcat.onmicrosoft.com

Edit flow
More
This flow is On
Edit description
See analytics
See all
Add another owner
MANAGE RUN-ONLY USERS
Add another user

Figure 11-23. *The test is currently running in Flow as seen by the run history*

Flow itself has an “Admin” area where an administrator can see the run history, edit the flow, and review the connections and ownership of the flow (Figure 11-23). When a flow has run successfully, failed, or is in progress, it can be seen from this screen and expanded using the See All button on the “Run History” table. These can be seen in Figures 11-24 and 11-25.



Add notes to a Dynamics CRM contact

Attach notes to a Dynamics CRM contact. Enter the note and the contact name, and it'll be added as a note to that contact. You'll get a notification for a successful flow run.

This flow is On

RUN HISTORY

Test Succeeded 12 minutes ago 4 minutes

CONNECTIONS

Dynamics 365 sarah@crmcat.onmicrosoft.com

Notifications Notifications

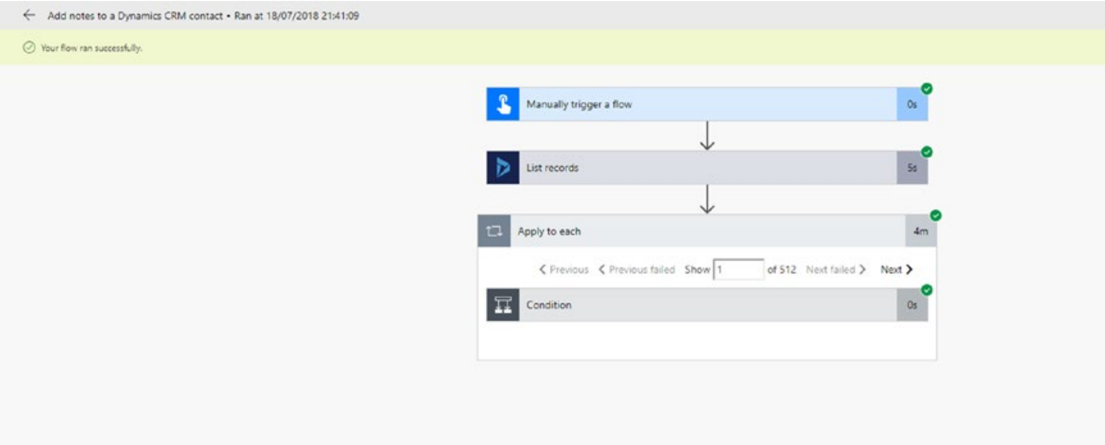
OWNERS

Sarah Critchley sarah@crmcat.onmicrosoft.com

Add notes to a Dynamics CRM contact
Edit flow
More
Edit description
See analytics
See all
Add another owner
MANAGE RUN-ONLY USERS
See all
Add another user

Figure 11-24. *Once a test or run has succeeded, it is visible within the run history*

16. Once the test has been successful, click into the successful test run from within the run history.



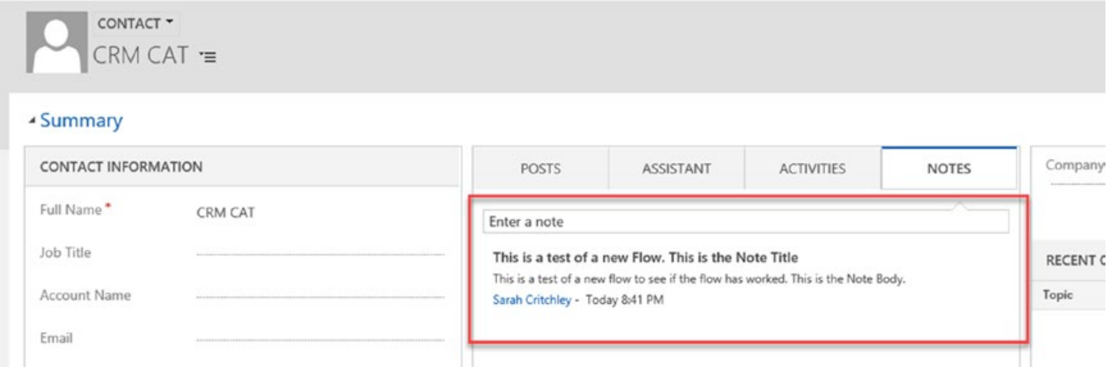
Add notes to a Dynamics CRM contact • Ran at 18/07/2018 21:41:09

Your flow ran successfully.

Manually trigger a flow
0s
List records
5s
Apply to each
4m
Previous
Previous failed
Show 1 of 512
Next failed
Next
Condition
0s

Figure 11-25. *A successfully run flow is visible with all green ticks on the blocks*

The note has been successfully created in Dynamics 365 CE, as shown in Figure 11-26.



CONTACT
CRM CAT
Summary
CONTACT INFORMATION
Full Name
CRM CAT
Job Title
Account Name
Email
POSTS
ASSISTANT
ACTIVITIES
NOTES
Enter a note
Company
RECENT O
Topic

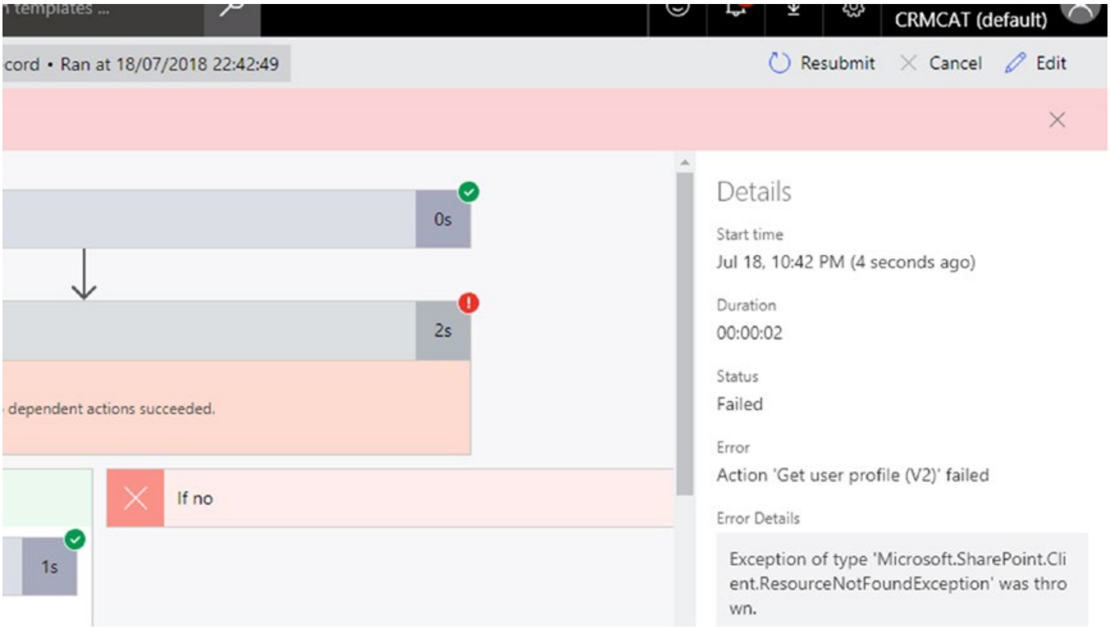
This is a test of a new Flow. This is the Note Title

This is a test of a new flow to see if the flow has worked. This is the Note Body.

Sarah Critchley - Today 8:41 PM

Figure 11-26. *The test was successful and created a note within Dynamics 365 CE*

You can select the specific instance of a flow where it has been run with a specific set of data within it and review the status of each of the logic blocks. When successful, a green tick can be seen on the right-hand side of the block. Failures are visible with a red cross (Figure 11-27). If a block has failed, it is important to click the block and review the error message. Flow suggests some reasons why a failure has occurred when this happens. You can edit the flow and save the changes, then rerun the flow from history with the data still captured from the original context.



cord • Ran at 18/07/2018 22:42:49

Details

Start time
Jul 18, 10:42 PM (4 seconds ago)

Duration
00:00:02

Status
Failed

Error
Action 'Get user profile (V2)' failed

Error Details
Exception of type 'Microsoft.SharePoint.Client.ResourceNotFoundException' was thrown.

Figure 11-27. *If an error occurs, a red exclamation mark is visible on the block*

17. Navigate to Dynamics 365 CE and locate the Contact record where the specific first name and last name were used in the test flow. Expand the note to see the flow was a success and has created the note with the correct data in Dynamics 365.

The next section will walk through how to create a flow without a template.

Getting Started with Flow: How to Create a Flow (Complex)

This section will take a deep dive into searching for triggers and actions and manually creating a more complex flow with data from Dynamics 365 and flow approvals without a template. This means no blocks are automatically created at the start, so you must create all the blocks manually. This option is useful if a template has not been created that fits your requirements.

Task: Create a more complex flow.

1. Click “Create from Blank” within Microsoft Flow.

2. Click “Create from Blank” again on the second screen to be routed to a blank flow with the trigger selector already opened (Figure 11-28).

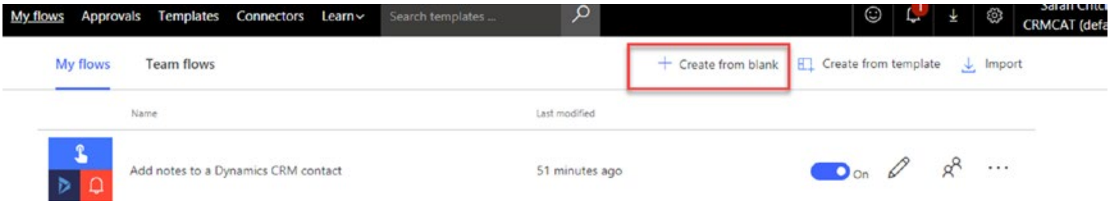

My flows
Approvals
Templates
Connectors
Learn
Search templates ...
CRMCAT (defa
My flows
Team flows
+ Create from blank
Create from template
Import
Name
Last modified
Add notes to a Dynamics CRM contact
51 minutes ago
On

Figure 11-28. *Select “Create from Blank” to create a new flow*

Triggers are the starting point of the flow. In the previous example, the trigger was a manual trigger where a user would click a button (manually) that would begin business logic within the flow.

3. When creating a new flow from a blank, select a trigger by typing the name of it in and selecting from the results. Type “Dynamics 365” in the search bar (Figure 11-29).

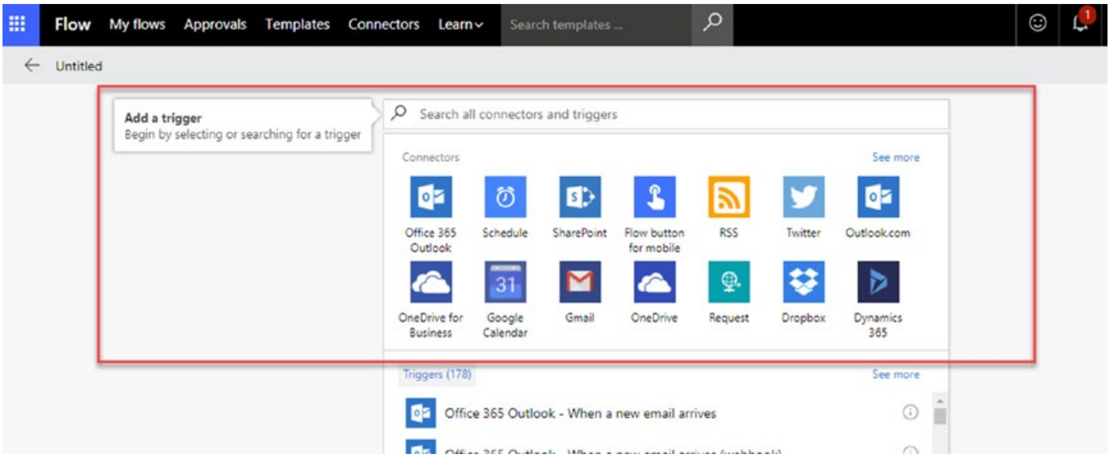
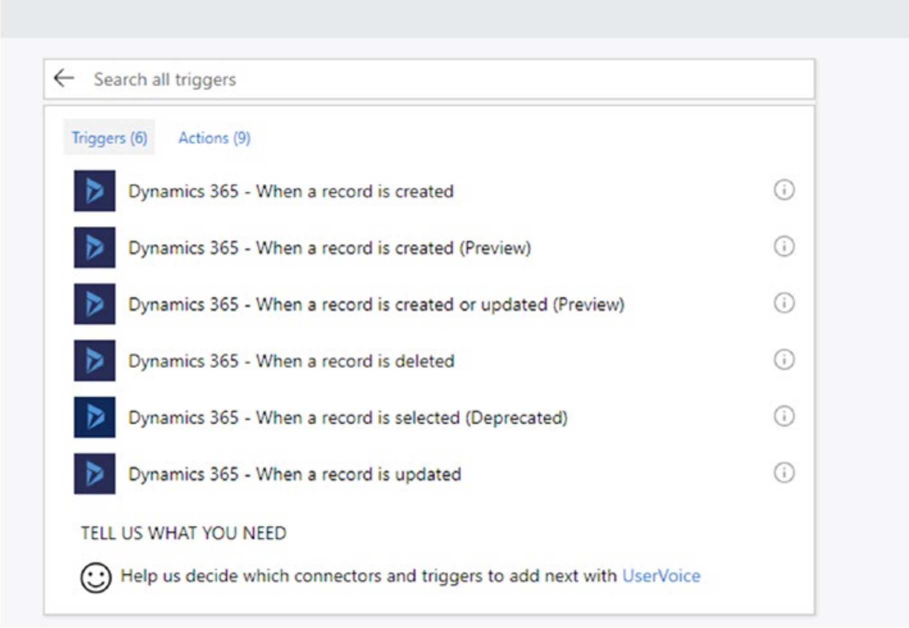

Flow
My flows
Approvals
Templates
Connectors
Learn
Search templates ...
Untitled
Add a trigger
Begin by selecting or searching for a trigger
Search all connectors and triggers
Connectors
See more
Office 365 Outlook
Schedule
SharePoint
Flow button for mobile
RSS
Twitter
Outlook.com
OneDrive for Business
Google Calendar
Gmail
OneDrive
Request
Dropbox
Dynamics 365
Triggers (178)
See more
Office 365 Outlook - When a new email arrives

Figure 11-29. *Add a trigger in the next step to create the initial block for the flow*

4. This will return a list of different triggers available that connect to Dynamics 365. Select “When a record is updated.”

Once the trigger is selected, a new block will be created in the flow, as shown in Figure 11-30.



Dynamics 365 - When a record is created

Dynamics 365 - When a record is created (Preview)

Dynamics 365 - When a record is created or updated (Preview)

Dynamics 365 - When a record is deleted

Dynamics 365 - When a record is selected (Deprecated)

Dynamics 365 - When a record is updated

TELL US WHAT YOU NEED

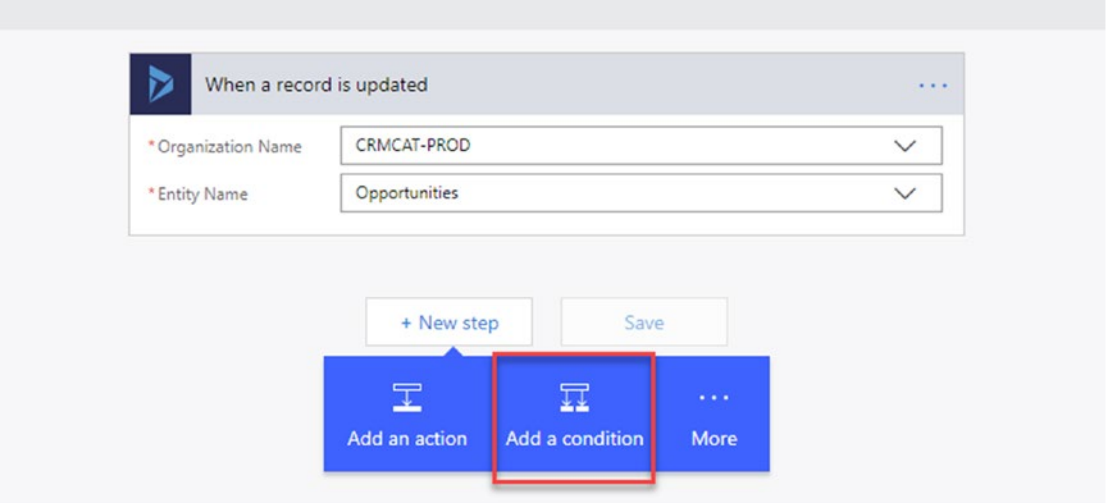
Help us decide which connectors and triggers to add next with UserVoice

Figure 11-30. *Searching for Dynamics 365 results in a range of different triggers available to begin a flow from actions within Dynamics 365*

5. Triggers often contain some additional configuration needs, such as the environment name and what the specific item type is that is being triggered. Select the Dynamics 365 CE instance from the list and select “Opportunities” for the entity.

   The trigger has been successfully created.

6. Select “New Step.” An action can be added; however, a condition is needed to filter out many of the opportunities being created in a real environment. Click “Add a condition” (Figure 11-31).



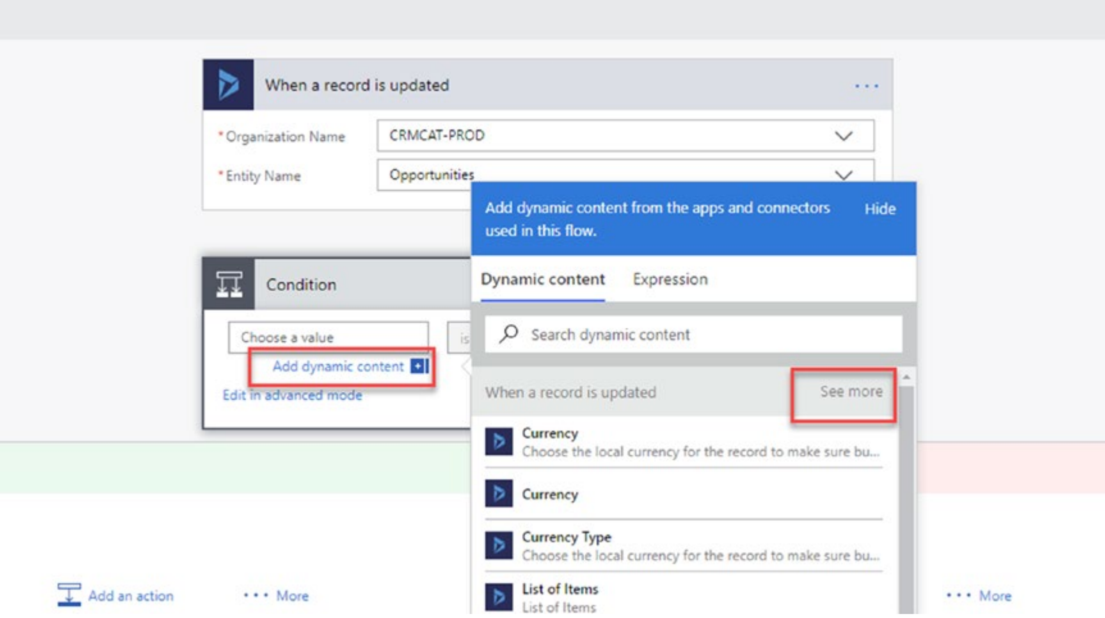
When a record is updated

*Organization Name: CRMCAT-PROD

*Entity Name: Opportunities

Figure 11-31. *From a trigger, you can select numerous different options and not just "Add Action." A condition is needed for this example, so select "Add a condition."*

When entering values in Condition and Action blocks, Microsoft Flow allows you to make use of the context, very similar to workflow processes within Dynamics 365 CE. The context contains data within the specific action being performed. In this example, the context will be the "update" action allowing the data within the opportunity being updated to be available for conditional (and other) operators. The data is updated in this case—the data from the opportunity—and is available within the Condition block. To open dynamic content, select "Add Dynamic Content" under the field. Only some fields appear available initially; to display all fields from the entity, select "See More," as shown in Figure 11-32.


When a record is updated
...
Condition
Choose a value
is
Add dynamic content
Edit in advanced mode
Add dynamic content from the apps and connectors used in this flow.
Hide
Dynamic content
Expression
Search dynamic content
When a record is updated
See more
Currency
Choose the local currency for the record to make sure bu...
Currency
Currency Type
Choose the local currency for the record to make sure bu...
List of Items
List of Items
Add an action
More
More

*Organization Name: CRMCAT-PROD

*Entity Name: Opportunities

***Figure 11-32.** Select "Add Dynamic Content" as highlighted and then "See more" to see all the fields available within the content*

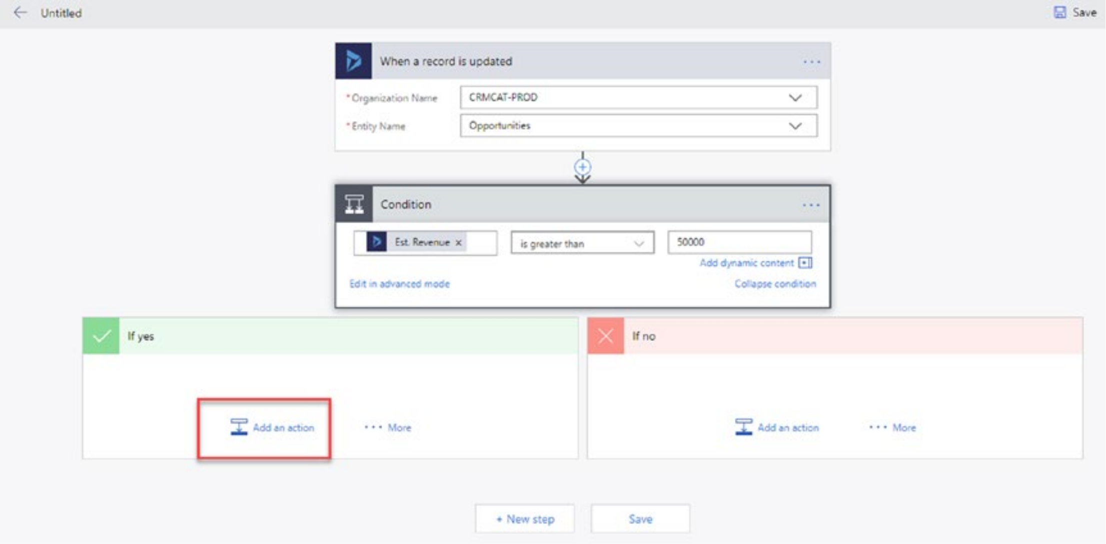
7. Select "Est Revenue." The dynamic field value will populate the "Value" field in the Condition block.

8. Select "is greater than" and in the "Value" field put "50000." This will evaluate all updated opportunities for their "Est. Revenue" field to be more than £50,000.

9. As a Condition block was added, there can be a positive or a negative outcome. Leave the negative outcome so that nothing further is done for opportunities under this value. For the positive block, an approval needs to be sent to the owner's (owner field on the Opportunity record) specified manager within Dynamics 365.

   Using two "Dynamics 365 - Get Record" actions, Microsoft Flow can retrieve the User record from the original Opportunity record and then use the context of the User record to retrieve the "Manager" value from the owner's User record (Figure 11-33).

10. Create two “Dynamics 365 - Get record” blocks in the positive block one after another and set the relevant organization name and the entity as “Users.” The first “Item Identifier” should use dynamic content as “Owner.” The second block should use dynamic content for the “Item Identifier” field, setting it to “Manager,” which is the “Manager” field from the User record in the previous step.


Untitled
Save
When a record is updated
...
Condition
...
Add dynamic content
Edit in advanced mode
Collapse condition
If yes
Add an action
... More
If no
Add an action
... More
+ New step
Save

*Organization Name: CRMCAT-PROD

*Entity Name: Opportunities

Est. Revenue × is greater than 50000

Figure 11-33. *Adding a new action and select “Dynamics 365 – get record” for two blocks within the positive branch of the condition*

11. Add another action called “Approval – Start an Approval” by searching “Approval” in the search bar of the action (Figure 11-34).

   Approvals are a Microsoft Flow feature that allow a user to create an approval item and send it to an individual or group of users using their email addresses. It creates an approval item for them to approve, reject, or reassign. Notes can also be added as part of the action. The result of the approval can be used, if required, to perform further follow-up and automation, with the data being contextually available in Flow actions.

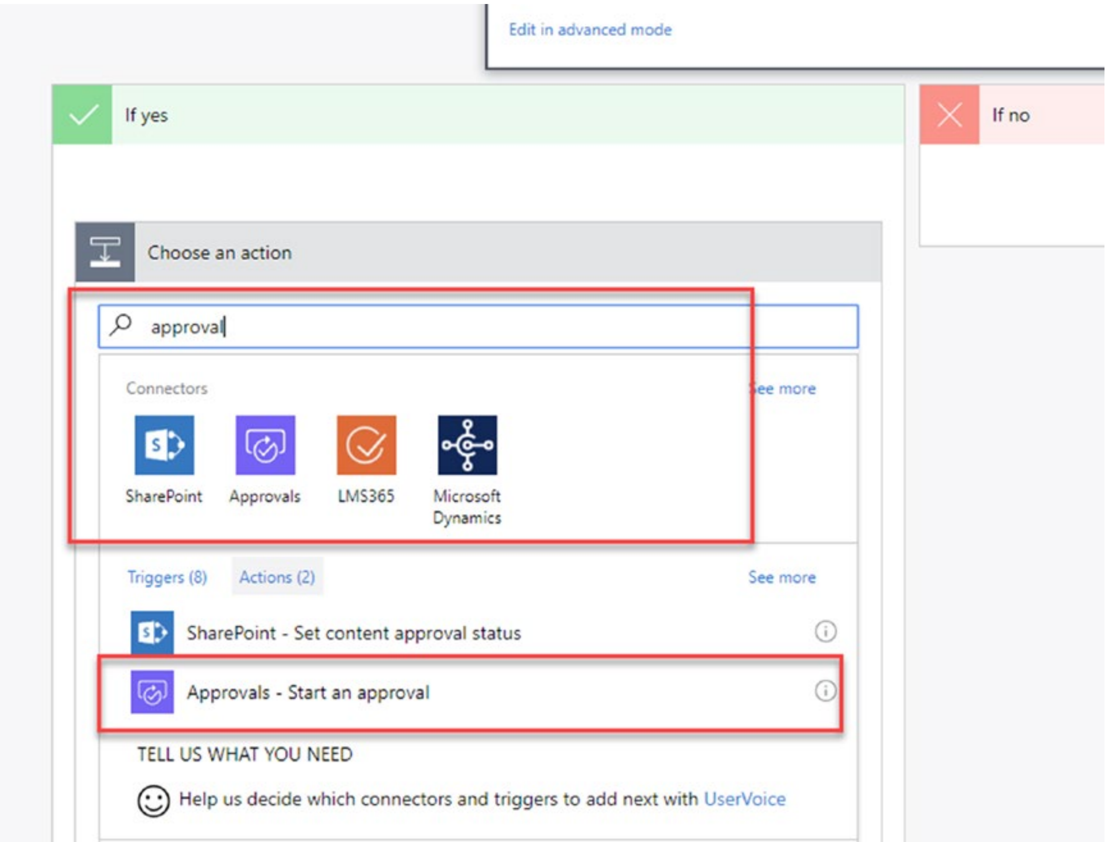

Edit in advanced mode
If yes
If no
Choose an action
approval
Connectors
See more
SharePoint
Approvals
LMS365
Microsoft Dynamics
Triggers (8)
Actions (2)
See more
SharePoint - Set content approval status
Approvals - Start an approval
TELL US WHAT YOU NEED
Help us decide which connectors and triggers to add next with UserVoice

Figure 11-34. *Search for "Approvals" and select "Start Approval"*

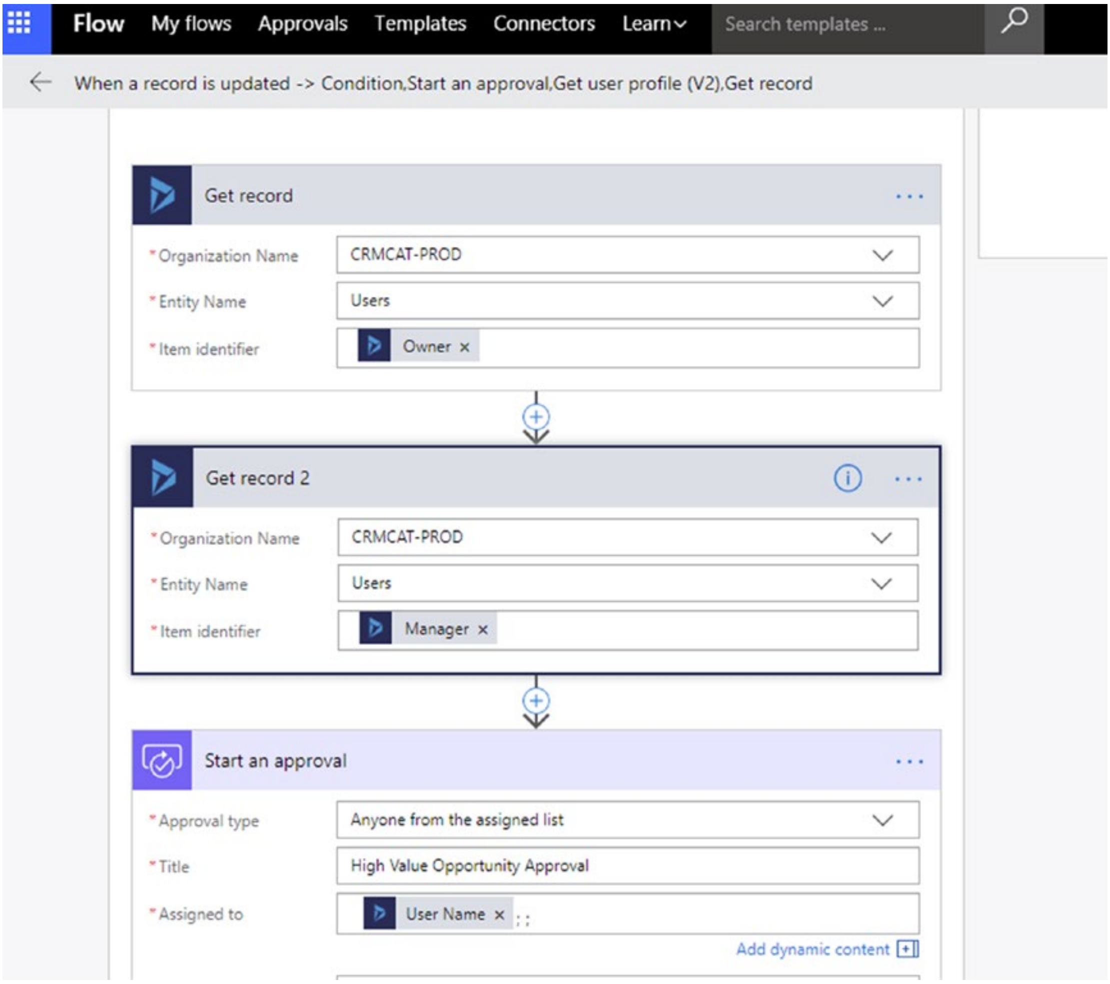
For this example, no further action will be taken on this approval, and it will simply be sent to the owner of the opportunity's defined manager within Dynamics 365.

12. Set the "Approval Type" field to "Anyone from the assigned list." This means any one person from any number of people in the "assigned to" list can approve the item and it would be approved. "Everyone in the assigned list" is the alternative, which means everyone in the defined list needs to approve the item before it is considered approved.

13. Set the "Title" field to "High-Value Opportunity Approval" (Figure 11-35).

14. Within the "Assigned to" field on the Approval Block, select the field and add the dynamic content "Manager" from the Get User 2 step and the "User name" field as shown in the Approval Block in Figure 11-35. (Note: The steps can be renamed to be more useful by right-clicking on the "..." within the block and clicking "Rename").

15. Add data within the "Details" field as "Please Approve or Reject."



When a record is updated -> Condition,Start an approval,Get user profile (V2),Get record

Get record

- *Organization Name: CRMCAT-PROD
- *Entity Name: Users
- *Item identifier: Owner

Get record 2

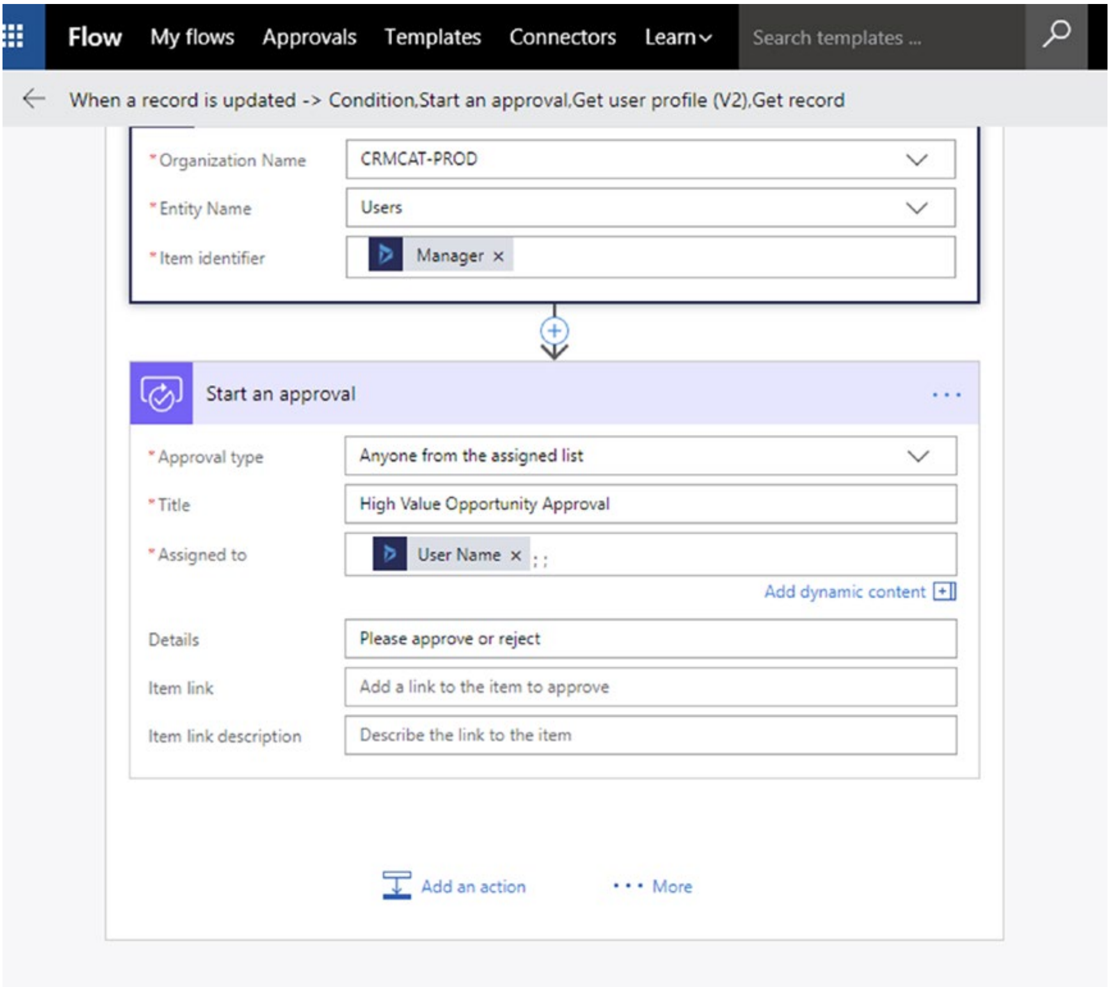
- *Organization Name: CRMCAT-PROD
- *Entity Name: Users
- *Item identifier: Manager

Start an approval

- *Approval type: Anyone from the assigned list
- *Title: High Value Opportunity Approval
- *Assigned to: User Name

Figure 11-35. Two "Get record" blocks and "Start approval" actions have been added on the positive outcome of the condition

The current flow should appear similar to Figure 11-36, where there are two "Get record" blocks, and the third is a "Start an approval" block.


Flow
My flows
Approvals
Templates
Connectors
Learn
Search templates ...
When a record is updated -> Condition,Start an approval,Get user profile (V2),Get record
Start an approval
Add dynamic content
Add an action
More

*Organization Name: CRMCAT-PROD

*Entity Name: Users

*Item identifier: Manager

*Approval type: Anyone from the assigned list

*Title: High Value Opportunity Approval

*Assigned to: User Name ; ;

Details: Please approve or reject

Item link: Add a link to the item to approve

Item link description: Describe the link to the item

Figure 11-36. *Start approval block details*

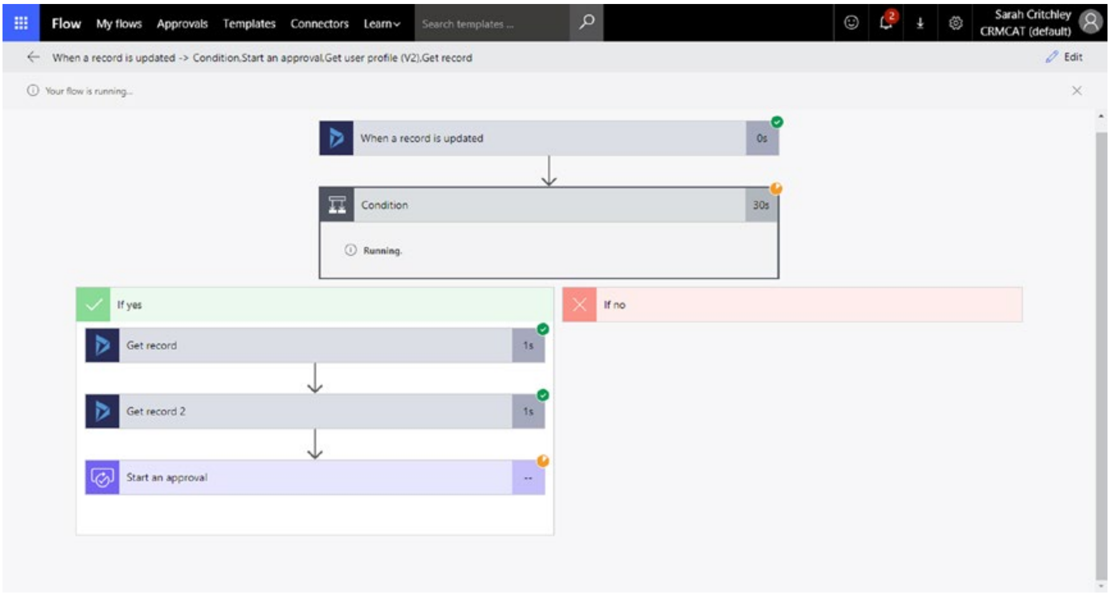
The business logic for this flow is now completed.

Task: Test the flow.

1. Click "Save" and then "Test."
2. Navigate to Dynamics 365 CE to test the positive branch.

3. Update an existing opportunity, ensuring the standard “Est. Revenue” field is over £50,000 (this field can normally be found in the header of the record at the top).

   The flow will appear to be running once the trigger action is created. The condition will appear in a “waiting state” as not all blocks have become successful within the “Yes” branch. The “Start an approval” block should update to a “waiting” state as indicated by the yellow timer symbol next to the block. This means an approval has been sent to the defined user and is waiting to be approved or rejected (Figure 11-37).



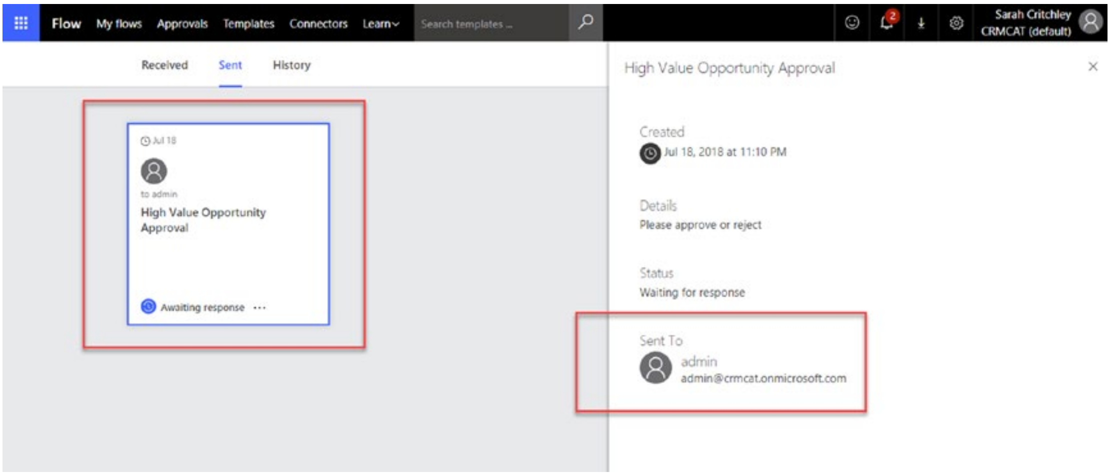
When a record is updated -> Condition.Start an approval.Get user profile (V2).Get record

Your flow is running...

Flow
My flows
Approvals
Templates
Connectors
Learn
Search templates ...
Sarah Critchley
CRMCAT (default)
Edit
When a record is updated
0s
Condition
30s
Running.
If yes
If no
Get record
1s
Get record 2
1s
Start an approval
--

Figure 11-37. *The yellow waiting icon means the approval is currently waiting to be approved or rejected*

Checking approvals can be completed by the user who sent the approval and also by the user who sent the original approval request. Navigate to “Approvals” in the header and then select “Sent.” The approval should be within the dashboard (Figure 11-38).


Flow
My flows
Approvals
Templates
Connectors
Learn
Search templates ...
Sarah Critchley
CRMCAT (default)
Received
Sent
History
Jul 18
to admin
Awaiting response

High Value Opportunity Approval

Created
Jul 18, 2018 at 11:10 PM

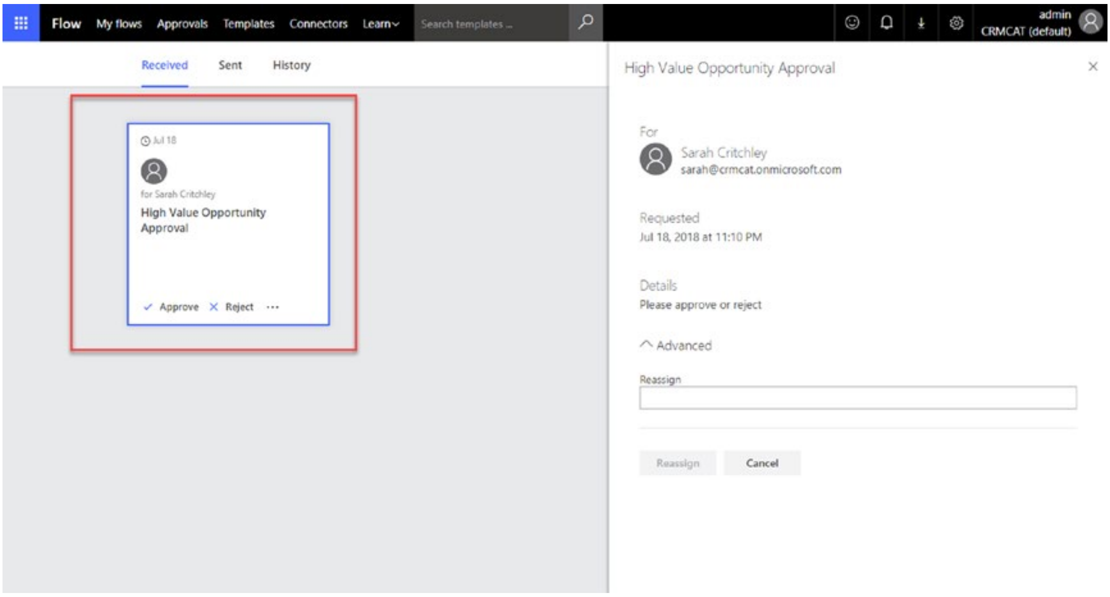
Details
Please approve or reject

Status
Waiting for response

Sent To
admin
admin@crmcat.onmicrosoft.com

***Figure 11-38.** Checking approvals sent within the Approvals dashboard in Microsoft Flow*

4. Ask the user who was set as a manager—or, if it’s another test user account within a trial account, log in as that user in Office 365—to navigate to the Approvals dashboard within Flow. The approval item should be waiting in the Approvals dashboard under the heading “Received” to be approved or rejected.
5. Select “Approve” on the card (Figure 11-39).


Flow
My flows
Approvals
Templates
Connectors
Learn
Search templates ...
admin
CRMCAT (default)
Received
Sent
History
Jul 18
for Sarah Critchley
High Value Opportunity Approval
Approve
Reject
...
High Value Opportunity Approval
For
Advanced
Reassign
Reassign
Cancel

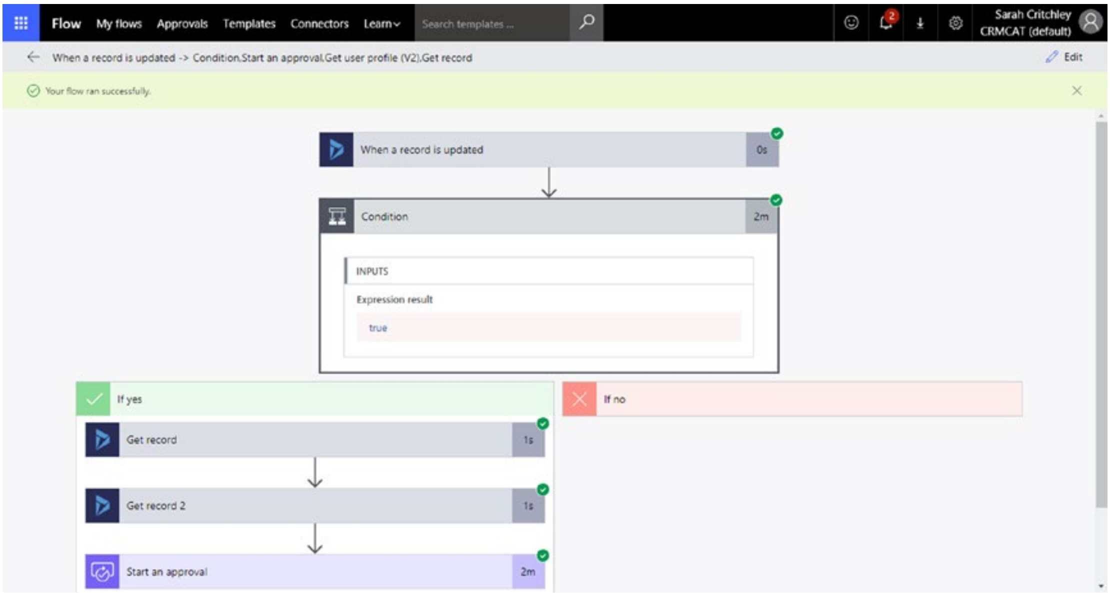
Sarah Critchley
sarah@crmcat.onmicrosoft.com

Requested
Jul 18, 2018 at 11:10 PM

Details
Please approve or reject

Figure 11-39. *The approval item waiting in the manager's Approvals dashboard to be approved or rejected*

This approval action completes the flow, and it is updated as running successfully (Figure 11-40).


Flow
My flows
Approvals
Templates
Connectors
Learn
Search templates ...
2
Sarah Critchley
CRMCAT (default)
Edit
When a record is updated
0s
Condition
2m
If yes
Get record
1s
Get record 2
1s
Start an approval
2m
If no

When a record is updated -> Condition,Start an approval,Get user profile (V2),Get record

Your flow ran successfully.

INPUTS
Expression result
true

Figure 11-40. *Approving the item completed the flow*

Exporting a Flow

Like solution management, flows will need to be deployed to different environments, such as in the scenario of moving from a development environment to a QA and then production environment. To do this for Flow, the process of exporting the .zip package is first completed, then the package is imported into the target environment (Figure 11-41). As highlighted earlier in this chapter, improved solution management is planned to be released as part of the October 2018 release for Flow and Canvas Apps.

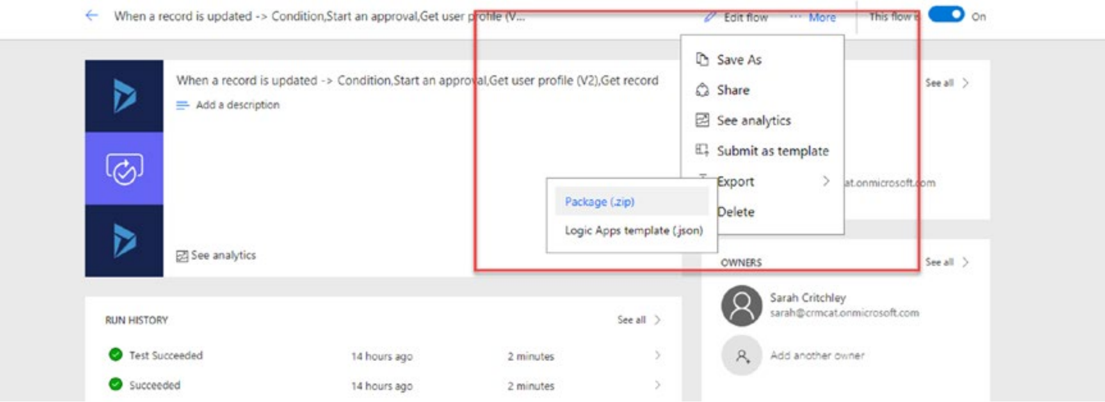
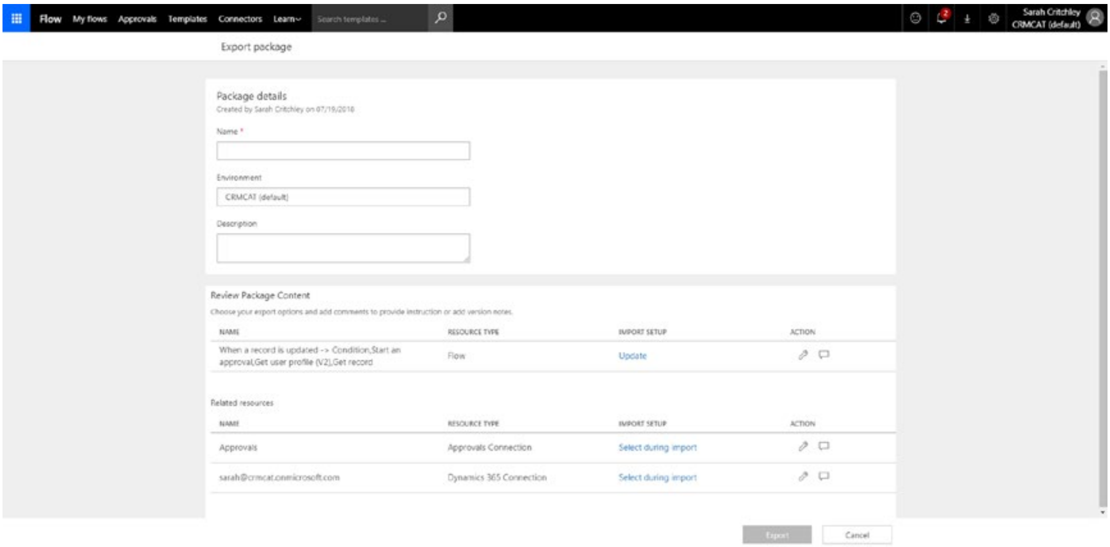

When a record is updated -> Condition,Start an approval,Get user profile (V...
Edit flow
More
This flow is
On
When a record is updated -> Condition,Start an approval,Get user profile (V2),Get record
Add a description
Save As
Share
See analytics
Submit as template
Export
Delete
Package (.zip)
Logic Apps template (.json)
See all
at.onmicrosoft.com
See analytics
OWNERS
See all
Sarah Critchley
sarah@crmcat.onmicrosoft.com
Add another owner
RUN HISTORY
See all
Test Succeeded
14 hours ago
2 minutes
Succeeded
14 hours ago
2 minutes

Figure 11-41. *Select "Export" and then "Package (.zip)" to export the zip folder of the flow*

Task: Export a flow.

1. Navigate to the flow and select the action menu ("...") and select "Export."
2. Two options will appear: Export the package as a .zip or export it as a logic app. As highlighted at the beginning of the chapter, Flow and Logic Apps are the same engine and so the flow can be ported to Azure Logic Apps if required. Click "Export as a Package."
3. There will be a prompt to name and describe the package and configure the import instructions. Import instructions can be set up to create or update an existing flow within the target environment and to set up connections that are utilized within the flow (as changing environments, it respects the fact that other authentication services may also need to redirect).

4. Click the Edit button under "Action" to modify these if required.
5. On this occasion, keep them as they are and click "Export" (Figure 11-42).


Flow
My flows
Approvals
Templates
Connectors
Learn
Search templates ...
Sarah Critchley
CRMCAT (default)
Export package
Export
Cancel

Package details

Created by Sarah Critchley on 07/19/2018

Name *

Environment: CRMCAT (default)

Description

Review Package Content

Choose your export options and add comments to provide instruction or add version notes.

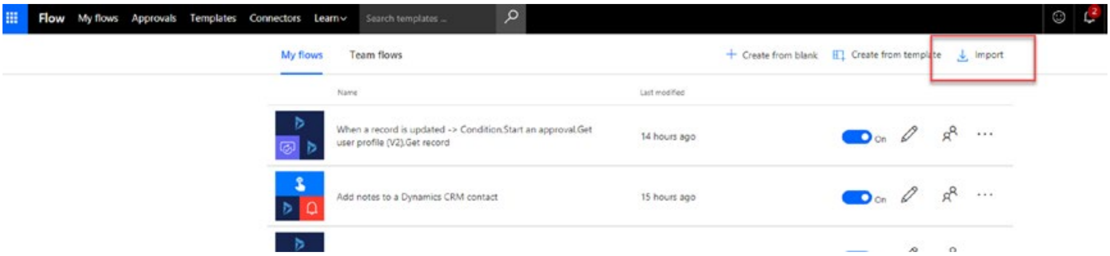
NAME	RESOURCE TYPE	IMPORT SETUP	ACTION
When a record is updated -> Condition,Start an approval,Get user profile (V2),Get record	Flow	Update	

Related resources

NAME	RESOURCE TYPE	IMPORT SETUP	ACTION
Approvals	Approvals Connection	Select during import	
sarah@crmcat.onmicrosoft.com	Dynamics 365 Connection	Select during import	

Figure 11-42. *Export Details screen when exporting a flow*

6. Navigate to another environment that has a Flow subscription and click "Import." A prompt will appear to find the .zip file just exported and select it for upload.
7. Find the .zip file exported in the previous step and select it for upload (Figure 11-43).

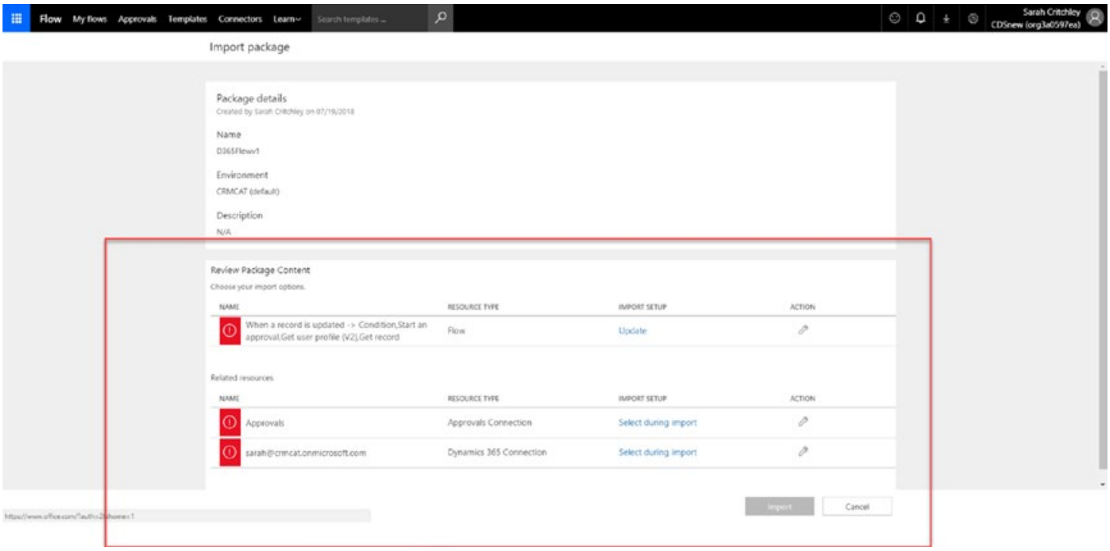

Flow
My flows
Approvals
Templates
Connectors
Learn
Search templates ...
My flows
Team flows
Create from blank
Create from template
Import
On
On

Name	Last modified
When a record is updated -> Condition,Start an approval,Get user profile (V2),Get record	14 hours ago
Add notes to a Dynamics CRM contact	15 hours ago

Figure 11-43. *Select "Import" in the target environment that the flow is being imported to*

8. Once the folder has been uploaded, some configuration needs to occur (Figure 11-44). The flow can be changed here from "Update" to "Create"; as the flow didn't exist in this environment previously, it needs to be created before its definition can be updated. For further imports of the same flow, they can be updated.

9. Authenticate to the specific services that the flow uses and create connections for those. If the connections already exist on the environment, these can be selected. Where they don't exist, a new connection needs to be created.


Flow
My flows
Approvals
Templates
Connectors
Learn
Search templates ...
Sarah Critchley
CDSnew (org3a0597ea)
Import package
Import
Cancel

Package details
Created by Sarah Critchley on 07/19/2018

Name
D365Flowv1

Environment
CRMCAT (default)

Description
N/A

Review Package Content
Choose your import options.

NAME	RESOURCE TYPE	IMPORT SETUP	ACTION
When a record is updated -> Condition,Start an approval,Get user profile (V2),Get record	Flow	Update	

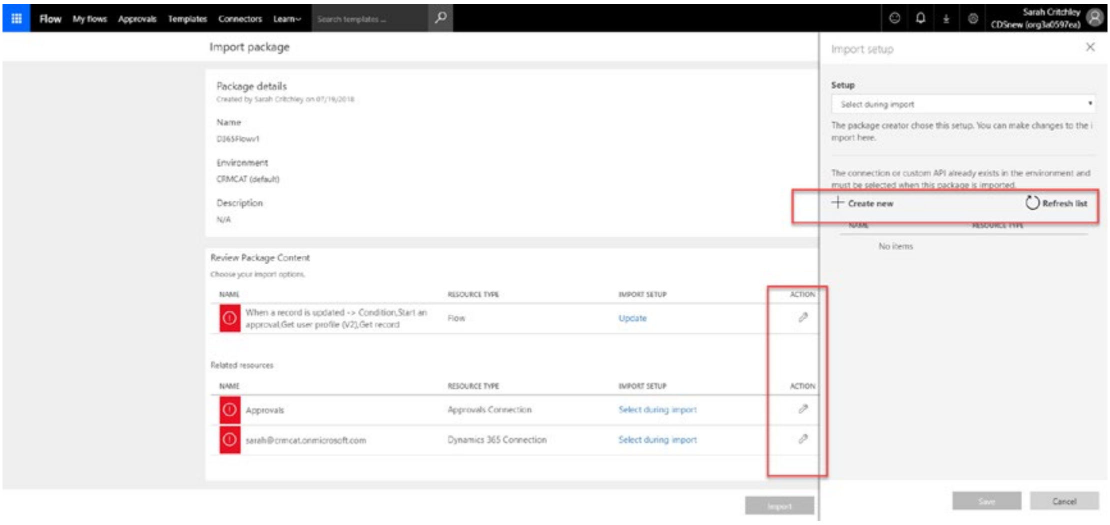
Related resources

NAME	RESOURCE TYPE	IMPORT SETUP	ACTION
Approvals	Approvals Connection	Select during import	
sarah@crmcat.onmicrosoft.com	Dynamics 365 Connection	Select during import	

Figure 11-44. *Import configuration for the flow within the target environment*

10. Click on the Action button shown in the Action column and a panel will open in the right-hand side of the window.

11. Select “Create New” and then “Create New Connection” on the connection page, as shown in Figure 11-45.


Flow
My flows
Approvals
Templates
Connectors
Learn
Search templates ...
Sarah Critchley
CDSnew (org3a0597ea)
Import package
Import setup
Create new
Refresh list
Save
Cancel
Import

Package details
Created by Sarah Critchley on 07/19/2018

Name
D365Flowv1

Environment
CRMCAT (default)

Description
N/A

Review Package Content
Choose your import options.

NAME	RESOURCE TYPE	IMPORT SETUP	ACTION
When a record is updated -> Condition,Start an approval,Get user profile (V2),Get record	Flow	Update	

Related resources

NAME	RESOURCE TYPE	IMPORT SETUP	ACTION
Approvals	Approvals Connection	Select during import	
sarah@crmcat.onmicrosoft.com	Dynamics 365 Connection	Select during import	

Setup
Select during import

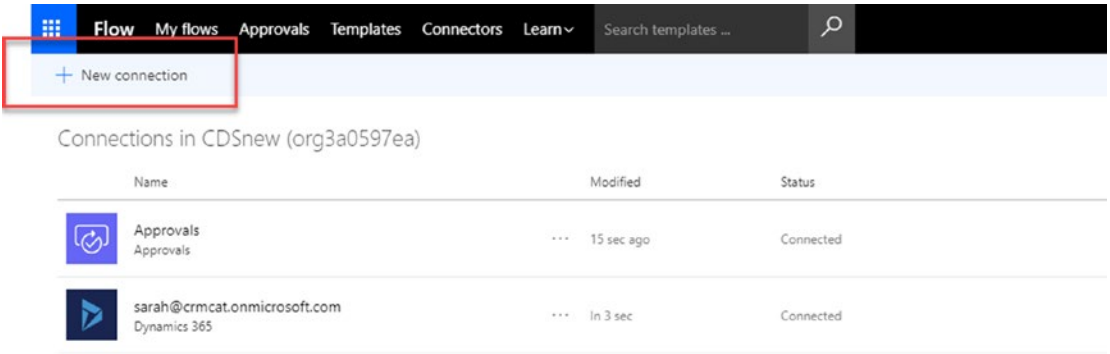
The package creator chose this setup. You can make changes to the i mport here.

The connection or custom API already exists in the environment and must be selected when this package is imported.

NAME	RESOURCE TYPE
No items	

Figure 11-45. *Select the respective Action button and create a new connection or select from existing connections*

12. Search for the connections required. In Figure 11-46, the connections are “Approvals,” which is the connection related to the flow approvals feature in the new environment. Complete the same step for the Dynamics 365 CE connector, which doesn’t have to be in the same tenant as the flow. A small popup appears in which to authenticate with the external service and agree to the terms. Once this has happened, the connections are set up.



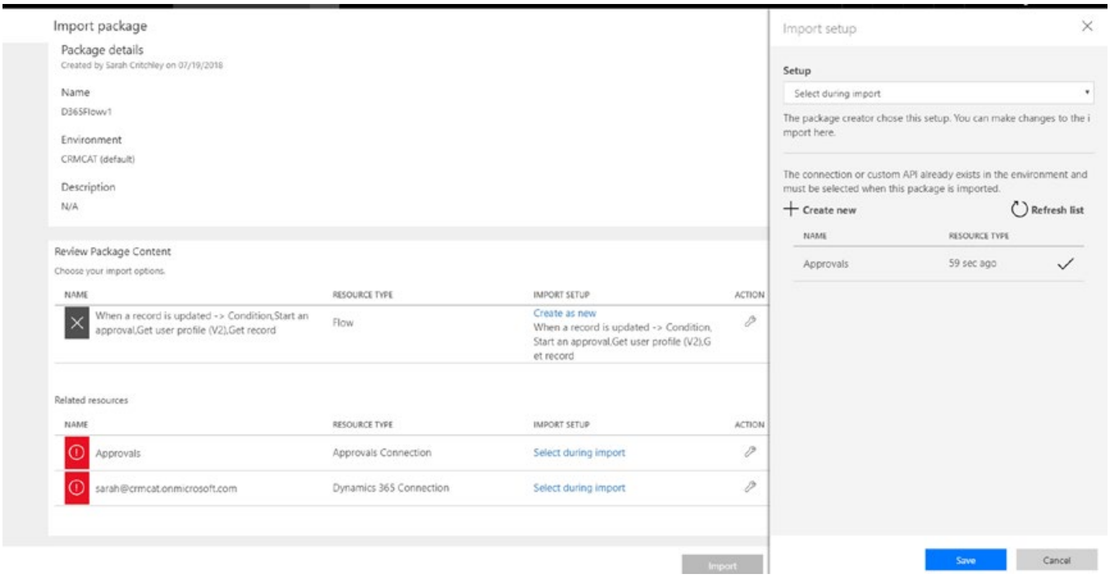
Connections in CDSnew (org3a0597ea)

Name	Modified	Status
Approvals Approvals	15 sec ago	Connected
sarah@crmcat.onmicrosoft.com Dynamics 365	In 3 sec	Connected

Figure 11-46. *Select "New Connection" to create a new connection within the environment, or select a connection from the list*

13. Navigate to the Action button in the Action column and select the existing connectors set up in the previous steps for the approvals and Dynamics 365 CE from the small table within the right-hand side pane, shown in Figure 11-47.

14. Click "Save" on each connector.



Package details

Created by Sarah Critchley on 07/19/2018

Name
D365Flow1

Environment
CRMCAT (default)

Description
N/A

Review Package Content

Choose your import options.

NAME	RESOURCE TYPE	IMPORT SETUP	ACTION
When a record is updated -> Condition,Start an approval,Get user profile (V2),Get record	Flow	Create as new When a record is updated -> Condition, Start an approval,Get user profile (V2),Get record	

Related resources

NAME	RESOURCE TYPE	IMPORT SETUP	ACTION
Approvals	Approvals Connection	Select during import	
sarah@crmcat.onmicrosoft.com	Dynamics 365 Connection	Select during import	

Setup
Select during import

The package creator chose this setup. You can make changes to the import here.

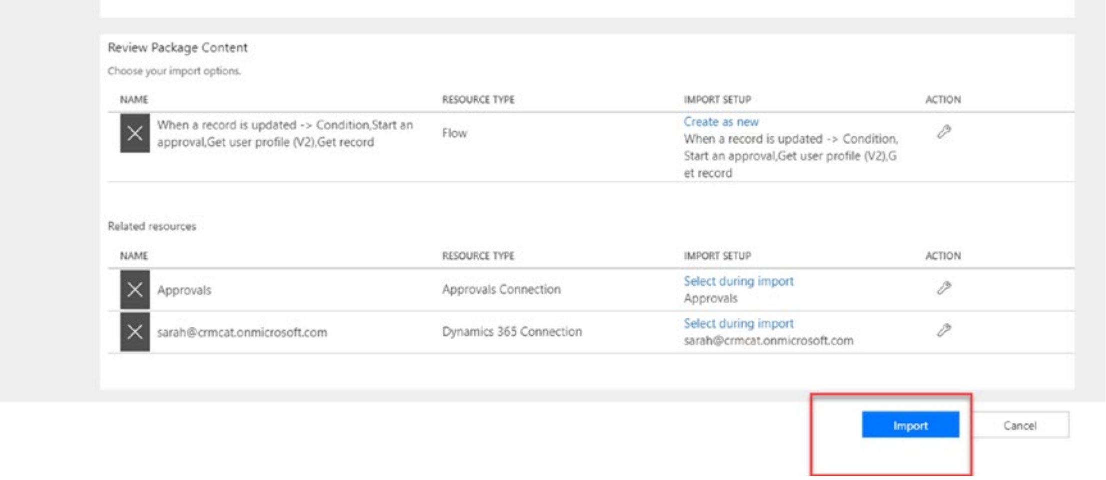
The connection or custom API already exists in the environment and must be selected when this package is imported.

+ Create new   Refresh list

NAME	RESOURCE TYPE	
Approvals	59 sec ago	✓

Figure 11-47. *Select the existing connectors and click "Save"*

Once completed, the Import button becomes available, shown in Figure 11-48, and the flow can now be imported into the environment. Once completed, the flow can be tested in the same way as it was in the previous environment.



Review Package Content

Choose your import options.

NAME	RESOURCE TYPE	IMPORT SETUP	ACTION
When a record is updated -> Condition,Start an approval,Get user profile (V2),Get record	Flow	Create as new When a record is updated -> Condition, Start an approval,Get user profile (V2),Get record	

Related resources

NAME	RESOURCE TYPE	IMPORT SETUP	ACTION
Approvals	Approvals Connection	Select during import Approvals	
sarah@crmcat.onmicrosoft.com	Dynamics 365 Connection	Select during import sarah@crmcat.onmicrosoft.com	

Figure 11-48. *Select “Import” to then import the flow into the target environment with the set import configurations*

Summary

Microsoft Flow has the potential to be a powerful tool in business system implementations and for personal productivity. The features of Flow take down the barriers of complexity and cost of system integrations, inside and outside of the Microsoft 365 platform. This chapter has covered the essentials of the Microsoft Flow platform, including where it is positioned in relation to the Dynamics 365 CE system. It has walked you through how to create new flows that range in complexity and, in some cases, take advantage of the extensive templates that are pre-created within the platform. While the ability to run flows directly from Dynamics 365 CE is not available in every country at the time of writing, using Flow to perform automation logic using Dynamics 365 CE is still possible, and this chapter gives you all the tools necessary to get started.

Chapter Tasks

At the end of every chapter, there will be a section that gives up to ten suggested tasks for you to complete within Dynamics 365 CE. These tasks will be based around the topics covered within the chapter and the further resources referenced at the end. They are aimed at expanding practical knowledge and application regarding those topics that goes beyond reading about them.

1. Create a basic flow.
2. Create a more complex flow, not using a template.
3. Create a flow that uses Dynamics 365 CE.
4. Create a flow that uses Microsoft Forms (or another connector) and Dynamics 365 CE.
5. Create a flow that uses SharePoint.
6. Create a flow that uses a non-Microsoft service.
7. Export a flow.
8. Import a flow.

Further Reading

Azure Logic Apps and Microsoft Flow (Microsoft, 2018), URL: `https://docs.microsoft.com/en-us/azure/azure-functions/functions-compare-logic-apps-ms-flow-webjobs`

Change Tracking in Microsoft Flow (Microsoft 2018), URL: `https://docs.microsoft.com/en-us/dynamics365/customer-engagement/admin/enable-embedded-flow-in-your-organization`

Embedded Flow in Dynamics 365 CE (Microsoft, 2018), URL: `https://docs.microsoft.com/en-us/dynamics365/customer-engagement/admin/enable-embedded-flow-in-your-organization`

CHAPTER 12

Common Data Service for Apps

The Common Data Service for Apps acts as a data store and model for Dynamics 365 CE data. Data that is entered through the user interface of the Dynamics 365 CE application automatically gets stored within the Common Data Service for Apps, essentially acting as one database of information. The advantage of this structure is that external data sources can be integrated with the Common Data Service for Apps so that this service can serve business applications of an organization with all the data stored and secured in a single space. The Common Data Service for Apps allows for a centrally controlled area to add and modify the structure (which reflects within the Dynamics 365 CE user interface) and for users to create canvas-driven applications that can utilize the data stored within the Common Data Service for Apps. Users would use Canvas Apps created in the PowerApps designer to link the Common Data Service for Apps database as a data source so the users could retrieve and add new data. Changes in this data are always reflected in model-driven apps created within the app designer in Dynamics 365 without any integration or user intervention, as they are both using the same data store, the Common Data Service for Apps.

Organizations can begin with just the Common Data Service for Apps, which includes a core set of records, such as Account, Activities, and more. The principle design of the Common Data Service for Apps is that the entities (record types) are added to the model based on other model-driven apps being subscribed to. An example of this would be that a customer-service app, which includes the Case entity, being used would then allow this entity to be used within the Common Data Service for Apps; The case entity would otherwise be a restricted type of entity as it requires a higher level of license subscription than the core Common Data Service for Apps.

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S. Critchley, *Dynamics 365 CE Essentials*, https://doi.org/10.1007/978-1-4842-3973-5_12

The Common Data Service for Apps is increasing in functionality every month, so this chapter is aimed at giving an introduction to the service and will be updated in later editions. Some recent updates include new export to Excel features that allow users to export data from the Common Data Service so as to modify and create new records to import back into the database.

Microsoft Flow, covered more extensively in Chapter 11, can also utilize the Common Data Service for Apps from triggers when a record is created, deleted, or updated and then perform actions within the Common Data Service for Apps, such as create new data. Microsoft Flow and Canvas Apps are two of the core tools that can help construct automation and integration in the Common Data Service for Apps to enable organizations to benefit from a loosely coupled architecture of many different sources that form one operational database. The operational database, the Common Data Service for Apps, which contains transactional data from multiple sources, users, and entry points, is designed to work with the Common Data Service for Analytics, coming soon.

To summarize, no integration is required for Common Data Service for Apps and Dynamics 365 CE. Both applications use the same database. Figure 12-1 shows how Dynamics 365 CE is built upon the Common Data Service for Apps and PowerApps. Users enter data, normally from a model or canvas-driven app, and the data is stored in a single common database that serves both Dynamics 365 Interface and also the Common Data Service for Apps.

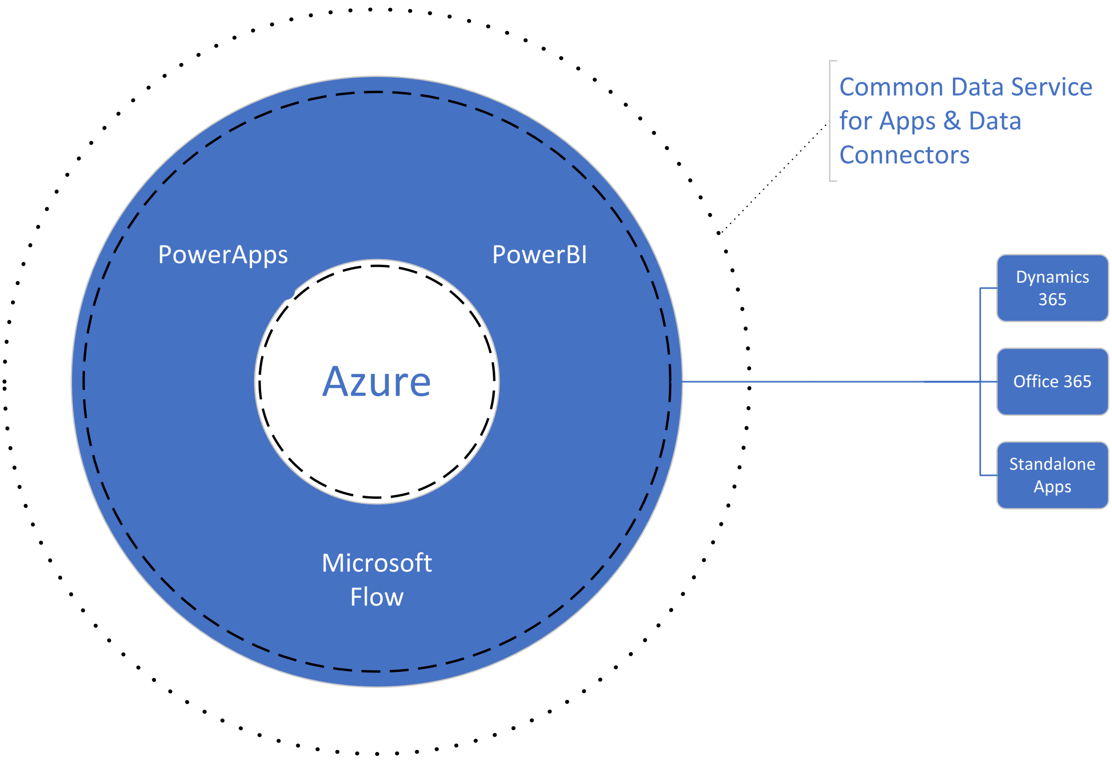

Common Data Service
for Apps & Data
Connectors
PowerApps
PowerBI
Azure
Microsoft
Flow
Dynamics
365
Office 365
Standalone
Apps

Figure 12-1. Dynamics built upon CDS and PowerApps

Starting with Common Data Service for Apps

The core Common Data Service for Apps is replicated in the Dynamics 365 CE Interface as the core “XRM” platform for users. This doesn’t include any first party apps, such as those for sales, customer service, or field service, and instead includes the “core” entity records, such as Account or Contact.

When an application, such as one for customer service, is licensed and added to the subscription, this module becomes available within the Dynamics 365 Interface. It also imports the additional set of entities as a schema into the Common Data Service for Apps. Other applications can then utilize this schema, such as Canvas Apps and other custom model-driven apps.

The core advantage of building canvas-driven apps is being able to create an app that includes and interacts with data from multiple sources and not just data from the Common Data Service for Apps. There is no need to create a complex custom integration project. Data-integration projects can be created that hold data in different data sources and are regularly scheduled to update within the Common Data Service for Apps. Data that doesn't require a scheduled update can be achieved using a simple import of Excel or CSV files (Figure 12-2).

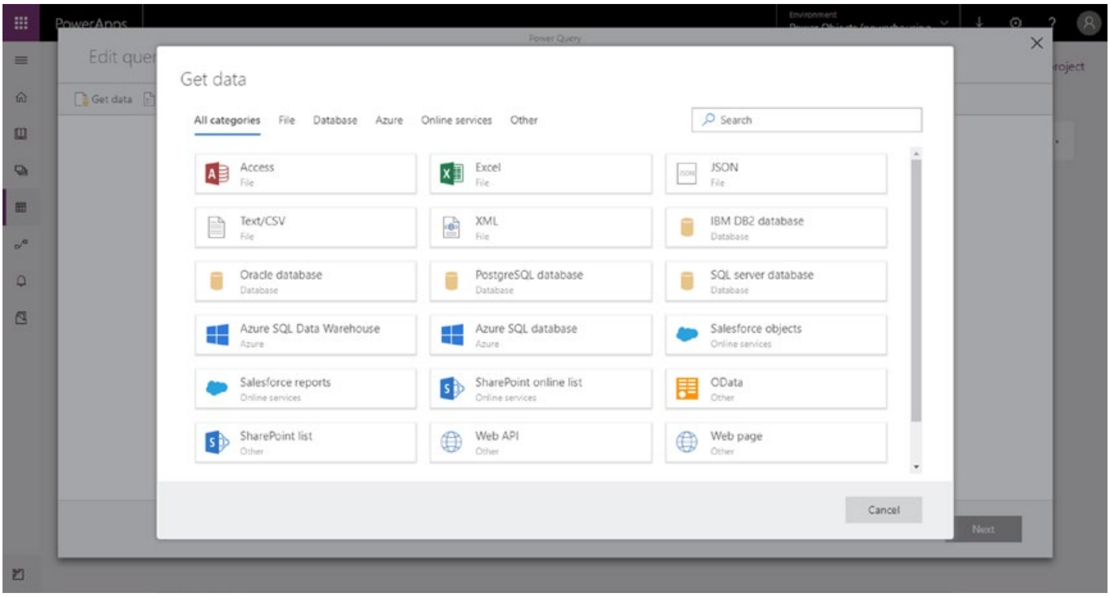

PowerApps
Power Query
Get data
All categories
File
Database
Azure
Online services
Other
Search
Access
File
Excel
File
JSON
File
Text/CSV
File
XML
File
IBM DB2 database
Database
Oracle database
Database
PostgreSQL database
Database
SQL server database
Database
Azure SQL Data Warehouse
Azure
Azure SQL database
Azure
Salesforce objects
Online services
Salesforce reports
Online services
SharePoint online list
Online services
OData
Other
SharePoint list
Other
Web API
Other
Web page
Other
Cancel
Next

Figure 12-2. *Data-integration projects can be created that schedule data to be updated within the Common Data Service*

Model-driven apps known to be using the Dynamics 365 CE Interface are created through app modules, discussed in Chapter 10. Canvas-driven apps can utilize data from multiple sources, including the Common Data Service for Apps (which is the same data Dynamics 365 CE users interact with) are created through the PowerApps Canvas App Designer, accessed through the administrative area of the Common Data Service for Apps or through `web.powerapps.com`.

The Common Data Service for Apps database exists per database per environment. An organization's sandbox and production Dynamics 365 CE environments will each have a separate database that is utilized and accessed using a different Common Data Service for Apps.

The different environments can be accessed via `admin.powerapps.com` or `admin.powerplatform.microsoft.com`, which gives administrators the ability to review the current environments, modify various settings, and create new environments. (At the time of writing, new environments created in the Common Data Service for Apps create an XRM-only instance of Dynamics 365 CE, with currently no upgrade path to add the customer service, sales, and other model-driven licensed apps into it.) The XRM-only environment for Dynamics 365 CE can be accessed through the administrative area of Dynamics 365 via `portal.office.com` (Figure 12-3).

It is expected that users' licenses attained through Dynamics 365 CE subscriptions and functionality will still be driven this way, which will automatically create the required Common Data Service for Apps environments. Alternative routes are suggested for those organizations not requiring Dynamics 365 CE, where they can choose Common Data Service for Apps–only plans.

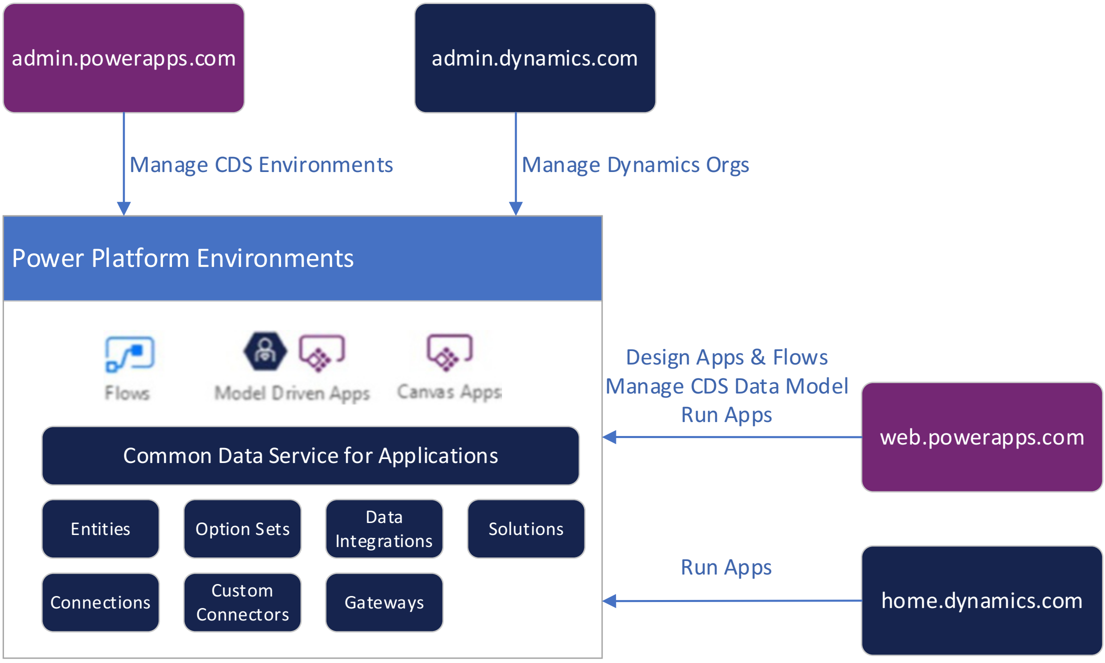

admin.powerapps.com
admin.dynamics.com
Manage CDS Environments
Manage Dynamics Orgs
Power Platform Environments
Flows
Model Driven Apps
Canvas Apps
Common Data Service for Applications
Entities
Option Sets
Data Integrations
Solutions
Connections
Custom Connectors
Gateways
Design Apps & Flows
Manage CDS Data Model
Run Apps
web.powerapps.com
Run Apps
home.dynamics.com

Figure 12-3. *Accessing the Dynamics 365 CE environment and Common Data Service for Apps*

How Can the Common Data Service for Apps Be Accessed?

Administrators and customizers, often referred to as *makers* within Microsoft documentation and learning material, can access the Common Data Service for Apps by navigating to `web.powerapps.com`.

In the top right-hand side of the website, the environment selector is available for you to switch between accessible environments (Figure 12-4). Referring to the earlier section in this chapter, environments can be linked to Dynamics 365 CE instances and have the same referring names. Administrators can also create new environments to be accessed from this dropdown at `admin.powerapps.com`.

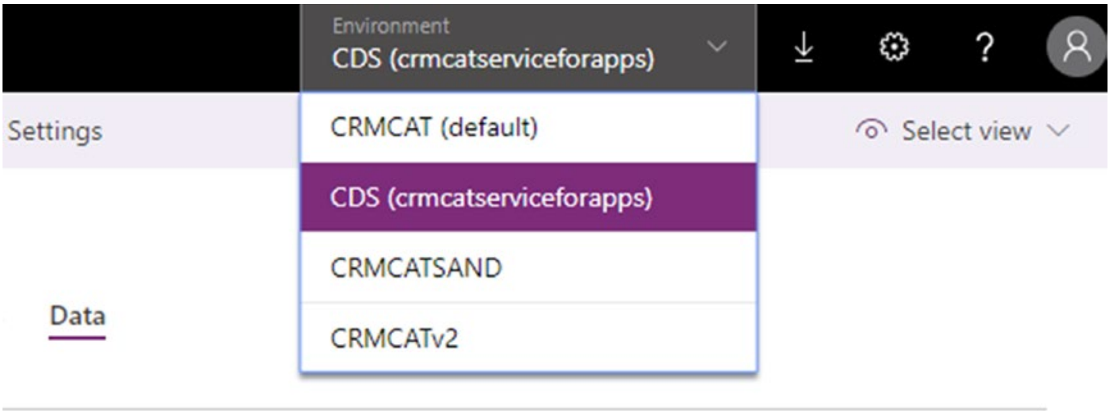


Figure 12-4. *Changing environments*

Once an environment is selected, you can choose between the model-driven and canvas design modes from within the browser (Figure 12-5) or from selecting 'Apps' and then 'New' where you will select if the app will be model-driven or canvas-driven (this change is dependant on the latest version at time of writing). These different modes affect the visibility of the apps in the left-hand panel. When Canvas mode is selected, the canvas apps are listed and can be created. When Model-Driven mode is selected, the model-driven apps, known as the Dynamics 365 CE apps, are available to be selected and created. Creating a model-driven app from here opens the app designer in Dynamics 365 CE.

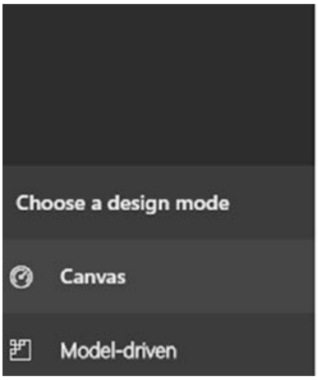


***Figure 12-5.** Changing the design mode changes the options of what is available in the left-hand pane on* `web.powerapps.com`

Navigation within the Common Data Service for Apps

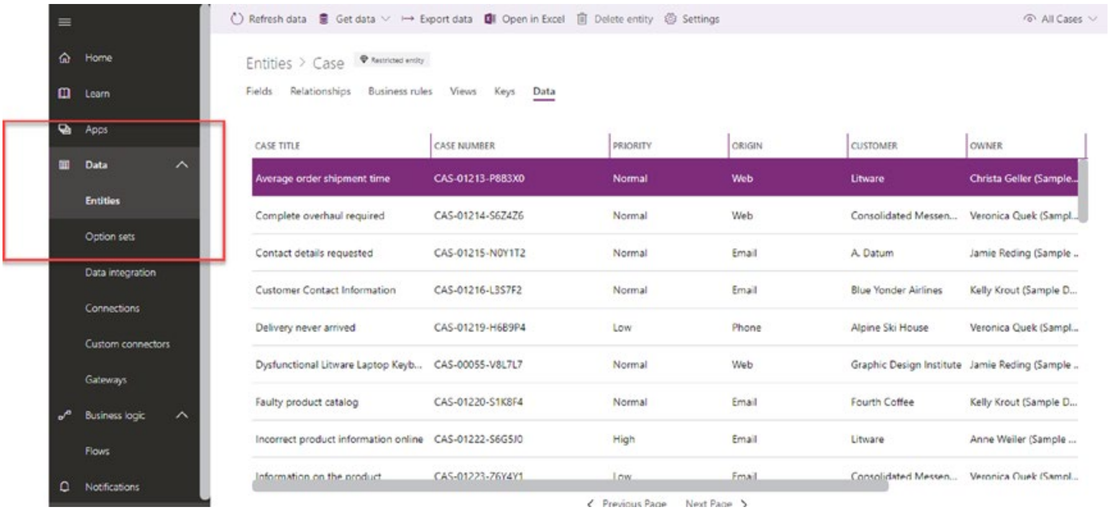
Navigating the Common Data Service for Apps is done by using the left-hand navigational pane. The left-hand navigation has the following options:

- **Apps** – Canvas or model driven depending on the active selector (see the previous section).
- **Data** – Add to and view the data model for the Common Data Service for Apps and Dynamics 365 CE
- **Business Logic** – Add flows that are triggered from PowerApps here
- **Notifications** – Any notifications on the environment
- **Solutions** – Only visible in Model-Driven mode; lists the solutions in the same way as the solutions are listed within Dynamics 365 CE. New solutions can be made and imported from here.

The main area of functionality is the “Data” option, which allows administrators and customizers to view and modify the schema of the Common Data Service for Apps and that of Dynamics 365 for Apps (Figure 12-6). When you click on the “Data” option, more options become available, including the following:

- Entities
- Option sets

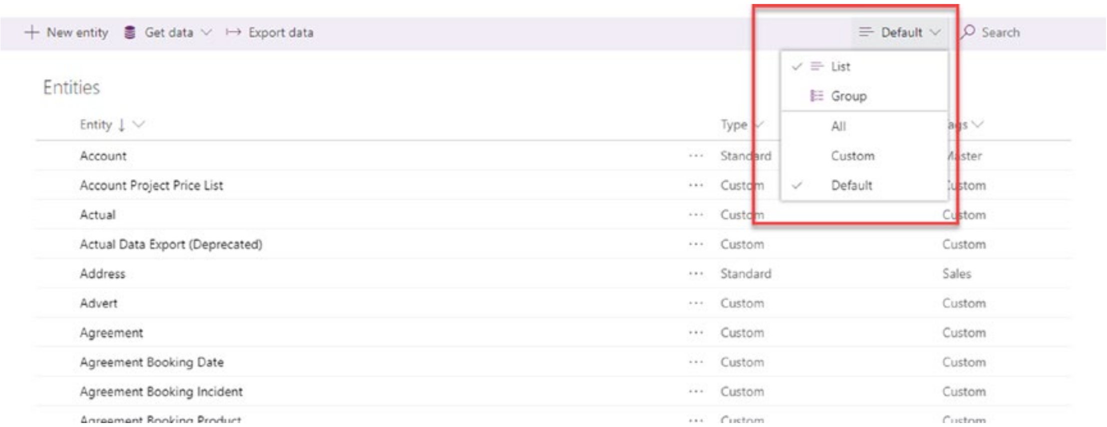
- Data integration
- Connections (only available in Canvas mode)
- Custom connectors (only available in Canvas mode)
- Gateways (only available in Canvas mode)


Refresh data
Get data
Export data
Open in Excel
Delete entity
Settings
All Cases
Home
Learn
Apps
Data
Entities
Option sets
Data integration
Connections
Custom connectors
Gateways
Business logic
Flows
Notifications
Entities > Case
Restricted entity
Fields
Relationships
Business rules
Views
Keys
Data
Previous Page
Next Page

CASE TITLE	CASE NUMBER	PRIORITY	ORIGIN	CUSTOMER	OWNER
Average order shipment time	CAS-01213-P8B3X0	Normal	Web	Litware	Christa Geller (Sample...
Complete overhaul required	CAS-01214-S6Z4Z6	Normal	Web	Consolidated Messen...	Veronica Quek (Sampl...
Contact details requested	CAS-01215-N0Y1T2	Normal	Email	A. Datum	Jamie Reding (Sample ...
Customer Contact Information	CAS-01216-L3S7F2	Normal	Email	Blue Yonder Airlines	Kelly Krout (Sample D...
Delivery never arrived	CAS-01219-H6B9P4	Low	Phone	Alpine Ski House	Veronica Quek (Sampl...
Dysfunctional Litware Laptop Keyb...	CAS-00055-V8L7L7	Normal	Web	Graphic Design Institute	Jamie Reding (Sample ...
Faulty product catalog	CAS-01220-S1K8F4	Normal	Email	Fourth Coffee	Kelly Krout (Sample D...
Incorrect product information online	CAS-01222-S6G5J0	High	Email	Litware	Anne Weiler (Sample ...
Information on the product	CAS-01223-Z6Y4Y1	Low	Email	Consolidated Messen...	Veronica Quek (Sampl...

Figure 12-6. *The left-hand pane option "Data" houses the data model for Dynamics 365 CE and Common Data Service for Apps*

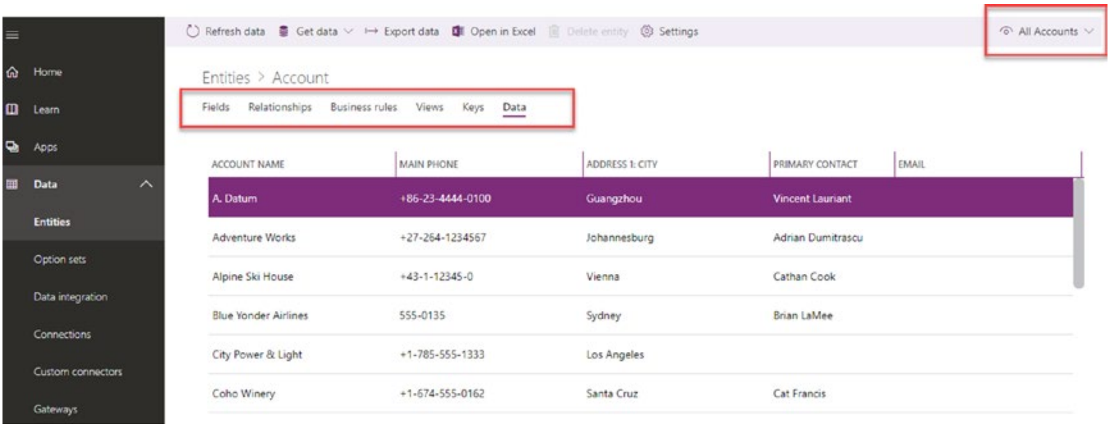
Under the 'Data' heading, in the "Entities" section, a list of the entities found in the Common Data Service for Apps is available. The entities list is filtered for default entities (XRM type only) and can be modified to include custom entities or all entities by clicking on the dropdown list in the top right corner next to the search bar, as shown in Figure 12-7. Entities such as the Case entity are classed as "Custom" and will not appear when this is filtered to "Default." New entities can be created here by selecting "New Entity" and completing the right-hand side pane that appears, ensuring "Save Entity" is selected at the bottom.


New entity
Get data
Export data
Default
Search
Entities
List
Group
All
Custom
Default

Entity	Type	Tags
Account	Standard	Master
Account Project Price List	Custom	Custom
Actual	Custom	Custom
Actual Data Export (Deprecated)	Custom	Custom
Address	Standard	Sales
Advert	Custom	Custom
Agreement	Custom	Custom
Agreement Booking Date	Custom	Custom
Agreement Booking Incident	Custom	Custom
Agreement Booking Product	Custom	Custom

***Figure 12-7.** The "Entities" list is pre-filtered to "Default." This can be changed in the filter options in the top right corner on the entities list.*

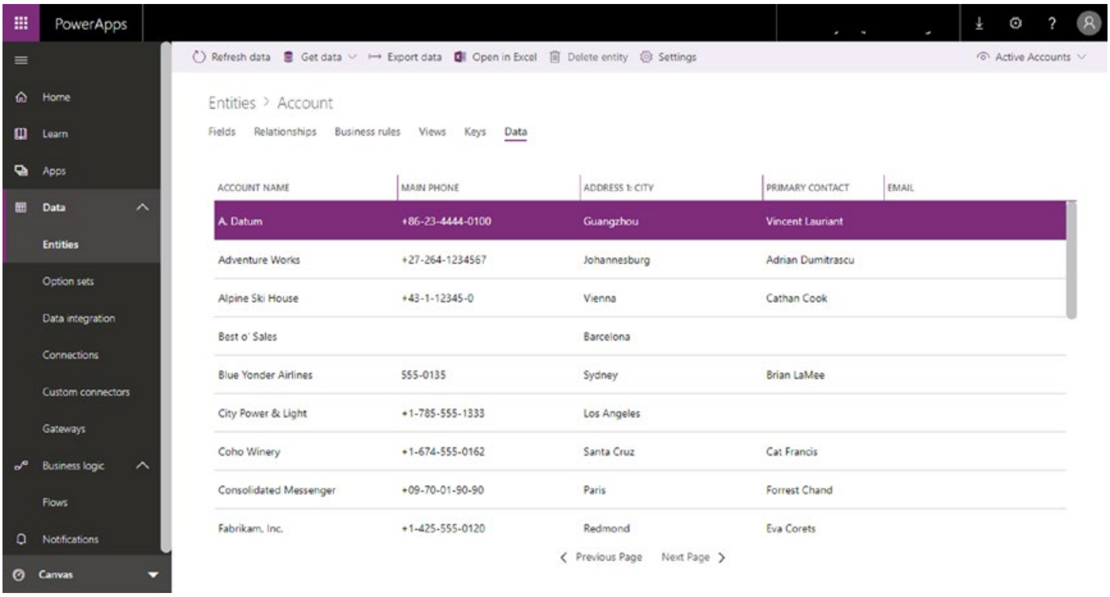
Click an entity name to open the entity definition. The definition contains familiar items previously covered in this book, such as the fields, relationships, business rules, views, and data. In the Data tab, the data from within the Common Data Service for Apps and Dynamics 365 CE can be displayed. Use the view selector in the top right, shown in Figure 12-8, to ensure the views match, and then load the data in the same way as users would in Dynamics 365 CE. This is important as it can appear as if no data is visible in certain views as it is being filtered.


Home
Learn
Apps
Data
Entities
Option sets
Data integration
Connections
Custom connectors
Gateways
Refresh data
Get data
Export data
Open in Excel
Delete entity
Settings
All Accounts
Entities > Account
Fields
Relationships
Business rules
Views
Keys
Data

ACCOUNT NAME	MAIN PHONE	ADDRESS 1: CITY	PRIMARY CONTACT	EMAIL
A. Datum	+86-23-4444-0100	Guangzhou	Vincent Lauriant	
Adventure Works	+27-264-1234567	Johannesburg	Adrian Dumitrascu	
Alpine Ski House	+43-1-12345-0	Vienna	Cathan Cook	
Blue Yonder Airlines	555-0135	Sydney	Brian LaMee	
City Power & Light	+1-785-555-1333	Los Angeles		
Coho Winery	+1-674-555-0162	Santa Cruz	Cat Francis	

***Figure 12-8.** The views can be changed when selecting the Data tab in the top right of the window*

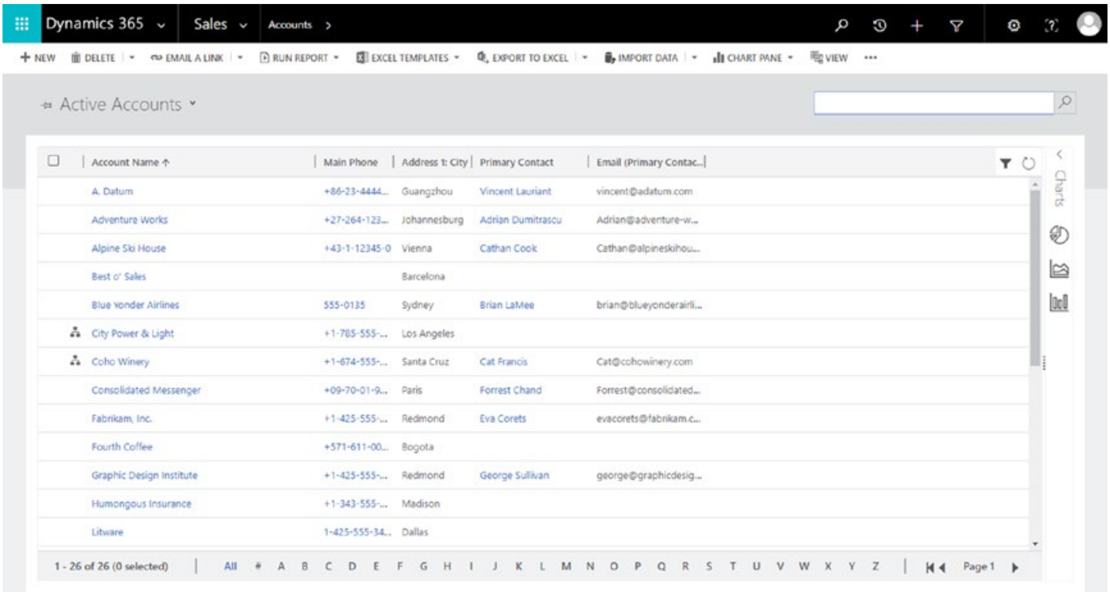
In Figures 12-9 and 12-10, the same view of data for the Account entity is available in both the Common Data Service for Apps and Dynamics 365 CE using the view "Active Accounts."


PowerApps
Home
Learn
Apps
Data
Entities
Option sets
Data integration
Connections
Custom connectors
Gateways
Business logic
Flows
Notifications
Canvas
Refresh data
Get data
Export data
Open in Excel
Delete entity
Settings
Active Accounts
Entities > Account
Fields
Relationships
Business rules
Views
Keys
Data
Previous Page
Next Page

ACCOUNT NAME	MAIN PHONE	ADDRESS 1: CITY	PRIMARY CONTACT	EMAIL
A. Datum	+86-23-4444-0100	Guangzhou	Vincent Lauriant	
Adventure Works	+27-264-1234567	Johannesburg	Adrian Dumitrascu	
Alpine Ski House	+43-1-12345-0	Vienna	Cathan Cook	
Best o' Sales		Barcelona		
Blue Yonder Airlines	555-0135	Sydney	Brian LaMee	
City Power & Light	+1-785-555-1333	Los Angeles		
Coho Winery	+1-674-555-0162	Santa Cruz	Cat Francis	
Consolidated Messenger	+09-70-01-90-90	Paris	Forrest Chand	
Fabrikam, Inc.	+1-425-555-0120	Redmond	Eva Corets	

Figure 12-9. *Account view within Common Data Service for Apps with the Active Accounts view selected*

This further reinforces the point that the Common Data Service for Apps is a single database where data can be viewed and accessed from multiple places.


Dynamics 365
Sales
Accounts
NEW
DELETE
EMAIL A LINK
RUN REPORT
EXCEL TEMPLATES
EXPORT TO EXCEL
IMPORT DATA
CHART PANE
VIEW
Active Accounts
Charts
1 - 26 of 26 (0 selected)
All # A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
Page 1

Account Name ↑	Main Phone	Address 1: City	Primary Contact	Email (Primary Contac...
A. Datum	+86-23-4444...	Guangzhou	Vincent Lauriant	vincent@adatum.com
Adventure Works	+27-264-123...	Johannesburg	Adrian Dumitrascu	Adrian@adventure-w...
Alpine Ski House	+43-1-12345-0	Vienna	Cathan Cook	Cathan@alpineskihou...
Best o' Sales		Barcelona		
Blue Yonder Airlines	555-0135	Sydney	Brian LaMee	brian@blueyonderairli...
City Power & Light	+1-785-555-...	Los Angeles		
Coho Winery	+1-674-555-...	Santa Cruz	Cat Francis	Cat@cohowinery.com
Consolidated Messenger	+09-70-01-9...	Paris	Forrest Chand	Forrest@consolidated...
Fabrikam, Inc.	+1-425-555-...	Redmond	Eva Corets	evacorets@fabrikam.c...
Fourth Coffee	+571-611-00...	Bogota		
Graphic Design Institute	+1-425-555-...	Redmond	George Sullivan	george@graphicdesig...
Humongous Insurance	+1-343-555-...	Madison		
Litware	1-425-555-34...	Dallas		

Figure 12-10. *Account view within Dynamics 365 CE with the Active Accounts view selected*

In the "Fields" section of the Entity, clicking "Add Field" opens a pane on the right-hand side of the window (Figure 12-11). You can configure the field, in the same way as the field designer does in Dynamics 365 CE, to set the display name, data type, and configuration of the field as to whether it is a rollup, calculated, or required by the business.

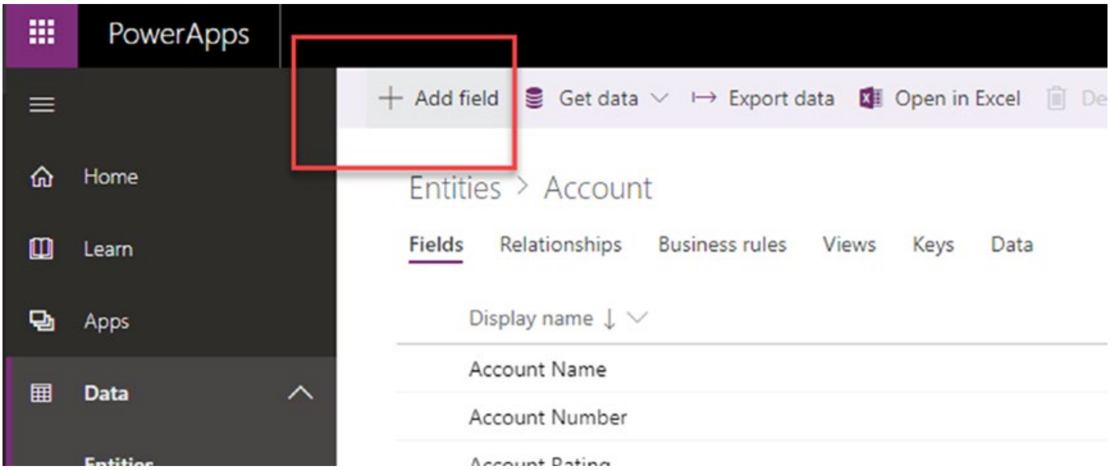
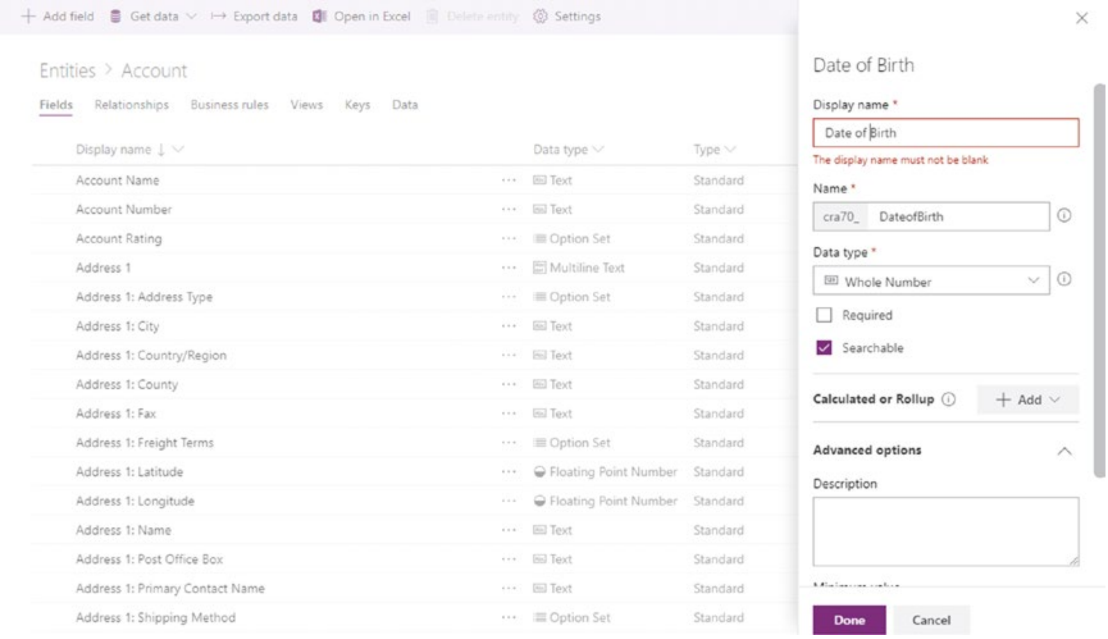

PowerApps
Home
Learn
Apps
Data
Entities
Add field
Get data
Export data
Open in Excel
De
Entities > Account
Fields
Relationships
Business rules
Views
Keys
Data
Display name ↓
Account Name
Account Number
Account Rating

Figure 12-11. *Selecting "Add Field" within the entity view in Common Data Service for Apps*

Creating new fields within the Common Data Service for Apps also allows them to be used within Dynamics 365 CE, since they are shared (Figure 12-12).



Display name	Data type	Type
Account Name	Text	Standard
Account Number	Text	Standard
Account Rating	Option Set	Standard
Address 1	Multiline Text	Standard
Address 1: Address Type	Option Set	Standard
Address 1: City	Text	Standard
Address 1: Country/Region	Text	Standard
Address 1: County	Text	Standard
Address 1: Fax	Text	Standard
Address 1: Freight Terms	Option Set	Standard
Address 1: Latitude	Floating Point Number	Standard
Address 1: Longitude	Floating Point Number	Standard
Address 1: Name	Text	Standard
Address 1: Post Office Box	Text	Standard
Address 1: Primary Contact Name	Text	Standard
Address 1: Shipping Method	Option Set	Standard

Date of Birth

Display name * Date of Birth

The display name must not be blank

Name * cra70_ DateofBirth

Data type * Whole Number

☐ Required

☑ Searchable

Calculated or Rollup + Add

Advanced options

Description

Figure 12-12. *Configuring a new field in Common Data Service for Apps that would be reflected within Dynamics 365 CE*

In the "Relationships" section of the entity, you can create one-to-many, many-to-one, and many-to-many type relationships and configure them based on the Primary and Related entities within the Common Data Service for Apps (Figure 12-13)

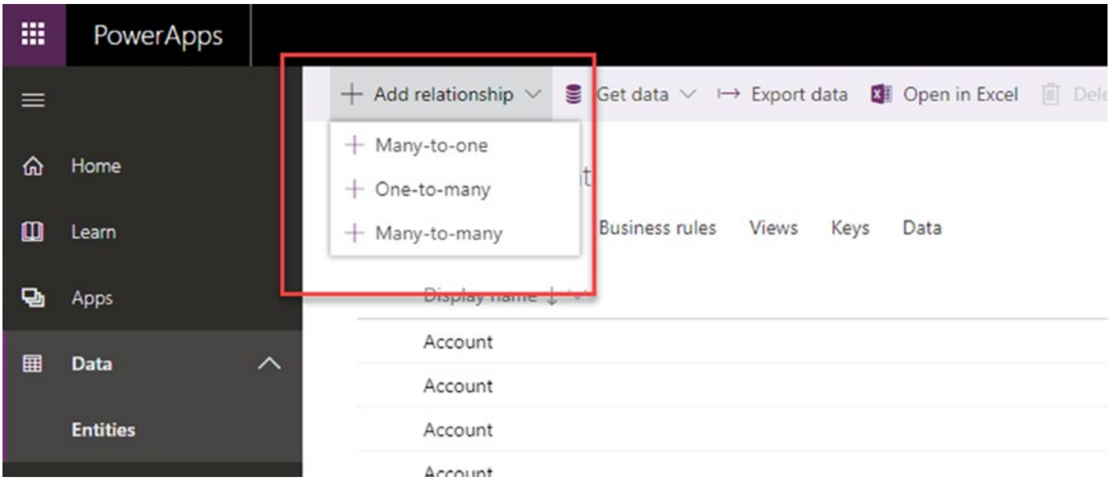
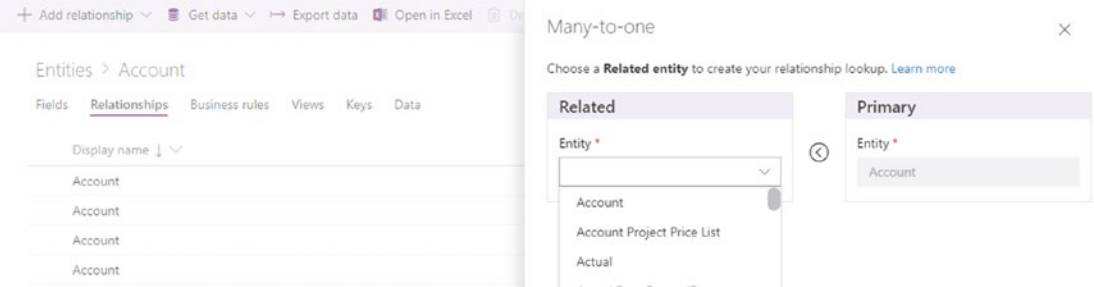

PowerApps
Add relationship
Many-to-one
One-to-many
Many-to-many
Get data
Export data
Open in Excel
Home
Learn
Apps
Data
Entities
Business rules
Views
Keys
Data
Display name
Account
Account
Account
Account

Figure 12-13. *Creating a new relationship under the relationship header on an entity definition within the Common Data Service for Apps*

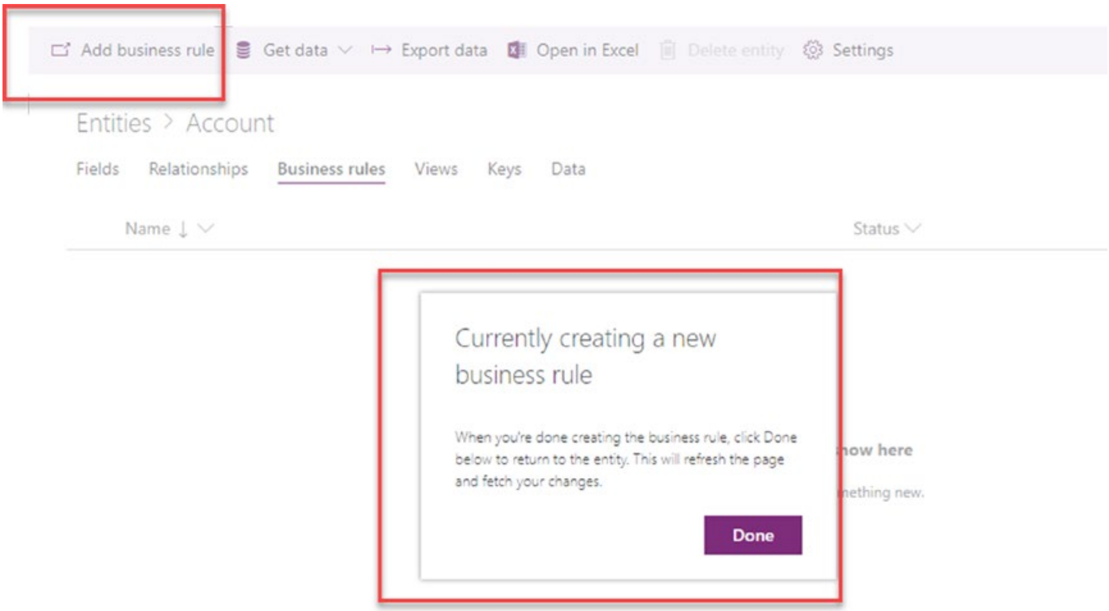
In the same way as fields, new relationships created within the Common Data Service for Apps can also be utilized and visible within Dynamics 365 CE (Figure 12-14).


Choose a **Related entity** to create your relationship lookup. Learn more

Add relationship
Get data
Export data
Open in Excel
Entities > Account
Fields
Relationships
Business rules
Views
Keys
Data
Display name
Account
Account
Account
Account
Many-to-one
Related
Entity *
Account
Account Project Price List
Actual
Primary
Entity *
Account

Figure 12-14. *Configuring the relationship's related entity when creating the construct within Common Data Service for Apps*

Business rules can also be started from the Common Data Service for Apps. You can select "Add Business Rule" from the entity, and the Business Rule designer opens in a new window, where the user can design the business logic for the rule and save it before coming back to the Common Data Service for Apps interface to complete the creation process (Figure 12-15). The business rule designer is covered within Chapter 8.

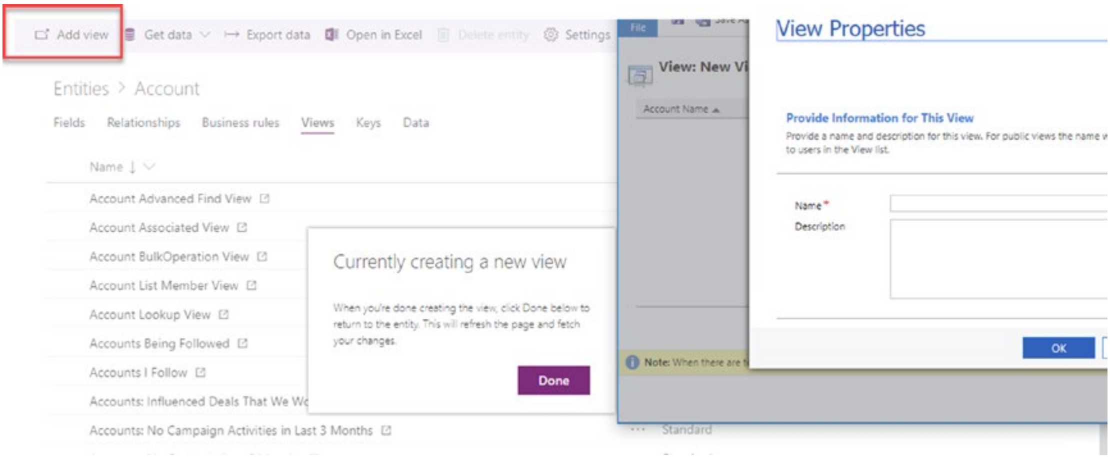

Add business rule
Get data
Export data
Open in Excel
Delete entity
Settings
Entities > Account
Fields
Relationships
Business rules
Views
Keys
Data
Name
Status
Done

Currently creating a new business rule

When you're done creating the business rule, click Done below to return to the entity. This will refresh the page and fetch your changes.

__Figure 12-15.__ Selecting "Add Business Rule" within Common Data Service for Apps opens the business rule designer within Dynamics 365 CE

In the same way, new views can be created from the Common Data Service for Apps. Selecting "Add View" creates a blank new view in the same style as in Dynamics 365 CE, covered earlier in the book, and prompts you to complete the name, modify the columns, and filter criteria. After saving it and closing the window, you are returned to the Common Data Service for Apps interface (Figure 12-16).


Add view
Get data
Export data
Open in Excel
Delete entity
Settings
Entities > Account
Fields
Relationships
Business rules
Views
Keys
Data
Name
Account Advanced Find View
Account Associated View
Account BulkOperation View
Account List Member View
Account Lookup View
Accounts Being Followed
Accounts I Follow
Accounts: Influenced Deals That We Wo
Accounts: No Campaign Activities in Last 3 Months
Done
File
View: New Vi
Account Name
Standard
View Properties
Provide Information for This View
Name
Description
OK

Currently creating a new view

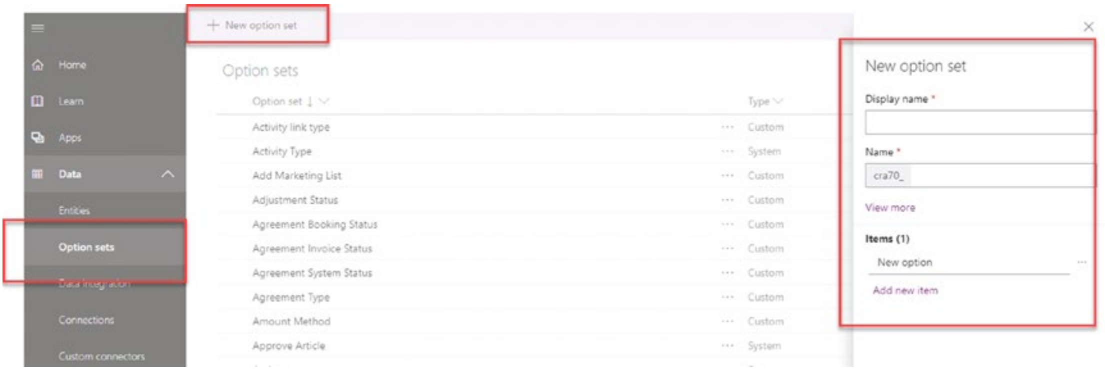
When you're done creating the view, click Done below to return to the entity. This will refresh the page and fetch your changes.

Provide a name and description for this view. For public views the name w to users in the View list.

Note: When there are t

__Figure 12-16.__ Creating a new view within Common Data Service for Apps prompts a user to complete this within the Dynamics 365 UI

Option sets can be created with the Common Data Service for Apps interface. These are also sometimes referred to as “global” option-set types that can be used across multiple fields of the type “Option-set.” Clicking the “Option set” navigational selection on the sitemap opens a list of all the available global option sets. There is also the option to create a new option set using New Option Set button. This opens a pane on the right-hand side for the user to complete. Once completed, this option-set menu can be used in fields created from the Common Data Service for Apps interface and the Dynamics 365 CE interface (Figure 12-17).



Option set	Type
Activity link type	Custom
Activity Type	System
Add Marketing List	Custom
Adjustment Status	Custom
Agreement Booking Status	Custom
Agreement Invoice Status	Custom
Agreement System Status	Custom
Agreement Type	Custom
Amount Method	Custom
Approve Article	System

Display name *

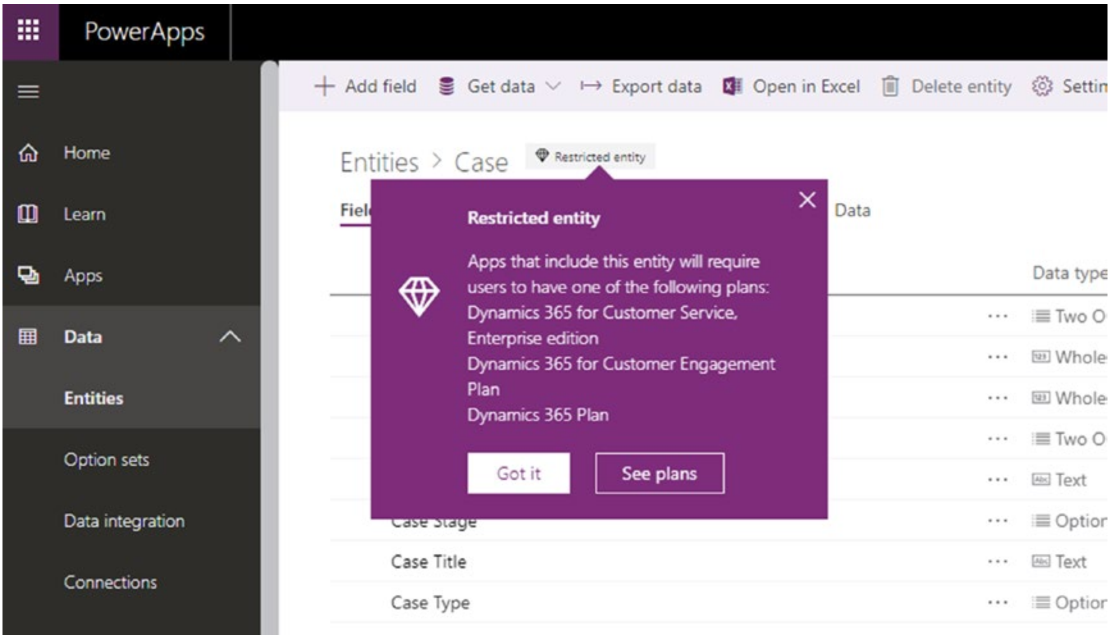
Name * cra70_

Items (1)

New option

Figure 12-17. *Creating new option sets within the Common Data Service for Apps*

As highlighted earlier in the chapter, when a user navigates to an entity that is not a first-party entity, a notification will appear that this entity is a restricted entity (Figure 12-18). This means the core Common Data Service for App license is not enough to be able to use this type of entity alone, and there must be an additional plan or license by the organization referenced in the notification. Modifications cannot be performed on entities without the correct plan. These types of entities are available in a list kept up to date by Microsoft and found in the “Further Resources” section at the end of this chapter.


PowerApps
Home
Learn
Apps
Data
Entities
Option sets
Data integration
Connections
Add field
Get data
Export data
Open in Excel
Delete entity
Settin
Entities > Case
Restricted entity
Fiel
Data
Data type
Two O
Whole
Whole
Two O
Text
Case Stage
Option
Case Title
Text
Case Type
Option
Got it
See plans

Restricted entity

Apps that include this entity will require users to have one of the following plans:
Dynamics 365 for Customer Service, Enterprise edition
Dynamics 365 for Customer Engagement Plan
Dynamics 365 Plan

Figure 12-18. Restricted entity notification within Common Data Service for Apps

Summary

This chapter has covered the essentials of the Common Data Service for Apps. It is an important chapter that will help you understand the relationship between the Common Data Service for Apps and Dynamics 365 CE. While there are multiple entry points, they both share the same database. The core advantage is being able to serve multiple data-entry points for users and also be able to use the Common Data Service for Apps to use other data sources, surfacing data in the user-facing application that is relevant for specific users using app modules.

There is a great deal of flexibility for organizations using the Common Data Service for Apps, especially following the upgrade to version 9 of Dynamics 365 CE. Organizations will begin using the Common Data Service for Apps through the Dynamics 365 CE interface regardless of whether it is ever accessed through `web.powerapps.com`.

This chapter has covered how to get started using the Common Data Service for Apps, including familiarity with the interface and accessing entities and related data through views in the same way as Dynamics 365 CE is structured for the user. New metadata can be added, such as fields, relationships, and option sets, so as to create the data structure that can be used across Dynamics 365 CE and other custom “maker” apps using the Canvas app designer. Follow the chapter tasks at the end of this chapter to become familiar with this functionality and keep up to date on the latest releases of the Common Data Service for Apps, as with time the functionality will continue to grow and improve.

Chapter Tasks

At the end of every chapter, there will be a section that gives up to ten suggested tasks for you to complete within Dynamics 365 CE. These tasks will be based around the topics covered within the chapter and the further resources referenced at the end. They are aimed at expanding practical knowledge and applications regarding those topics that go beyond reading about them.

1. Navigate to `web.powerapps.com` and become familiar with the latest user interface.
2. Review the data model under the “Data” heading.
3. Navigate to the Account entity and filter the view under the “Data” heading.
4. Navigate to Dynamics 365 CE, locate the accounts and the same view, and compare the data—it should be the same.
5. Change environments.
6. Change between model- and canvas-driven apps.
7. Create a new entity in the Common Data Service for Apps.
8. Create a new view within the Common Data Service for Apps.
9. Create several new fields within the Common Data Service for Apps.

Further Reading

Common Data Service for Apps (Microsoft, 2018). URL: `https://docs.microsoft.com/en-us/powerapps/maker/common-data-service/data-platform-intro`

Solutions in the Common Data Service for Apps (Microsoft, 2018). URL: `https://docs.microsoft.com/en-us/powerapps/maker/common-data-service/solutions-overview`

Restricted Entities (Microsoft, 2018). URL: `https://docs.microsoft.com/en-us/powerapps/maker/common-data-service/data-platform-restricted-entities`

CHAPTER 13

Dynamics 365 for Marketing

The standard marketing capability found in previous versions of Dynamics 365 CE could have been considered the least functional area of the platform. It allowed organizations to create marketing lists, create campaigns, including campaign activities, and send bulk emails through quick campaigns. This functionality may have been able to serve businesses marketing requirements a long time ago, but in society today, where marketing has become increasingly digital, requirements have evolved way beyond this functionality to the point that the old marketing features of Dynamics 365 struggle to meet those requirements.

For this reason, the marketing area of Dynamics 365 CE has become a popular place for ISVs (independent solution vendors) to create their own managed solutions. These solutions are either embedded into the application, like Click Dimensions and PowerObjects marketing add-ons, or act as "connectors" to other marketing applications, such as DotMailer. This has allowed the platform to functionally meet the changing needs of marketing in a more digital and omnichannel space.

In the past year, Microsoft has redesigned the standard marketing features of the Dynamics 365 CE application and introduced the Dynamics 365 for Marketing application. This application is licensed separately, like the other Dynamics 365 CE first-party apps, and has been created by Microsoft to introduce marketing departments to the latest Microsoft technology and Dynamics 365 CE capabilities. It includes the capability to create segments, design simple to complex emails, create behavior-driven customer journeys, score leads, and use an extensive event-management module. The event-management feature allows organizations to create an external portal for events and manage pages for events for the organization, from speaker sessions to event registrations. This chapter aims to be an essential guide to this functionality within the Dynamics 365 CE for Marketing application and to allow you to get started.

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S. Critchley, *Dynamics 365 CE Essentials*, https://doi.org/10.1007/978-1-4842-3973-5_13

Leads in Dynamics 365 for Marketing

Leads can be used in segments within Dynamics 365 for Marketing. However, leads must include a linked Contact record.

There has been an understanding that a Lead record is separate from a Contact record. The lead is seen as an unqualified contact and has historically allowed an organization to keep unqualified contacts away from the main data store of the Contact table. This is done until they reach a qualified state, at which point a Contact record is created as part of the qualification process. Following that, qualified contacts would then be able to have leads created and associated under the "Existing Contact" field (or "Parent Contact for Lead" field), which represents existing or continuing business. The way Dynamics 365 for Marketing utilizes leads is as an *expression of interest* and means a contact must exist for both new business and existing business, should they wish to be marketed to. It introduces a marketing managed process for leads and a period of time when a lead is "owned" by marketing before it is classified as a sales-ready lead. This gives organizations some distinct advantages, as follows:

- Being able to produce a lead lifecycle report through a contact
- It does not reach the sales team until it is scored or already pre-qualified for specific reasons
- Clear definitions between ownership of marketing and sales
- A single place to manage consent if contact should unsubscribe or change their preferences; this is managed in a specific area of the segmentation and would automatically drop out
- The rare occasion of having two or more leads at one time is possible and can be managed
- Provide organizations with extensibility options should the preceding hold no distinct advantages. If the Lead record does not add any value to sales, the transition to sales ready could be automatically qualified through customizations, creating an opportunity, and instead full ownership of a lead can lie within marketing and be used to manage the topic or product marketing.

Organizations have, in the past, purchased leads that they often wish to keep separate from the main Contact table, as referred to earlier. If this is the case, it would mean that they would need to mark imported contacts as not sales ready and create a contact that has been set as “Marketing Only.”

The Contact record holds the details for consent and whether the individual can be contacted, and how, which is linked to data-protection regulations. The Contact record is a single point of change for this data. It also allows organizations to keep their marketing consistent to a single contact.

It can be argued that this approach to leads is going directly against the core Dynamics 365 CE platform. Dynamics 365 CE has, however, always had an “Existing Contact” record lookup field on the Lead form, and the change of moving toward creating contacts together with a Lead record (initially) would affect the organizations that are using a strict lead-management process (e.g., not creating contacts before creating a lead and qualifying).

The marketing-to-sales process needs to be defined when implementing these features. The ownership of the records, what and where exactly the transition point is from the marketing team, and where the transition happens to the sales team need to be addressed. Obtaining this distinction and being able to attribute sales back to a specific campaign or customer journey is a challenging task for organizations and a core requirement of marketing to ensure they can measure the effectiveness of their strategy, even if it’s not just by revenue made, but by influence in the number of interested parties and contacts gained from it. Lead-scoring functionality can help in this area. A lead, which is linked to a contact, can be automatically updated to “Sales Ready” when it reaches a score. At this point, any amount of automation can happen using configuration such as Workflows. This can include the owner being changed (which would drop it out from marketing views and into sales views), or it could automatically qualify the lead to an opportunity, and more. Once sales owns the lead, they can see the Contact 360 in more depth, so they can have direct access to all the interactions associated with the lead and what has led to that score. They would be able to take the best route based on the information contained within that data to take the opportunity forward in the sales lifecycle.

Getting Set Up with the App

At the time of writing, Dynamics 365 for Marketing is available in a trial form, in the same way as the other Dynamics 365 CE apps; for example, Customer Service and Sales. It can also be added into existing subscriptions and licensed separately. Dynamics 365 for Marketing uses the Unified Interface and is not available within the Classic Client. When setting up the application for the first time, users must ensure the home URL is set for the Event Portal functionality and agree to consent about the marketing data and how it is processed. Once this is set, it takes a moment, and the instance is ready to use (Figure 13-1).

Dynamics 365 for Marketing has it is own email servers that it sends the marketing emails from, and all sender IPs by Microsoft are shared with other organizations using the app. This means a portion of the delivering of emails is managed by Microsoft, and by having a shared IP, the deliverability of the emails is improved compared with a new IP, which must gain the trust of email providers and build up a positive reputation score. There is the possibility that organizations can use a dedicated IP, which is discussed in the "Further Reading" section at the end of the chapter.

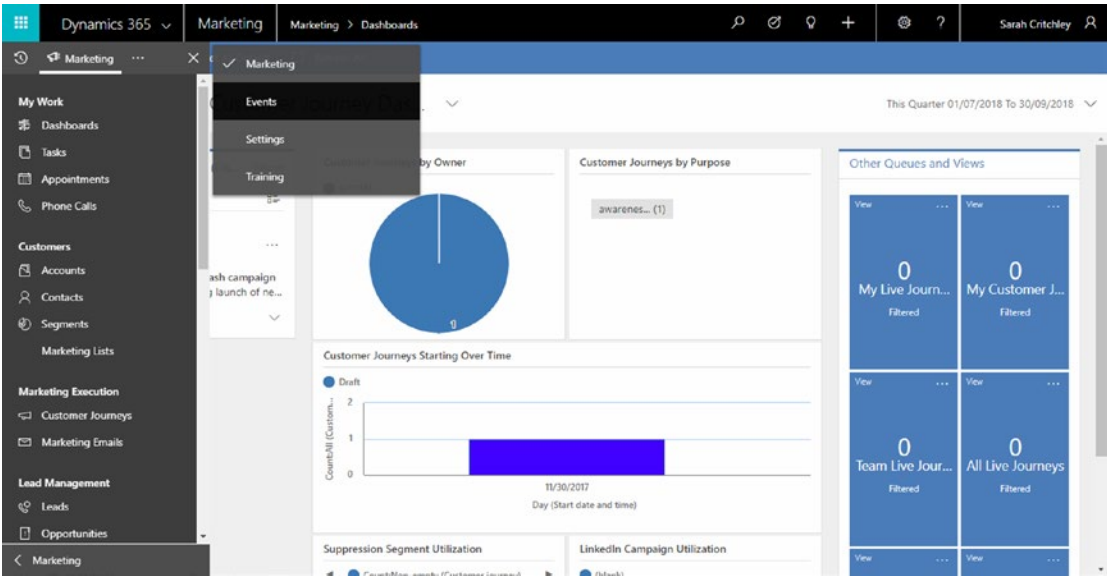

Dynamics 365
Marketing
Marketing > Dashboards
Sarah Critchley
Marketing
Marketing
Events
Settings
Training
My Work
Dashboards
Tasks
Appointments
Phone Calls
Customers
Accounts
Contacts
Segments
Marketing Lists
Marketing Execution
Customer Journeys
Marketing Emails
Lead Management
Leads
Opportunities
Marketing
This Quarter 01/07/2018 To 30/09/2018
by Owner
Customer Journeys by Purpose
awarenes... (1)
Other Queues and Views
View
0
My Live Journ...
Filtered
View
0
My Customer J...
Filtered
View
0
Team Live Jour...
Filtered
View
0
All Live Journeys
Filtered
ash campaign
launch of ne...
Customer Journeys Starting Over Time
Draft
CountAll (Custom...
2
1
0
11/30/2017
Day (Start date and time)
Suppression Segment Utilization
LinkedIn Campaign Utilization

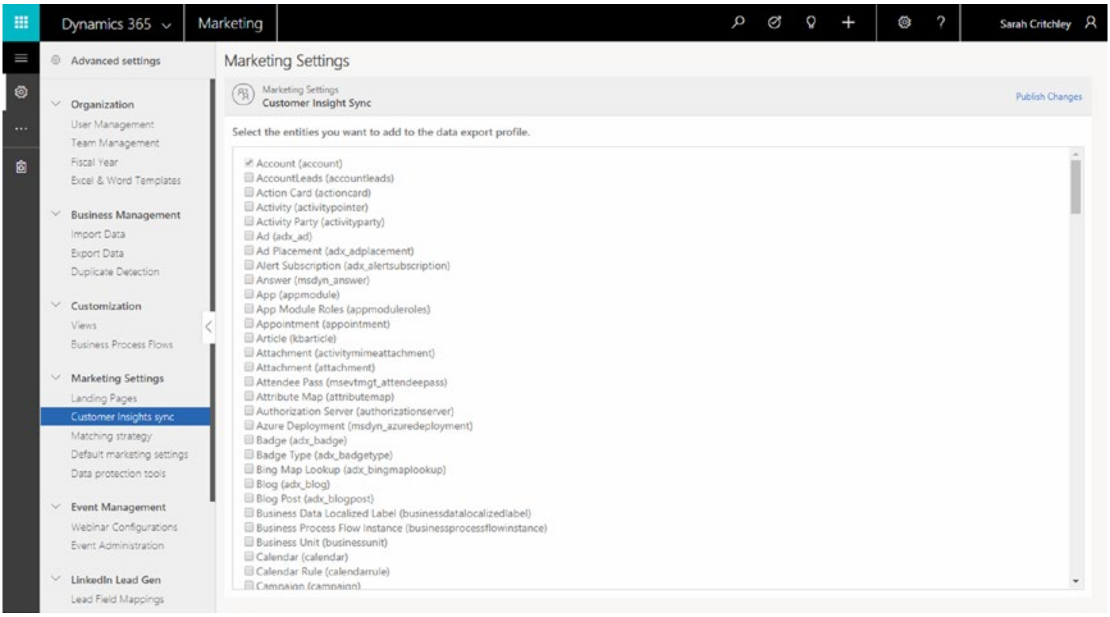
Figure 13-1. *Dynamics 365 for Marketing*

Dynamics 365 for Marketing utilizes a small number of configuration records set up behind the scenes. These are the Default Content Settings, Default Marketing Page, and Default Marketing Settings records. These records are used to manage litmus integration (a marketing preview and testing feature), the address and core details of the organization, and the main Subscription Center that is linked to these settings. Subscription Centers are a way to manage subscription lists within the Dynamics 365 for Marketing application and are covered in more depth in the “Segmentation” section of this chapter. Subscription lists are based on the legacy Marketing List entity as a static list and are used to manage the subscribes and unsubscribes of customers. These lists are associated with a customer journey, which, when it sends a marketing email, sends the subscription link details along with it for several reasons, one being a legal requirement to provide a way for a customer to unsubscribe.

Core entities are set up for marketing as standard, which includes the Contact, Leads and Account records. Any entity, including custom entities, can be set up for use within the Dynamics 365 for Marketing application; however, it must be turned on to synchronize with the Customer Insights Service, which manages the segmentations. Despite any entity being able to be utilized in the query, the query must still end in the associated Contact record and in the linked relationship being defined from that query. Once an entity has been set up to be synchronized, it cannot be unsynchronized.

Task: Update the marketing settings to configure the app for additional entities.

1. Open the Dynamics 365 for Marketing app.
2. Navigate to Settings ➤ Advanced Settings ➤ Marketing Settings ➤ Customer Insights Sync to open a page that looks like Figure 13-2 and contains a list of the entities within the system.
3. Select the entities checkbox that needs to be set up and synchronized.
4. Select “Publish Changes” and wait for the confirmation at the top of the screen.


Dynamics 365
Marketing
Sarah Critchley
Advanced settings
Organization
User Management
Team Management
Fiscal Year
Excel & Word Templates
Business Management
Import Data
Export Data
Duplicate Detection
Customization
Views
Business Process Flows
Marketing Settings
Landing Pages
Customer Insights sync
Matching strategy
Default marketing settings
Data protection tools
Event Management
Webinar Configurations
Event Administration
LinkedIn Lead Gen
Lead Field Mappings
Marketing Settings
Marketing Settings
Customer Insight Sync
Publish Changes

Select the entities you want to add to the data export profile.

☑ Account (account)
☐ AccountLeads (accountleads)
☐ Action Card (actioncard)
☐ Activity (activitypointer)
☐ Activity Party (activityparty)
☐ Ad (adx_ad)
☐ Ad Placement (adx_adplacement)
☐ Alert Subscription (adx_alertsubscription)
☐ Answer (msdyn_answer)
☐ App (appmodule)
☐ App Module Roles (appmoduleroles)
☐ Appointment (appointment)
☐ Article (kbarticle)
☐ Attachment (activitymimeattachment)
☐ Attachment (attachment)
☐ Attendee Pass (msevtmgt_attendeepass)
☐ Attribute Map (attributemap)
☐ Authorization Server (authorizationserver)
☐ Azure Deployment (msdyn_azuredeployment)
☐ Badge (adx_badge)
☐ Badge Type (adx_badgetype)
☐ Bing Map Lookup (adx_bingmaplookup)
☐ Blog (adx_blog)
☐ Blog Post (adx_blogpost)
☐ Business Data Localized Label (businessdatalocalizedlabel)
☐ Business Process Flow Instance (businessprocessflowinstance)
☐ Business Unit (businessunit)
☐ Calendar (calendar)
☐ Calendar Rule (calendarrule)
☐ Campaign (campaign)

Figure 13-2. Advanced Settings in Dynamics 365 for Marketing

Segmentation

Segments are groups or lists of contacts within Dynamics 365 CE. Segmentation is a way to separate contacts into logical lists that have defining qualities about them relevant to the organization and their marketing strategies. By targeting specific segments of contacts, customer journeys can be tailored to be more relevant and better suited to a customer's needs. This can lead to a more positive interaction from within the journey, contributing to lead scores and more leads that can be passed over to the sales team. An example is where Contacts are in a specific geographical location or if they have purchased a specific product.

As referenced in an earlier section, marketing lists are used to manage subscription lists, which can also be targeted through segments that will be referenced within a customer journey.

To create a new subscription list and use it within a customer journey, a new marketing list needs to be created and associated with a marketing form. The marketing form is then associated with a marketing page to create a new Subscription Center, which is referenced within a Content Settings record. This Content Settings record is associated with a customer journey. This allows tailored subscription links to be referenced within the email for the customer to unsubscribe or subscribe to a specific subscription list.

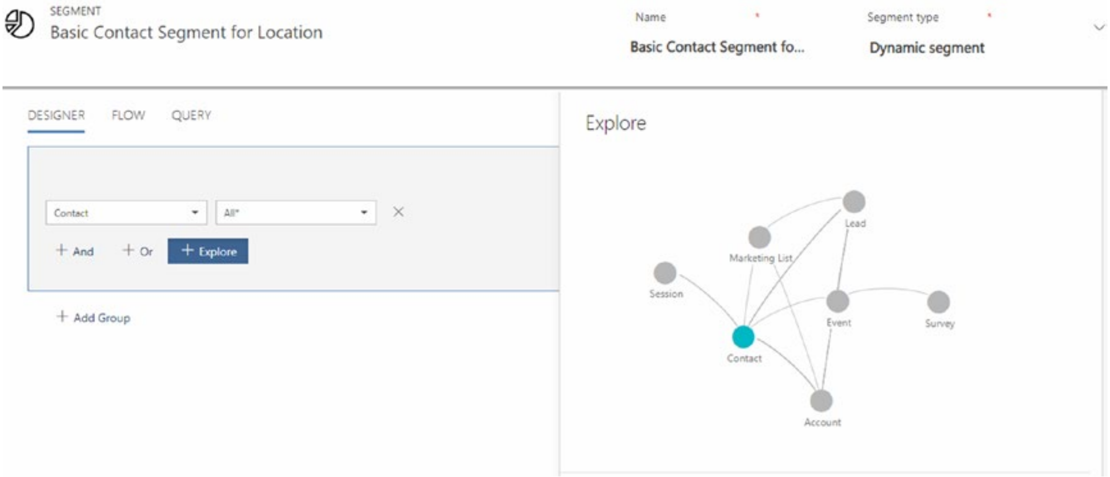
You can also utilize this list to send marketing materials to the contacts as a segment. When adding a new segment, set the “Segment Source” field to be the marketing list that references the subscription list you wish to use. Marketing lists, where they are of a subscription type, are only ever static marketing lists. This means when a user unsubscribes or subscribes, essentially what they are doing is manually adding or removing themselves from this list.

For steps on how to complete these tasks, review the “Further Reading” section at the end of the chapter under the heading “Subscription Center Management.”

Segments have three different types, as follows:

- **Static segments** – Similar to a static marketing list, these are lists of contacts that are manually added to the list.
- **Dynamic segments** – A list of contacts that is based on one or more logical queries from a direct or indirect relationship
- **Compound segments** – A combination of other segments that are published

There are different routes by which to create Dynamics segments. They can be created by using the Designer, Flow, and Query methods. The Designer and Flow methods provide an additional function to “explore” a relationship, which shows a live map of the entities and their relationships to other entities, allowing a user to build a segment with extra visualization options. This is shown in Figure 13-3.



SEGMENT
Basic Contact Segment for Location

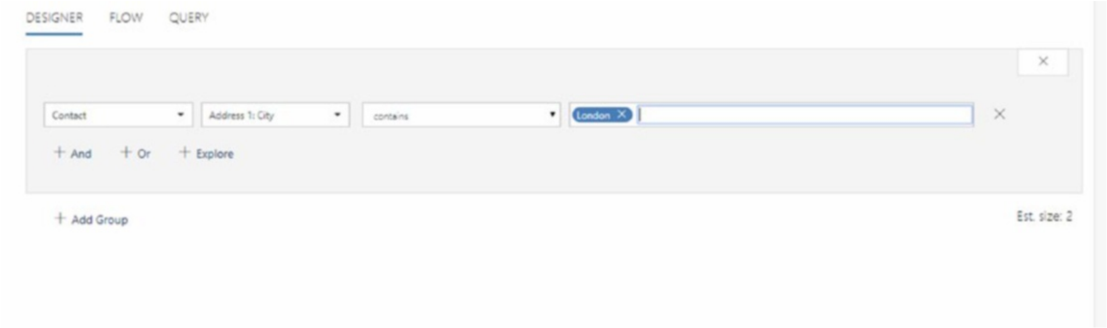
Name *: Basic Contact Segment fo...

Segment type *: Dynamic segment

Contact | All*

Figure 13-3. *Using the Designer method to create a segment with the Explore visualization*

The Designer method allows a query to be created by using lines of statements and operators that all need to evaluate as “true” for a contact to be included within the segment. Many more operators are being shipped in the October 2018 release of Dynamics 365 for Marketing, allowing greater control of the segmentation functionality (Figure 13-4).

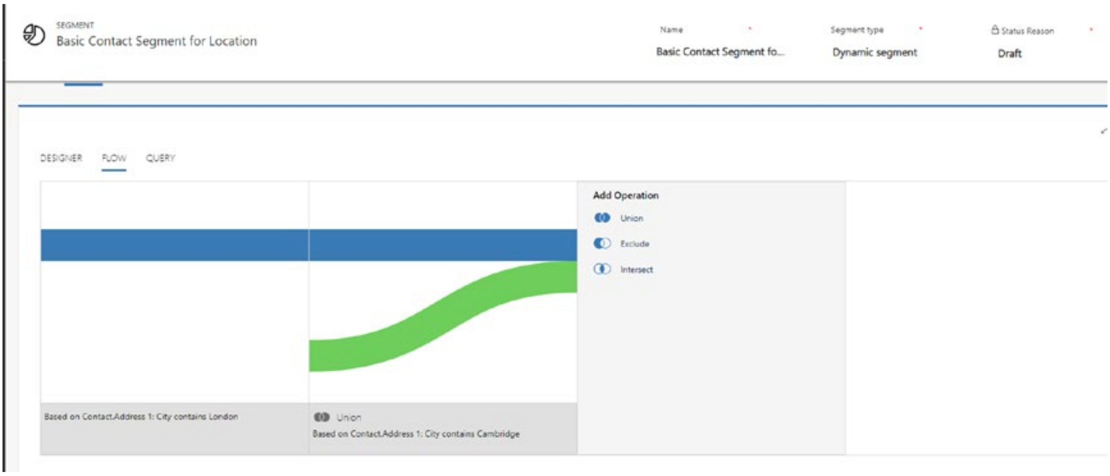


Contact · Address 1: City · contains · London

Figure 13-4. *Creating a segment using the Designer method*

Using the segment Flow method, you can easily create a more dynamic experience as it allows greater control when using groupings such as Union, Intersect, and Exclude within queries (Figure 13-5):

- **Union** – Allows you to add another query group to the existing segment
- **Exclude** – Allows you to define a query of contacts to remove from the total segment
- **Intersect** – Target a specific query of contacts, and those matching this query will be taken forward only to the next segment, and the remaining contacts that do not will be removed



Name: Basic Contact Segment fo...

Segment type: Dynamic segment

Status Reason: Draft

Based on Contact.Address 1: City contains London

Based on Contact.Address 1: City contains Cambridge

Figure 13-5. *Creating a segment using the Flow method*

Segments need to be published and in a “live” state before being used. Once in a live state, the segment cannot be changed until it is stopped and changed back to a “draft” state. Live segments are ready to be used within customer journeys.

Creating Marketing Forms, Pages, and Emails

Dynamics 365 for Marketing has three core components that are used to send emails and associated content messaging such as landing pages to customers.

- **Marketing Forms** – Reusable form components used in marketing pages. These reference fields and data within the contact database. The form is intended to be filled in by a customer.
- **Marketing Pages** –Marketing forms have three core types: Forward to a Field, Subscription Center, and a landing page. These can be sent as a separate block within a customer journey and do not have to be associated with an email. They will be sent as an email, and the page will form the “email” design.
- **Marketing Emails** – Marketing emails are specific emails that are sent to a customer and can contain a marketing page, survey, or event and normally form a larger piece within a specific marketing strategy.

All of these components have built-in templates within the Dynamics 365 for Marketing app that are pre-created with expected forms those types of fields are used with (Figure 13-6). The Dynamics 365 for Marketing app comes with extensive editing capabilities beyond utilizing the templates and can be created using the drag-and-drop designer or HTML. The design can be easily previewed on some different form factors, from browser to mobile, using the preview feature.

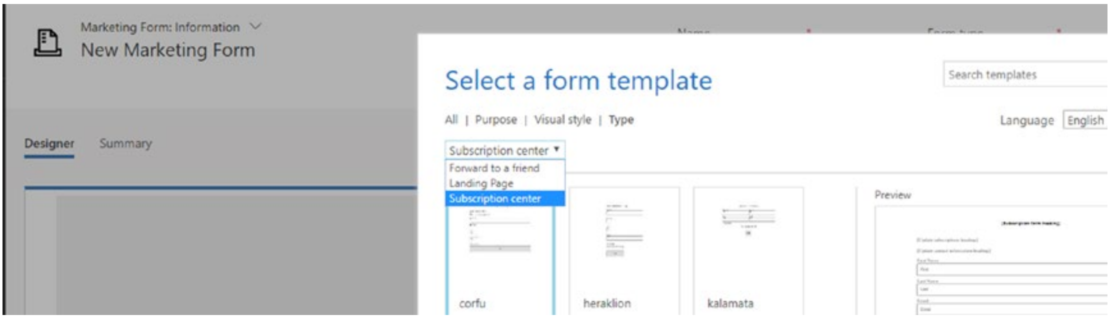
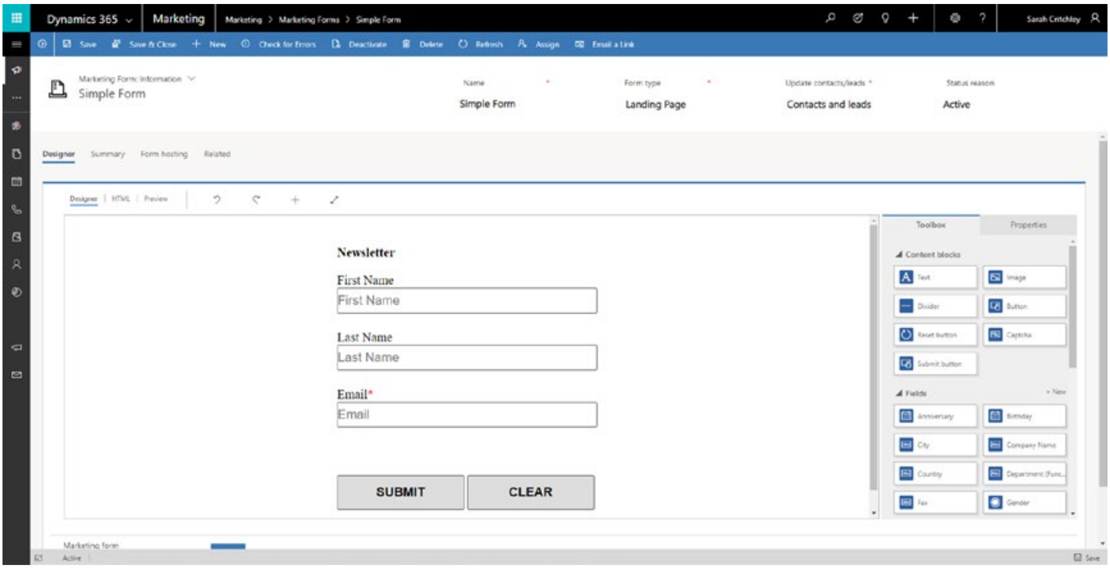

Marketing Form: Information
New Marketing Form
Designer
Summary
Select a form template
Search templates
All | Purpose | Visual style | Type
Language English
Subscription center
Forward to a friend
Landing Page
Subscription center
Preview
corfu
heraklion
kalamata

Figure 13-6. *Using templates within Dynamics 365 for Marketing*

Marketing forms have content and lead-matching strategies. Depending on the purpose of the form, it will be specified to create a contact or lead or create a new record based on the matching strategy. The matching strategy specifies which field or fields this matching should be based on. As a default, the strategy is based on the email address. These can be changed within the “Advanced Settings” area of the app (Figure 13-7).


Dynamics 365
Marketing
Marketing > Marketing Forms > Simple Form
Sarah Critchley
Save
Save & Close
New
Check for Errors
Deactivate
Delete
Refresh
Assign
Email a Link
Designer
Summary
Form hosting
Related
Designer | HTML | Preview
Toolbox
Properties
Content blocks
Text
Image
Divider
Button
Reset button
Captcha
Submit button
Fields
New
Anniversary
Birthday
City
Company Name
Country
Department (Func...
Fax
Gender
SUBMIT
CLEAR
Marketing form
Active
Save

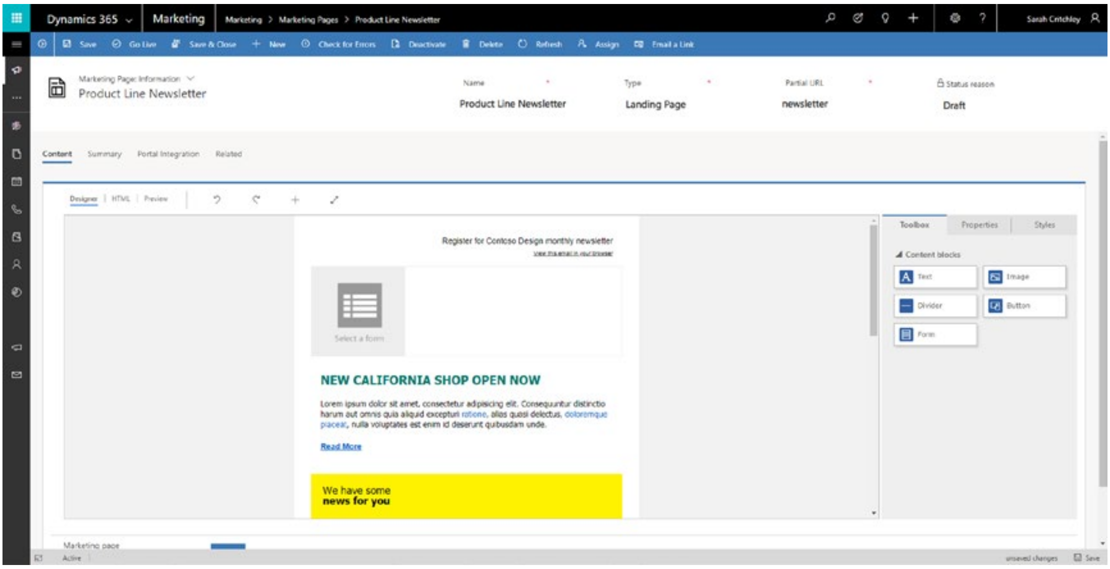
Marketing Form: Information
Simple Form

Name: Simple Form
Form type: Landing Page
Update contacts/leads: Contacts and leads
Status reason: Active

Newsletter
First Name
Last Name
Email*

Figure 13-7. *Dynamics 365 for Marketing form*

Once a form is created, a new marketing page is created. The "Form" block can be dragged over to the designer and configured using the Properties tab within the toolbox (Figure 13-8).


Dynamics 365
Marketing
Marketing > Marketing Pages > Product Line Newsletter
Sarah Critchley
Save
Go Live
Save & Close
New
Check for Errors
Deactivate
Delete
Refresh
Assign
Email a Link
Content
Summary
Portal Integration
Related
Designer | HTML | Preview
Toolbox
Properties
Styles
Content blocks
Text
Image
Divider
Button
Form
Select a form
Read More
Marketing page
Active
unsaved changes
Save

Marketing Page: Information
Product Line Newsletter

Name: Product Line Newsletter
Type: Landing Page
Partial URL: newsletter
Status reason: Draft

Register for Contoso Design monthly newsletter

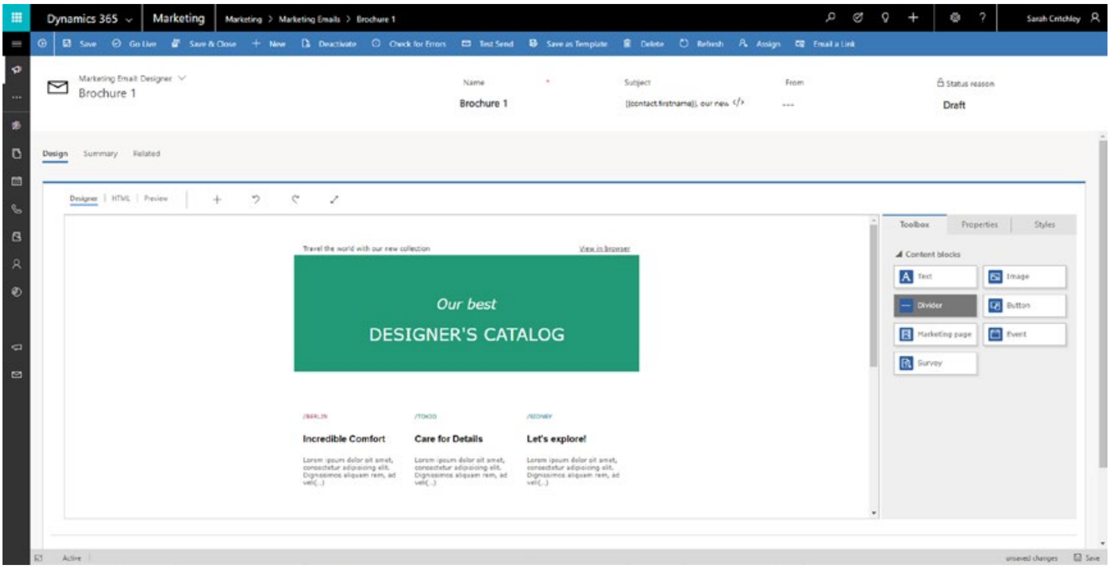
NEW CALIFORNIA SHOP OPEN NOW

Lorem ipsum dolor sit amet, consectetur adipisicing elit. Consequuntur distinctio harum aut omnis quia aliquid excepturi ratione, alias quasi delectus, doloremque placeat, nulla voluptates est enim id deserunt quibusdam unde.

We have some **news for you**

Figure 13-8. *Dynamics 365 for Marketing page*

Marketing pages can be utilized within a customer journey as a separate block, independent of a marketing email. They can, however, also be utilized within an email and appear as a "call to action" link in the same way the "Event" and "Survey" blocks are utilized (Figure 13-9). An email gives greater context and control to users as to how the links are portrayed and presented to customers and can assist in encouraging them to click on the links within the email to follow up with the specific information (as opposed to being an independent page).


Dynamics 365
Marketing
Marketing > Marketing Emails > Brochure 1
Sarah Critchley
Save
Go Live
Save & Close
New
Deactivate
Check for Errors
Test Send
Save as Template
Delete
Refresh
Assign
Email a Link
Marketing Email Designer
Brochure 1
Design
Summary
Related
Designer
HTML
Preview
Toolbox
Properties
Styles
Content blocks
Text
Image
Divider
Button
Marketing page
Event
Survey
Active
unsaved changes
Save

Name: Brochure 1

Subject: {{contact.firstname}}, our new

From: ---

Status reason: Draft

Travel the world with our new collection

View in browser

Our best

DESIGNER'S CATALOG

/BERLIN

Incredible Comfort

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Dignissimos aliquam rem, ad vel(...)

/TOKIO

Care for Details

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Dignissimos aliquam rem, ad vel(...)

/SIDNEY

Let's explore!

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Dignissimos aliquam rem, ad vel(...)

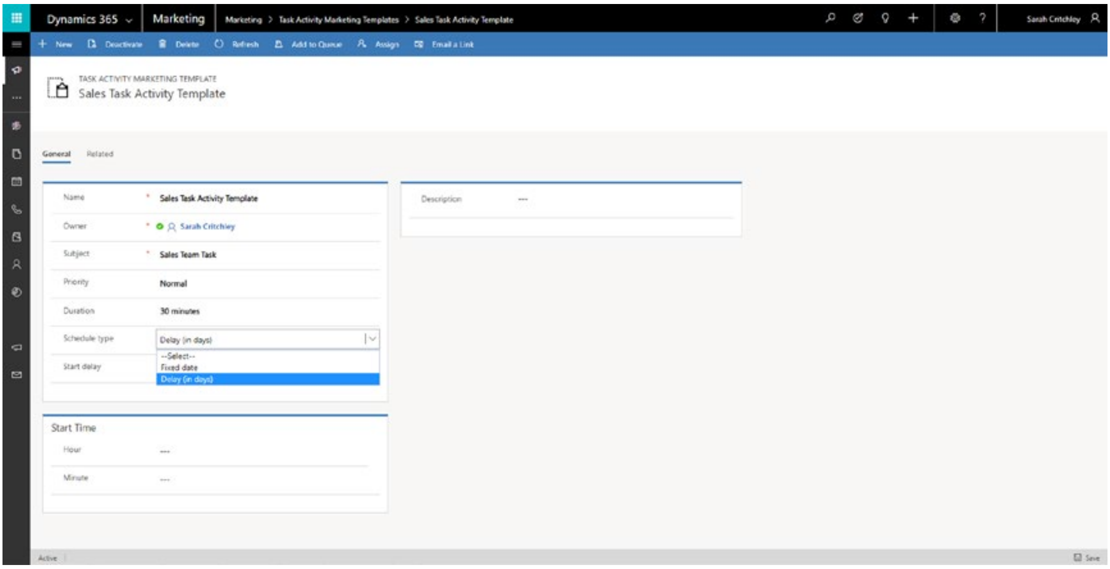
Figure 13-9. *Dynamics 365 for Marketing Email*

Emails can be created once and used within more than one customer journey, and can even be used more than once in the same customer journey if required.

Activity Marketing Templates

Within a customer journey, you can add an "Activity" block, which automatically creates an Activity record in Dynamics 365 CE. This functionality is particularly useful when an action has occurred based on the behavior of a customer within a customer journey, which can trigger a certain follow-up action; for example, a Task record being created and assigned to a member of the sales team.

To create activities in this way, an activity marketing template needs to be created that specifies a subject, priority, duration, and specific schedule type for the activity being created as part of that customer journey. When this block is used, the template is then referenced within the customer journey. The template can be set to be a fixed date, or it can be set to be delayed by a specific number of days, saving the time and effort of users having to complete specific details each time (Figure 13-10).


Dynamics 365
Marketing
Marketing > Task Activity Marketing Templates > Sales Task Activity Template
Sarah Critchley
New
Deactivate
Delete
Refresh
Add to Queue
Assign
Email a Link
General
Related
--Select--
Fixed date
Delay (in days)
Active
Save

TASK ACTIVITY MARKETING TEMPLATE
Sales Task Activity Template

Name * Sales Task Activity Template
Owner * Sarah Critchley
Subject * Sales Team Task
Priority Normal
Duration 30 minutes
Schedule type Delay (in days)
Start delay
Description ---

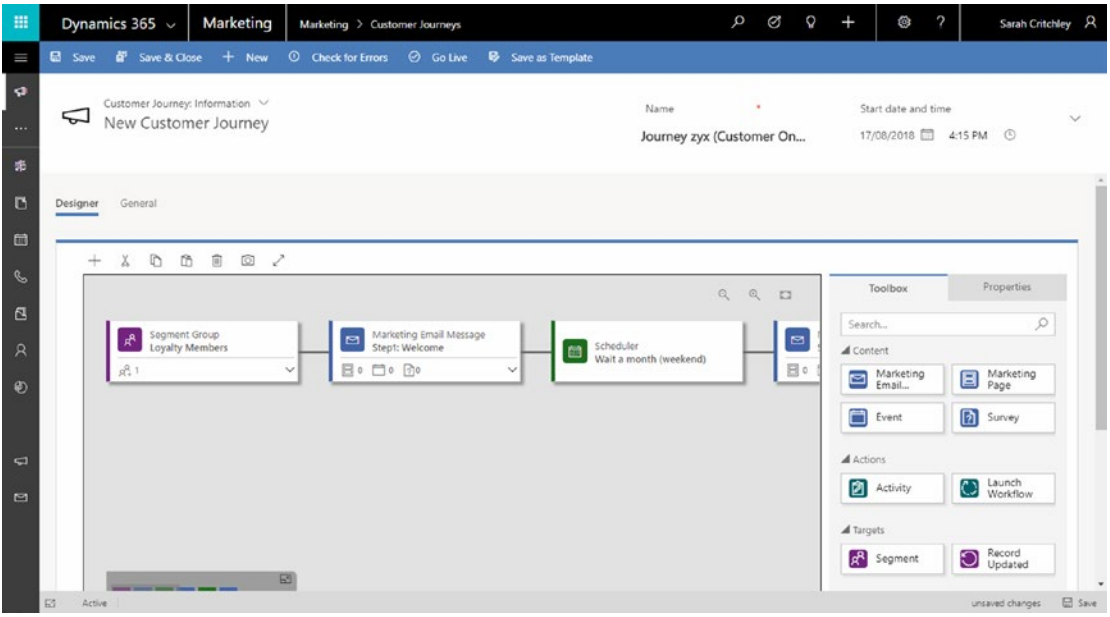
Start Time
Hour ---
Minute ---

Figure 13-10. *Activity templates within Dynamics 365*

Customer Journeys

Customer journeys are behavior-driven journeys that are based on customer segments. Users can build customer journeys by using a series of blocks that reference an action, such as sending a marketing email, or reference a trigger, such as waiting for a set amount of time or after an email is opened. Customer journeys are driven based on the subsequent behavior of the customer (Contact record) in each block. Based on their behavior, they move throughout the journey, triggering actions within that.

Customer journeys use the same process designer as seen in earlier chapters and originally covered in Chapter 8, meaning the learning curve to get started with creating customer journeys is even smaller (Figure 13-11). Simple to more-complex email marketing campaigns can be sent using customer journeys and other types of marketing, such as being sent “call to action”–style landing pages, newsletters based on subscription lists, event marketing, and follow-up surveys from a customer experience using the voice of the customer.


Dynamics 365
Marketing
Marketing > Customer Journeys
Sarah Critchley
Save
Save & Close
New
Check for Errors
Go Live
Save as Template
Customer Journey: Information
New Customer Journey
Designer
General
Toolbox
Properties
Search...
Content
Marketing Email...
Marketing Page
Event
Survey
Actions
Activity
Launch Workflow
Targets
Segment
Record Updated
Segment Group
Loyalty Members
Marketing Email Message
Step1: Welcome
Scheduler
Wait a month (weekend)
Active
unsaved changes
Save

Name: Journey zyx (Customer On...

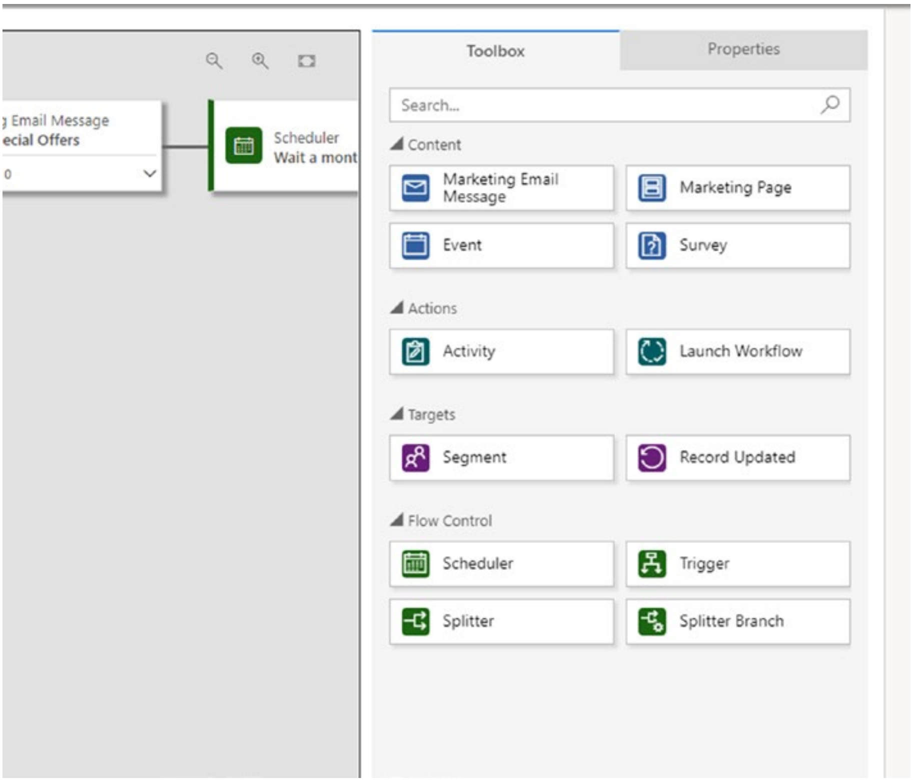
Start date and time: 17/08/2018 4:15 PM

Figure 13-11. *Customer journey designer in Dynamics 365 for Marketing*

The types of blocks available are as follows (Figure 13-12):

- **Marketing Email** – Sends a marketing email to contacts that arrive at this block
- **Marketing Page** – Sends a Call to Action button that links to the page or can be embedded within a “Marketing Email” block as a child block. Landing pages generate new leads or update existing leads based on the matching rules.
- **Event** – Similar to pages, are linked as child blocks within an email
- **Survey** – Similar to events, are linked as child blocks within an email
- **Activity** – Generates a new Activity record in Dynamics 365 CE
- **Launch Workflow** – Launch a workflow process as part of the customer journey

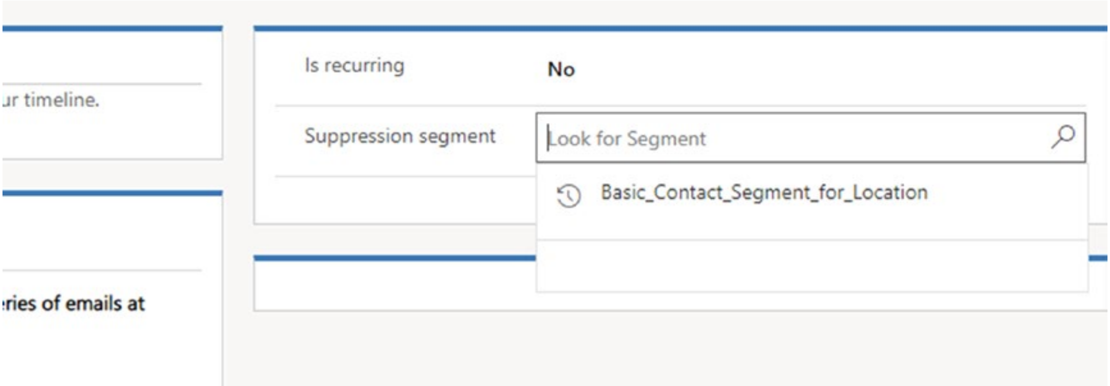
- **Segment** – A selection of people to target
- **Record Update** – Use to add Contact records at a stage in the journey
- **Scheduler** – Waits for a particular time before continuing
- **Trigger** – Added after emails, pages, and events that are referenced in the properties and the specific trigger selected. Trigger actions change depending on what they are referencing.
- **Splitter** – Sends a random amount of contacts down a path
- **Splitter Branch** – Used with splitter tiles to create branches in the customer journey



g Email Message
ecial Offers
0
Scheduler
Wait a mont
Toolbox
Properties
Search...
Content
Marketing Email Message
Marketing Page
Event
Survey
Actions
Activity
Launch Workflow
Targets
Segment
Record Updated
Flow Control
Scheduler
Trigger
Splitter
Splitter Branch

Figure 13-12. *Available customer journey blocks*

Customer journeys are linked to a Content Settings record that references the Subscription List that manages new customers subscribing to that list and those existing ones unsubscribing. A suppression segment can be added so that a journey can reference a segment of contacts who should not be sent any of the content from this journey, even if they exist within the specified segments (Figure 13-13).



Is recurring No

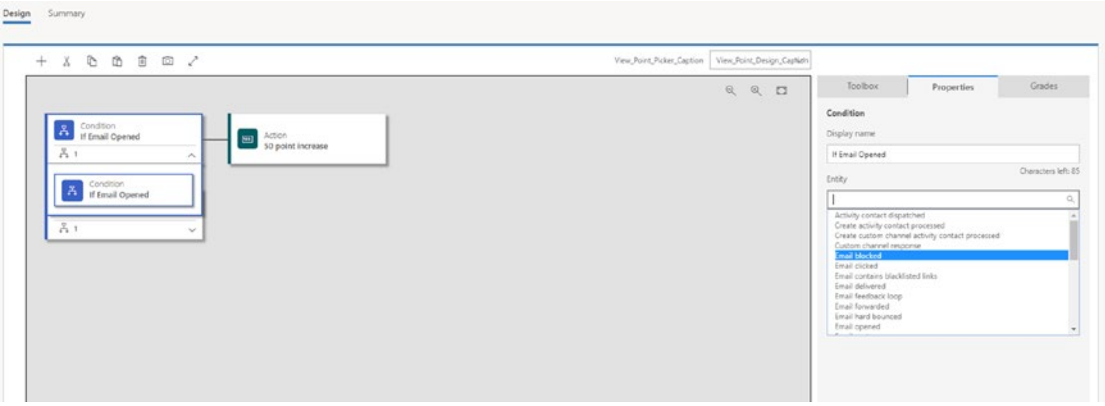
Suppression segment

Figure 13-13. *Specify a suppression segment within a customer journey*

Lead Scoring and Grading

Leads are normally created from landing pages sent from a customer journey. Landing pages can be configured for many different things depending on the business and the marketing strategy. Common uses of landing pages are for when a customer is downloading content from the organization's website, for registering for an event, or for signing up for a subscription list. When a customer completes a form and submits it, based on the lead-matching rules configured within Dynamics 365 for Marketing (covered earlier), a new lead is created or an existing one is found. If a new lead is found, it can activate one or more lead-scoring models configured within the system.

Lead-scoring models are simple condition and action processes that are created based on a condition activated by a customer, such as an email clicked. Once the condition is met, then, an action takes place, which can lower or increase the overall score by a set numerical amount (Figure 13-14). The overall score contributes to the "grade" based on where that score sits within specific boundaries set within the "Grades" properties within a lead-scoring model. Leads can be scored and graded using more than one model when they appear on a sub-grid within the Lead record.

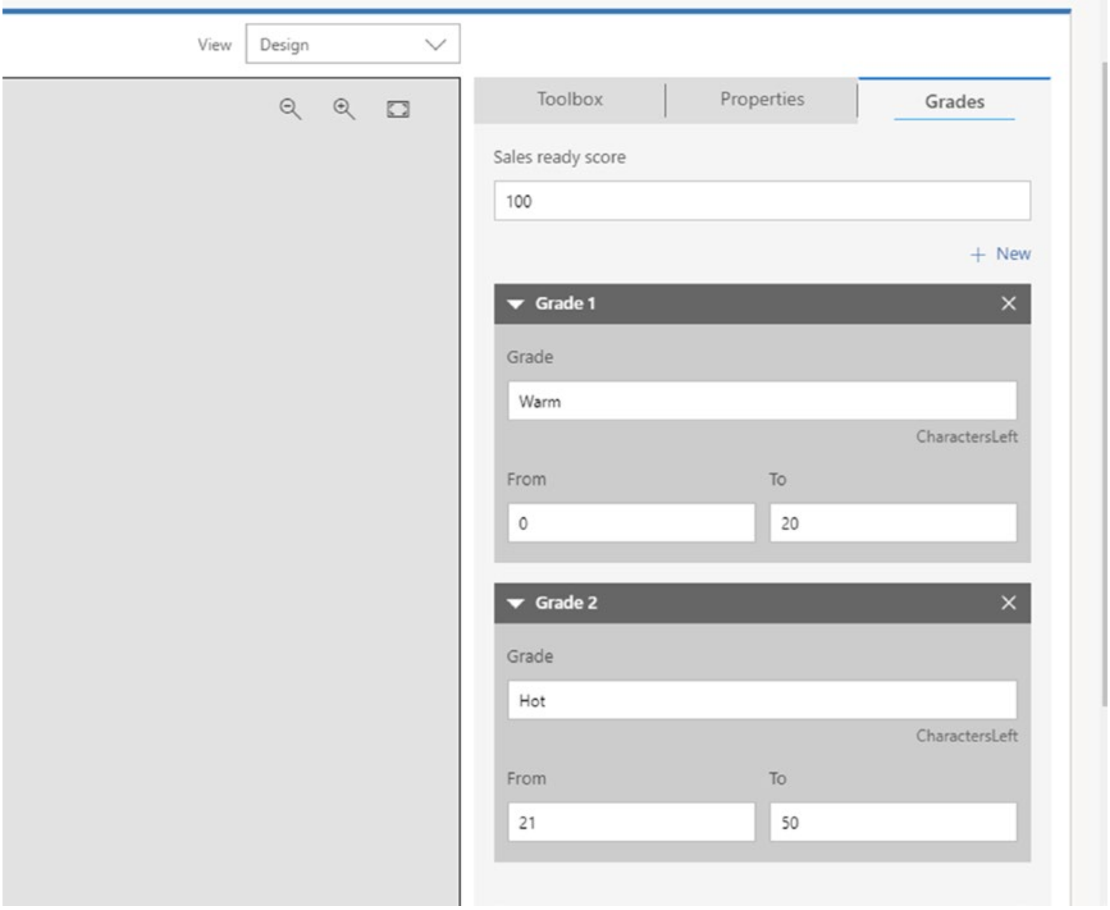

Design
Summary
View_Point_Picker_Caption
View_Point_Design_Caption
Condition
If Email Opened
1
Condition
If Email Opened
1
Action
50 point increase
Toolbox
Properties
Grades
Condition
Entity
Activity contact dispatched
Create activity contact processed
Create custom channel activity contact processed
Custom channel response
Email blocked
Email clicked
Email contains blacklisted links
Email delivered
Email feedback loop
Email forwarded
Email hard bounced
Email opened

Display name: If Email Opened

Characters left: 85

Figure 13-14. *Lead-scoring condition and action process design*

Lead models also have a specific "sales-ready" score set. The sales-ready score is the score a lead needs to reach (from any model) for the 'Sales Ready' (yes/no) field on the Lead to be automatically updated to "Sales Ready" (Figure 13-15). Based on this action, any number of specific customizations can be completed, as discussed in the "Introduction," in the lead-qualification process of your organization.



Sales ready score: 100

Grade 1
Grade: Warm
From: 0
To: 20

Grade 2
Grade: Hot
From: 21
To: 50

Figure 13-15. *Specifying the lead grades and sales-ready score*

Event Portal Overview and Setup

The Dynamics 365 for Marketing app has an extensive Event Management module that allows you to create an event-management portal as part of Dynamics 365 CE using Microsoft Portals. The portal hosts all the published events, giving them each a separate homepage with display details of the event, sponsor advertisements, speaker information, session details, breakdown by the hour, pass information, and the ability for people to register for the event.

One of the things it does not include is integration with a payment gateway. By default, it includes a demo gateway, which can be removed, or a custom component can be added with some configuration.

The Event Management module is particularly useful for both internal and external events and gives the capability to manage logistics such as hotels and even the granular details of the rooms and financial details (Figure 13-16). The portal can be customized based on the Microsoft Portals capabilities and tailored to the styling and branding of your organization.

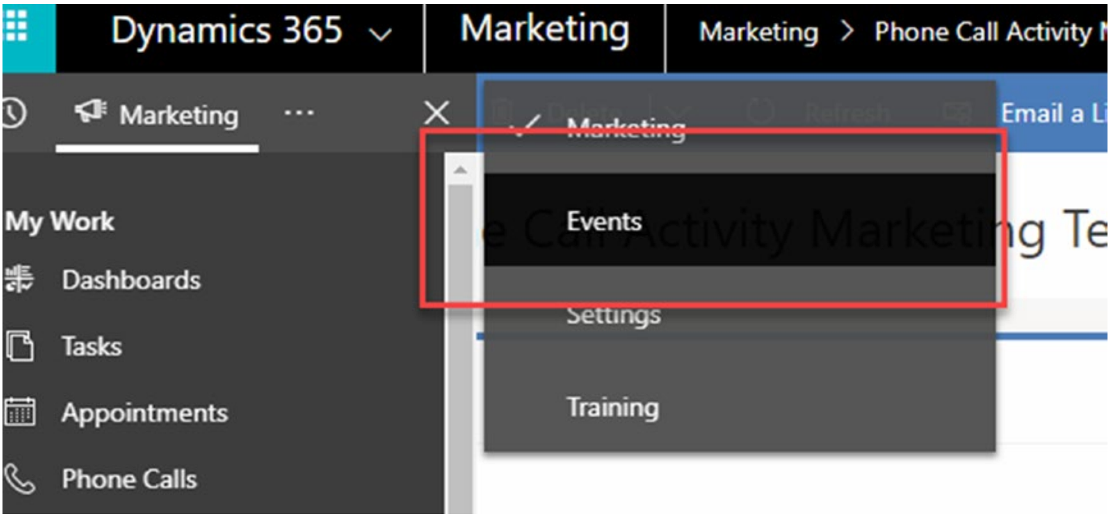

Dynamics 365
Marketing
Marketing > Phone Call Activity
Marketing
Email a Li
My Work
Dashboards
Tasks
Appointments
Phone Calls
Marketing
Events
Settings
Training

Figure 13-16. *Events section of the Dynamics 365 for Marketing application*

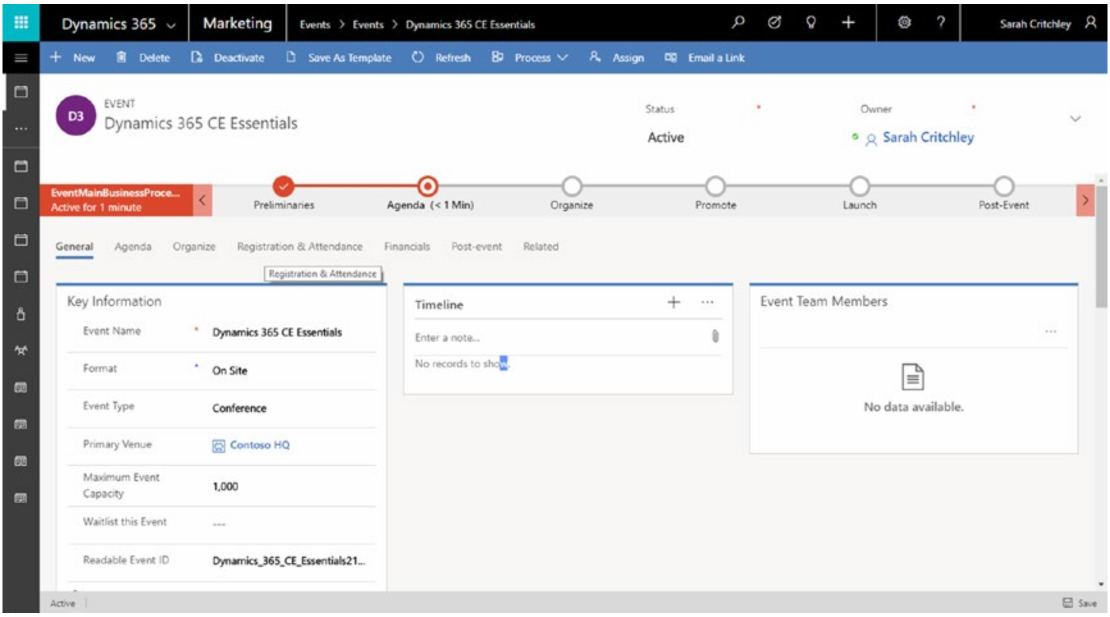
Events can be in-person and require a “Venue” field entry (which can also be managed via the app), or they can be webinars and take significantly less setup time.

Getting started with the Event Management module requires a small number of steps.

Task: Create a new Event record and publish it to the portal.

1. Navigate to the Event Management module and Click on “Events” and “New.”

2. Fill in the “Name,” “Format,” “Start Date,” “End Date,” “Event Type,” and “Venue” fields, saving the record as shown in Figure 13-17.


Dynamics 365
Marketing
Events > Events > Dynamics 365 CE Essentials
Sarah Critchley
+ New
Delete
Deactivate
Save As Template
Refresh
Process
Assign
Email a Link
D3
EventMainBusinessProce...
Active for 1 minute
Preliminaries
Agenda (< 1 Min)
Organize
Promote
Launch
Post-Event
General
Agenda
Organize
Registration & Attendance
Financials
Post-event
Related
Registration & Attendance
Key Information
Timeline
Event Team Members
Active
Save

EVENT
Dynamics 365 CE Essentials

Status: Active

Owner: Sarah Critchley

Event Name * Dynamics 365 CE Essentials

Format * On Site

Event Type Conference

Primary Venue Contoso HQ

Maximum Event Capacity 1,000

Waitlist this Event ---

Readable Event ID Dynamics_365_CE_Essentials21...

Enter a note...

No records to show.

No data available.

Figure 13-17. A new Event record

3. Navigate to the Agenda tab on the Event record. This is where you can create the sessions for the event.

4. Click “Add New Session.”

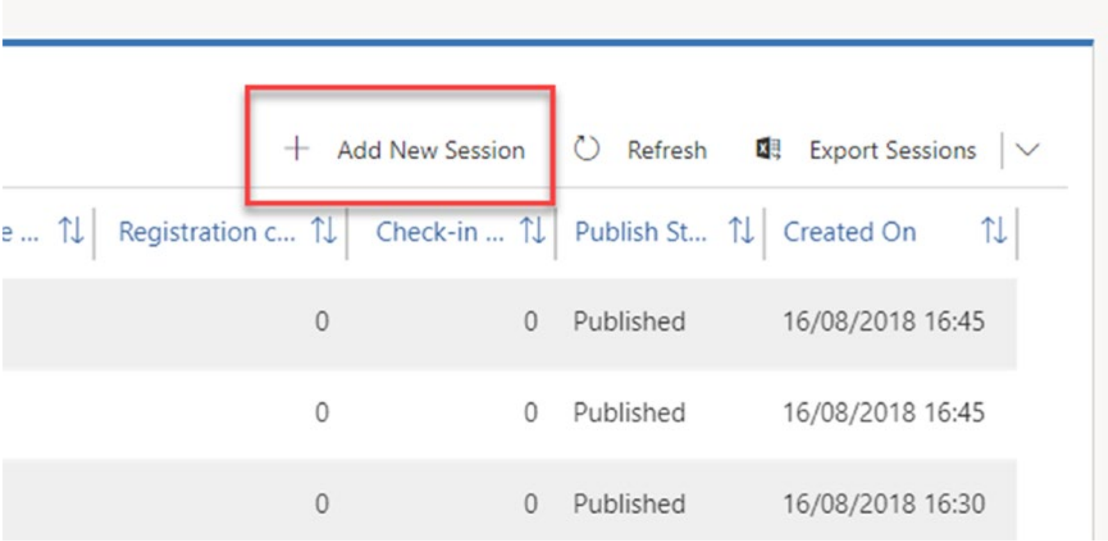
5. Fill in the “Session Title,” “Start Time,” and “End Time” fields, saving the record (ensuring the start and end dates are within the same date range set for the event itself).

6. Create another three sessions by repeating steps 4 and 5.

7. In the Agenda tab under the Speaker Engagements sub-grid, click “Add New Speaker Engagement,” as shown in Figure 13-18. A panel should appear on the right-hand side of the screen.

8. Fill in the “Name” and “Speaker” (Contact) fields and link the “Session” the speaker is linked to, then save the record.

9. Repeat steps 7 and 8 to create three more Speaker Engagement records.



e ...	Registration c...	Check-in ...	Publish St...	Created On
	0	0	Published	16/08/2018 16:45
	0	0	Published	16/08/2018 16:45
	0	0	Published	16/08/2018 16:30

Figure 13-18. *A new Event record*

10. Click on the Registration and Attendance tab within the Event record.
11. In the Passes sub-grid, click “Add New Pass.”
12. Enter the name of the pass, e.g., Developer Summit, the number of passes allocated, which would be 0, and pass price, which can be any currency amount. (“No of Passes Allocated” field increments when a customer registers for this pass.) Save the record.

    The core detail for the event has now been set up. There is a great deal of supporting information that can be added, such as sponsor records, more passes, tracks for the sessions, more session descriptive information, and venue details, to name a few. These can be explored using the “Further Reading” section at the end of this chapter.

    The next step is to publish the event so that a portal is created for it and customers can register.

13. Change the “Publishing Status” dropdown field in the header of the event to “Published.”

Note If the sessions to not appear on the portal, this means they have not been published and need to be manually set from “Draft” to “Published” in the app. Publishing the app will generate the URL in the “Event URL” page of the Event record near the bottom of the General tab. Click the field to open a new tab with this URL. The page should open your new event portal.

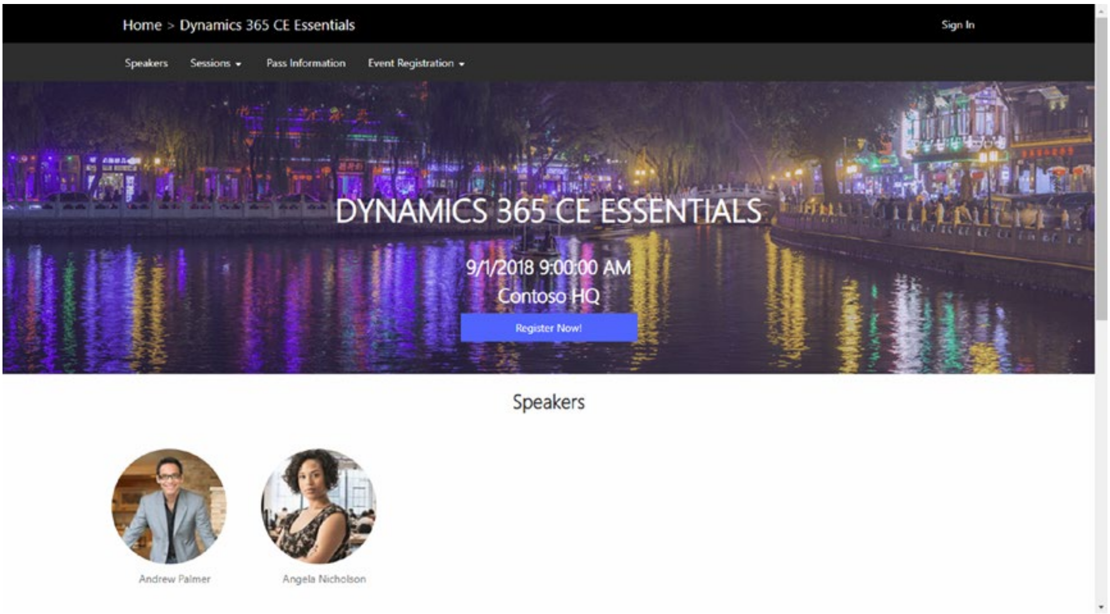
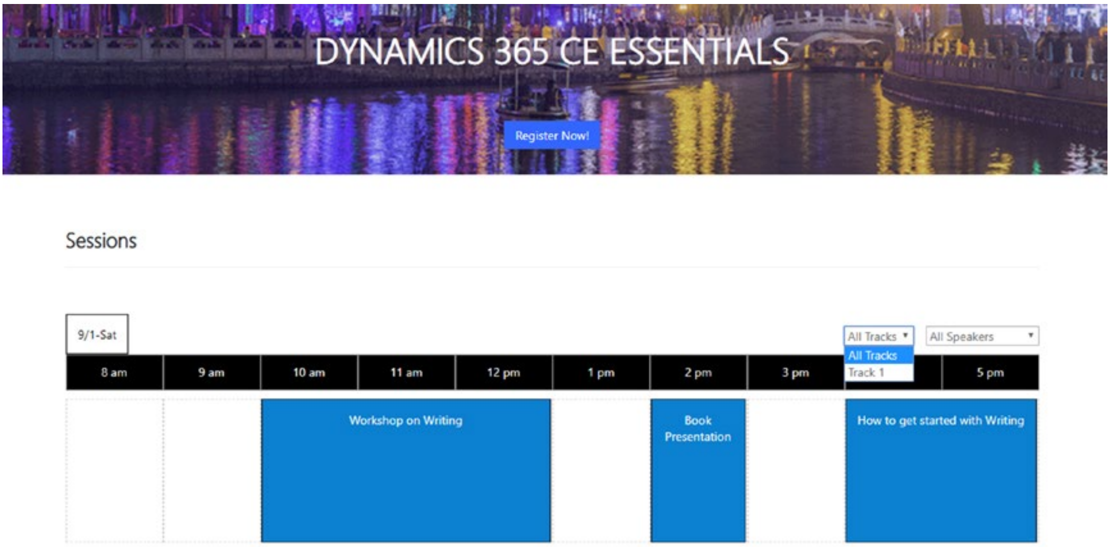

Home > Dynamics 365 CE Essentials
Sign In
Speakers
Sessions
Pass Information
Event Registration
DYNAMICS 365 CE ESSENTIALS
9/1/2018 9:00:00 AM
Contoso HQ
Register Now!
Speakers
Andrew Palmer
Angela Nicholson

Figure 13-19. A new event portal with a custom event

A customer can navigate to the portal and click on “Sessions” to see the different sessions and specific times of the sessions in an easy-to-use timetable view (Figure 13-19). They can filter on the speakers for the sessions, and if tracks have been set up, these can be filtered in the “Tracks” dropdown (Figure 13-20). Tracks are a way of grouping sessions into a specific category; e.g., Administration, Development, or “No Code” session types. If the event is across more than one day, the days appear as tabs across the timetable view.


DYNAMICS 365 CE ESSENTIALS
Register Now!
Sessions
9/1-Sat
All Tracks
All Tracks
Track 1
All Speakers
8 am
9 am
10 am
11 am
12 pm
1 pm
2 pm
3 pm
5 pm

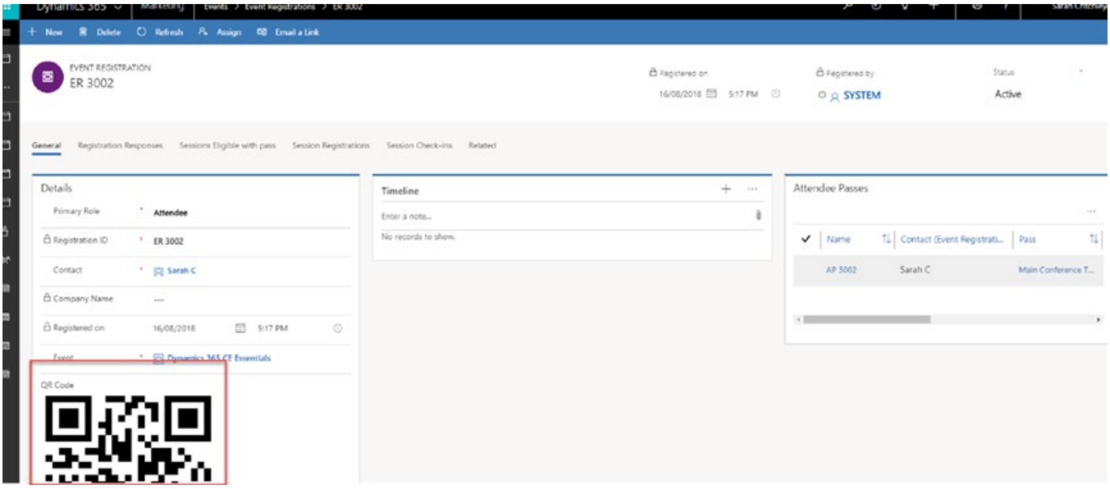
Workshop on Writing

Book Presentation

How to get started with Writing

Figure 13-20. *Using the timetable within the portal to view sessions*

Users can register for the event by navigating to "Event Registration" on the portal and completing the registration details. This action creates a new Event Registration record within Dynamics 365 for Marketing and is associated with the event. It also generates a QR code that can be used for the attendee's registrations (Figure 13-21).


Dynamics 365
Marketing
Events > Event Registrations > ER 3002
New
Delete
Refresh
Assign
Email a Link
General
Registration Responses
Sessions Eligible with pass
Session Registrations
Session Check-ins
Related
Details
Timeline
Enter a note...
Attendee Passes
QR Code

EVENT REGISTRATION
ER 3002

Registered on: 16/08/2018 5:17 PM
Registered by: SYSTEM
Status: Active

Primary Role: Attendee
Registration ID: ER 3002
Contact: Sarah C
Company Name: ---
Registered on: 16/08/2018 5:17 PM
Event: Dynamics 365 CE Essentials

No records to show.

Name	Contact (Event Registrati...	Pass
AP 3002	Sarah C	Main Conference T...

Figure 13-21. *Event registrations within Dynamics 365 CE*

Following the event creation, the event can be used in customer journeys using the “Event” block and is normally used within marketing emails to generate interest and prompt customers to register for the event.

Summary

This chapter has covered the essential details of the Dynamics 365 for Marketing application. It has covered core definitions of leads and how they are used within the app. This section is important, as without a Contact record associated with an entity referenced within a segment, the query will not be able to find a contact to use within a customer journey. The chapter then went on to highlight how marketing lists are used to create subscription lists, which can be used to market to segments and can also be used in marketing forms to manage customers who are subscribing and unsubscribing. Segments are a critical part of the marketing application as they represent who the organization is going to be marketing to as part of their overall marketing strategy. The application allows these to be created in numerous ways and to be used in customer journeys to conduct behavior-driven marketing campaigns. Customer journeys often create leads and actions from those journeys, which include triggers such as opening an email or clicking links. These actions can trigger lead scoring, affect lead scores and grades, and influence the accumulation of points for the “Sales Ready” score to be triggered. Dynamics 365 for Marketing also provides functionality to run extensive event management, which can be used together within customer journeys to market the event, gain registrations, and facilitate the running of the actual event. The native capability within Dynamics 365 CE has been expanded extensively, giving marketing departments the capability to successfully execute digital marketing campaigns.

> *Special thanks to Mauro Marinilli, Group Program Manager for Dynamics 365 for Marketing app at Microsoft for reviewing this chapter.*

Chapter Tasks

At the end of every chapter, there will be a section that gives up to ten suggested tasks for you to complete within Dynamics 365 CE. Completing these tasks will be based around the topics covered within the chapter and the further resources referenced at the end.

They are aimed at expanding practical knowledge and application of those topics that go beyond reading about them.

1. Create a subscription list and new subscription center.
2. Use the subscription list in a customer journey.
3. Create static, dynamic, and compound segments.
4. Create a marketing form and page.
5. Create a marketing email.
6. Create a customer journey that uses triggers and schedules.
7. Set up a lead-scoring model.
8. Create a new Event record and associated sessions.

Further Reading

Subscription Center Management (Microsoft, 2018). URL: https://docs.microsoft.com/en-gb/dynamics365/customer-engagement/marketing/set-up-subscription-center

Creating Segments (Microsoft, 2018). URL: https://docs.microsoft.com/en-gb/dynamics365/customer-engagement/marketing/segmentation-lists-subscriptions

Customer Journeys (Microsoft, 2018). URL: https://docs.microsoft.com/en-gb/dynamics365/customer-engagement/marketing/create-simple-customer-journey

Event Management in Dynamics 365 for Marketing (Microsoft 2018). URL: https://docs.microsoft.com/en-gb/dynamics365/customer-engagement/marketing/event-management

Customer Journey Tiles (Microsoft 2018). URL: https://docs.microsoft.com/en-gb/dynamics365/customer-engagement/marketing/customer-journey-tiles-reference

Lead Scoring (Microsoft 2018). URL: https://docs.microsoft.com/en-gb/dynamics365/customer-engagement/marketing/qualify-leads-section

Marketing Deliverability and IP Addresses (Microsoft, 2018). URL: https://docs.microsoft.com/en-gb/dynamics365/customer-engagement/marketing/get-ready-email-marketing

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S. Critchley, *Dynamics 365 CE Essentials*, https://doi.org/10.1007/978-1-4842-3973-5

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