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Microsoft Dynamics CRM Customization Essentials

Use a no-code approach to create powerful business solutions
using Dynamics CRM 2015

Nicolae Tarla

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Use a no-code approach to create powerful business
solutions using Dynamics CRM 2015

Nicolae Tarla



BIRMINGHAM - MUMBAI

Microsoft Dynamics CRM Customization Essentials

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In 2014, Nicolae was awarded with Dynamics CRM MVP.

I would like to thank my wife and daughter for the ongoing support they provided during this project.

Also, a big thanks goes to the community for being there, being active, and driving me to participate and give back more and more every day. You rock!

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I'd like to thank my mom and the lovely Helene.

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Additionally, he has helped many companies with CRM installation, deployment, reporting, and configuration.

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Ian has worked with Microsoft Dynamics GP since 2003, and over the years, he has dealt with all the aspects of the product life cycle – from presales to implementation, technical and functional training, post go-live support, and subsequently upgrades and process reviews.

Alongside his work with Microsoft Dynamics GP, he has fulfilled a similar role since the time he joined Perfect Image, dealing with Microsoft Dynamics CRM – with especial emphasis on project delivery and the training of end users on the management of sales, marketing, and service.

Ian is the coauthor of *Microsoft Dynamics GP 2013 Cookbook* and the author of *Microsoft Dynamics GP 2013 Financial Management* and *Implementing the Microsoft Dynamics GP Web Client*. He has produced the Microsoft Dynamics GP Techniques Online learning course and is the technical reviewer of both *Microsoft Dynamics CRM 2011 Applications (MB2-868) Certification Guide* and *Microsoft Dynamics CRM 2011 Cookbook*.

In his spare time, Ian runs the *azurecurve – Ramblings of a Dynamics GP Consultant* (<http://www.azurecurve.co.uk>) – blog dedicated to Microsoft Dynamics GP and related products.

The most recent offshoot of running his blog is that he has started writing plugins to extend the functionality of the blogging platform WordPress. A new site, *azurecurve WordPress Development* (<http://wordpress.azurecurve.co.uk>) contains information on his plugins and also the new blog, where he discusses how the development of plugins is done.

Harry Riddle is a Data Analyst who certified on Dynamics CRM in 2004 with Automated Options, Inc. in Spokane, Washington, USA and has focused his career on custom implementations. Harry has reviewed *Microsoft Dynamics CRM 2011 New Features*, Packt Publishing.

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I would like to thank my wife, Emeline, who let me work on my community work for Microsoft Dynamics CRM without any remarks, even though our one-year-old baby boy is a full-time job.

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In his spare time, he has developed a number of custom tools for Microsoft Dynamics CRM, including an IronPython scripting tool.

He is also the technical reviewer of *Microsoft Dynamics CRM 2011 Application Design*, *Microsoft Dynamics CRM 2011 Reporting*, and *Microsoft Dynamics CRM 2011 Cookbook*.

You can read his blog at www.woodworkblog.wordpress.com.

I would like to thank my family and friends for everything—especially Georgia, for being my wife.

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Preface

Microsoft Dynamics CRM Customization Essentials covers the essential structure and customization options available to a Dynamics CRM power user. The book takes you through the basics of the platform, explains the structure and relationship of various elements, and presents the customization options available on the platform. It also covers the administrative options at a high level.

What this book covers

Chapter 1, Getting Started, gives you an introduction to Dynamics CRM and guidance on setting up a free 30-day trial of Dynamics CRM Online, in order to be able to follow through the examples in the book. No prior knowledge of Dynamics CRM is assumed. When you complete this chapter, you will be able to replicate all the examples provided in this book in their newly created trial instance of Dynamics CRM.

Chapter 2, Dynamics CRM Application Structure, delves into the Dynamics CRM application structure, describing the standard modules, elements available for customization and their relationship with each module, as well as the available options to extend the platform further. In this chapter, you will understand how to manage the existing application structure, extend and modify the modules, and update the navigation accordingly.

Chapter 3, Customizing Entities, builds on the knowledge gained in the previous chapter, and goes one step further by showing you how to work with entities within the existing modules, customize and extend these entities, and create logical relationships between them. In addition, this chapter will loop back and reference the previous chapter by describing how these new customizations fit within the application modules and can live across various modules.

Chapter 4, Business Processes, takes you into the core of the application, by taking a look at how business affects the behavior of the platform. You will look at how to enforce business rules on the platform and create customizations that will guide and correct the user, thus making sure that the platform works in sync with the user.

Chapter 5, Social Features in Microsoft Dynamics CRM, lets you take a look inside and outside the platform, by first diving into the internal social aspect of the platform and then tapping into external data from the market, as well as at the customers and prospects. You will be introduced to some of the new features that have been introduced in the latest versions of Dynamics CRM as well as the analytics options available with the platform.

Chapter 6, Dynamics CRM Administration, guides you through generic administration options available on the platform. While it is by no means an exhaustive guide to application administration, this chapter aims at giving you enough knowledge on the administrative options to provide a base of knowledge. In addition, references to the Microsoft documentation will point you to the available sources to enhance your knowledge.

What you need for this book

By following the instructions provided in *Chapter 1, Getting Started*, you will be able to create a 30-day trial of Dynamics CRM Online. This environment can be used to experiment with the configurations described in this book.

In addition, Microsoft Office Outlook can be used to integrate with this environment. *Chapter 1, Getting Started*, also describes how to configure this integration.

Who this book is for

This book is a basic guide for both new and seasoned Microsoft Dynamics CRM users. It takes a gradual approach to present the platform, starting with the basic structure, then moving on to configuration options, and ending with solution administration concepts.

A new user will be slowly guided through the base concepts of the platform, the structure, and the configuration options so that he or she can become a power user.

An advanced user will find the coverage of a certain aspect of the platform that they have not yet worked with, or find specific gems about differences between the versions of the platform and the new features introduced with the latest version.

A power user will find details and concepts that will help them become better and faster as well as more efficient and proficient at customizing the platform. In addition, they will get an overview of the platform administration options, helping to close the communication gap between users and administrators.

This book takes a no-code approach to configuration and customization and is aimed at nondevelopers. It is intended as a guide for someone who is starting out with the platform and as a reference material during the platform life.

Conventions

In this book, you will find a number of styles of text that distinguish between different kinds of information. Here are some examples of these styles, and an explanation of their meaning.

Code words in text, database table names, folder names, filenames, file extensions, pathnames, dummy URLs, user input, and Twitter handles are shown as follows: "This URL is in the format `https://[OrganizationName.crm.dynamics.com]`."

New terms and **important words** are shown in bold. Words that you see on the screen, in menus or dialog boxes for example, appear in the text like this: "With the URL in place, click on **Test Connection**."

 Warnings or important notes appear in a box like this.

 Tips and tricks appear like this.

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1

Getting Started

Microsoft Dynamics CRM is offered in a variety of deployment scenarios. From the standard on-premise deployment to a private cloud or an online cloud offering from Microsoft, the choice depends on each customer, their type of project, and a large number of requirements, policies, and legal restrictions.

In this chapter, we will cover the following topics:

- Dynamics CRM
- Prerequisites to customize CRM
- Setting up Dynamics CRM
- Integrating Dynamics CRM Online with Outlook

We will first take a look at which environment we need to complete the examples presented in the book. We will create a new environment based on a Microsoft Dynamics CRM Online trial. This approach will give us 30 days to experiment with an environment for free.

Dynamics CRM

Dynamics CRM 2015 is the current version of the popular customer relationship management platform offered by Microsoft. This platform offers users the ability to integrate and connect data across their sales, marketing, and customer service activities and to give their staff an overall view of all the interactions and activities as they relate to a specific customer.

Along with the standard platform functionality provided, we have a wide range of customization options, which allow us to extend and further customize solutions to solve almost any other business need. In addition, we can integrate this platform with other applications and create a seamless solution, such as a centralized repository.

While Microsoft Dynamics CRM is by no means the only available CRM platform on the market today, it is one of the fastest growing platforms, gaining large acceptance at all levels, from small- to mid-size and enterprise-level organizations. This is due to a multitude of reasons, some of which include the variety in deployment options, the scalability, the extensibility, the ability to integrate with other systems, and the ease of use. Let's take a look at them in detail.

Deployment options

Microsoft Dynamics CRM can be deployed with a variety of options. Starting with the basic offering from Microsoft, you can get CRM Online. Once we have the 30-day trial active, this can be easily turned into a full production environment by providing payment information and keeping the environment active. The data will live in the cloud, in one of the data center provided by Microsoft at multiple locations worldwide.

Alternatively, you can obtain hosting with a third-party provider. The whole environment can be hosted by a third party, and the service can be offered either as a **Software as a Service (SaaS)** solution or as a fully hosted environment. Usually, there is a difference in the way payment is processed, with a SaaS solution, in most cases, being offered in a monthly subscription.

The last option is to have the environment hosted in-house, in an on-premise scenario. This option carries the highest upfront cost, but it gives you the ability to extensively customize the system. In addition to the higher upfront cost, the cost to maintain the environment and hardware and the requirement of skilled people to constantly administer the environment can easily add new costs.

Scalability

Dynamics CRM can scale over a wide range of deployment options. From a single box deployment used mostly for development, all the way up to a cloud offering that can span over a large number of servers and host a large number of environments, the same base solution can handle all the scenarios in between with ease.

Extensibility

Dynamics CRM is a platform. While the base offering comes with prepackaged functionality for sales, services, and marketing, a large variety of solutions can be built on top of Dynamics CRM. The extensibility model is powered by a very robust set of **Application Programming Interfaces (APIs)**.

Ability to integrate with other systems

There are a large variety of integration options available when working with Dynamics CRM. The base solution comes with the ability to configure the integration with SharePoint for document management and with Yammer for social features.

In addition, you can use specific connectors provided by either Microsoft or other third-party providers for integration with specific solutions. Some of the most common ones are (in no particular order) Microsoft Dynamics CRM connector (for AX, NAV, and GP), Scribe connectors, and so on.

When the previously mentioned options are not available, you can still integrate with other solutions using a third-party integration tool. This allows real-time integration into legacy systems. Some of the most popular tools used for integration include **SQL Server Integration Services (SSIS)**, Scribe, and BizTalk.

Ease of use

Dynamics CRM offers a variety of options to interact with the system. You can access Dynamics CRM either through a browser, which now comes with support for all the recent versions of the major browsers. In addition, a user can interact with the system directly from the very familiar interface of Outlook. The Dynamics CRM connector for Outlook allows users to get access to all the system data and features from within Outlook. In addition, a set of functions built specifically for Outlook allow users to track and interact with e-mails, tasks, and events from within Outlook.

In addition to the features provided through Outlook integration, the users of CRM for Outlook have the ability to work offline. Data can be taken offline, work can be done even when you are disconnected, and data can be synchronized back into the system when connectivity is available again.

For mobile users, Dynamics CRM can be accessed from mobile devices and tablets. Dynamics CRM provides a standard web-based interface for most mobile devices as well as specific applications for Windows-based mobile devices, iPad, and Android devices.

Third-party providers have also built mobile solutions for Dynamics CRM. A quick search in the application markets for each platform will reveal several options for each platform.

Prerequisites to customize Dynamics CRM

First and foremost, in order to follow through with the information presented in this book, you will need an instance of Dynamics CRM 2015. The following sections will describe how to obtain a 30-day trial instance in detail.

Also, in order to subscribe to a 30-day trial, you will need a Microsoft Live account. You can obtain an account by going to <http://www.outlook.com>. In the page presented, in the bottom right-hand corner, you will find the **Sign up now** link, as shown here:

Don't have a Microsoft account? [Sign up now](#)

Follow the instructions on this link and create your account if you don't have one already.

Setting up Dynamics CRM

While this book will not provide step-by-step instructions to be followed as a recipe, it is strongly recommended that you have an environment available to supplement the material you will be reading and that you become familiar with the environment. In order to minimize the footprints and to allow everybody to start quickly, I have opted to present all the topics based on a Dynamics CRM Online instance.

Opening a free 30-day trial of Dynamics CRM Online

In order to open your 30-day trial of Microsoft Dynamics CRM, you need to go through a wizard-driven process. First, navigate to <http://www.microsoft.com/en-ca/dynamics/default.aspx>.

Change your locale from the top right-hand corner of the screen, if necessary:



As you can see, 44 languages are supported at the time of writing this book, and more are being added all the time.

Once you have your locale selected, find the **TestDrive CRM** link, which looks as follows, and click on it:



The reason why we have selected the correct locale right from the start is because we now don't have to change the environment preferences during the signup process.

Once the wizard is started, the first page that is presented gives you the option to select the product. By default, **Microsoft Dynamics CRM** is selected. The right-hand side of this page presents you with some configuration questions. Select the most relevant options for the role and organization size fields and click on **Start TestDrive**, as shown in the following screenshot:

The screenshot shows a two-step configuration wizard. Step 1, 'Select a Product:', has three options: 'Microsoft Dynamics CRM' (selected and highlighted with a blue arrow), 'Microsoft Dynamics Marketing', and 'Microsoft Social Listening'. Step 2, 'Configure your TestDrive experience:', contains the following elements: a description 'TestDrive Microsoft Dynamics CRM to learn how to manage contacts, put social media insights to work and utilize knowledge bases.', a disclaimer 'We don't want personal or payment information, just a bit about your role to help craft the most relevant CRM TestDrive experience.', a required field 'What kind of job do you have? *' with a dropdown menu labeled 'Select your role', a required field 'How many people work in your company? *' with a range slider from 0 to 1000+, a blue 'Start TestDrive' button with a right arrow, a footnote '* Required Fields', and a link 'Have you already experienced the Microsoft Dynamics CRM TestDrive? Sign up for a 30-day free trial today.'

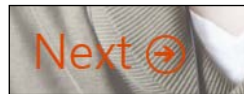
Next, follow the wizard step by step if you are using the product for the first time, or you can directly skip to creating a trial by clicking on the **Start Free Trial** button, as shown in the following screenshot:

The screenshot shows a single blue button with the text 'Start Free Trial' and a right-pointing arrow.

The signup process consists of the following three steps:

- In the first step, personal and company information is collected. I will recommend that you pay close attention to the country selection option in this step, as this selection predefines the language, currency, and locale details. As noted on the screen, this information cannot be changed once the instance is configured. If you have selected the wrong country, you will have to sign up again for a new instance to reset this information.

- In this step, the e-mail address collected is used for all further communication with the environment owner. The phone number and company name are also collected. The company name provided will be used to create the specific accessible URL for the instance to be used. Also, make sure that the e-mail address provided is a valid e-mail address, as all communication regarding this instance as well as expiration notifications will be sent to this address.
- Once you've filled in this form, find and click on the **Next** button, which looks similar to the one in the following screenshot, to advance to the next step:



- The second step is the provisioning of an Office 365 user account. Since this is a free 30-day trial, the default extension of `onmicrosoft.com` is being used for all the accounts. Provide a username that is easy to remember and the company name to be used when generating the environment URL.
- Finally, click on **Next** once all this is completed and advance on to the third step. The last step is a validation step. You need to provide a valid phone number, and a text message with a verification code will arrive almost instantly. Enter this code in the box shown in the following screenshot:

Prove. You're. Not. A. Robot.

Didn't get it or need a new code? [Try again](#)

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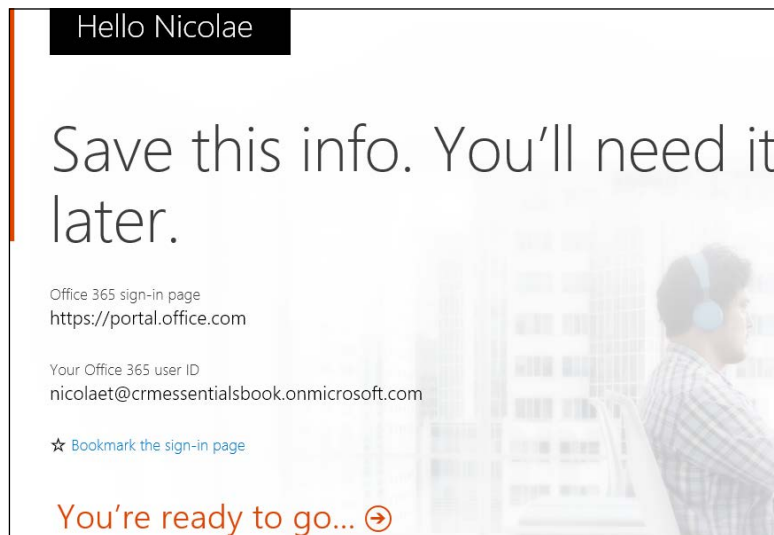
By clicking **create my account**, I confirm that I have read and understand the [Trial Agreement](#). If Customer is an organization, when I click create my account, I represent that I have the authority to bind my organization to the terms in this agreement and that Customer agrees to be bound by this agreement and its linked websites.

Create my account ➞

When you are done, click on **Create my Account**. Your account will be created. The process can take a few minutes to complete; during this time, your **sign-in page** and **user ID** will be shown, as follows:



Once this is completed, the link to start your trial is active. Click on **You're ready to go...**, as shown here:



A new wizard will start, allowing you to configure your Office 365 CRM Online instance through the **Administration Center**. Fill in the required fields and click on **Continue Setup**.

Pay close attention to the customer currency that you are setting up for your environment. This will define the base currency used in the environment, and all currency conversions will be set up in relation to this currency. The default currency cannot be changed once the online instance is created.

The **Organization Language** of **CRM Online Administration Center** defines the default language used for the system. While you can add any of the additional language packs provided, the default language must be selected during the online instance creation process.

The screenshot shows the 'CRM Online Administration Center' setup wizard. It has a title bar with the text 'CRM Online Administration Center'. Below the title bar, it says 'Welcome to the Microsoft Dynamics CRM Online Instance Setup!' followed by 'Before we begin, we need to collect additional information.' The first section is 'Organization Language' with a dropdown menu showing 'English'. The second section is 'Please select your base currency' with a subtext 'Microsoft Dynamics CRM supports multiple currencies, but all reporting is done in the currency you select now.' Below this, it says 'We have set the default currency based on the country/region that was selected. If this information isn't correct, you can select a different country/region and currency. Or, click Specify Custom Currency to set up a different currency.' There are two radio buttons: 'Select currency by country/region' (which is selected) and 'Specify Custom Currency'. Under 'Select currency by country/region', there are two dropdown menus: 'Country/Region' showing 'Canada' and 'Currency' showing 'bα.C▷< ρα.▷>¥ℓ (CAD,\$)'. At the bottom, there is a 'Continue Setup' button.

CRM Online Administration Center

Welcome to the Microsoft Dynamics CRM Online Instance Setup!
Before we begin, we need to collect additional information.

Organization Language

English

Please select your base currency
Microsoft Dynamics CRM supports multiple currencies, but all reporting is done in the currency you select now.

We have set the default currency based on the country/region that was selected. If this information isn't correct, you can select a different country/region and currency. Or, click Specify Custom Currency to set up a different currency.

☒ Select currency by country/region

Country/Region

Canada

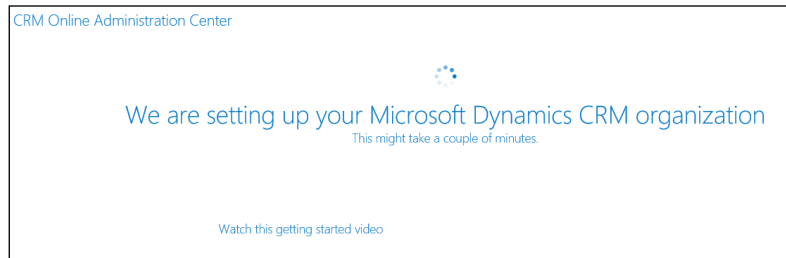
Currency

bα.C▷< ρα.▷>¥ℓ (CAD,\$)

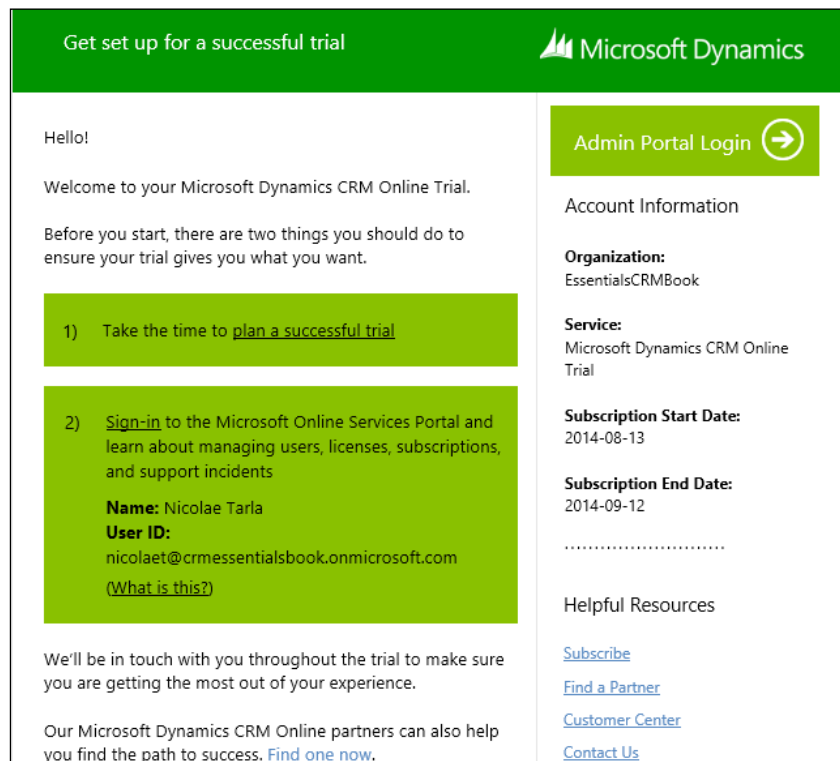
☐ Specify Custom Currency

Continue Setup

Once you click on the **Continue Setup** button, the system will start provisioning your new instance of Microsoft Dynamics CRM. This process takes a few minutes, as you can see in the following screenshot:



While you wait for the provisioning to finish, check the e-mail address you used to subscribe. A new e-mail from Microsoft must have landed in your inbox, presenting you with details about your subscription, the start and end dates, organization name, and user ID. Keep this information handy for the duration of the trial, as you will need to refer to it later on. You will receive the following e-mail when creating a new **Organization** named **EssentialsCRMBook**:





Depending on the locale selected, you might receive an additional e-mail about eligibility for additional products or services. At the time of writing this book, social listening is not yet available in all the locales.

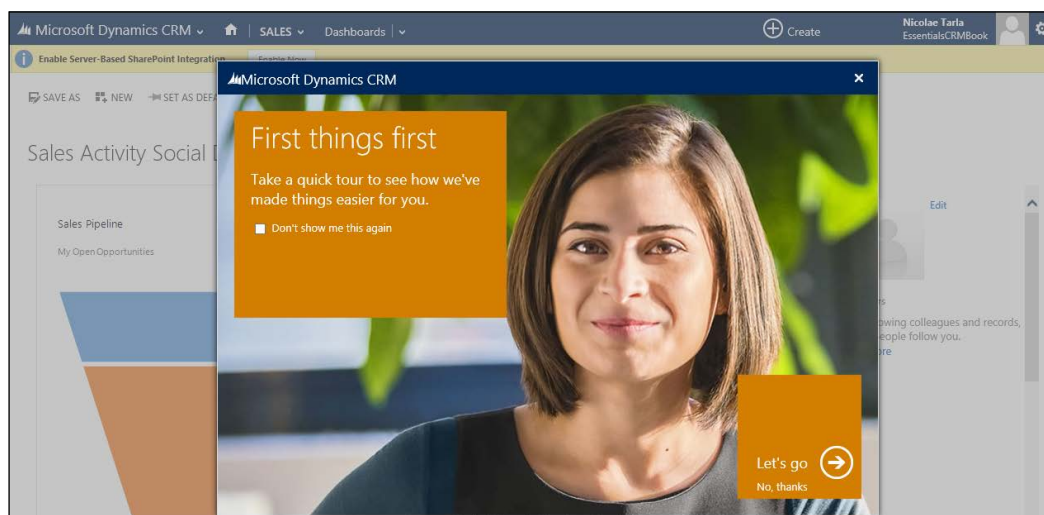
Once the provisioning is completed, the page refreshes, and a link to access your new instance is presented, as shown here:

Your Microsoft Dynamics CRM organization is ready

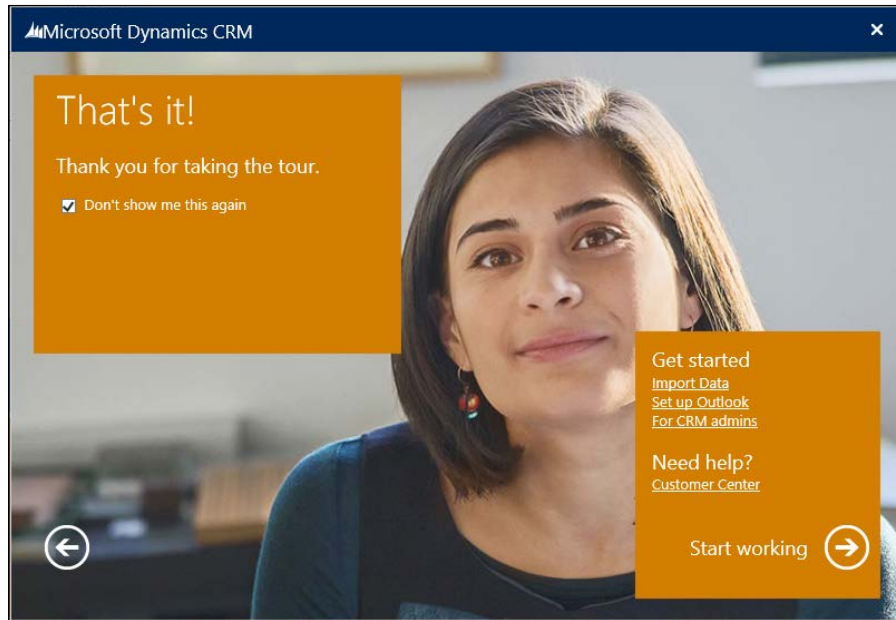
Launch CRM Online

To sign in directly to your Microsoft Dynamics CRM organization in the future, bookmark this URL:
<https://crmessentialsbook.crm.dynamics.com/>

Click on the **Launch CRM Online** button to access your newly created instance of Dynamics CRM. You are presented with the default dashboard and, on first launch, the welcome wizard. You can opt for it to not be shown again, or this wizard can be disabled for all the users by an administrator.



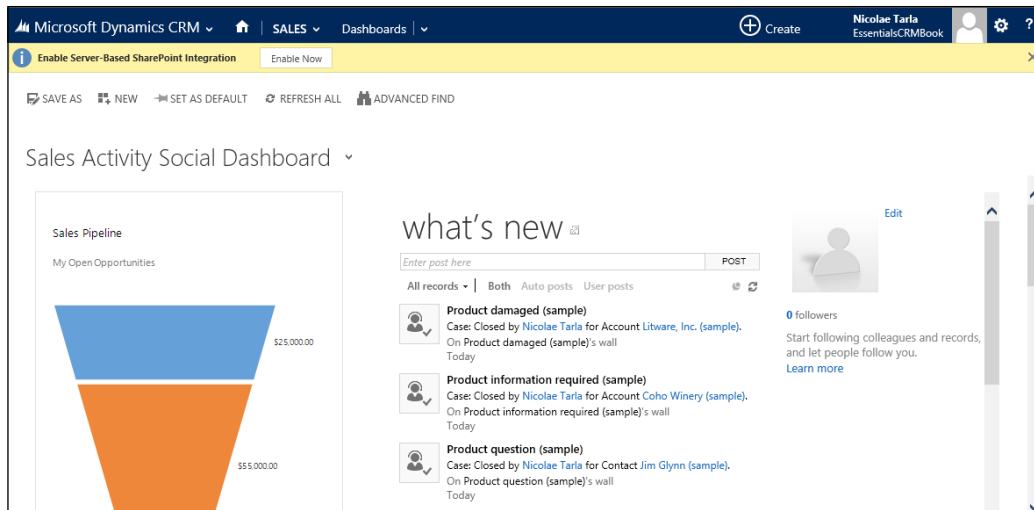
Clicking on the **Let's go** arrow presents you with a set of highlights about the platform. If you are working with Microsoft Dynamics CRM for the first time, it's recommended that you follow this quick tutorial to get a first look at some of the features of the platform.



When you are done, click on **Start working**, which you can see in the right-hand corner of the previous screenshot. You are now logged in to your brand new Dynamics CRM Online trial instance. The window should look like the following screenshot.

For additional training resources, you can refer to the CRM Customer Center at <http://www.microsoft.com/en-us/dynamics/crm-customer-center/>.

Or, if your organization has access, you can refer to the Dynamics Learning Portal at <https://mbspartner.microsoft.com/Landing>, which is a treasure trove of information.



By default, the first time you access Dynamics CRM, you are presented with the **Sales Activity Social Dashboard**. You will get some additional messages about extra configuration steps in the yellow bar at the top. We can ignore these for now, as we will be going back to them in a later chapter, when we take a look at the other features available.

The Outlook connector's configuration will be covered in the next section of this chapter, while SharePoint integration configuration will be covered in *Chapter 6, Dynamics CRM Administration*.

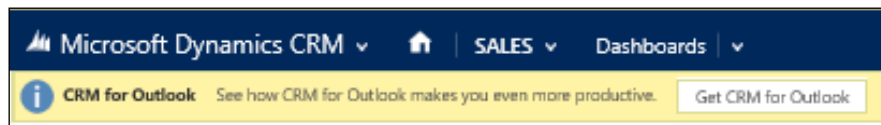
The trial instance of Dynamics CRM Online comes preloaded with some sample data. This makes it easy for a first-time user to see some of the visual representations on the dashboards as well as gives a new user the opportunity to track some of the data relationships and see how related data is presented on certain records. This sample data can be removed by navigating to **Settings | Data Management | Sample Data**.

In the next few chapters, we will start investigating all the available features of the Dynamics CRM platform.

Integrating Dynamics CRM Online with Outlook

While it is not necessarily a requirement of this book, Dynamics CRM Online and On-Premise can be integrated with Microsoft Outlook in order to provide the user with an interface that is already familiar to them.

Once you have your instance up and running, you can go ahead and install the Outlook client. This client is available either directly from the web interface of Dynamics CRM, presented as an option for download, or it can be downloaded from <http://www.microsoft.com/en-us/download/details.aspx?id=40344>.



You can either download the file locally or run it directly.



Microsoft presents you with the option to download two files for the Outlook client. Make sure that you select the file that matches the version of Office you have installed. For 32-bit versions of Office, select the file that ends in `Client-ENU-i386.exe`, while for 64-bit versions of Office, select the file that ends in `Client-ENU-amd64.exe`.



The following are the requirements for Dynamics CRM for an Outlook installation:

- Must be logged in as a user with local administrator privileges
- Must be on a machine with Windows Vista SP2 or newer
- Must have Office 2007 or newer installed
- Must have Internet Explorer 8 or newer

The following are the minimum system requirements for Dynamics CRM for Outlook:

- Processor: x86 or x64, 1.9 GHz or faster, dual core with SSE2 (most modern processors qualify)
- Memory: A minimum of 2 GB RAM for online Dynamic CRM only; 4 GB RAM for supporting the offline capability
- Hard Disk: 1.5 GB available disk space and 2 GB for the offline mode
- Display: SVGA, a minimum resolution of 1024 x 768

Installing CRM for Outlook

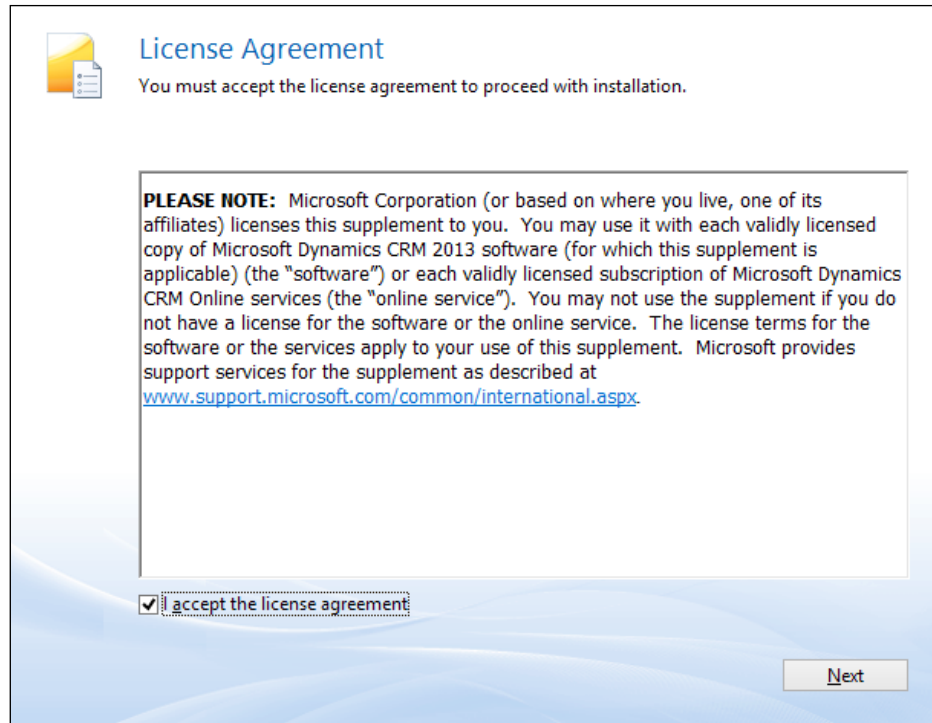
Once the file is executed, all the necessary components are extracted, and you are guided through a wizard-based installation. Do make sure that your Outlook application is closed, otherwise you will be prompted to close it for the installation to proceed.

If you are running the wrong version of the installer, the installation process checks and prompts you about the version mismatch, as shown in the following screenshot:



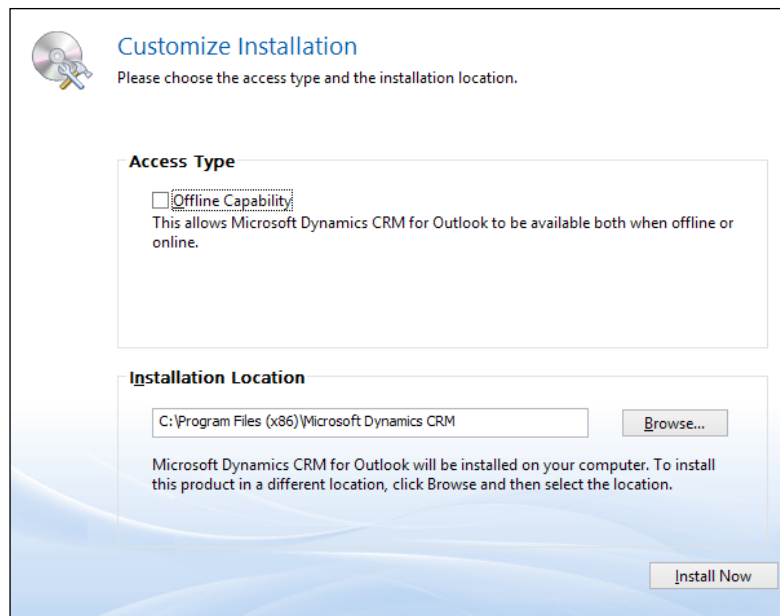
If you get an error, as shown in the previous screenshot, click on **Close** and try installing Microsoft Dynamics CRM from the other download file.

Once the installation starts, you are guided through a few screens, starting with the setup preparation. In the next step, you are prompted to accept the **License Agreement**, as shown in the following screenshot. Tick the checkbox and click on **Next**.

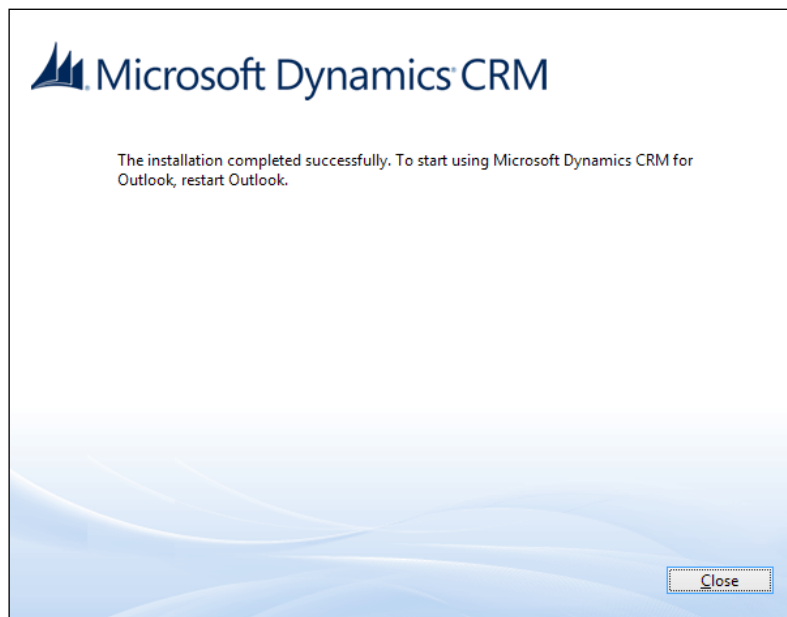


Once the acceptance is completed, you will be presented with a screen in which you can directly start the installation process or modify the installation options. If you choose to modify the default option, you will be presented with a new screen where you can define whether you want to install Dynamics CRM for Outlook with offline support or not. For the purpose of a 30-day trial, unless there is a specific need for offline support, we can leave this option unselected.

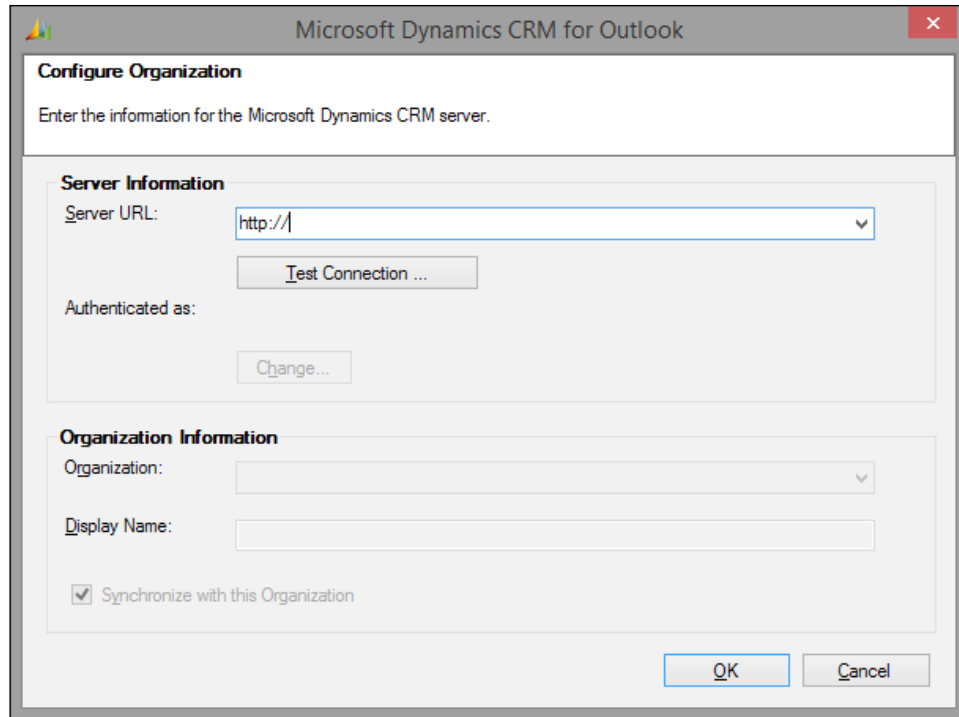
The second configuration option presented on this screen is the location where you want the files to be installed. You can also leave the default selection in place. Overall, the following screenshot shows how the **Customize Installation** window looks:



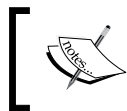
Next, let's click on **Install Now** and get started with the installation process. From here, the installation wizard proceeds to completion with no more questions or interruptions. On completion, a window similar to the one shown in the following screenshot will appear. Click on **Close** to complete the process.



At this point, we have Microsoft Dynamics CRM for Outlook installed, and we are ready to start Outlook and configure our client to connect to our trial instance. Once we launch Outlook, we are prompted to configure the newly installed plugin. The window that pops up should look similar to the following screenshot:



First, insert the URL to your current Dynamics CRM Online instance. This URL is in the format `https://[OrganizationName.crm.dynamics.com]`.

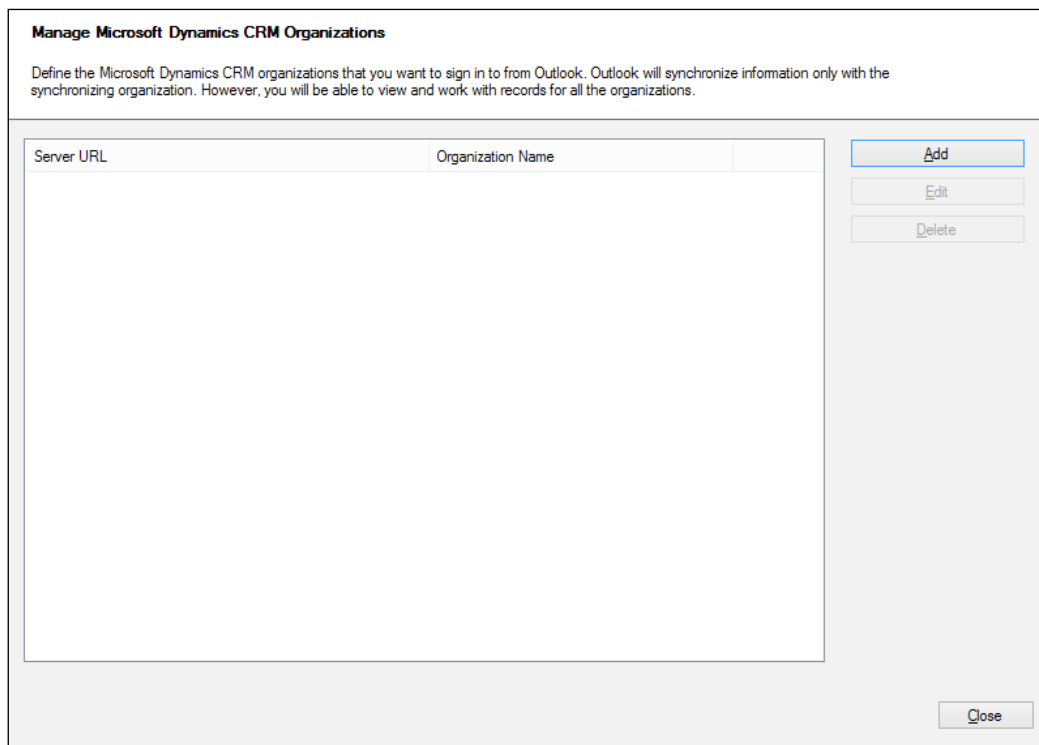


For an on-premise deployment, this URL will be different. The format will be `http[s]://[ServerName]/[OrganizationName]`.

With the URL in place, click on **Test Connection**. You will now be prompted to authenticate. If you have forgotten your selected username, retrieve it from the confirmation e-mail you received from Microsoft when setting up your free 30-day trial.

Once authenticated, you can now give your instance a name or change it. When you are done, make sure that the **Synchronize with this Organization** checkbox is selected and click on the **OK** button.

This completes the configuration of the Dynamics CRM for Outlook plugin, and you are presented with a final view of all the configured connections. In here, you will see your currently configured connection, along with the other possible connections configured previously.



You can also go to the previous window post the installation by relaunching the configuration wizard.

Close this window. Now, your Outlook is connected to your instance of Dynamics CRM. You can now navigate to your Dynamics CRM environment in the same way as you navigate within Outlook to any other e-mail already configured. Your new Dynamics CRM environment shows in the listing of mailboxes as a new mailbox. Expanding this list will give you access to all the sections and entities from your CRM environment.

Summary

Throughout this chapter, we looked at how to create our new free trial environment for Dynamics CRM using Microsoft Dynamics CRM Online. In addition, we walked through configuring Outlook to integrate it with our Dynamics CRM Online instance.

The next chapter will delve into the application structure. We will take a look at the standard modules included in the platform and the elements available for customization as well as their relationship with each module. We will also take a look at the navigation model used in Dynamics CRM and how we can extend and modify it.

2

Dynamics CRM Application Structure

In the previous chapter, we described how to get a Dynamics CRM Online environment up and running, and how to configure your Outlook to integrate with this environment. With this environment available to us, we can start looking at some of the components of this system. We will be investigating the modules that come as standard parts of Microsoft Dynamics CRM and the features of each of these modules.

This chapter is structured into four main categories. They are as follows:

- The Dynamics CRM modules
- The Dynamics CRM application elements
- The extensibility options
- Application navigation

Microsoft Dynamics CRM is Microsoft's platform for customer relationship management. This system allows a company to manage interactions with past, current, and future customers. Usually, a CRM system is a part of a bigger picture, involving customer service, customer experience, customer retention, and other aspects. The CRM platform fits in this puzzle as a software platform that provides a company with the tools to perform all of its other tasks.

A solid CRM system in place allows reactive and proactive actions from the various staff members that use it. While most of the service aspects are primarily reactive, through extensive analysis and solid business processes, proactive actions can be taken to increase customer retention, quality of service, and sales, and create more robust marketing campaigns.

A robust CRM system can have a greater impact than a tool per se. This system provides a 360-degree view of a customer, with all historical interactions, purchase history, contact preferences, and survey responses. This data collected by the system can be further analyzed to determine the best strategies to increase customer satisfaction and provide better quality services.

From a proactive point of view, analyzing the aforementioned data about customers allows us to identify new opportunities and prevent potential customer issues.

Dynamics CRM core elements

Dynamics CRM is comprised of a few standard elements working together to achieve the system's functionality. These include, but are not limited to, modules and entities.

Modules

Modules are a group of functionalities that serve a specific business scope. The standard modules provided by Microsoft include sales, service, and marketing.

The sales module deals with all the functionalities needed to progress a lead to fruition.

The service module focuses on tracking activities related to interactions with existing customers. This module focuses on caring for customers and helps the representatives build a better relationship with existing customers.

The marketing module deals with engaging existing and potential customers by facilitating marketers to plan, execute, and gauge the success of campaigns that engage customers across multiple channels. This module also helps marketers quantify the success of each campaign and the impact of your marketing efforts.

Entities

Entities are containers used to model, store, and manage business data. Through the use of entities, the platform allows us to structure data, create relationships, and manage actions.

Each entity is comprised of a varying number of attributes. These attributes are, in fact, data items of a particular type stored in the database. Each one of these attributes can be displayed on an entity form as a field. For example, an account will have a name attribute, possibly an ID attribute, a description attribute, and many others.

From a tabular point of view, we can think of each entity as a table, or an Excel spreadsheet. Each column is an attribute. Each record is a line in this table. Each field is a specific record's attribute and can be defined as one of the available data types.

Within Dynamics CRM, entities are classified into three major categories. They are system entities, business entities, and custom entities.

Business and custom entities can be configured as customizable or noncustomizable. A customizable entity can be modified by modifying its attributes, renaming it or changing processes associated with it.

System entities

System entities are used internally by the framework. They can handle workflows and asynchronous jobs.



System entities cannot be deleted or customized.

Business entities

Business entities are the standard entities provided by the framework as a part of the three available modules. They are present in the default user interface and are available for customization. They cannot be deleted. We will be looking at some of these entities further.

Custom entities

Custom entities are the entities that are created as a part of extending the standard framework with new functionality. They can be made visible through the standard user interface, or can be kept hidden and participate in custom processes only.

The Dynamics CRM modules

While Microsoft used to market Dynamics CRM as a platform under the **Extended Relationship Management (xRM)** term, and is encouraging partners that extend it to cover various aspects of businesses, the product by default includes three major modules, namely sales, marketing, and service as mentioned before.

At the time of this writing, the platform is of version 2015. It has greatly evolved over the years and is currently one of the top five players in the market. Gartner, one of the top market analysts, places Microsoft Dynamics CRM in the leaders quadrant, with both their online and on-premise offerings in both **Sales Force Automation (SFA)** and customer engagement center categories.

With this evolution, all the standard modules have been revamped and new functionality has been added. Currently, these modules can function either independently or in conjunction with each other in Dynamics CRM, sharing data and providing full visibility to customers across all modules. During 2014, products have been released that work with the Dynamics CRM platform, including **Unified Service Desk (USD)**, **Microsoft Dynamics Marketing (MDM)**, **Microsoft Social Listening (MSL)**, and Parature for portals as well as Office 365 with Power BI. This is on top of already integrated solutions such as Yammer, SharePoint, Lync, and Skype.

Shared entities

Shared entities are entities that are used across multiple modules. While they are not specific to a certain module, they tend to be tightly integrated with the functionality of each module where they are present. Some of the most obvious ones include account and contact entities, which span across the whole platform and tightly integrate with all modules.

Account

An account is an entity representing an existing customer or organization that we do business with. It is usually a qualified organization. It can be created as a result of processing leads or entered directly into the system when we start doing business with a new organization.

The account is one of the most used entities in Dynamics CRM, as it is the entity to which most other entities are attached. An account can be a parent of almost any other entity, including another account. Using this relationship, we can create complex structures that represent organizations functioning under various names, locations, or any other type of relationship. For large global organizations, this relationship is essential, as we can easily represent the parent organization and each geographical coverage area as a child account. In most cases, these child accounts would run their business by following different rules dictated by geopolitical factors. Each child account would have a different set of properties, but would roll up under the parent account in the end.

The following screenshot shows the Account geographical factor:

The screenshot displays the Dynamics CRM Account form for 'Blue Inc.'. On the left, a navigation pane shows the account hierarchy: Blue Inc. (selected), Blue Inc. Central, Blue Inc. East, and Blue Inc. West. The main area shows a summary card for 'Blue Inc.' with the following details:

- Primary Contact: John Smith
- Owner: Nicolae Tarla
- Open Revenue: \$0.00
- Open Deals: 1

Below the summary card, three smaller cards represent the geographical factors:

- Blue Inc. Central:** Primary Contact: Nicolae Tarla, Owner: Nicolae Tarla, Open Revenue: \$0.00, Open Deals: 0.
- Blue Inc. East:** Primary Contact: Nicolae Tarla, Owner: Nicolae Tarla, Open Revenue: \$0.00, Open Deals: 0.
- Blue Inc. West:** Primary Contact: Nicolae Tarla, Owner: Nicolae Tarla, Open Revenue: \$0.00, Open Deals: 0.

A typical account form in Dynamics CRM looks like the following screenshot:

The screenshot displays the Dynamics CRM Account form for 'Blue Inc.' in a detailed view. The form includes a navigation pane on the left with tabs for Summary, ACCOUNT INFORMATION, POSTS, ACTIVITIES, and NOTES. The main area is divided into several sections:

- Summary:** Shows the account name 'Blue Inc.' and a list of recent cases with their status and titles.
- ACCOUNT INFORMATION:** Displays fields for Account Name, Phone, Fax, Website, Parent Account, Ticker Symbol, and Total Open Cases (4).
- POSTS:** A list of recent posts, including 'Demo Case 006' with details about the case and the user who created it.
- Primary Contact:** Shows the primary contact 'John Smith' with fields for Email and Business.
- CONTACTS:** A list of other contacts, including 'John Smith'.
- RECENT OPPORTUNITIES:** A list of recent opportunities, including 'Test Lead 001' with a status of 'Open'.

Here, we can see that we are capturing the essential account details and related information from the system in the **Account Information** section. We see all interactions we had with this account in the central area of the form, details about the Primary Contact as well as other contacts, related Cases, Opportunities, and so on. Scrolling down the form, we see additional information about Entitlements, Billing, Shipping and Marketing preferences, additional company profile details, and a listing of all related child accounts.

Starting from an account record, we can easily navigate to most of the records related to this account, thus having access to details about all the relationships we've ever had with this account.

Contact

Just as important as the account, the contact entity represents a specific person we are doing business with. Contact can also be created as a part of the process to qualify a lead, or can be directly created in the system. They can also be captured from a web form, an event registration, or a variety of other sources.

The contact can be in most cases related to a specific account, but can live independently too.

Just as we relate an account to various other records in our system, we do the same with a contact. The contact can be a parent of any other entity except account and contact.

On the Contact form, we can see the relationships we define with a Parent Account, Cases, Opportunities, and Entitlements.

The screenshot displays the Microsoft Dynamics CRM interface for a contact record. At the top, the contact's name 'John Smith' is shown next to a placeholder profile picture. A navigation bar below the header contains several tabs: 'Check Interest (Active)', 'Add To Cart', 'Convert', 'Payment Terms', 'Follow Up', and 'Next Stage'. The main content area is divided into three sections. On the left, the 'Summary' section includes 'CONTACT INFORMATION' with fields for Full Name (John Smith), Job Title, Company Name (Blue Inc.), Email, Business Phone, Mobile Phone, Fax, Preferred Method of Address, and Address. The middle section, titled 'POSTS', 'ACTIVITIES', and 'NOTES', shows a list of posts with a 'POST' button and a filter for 'Both Auto posts User posts'. The right section, titled 'RECENT CASES', shows a table with columns for Case Title and Case Number, and a message stating 'No Case records found.'.

In addition, we collect contact information including name, title, phone numbers, addresses, specific personal details, billing, shipping, marketing, contact preferences, and notes about the specific contact.

Through the use of connection roles, we can create another layer of relationships, thus associating contacts with multiple accounts or other entities. We will be looking at connection roles later.

Activity

Through activities, we track all the actions and interactions we have with the system and both the accounts and the contacts of our customers. There are five types of interactions customized out of the box with Dynamics CRM. They are appointment, e-mail, fax, letter, and phone call. Each interaction has its specific properties based on the type of action or interaction.

Activities can be created for your own actions or can be assigned to other users or teams.

Activities are defined by a time dimension, thus helping to determine when a specific action occurred or will occur in a process.

From the point of view of working with activities, we can create, modify, cancel, or complete activities. Each of these statuses is tracked and we can easily report on them.

Activities usually involve one or more participants. The participants can be contacts, users, or custom entities that define things such as room, equipment, and so on.

Appointment

An appointment is a scheduling activity that enables us to track service activities and resources. In Dynamics CRM, we can define regular appointments or recurring appointments. When you integrate your CRM environment with Microsoft Outlook, these appointments will be synchronized with your Outlook calendar.

The following screenshot shows the standard **New Appointment** form:

The screenshot displays the 'New Appointment' form in Dynamics CRM. The form is titled 'New Appointment' and includes a dropdown menu for 'APPOINTMENT'. The form is divided into several sections:

- Required**: A dropdown menu with '--' selected.
- Optional**: A dropdown menu with '--' selected.
- Subject**: A text input field with a red asterisk, containing a single character 'I'.
- Location**: A dropdown menu with '--' selected.
- Regarding**: A dropdown menu with '--' selected.
- Attachments**: A section with a table for 'File Name' and 'File Size (Bytes)'. Below the table, it says 'To enable this content, create the record.'
- Start Time**: A date and time field showing '11/27/2014 2:00 PM'.
- End Time**: A date and time field showing '11/27/2014 2:30 PM'.
- All Day Event**: A checkbox that is currently unchecked.
- Duration**: A text field showing '30 minutes'.
- Description**: A text area with '--' as the placeholder.

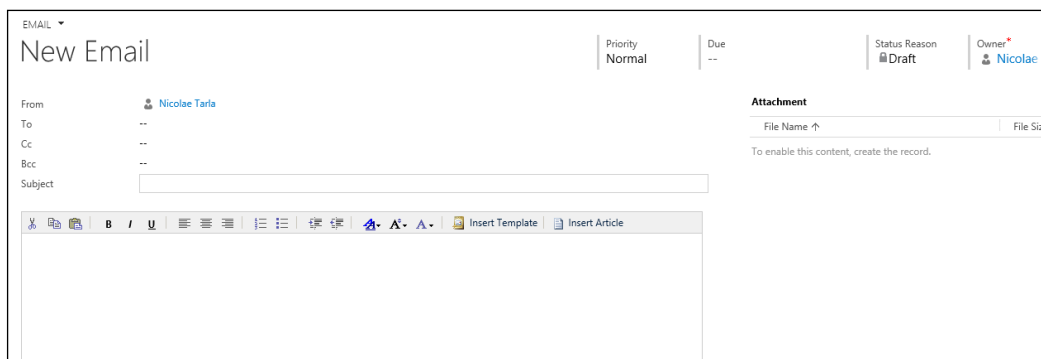
At the top right of the form, there are three tabs: 'Priority' (Normal), 'Status' (Open), and 'Owner' (Nicolae).

In an appointment, we track a required subject, the required and optional attendees, a location, the related record the appointment is about, start and end time and date, and any related documents required.

The status and priority fields allow us to track the progression of this activity, and the importance.

E-mail

An e-mail activity allows us to generate and track e-mails directly in Dynamics CRM. The following screenshot shows the default e-mail form when generating a **New Email**:

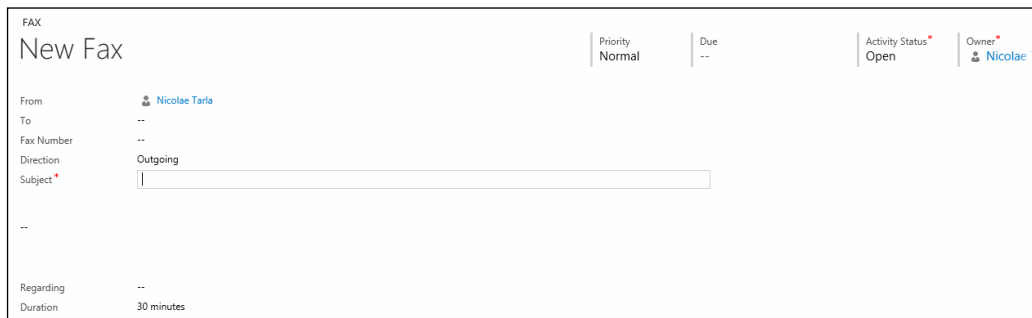


The screenshot shows the 'New Email' form in Dynamics CRM. The form is titled 'New Email' and has a tab 'EMAIL' selected. The form includes fields for 'From' (Nicolae Tarla), 'To' (empty), 'Cc' (empty), 'Bcc' (empty), and 'Subject' (empty). There are also fields for 'Priority' (Normal), 'Due' (empty), 'Status Reason' (Draft), and 'Owner' (Nicolae Tarla). An 'Attachment' section is visible with a table for 'File Name' and 'File Size'. Below the form is a rich text editor with a toolbar containing various formatting options like bold, italic, underline, and links. The bottom of the form has 'Insert Template' and 'Insert Article' buttons.

E-mails can also be created and tracked from Microsoft Outlook once integration with Outlook is configured.

Fax

A fax activity allows us to track faxes received from and sent to customers. The following screenshot shows the standard **New Fax** form:



The screenshot shows the 'New Fax' form in Dynamics CRM. The form is titled 'New Fax' and has a tab 'FAX' selected. The form includes fields for 'From' (Nicolae Tarla), 'To' (empty), 'Fax Number' (empty), 'Direction' (Outgoing), and 'Subject' (empty). There are also fields for 'Priority' (Normal), 'Due' (empty), 'Activity Status' (Open), and 'Owner' (Nicolae Tarla). A 'Regarding' field is set to 'Duration' with a value of '30 minutes'. The bottom of the form has a 'Duration' field with a value of '30 minutes'.

While a duration on the fax activity is tracked, the default 30-minute duration being applied to most activities in this case might not necessarily make sense to be tracked.

Letter

The letter activity allows us to track customer interactions via regular mails. These activities, along with all the other mails, participate in creating a log of all client interactions.

The default form used to create a **New Letter** activity looks like the following screenshot:

The screenshot shows a form titled 'LETTER' with the subtitle 'New Letter'. The form includes several fields and sections:

- Priority:** Normal
- Due:** --
- Activity Status:** Open
- Owner:** Nicolae Tarla
- From:** Nicolae Tarla
- To:** --
- Address:** --
- Direction:** Outgoing
- Subject:** (empty text box)
- Description:** --
- Regarding:** --
- Duration:** 30 minutes

The format is very similar to that of the fax activity, as it tracks only the action and not necessarily the context.

Phone call

The phone call activity allows us to track communication with customers via phone. While integrating our CRM system with a telephony system, a number of details about the phone conversation we are tracking can automatically be populated. We can automatically determine the From and To fields, phone number and direction details, as well as the duration of the call. This makes things much easier for the system user, who now has to input only details about the conversation.

The default form used to create a **New Phone Call** activity looks like the following screenshot:

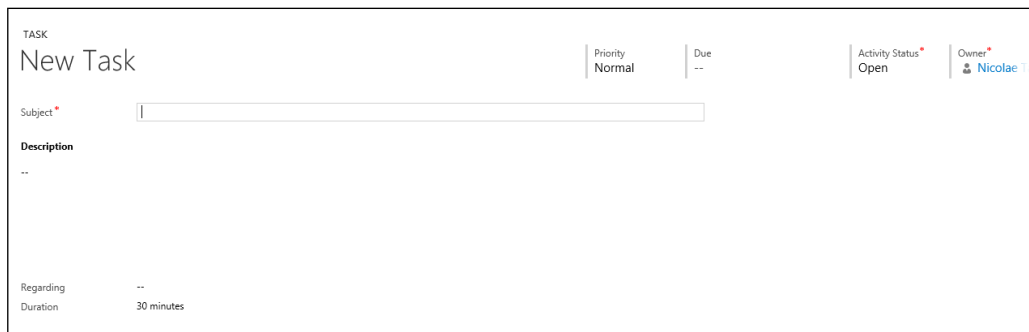
The screenshot shows a form titled 'PHONE CALL' with the subtitle 'New Phone Call'. The form includes several fields and sections:

- Priority:** Normal
- Due:** --
- Status:** Open
- Owner:** Nicolae Tarla
- Subject:** (empty text box)
- Call From:** Nicolae Tarla
- Call To:** --
- Phone Number:** --
- Direction:** Outgoing
- Description:** --
- Regarding:** --
- Duration:** 30 minutes

Task

The task activity is a record used to track work that needs to be done. The standard task activity can be assigned to other system users. It can also be associated with other entities.

The default form used to create a standard **New Task** activity looks like the following screenshot:

The screenshot shows the 'New Task' form in Dynamics CRM. At the top, the title 'TASK New Task' is displayed. To the right of the title, there are several fields: 'Priority' set to 'Normal', 'Due' set to '--', 'Activity Status' set to 'Open', and 'Owner' set to 'Nicolae'. Below the title, there is a 'Subject' field with a red asterisk indicating it is required, followed by a text input box. Below the subject field is the 'Description' field, also with a red asterisk, followed by a text area. At the bottom of the form, there are two fields: 'Regarding' and 'Duration', with the value '30 minutes' entered in the duration field.

Address

The address entity is used to store a generic address. By default, it is associated with other entities such as accounts and contacts. This association allows us to store multiple addresses in relation to a specific record.

User

The user entity defines the properties of a system user. It defines the existence of a user account. In order to give a new user access to the system, you must first create a user account and then assign permissions to that account. A user record by itself, with no permissions assigned, will not allow the respective system user to log in.

Connection role

Connection roles are used in conjunction with system entities to determine special relationship types between them. As an example, we can use connection roles to define the stakeholder relationship between contacts and a custom committee entity. We can create several connection roles for specific committee roles, such as chair, internal member, external member, and so on. We then associate contacts with the committee using these connection roles. Using this approach makes it quite easy to display on the committee page a listing of all committee members and their roles.

Sales module

The Microsoft Dynamics CRM sales module facilitates the sales team in managing leads and opportunities, closing these opportunities in a shorter, more orderly fashion, and increasing the opportunity for success.

Within the sales module, the sales team has the ability to manage their own customers and contacts, and get full visibility on customers, current orders and services, existing issues, and resolutions. With all of this information at their fingertips, a salesperson can walk into any new opportunity fully prepared, and avoid surprises. Furthermore, they can show full knowledge of the customers and their current needs, level of satisfaction, and potential subjects of contention.

The sales module is comprised of a set of entities, processes, dashboards, and reports, and has the ability to see the products and services offered as well as the associated sales literature. Within this same module, the sales team can see their progress against predefined goals. In addition, each of the sales staff can manage their own customer interaction through the use of some of the marketing features built in the system. The sales pipeline feature presents in a visual way the current status of the sales engagements, while allowing further drill-down into the detailed data.

Sales entities

The Dynamics CRM sales module includes a set of entities that are shared across modules, and entities specific to sales in particular. We will be looking at these two generic categories and each of the entities included in them.

Sales-specific entities

Sales-specific entities are entities that are used mainly within the sales module. Some of these include the leads used in sales and marketing, opportunities, products, quotes, orders, invoices products, and sales goals.

When you are customizing the system, the scope of each of the out-of-the-box entities can be changed simply by modifying the navigation and associations. For example, a new entity can be made accessible only through a specific module, or an entity from one module can be transferred to another module.

The default sales process takes us across several entities. We start with a lead, which is an unqualified prospect. Upon qualification, we convert the lead to an opportunity. Along with generating the opportunity, by using the lead, we can also generate an account and a contact. While working on the opportunity, we can generate quotes and orders, followed by invoices before closing the opportunity.

Leads

The leads entity is a representation of an unqualified opportunity. A sales representative will work on the lead through to qualification. They will track all activities with the final purpose of qualifying the lead and generating an opportunity. Leads can be classified in various stages, each representing the probability of qualification based on the amount of information collected and the interaction with the potential client.

Leads can be generated in various ways. They can be the result of direct sales engagements, or generated from the marketing module as a result of a marketing campaign. They can also be generated as a result of various events or collected from various portals.

The following screenshot shows a standard **New Lead** form in Dynamics CRM:

The screenshot displays the 'New Lead' form in Dynamics CRM. At the top, there's a header bar with 'LEAD' and 'New Lead'. Below this, a progress bar shows the stages: Qualify (Active), Develop, Propose, and Close. Under the progress bar, there are links to enter various fields: Existing Contact?, Existing Account?, Purchase Timeframe, Estimated Budget, Purchase Process, Identify Decision Maker, and Capture Summary. The form is divided into sections: CONTACT, POSTS, ACTIVITIES, NOTES, STAKEHOLDERS, and COMPETITORS. The CONTACT section includes fields for Topic, Name, Job Title, Business Phone, Mobile Phone, Email, Initial Communication, Budget, and Lead Score. The POSTS section has a 'Enter post here' field and a 'POST' button. The STAKEHOLDERS section has a table with columns for Name and Role. The COMPETITORS section has a table with columns for Name and Website.

The lead management qualification process is the process of managing a possible opportunity until qualification. This process is kept separate from the opportunity management process by the use of the lead entity.

A lead record can be in one of the three default states: open, qualified, or disqualified. Once a lead is qualified, it can be converted to an opportunity. From the associated data collected, an account and a contact can also be created.

The lead record can be related to other system data including contacts, accounts, activities, and notes. This relationship can be easily represented in Dynamics CRM, and greatly enhances data integrity and the ability to surface related records in searches. In addition, documents can be attached to leads, allowing the sales staff to store all related materials in the same place and make them easily accessible from a single location.

Opportunities

The opportunity entity is meant to store a potential sale in a new or existing customer. It is used by the sales staff to keep track of and forecast sales engagements that they are working on. An opportunity can be created directly in the system or generated as a result of qualifying a lead.

Based on business opportunities, a company can forecast business demands for products and services, as well as sales revenues.

An opportunity in the system must be related to an account and/or contact. This is one of the differences between lead and opportunities, where an account or contact must be already qualified in the system for an opportunity to be able to associate with it.

Same as with the leads, a sales representative can track phone calls, e-mails, tasks and other activities against the opportunity. This gives the representative complete visibility of all the steps that were involved in closing each opportunity.

The following screenshot shows a standard **New Opportunity** form in Dynamics CRM:

The screenshot displays the 'New Opportunity' form in Dynamics CRM. At the top, there are tabs for 'QUALITY (Active)', 'Develop', 'Propose', and 'Close'. Below the tabs, there are sections for 'Summary' and 'STAKEHOLDERS'. The 'Summary' section includes fields for 'Topic', 'Contact', 'Account', 'Purchase Timeframe', 'Currency' (set to 'Canadian Dollar'), 'Budget Amount', 'Purchase Process', and 'Description'. The 'STAKEHOLDERS' section includes a table with columns 'Name' and 'Role', and a note 'To enable this content, create the record.'

Every opportunity in the system usually has one or more products or services associated with it. This association is achieved through the use of an intermediary system entity called **opportunity product**. In addition, processes can be put in place to validate that only certain products or services are available for a specific opportunity, based on either the account or contact selected, or any other set of business rules.

Processing an opportunity results in its closure. An opportunity can be closed either as won or lost. Upon the closure of an opportunity, an opportunity close activity is generated. This activity record stores information about the reason for closing, date, and revenue.

An opportunity can be associated with accounts, contacts, competitors, quotes, orders, and activities. In addition, you can include notes and store attachments against an open opportunity, as well as relate sales literature.

Quotes

The quote entity is an important part of the sales process defined within the Dynamics CRM platform. It works in conjunction with products and orders to complete the sales cycle.

The quote entity represents an offer of products and/or services at a predetermined price. In addition, payment terms are associated with the respective quote.

A quote in the system can be stored as draft, active, or closed. A draft quote is a quote that is still being worked on. Once work is completed and it is ready to be sent to the customer, the quote becomes active. On completion, whether accepted or rejected, the quote becomes closed. A completed quote that is accepted by the customer can be converted into an order.

The following screenshot shows a standard **New Quote** form in Dynamics CRM:

QUOTE

New Quote

Summary

Quote ID * --

Revision ID * --

Name * --

Currency * Canadian Dollar

Price List * --

SHIPPING INFORMATION

Shipping Method --

Payment Terms --

Freight Terms --

ADDRESSES

Bill To Address --

Ship To Address --

Ship To Address --

PRODUCTS

Product Name	Properties	Unit	Price Per Unit	Quantity	Discount	Extended Am
To enable this content, create the record.						

SALES INFORMATION

Opportunity --

Potential Customer * --

DESCRIPTION

--

Detail Amount	--
(-) Discount (%)	(--)
(-) Discount	--
Pre-Freight Amount	--
(+) Freight Amount	--
(-) Total Tax	--
Total Amount	--

When a quote is created from an opportunity, the products and services associated with that opportunity are automatically added to the quote. When the quote generates an order, all products and services are kept and the quote can be left open or closed.

Information stored with the quote includes the various dates that relate to the quote processing. These include effective dates and requested delivery dates as well as capturing the due date. It also stores one or more Ship To addresses. They can be split by line item.

Other entities that can be associated with a quote include the customer as an account and/or contact, competitors, products and/or services, opportunities, as well as customer addresses. Within a quote, we can track notes and associate attachments.

Once completed, a quote is ready to be activated. An activated quote is a quote that is ready to be presented. At this point, it can be printed for the customer. If changes need to be made, the quote can be revised and reactivated. The quote can be closed if it is not accepted. If it is accepted, an order can be directly created from the existing quote. When you create an order from within the quote, just like creating the quote for an opportunity, details about the products and services along with prices are carried over to the new entity.

Orders

The order entity is a quote that has been accepted by a customer. They can be created either from a quote or directly as a new order.

The following screenshot shows the standard **New Order** form in Dynamics CRM:

ORDER

New Order

Total Amount: -- | Status: Active | Status Reason: New | Owner: Nicolae T...

Summary

Order ID: -- | Name: | Currency: Canadian Dollar | Price List: -- | Prices Locked: No

SHIPPING DATES

Requested Delivery: -- | Date Fulfilled: --

SHIPPING INFORMATION

Shipping Method: -- | Payment Terms: -- | Freight Terms: --

ADDRESSES

Bill To Address: -- | Ship To: Address

PRODUCTS

Product Name	Properties	Unit	Price Per Unit	Quantity	Discount	Extended Am
To enable this content, create the record.						

SALES INFORMATION

Opportunity: -- | Quote: -- | Potential Customer: --

DESCRIPTION

--

Detail Amount	--
(-) Discount (%)	{ -- }
(-) Discount	--
Pre-Freight Amount	--
(+) Freight Amount	--
(+) Total Tax	--
Total Amount	--

The order form is quite similar to the quote form, and allows us to track similar information as that of the quote, as well as the ability to associate the same entities with the quote form.

Invoice

An invoice represents an order that has been processed and billed for. The following screenshot shows the standard **New Invoice** form in Dynamics CRM:

INVOICE

New Invoice

Summary

Invoice ID: --

Name: --

Currency: Canadian Dollar

Price List: --

Prices Locked: No

SHIPPING DATES

Date Delivered: --

Due Date: --

SHIPPING INFORMATION

Shipping Method: --

Payment Terms: --

ADDRESSES

Bill To Address: --

Ship To: Address

Ship To Address: --

PRODUCTS

Product Name	Properties	Unit	Price Per Unit	Quantity	Discount	Extended Amount
To enable this content, create the record.						

SALES INFORMATION

Opportunity: --

Order: --

Customer: --

Description: --

Detail Amount	--
(-) Discount (%)	(--)
(-) Discount	--
Pre-Freight Amount	--
(-) Freight Amount	--
(+) Total Tax	--
Total Amount	--

Similar to orders and quotes, the user interface presents information and the ability to associate products and/or services. When an invoice is generated from an order, all the order details get prepopulated on the invoice. They can be later adjusted before marking the invoice as Paid.

Competitor

The competitor entity stores details about another organization offering similar products and/or services. This allows us to associate a competitor record throughout the sales cycle as needed. This type of relationship is not required by the system, but it can prove beneficial when doing further market analysis. In addition, we can store details about the competitor including listing of their products that compete directly with our sales literature and any other sales materials.

The following screenshot shows the standard **New Competitor** form in Dynamics CRM:

COMPETITOR

New Competitor

Ticker Symbol: -- Reported Revenue: --

COMPETITOR

Name:

Website: --

Currency: Canadian Dollar

Address: --

POSTS **NOTES**

Enter post here

Both Auto posts User posts

We didn't find any posts.

STRENGTH

--

WEAKNESS

--

OPPORTUNITIES

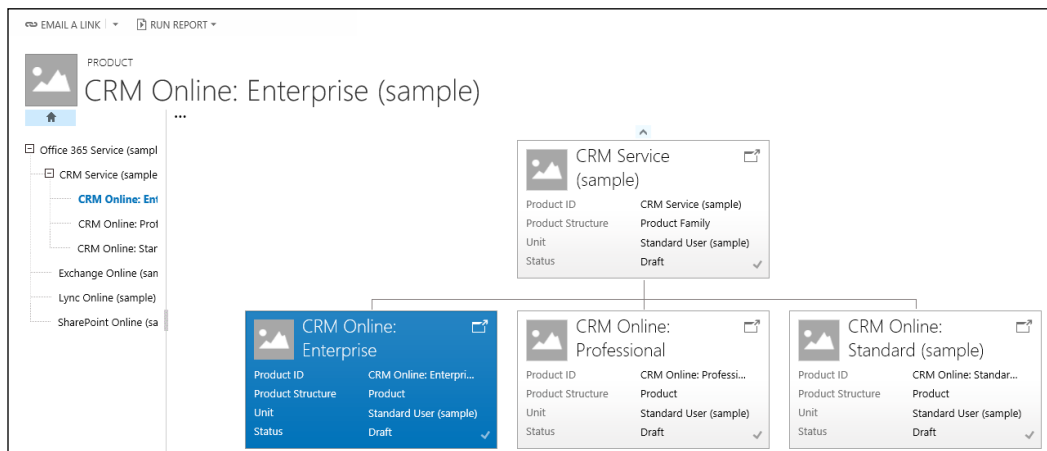
These competitors can be categorized and details can be recorded on each competitor's strengths and weaknesses along with their profile. All of this data collected allows sales representatives to make more informed decisions on each opportunity, in order to increase its potential.

One or many competitor records can be associated with every opportunity.

Products

A part of the product catalog entity, the product is a record that represents an individual product or service offered to customers. Products can be associated with opportunities, quotes, orders, and service cases. A product can contain associated sales materials as well as details about competitor offerings.

Products can be grouped and categorized in product families. The relationship between specific products can be visualized in a relational diagram, as shown in the following diagram:



In addition, we can now define product bundles. These are possibly prepackaged sets of products that are commonly sold together. For example, we can have an office suite, and define individual included products such as Access, Excel, InfoPath, Lync, OneNote, and so on. The following screenshot shows an example of an office suite:

The screenshot shows the 'Product Family: Office Desktop (sample)' form in Dynamics CRM. The form is in 'Draft' status. It includes a 'SUMMARY' section with fields for Name, Product ID, Family Hierarchy, Valid From, Valid To, Description, Unit Group, Default Unit, Default Price List, Decimals Supported, and Subject. Below the summary is a 'PRODUCT PROPERTIES' table listing products included in the family.

Name	Base Property	Data Type	Read-Only	Required	Hidden	Default Value
Access (sample)		Whole Number	No	Yes	No	0
Excel (sample)		Whole Number	No	Yes	No	0
InfoPath (sample)		Whole Number	No	Yes	No	0
Lync (sample)		Whole Number	No	Yes	No	0
OneNote (sample)		Whole Number	No	Yes	No	0

Product properties can be created for product families and inherited by all products.

The following screenshot shows the standard **New Product** form in Dynamics CRM:

The screenshot shows the 'Product: New Product' form in Dynamics CRM. The form is in 'Draft' status. It includes a 'SUMMARY' section with fields for Name, Product ID, Parent, Valid From, Valid To, Description, Unit Group, Default Unit, Default Price List, Decimals Supported, and Subject. Below the summary is a 'PRODUCT PROPERTIES' table. The table is currently empty, with a message: 'To enable this content, create the record.' Below the table is an 'ADDITIONAL DETAILS' section.

In addition to defining product properties, product relationships now help with cross-selling and up-selling, and are presented as either cross-sell, up-sell, substitute, or accessory. These are presented to sales staff as possible suggestions when working with the sales entities.

As a part of the product catalog, a product can have one or more pricing models and discount lists associated with that catalog.

Based on user permissions, products can be created, updated, disabled, or deleted. It is advisable not to delete any product records for historical purpose. Always disable products rather than deleting them.

Part of the product management process, we now have the ability to version our changes to product properties. A product is available to be used only if it is set as active. When you are working with products, they are in draft mode by default.

Creating new products with similar properties can easily be achieved by cloning existing products. This greatly speeds up the process of populating the product catalog. Once a product catalog is created, it can be exported from and then imported to another organization using the updated configuration migration tool.

Sales goals

The goals configuration and tracking process allows managers to monitor progress against targets. Taking advantage of the goal management processes across sales and other business aspects allows better planning and growth for the business.

Goals in Dynamics CRM can be created in a hierarchical structure, and can be rolled up from the individual user to the team and department level. This allows greater visibility of the success of certain new initiatives and regular processes and regions.

A goal entity interacts directly with two types of user records—the goal manager as the record owner, with rights to update and modify the goal properties, and the goal owner as the user that has to meet the goal targets. In addition, the goal is set for a certain period of time, mapped to either a fiscal period or a custom arbitrary period.

Tracking progress against preset goals can be done visually through the use of graphs that can be placed on dashboards. This way, enhanced visibility into the progress against goals can help the goal owners see where they are, and whether they are behind in any of the assigned goals or not.

The following screenshot shows the standard **New Goal** form in Dynamics CRM:

Goal New Goal

Goals

General

Name *

Parent Goal

Goal Metric *

Goal Owner *

Manager *

Nicolae Tarla

Time Period

Goal Period Type

☐ Custom Period ☒ Fiscal Period

Fiscal Period

Quarter 3

Fiscal Year

FY2014

From

7/1/2014

To

9/30/2014

Targets

Child Goals

Name	Goal Owner	Target	Percentage Achieved	Actu
------	------------	--------	---------------------	------

Status: Active

Sales processes

Business Process Flows is a new feature that was introduced with Dynamics CRM 2013 and greatly enhanced in Dynamics CRM 2015. It allows the system user to follow a predefined business process to completion and track progress in a visual way. The business process flow is a great way to guide the system user through a common process that spans multiple entities. This allows us to put the business logic in front of the separate entities, which makes the business user's tasks much more cohesive. Defining specific stages in a Business process flow also helps segment the general flow into business-specific components, making things easier to handle at each step. Once a step is completed, the user has the ability to progress to the next step. Business process flow can be customized to make decisions regarding which path to follow based on the previously selected values. This is achieved by defining branches and branching rules.

On an entity form, the Business process flow is presented to the user through the visual representation at the top of the form. The following screenshot shows the standard Business process flow graphical interface, as seen on the default **New Lead** form:

LEAD
New Lead

Lead Source: -- Rating: Warm Status: New Owner: Nicolae Tău

Qualify (Active) Develop Propose Close Next Stage

Existing Contact? [click to enter](#) Estimated Budget [click to enter](#) Capture Summary [click to enter](#)

Existing Account? [click to enter](#) Purchase Process [click to enter](#)

Purchase Timeframe [click to enter](#) Identify Decision Maker [mark complete](#)

On a default base installation of Dynamics CRM, two sales processes are included in the sales module. They are as follows:

- Lead to opportunity sales process
- Opportunity sales process

Let's look at each one of the boxes business process flow provides with the platform.

Lead to opportunity sales process

This business process flow guides the user through the qualification of a system lead to an opportunity record.

The following screenshot shows the **Lead to Opportunity Sales Process** customization form:

BUSINESS PROCESS FLOW
Lead to Opportunity Sales Process

Details ▾

Stage Name *	Step Name	Value	Required
Qualify	Existing Contact?	Existing Contact?	☐
	Existing Account?	Existing Account?	☐
	Purchase Timeframe	Purchase Timeframe	☐
	Estimated Budget	Budget Amount	☐
	Purchase Process	Purchase Process	☐
	Identify Decision Maker	Decision Maker?	☐
	Capture Summary	Description	☐
Entity *	Lead		
Stage Category	Qualify		

+ Insert stage Add branch

Stage Name *	Step Name	Value	Required
Develop	Customer Need	Customer Need	☐

↑ ↓ MOVE

Status: Active

This process defines the data needed to be captured on a lead in order to qualify it. The previous screenshot lists the data fields needed.

Opportunity sales process

This business process defines the stages required to qualify an opportunity. Just like the previous business process described, the fields required at each stage are highlighted.

The following screenshot shows the **Opportunity Sales Process** customization form:

BUSINESS PROCESS FLOW

Opportunity Sales Process

Details ▾

Stage Name *	Step Name	Value	Required
Qualify	Identify Contact	Contact	☐
	Identify Account	Account	☐
	Purchase Timeframe	Purchase Timeframe	☐
	Estimated Budget	Budget Amount	☐
	Purchase Process	Purchase Process	☐
	Identify Decision Maker	Decision Maker?	☐
	Capture Summary	Description	☐

+ Insert stage ↕ Add branch

Stage Name *	Step Name	Value	Required
Develop	Customer Need	Customer Need	☐

↑ ↓ MOVE

Status: **Active**

The sales dashboards

Microsoft has introduced a set of dashboards in the sales module specifically for sales staff. They are as follows:

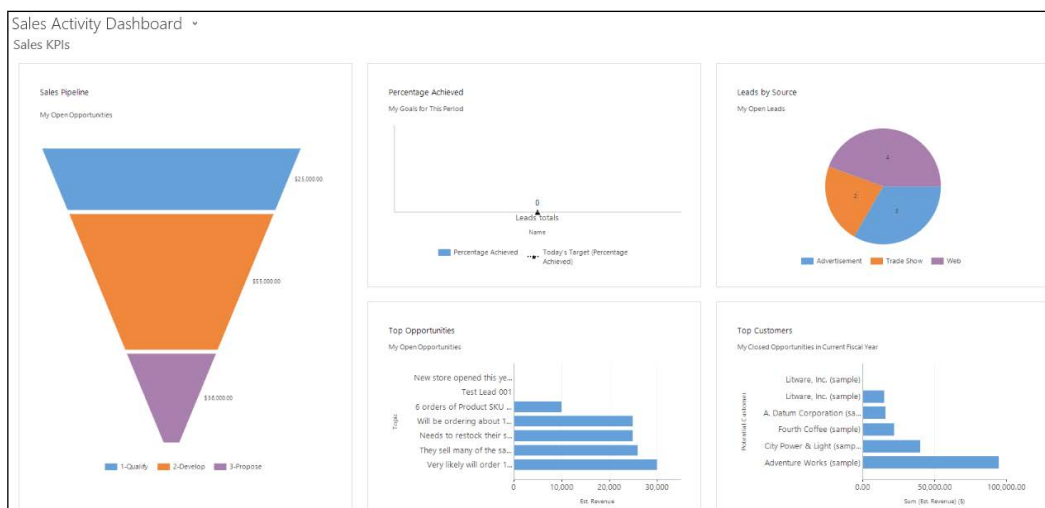
- Sales activity dashboard
- Sales activity social dashboard

- Sales dashboard
- Sales performance dashboard

Let's have a look at each dashboard and see what the difference is.

Sales activity dashboard

The Sales activity dashboard consolidates the day-to-day data required by a sales representative to complete their regular tasks. It includes charts that represent the sales pipeline, a view of open leads, top opportunities, and customers, as well as a view of pending activities.

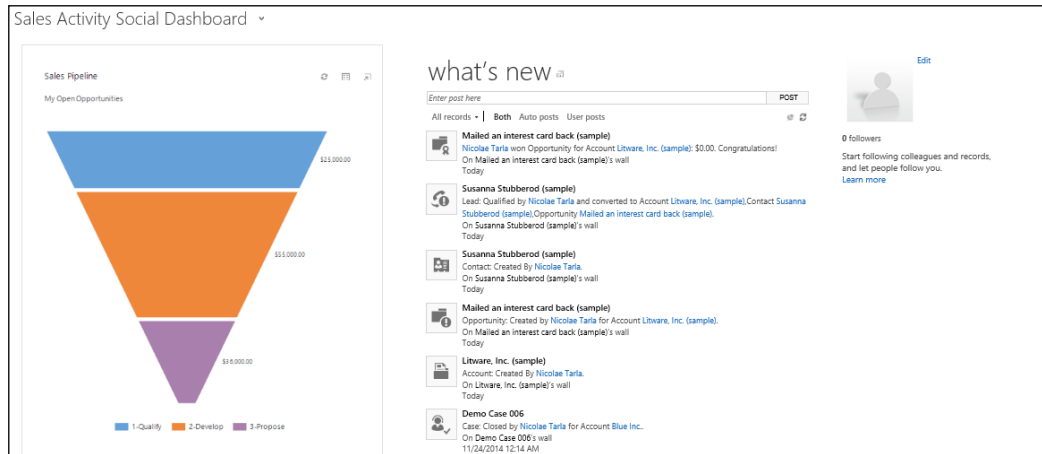


All of the data represented in the previous dashboard is relevant to the currently logged-in sales representative.

Sales activity social dashboard

The sales activity social dashboard takes most of the similar data representations from the regular sales activity dashboard, but it also adds the social pane and a component allowing the user to follow other users and see the followers.

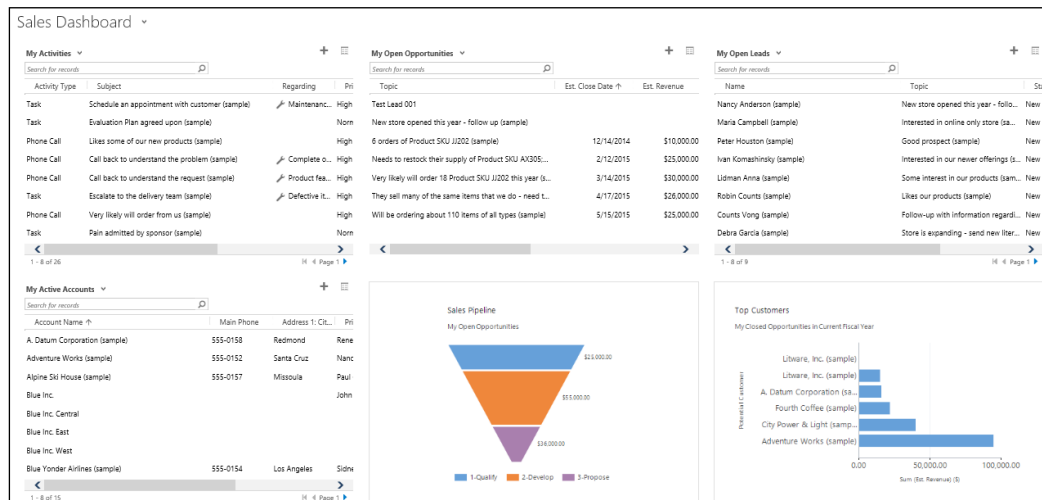
The following screenshot shows the **Sales Activity Social Dashboard**:



This dashboard allows greater interaction between sales representatives within the organization.

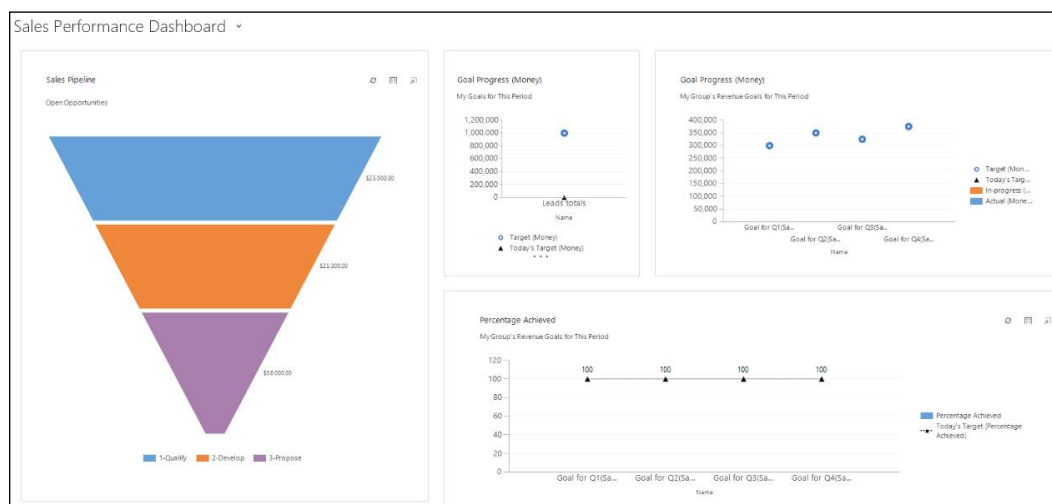
Sales dashboard

The standard sales dashboard is less focused on charts and visual elements. Instead, it digs right into the data, and presents listings of accounts, leads, opportunities, and activities. The next screenshot will give you a clearer understanding of a sales dashboard:



Sales performance dashboard

The sales performance dashboard focuses less on the sales data and more on aggregating it to produce reports on goals, total views on deals and progress, and a sales leaderboard.



This dashboard will come in handy when comparing your sales staff performance against goals and against other sales staff.

Sales reports

A default installation of Dynamics CRM will include a set of reports to get you started. There are reports for every module of the application, and general reports spanning data from across multiple modules.

When working with reports, in most cases you will end up customizing your own reports. The default ones provided are presented as guidance, but they can, on certain occasions, be useful with no customization.

The standard reports revolve around accounts and contacts, activities, leads, sales history, and sales pipeline.

Reports in Dynamics CRM can be customized either through the use of the wizard-driven interface, or by building custom **SQL Server Reporting Services (SSRS)** reports. We will be covering the aspects of building a new wizard-driven report later in *Chapter 6, Dynamics CRM Administration*.

Marketing features

While the sales module is different from the marketing module logically, certain features from marketing are exposed here. As such, a sales representative has the ability to create his or her own marketing lists and then generate quick campaigns. This is meant to allow sales staff to contact a group of customers at a time and track this interaction within the system. This functionality is on top of the regular direct customer interaction, and is tracked in the same way as any other customer contact.

Service

The service module is one of the most powerful features of Microsoft Dynamics CRM, allowing service users and managers to manage and track customer complaints and service activities, as well as customer interactions within a user's organization.

The service module can be looked at from the point of view of service management and service scheduling. The management aspect deals primarily with managing service tickets. They are called cases within the context of Dynamics CRM. The other aspect, scheduling, provides the ability to schedule resources for customers.

Service entities

Just like the sales module, the service module contains specific service entities, as well as shared entities. The service-specific entities are explored in the following sections:

Cases

The case entity represents an incident or a ticket logged in the system as it relates to a customer. The system users create cases to track a request, problem, or question from an existing customer. This entity is also the central point for tracking all future communications and actions performed while handling the request until its completed.

The cases tracked in the system can be in one of the following states: active, resolved, or canceled.

The following screenshot shows the standard **New Case** form:

Starting with Dynamics CRM 2013 Service Pack 1, the ability to relate cases hierarchically is supported. This allows better organization of data and easier management of cases by users.



Only one level of hierarchy is supported. A case cannot be associated with another case that in turn is associated with a third case.

You can associate up to 100 child cases with a parent case.

While closing a case, a case resolution activity is created. It stores details about the reason for closing, duration, and billing status.

Contracts

A contract is an agreement with a customer to manage support services to be provided. It defines either a specific number of cases or a set of periods of time to be provided for support. Thus, the contract defines the type and level of support a customer will receive.

Contracts can be created for existing and/or new customers. They must be related to either an account or a contact entity. This is how the standard **New Contract** form looks in Dynamics CRM:

The screenshot displays the 'New Contract' form in the Dynamics CRM interface. The top navigation bar shows the 'SERVICE' application and the 'New Contract' form. The form is titled 'New Contract' and is in 'Draft' status. The 'General' section contains fields for Contract ID, Contract Name, Customer, Contract Address, Contract Start Date, Contract End Date, and Duration in Days. The 'Contract Type' section shows 'Discount' and 'Service Level' with a 'Gold' amount. The 'Activities' section shows 'Add Phone Call' and 'Add Task' buttons. The 'Notes' section shows 'We didn't find any activity records.' The form is part of the 'SERVICE' application, and the user is 'Nicolae Tarla'.

The contract is registered in the Dynamics CRM system as a draft until it is invoiced. As long as a contract is a draft, it can be updated and the template used can be changed.

Once a contract is marked as invoiced or active, all changes to the contract are saved as a new contract, and associated with the original contract.

Articles (knowledge base)

In Dynamics CRM, the knowledge base is comprised of individual articles. Each article has one or more headers, and is searchable by the header, by keywords in the context, or by the subject.

The knowledge base is a repository driven by metadata. In addition, article templates can be used and articles can be related to additional materials such as documents, graphics, and other web pages.

Every article in the knowledge base can be associated with products and services, and it can then be retrieved in cases and forwarded to customers.

The following screenshot shows the standard **New Article** form:

While an article is being worked on, it is in a state of draft. Once work is completed, the article is submitted for approval. After it is approved, the article becomes published and visible to all organization users.

Queues

Queues are used within Dynamics CRM to organize, prioritize, and monitor a user's or team's work. In conjunction with routing workflows, queues play an important role in automating standard business processes and improving efficiency.

From an underlying point of view, queues are comprised of queue items. Each queue item is a record pointing an existing system entity. For example, you can have a queue holding various cases. Each queue item would point back to an existing case. A queue item can point to a task, e-mail, or case. In addition, all new custom entities can be enabled for queues.



A queue can hold more than one entity type. Thus, a queue can hold tasks and cases together.

Each system user gets a personal queue that is associated with the respective user profile. In addition, new queues can be created, and they can be either private or public.

Services

The service entity represents work to be performed for a customer. It is defined by the date and time, duration, name, resources assigned, and other fields as needed.

The service appointment works in conjunction with the service calendar and the resource calendar, along with other factors that are used to determine the resource ranking and availability. This entity is used to create scheduled activities and works in conjunction with resources, equipment, and services offered.

The following screenshot shows the **New Service** standard form in Dynamics CRM:

Service: Information

Service
New Service

Services

Required resources have not been selected for one or more selection rules. To complete the rules, click Required Resources.

General

Name *

Initial Status Reason: Reserved

Description

Scheduling

Default Duration *: 1 hour

Start Activities Every *: 15 minutes

Beginning At: 8:00 AM

Required Resources

Common Tasks

Add a Selection Rule

Define the resources required to schedule this service.

Choose 1 From The same site From < Click to select Quantity >

Click to add Resources, Resource Groups or a Selection Rule

Calendar entity

The service calendar is the representation of all service records created, based on the availability of resources and equipment, and the duration of a service activity. The calendar entity aggregates the service data with holiday schedules and business closures, and presents availability for scheduling new service activities.

Calendars are related to calendar rules, which define duration, availability, recurrence, and start or end times. These rules can be ordered and ranked to determine precedence and they can overlap.

Goals management

Just the same as the sales module, in the service module, goals can be configured for users. While these goals will probably not deal with sales amounts unless up-sells are counted, they will most definitely deal with the scope and number of service calls handled, and sometimes with **Service Level Agreements (SLAs)**.

Just like before, goals are set up for users, are rolled up at a team level, and must be configured for a specific duration.

Goals can be related as parent or child goals, and the results will be automatically rolled up.

Service processes

With a default Dynamics CRM deployment, for the service module, we get only one predefined Business Process flow. This is the phone to case process.

The Business Process flow for the **Phone to Case Process** is shown in the following screenshot:

BUSINESS PROCESS FLOW

Phone to Case Process

Details ▾

Stage Name *	Step Name	Value	Required
Identify	Find Customer	Find Customer	☐
	Find Contact	Existing Contact?	☐
	Find Case	Find Case	☐
+ Insert stage ↕ Add branch			
Research	Similar Cases	Similar Cases	☐
	Assign to Others	Owner	☐
Relationship <u>Select relationships</u>			
↑ ↓ MOVE			
Status: Active			

This process lives on the case entity and handles the standard approach to solving cases through three standard stages.

This Business Process flow created in the previous wizard will display on a **New Case** form, as shown in the following screenshot:

CASE

New Case

Priority: Normal | Created On: -- | Status: In Progress | Owner: Nicolae Tari

Identify (Active) | Research | Resolve | Next Stage

Find Customer * [click to enter](#)
Find Contact [click to enter](#)
Find Case [click to enter](#)

Summary

CASE DETAILS | POSTS | ACTIVITIES | NOTES

Case Title *
ID

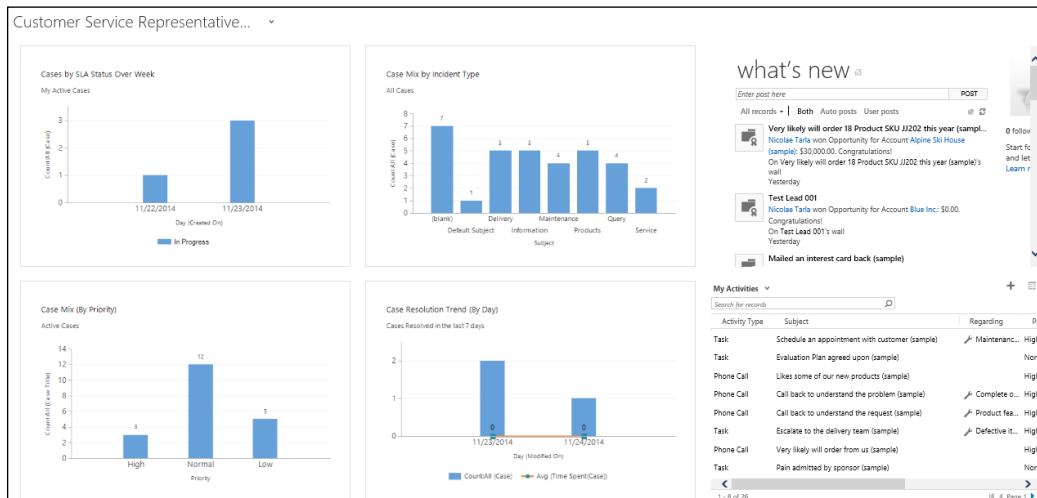
POSTS: All | Add Phone Call | Add Task | ...

Service dashboards

For the service aspect of the business, just as for sales, dashboards are an invaluable resource to present data to the system users in a variety of ways. By default, the service module comes with five standard dashboards serving various roles.

Customer service representative social dashboard

As an aggregation of case details, listing of activities and the social component that presents real-time posts from various records, the customer service representative social dashboard is the default dashboard for the service module. The dashboard looks like the following screenshot:



Customer service representative dashboard

The customer service representative dashboard strips out the social aspect and focuses entirely on the data that a service representative will need to work with on a day-to-day schedule.

The following screenshot shows the **Customer Service Representative Dashboard**:



This dashboard focuses entirely on the case types, various categories of processes, resolution, performance, and goals, as well as the activities in the service representative's queue.

Customer service performance dashboard

The performance dashboard focuses primarily on the service representative's performance against SLAs, and looks at case mix and trends. It is a charting dashboard that gives a quick overview of the current status.

Customer service operations dashboard

The operations dashboard analyzes cases by origin and priority, and structures data by owner and priority. The leaderboard section looks at cases across the current team.

In addition to case-specific diagrams, this dashboard also includes information about articles in the knowledge base and their status.

Customer service manager dashboard

The manager dashboard combines the social aspect of notifications with generic information across the whole team. Sections of this dashboard present views as cases such as agents, team, queues, and priority.

Service reports

Just like the other modules, the service module presents us with a set of standard reports. These include, but are not limited to, reports about activities, case summaries, service activity volumes, and top knowledge base articles.

A large variety of additional reports can be customized in various ways. More information on reporting customization can be found in *Chapter 6, Dynamics CRM Administration*.

Marketing

The marketing module completes the set of modules provided with the Dynamics CRM platform. This module is targeted at marketing professionals, and provides them with a solid set of tools for retaining existing customers, attract new ones, and expand their business.

This module fits in nicely with the sales module, as it allows to track generation of leads from specific campaigns.

Marketing entities

As a part of this module, the main entities revolve all around customer communication. We have management of marketing lists, campaigns, and quick campaigns. They all work in conjunction with base system entities such as accounts, contacts, leads, and even articles from the knowledge base.

Marketing lists

The marketing list is the foundation of any marketing campaign. It is a collection of customers that are grouped according to specific criteria.

Marketing lists can be created in Dynamics CRM in two ways. They can be static or dynamic. A static marketing list is a list that, once created, remains unchanged until a system user performs the changes manually. On the other hand, a dynamic marketing list is a list that is generated based on a set of conditions. At each refresh of the list, the conditions are applied as a filter across all records and the list is regenerated.

The following screenshot shows the standard **New Marketing List** form in Dynamics CRM:

MARKETING LIST ▾

New Marketing List

Locked No Last Used on (Date) -- Owner Nicolae Tarla

Summary

Information

Name * New Marketing List

List Type * Dynamic

Purpose --

Targeted At * Contact

Source --

Currency Canadian Dollar

Modified On 9/1/2014 8:49 PM

Cost --

Last Used On --

Locked No

Owner Nicolae Tarla

Description --

Members

Full Name ↑ Business Phone

No Contact records found.

Campaigns

Name ↑

No Campaign records found.

Quick Campaigns

Subject

No Quick Campaign records found.

On the standard marketing list management form, besides the definition fields and the members associated with the list, we can see which campaigns and quick campaigns our list is associated with. This is an easy way to find out whether a marketing list is being used in the system or not, and where it is being used.

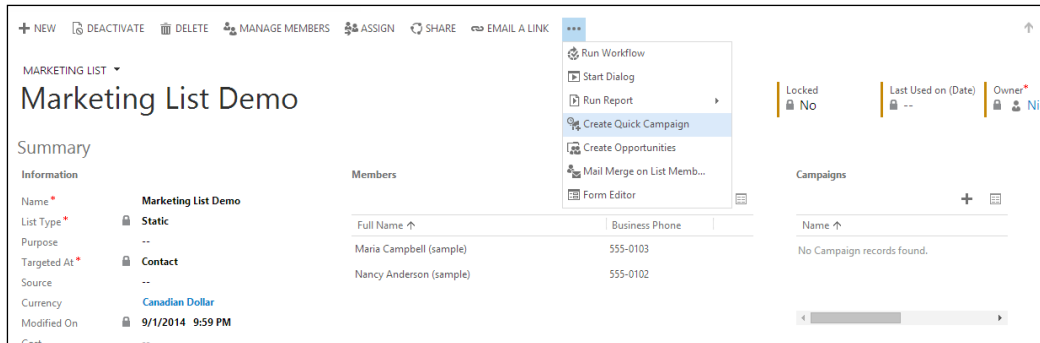
Quick campaigns

A quick campaign is very similar in structure to a regular campaign. The main difference is the number of channels that can be used to reach out to customers. In a quick campaign, we are limited to a single method of communication with our customers. As such, for an e-mail blast, the only method of communication is e-mail, and thus we can use a quick campaign.

As far as targeting a quick campaign, we can target only the members of a single marketing list, or the resulting members that are selected through a search query. This query could return entities of various types, for example accounts, contacts, and leads.

The way to create a quick campaign is from within a marketing list. From the navigation ribbon, select the ellipse to expand the additional options, and select a section in there to create a quick campaign.

The following screenshot shows where the **Create Quick Campaign** is located on a **Marketing List Demo** form:



The quick campaign wizard will then guide you through the necessary steps to create the campaign. Once created, it is left in an open state, with a progress bar.

The following screenshot shows the **Quick Campaign** form:



Activities are automatically created and tracked in the campaign. Once all the related activities are completed, the campaign is marked as complete.

Campaigns

The campaign in Dynamics CRM is the entity that collects information about the mediums in which communication with the customer is achieved, as well as related cost information.

The campaign is meant to achieve a clear result. As such, within the campaign itself, there are **Key Performance Indicators (KPIs)** and metrics available to gauge its success.

Within a regular campaign, communication to customers can take place in various ways. A campaign allows us to track direct mail, e-mail, and phone communication against one or more specific marketing lists.

A campaign is comprised of planning activities and tasks, campaign activities, communications, and responses from customers. A campaign also has a list of related products and/or services and various sales literature elements.

A campaign can be targeted at more than one type of entity. For example, we can target it to accounts and leads by creating two different marketing lists and associating both with the campaign.

In the process of organizing a campaign, we can structure and organize all tasks and activities, just like planning any other project. As such, we can add campaign activities for research, content preparation, target marketing list creation, lead qualification, content distribution, direct initial contact, direct follow-up contact, and reminder distribution. All these activities can be assigned to the team that participates in the creation and management of each campaign.

The following screenshot shows the **New Campaign Activity** form in Dynamic CRM:

CAMPAIGN ACTIVITY ▾

New Campaign Activity

SUMMARY

Subject *

Used in Campaign * Charity event(sample)

Type **Research**

Channel --

Outsource Vendors --

Description --

Scheduled Start --

Scheduled End --

Actual Start --

Actual End --

FINANCIALS

Currency **Canadian** :

Allocated Budget -- Actual Cost --

Anti-Spam Settings: Exclude members who are contacted within the set

[Open](#)

MARKETING LISTS

Name ↑ | Marketing List Member Type

To enable this content, create the record.

ACTIVITIES **NOTES**

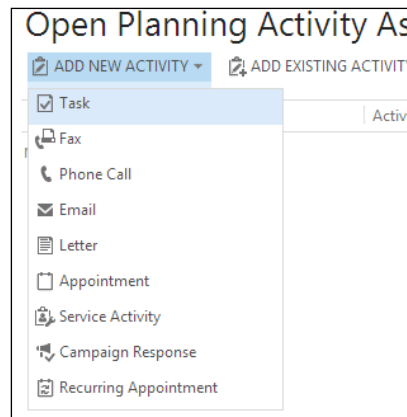
Priority **Normal** | Status Details **Proposed** | Owner * **Nicol**

All - | Add Phone Call Add Task ...

We didn't find any activity records.

In addition, we can create a set of planning activities within the campaign. They help with the preparation of the campaign. They are standard activities in the context of Dynamics CRM, and are associated directly with the campaign.

The following screenshot shows the expanded options for adding new activities in Dynamics CRM:



Campaign responses can also be tracked within the campaign. They can be either directly tracked for e-mail marketing campaigns or manually entered for other types of campaigns.

The following screenshot shows the **New Campaign Response** standard form in Dynamics CRM:

The screenshot shows the 'New Campaign Response' form. The form is titled 'New Campaign Response' and has a 'CAMPAIGN RESPONSE' dropdown menu at the top left. The form is divided into several sections: 'SUMMARY', 'RECEIVED FROM', 'DETAILS', and 'DESCRIPTION'. The 'SUMMARY' section includes fields for 'Subject', 'Related Campaign' (set to 'Charity event(sample)'), 'Response Code' (set to 'Interested'), 'Status' (set to 'Open'), and 'Owner' (set to 'Nicolae Tari'). The 'RECEIVED FROM' section includes fields for 'Customer', 'Company Name', 'Last Name', 'First Name', 'Phone', and 'Email'. The 'DETAILS' section includes fields for 'Promotion Code', 'Related Campaign' (set to 'Charity event(sample)'), 'Response Code' (set to 'Interested'), 'Channel', 'Outsourced Vendor', 'Owner' (set to 'Nicolae Tari'), 'Priority' (set to 'Normal'), 'Received On' (set to '9/1/2014'), and 'Close By'. The 'DESCRIPTION' section is currently empty. At the bottom of the form, there is an 'Open' button.

A campaign can comprise all the previously mentioned elements, but it can also be a parent of another campaign. As such, we can create a hierarchical structure of campaigns, with various subcampaigns managed independently. Reporting across all related campaigns can then roll up all related data to give the marketing analysts an overall view from the highest level.

Quick campaigns versus campaigns

Quick campaigns and campaigns in Dynamics CRM are used in very different ways. A quick campaign is a bulk activity targeted to a subset of accounts, contacts, or leads. It can distribute a single activity. However, it cannot use a predefined template, track planning activities, and be reported on. Additionally, you cannot associate products and price lists with a quick campaign.

A campaign, on the other hand, is used for more complex planning. It allows a marketing specialist to manage it as a project, plan various activities, track the associated costs, and assign activities to other marketing team members. It can also be configured to target multiple channels and multiple marketing lists of accounts, contacts, and leads.

Using a campaign allows us to track financial information and the **Return On Investment (ROI)** related to the campaign, report on the campaign progress, as well as associate products and price lists. This makes the campaign a very powerful tool in managing marketing initiatives.

Dynamics CRM marketing module dashboards

With the marketing module, Microsoft provides two default dashboards. They are as follows:

- Marketing dashboard
- Marketing social dashboard

Let's have a quick look at each one individually.

Marketing dashboard

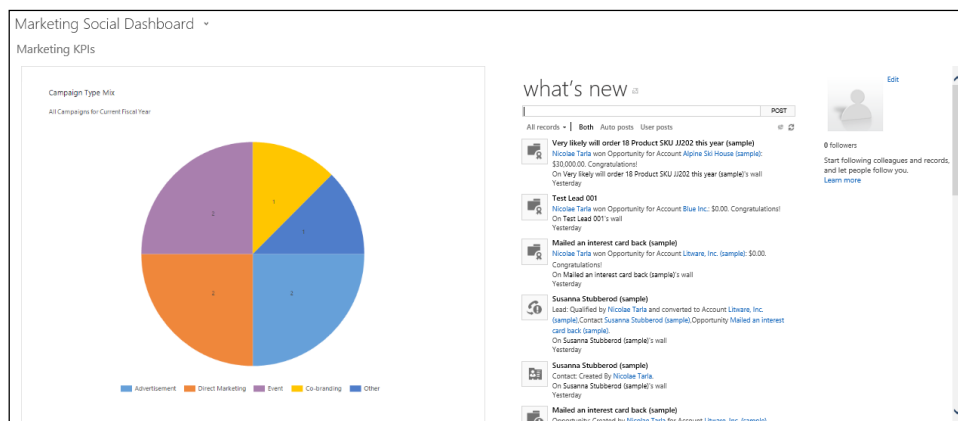
The marketing dashboard focuses on campaigns, leads generated by campaigns, costs, and revenue. In addition, activities and campaigns owned by the current system user are rolled up and made available from a simple interface.



This is the main working dashboard for a marketing representative. A quick glance at this dashboard can easily show performance and activities.

Marketing social dashboard

The marketing social dashboard builds on top of the previous dashboard, adding the same social features we have seen in the other modules. A marketing representative who uses this dashboard can follow specific entities and receive notifications directly in the dashboard through the social pane displayed on the top right area of the dashboard.



Marketing reports

Marketing reports are also included in the Dynamics CRM platform by default. The main marketing reports provided with the system include the ability to report on campaigns and campaign performance.

Additional reports can be customized and added to the system, as described in *Chapter 6, Dynamics CRM Administration*.

Other core functionalities

The items explored in the following sections play an important role in mapping business processes and requirements in the system. They are essential to conduct business in an efficient fashion and provide usage guidance and enhanced visibility.

Processes

Dynamics CRM allows a business to define and enforce consistent business processes, helping users to focus more on performing their regular work and less on remembering what needs to be done at each step on the way.

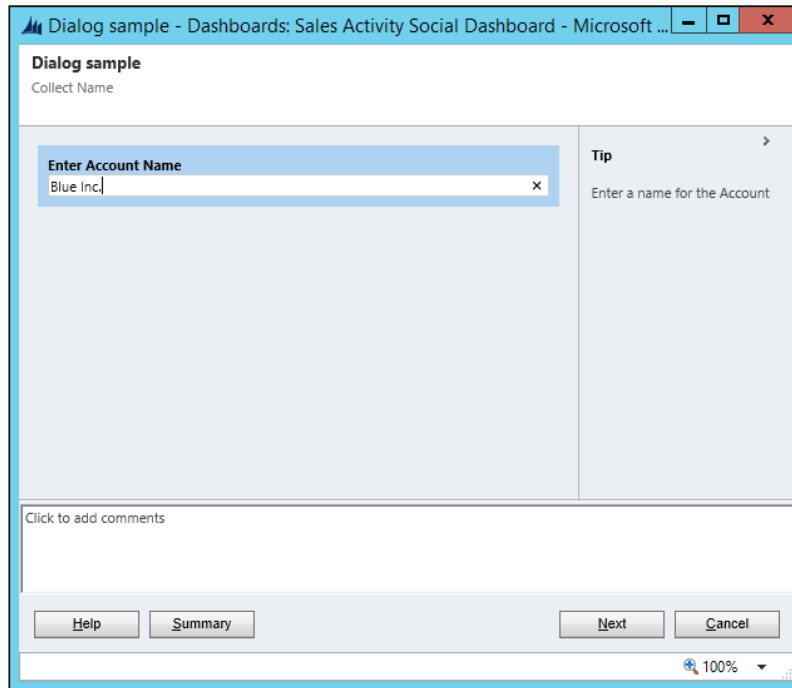
The processes defined can be as complex as needed, and can be grouped and related to achieve even greater complexity. The processes on the CRM platform can be created and managed by non-developers. This brings ease of use and allows managers and power users to manage and update them as time goes by. For this reason, the system can easily stay up to date with the business as it evolves.

Within the Dynamics CRM platform, at the time of writing this, there are four categories of processes available; they are dialogs, workflows, actions, and business process workflows. We will be looking at each one individually, and when you should use one over another.

Dialogs

The dialogs in Dynamics CRM are used to create a graphical interface to guide a user through a process to be followed when interacting with a customer or performing a set of actions. They are similar to a script used in a call center scenario. They are meant to be executed in one session from the beginning to the end.

Dialogs help users collect data and create new records, and guide the user through a set of actions to be performed based on various answers from a customer. A running dialog that collects user input looks like the following screenshot:



Workflows

Workflows help automate actions behind the scenes. They do not present a user interface and are not limited to being completed in a single session. Workflows can run over a period of time to completion.

A workflow is usually initiated by a system action, but they can also be customized to be triggered by a user directly. They can work asynchronously or synchronously. Synchronous workflows are also referred to as real-time workflows, and they have been introduced with the CRM version of 2013.

Actions

An action in Dynamics CRM is a custom process that allows us to create custom messages. It is used to add a new functionality to the application, or to combine multiple requests into a single one. They use the underlying web service architecture to group complex or specific actions. These are used in components built by a developer, and can be used for very specific functionalities.

Creating an action is very similar to creating a workflow. They can be created using the wizard-driven interface or custom code. Custom code is supported for on-premise deployments only.

An action is associated with a specific entity or can be defined at a global level. Through an action, we can invoke custom workflow activities, which are custom business logic components built by developers.

New actions are exposed through the standard API, and can be triggered through custom code or through integration from other applications.

One very important aspect of actions is that they are not supported by offline clients.

Business process workflows

Business process workflows are visual elements that allow a system user to input required data by grouping the required fields together at the top of the screen. They can be created using the wizard-driven user interface. They show the user the progress of the record through a predetermined set of steps to completion.

The opportunity sales process is a very good example of such a customization. Users will see the following section on their screen:

The screenshot displays the 'New Lead' form in Dynamics CRM. At the top, there's a header with a user icon, the text 'LEAD', and 'New Lead'. To the right, there are fields for 'Lead Source' (value: --), 'Rating' (value: Warm), 'Status' (value: New), and 'Owner' (value: Nicolae T.). Below the header is a horizontal bar representing the workflow stages: 'Qualify (Active)', 'Develop', 'Propose', 'Close', and 'Next Stage'. The 'Qualify (Active)' stage is currently selected and expanded, showing a list of fields with 'click to enter' links: 'Existing Contact?', 'Existing Account?', 'Purchase Timeframe', 'Estimated Budget', 'Purchase Process', and 'Identify Decision Maker'. The 'Close' stage has a 'Capture Summary' link. The 'Next Stage' button is at the far right of the stage bar.

For the customizers of the system, the interface to generate this is quite simplistic and easy to use, and looks as follows:

The screenshot shows the 'BUSINESS PROCESS FLOW' editor for the 'Opportunity Sales Process'. The interface is divided into two main sections for different stages: 'Qualify' and 'Develop'.

Qualify Stage:

- Stage Name:** Qualify
- Entity:** Opportunity
- Stage Category:** Qualify

Step Name	Value	Required
Identify Contact	Contact	☐
Identify Account	Account	☐
Purchase Timeframe	Purchase Timeframe	☐
Estimated Budget	Budget Amount	☐
Purchase Process	Purchase Process	☐
Identify Decision Maker	Decision Maker?	☐
Capture Summary	Description	☐

Below the table, there are controls: '+ Insert stage' and 'Add branch'.

Develop Stage:

- Stage Name:** Develop
- Entity:**

Step Name	Value	Required
Customer Need	Customer Need	☐

Below the table, there are 'MOVE' controls with up and down arrows.

At the bottom, the status is set to 'Active'.

Each stage of the process is defined, and within it, each required field can be added and marked as required or not. Progressing through stages requires that all fields marked as required be filled in before advancing to the next stage. A control on the screen also allows users to navigate back and forward to see what is required at each stage.

Business processes are a key differentiator for Dynamics CRM in the market. By providing users with step-by-step guided processes and visual indicators, business processes enforce a standard in how processes are conducted while also creating measurable and verifiable outcomes.

Dashboards

Dashboards in Dynamics CRM are visual components that allow users quick access to aggregated data in the system. They are a visualization and analytics tool that enhance the value of your system by allowing users to quickly glance at aggregated data and dig deeper into the underlying data that is used to generate the visualization. They act as business intelligence tools, providing snapshots of the system data presented in various forms.

Dashboards are comprised of various elements, including charts, grids, web resources, and iframes that expose external and integrated information. With additional customizations, reports can be incorporated into dashboards as well. In fact, dashboards are containers for these elements and can present up to six visualizations at a time.

Dashboards comprise tabs, sections, and components. They can be easily created through the wizard-based interface and can be targeted to a specific module, user or team. From an ownership perspective, dashboards can be organization-owned or user-owned. A user-owned dashboard can be shared with other users.

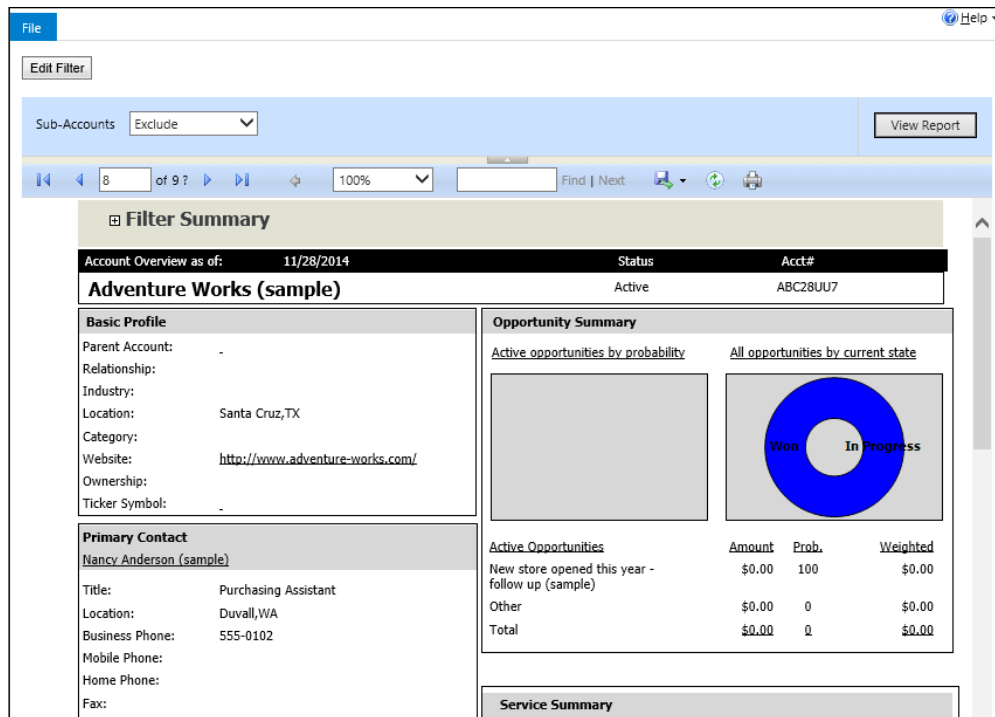
Reports

A user can report on system data in various ways from the simplistic advanced find, where tabular data can be retrieved and exported to Excel for further analytics, to wizard-driven report generation and all the way to custom **SQL Server Reporting Services (SSRS)** reports. This flexibility makes reporting easy to use and very powerful.

Each of these options has its own strong points and weaknesses. For example, while custom SSRS reports are the most powerful, not only with respect to the amount of data collected and visual representation options but also from the flexibility point of view, they do require a developer with extensive knowledge of SSRS reporting and Dynamics CRM to produce.

Power users of the system will find it familiar to create wizard-driven reports. Though they are limited in the complexity and have a standard user interface, the ease of creating them will appeal to users with no development background.

The following screenshot shows a report rendered through CRM:



These reports support the use of custom parameters to filter data and allow us to save it for offline use as well as export data in some of the most common formats including Excel, Word, and PDF.

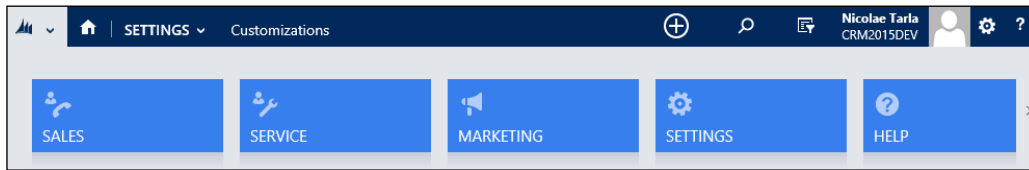
Extensibility options

Dynamics CRM is a very flexible platform, with a multitude of extensibility options. The system can be extended using various methods and components. Third-party solutions can be acquired from the Dynamics CRM marketplace and internal customizations can be performed, packaged, and exported from one environment to another.

Application navigation

User experience has evolved a lot with every new version of Dynamics CRM. This continues with the release of Dynamics CRM 2013 in which a user interface and a navigation paradigm are presented, both completely redesigned. In line with the Windows 8 tiled interface, the navigation has been enhanced to present the user with options to get to data with less clicks, and to flatten the interface. As part of this process, navigation is less obtrusive, takes less screen real estate, and is more dynamic.

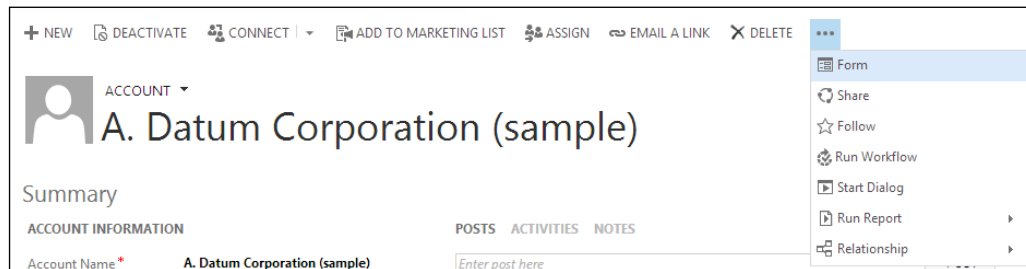
The default navigation is presented in the following screenshot:



The navigation remains highly customizable and the logical modules are clearly presented. This navigation can be changed to add new modules, remove existing ones, and rearrange items.

On individual records, the left-side navigation has been replaced with a consistent similar navigation option, and the ability to navigate up, down, and laterally in the system has been highly increased.

The application ribbons have also been redesigned, with a similar horizontal display at the top of the form, just below the navigation. The most common actions are left visible, with additional ribbon elements collected under a **More commands...** menu.



Summary

Throughout this chapter, we looked at some of the most important elements comprising the Microsoft Dynamics CRM platform. We reviewed the three standard modules that comprise the default Dynamics CRM platform: the sales, service, and marketing modules. We also looked at the major components of these modules, and how they relate to a specific module or work across multiple modules. We also looked at entities and what an entity is in the context of Dynamics CRM. We reviewed dashboards, reports, and the default navigation through the application. At this point we should have an understanding of how everything is tied together and what to look for when we need to customize the system.

The next chapter will take you through some of the most common elements that comprise an entity, the options to customize them, and working with existing and new entities.

3

Customizing Entities

In *Chapter 2, Dynamics CRM Application Structure*, we looked at the basic structure of Dynamics CRM, the modules comprising the application, and what each of these modules contain. Now, we'll delve deeper into the application and take a look at how we can customize it.

In this chapter, we will take a look at the following topics:

- Solutions and publishers
- Entity elements
- Entity types
- Extending entities
- Entity forms, quick view, and quick create forms
- Entity views and charts
- Entity relationships
- Messages
- Business rules

We'll be taking a look at how to work with each of the elements comprising the sales, service, and marketing modules. We will go through the customization options and see how we can extend the system to fit new business requirements.

Solutions

When we are talking about customizations for Microsoft Dynamics CRM, one of the most important concepts is the solution. The solution is a container of all the configurations and customizations. This packaging method allows customizers to track customizations, export and reimport them into other environments, as well as group specific sets of customizations by functionality or project cycle. Managing solutions is an aspect that should not be taken lightly, as down the road, a properly designed solution packaging model can help a lot, or an incorrect one can create difficulties.

Using solutions is a best practice. While you can implement customizations without using solutions, these customizations will be merged into the base solutions and you will not be able to export the customizations separately from the core elements of the platform.

 For a comprehensive description of solutions, you can refer to the MSDN documentation available at http://msdn.microsoft.com/en-gb/library/gg334576.aspx#BKMK_UnmanagedandManagedSolutions.

Types of solutions

Within the context of Dynamics CRM, there are two types of solutions that you will commonly use while implementing customizations:

- Unmanaged solutions
- Managed solutions

Each one of these solution types has its own strengths and properties and are recommended to be used in various circumstances.

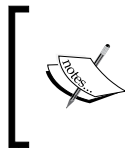
 In order to create and manage solutions as well as perform system customizations, the user account must be configured as a system customizer or system administrator.

Unmanaged solutions

An unmanaged solution is the default state of a newly created solution. A solution is unmanaged for the period of time while customization work is being performed in the context of the solution. You cannot customize a managed solution. An unmanaged solution can be converted to a managed solution by exporting it as managed. When the work is completed and the unmanaged solution is ready to be distributed, it is recommended that you package it as a managed solution for distribution. A managed solution, if configured as such, prevents further customizations to the solution elements. For this reason, solution vendors package their solutions as managed.

In an unmanaged solution, the system customizer can perform various tasks, which include:

- Adding and removing components
- Deleting components that allow deletion
- Exporting and importing the solution as an unmanaged solution
- Exporting the solution as a managed solution



Changes made to the components in an unmanaged solution are also applied to all the unmanaged solutions that include these components. This means that all changes from all unmanaged solutions are also applied to the default solution.

Deleting an unmanaged solution results in the removal of the container alone, while the unmanaged components of the solution remain in the system.

Deleting a component in an unmanaged solution results in the deletion of this component from the system. In order to remove a component from an unmanaged solution, the component should be removed from the solution, not deleted.

Managed solutions

Once work is completed in an unmanaged solution and the solution is ready to be distributed, it can be exported as a managed solution. Packaging a solution as a managed solution presents the following advantages:

- Solution components cannot be added or removed from a managed solution
- A managed solution cannot be exported from the environment it was deployed in

- Deleting a managed solution results in the uninstallation of all the component customizations included with the solution. It also results in the loss of data associated with the components being deleted.



A managed solution cannot be installed in the same organization that contains the unmanaged solution which was used to create it.

Within a managed solution, certain components can be configured to allow further customization. Through this mechanism, the managed solution provider can enable future customizations that modify aspects of the solution provided.

The guidance provided by Microsoft when working with various solution types states that a solution should be used in an unmanaged state between development and test environments, and it should be exported as a managed solution when it is ready to be deployed to a production environment.

Solution properties

Besides the solution type, each solution contains a solution publisher. This is a set of properties that allow the solution creators to communicate different information to the solution's users, including ways to contact the publisher for additional support. The solution publisher record will be created in all the organizations where the solution is being deployed.

The solution publisher record is also important when releasing an update to an existing solution. Based on this common record and the solution properties, an update solution can be released and deployed on top of an existing solution.

Using a published solution also allows us to define a custom prefix for all new custom fields created in the context of the solution. The default format for new custom field names is a new field name. Using a custom publisher, we can change the "new" prefix to a custom prefix specific to our solution.

Solution layering

When multiple solutions are deployed in an organization, there are two methods by which the system defines the order in which changes take precedence. These methods are merge and top wins. The user interface elements are merged by default. As such, elements such as the default forms, ribbons, command bars, and site map are merged, and all base elements and new custom elements are rendered.

For all other solution components, the top wins approach is taken, where the last solution that makes a customization takes precedence. The top wins approach is also taken into consideration when a subset of customizations is being applied on top of a previously applied customization.

The system checks the integrity of all solution exports, imports, and other operations. As such, when exporting a solution, if dependent entities are not included, a warning is presented. The customizer has the option to ignore this warning.

When importing a solution, if the dependent entities are missing, the import is halted and it fails. Also, deleting a component from a solution is prevented if dependent entities require it to be present.

The default solution

Dynamics CRM allows you to customize the system without taking advantage of solutions. By default, the system comes with a solution. This is an unmanaged solution, and all system customizations are applied to it by default.

The default solution includes all the default components and customizations defined within Microsoft Dynamics CRM. This solution defines the default application behavior. Most of the components in this solution can be further customized. This solution includes all the out-of-the-box customizations. Also, customizations applied through unmanaged solutions are being merged into the default solution.

Entity elements

Within a solution, we work with various entities. In Dynamics CRM, there are three main entity types:

- System entities
- Business entities
- Custom entities

Each entity is composed of various attributes, while each attribute is defined as a value with a specific data type. We can consider an entity to be a data table. Each row represents an entity record, while each column represents an entity attribute. As with any table, each attribute has specific properties that define its data type.

The system entities in Dynamics CRM are used internally by the application and are not customizable. Also, they cannot be deleted.

As a system customizer or developer, we will work mainly with business management entities and custom entities. Business management entities are the default entities that come with the application. Some are customizable and can be extended as required. Custom entities are all net new entities that are created as part of our system customizations.

The aspects related to customizing an entity include renaming the entity; modifying, adding, or removing entity attributes; or changing various settings and properties. Let's take a look at all these in detail.

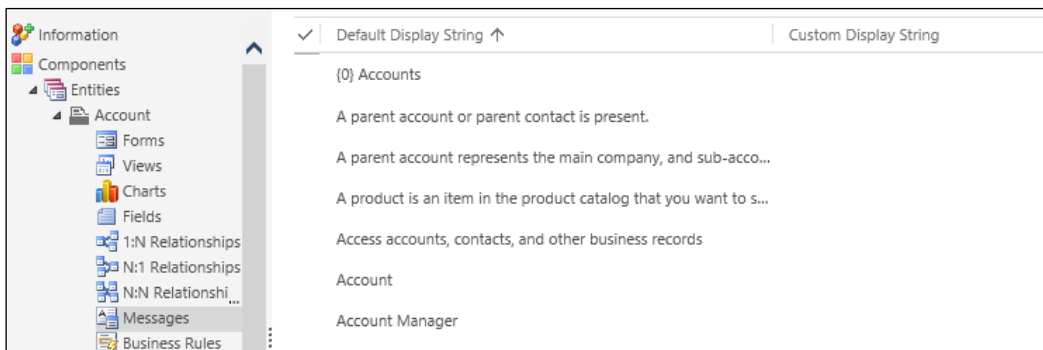
Renaming an entity

One of the ways to customize an entity is by renaming it. In the general properties of the entity, the field's display name allows us to change the name of an entity. The plural name can also be updated accordingly.



When renaming an entity, make sure that all the references and messages are updated to reflect the new entity name. Views, charts, messages, business rules, hierarchy settings, and even certain fields can reference the original name, and they should be updated to reflect the new name assigned to the entity.

The display name of an entity can be modified for the default value. This is a very common customization. In many instances, we need to modify the default entity name to match the business for which we are customizing the system. For instance, many customers use the term organization instead of account. This is a very easy customization achieved by updating the **Display Name** and **Plural Name** fields. While implementing this change, make sure that you also update the entity messages, as a lot of them use the original name of the entity by default.



You can change a message value by double-clicking on the message and entering the new message into the **Custom Display String** field.

Changing entity settings and properties

When creating and managing entities in Dynamics CRM, there are generic entity settings that we have to pay attention to. We can easily get to these settings and properties by navigating to **Components | Entities** within a solution and selecting an entity from the list. We will get an account entity screen similar to the following screenshot:

The screenshot shows the 'Entity Definition' settings for the 'Account' entity in Dynamics CRM. The 'General' tab is selected, and the 'Primary Field' sub-tab is active. The 'Entity Definition' section includes the following fields and options:

- Display Name ***: Account
- Plural Name ***: Accounts
- Name ***: account
- Primary Image**: Default Image
- Description**: Business that represents a customer or potential customer. The company that is billed in business transactions.
- Ownership ***: User or Team
- ☐ Define as an activity entity.
- ☐ Display in Activity Menus
- Areas that display this entity**:
 - ☒ Sales
 - ☒ Service
 - ☒ Marketing
 - ☐ Settings
 - ☐ Help
- Options for Entity**:
 - ☒ Business process flows (fields will be created) †

The settings are structured in two main tabs, with various categories on each tab. We will take a look at each set of settings and properties individually in the next sections.

Entity definition

This area of the **General** tab groups together general properties and settings related to entity naming properties, ownership, and descriptions. Once an entity is created, the **Name** value remains fixed and cannot be modified. If the internal **Name** field needs to be changed, a new entity with the new **Name** field must be created.

Areas that display this entity

This section sets the visibility of this entity. An entity can be made available in only one module or more standard modules of the application. The account is a good example as it is present in all the three areas of the application.

Options for entity

The **Options for Entity** section contains a subset of sections with various settings and properties to configure the main properties of the entity, such as whether the entity can be customized by adding business process flows, notes and activities, and auditing as well as other settings.

 Pay close attention to the settings marked with a plus, as once these settings are enabled, they cannot be disabled. If you are not sure whether you need these features, disable them.

The **Process** section allows you to enable the entity for **Business Process Flows**. When enabling an entity for Business Process Flows, specific fields to support this functionality are created. For this reason, once an entity is enabled for Business Process Flows, it cannot be disabled at a later time.

In the communication and collaboration area, we can enable the use of notes, related activities, and connections as well as enable sending of e-mails and queues on the entity. Enabling these configurations creates the required fields and relationships in the system, and you cannot disable them later. In addition, you can enable the entity for mail merge for use with access teams and also for document management. Enabling an entity for document management allows you to store documents related to the records of this type in SharePoint if the organization is configured to integrate with SharePoint.

The data services section allows you to enable the quick create forms for this entity's records as well as to enable or disable duplicate detection and auditing.

 When you are enabling auditing, auditing must also be enabled at the organization level. Auditing is a two-step process.

The next subsections deal with Outlook and mobile access. Here, we can define whether the entity can be accessed from various mobile devices as well as Outlook and whether the access is read-only or read/write on tablets.

The last section allows us to define a custom help section for a specific entity. Custom help must be enabled at the organization level first.

Primary field settings

The **Primary Field** settings tab contains the configuration properties for the entity's primary field. Each entity in the Dynamics CRM platform is defined by a primary field. This field can only be a text field, and the size can be customized as needed. The display name can be adjusted as needed. Also, the requirement level can be selected from one of the three values: optional, business-recommended, or business-required. When it is marked as business-required, the system will require users to enter a value if they are creating or making changes to an entity record form.

The primary fields are also presented for customization in the entity field's listing.

Business versus custom entities

As mentioned previously, there are two types of customizable entities in Dynamics CRM. They are business entities and custom entities. Business entities are customizable entities that are created by Microsoft and come as part of the default solution package. They are part of the three modules: sales, service, and marketing. Custom entities are all the new entities that are being created as part of the customization and platform extending process.

Business entities

Business entities are part of the default customization provided with the application by Microsoft. They are either grouped into one of the three modules of functionality or are spread across all three. For example, the account and contact entities are present in all the modules, while the case entity belongs to the service module. Some other business entities are opportunity, lead, marketing list, and so on.

Most of the properties of business entities are customizable in Dynamics CRM. However, there are certain items that are not customizable across these entities. These are, in general, the same type of customizations that are not changeable when creating a custom entity. For example, the entity internal name (the schema name) cannot be changed once an entity has been created. In addition, the primary field properties cannot be modified once an entity is created.

Custom entities

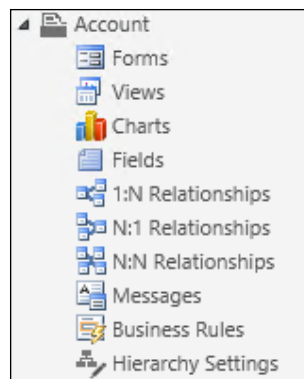
All new entities created as part of a customization and implemented in Dynamics CRM are custom entities. When creating a new custom entity, we have the freedom to configure all the settings and properties as needed from the beginning. We can use a naming convention that makes sense to the user and generate all the messages from the beginning, taking advantage of this name.

A custom entity can be assigned by default to be displayed in one or more of the three main modules or in the settings and help section.

If a new module is created and custom entities need to be part of this new module, we can achieve this by customizing the application navigation, commonly referred to as the application sitemap. While customizing the application navigation might not be such a straightforward process, the tools released to the community are available, which makes this job a lot easier and more visual. The default method to customize the navigation is described in detail in the SDK, and it involves exporting a solution with the navigation sitemap configuration, modifying the XML data, and reimporting the updated solution.

Extending entities

Irrespective of whether we want to extend a customizable business entity or a custom entity, the process is similar. We extend entities by creating new entity forms, views, charts, relationships, and business rules.



Starting with Dynamics CRM 2015, entities configured for hierarchical relationships now support the creation and visualization of hierarchies through hierarchy settings.

We will be taking a look at each of these options in detail in the next sections.

Entity forms

Entities in Dynamics CRM can be accessed from various parts of the system, and their information can be presented in various formats. This feature contributes to the 360-degree view of customer data.

In order to enable this functionality, the entities in Dynamics CRM present a variety of standard views that are available for customization. These include standard entity forms, quick create forms, and quick view forms. In addition, for mobile devices, we can customize mobile forms.

Form types

With the current version of Dynamics CRM 2015, most of the updated entities now have four different form types, as follows:

- The main form
- The mobile form
- The quick create form
- The quick view form

Various other forms can be created on an entity, either from scratch or by opening an existing form and saving it with a new name. When complex forms need to be created, in many circumstances, it is much easier to start from an existing entity form rather than recreating everything.

We have role-based forms, which change based on the user's security role, and we can also have more than one form available for users to select from. We can customize which view is presented to the user based on specific form rules or other business requirements.

It is a good practice to define a fallback form for each entity and to give all the users view permissions to this form. Once more than one main forms are created for an entity, you can define the order in which the forms are presented based on permissions. If the user does not have access to any of the higher precedence forms, they will be able to access the fallback form.

Working with contingency forms is quite similar; here, a form is defined to be available to users who cannot access any other forms on an entity. The approach for configuring this is a little different though. You create a form with minimal information being displayed on it.

Only assign a system administrator role to this form, and select **enable** for a fallback. With this, you specify a form that will not be visible to anybody other than the system administrator. In addition, configuring the form in this manner also makes it available to users whose security roles do not have a form specified. With such a configuration, if a user is added to a restrictive group that does not allow them to see most forms, they will have this one form available.

The main form

The main form is the default form associated with an entity. This form will be available by default when you open a record. There can be more than one main form, and these forms can be configured to be available to various security roles. A role must have at least one form available for the role. If more than one form is available for a specific role, then the users will be given the option to select the form they want to use to visualize a record available for it to be selected by the user. Forms that are available for various roles are called role-based forms. As an example, the human resource role can have a specific view in an account, showing more information than a form available for a sales role.

At the time of editing, the main form of an entity will look similar to the following screenshot:

The screenshot displays the 'Account' form in the CRM Book application. The interface includes a left-hand navigation pane with categories like Account, Common, Sales, Service, Marketing, and Process Sessions. The main content area is titled 'Solution: CRM Book' and 'Form: Account'. The 'Summary' tab is active, showing a form with several sections: 'ACCOUNT INFORMATION' (with fields for Account Name, Phone, Fax, Website, Parent Account, and Ticker Symbol), 'ADDRESS' (with an Address 1 field), 'SOCIAL PANE' (a large empty box), and a 'Section' area (with Primary Contact fields). A 'CONTACTS' section is also visible at the bottom right.

A mobile form

A mobile form is a stripped-down form that is available for mobile devices with small screens. When customizing mobile forms, you should not only pay attention to the fact that a small screen can only render so much before extensive scrolling becomes exhaustive but also the fact that most mobile devices transfer data wirelessly and, as such, the amount of data should be limited.

At the time of editing, the **Mobile Entity** form looks similar to the **Account Mobile** form shown in the following screenshot. This is basically just a listing of the fields that are available and the order in which they are presented to the user.

Mobile Entity: Accounts
Select the attributes from the Available Attributes list that you would like displayed on the form. Set the order in which they are displayed by moving them up and down in the selected list.

Available Attributes		Selected Attributes
Account Number	Add > Add All >> < Remove << Remove All Move Up Move Down Read Only	Account Name *
Account Rating		Primary Contact
Address 1		Main Phone
Address 1: Address Type		Email
Address 1: County		Website
Address 1: Fax		Address 1: Street 1
Address 1: Freight Terms		Address 1: Street 2
Address 1: Latitude		Address 1: City
Address 1: Longitude		Address 1: State/Province
Address 1: Name		Address 1: ZIP/Postal Code
Address 1: Post Office Box		Address 1: Country/Region
Address 1: Primary Contact Name		Industry
Address 1: Shipping Method		Owner *
Address 1: Street 3		Status *
Address 1: Telephone 2		
Address 1: Telephone 3		
Address 1: UPS Zone		
Address 2		
Address 2: Address Type		
Address 2: City		
Address 2: Country/Region		

The quick create form

The quick create form, while serving a different purpose than quick view forms, are confined to the same minimalistic approach. Of course, a system customizer is not necessarily limited to a certain amount of data to be added to these forms, but it should be mindful of where these forms are being used and how much real estate is dedicated to them.

In a quick create form, the minimal amount of data to be added is the required fields. In order to save a new record, all business-required fields must be filled in. As such, they should be added to the quick create form.

The quick create form are created in the same way as any other type of form. In the solution package, navigate to entities, select the entity in which you want to customize an existing quick create form or add a new one, and expand the **forms** section; you will see all the existing forms for the specific entity.

Here, you can select the form you want to modify or click on **New** to create a new one.

Once the form is open for editing, the process of customizing the form is exactly the same for all forms. You can add or remove fields, customize labels, rearrange fields in the form, and so on.

In order to remind the customizer that this is a quick create form, a minimalistic three-column grid is provided by default for this type of form in edit mode, as shown in the following screenshot:



 Pay close attention to the fact that you can add only a limited type of controls to a quick create form. Items such as iframes and sub-grids are not available.

That's not to say that the layout cannot be changed. You can be as creative as needed when customizing the quick create view.

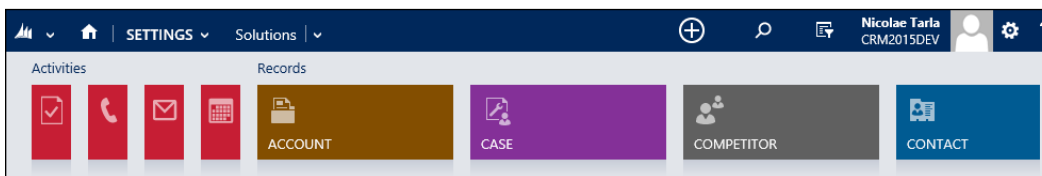
Once you have created the form, save and publish it. Since we have created a relationship between the account and the project earlier, we can add a grid view to the account displaying all the related child projects.

Now, navigating to an account, we can quickly add a new child project by going to the project's grid view and clicking on the plus symbol to add a project. This will launch the quick create view of the project we just customized. This is how the project window will look:

The screenshot shows a 'Project' quick create form. The form has a title bar 'Project' with a close button. Below the title bar is a 'Name' field with a red asterisk and a dropdown menu showing '--'. At the bottom right are 'Save' and 'Cancel' buttons. Below the form is a list of existing projects, with 'Project Rouge' selected.

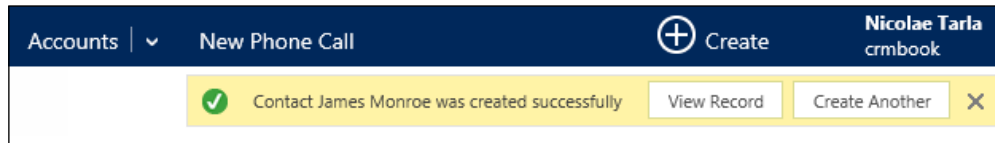
As you can see in the previous screenshot, the quick create view is displayed as an overlay over the main form. For this reason, the amount of data should be kept to a minimum. This type of form is not meant to replace a full-fledged form but to allow a user to create a new record type with minimal inputs and with no navigation to other records.

Another way to access the quick create view for an entity is by clicking on the **Create** button situated at the top-right corner of most Dynamics CRM pages, right before the field that displays your username. This presents the user with the option to create common out-of-the-box record types available in the system, as seen in the following screenshot:



Selecting any one of the **Records** options presents the quick create view. If you opt to create activities in this way, you will not be presented with a quick create form; rather, you will be taken to the full activity form.

Once a quick create form record is created in the system, the quick create form closes and a notification is displayed to the user with an option to navigate to the newly created record. This is how the final window should look:



The quick view form

The quick view form is a feature added with Dynamics CRM 2013 that allows system customizers to create a minimalistic view to be presented in a related record form. This form presents a summary of a record in a condensed format that allows you to insert it into a related record's form.

The process to use a quick view form comprises the following two steps:

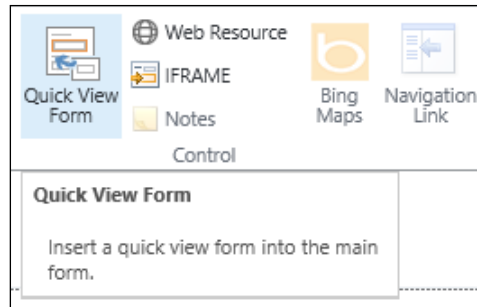
- Create the quick view form for an entity
- Add the quick view form to the related record

The process of creating a quick view form is similar to the process of creating any other form. The only requirement here is to keep the amount of information minimal, in order to avoid taking up too much real estate on the related record form. The following screenshot describes the standard **Account** quick create form:

A screenshot of the 'Form: Account' quick view form. The title bar says 'Form: Account'. The form is divided into sections. The first section is 'General', which contains a 'CUSTOMER DETAILS' group. This group has three rows: 'Account Name' with a red lock icon, 'Email', and 'Phone'. Each row has a corresponding input field on the right. Below this is a 'RECENT CASES' section, which contains a 'Cases' group with a grid area for displaying recent cases.

A very good example is the quick view form for the account entity. This view is created by default in the system. It only includes the account name, e-mail and phone information, as well as a grid of recent cases and recent activities.

We can use this view in a custom project entity. In the project's main form, add a lookup field to define the account related to the project. In the project's form customization, add a **Quick View Form** tab from the ribbon, as shown in the following screenshot:



Once you add a **Quick View Form** tab, you are presented with a **Quick View Control Properties** window. Here, define the name and label for the control and whether you want the label to be displayed in the form.

In addition, on this form, you get to define the rules on what is to be displayed on the form. In the **Data Source** section, select **Account** in the **Lookup Field** and **Related Entity** dropdown list and in the **Quick View Form** dropdown list, select the **account card** form. This is the name of the account's quick view form defined in the system. The following screenshot shows the **Data Source** configuration and the **Selected quick view forms** field:

 The screenshot shows a 'Data Source' configuration window. It contains the following fields and controls:

- Specify the primary data source for this Quick View Form.**
- Lookup Field:** A dropdown menu with 'Account' selected.
- Related Entity:** A dropdown menu with 'Account' selected.
- Quick View Form:** A dropdown menu with 'account card' selected.
- Selected quick view forms:** A text area displaying 'Account : account card'.
- Edit** and **New** buttons at the bottom.

Once complete, save and publish the form.

Now, if we navigate to a project record, we can select the related account and the quick view will automatically be displayed on the project form, as shown in the next screenshot:

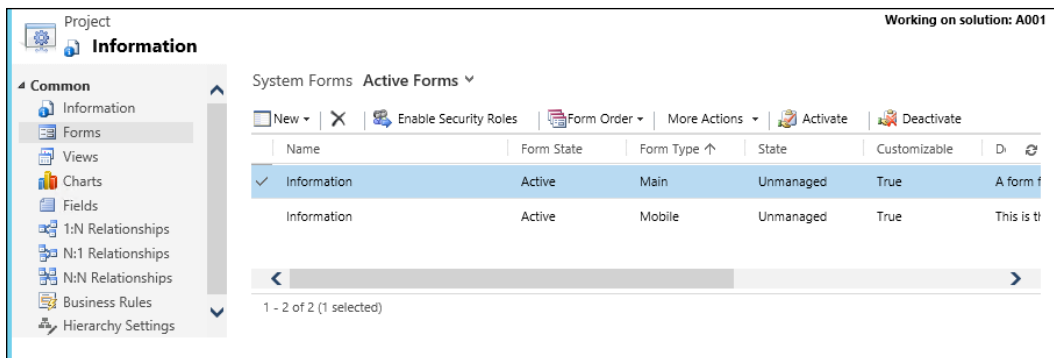
The screenshot shows a form titled "Project Rouge". On the left, there are two fields: "Name *" with the value "Project Rouge" and "Account *" with the value "Blue Inc.". On the right, there is a section titled "CUSTOMER DETAILS" with a lock icon. Below this, the account name "Blue Inc." is displayed. Underneath, there are two rows of information: "Email" with a value of "--" and "Phone" with the value "18881231234". Below the customer details, there is a section titled "RECENT CASES" with a lock icon. This section contains a table with two columns: "Status" and "Case Title". The table is currently empty, and a message "No Case records found." is displayed at the bottom of the section.

The default quick view form created for the account entity is displayed now on the project form with all the specified account-related details. This way any updates to the account are immediately reflected in the project form.

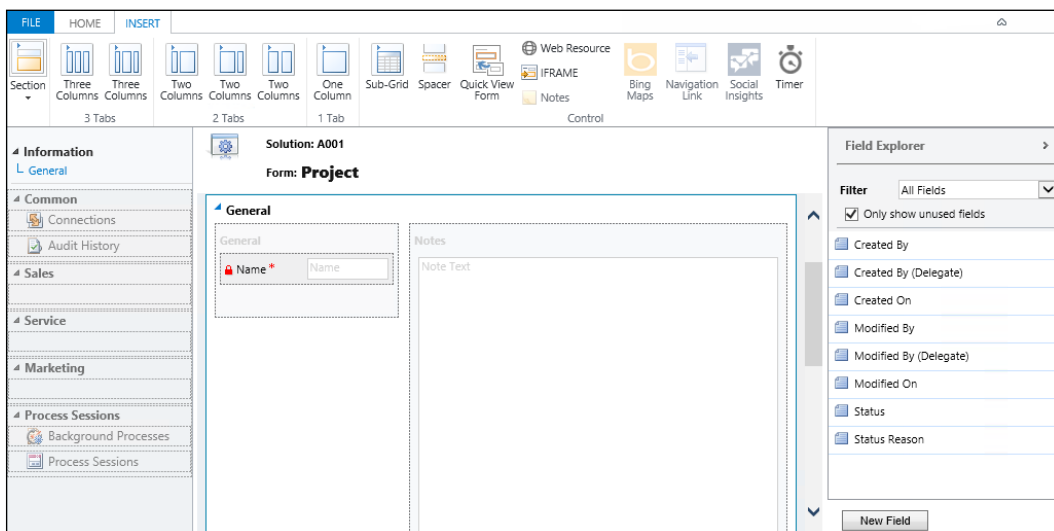
Taking this approach, it is now much easier to display all the needed information on the same screen so that the user does not have to navigate away and click through a maze to get to all the data needed.

Customizing forms

In Dynamics CRM, forms comprise various elements. We have various layout elements, including tabs and sections, iframes, sub-grids, and spacers. At the lowest level, we have data fields, which can be placed within some of the previously mentioned containers. Forms can be customized by opening a solution, adding or navigating to the entity you intend to customize, and opening or creating the form to be customized.



Once you have the form open, you can start customizing the form elements. You can add or remove various elements using the controls available on the form's customize screen and the ribbon.



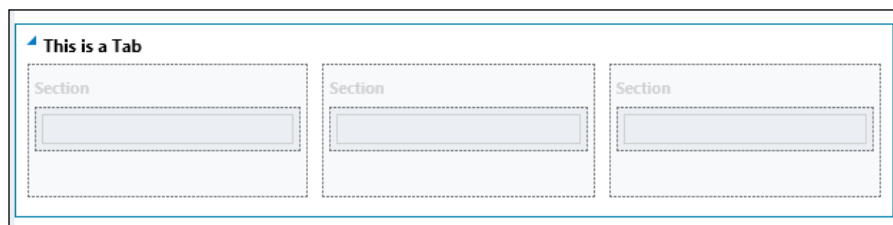
Let's take a look at each one of these elements in detail. We will analyze the form designer and look at all the major elements involved in the customization process.

Tabs

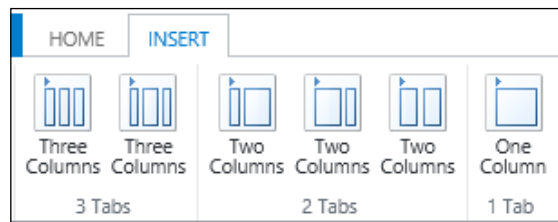
A tab is the highest level of grouping used for the elements of the form. A tab can be set to open by default as expanded or collapsed. Clicking on the tab name in an open form allows the user to expand or collapse it. This makes navigation through a form easier.

Tabs can be opened, closed, and also hidden programmatically using JavaScript customization. For example, if the value of a field is set to a certain value, then we show another tab, otherwise we keep it hidden.

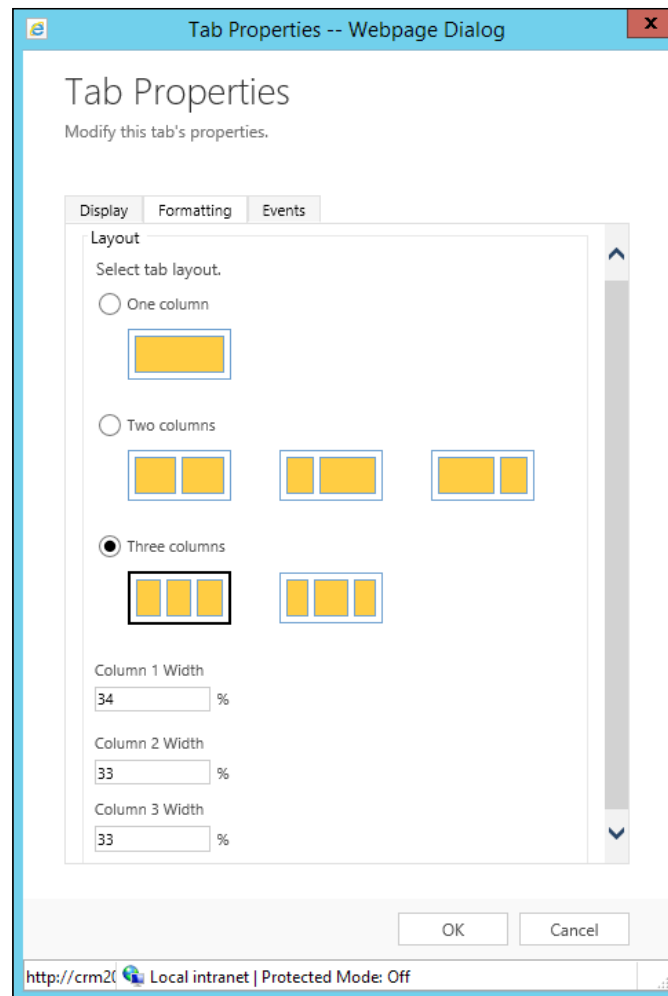
The following screenshot shows a form tab in design mode on the account form:



Tabs can be created with various predefined layout options. When editing the form, on the toolbar, we are presented with the following options:



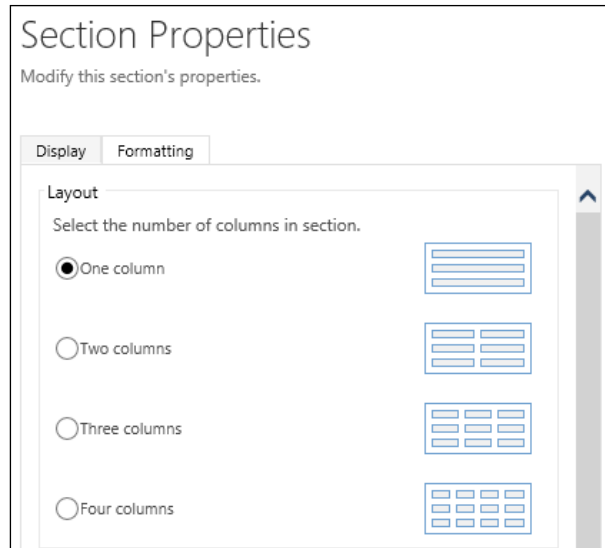
Once a tab is inserted in the form, the layout can be customized further. You can change the originally selected layout and adjust the width of the columns as needed. This is all done by double-clicking on the tab in the form in edit mode. You get a **Tab Properties** window. On the **Formatting** tab, you are presented with the following layout options:



Sections

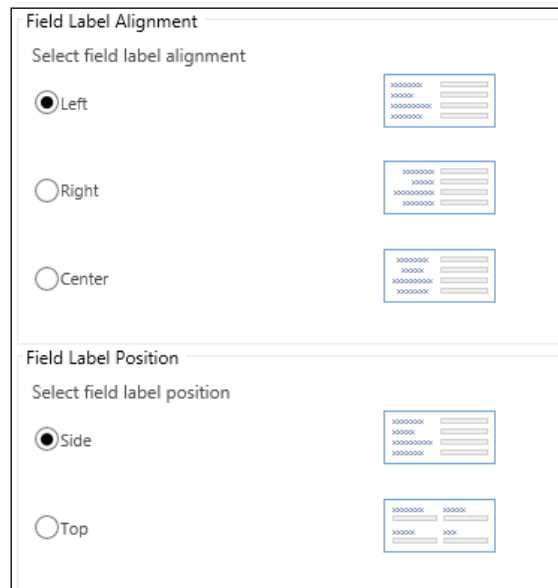
A section is a subgrouping element that is used to further design your forms. Creating a tab with three columns will automatically generate three new sections aligned side by side. We can then add an additional section to each of the columns from the tab.

A section's layout can be also customized to present information in multiple columns. The layout options are presented by double-clicking on the section in edit mode. This opens up a **Section Properties** window. On the **Display** tab, the first grouping is the **Layout** settings, which allows us to customize up to four new columns.



The image shows a 'Section Properties' dialog box with the 'Display' tab selected. Under the 'Layout' section, there is a prompt 'Select the number of columns in section.' followed by four radio button options: 'One column', 'Two columns', 'Three columns', and 'Four columns'. To the right of each option is a small grid icon representing the layout. The 'One column' option is selected, and its icon shows a single column of four rows.

In addition, we can customize the formatting of the form's fields here by setting the formatting for the field label's location and alignment, as shown here:



The image shows two sections of a settings window. The first section, 'Field Label Alignment', has the prompt 'Select field label alignment' and three radio button options: 'Left', 'Right', and 'Center'. The 'Left' option is selected. To the right of each option is a small grid icon showing the alignment of field labels. The second section, 'Field Label Position', has the prompt 'Select field label position' and two radio button options: 'Side' and 'Top'. The 'Side' option is selected. To the right of each option is a small grid icon showing the position of field labels.



When customizing a form's layout, pay close attention to the amount of data presented horizontally, and make sure that at a lower resolution, it does not result in unexpected line wrapping. Items that are laid out might look perfect at a higher resolution, but on lower resolution screens, the fields might get wrapped, resulting in a layout that is not ideal for the user.

iframes

iframes is a feature that allows you to include external pages or Web resources into a form. Using this approach, you can introduce custom HTML elements into the entity forms. This allows you to extend the system with custom elements. A good use for this is taking advantage of custom forms formatting, dashboard elements, and the reports functionality.

Pay attention to the formatting of iframes. The risk here is that bringing in forms with a larger format than the actual iframe will result in a scrolling of the iframe.

Sub-grids

In Dynamics CRM, sub-grids allow you to display listings of related entities. They are based on existing views, with specific filters added. For example, on an account entity, we can have a listing in a sub-grid that shows all the contacts related to the current account, as shown here:

The screenshot shows a Dynamics CRM form with a sub-grid for 'POSTS' and a 'CONTACTS' list. The 'POSTS' sub-grid has tabs for 'Both', 'Auto posts', and 'User posts'. It displays three items, each with a status icon, a title, a description, and a timestamp. The 'CONTACTS' list is a table with columns for 'Full Name' and 'Email'.

Full Name	Email
Johnny Blake	jblake@adventureworks.c...
Nancy Anderson (sample)	someone_c@example.com

A sub-grid is bound by the same limitation as an iframe: if the view is larger than the allocated space on the form, we will be treated with scroll bars. This makes the user experience less friendly.

As far as options for configuration are concerned, we can adjust the **Layout** field anywhere between a single column to four columns for sub-grids. We can also adjust the height of the sub-grid by either setting a fixed height or allowing it to expand as needed. All these settings are available by double-clicking on the grid in the form's edit window. This opens up the **Set Properties** window. By going to the **Formatting** tab, we can get all the layout options described.

Refer to the following screenshot for more information:

The screenshot shows a software configuration window with two tabs: 'Display' and 'Formatting'. The 'Formatting' tab is active. It contains two main sections: 'Layout' and 'Row Layout'.

Layout Section:

- Text: "Select the number of columns the control occupies:"
- Four radio button options:
 - ☒ One column: Accompanied by a diagram showing a single column of 6 cells.
 - ☐ Two columns: Accompanied by a diagram showing two columns of 3 cells each.
 - ☐ Three columns: Accompanied by a diagram showing three columns of 2 cells each.
 - ☐ Four columns: Accompanied by a diagram showing four columns of 1.5 cells each.

Row Layout Section:

- Text: "Select the maximum number of rows per page"
- Text: "Number of Rows" followed by a text input field containing the value "6".
- Text: ☐ Automatically expand to use available space.

In addition to formatting, when working with sub-grids, we have some very handy ways of customizing the data to be displayed in the grid. We can select the related entity and the specific view to be used as well as filter by related records only.

The screenshot shows the 'Set Properties -- Webpage Dialog' for a CRM entity. The 'Display' tab is selected. The 'Name' section has 'Name' set to 'Contacts' and 'Label' set to 'CONTACTS'. The 'Data Source' section has 'Records' set to 'Only Related Records', 'Entity' set to 'Contacts (Company Name)', and 'Default View' set to 'Active Contacts Subgrid View'. The 'Additional Options' section has 'Display Search Box' and 'Display Index' unchecked, and 'View Selector' set to 'Off'. A list of 'System Views' is shown at the bottom: 'Active Contacts', 'Active Contacts Subgrid View', and 'Contacts Being Followed'. The 'Set' and 'Cancel' buttons are at the bottom right.

As shown in the previous screenshot, the **Additional Options** section allows you to customize whether the user can change the view used, along with a few other display options.

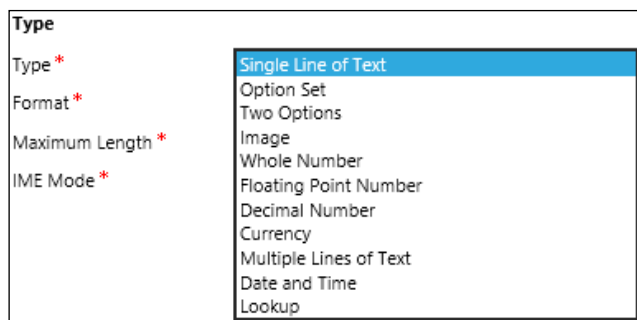
Fields

Fields are the building bricks of forms. They are used to collect and display a record's data. In Dynamics CRM, fields are defined with various data types. Just like the data that resides in the database, each field is defined with a related data type, and some specific fields include the additional formatting properties.

The data types used in Dynamics CRM are as follows:

- **Single Line of Text**
- **Option Set**
- **Two Options**
- **Image**
- **Whole Number**
- **Floating Point Number**
- **Decimal Number**
- **Currency**
- **Multiple Lines of Text**
- **Date and Time**
- **Lookup**

The following screenshot shows how the data type option window will look:



Depending on the data type selected, the field type can be set as **simple**, **calculated**, or **rollup**. The **calculated** and **rollup** fields were added starting with Dynamics CRM 2015, and they greatly enhance the customization experience where previously an extensive custom code was required to achieve the same result.

There are certain similarities between some of these data types. For example, the **Single Line of Text** and **Multiple Lines of Text** data types capture all the characters and are differentiated only by the total number of characters allowed. The **Two Options** data type is similar to the **Option Set** data type, but they capture only two possible options. They are also rendered differently on the form.

The numerical field enforces values such as **Whole Number**, **Floating Point Number**, and **Decimal number**. They are differentiated by the type of numerical value they can hold and by the formatting available.

Under each of these data types, there are various options that can be used to format the data. For example, in the **Single Line of Text** data type, data can be left as a string of characters limited by the length of the defined field, or it can be formatted as either e-mail, text, text area, URL, ticker symbol, or phone.

The **Whole Number** data type can be formatted as a regular whole number in the form of duration, time zone, or language.

- The **duration** field stored in the database is a value that represents the total number of minutes. In the form, the field is represented as a dropdown, with suggested options ranging from one minute all the way up to three days. The field is smart enough to interpret user input also. For example, if you type in 60 minutes, it resolves automatically to 1 hour. The duration formats supported include x minutes, x hours, and x days. You can also enter values such as x.x hours.
- The **time zone** field displays a list of options in the format (GMT-08:00) Pacific Time (US and Canada) or (GMT-12:00) International Date Line West. In the database, the values are stored as numbers.
- The **Language** field displays a list of all the languages provisioned in the current organization. The values are presented as a dropdown. At the database end, the selection is stored as a number using **Locale ID (LCID)** codes. These codes are four or five-digit codes and all the values are available from the MSDN documentation.

The **Currency** data type allows you to select the currency precision. You can select from a zero- to four-digit precision, as well as select the pricing decimal precision and currency precision. The pricing decimal precision is a global value defined in the system settings. The currency precision applies the precision defined by the currency used by the record.

The **Date and Time** data type allows you to select whether the date and time or just the date should be displayed.

The **Lookup** data type allows you to select the related entity where values are being selected. For example, a lookup field on a contact allows you to select the parent account by presenting a window that allows you to search for the specific account record. The lookup field works in relation to the entity relationships.

Spacers

The **Spacer** option is used for formatting. Because forms are generated by adding fields and ordering these fields on the form, in certain instances, we need to leave blank spaces for clarity. As such, a spacer will take the same space as a regular field, but no actual data will be present. The following screenshot illustrates the **Spacer** type on a form:

The screenshot displays a form titled "Form: Project". The form is divided into several sections. The "General" section is highlighted with a blue border and contains the following fields and spacers:

- Name *** (with a red lock icon) and a text input field containing "Name".
- Spacer** (a gray rectangular bar).
- Spacer** (a gray rectangular bar).
- Created By** and a text input field containing "Created By".
- Created On** and a text input field containing "Created On".
- Spacer** (a gray rectangular bar).
- Modified By** and a text input field containing "Modified By".
- Modified On** and a text input field containing "Modified On".

Below the "General" section is a "Section" containing a text input field with the URL "http://www.bing.com". To the right of the "General" section is a "Notes" section with a text input field labeled "Note Text".

Entity relationships

Entity relationships are the representation of relationships between various Dynamics CRM entities. The customization tools included with Dynamics CRM make it easy for system customizers to create new entities, modify existing entities, and create the relationships between them. Starting with Dynamics CRM 2015, hierarchical relationships are introduced standard to some entities. In addition, a visualization component allows you to graphically display the hierarchical relationships in both a tree structure as well as an entity-relationship diagram, as shown here:



Entity relationships define the association of one entity with other entities or with itself. For $N:N$ relationships, a new relationship is represented as a new table relationship in the database.

The simplest example of an entity relationship is the creation of a lookup for an entity. This creates a one-to-many relationship between the two entities. This allows you to associate multiple child records with a parent record.

Within Dynamics CRM, there are three types of relationships: one-to-many, many-to-one, and many-to-many.

One-to-many (1:N) and many-to-one (N:1) relationships

These kind of relationships define an entity record that can be associated with many records of a different entity. The difference between 1:N and N:1 is the direction of the relationship.

When viewing a primary entity record, you can see a list of the related entity records defined by the relationship. As a concrete example, an account can have multiple child contacts, while contacts can only have a single parent account.

Defining a custom **1:N Relationship** involves defining four options, that is, **Relationship Definition**, **Lookup Field**, **Navigation Pane Item for Primary Entity**, and **Relationship Behavior**. The following screenshot show the configuration options that are available when creating a 1:N or N:1 relationship in Dynamics CRM.

The following screenshot shows the customization screen for a relationship. Here, we can define the related entities and the relationship properties, as well as the standard behaviors.

Relationship
New

Working on solution: A001

4 Common
Information
Mappings

General

Relationship Definition

Primary Entity * Project Related Entity *

Name * new

Searchable Yes

Hierarchical No

Lookup Field

Display Name * Name * new

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 None



For more details on how to configure relationships, check out the MSDN documentation available at <http://msdn.microsoft.com/en-us/library/gg328297.aspx>.

Many-to-many (N:N) relationships

The N:N relationship is a special type of relationship that depends on a joint entity to create a relationship. This allows you to relate many primary entities with many child entities.

When viewing the record of the parent or child entity, in an **N:N Relationship**, you can see a list of any record of the related entity.

Creating a new many-to-many relationship involves defining the parent and child entities and naming the relationship, as shown in the following screenshot:

The screenshot shows the 'New Relationship' dialog box in CRM. The 'General' tab is selected. The 'Current Entity' is 'Account'. The 'Other Entity' is empty. The 'Relationship Definition' section shows 'Name' as 'new_', 'Relationship Entity Name' as 'new_', and 'Searchable' as 'Yes'.

Current Entity	
Entity Name *	Account
Display Option *	Do not Display
Display Area *	Details

Other Entity	
Entity Name *	
Display Option *	Do not Display
Display Area *	Details

Relationship Definition	
Name *	new_
Relationship Entity Name *	new_
Searchable	Yes

N:N relationships do not generate a hierarchy between related entities. In such a relationship, you do not define lookups or behaviors. The relationship is reciprocal.

A joint entity is generated automatically by the system, and it is not customizable. As such, you cannot add custom fields to it. If custom fields are required, create your join table by creating a custom entity with N:1 and 1:N relationships as needed.

Entity views and charts

Entity views are the queries saved against the system data. These queries apply filters to the present subsets of data as needed. The views also contain formatting details regarding how the data will be displayed, columns, and order. Views can be defined programmatically or using XML. When using XML, views can be exported, modified, and reimported back into Dynamics CRM. Using an unmanaged solution, the entity can be exported and the XML can be modified and then reimported into the organization.

An entity view is a saved query that is available globally throughout the organization. A view can also be defined at the user level and shared with other users. Each entity can have multiple views, with various filter conditions and formatting.

Dynamics CRM supports personal views as well as system views. A system view is a view that is deployed as part of a solution by an administrator. It is available to the whole organization. Personal views can be created by users. Once created by users, these views are owned by the user who created them, and they can be shared with other users. They are not part of a solution, and they are not transferrable to another organization through the export or import of a solution.

Each entity can have various types of views, such as **Advanced Find Views**, **Associated Views**, **Lookup Views**, **Public Views**, and **Quick Find Views**, which serve different purposes. Also, each entity will have one default **Public View**.

Public Views are views that are available across the records of the entity. One of these public views will be the default public view. You can have as many public views as you need.

The **Advanced Find View** tab is a view that is used to display results when using an advanced find. There can only be one advanced find view per entity.

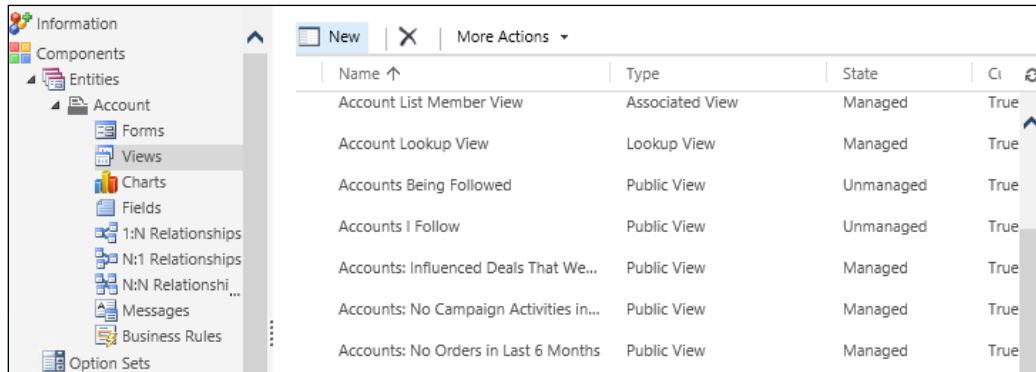
The **Associated View** tab is used to display data in a grid. There can only be one associated view per entity.

The **Quick Find View** tab defines the searchable columns when a search is performed using the list search control at the top-right corner of a list. There can only be one quick find view per entity.

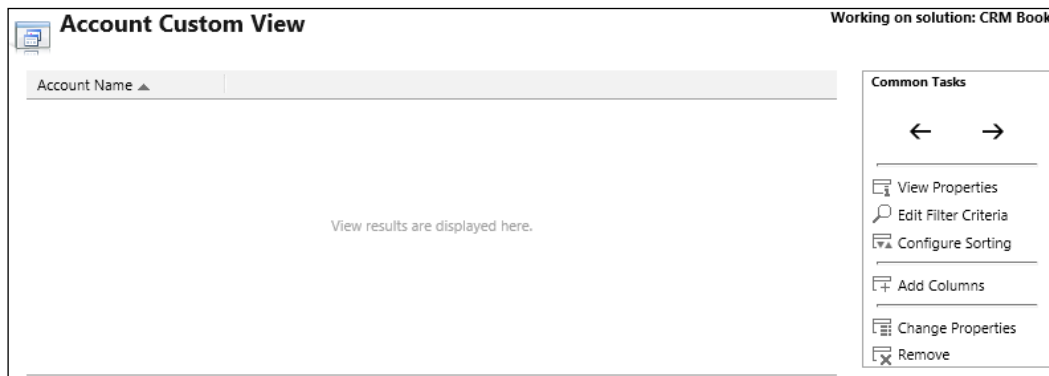
The **Lookup View** tab is the default view that is used to display lookup results. There is only one lookup view per entity, but other views can be configured to display these results.

Just like any other record in Dynamics CRM, public entity views can be created, updated, retrieved, deleted, and deactivated.

You can start creating a new view in a solution by adding an entity to the solution, navigating to **Views**, and clicking on **New**, as shown here:



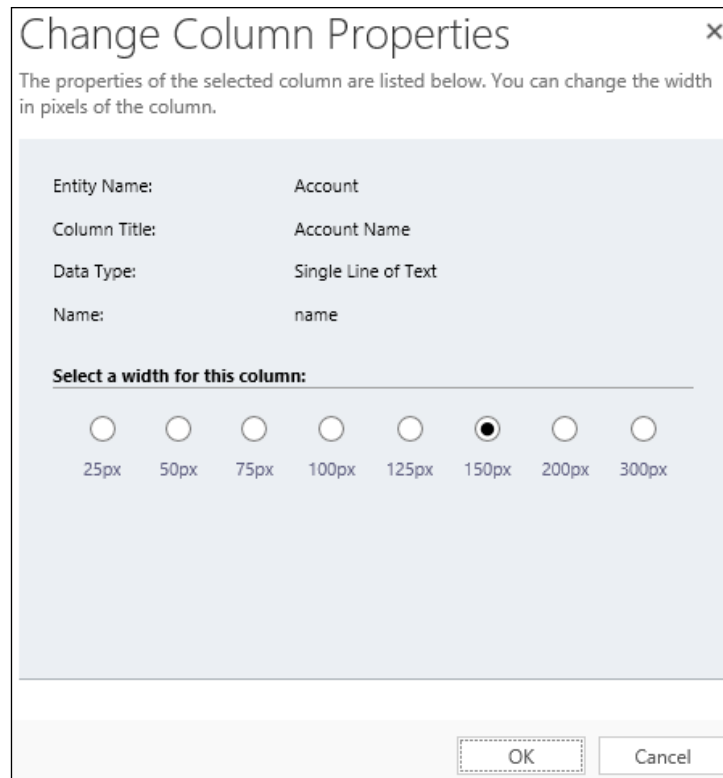
In the **Entities** tab, define the **Name** and **Description** fields. Once you are done, start configuring the view. You can customize the following **Custom Tasks** in a view:



The left and right arrows at the top right-hand side of the commands area allow a system user to move and rearrange the columns in a view. Select a column that you want to rearrange and click on the arrows until you have it positioned in the correct spot.

- **View Properties:** This option allows you to change the view's name and description.
- **Edit Filter Criteria:** This option allows you to define the filtering criteria for the view. Using a very simplistic wizard-based interface, a system customizer can easily create and enhance the filter applied to the view.

- **Configure Sorting:** This option allows a customizer to choose two filtering columns and the order of sorting for each. You can use one or both of the sorting options at the same time.
- **Add Column:** This option allows a system customizer to bring new data fields into the view from the same entity or from directly related entities. In a view of accounts, a system customizer can bring in information from the related created by system user. For **Quick Find Views**, the **Add Columns** option is replaced by the **Add View Columns** and **Add Find Columns** options. This allows you to define different columns in order to search against them the columns to be displayed in the view.
- **Change Column Properties:** This option allows a system customizer to modify each view's column properties. You can change the width of the column. You can also view the properties of the field's data type and internal name in this view, as shown here:



The dialog box is titled "Change Column Properties" with a close button (X) in the top right corner. Below the title, a subtitle reads: "The properties of the selected column are listed below. You can change the width in pixels of the column." The main content area is divided into two sections. The top section displays the following properties: Entity Name: Account, Column Title: Account Name, Data Type: Single Line of Text, and Name: name. The bottom section is titled "Select a width for this column:" and features a row of eight radio buttons corresponding to widths: 25px, 50px, 75px, 100px, 125px, 150px, 200px, and 300px. The 150px option is selected, indicated by a filled radio button. At the bottom right of the dialog are "OK" and "Cancel" buttons.

Entity Name:	Account
Column Title:	Account Name
Data Type:	Single Line of Text
Name:	name

Select a width for this column:

☐ 25px ☐ 50px ☐ 75px ☐ 100px ☐ 125px ☒ 150px ☐ 200px ☐ 300px

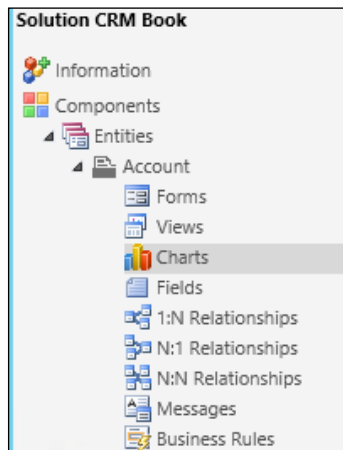
OK Cancel

- **Remove:** This option simply allows the system customizer to remove a specific column from the view.

Charts

Once we have customized a view, we can move on and create a chart. Charts are visual representations of the views created in the system.

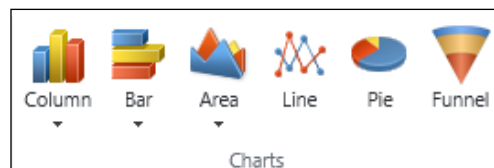
Within the **Solution CRM Book** window you use for customization, navigate to the entity to which you want to add a chart. Go to **Entities** and then click on entity name (for example, **Account**) and click on **Charts**, as shown in the following screenshot:



Most business entities will have a set of charts already created by default. You can modify these or create new ones.

In order to create a new chart, the system customizer needs to click on **New** from within the solution entity's charts section. They are then presented with a set of options to customize the chart as needed.

From this view, we can select the type of chart to be used. The options are **Column**, **Bar**, **Area**, **Line**, **Pie** and **Funnel**.



All charts are based on a view. As such, one of the first items that needs to be selected once the chart type is defined is the view used for the chart preview. You can select one of the entity views from the dropdown.

The next step is to name your chart and verify the preview. You can adjust the series used to generate the chart, add new series, define and add categories, as well as define a description for the chart.

Once you have created the charts, you can see them by navigating to the view. You can also start adding these charts to dashboards.

Dashboards

A dashboard is a special type of form in Dynamics CRM. It comprises up to six areas. Each of these areas can present types of data such as charts, lists, iframes, and web resources.

In Dynamics CRM, there are two types of dashboards. They are organization-owned dashboards and user-owned dashboards. The difference between these two types is in the behavior. An organization-owned dashboard, once created, must be published to make it available to the organization. As such, it cannot be assigned or shared. It is created as part of a solution and published with the solution.

A user-owned dashboard is a dashboard created by a user. As such, the user owns the dashboard, and they can assign or share it with other users. This type of dashboard functions in a similar manner to a personal view, where it is not part of a solution and cannot be moved to another organization through the standard solution export or import process.

The following screenshot shows how a generic **Sales Activity Dashboard** looks:

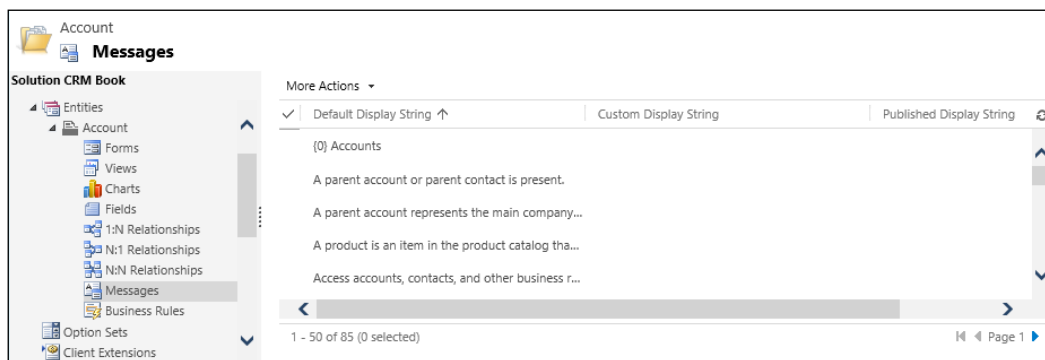


Messages

Messages are the customizable snippets of text that appear throughout the entity form. By default, there is a set of predefined messages that can be edited and replaced as needed.

Do not confuse these messages with the plugin execution messages. That is a development topic, completely different from what we cover in this book.

The following screenshot shows how a standard **Messages** configuration window looks:



All the messages that are being changed from the default messages must be published before they are made visible to all the users.

The view presents the **Default Display String**, **Custom Display String** (which is the string we have modified), and **Published Display String** dropdown lists. The **Published Display String** dropdown list can be different from the **Custom Display String** dropdown list if we have modified a message several times and the latest change is not yet published.

When working with multiple languages, only the base language messages can be modified through this interface. For additional languages, you can export the base language messages, translate them, and then reimport the translation for the additional languages.

Business rules

Business rules is a new feature added to Dynamics CRM 2013. It allows power users and nondevelopers to create automated processes without the use of custom code.

With the use of business rules, we can now apply form's logic to replace some of the JavaScript code that we previously used for customization. For situations where you want to validate fields as well as show or hide fields based on the values of another fields or for simple form manipulations, we can now implement business rules.

The main reason why business rules were introduced is to simplify the ability of system customizers to make changes to an organization without the need for a developer. While workflows allowed a nondeveloper to customize the system in a wizard-driven mode, they are used only on the server side. Nothing was available on the client side before this feature was introduced, and client-side behavior is very important when customizing forms for users.

The following actions are supported by business rules:

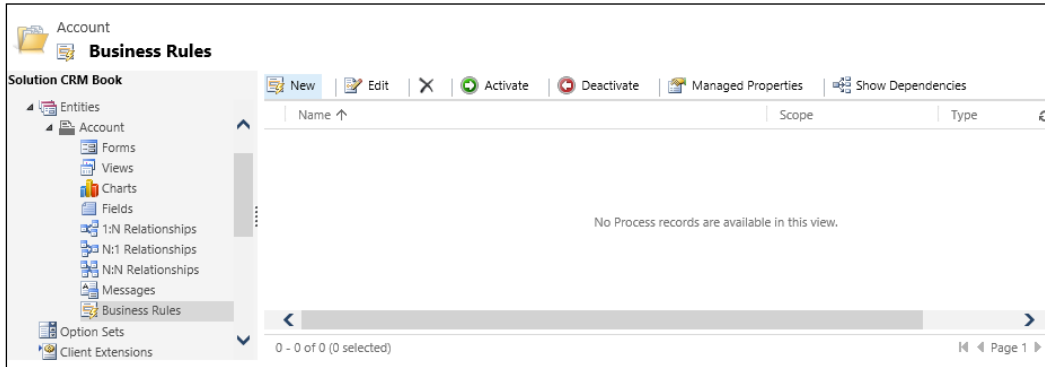
- Setting a field's default value
- Showing or hiding a field
- Setting a field's requirement
- Enabling or disabling a field
- Validating the data in a field and showing error messages



Business rules are packaged as part of a solution. Thus, they can be transported along with the rest of the customizations from one environment to another.

In order to customize business rules, you must at least have the system customizer role. Furthermore, to activate a business rule, you must activate the business rule privilege.

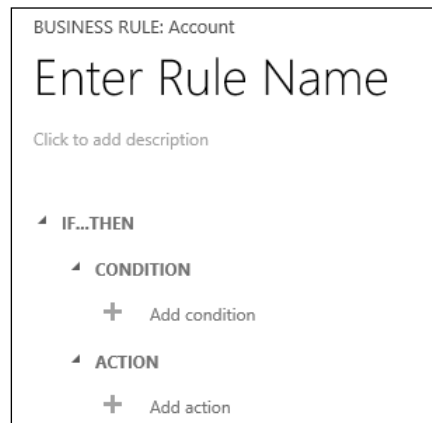
The most common way to create or modify a **Business Rules** tab is by navigating to a **Solution** tab, expanding the entity to which the business rule applies, and clicking on **Business Rules**, as shown here:



If there are existing business rules defined, you can open one of them for editing. Otherwise, you can click on **New** to create a new business rule.

Once the **Business Rule** window opens, give the new rule a name.

In order to assign the logic required to a business rule, you work with conditions and actions. The **Description** field allows you to write a short blurb that describes the behavior of the defined business rule. The following screenshot shows how the **Business Rule: Account** tab should look:



Conditions

Conditions are added by clicking on the + sign under the **CONDITION** tab. Each condition is composed of the field that triggers the condition, the operator, and the condition. A simple example is described in the following figure. We are looking for an **Account Rating** dropdown list that contains the value of **Red**. Assume that the **Account Rating** values for this scenario are **Green**, **Yellow**, and **Red**, as shown here:

The screenshot shows the 'IF...THEN' configuration window. The 'CONDITION' tab is active. It contains a table with columns: Field, Operator, Type, and Value. The first row is: If, Account Rating, Equals, Value. A dropdown menu is open for the 'Value' field, showing three options: Red (checked), Yellow, and Geen. Below the table, there is a '+ Add condition' button. The 'ACTION' tab is also visible with a '+ Add action' button. At the bottom right of the condition table, there are green checkmark and X icons.

Multiple conditions can be added to a business rule. The default relationship is **AND** between all the conditions. Starting with Dynamics CRM 2015, we are now able to also declare **OR** conditions. The **Condition** window should look similar to the following screenshot:

The screenshot shows the 'CONDITION' window. It contains a list of conditions joined by 'and'. The conditions are: 'If Account Rating contains "Red"', 'and Account Name equals Account Number', and 'and Account Number does not equal "0"'. There is a '+' button at the bottom to add more conditions.

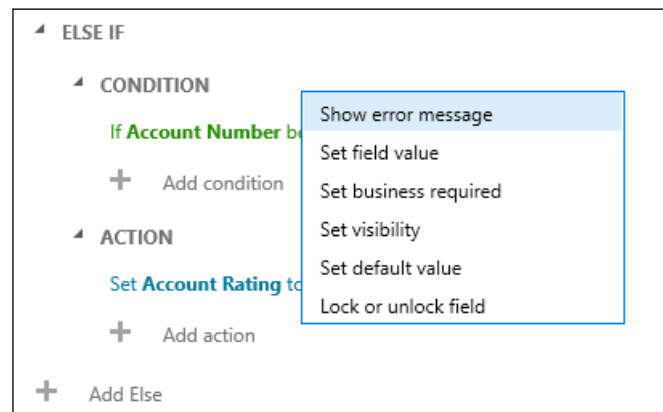
Actions

The **ACTION** tab defines what will happen in the form when the condition is met. These are the default available actions:

- Show error message
- Set field value
- Set business required
- Set visibility

- **Set default value**
- **Lock or unlock field**

As you can see in the following screenshot, you must select one of these values to define the type of action to be created:



Let's take a look at each of these actions in detail to see what options are presented:

- **Show error message:** This allows the system customizer to define a custom error message when a certain condition is met. When presenting an error message, the record cannot be saved until the error is corrected.
- **Set field value:** When setting a field's value through business rules, we choose the field that will be updated and the type. The type can be one of the three options: field, value, or formula. If you select field, the value of another field will be copied into this field, while value will populate the field with a fixed value. Moreover, the formula type executes a calculation and updates the field value with the result of the calculation.
- **Set business required:** This option is used to set the required status of the field. This business rule's set can choose between the values of **Not Business Required** or **Business Required**. **Business Recommended** is not supported through the use of business rules.
- **Set visibility:** This option is used to make a field visible or to hide it in the form based on the previously set condition. The options are **Show Field** and **Hide Field**.
- **Set default value:** This is similar in functionality to the **Set field value** option; this is only executed on creation. Further updates will not trigger set default value.

- **Lock or unlock field:** This option is used to define whether the field is enabled or not on the form. The options are **Lock** and **Unlock**. When a field is marked as locked, the user cannot change the field value in the form.

Business rules must be activated to make them available to users. Once you save a business rule, the **Activate** option becomes available on the ribbon. If you close the business rule, you can still activate it directly from the listing of business rules, or you can reopen it and click on **Activate** in the ribbon.

The business rules were created in order to address the most common actions to be performed on the system. As such, there are limitations on what you can achieve using business rules. For this reason, scripts are still the preferred method to customize the system if more complex rules must be implemented. Some of the limitations include:

- **All conditions are evaluated using an and join or an or join:** Here, the limitation is that all conditions must resolve to true. Starting with Dynamics CRM 2015, evaluation using other conditions such as `else` is now supported. There is no support to mix the `and` with `or` conditions.
- **Time when the business rules run:** Business rules run only when the form loads or when a field value changes. They do not run on record save. For the functionality required on record save, JavaScript or other customizations are required.

Business rules only support the interaction with the form field. All other elements of the form are only accessible through scripts.

The `onchange` event are not being triggered on field value changes as a result of business rules. The reason why this is implemented is to avoid creating a circular reference.

Business rules targeting fields that are not on the form will not run and will not present an error message.

For CRM for tablets, the business rules are cached on an application load. If a business rule is changed, the only way to refresh it on a tablet is to reload CRM for tablet.

When working with business rules, always take into consideration the order of precedence of customizations. System customizations are executed in the following order:

- First, all system scripts are applied
- Next, all custom form scripts are applied

- Next, client-side business rules are applied in the order in which they were activated, from the oldest to the newest

Starting with Dynamics CRM 2015, we can now customize business rules to execute on the server side (on the server) by setting the **Scope** field to **Entity**, as shown here:

The screenshot shows the Dynamics CRM Business Rule configuration window. At the top, there are buttons for 'SAVE', 'SAVE AS', 'SAVE AND CLOSE', and 'ACTIVATE'. Below these buttons, it says 'BUSINESS RULE: Account'. The main title of the rule is 'Demo Business Rule'. Below the title, there is a link that says 'Click to add description'. On the right side, there is a 'Scope' dropdown menu. The dropdown is open, showing four options: 'Entity' (which is selected and highlighted in blue), 'All Forms', 'Information', and 'Account'. A question mark icon is visible next to the dropdown menu.

Summary

Throughout this chapter, we looked at the main component of the three system modules: an entity. We defined what an entity is and we looked at what an entity is composed of. Then, we looked at each of the components in detail and we discussed ways in which we can customize the entities and extend the system. We investigated ways to visually represent the data related to entities and how to relate entities for data integrity. We also looked at how to enhance entity behavior with business rules and the limitations that the business rules have versus more advanced customizations, using scripts or other developer-specific methods.

The next chapter will take you into the business aspect of the Dynamics CRM platform, with an in-depth look at all the available business processes. We will revisit business rules, and we will take a look at other ways to enforce business-specific rules and processes using the wizard-driven customizations available with the platform.

4

Business Processes

In the previous chapter, we looked at the basics of working with entities in Dynamics CRM and the essentials of customizing these entities. Now it's time to look at how the Dynamics CRM platform impacts our business and how we can tailor it to fit most, if not all, of our business needs.

This chapter will look at the following topics:

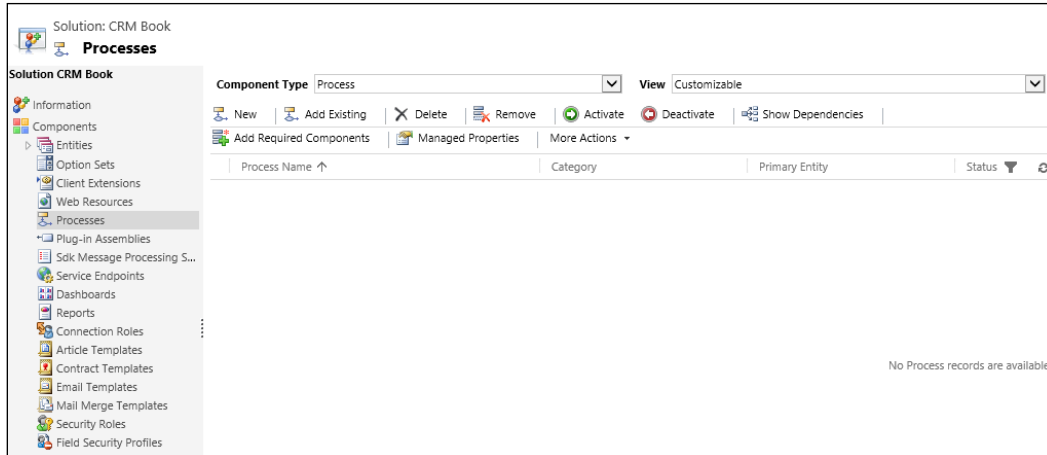
- Processes
- Types of processes
- Dialogs
- Workflows
- Business rules
- Business process flow

We'll be looking at how to work with each of the elements that comprise the sales, service, and marketing modules. We will also go through the customization options, and how we can extend the system to fit new business requirements.

Processes

In the context of Dynamics CRM, **processes** is a generic category that covers a few functional features, all grouped together. A process is any type of automation introduced as part of customizing the system, and it involves multiple actions grouped together. As such, some examples of processes supported by the platform include dialogs, workflows, actions, and business process flows.

In the context of customizing Dynamics CRM, processes are created and grouped as part of one or more solutions. Within the solution, processes are listed as a separate category and are accessible on their own configuration tab, as presented in the following screenshot:



When working within a solution, we can add new or existing processes, remove processes, or completely delete them. Other options include the activation and deactivation of a process. Any process, in order to be available to users, must be activated. As long as a process is activated, it cannot be removed or deleted.

When working with a large number of processes customized in a solution, you can order the processes view by any of the columns available, either ascending or descending. You can also apply filters to sort and reduce the number of processes displayed in that view. This will help a lot when you want to retrieve a specific process from a large number of customized items.

Processes can have defined and specified dependencies. As such, a process could be related to another process in a parent or child relationship. A process can have one or more child processes depending on the complexity of the business requirements. Splitting a large process into parent and child processes is a good practice to help manage functionality in smaller and more manageable chunks, or to avoid repeated customizations of the same steps in multiple processes.

There are three ways to create processes in Dynamics CRM:

- The most common method used by power users and administrators is interactively, through the user interface. The process builder in Dynamics CRM is a pretty robust and simple-to-use tool that allows you to build custom processes with no code. This will be quite appealing to power users who can customize aspects of the system without having to call for support from a development team, and waiting for the features to be implemented.
- Another method is by creating custom processes using code. This method is targeted at developers and uses workflow-related classes from the **software development kit (SDK)**. This is a very developer-focused approach, and it involves planning, designing, developing, testing, and deploying custom code solutions. Usually, this approach involves a strict deployment process and tends to involve various teams in producing proper packaged solutions.
- Finally, the last method to create processes is by importing already developed processes from other environments or solutions. These processes come packaged in solutions. They can be either internally created or can come from an external source like a system customizer or an **Independent Software Vendor (ISVs)**.

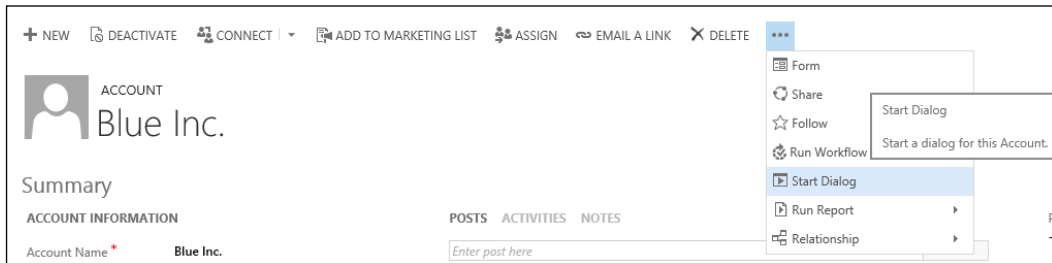
Dialogs

One of the common processes customizable in Dynamics CRM is the dialog.

A dialog is a type of process used to create an interactive data entry and a set of forms that guides the user step by step through a scenario. This process relies on continuous user interaction and requires user input to run through to completion. Dialogs can be used to guide users through a standard scripted scenario, capturing information in an organized manner, branching of scenarios, and so on.

A dialog presents the user with an interface similar to a wizard. The user can make the appropriate selection at each step of the dialog, and progress through all the steps to completion. Dialogs can be used for data capture, as well as to guide the user through a predefined scenario. This can be very helpful in call center scenarios where, based on specific customer responses, a path can be automatically selected to guide the service representative to the best solution.

A dialog is usually launched by the user, but it can also be customized to be triggered by an action on the form. Launching a dialog is done by navigating to a record and selecting **Start Dialog** from the ribbon, as shown in the following screenshot:



Once you select the **Start Dialog** option, you are presented with a dialog selection window, which is shown in the following screenshot. Here you can select any of the **On Demand Dialogs** available for the specific type of record.

The 'Look Up Record' window is displayed, allowing users to search for records. It includes search criteria fields for 'Look for' (set to Process), 'Look in' (set to On Demand Dialogs), and a 'Search' field. A checkbox for 'Show Only My Records' is also present. Below the search fields is a table listing the search results.

	Process Name	Created On	Modified On	Status	
✓	Parent Dialog	10/11/2014 1:40...	10/11/2014 2:02...	Activated	

At the bottom of the window, there is a pagination bar showing '1 - 1 of 1 (1 selected)' and 'Page 1'. Below the pagination bar are three buttons: 'Add', 'Cancel', and 'Remove Value'.

Dialogs can be configured to be on-demand processes or child processes. An on-demand process is available to be run directly by the user or automatically started through customization. A child process can be triggered only by a parent dialog.

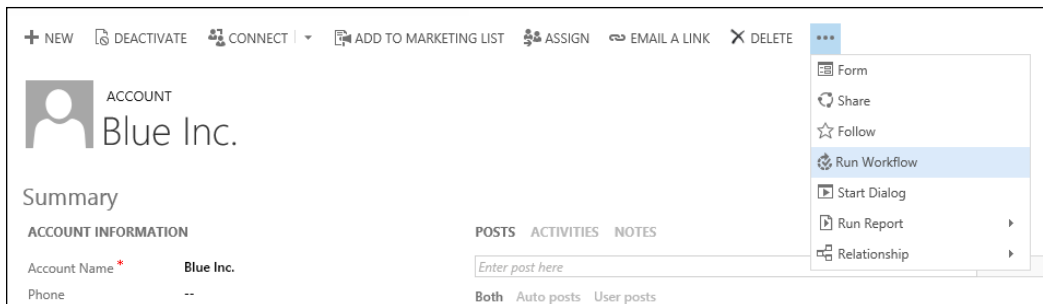


Dialog information is stored in the context of the running process in an entity called Process Session.

As opposed to workflows, dialogs cannot be created outside of Microsoft Dynamics CRM. They must be created within the platform and exported as part of a solution. They can run against only one specific entity at a time.

Workflows

A workflow is another type of process that can be defined within the Dynamics CRM platform. This process is used to model and automate business processes. Workflows are processes that run with no user interaction. They are scheduled and run asynchronously. They are triggered either automatically based on certain events on the entity forms or specific conditions, or they can be started manually by a user. Starting a workflow manually is done by navigating to a record and selecting the **Run Workflow** option in the ribbon, which you can see in the following screenshot:



Once the **Run Workflow** option is selected, the user is presented with a dialog to select the **On Demand Workflow** to be run. The following screenshot will give you a clear idea:

Process Name	Created On	Modified On	Status
✓ Account Renewal Process	12/3/2014 2:20...	12/3/2014 2:20...	Activated
Collect Account Details	12/3/2014 2:17...	12/3/2014 2:18...	Activated
Track Customer Call - New Case	12/3/2014 2:19...	12/3/2014 2:19...	Activated

If no workflows are customized for this specific entity, or no workflows are enabled, the **Look Up Record** view will not display any records. For records to be available in this view, a few conditions must be met: the workflow has to be enabled, the workflow has to be targeted to the entity we are trying to run it against, and the workflow must be an on-demand workflow. No child workflows can be selected to be run in this way. In addition, the user must have the permissions to run workflows and the workflow should be defined in the scope of the current user.

Workflows can be created in the same fashion as dialogs – by using the Dynamics CRM process builder wizard, by creating them in custom code, or by importing them from other solutions. In addition, workflows can be created declaratively. This process does not involve writing any code, and you do not have to compile the code. In this approach, you declare the workflow definitions using a language called **Extensible Application Markup Language (XAML)**. This is a declarative markup language used mostly to simplify creating user interfaces for .NET applications.



XAML workflows are not supported in Dynamics CRM Online.

While custom-coded plugins can perform almost the same operations as workflows, there are certain situations where a workflow is recommended over a plugin. These include situations where the business logic needs to be updated regularly by non-developer users, or when we need the ability to start a process manually.

Workflows can be distributed from one environment to another as part of a custom solution. There are, however, some considerations to be aware of. If your workflows reference specific entity instances, the unique IDs of the entity will differ in a new environment. Dynamics CRM only resolves system user and currency records based on the full name property, while all other entities do not get resolved. For this reason, if you deploy workflows as part of a solution to another environment, you must verify after deployment that all workflows are enabled. Workflows where the previous condition is encountered will remain in the draft status, and will require the user to alter the deployment to correct the references and reactivate the workflows.

Just as with dialogs, workflows are in a draft state while they are being worked on. Once you are ready to make them available to users, you must activate them. On activation, the workflow subscribes to specific events and listens for them to be triggered. Once triggered, the workflow creates a new asynchronous operation and adds it to the asynchronous service queue. As such, workflows run asynchronously.



Asynchronous operations can be suspended and restarted by users.

Running workflows asynchronously allows Dynamics CRM to queue execution and process operations at a later time. This allows the platform to manage resources efficiently, and allows long-running processes to be paused and resumed as needed.

Using the asynchronous service, long-running processes can be safely paused and resumed while the state is being saved. This allows the system to restart without losing the process state. This save takes advantage of the persistence service by saving the state on the disk. It also allows a process that crashed to restart from the last persisted point. While asynchronous processes, in most cases, run within a reasonable amount of time, there is no control over when exactly they will run.

Real-time workflows

By nature, real-time workflows are very similar to regular workflows in Dynamics CRM. The process of their creation is identical to that of regular workflows. This type of workflow was introduced with Dynamics CRM 2013, and involves a change on the backend of how the information is processed. These processes are not queued, but just like plugins, they execute immediately or in response to a message.

Real-time workflows execute in the same stage as synchronous plugins. They can execute before, after, or during the main operation. They can also be ranked within a stage like plugins.

These workflows can run in the context of either the current user or the workflow owner. When a workflow runs manually, it only runs in the context of the current user.

A limitation of real-time workflows is that they cannot contain any delay or wait activities.



A real-time workflow can be converted to asynchronous and back to real-time. The workflow must be in the draft state to modify it.

Actions

Actions are a special type of process in Dynamics CRM. They were introduced with Dynamics CRM 2013, and are used to define custom messages. Actions are used to add new functionality to the organization web service or to combine multiple organization web service message requests into a single one.

The basic actions in most systems are defined by verbs such as create, update, and delete. CRM systems add assign to this list. Through actions, we can define additional functionalities like escalate, approve, schedule, route, and so on. By combining processes based on the core actions, system customizers can create new actions for specific business needs.

Actions are defined by implementing workflows. The action workflows are registered in the core operation of the execution pipeline.

Actions are supported in both on-premise and online Dynamics CRM organizations, but just like workflows, when defined using declarative XAML, they are only supported in Dynamics CRM on-premise and **Internet Facing Deployment (IFD)** scenarios.

One main difference between actions and regular workflows is that actions can be declared global, where they are not associated to a particular entity. Also, actions are triggered from a custom workflow activity or plugin.

 Actions always run in the context of the calling user.

One aspect to be aware of when defining actions is that they are not supported with offline clients. If the expectation is that offline access is required for certain actions, a more creative approach must be taken and plugins might be used.

Actions can be created in two ways: through the process builder, just like workflows and dialogs, or through custom code. The first approach is targeted mostly at power users as a no-code approach, while the latter requires a developer to be involved in the creation of the action definition.

Just like workflows and dialogs, actions can be added to a packaged solution and transferred to another environment.

The process to create an action through the process builder is quite simple. In the context of a solution, navigate to **Processes**. On the processes listing view, select **New** to create a new process. As shown in the following **Create Process** window that pops up, define the required fields and select Action in the **Category** dropdown. For the entity definition, you can create an action against a specific entity or a global action.

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: * Escalate

Category: * Action Entity: * None (global)

Type: ☒ New blank process ☐ New process from an existing template (select from list):

Template Name ↑	Primary Entity	Owner
No process template records are available in this view.		

0 - 0 of 0 (0 selected) Page 1

Properties

OK Cancel

With the selections in place, you are ready to create the new action. Select **OK**.

The creation of the action from this point onwards is quite similar to creating a workflow. The main difference is the ability to define a multitude of arguments of various data types, as well as the direction of arguments, as described in the following screenshot:

Process: Escalate

Information

General Administration Notes

Hide Process Properties

Process Name * Escalate

Unique Name * new_Escalate

Activate As Process

Entity Case

Category Action

Enable rollback ☒

Workflow Log Retention

☒ Keep logs for workflow jobs that encountered errors

Show Process Arguments

Add Step Insert Delete this step.

Type a step description here.

If Case:Status equals [Active], then:

Type a step description here.

Assign: Case to Mike Smith Set Properties

The **Enable rollback** configuration on the action creation screen allows us to define when we disable the rollback feature. There are situations when the code runs out of scope for CRM. These actions cannot be rolled back, and so we can disable the option in the action configuration form.


 Using actions allows us to run custom business logic using server-side events.

Business rules

Business rules were introduced with Dynamics CRM 2013 to assist power users without any coding skills in creating validation rules. As such, they are a very powerful feature added to the system customizer's toolbox.

A lot of customizations include various validation rules. From field-level validation to showing or hiding form fields based on values selected in other fields, business rules allow power users to implement a variety of rules in a pseudocode format. No code is required, as the whole creation of business rules is wizard-based.

While this is a step in the right direction, business rules will not replace JavaScript completely. For complex validations and implementation of complicated rules, you will find that certain limitations require a JavaScript developer to be involved.

The main difference between workflows and business rules is the location where the process runs. Business rules are primarily meant as client-side logic, and the result is expected to directly and immediately influence the user's interaction with the system.

The most common applications for business rules involve the following processes:

- Set or clear a field's value
- Set the required or not required level on a field
- Enable or disable fields
- Show or hide fields
- Validate field data
- Show error messages to users
- Set default values

Business rules are included in a solution at the entity level. This way, they can be deployed from one environment to another.



Business rules can be applied not only to the main entity forms, but also to quick create forms.

When creating business rules, you can set the scope to either a specific form or all forms. Selecting all forms applies the business rule to all main and quick create forms for the entity. You have no ability to select a few specific forms.

Creating a new business rule involves the following steps:

1. From the solution package that will hold the customizations, navigate to an entity and expand the options. Click on **Business Rules**.
2. In the business rules grid, select **New** to create a new business rule. You will be presented with a new window that allows you to customize the business rule definition. The final window should look like the following screenshot:

BUSINESS RULE: Account

Demo Business Rule

Click to add description

- IF...THEN
 - CONDITION
 - If **Account Number** begins with "100"
 - or **Account Number** begins with "200"
 - + Add condition
 - ACTION
 - Set **Account Rating** to "Red"
 - + Add action
- ELSE IF
 - CONDITION
 - If **Account Number** begins with "300"
 - + Add condition
 - ACTION
 - Set **Account Rating** to "Yellow"

3. Give your new business rule a name. Make sure the name is descriptive enough to allow other users customizing the system in the future to quickly understand the purpose of this business rule.
4. Next, you have to configure the conditions for execution. Here you can set various conditions by selecting the **Add condition** option represented by the + sign. Selecting this option opens up a grid where you can select the field against the condition that is running, the operator, and type. The following screenshot shows the creation of a new condition:

	Field	Operator	Type	Value
If	Account Number	Begins with	Value	100

✓ ✕

One limitation of business rules is that all conditions are joined together with either the AND or the OR operator. You cannot mix AND and OR conditions.

Operators used within the condition include most of the common conditions such as equals, does not equal, contains, does not contain, begins with, does not begin with, ends with, does not end with, contains data, and does not contain data.

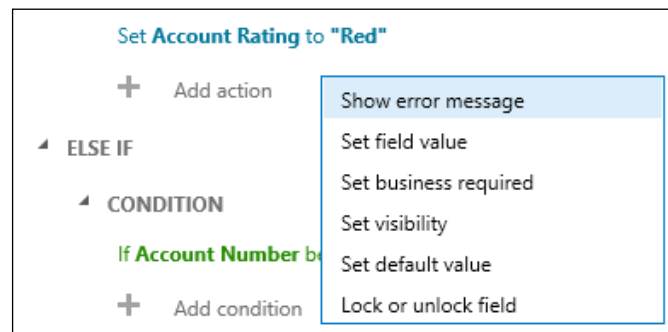
The type allows us to define a condition against a field or the value of a field.

The field allows us to select any of the fields available for comparison.

A simplistic example of a condition can be described in pseudocode as *Account Number does not equal 0*.

Once you have the conditions defined, we can move on to defining the actions. We can configure one or more actions as required. All the actions will be executed.

Adding an action is done similar to adding a condition, by clicking on the **Add action** option represented by the + symbol. Performing this action presents us with a drop-down menu as shown in the following screenshot of available actions to be configured:



Starting with Dynamics CRM 2015, a new option has been added to the actions. Now we can also set a default value for a field.

Through these preconfigured actions, we can generate and display a defined error message, set a field's value either as a fixed value or the value of another field, set a field as "business required" or not, set a field's visibility, or lock or unlock a field.

As we can observe, some of the limitations include the lack of ability to set a field as business recommended, or set the value of a field to a calculated value. For these situations, we still need to revert to the JavaScript.

Finally, provide a description of the business rule in the description field. This will help future system customizers in determining the reasons for creating this business rule, as well as the business logic. You can also track here the updates performed while customizing the system.

Once your business rule is fully customized, save it. In order to make it available to users, you must activate it. Later on, if you need to modify it, you must deactivate it before any modifications can be done.



You can create a business rule based on another existing business rule by performing a Save As and modifying the new rule as required.

When using business rules to customize a system, you must be aware of the order of execution. First, all system scripts are executed, followed by custom scripts on the form, and then the business rules logic. When multiple business rules execute against the same fields, the business rules are applied in the order in which they were activated. The oldest activated business rule is applied first.

Limitations of business rules

While business rules are a very handy customization option for power users, we must take into consideration the following limitations:

- Business rules do not run on record save. They are triggered by the onchange message of the field, or by the form onload.
- If a field associated with a business rule is removed from the form, the business rule will not run. No error message will be presented to the user or logged in the system.
- Interaction of business rules is limited to form fields only. No other form elements can be manipulated through business rules.
- When you perform a field value change using business rules, the onchange event is not triggered. As such, if you have scripts set to run on the onchange of that field, they will not run when the value is updated by a business rule.
- Certain whole number fields cannot be used in business rules. They include time zone, duration, and language, and they are not presented in the rule editor.

Nonetheless, business rules are an important advancement added to the system. They enhance the ability of non-developer system customizers to create rules through a visual editor and implement logic with no code.

Business process flows

Starting with Dynamics CRM 2013, Microsoft introduced business process flows. Additional functionality and features have been added with each update afterwards. They are a feature similar in design to other processes, but provide very different capabilities. Business process flows provide users with a visual way to guide a system user through a predefined process to get work done. User experience is greatly enhanced and streamlined. They provide visual guidance through a predefined business process, highlighting user interaction with the system and defining the steps and the requirements at each step in order for a user to complete a process. These processes can easily be customized through a wizard-based, no-code approach. They also allow a user to select the process type to be used when performing an activity.

Business process flows are used to define a process and the required steps for users to take to achieve a desired outcome. Each step is visually indicated through graphical representation on the record, and includes a listing of required fields. A user has the ability to navigate through the defined steps, determine what needs to happen at each step, and make decisions regarding the best approach to take to complete a process. A user also has the ability to advance the process to a new step once certain business requirements are met, by clicking on the **Next Stage** link as shown in the following screenshot:

Qualify (Active)	Develop	Propose	Close	Next Stage
Existing Contact? click to enter	✓ Estimated Budget \$3,000.00		Capture Summary click to enter	
Existing Account? click to enter	✓ Purchase Process Committee			
✓ Purchase Timeframe Next Quarter	Identify Decision Maker mark complete			

An example of a predefined business process flow is the lead-to-opportunity sales process. This is one of the standard processes defined in Dynamics CRM, and provides a good representation of the potential of business process flows on the platform. All existing business process flows can be customized to match existing business requirements, and new processes can be created from scratch.

The main purpose of business process flows is to reduce the amount of user training by enhancing the ability to guide the user through predefined steps.

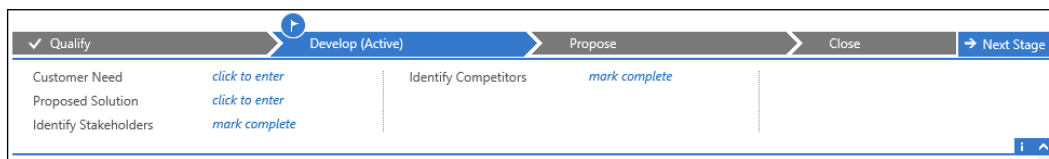
Business process flows can be configured to support sales methodologies specific to each business and group, as well as service response processes. You can also customize business process flows for any other business requirements involving standard or custom entities defined in Dynamics CRM.

Following a specific predefined business process flow greatly reduces the amount of mistakes a user can make when performing his or her duties, and allows users to quickly and efficiently correct mistakes. This results in increased customer satisfaction.

With the help of business process flows, a system user can easily determine where he or she is in the process, what needs to be done next, and what has already been completed.

Each business process flow defines a collection of stages and steps. They are visually displayed at the top of the records that have business process flows enabled.

Stages are the main groupings, and contain a set of steps. They are represented visually by the chevron headers. The current step is marked with a blue circle containing a flag. The completed stages are represented with a tick before the stage name, while the future stages are represented with just the stage name. A user can navigate to past or future stages by clicking on the chevron for each stage. Doing so, they will see the steps associated with each stage as shown in the following screenshot:



You advance to the next stage by clicking on the **Next Stage** button at the top-right corner of the business process flow representation or by performing a specific action. On a lead for example, when you qualify the lead, you are moved automatically to the develop stage.

Within each stage, the completed steps are represented with a check mark in front of each field, while the remaining steps are color-coded and marked with the **click to enter** message or a message specific to the field data type.

Starting with Dynamics CRM 2015, business process flows now provide the ability to define logic branching. For situations where the flow is not linear, now we have the ability to define various conditional paths of execution.

Business process flows provide a streamlined experience for capturing user input at each defined stage. A complete solution can mix business process flows with other system processes to enhance and validate user interactions with the system, thus creating quite complex scenarios with absolutely no involvement from developers. As such, power users can create and add to the system complex business requirements and scenarios, and maintain them without having to rely on a development group or partner.

The data captured in the business process flows is also replicated on the form fields, where other custom processes or customizations can be triggered to execute validation or any other type of customized processes. This gives us the ability to not only visually guide users, but also validate that the work performed is correct and in line with the current company business processes, requirements, restrictions, and service-level agreements.

 Business process flows can set field values for fields that are not present on the form. As such, the form can be kept simpler, while still collecting all the necessary information on the record.

The order of execution is very important when designing business process flows. Other processes that are initiated by changes to business process flows; fields are triggered only when the data in the form is saved.

With the December 2012 update to Dynamics CRM Online and on-premise, Microsoft has added three system business process flows. These business process flows have also been enhanced in functionality in Dynamics CRM 2015. They are as follows:

- Lead-to-opportunity sales process
- Opportunity sales process
- Phone-to-case process

These three processes are hard-coded, and some of the capabilities are not available when creating new business process flows.

When creating and working with business process flows, they can span across one or multiple entities. Processes can be created to be in an entity, and continue through other entities to completion. For example, you can start a business process flow at the opportunity record level and progress through to quote, order, and invoice. You can also return in the last step to update the opportunity record with the final conclusion of the process.

 One limitation of business process flows is that they cannot span for more than five related entities.

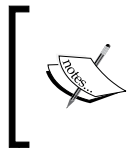
From a user's perspective, we have the ability to define which business process flow is required when working with a specific record. A user with a role of system customizer or administrator can create multiple business process flows for the same entity. When creating a new entity record, the user then has the ability to select which business process flow applies to the particular scenario used.



Up to ten business process flows can be activated per entity.

In Dynamics CRM, business process flows can be associated with specific security roles. This way, specific users can be restricted from using specific business process flows. The functionality is quite similar to restricting forms by security role. The default business process flow assigned to an entity is the oldest flow activated on the entity that the user has permissions to use.

When multiple business process flows are activated on an entity, the user has the ability to choose which one to use. He or she can choose a process from the command bar, and follow the onscreen steps to change to a different business process flow. On changing the process, the newly assigned process starts at the first step.



If a user opens a record with a business process flow assigned that he or she does not have permissions for, the business process flow will be displayed but remain disabled. Thus, the user cannot modify anything on the process itself.

Another limitation of business process flows is in the number of stages available. For performance and usability reasons, a business process flow cannot contain more than 30 stages.

Also, business process flows are available only for those entities that use an update form. This limits the use of business process flows to custom entities and the following standard system entities: Account, Appointment, Campaign, Campaign Activity, Campaign Response, Competitor, Contact, Email, Fax, Case, Invoice, Lead, Letter, Marketing List, Opportunity, Phone Call, Product, Price List Item, Quote, Recurring Appointment, Sales Literature, Order, User, Task, and Team.

For custom created entities, the business process flows must be enabled on the entity definition. Once this option is enabled, it cannot be disabled.

Creating business process flows

The process of creating business process flows is quite similar to creating any other process in Dynamics CRM, but the process definition is quite different. We start by navigating to the solution that will store our customizations. We go to the processes section. This section will display all the existing processes customized in this solution. This includes not only business process flows, but also workflows, dialogs, and actions.

We can easily see in the processes view the status of each customized process. We can also sort and filter by any of the columns in the view. The following screenshot will give you a much clearer understanding:

Component Type

Process

View

Customizable

New

Add Existing

Delete

Remove

Activate

Deactivate

Show Dependencies

Add Required Components

Managed Properties

More Actions

✓	Process Name ↑	Category	Primary Entity	Status
	Copy Account	Dialog	Account	Draft
	Escalate	Action		Draft
	Generate Contact ID	Workflow	Contact	Activated
	Parent Dialog	Dialog	Account	Activated

Here we click on **New** to create a new business process flow. We are presented with a new **Create Process** window. The **Create Process** window will look like the following screenshot:

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: ☒ New blank process
☐ New process from an existing template (select from list):

Template Name ↑	Primary Entity	Owner
No process template records are available in this view.		

0 - 0 of 0 (0 selected) Page 1

Properties

OK Cancel

Populate all required fields, defining a name for the process and the entity it's being applied to, and from the **Category** dropdown, select **Business Process Flow**. If a template is created in the system, you can use the template as a starting point for your new process.

The following window presents us with the options to define the stages and steps of a business process flow, as well as its generic properties:

BUSINESS PROCESS FLOW

Account Promotion to Gold

Details ▾

Stage Name *	Step Name	Value	Required
Identify Gold Eligibility	Customer Size	Customer Size	☒
Entity *	Account Rating	Account Rating	☒
Account			
Stage Category			
Qualify			

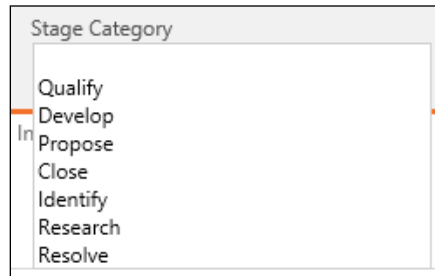
+ Insert stage after branch ↶ Add branch

At the top of this window, we have the controls to manage saving, activating, deleting, and other features.

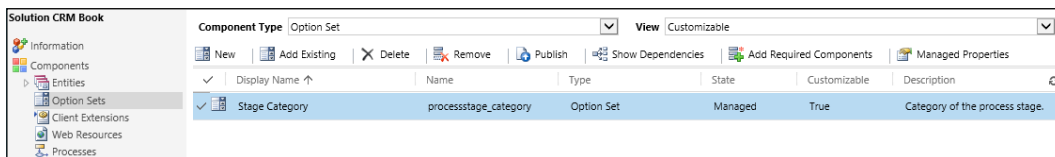
Expanding the details section, we can still modify the process name in this view, but we can no longer change the entity. A description field is also provided. While not mandatory, it is a good practice to put in details about the expected business requirements this process handles.

The next section on this form presents us with the options to create and manage stages. As mentioned earlier, stages are represented visually as chevrons and they contain one or more steps.

Give each stage a concise and clear name that describes where in the process the user is. Next, select a **Stage Category** from the available options. The options in **Stage Category** are mentioned in the following screenshot:



In fact, these stage categories are customizable and available as a global option set. You can add this set to your custom solution by adding an existing option set, as shown in the following screenshot:



Next, define your steps by providing a step name, a field, and whether the field is required or not. Define as many steps as needed per stage.

Once you have your first stage defined, define the rest of the stages. Starting with Dynamics CRM 2015, we can customize branching in our stage definition. You can branch with various conditions the same way as you declare conditions in business rules.

This will conclude the definition of your business process flow.

In order to make the process available to users, don't forget to activate it. Once activated, it will become available to the users that have permissions to execute it.

BUSINESS PROCESS FLOW

Account Promotion to Gold

Details ▾

Stage Name *	Step Name	Value	Required
Enter a stage name	Account Rating	Account Rating	☒
Entity *	Account Number	Account Number	☒
Account	No. of Employees	No. of Employees	☒
Stage Category			
--			

+ Insert stage after branch + Add branch

If Account Rating equals "Green"

+ Insert stage

Stage Name *	Step Name	Value	Required
Promote to Gold			

To define a business process flow for a specific security role, click on the **Enable Security Roles** button on the ribbon.

BUSINESS PROCESS FLOW

Account Promotion to Gold

Details ▾

This opens up a new window similar to the one presented in the following screenshot that allows you to enable the process to everyone or to select one or more specific security roles to have access to this process:

Enable Security Roles: Lead Progress Flow ?

Only users with selected security roles can assign this process to a new record. These users can also switch to this process on an existing record.

☐ Enable for everyone

☒ Enable only for the selected security roles

✓	Name	Business Unit
	Marketing Manager	crmbook
	Marketing Professional	crmbook
✓	Sales Manager	crmbook
✓	Salesperson	crmbook
	Schedule Manager	crmbook
	Scheduler	crmbook
✓	System Administrator	crmbook

1 - 15 of 15 (4 selected)

Another important customization option presented to power users is the ability to create a new business process flow from an existing one. You can open an existing process and click on **Save As** on the ribbon. This creates a copy of the existing **Business Process Flow** and allows you to change the process name and then modify any of the stages or steps to suit your new business requirements. The following screenshot shows you a copy created based on the default **Lead Progress Flow**:

BUSINESS PROCESS FLOW

Lead Progress Flow (Copy)

Details ▾

Stage Name *	Step Name	Value	Required
Enter A Stage Name	Existing Account?	Existing Account?	☒
	Existing Contact?	Existing Contact?	☒

Entity *
Lead

Stage Category
Qualify

+ Insert stage ↗ Add branch

Note that the newly created business process flow retains the same properties as the original, but the name has the **Copy** suffix appended.

Starting with Dynamics CRM 2015, under each stage, we are presented with an **Add branch** option. This allows logical branching in a business process flow and greatly enhances the capabilities of customization.

Triggering workflows on business process flow stage changes

The beauty of business process flows is that they allow a system customizer to declare workflows that are being triggered by a change of stage in a business process flow. The whole configuration lies with the custom workflow, and a workflow can be added or removed at a later time without affecting the original business process flow.

In order to achieve this functionality, create a new workflow. In the workflow definition, select the **Record fields change** option in the **Start when** field.

▼ Hide Process Properties

Process Name *

Activate As

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

Category

Options for Automatic Processes

Scope

Start when:

☐ Record is created

☐ Record status changes

☐ Record is assigned

☒ Record fields change

☐ Record is deleted

The previous screen appears after the change. Click on the **Select** button, and in the new window that opens up, scroll until you find the **Process Stage** option. As shown in the following screenshot, select the checkbox in front of it, and click on **OK**:

Select Fields

Select the fields that the process will monitor for changes.

☐	Display Name ▲	Name	Type
☐	Parent Contact for Lead	parentcontactid	Lookup
☐	Preferred Method of Contact	preferredcontactmethodcode	Option Set
☐	Priority	prioritycode	Option Set
☐	Process	processid	Unique Identifier
☒	Process Stage	stageid	Unique Identifier
☐	Purchase Process	purchaseprocess	Option Set
☐	Purchase Timeframe	purchase timeframe	Option Set
☐	Qualification Comments	qualificationcomments	Multiple Lines of Text
☐	Qualifying Opportunity	qualifyingopportunityid	Lookup
☐	Rating	leadqualitycode	Option Set
☐	Record Created On	overriddencreatedon	Date and Time
☐	Related Campaign Response	relatedobjectid	Lookup

OK Cancel

Now build the rest of the workflow as described in the *Workflows* section earlier in this chapter. This can be either a synchronous or an asynchronous workflow.

With both the business process flow and the workflow now published, you can test and see that in each process the step get change in the business process flow now triggers the workflow to execute.

Summary

Throughout this chapter, we looked at the processes available for customization in Dynamics CRM. We determined which type of process applies to which scenario, and when one type is better suited than another. We also looked at business rules and the business process flow, and how to use business rules to enforce and visually enhance the user experience. We also saw examples of creating these processes, and building complex relationships where one process can be triggered from another.

In the next chapter, we will look at the social aspect of Dynamics CRM, and some of the new tools introduced with the newer versions of the platform.

5

Social Features in Microsoft Dynamics CRM

In the previous chapter, we took a look at business processes and how a business affects the behavior of the Dynamic CRM platform. We looked at how to map and enforce business rules on the platform and how to customize the system by creating guided paths for users, thus making sure that the platform works with the user.

In this chapter, we will cover the following topics:

- Social Pane
- Microsoft Social Listening
- Insight by InsideView
- Yammer

We'll take a look at both the internal and external workings of the platform. We will first dive into the internal social aspects of the platform and then we will take a look at the external sources integrated into Dynamics CRM. We are also going to look at the analytics options available with the platform.

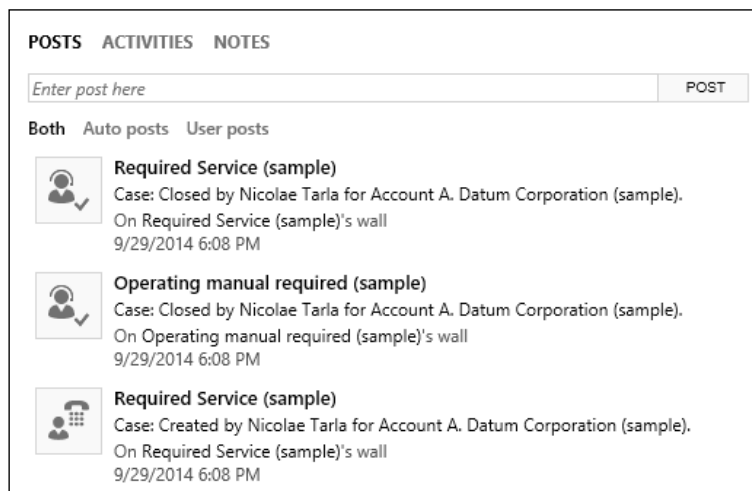
Social Pane

Social Pane was introduced in the Microsoft Dynamics CRM platform from the 2011 version. It made its debut in the December 2012 update (Polaris) to Dynamics CRM Online and was introduced at that time on leads, opportunities, and cases. The purpose of using Social Pane is to enhance business interactions and to allow a user to review and create *social* posts directly at the record level. A post can either be created by a user or automatically generated by the system. Some of the automatically generated posts include record creation or assignment information.

This is a custom control created by Microsoft. While it presents an enhanced social functionality, the ability to customize it is limited.

The Social Pane presents all the interactions related to a specific record across entities such as the account, contact, lead, opportunity, case, and so on, and ensures that they are all being presented in a unified manner.

Along with this information, the Social Pane is also the place where you can find notes and track activities on a record in a much simpler interface. This makes it so much easier for the system user to see all the interactions within a specific record without the need to navigate to other tabs or views. The following screenshot shows the Social Pane presenting various posted messages related to an Account called **A. Datum Corporation (sample)**:



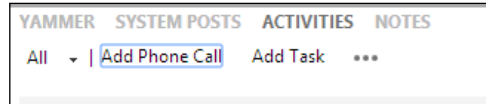
Since the initial introduction of the Social Pane, we can now find it on all the main system entities, and by default, it is placed on the entity's main form. In this way, users can now interact with all the record types by adding either new activities or notes.

The Social Pane is a structure with three main category tabs. While the content will vary based on the various actions and events displayed, the tabs are as follows:

- Posts
- Activities
- Notes

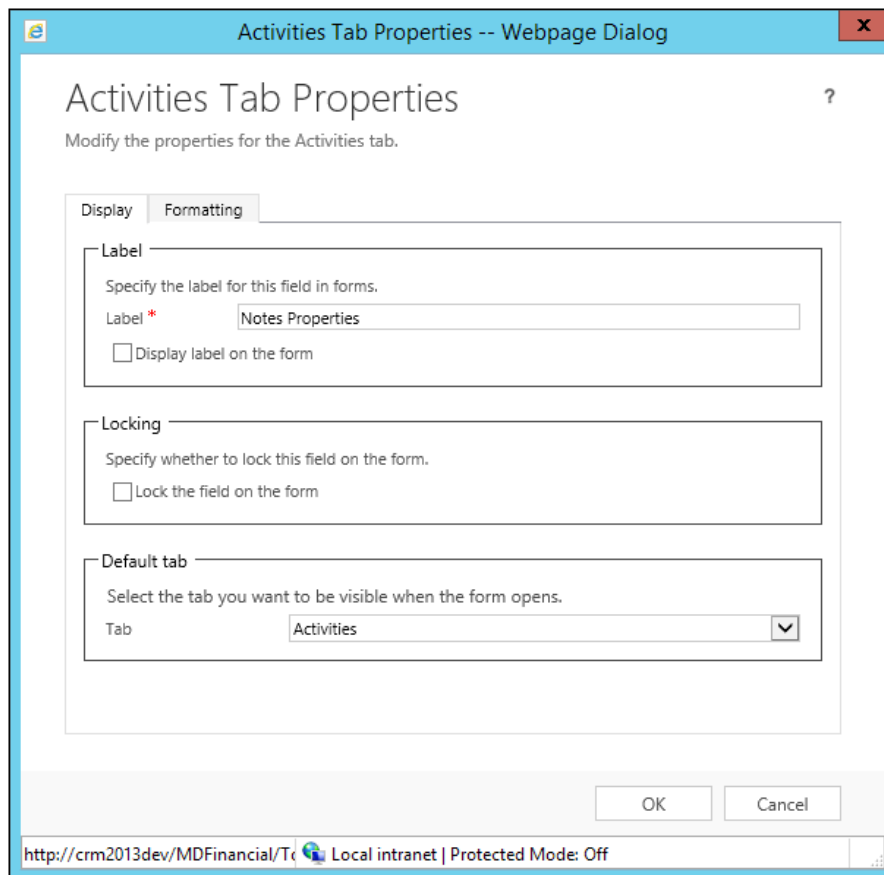
Any one of these can be hidden based either on the entity configuration or customizations. For example, if notes are not enabled on the entity, the notes tab will not be displayed on that particular entity's records.

When integrated with Yammer, the Social Pane is also the place where you can find Yammer activity. It presents a new tab for all Yammer-related social interactions.



Social Pane – standard configuration options

The standard configuration options for the Social Pane are quite limited. The configuration wizard presents you with the standard field customization options, along with an option to select the default tab for the pane to present:



The **Default tab** value is **Activities**, and this can be changed to **Posts** or **Notes** when Yammer is not configured.

Social Pane – extended customization options

While Microsoft has not provided any additional customizations to the Social Pane, the community has requested more flexibility in customizing the functionality of the Social Pane.

In addition to the standard wizard-based customization options presented, there is some support for making additional programmatic customizations to the behavior of the Social Pane component.

Hiding a tab

For some customers, the posts tab presents a lot of relevant information, but for certain applications, this information is irrelevant. For this reason, the following script allows a system customizer to hide this tab. Before publishing this script, make sure that the display tab is changed to either activities or notes:

```
// Passed parameter values:
// POSTS
// ACTIVITIES
// NOTES
function HideTabs(socialPaneType) {
    var controlEle = document.getElementById("header_notescontrol");
    if (controlEle.children != null && controlEle.children.length > 0)
    {
        for (var i = 0; i < controlEle.children.length; i++) {
            var ctrl = controlEle.children[i];
            if (ctrl.title == socialPaneType) {
                ctrl.style.display = "none";
                if (i + 1 < controlEle.children.length) {
                    controlEle.children[i + 1].click();
                    return;
                }
            }
            else if (i - 1 >= 0) {
                controlEle.children[i - 1].click();
                return;
            }
        }
    }
}
```



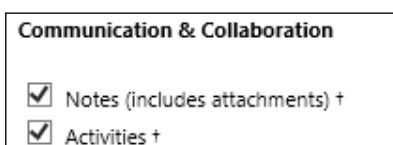
This script, while a convenient way to provide this functionality, is not officially supported and it might break with future updates to the page's DOM.

Adding the Social Pane to custom entities

While the Social Pane comes with most of the standard entities in Dynamics CRM, for new custom entities, it must be added to the entity form.

Customizing the entity

On the entity customization screen, enable both **Notes** and **Activities**, as shown here:



Communication & Collaboration

- ☒ Notes (includes attachments) †
- ☒ Activities †

Configuring the post configuration

In order to record posts, we need to perform the following steps:

1. Navigate to **Settings | Post Configurations**.
2. Make sure that the new entity has the **Wall Enabled** option selected, as shown in the following screenshot:



✓	Entity Name	Entity Display Name ↑	Wall Enabled	Status
	new_custent001	CustEnt001	Yes	Active

Customizing the form

For forms that are upgraded from CRM 2011, the Social Pane cannot be added. You must create a new form after upgrading it to CRM 2013.

Once a CRM 2011 form is upgraded, only the **NOTES** tab will be displayed.

On a new CRM 2013 or CRM 2015 form, **POSTS**, **ACTIVITIES**, and **NOTES** will be displayed.

Creating a custom new activity feed post

For situations where a new set of posts must be added to the activity feed, they can be created using a custom process workflow. Here are the steps to do so:

1. Select your trigger condition for each entity in which you want to add new custom posts, create a new workflow, and set the starting condition. This could be either a field change, a record save, or any other custom condition as required.
2. Add a step to create a record and select **Post** as the record type. Insert the appropriate input in the **Text**, **Source**, and **Regarding** fields and select the **Type** of post.

The screenshot shows the 'Create Post' step configuration in a Dynamics CRM workflow. The title bar indicates the process is 'Contact Phone Change post'. The 'General' tab is active. The 'Text' field contains a message: 'The Business Phone for {Contact(Contact)} has been updated by {Modified By(Contact)} on {Modified On(Contact)}. New Business Phone number: {Business Phone(Contact)} {Record URL(Dynamic)(Contact)}'. The 'Source' dropdown is set to 'Auto Post'. The 'Regarding' dropdown is set to '{Parent Customer(Contact)}'. The 'Additional Fields' tab is also visible, showing the 'Type' dropdown set to 'News'.

3. Activate the workflow and test it on a record.

Microsoft Social Listening

MSL is one of the more recent additions to the Dynamics CRM suite of tools that are available to monitor and interact with the various social media channels available. This is a service that can bring your organization to the forefront by allowing a system user to track campaigns as well as brand and product impact and interact in real time with customers, thus putting your business in front of customers as a leader across the social web.

Social listening is a separate application that can integrate into Dynamics CRM in all three default application modules as well into custom-created components.

For Dynamics CRM Online, MSL is included in the current licensing model, but your organization must meet the minimum eligibility criteria to get this functionality. For on-premise deployments, integration with MSL is available at a cost.

For marketing professionals, this service can analyze and present the customers' perceptions of campaigns in real time. It also allows marketers to interact directly with potential or existing customers on media channels such as Twitter and Facebook. Moreover, it also allows the marketing team to report the brand's and product's sentiment in real time. This allows campaign adjustments to be made to the right specific aspect in order to raise the success of a campaign.

In addition, and very important for marketing personnel, this service allows marketing team to identify the top influencers, the most active people discussing your brand or products.

From a sales perspective, this service allows users to monitor specific customer accounts and gain a competitive advantage over competitors by analyzing their performance against yours.

In addition, this service can track social buying signals. This means more social network generated leads and more targeted opportunities identified.

From a service perspective, this service allows users to identify potential customer issues in real time and prevent a bad public relations campaign generated by negative reviews. The customer service team can be notified and can directly interact with customers to immediately identify and flag potential issues, engage with customers to resolve these issues across the various social platforms, and minimize the potential of a negative image created as a result of customer nonsatisfaction.

Furthermore, social charts can present the social sentiment as an integral part of standard dashboards. This allows key management a direct view into the success of the company's overall image or a specific product line with the public.



MSL lives as a completely separate application, but it is integrated directly with Dynamics CRM.

Integrating social listening with Dynamics CRM

The process to integrate social listening into Dynamics CRM varies by the type of CRM implemented.

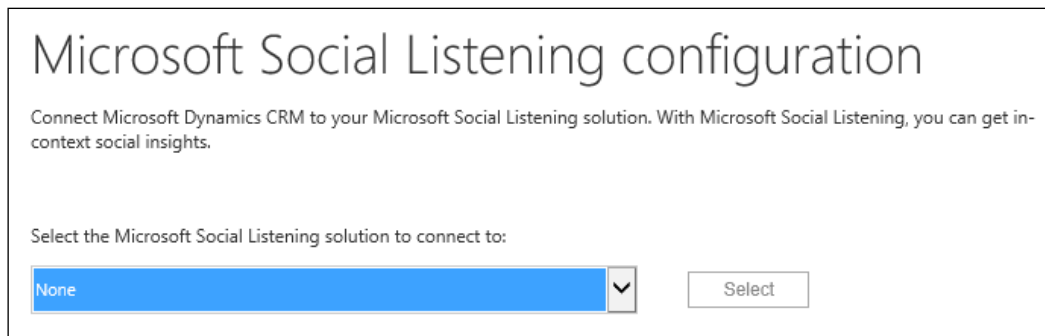
Dynamics CRM Online

The simplest configuration of Social Listening is for CRM Online. Since the entire configuration is under Office 365, the system knows where the Social Listening instance resides and presents it as an option on a dropdown. The following screenshot shows the administrative option to configure **Microsoft Social Listening Configuration**:

1. Navigate to **Settings | Administration**.



2. Here, you will find the link to **Microsoft Social Listening Configuration**. Click on it and you will be presented with a simple configuration page, as shown in the following screenshot:



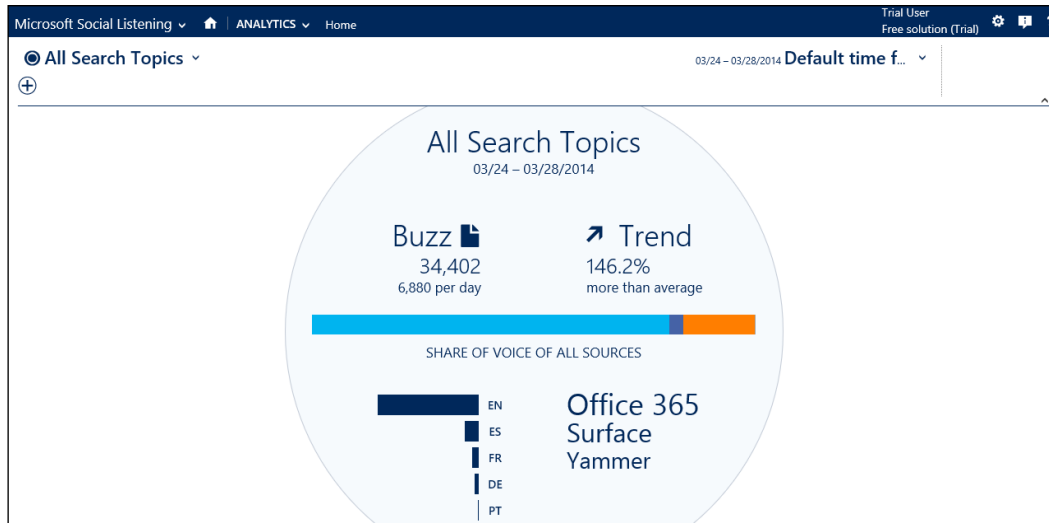
3. Here, simply select one of the named instances of Social Listening from the dropdown and click on **Select**.

Dynamics CRM On-Premise

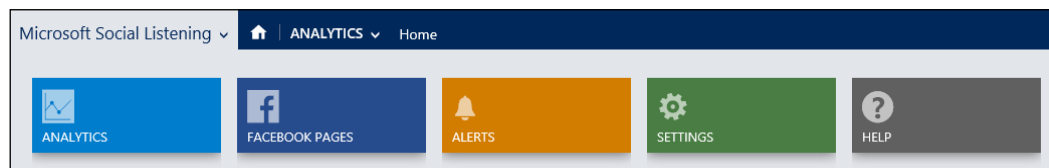
For Dynamics CRM on-premise, the configuration involves settings on both applications. On the Social Listening side, you need to specify the allowed domain where your Dynamics CRM resides. Then, you can go back to CRM, find the same link by going to **Settings | Administration**, and provide the wizard in the connect this CRM instance section with the URL to the Social Listening environment. Make sure that you check the **Allow social insights** checkbox and click on **Save Settings** after testing the URL.

The application layout

The application itself is designed based on the same layout as Dynamics CRM. This will make it very convenient for users who will find it familiar when navigating between the two platforms.



The main navigation presents the user with options to customize the tracking settings as well as provides direct links to a comprehensive analytics package, social channels, and customizable alerts, as shown here:



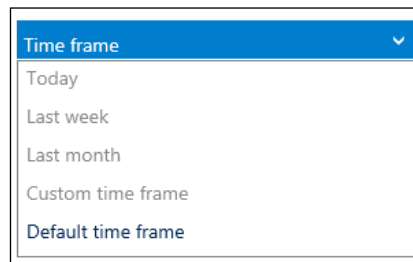
Targeting sources

MSL can target various social media channels. It can follow sentiments on Facebook, Twitter, YouTube, and various blogs.

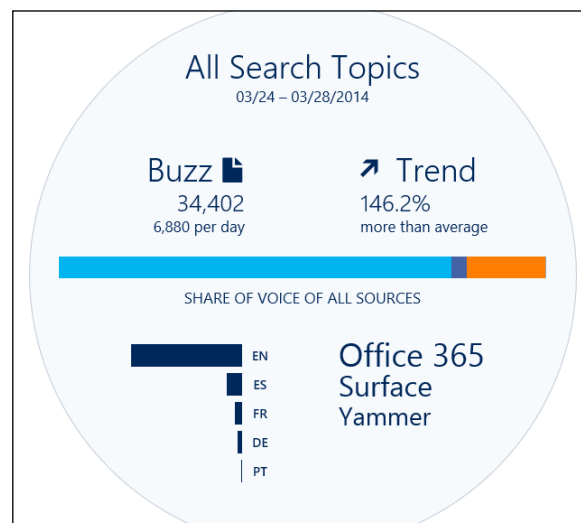
Dynamics CRM environments, with the updates as of spring 2014, can integrate the Social Listening charts and visuals directly into dashboards in the environment. In addition, charts can be added to specific record types, such as accounts, contacts, and competitors.

Configuring the analysis

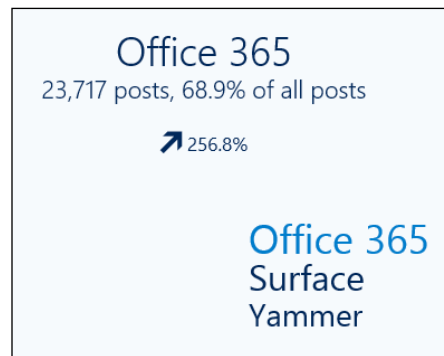
Using Social Listening is mostly a wizard-driven configuration process. We can define the time frame to be analyzed by selecting a period from the dropdown, as shown here:



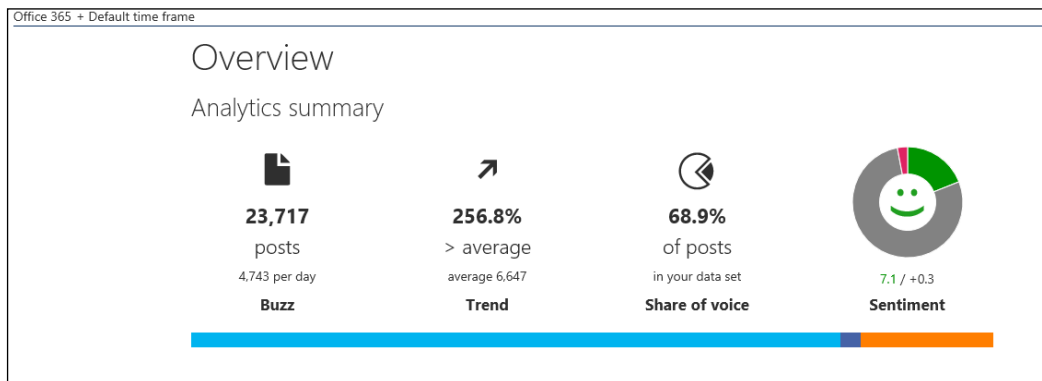
The main **Analytics** dashboard presents an overall view of all the monitored sources. From here, we can do an advanced drilldown into the underlying data.



Hovering over a specific category allows you to take a look at the specific details of the category, as shown in the following screenshot:



Clicking on a category allows you to get to the underlying data, the way we work with dashboards in Dynamics CRM:



Within this **Overview** of the selected category, we can see **Analytics summary**, along with details for the volume history, sources' summary, and sources' **Share of voice** by language.

The analytics summary

A summary of the analytics presents the data analyzed in four categories. **Buzz** is a generic representation of the number of posts analyzed and captured during the specified period of time. This allows you to drill down further in order to see the actual sources, item by item, and to interact with them.

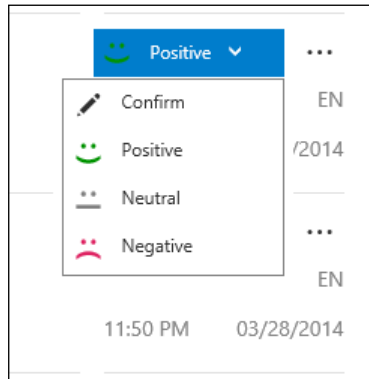
Trend is a calculated section that shows you a comparison against the average. This allows you to determine whether you encounter an upward or downward trend in the posts that are analyzed.

Share of voice is again a calculated section that analyzes the posts in the current captured dataset.

Sentiment is a graphical representation of the positive, neutral, and negative comments captured and analyzed in the selected dataset. This allows you to further drill down into the underlying data and gives you the ability to interact with each captured post.

Interacting with social channels

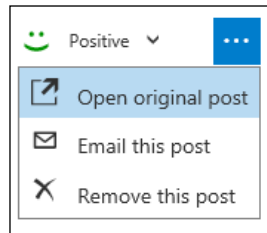
Once we drill-down into the listing of analyzed posts, we can interact with each one of them. We can adjust and modify the sentiment associated with each post by the system.



In addition, we can respond to posts directly from this view for the channels that support interaction, such as Twitter.



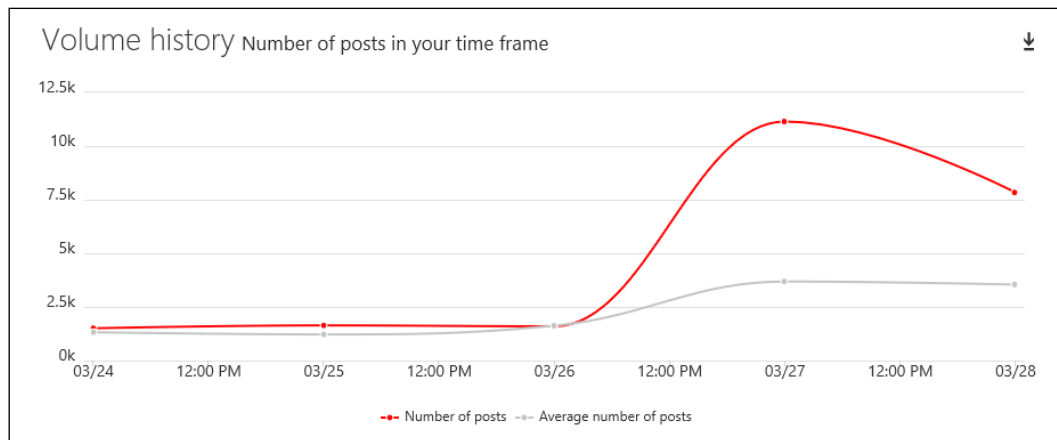
Other options include the ability to navigate to the original post, forward it by e-mail, or remove it from the overall analytics dataset if it is not relevant, as shown here:



For each tracked record, the source channel is clearly represented by the standard source logos.

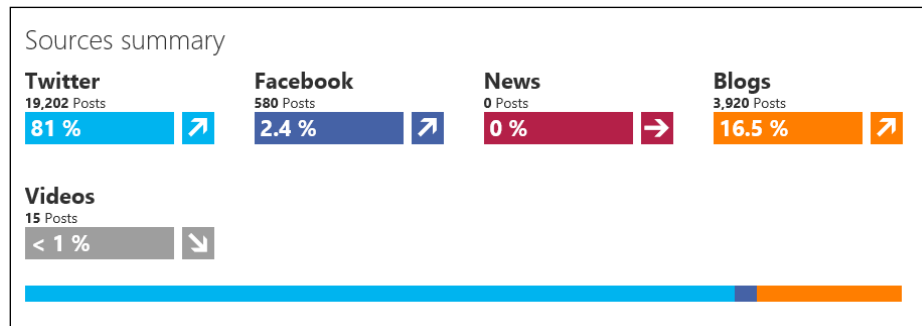
Volume history

Volume history is a representation of the total number of topic related posts in the selected analyzed period. It graphically displays the volume and trend and their comparison against the average number of posts in total, as shown in the following screenshot:



Sources summary

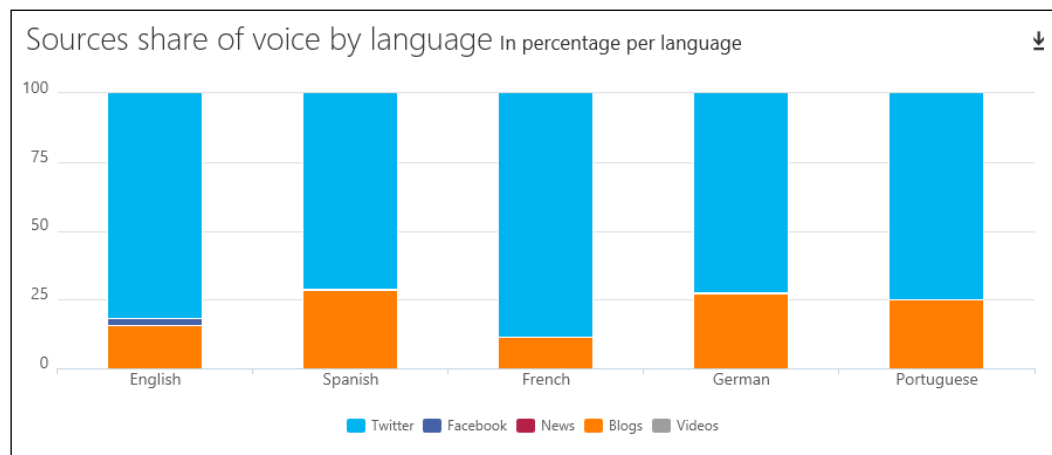
Sources summary splits the total number of posts by source channel and renders this information in a graphical, easy-to-read format, as shown here:



In addition, it provides specific numbers and calculates the percentage by source channel.

Sources share of voice by language

Sources share of voice and language allows users to analyze the social impact of a campaign or product not only by social channel but also by language, as shown in the following screenshot:



This information might prove to be crucial for companies that manage campaigns and products globally or across multiple markets.

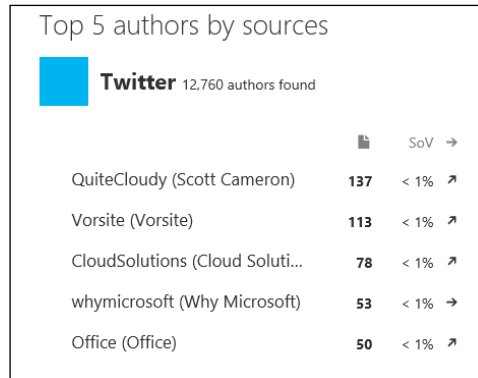
Details of the analysis

For additional analysis, down to the individual level, Social Listening allows advanced drilling into the data and can surface the most active users by social media channel. Navigating to **Analytics | Sources** presents the data not only by source but also by the top overall contributors (by scrolling down the page); it also presents the top contributors by media channel.

For the top overall contributors, we can display the location, number of posts, percentage in the overall dataset, as well as trend, as shown here:

Authors				
Top 5 authors				
				
burakmentes		178	< 1%	
QuiteCloudy (Scott Cameron)	Olathe, Kansas,...	137	< 1%	
Vorsite (Vorsite)	Seattle, Washin...	113	< 1%	
Bob Gourley		108	< 1%	
myfreshreviews		102	< 1%	

When analyzing by specific social media channel, we can see the data specific to each media channel in a similar formatted view, as shown in the following screenshot:

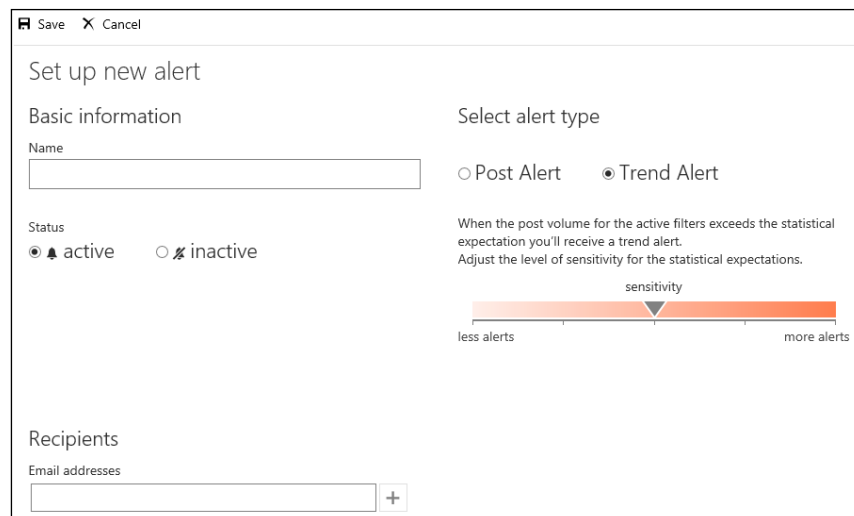


Twitter 12,760 authors found			
QuiteCloudy (Scott Cameron)	137	< 1%	↗
Vorsite (Vorsite)	113	< 1%	↗
CloudSolutions (Cloud Soluti...	78	< 1%	↗
whymicrosoft (Why Microsoft)	53	< 1%	→
Office (Office)	50	< 1%	↗

Configuring alerts

In order to enhance the platform and make it more dynamic, Social Listening has received the ability to not only monitor and analyze the data but also alert users of specific changes in trends. This can be achieved by configuring alert parameters and properties. The following are the steps to configure alerts:

- Navigate to **main menu | Alerts**.
- Here, you will have a listing of the existing alerts configured as well as the ability to create a new alert. Selecting **Add Alert** allows users to customize the alert specifics, as shown in the following screenshot:



Set up new alert

Basic information

Name

Status ☒ active ☐ inactive

Recipients

Email addresses +

Select alert type

☐ Post Alert ☒ Trend Alert

When the post volume for the active filters exceeds the statistical expectation you'll receive a trend alert. Adjust the level of sensitivity for the statistical expectations.

sensitivity

less alerts more alerts

- Once the alerts are configured, they can be reviewed and edited from the main **Alerts** screen.

Microsoft Dynamics CRM Insight by InsideView

Microsoft Dynamics CRM Insight is an add-on provided by Microsoft and powered by InsideView. It is included with all the Microsoft Dynamics CRM Online applications with a professional license and is available as an add-on for Dynamics CRM on-premise.

Insight is the equivalent of InsideView for sales professionals. The functionality has been made available in Dynamics CRM through integration with the InsideView platform. This package is available for Dynamics CRM Version 4.0 or newer and is available for both on-premise and online Dynamics CRM.

Insight is a data-enriching tool that allows the users of Dynamics CRM to validate and enhance their data as well as generate new leads and close more opportunities.

Once it is configured, the Insight solution presents data within Dynamics CRM on the account, lead, contact, and opportunity entities in an iframe on the actual record form. This makes it easy for users to get access to all the additional data provided by the solution.

Installation and configuration

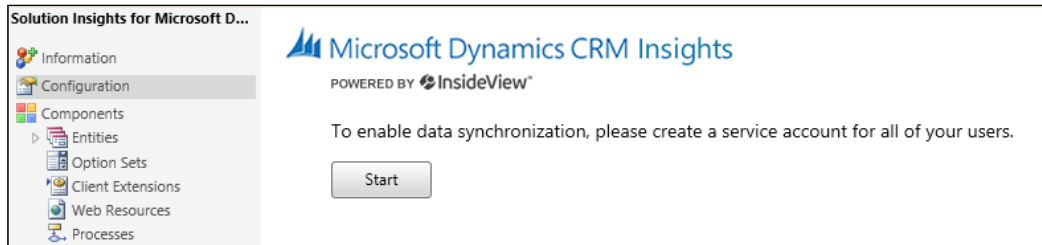
Depending on the type of Dynamics CRM deployment you have, the installation process is slightly different.

Installing in Dynamics CRM Online

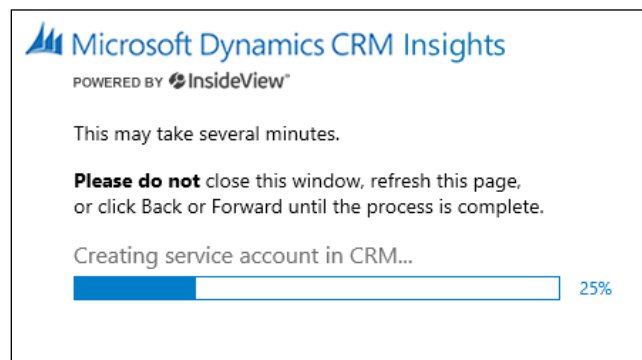
Where it is not already provisioned with your instance, you can take the following steps to install and configure the InsideView solution:

1. First, download the managed solution provided by InsideView from their site.
2. Next, go to **Settings** | **Solutions** and install the solution you just downloaded.

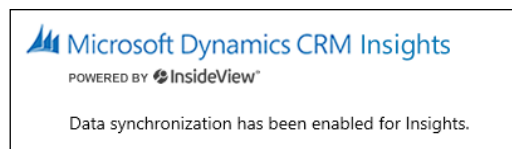
3. Once it is installed, open the solution and navigate to the **Configuration** tab, as shown in the following screenshot:



4. Click on the **Start** button to enable data synchronization and follow through the wizard to complete the initial configuration.
5. Once you complete the configuration of the wizard, you are sent back to the **Configuration** screen in Dynamics CRM where the data synchronization configuration progress continues, as shown in the following screenshot:



6. Once this is completed, you will be presented with a confirmation message.



7. Once the data synchronization is complete, you are ready to start using the insight functionality. To validate, you can navigate to an account and make sure that you have a new tab called **Insight**.

Installing in Dynamics CRM On-Premise

For on-premise deployments, the process is relatively similar but data synchronization is not handled through the solution configuration page. Instead, you need to set up a proxy CRM user in order to provide your application users with the ability to synchronize and export data. For the updated instructions to set up a proxy CRM user, please follow the instructions provided by InsideView on their website.

Once your synchronization is complete, just as with Dynamics CRM Online, you can validate that the installation is successful by navigating to an account record and looking for the **Insight** tab in the form.

Insights feature set

Once the configuration is complete, navigating to an account, contact, lead, or opportunity will display a new tab called **Insight** with additional data about the specific record.

The data is structured in various tabs. The **OVERVIEW** tab presents generic information about the selected record. In the case of an account record, we can see the address, phone number, ownership, industry, revenue, number of employees, and description.

In addition, we get a set of company insights. We can see news articles structured by various categories, including **Leadership Changes**, **New Offerings**, **Acquisitions**, **Partnerships**, **Expanding Operations**, and so on, as shown here:

The screenshot shows the Dynamics CRM interface for the Microsoft Corporation account. The top navigation bar includes tabs for ACCOUNT, OVERVIEW, PEOPLE, BUZZ, FAMILY TREE, and SIMILAR ACCOUNTS. The main content area is titled 'Microsoft Corporation' and features a 'COMPANY INSIGHTS' section. This section lists various insights categorized by type, such as 'Leadership Changes', 'New Offerings', 'Acquisitions', 'Partnerships', 'Expanding Operations', 'Cost Cutting', 'Outperforming', 'Underperforming', 'Company Presentations', 'Litigation', and 'Compliance'. A detailed view of a specific insight is shown, titled 'Microsoft Hires Suresh Kumar, Amazon's VP Of Worldwide Retail Systems'. The insight text states: 'As Microsoft was making some major announcements at their Microsoft Cloud press briefing in San Francisco, it was revealed that Microsoft has hired longtime Amazon veteran Suresh Kumar to head their Azure infrastructure team. He is now the CVP of Microsoft Cloud Infrastructure and Operations...'. The page also includes a 'Back to top' button and a 'Wrong info?' link.

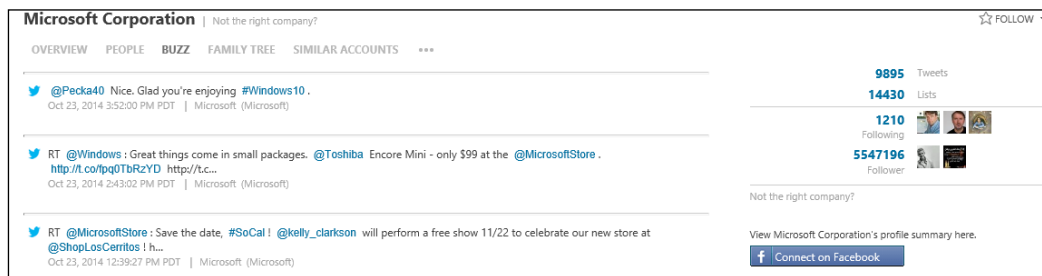
The **PEOPLE** tab presents details about various resources associated with the selected record. These resources are populated based on various social network profiles and augmented data by InsideView. You can sort and filter the listing of these resources as needed, based on job level, job function, as well as your relationship to the respective contact.

You can also search for a specific contact by name, role, or title.

Hovering over a contact in the list brings up the extended user profile, as shown in the following screenshot:



Navigating to the **BUZZ** tab, you do a one-time authorization of the application for Twitter and Facebook. Once you are done, you can see all related social network posts on this tab, as shown here:



The Twitter connection not only brings in tweets related to the selected record but also tweets statistics and followers, as shown in the following screenshot:

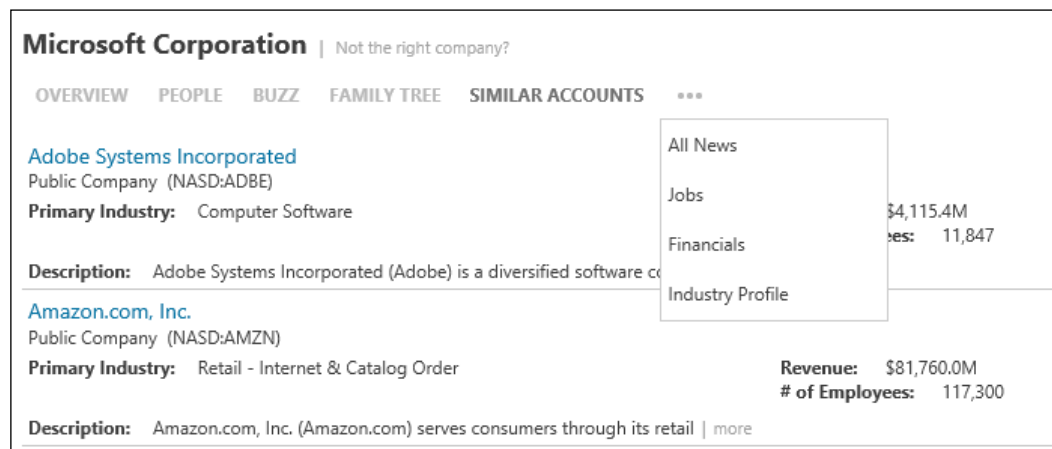


From the tweet window, you can directly interact with the tweets by retweeting and replying to any of the existing captured tweets.

The **FAMILY TREE** tab presents a listing of the related companies as well as acquisitions. You can hover over any of the companies presented to get additional details about them.

The **SIMILAR ACCOUNTS** tab lists the companies related to the selected account record as well as the header details of each company.

On expanding the navigation, you can see other options such as **News**, **Jobs**, **Financials**, and **Industry Profile**, as shown here:



There is a rich set of additional information presented through these tabs. Collecting all these details in one place that can be found easily can greatly enhance the ability of a salesperson to generate new leads and close new opportunities.

You can follow any record or related records. This allows the system to surface data as needed.

One great feature of Insight is its ability to synchronize data and refresh your Dynamics CRM records. From the **Overview** tab, in the top-right corner of the window, you can find the **SYNC** button, as shown here:



Clicking on **SYNC** allows a Dynamics CRM user to select which information can be refreshed in Dynamics CRM. The following screenshot shows the record to be updated in Dynamics CRM:

A screenshot of the 'Update Account' dialog box in Dynamics CRM. The dialog has a title bar 'Account Microsoft' and buttons 'Update Account' and 'Cancel'. The main content area is titled 'Microsoft Dynamics CRM Insights' and contains a table with account details. At the top right of the table is a 'Check All / None' checkbox. The table has columns for 'Account Name' and 'Microsoft'. The 'Account Name' column lists various fields like Ownership, Ticker Symbol, SIC, Revenue, Employees, Account Phone, Account Fax, Website, Street, City, State, Country, Zip, and Description. The 'Microsoft' column shows the corresponding values for each field, with checkboxes to the right of each value. At the bottom of the dialog, there is a 'Source(s)' section with logos for Reuters, Netprosper, Equifax, and InsideView, and a 'Back to top' link.

Account Name	Microsoft
Ownership	Microsoft Corporation ☒
Ticker Symbol	Public Company ☒
SIC	MSFT ☒
Revenue	7372 ☒
Employees	\$86,833,000,000 ☒
Account Phone	128,000 ☒
Account Fax	+1 425 882 8080 ☒
Website	1-425-7067329 ☒
Street	www.microsoft.com ☒
City	One Microsoft Way ☒
State	Redmond ☒
Country	WA ☒
Zip	United States ☒
Description	98052-6399 ☒
	Microsoft Corporation is engaged in developing, licensing and supporting a range of software products and services. The Company also designs and sells hardware, and delivers online advertising to the customers. The Company operates in five segments: Windows & Windows ☒

Source(s): Reuters Netprosper Equifax InsideView Back to top

Select the specific records to be updated in Dynamics CRM and click on **Update Account**. The data from Insight will be transferred automatically into your CRM record.

You are prompted with a screen that notifies whether the operation was successful, and after five seconds, you are sent back to the Dynamics CRM record. All the data is refreshed with the new information from the selected data source.

You can perform the same operation on contact records from within the account record.

Yammer

Yammer can be directly integrated into your Dynamics CRM instance. You just need to configure the connection to run the Yammer.

Yammer is an enterprise social network. The company was created in 2008 and was bought by Microsoft in 2012. This is a corporate-friendly social media network. Any user can join the network with a business e-mail account, as long as the company's domain is registered. Once you joined Yammer, you can create internal and external networks for employees, customers, suppliers, and so on.

The application structure is quite similar to that of Facebook when accessed online, outside Dynamics CRM. You have a news feed on the main page, and you have the ability to follow users as well as send and receive private messages.

Yammer and hashtags

Yammer's architecture is built around a robust search function. Using hashtags greatly increases the find ability of posts. Hashtags are posted using the # symbol followed by a word or combination of words, for example, #CustomizationEssentials.

Mentions are also supported on Yammer. You use the @ symbol. An example is @JohnDoe.

Other Yammer features

Yammer sports a people directory that enhances the search ability and brings up details about your colleagues with ease. Furthermore, user profiles can be searched, thus making it easy to retrieve, for example, a Dynamics CRM specialist in your company.

In order to enhance the business appeal of the network, you can use Yammer for file sharing. Files can be attached to posts, or they can be uploaded to a file repository and made accessible to other users. In addition, for teams, Yammer introduces the concept of pages. They are used for collaboration on documents and can be locked to read-only settings if needed.

Yammer and Dynamics CRM

Since Yammer was included under the umbrella of Office 365, there has been a big push to integrate it into most, if not all, business applications. Yammer integration has been built into Dynamics CRM both on-premise and online, and the posts are surfaced on a new Yammer tab in the Social Pane.

Configuring the integration can be achieved easily, thus giving Dynamics CRM users the ability to collaborate more productively within teams.

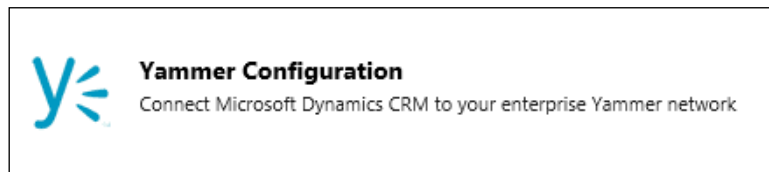
In order to configure the Yammer integration with Dynamics CRM, the following prerequisites must be met:

- For Dynamics CRM to integrate with Yammer, you need the Enterprise Version of Yammer
- The user account that is used to configure the integration must be a system administrator in both Dynamics CRM and your organization on Yammer
- Have Dynamics CRM updated to the latest available version if possible

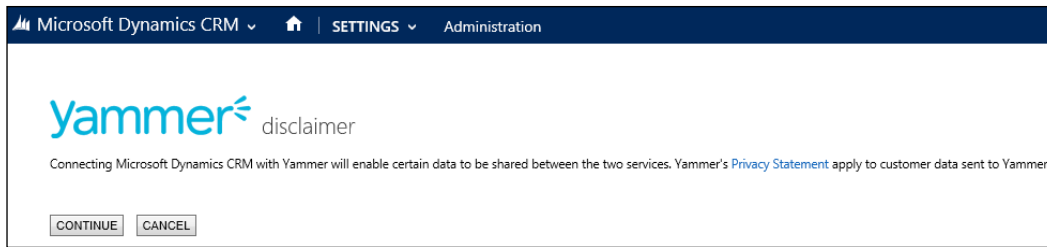
Configuring the integration

In order to configure the integration, perform the following steps:

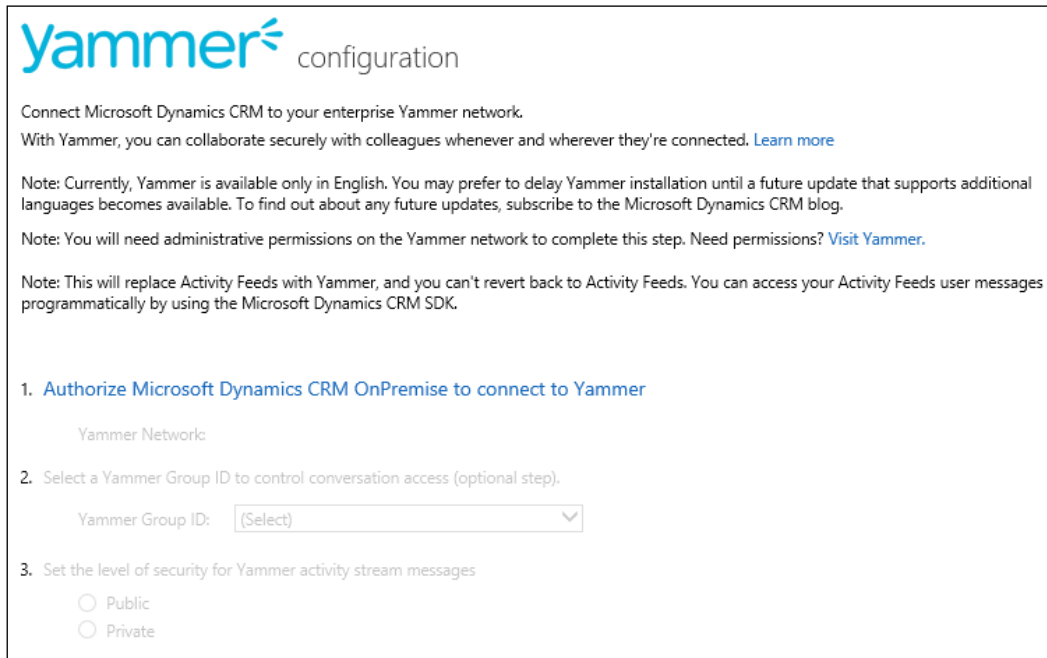
1. Navigate to **Settings | Administration**.
2. In the **Administration** section, you will find the **Yammer Configuration** section, as shown in the following screenshot. Click on the link; it will take you to the configuration section for the Yammer integration.



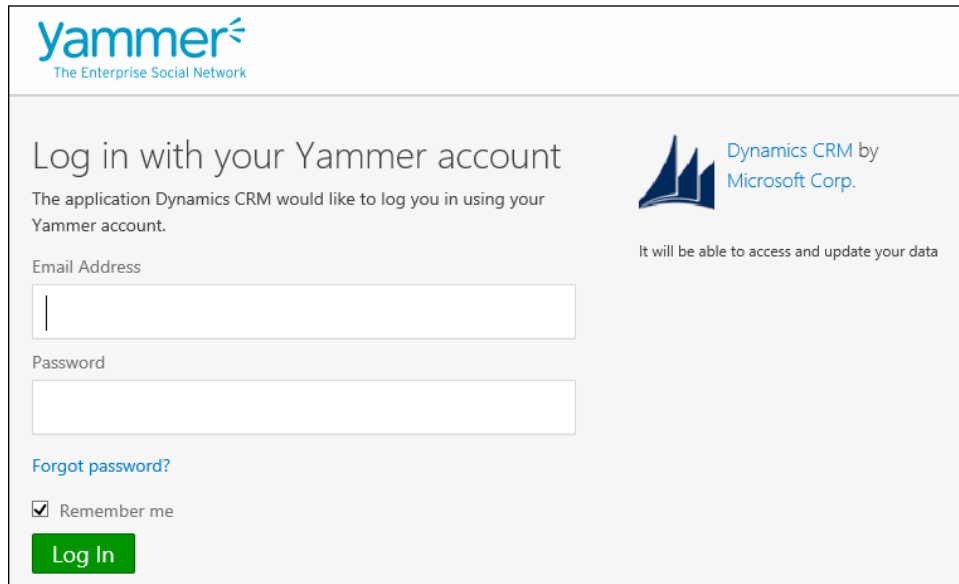
3. First you will be prompted with a disclaimer page. Click on **Continue**.



4. Next, you will be taken to the configuration page. On this page, only the first option **Authorize Microsoft Dynamics CRM OnPremise to connect to Yammer** is enabled at this point, as shown in the following screenshot. For online instances, the message will be **Authorize Microsoft Dynamics CRM Online to connect to Yammer**.

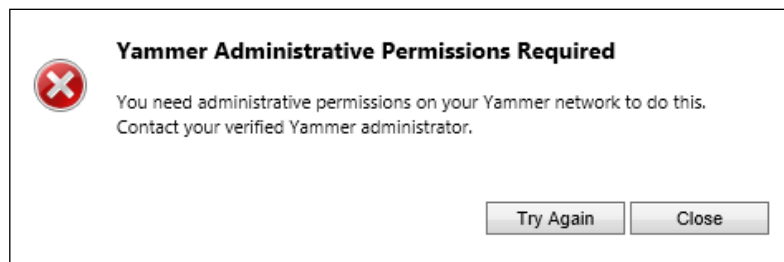


5. Click on the link and you will be prompted to log in into Yammer, as shown in the next screenshot. Here's where you must use an account that has **System Administrator** rights in your Yammer organization.

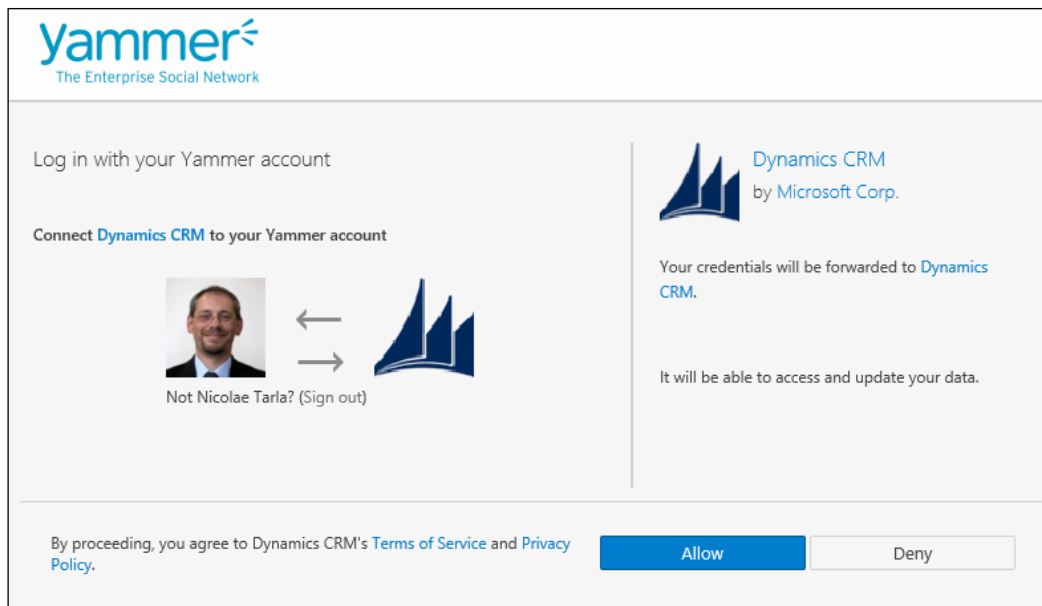


The screenshot shows the Yammer login interface. At the top left is the Yammer logo with the tagline "The Enterprise Social Network". The main heading is "Log in with your Yammer account". Below this, it states "The application Dynamics CRM would like to log you in using your Yammer account." To the right, there is a Dynamics CRM logo and the text "Dynamics CRM by Microsoft Corp." and "It will be able to access and update your data". The login form includes fields for "Email Address" and "Password". Below the password field is a link for "Forgot password?". There is a checkbox labeled "Remember me" which is checked. A green "Log In" button is at the bottom left of the form.

Failing to provide such an account results in an error message stating that the required permissions are not valid:



Once you provide the correct credentials, the next steps of the wizard will walk you through the authentication portion and when completed, it will take you back to step 2 on the configuration page.



At this point, steps 2 and 3 on the configuration page will be enabled. Note that these steps are optional and allow additional configuration of the integration. At this point, the integration is complete, and Dynamics CRM now has access to the Yammer network. In order to verify this, you can navigate to a record that has the Social Pane visible and the entity enabled for Yammer, and confirm that a new Yammer tab is displayed at the top.

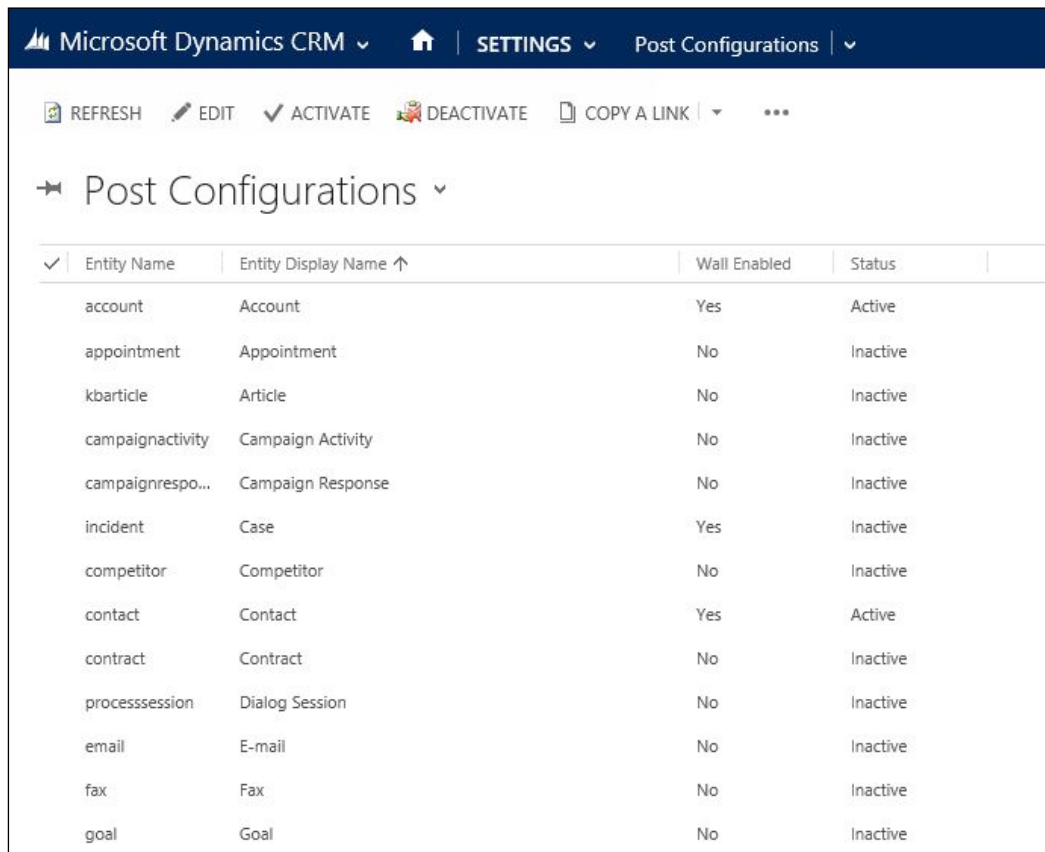
Step 2 on the configuration page, while optional, allows you to configure a specific Yammer group to be used for the Dynamics CRM integration. This allows you to restrict conversations and not pollute the entire all-company group area with Dynamics CRM messages. It is a good practice to separate the Dynamics CRM messages from the other Yammer group communications.

The third step, also optional, allows you to configure the security for Yammer messages. In this step, you can configure the Dynamics CRM messages to be made available to the public (everyone) or you can set them to be private. Setting this option to private restricts the visibility of the messages only to users who follow the specific Dynamics CRM records.

Entity configuration

Now that the integration with Yammer is complete and functional, there is one additional step required to surface Yammer into our Dynamics CRM environment. We need to tell Dynamics CRM which entities are enabled for Yammer. Without this configuration, no entities will support the Yammer integration.

We can do this by navigating to **Settings | Post Configurations**:



Microsoft Dynamics CRM SETTINGS Post Configurations				
REFRESH EDIT ACTIVATE DEACTIVATE COPY A LINK				
Post Configurations				
Entity Name	Entity Display Name	Wall Enabled	Status	
account	Account	Yes	Active	
appointment	Appointment	No	Inactive	
kbarticle	Article	No	Inactive	
campaignactivity	Campaign Activity	No	Inactive	
campaignrespo...	Campaign Response	No	Inactive	
incident	Case	Yes	Inactive	
competitor	Competitor	No	Inactive	
contact	Contact	Yes	Active	
contract	Contract	No	Inactive	
processsession	Dialog Session	No	Inactive	
email	E-mail	No	Inactive	
fax	Fax	No	Inactive	
goal	Goal	No	Inactive	

Here, we can select the entities for which Yammer will be available and then click on **Activate** in the navigation bar. Once activated, make sure that you publish all the customizations.

If an entity is deactivated, the Yammer integration will be removed from the entity records. The messages though will remain in Yammer. All messages posted to Yammer remain stored in Yammer, and if the entity is re-enabled, the messages can be resurfaced.

Additional configuration

In some situations, you might encounter unexpected behavior when using entities integrated with Yammer. If that is the case, make sure that the Yammer URL is added to the browser's trusted sites along with the Dynamics CRM URL.

Summary

Throughout this chapter, we looked at the various social platforms either built on the Dynamics CRM platform or providing integration to it. From internal social integration to using the Social Pane to using the MSL platform in an integrated manner to the external integration, achieved by bringing insight into Dynamics CRM, and finally through using Yammer in a more dynamic way, we have a large variety of social interactions available on the platform.

In the next chapter, we will take a look at the administration aspect of the platform. You will be introduced to the basic administrative concepts of the platform, take a quick tour of the administration interface, and analyze the section that an administrator is expected to use on a day-to-day basis.

6

Dynamics CRM Administration

In the previous chapter, we looked at the various social aspects integrated into Dynamics CRM. We discussed various topics ranging from the social pane to integration with MSL and Yammer as well as the available insight component from InsideView and the full-blown solution provided by them.

In this chapter, we will take a look at the following topics:

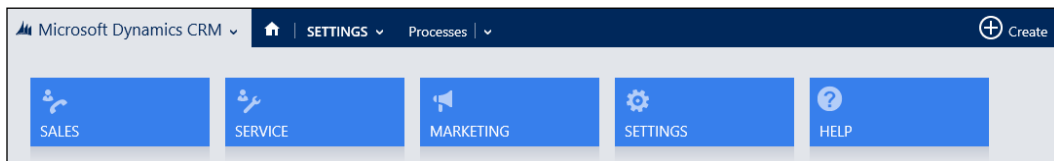
- Administration concepts
- The **SETTINGS** area
- Administration
- Business management
- Service management
- Working with templates
- Working with products
- Monitoring system jobs
- Configuring e-mails
- Configuring SharePoint integration
- Auditing
- Managing processes

This is by no means an exhaustive description of all the administrative options available in Dynamics CRM; a whole book can be dedicated to this topic. In this chapter, we will discuss the most commonly-used configuration options that an administrator of the system will work with on a day-to-day basis.

The concepts of Dynamics CRM administration

Similar to any other platform, Dynamics CRM requires constant care and attention. An administrator of the system has the task of monitoring the system, analyzing its performance, and intervening where necessary to make improvements.

In a standard out-of-the-box configuration, all the system management options are collected in the **SETTINGS** area. You can reach this by going to the navigation bar at the top of the screen and selecting **SETTINGS** from the options presented, as shown in the following screenshot:



When working with a heavily-customized system, the **SETTINGS** area might be removed, renamed, or relocated to a different location on the navigation bar. In addition, some options can be removed entirely. The navigation and settings options are security-trimmed so that the user can only access the settings options that they are allowed to.

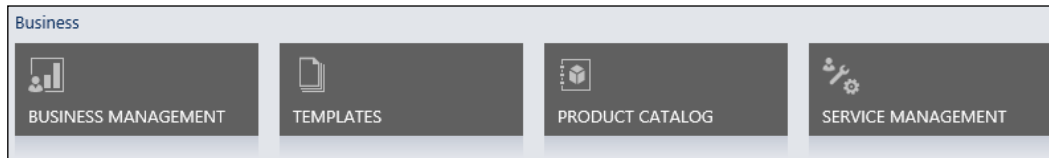
The SETTINGS area

The **SETTINGS** area is the place where you find all the organization and user administration settings. This area is structured in the following categories:

- Business
- Customization
- System
- Process center

Each one of these areas is linked to the various configuration aspects of the application.

Within the **Business** category, we have configurations for business management and service management as well as the ability to manage the template and product catalog, as shown here:



Business management

Business management is the area where you can handle most of the initial system configuration as well as managing the common aspects of the system. In here, you can configure the **Fiscal Year Settings** window. The fiscal year setting is usually configured at the time of system creation. Rarely in the life of a business will the fiscal year change.

In this area, you can configure the fiscal year's **Start Date** and **Fiscal Period Template** as well as the formatting options to be used for display throughout the system.

Chances are that, once you've initially configured these settings, you might not have to touch them again for a very long time, if ever. The following screenshot shows how the **Fiscal Year Settings** window looks:

 A screenshot of the "Fiscal Year Settings" window. The title bar says "Fiscal Year Settings" with a question mark icon. Below the title bar is a subtitle: "Select fiscal year settings for Microsoft Dynamics CRM." There is a tab labeled "Fiscal Settings". The main content area is divided into two sections. The first section, "Set the fiscal period.", contains a "Start Date" field with a red asterisk, a date picker showing "1/1/2014", and a "Fiscal Period Template" dropdown menu set to "Quarterly". The second section, "How to display?", contains several dropdown menus: "Prefix" (set to "FY"), "Year Format" (set to "YYYY"), "Postfix" (set to "FY"), "Named Based On" (set to "Start Date"), "Fiscal Period" (set to "Quarter 1"), and "Display As" (set to "<fiscal period> <fiscal year>"). At the bottom right are "OK" and "Cancel" buttons.

The **Business Closure** section allows you to define the standard holidays for each year in the system as well as certain company-specific closures. Usually, these settings are configured at the beginning of a year. These settings work in conjunction with the service module and integrate settings into scheduling activities.

Once the business closures are configured, you can export them to Microsoft Excel or print them.

Scheduling a new business closure involves defining a name for the record as well as the start and end dates and time, if required. The following screenshot will give you a clear picture of how things work:

Schedule a Business Closure

Specify the name and select the time of the business closure.

i During this closure, service activities cannot be scheduled. However, resources with the Do not observe option selected for business closures can be scheduled for services.

Business Closure

Details

Name *

Start Time 10/29/2014 ☒ All Day Event

End Time 10/29/2014

Duration 1 day

Help OK Cancel

The **Queues** area allows you to manage system queues. By default, queues are created for users and teams in the system, but they can be created for all the customizable entities in Dynamics CRM.

Queues can be either public or private. The queue items that reside in private queues are only accessible to the members of that particular queue.



You can store multiple queue item types in a queue. You can have items for entities such as cases, tasks, and e-mails in the same queue.

In addition to the standard information regarding the items placed in the queue, queues also store information about the user working on each queue item.

A very important aspect of automating queues is the ability to enable workflows and audits for queues. This helps with automating processes in order to validate specific business processes and rules around processing various queue items, to improve productivity, and to track progress. Auditing allows you to report the changes at various stages in processing queue items.

Starting with the introduction of Service Pack 1 for Dynamics CRM 2013, the improvements to managing queue access now allow for private queues as well.

The **Salespeople with Quotas** section allows a user with permissions to see all the system users who have a sales quota enabled. Quotas exist once the fiscal year has been configured in the system.

The **Services** section allows administrators to configure the capacity of a service activity. In order to modify these settings, you must have the schedule manager role.

Here, you can either choose to assign resources, based on various conditions depending on work load, or define capacity requirements.

The **Subjects** area allows you to define a comprehensive subject tree in order to hierarchically categorize the various elements of the system. You can use this hierarchy to categorize products, cases, sales literature, or articles. You can also use this hierarchy for various custom entities.

The **Connection Roles** area allows you to view and define new connections. Connection roles are used to define relationships between entities based on the specific defined roles assigned.

You can apply connection roles in three different ways:

- Apply the same connection role to both the source and target records
- Apply a connection role from the source record to the target record only
- Apply a reciprocal role, which is a role from the source record, to the target record and a related role from the target to the source entity

The **Goal Metrics** area allows you to define and track the goals assigned to users. Using goals, you can assign specific goals to teams or users as well as tracking and measuring their performance against these goals. In order to define a goal metric, a goal must be created for a specific type of data to be measured. Once you have created the goal, you can define rollup fields to track a target's actual and in-progress values.

The **Facilities/Equipment** section allows you to track physical equipment and facilities for scheduling services. These facilities and equipment can then be used to define service activities.

The **Resource Groups** section is where you define groups and their membership. These groups can then be used in conjunction with the service module to schedule service activities.

The **Sales Territories** section is where you define geographical areas for sales, service, or marketing. You can assign managers and members to these territories. For example, you can create a central territory and assign a sales manager to this territory as well as a team of sales people for all the sales activities.

The **Sites** section is where you can track various locations to conduct business from. For example, in a manufacturing company, you can have various storage sites, production sites, and stores. Each one of these can be tracked as a different site.

The **Currencies** section is where you define the additional currencies used by the system. Each system will have a base currency defined at the time of creation of the organization. On top of this base currency, you can define as many new currencies as needed. For example, if you have a retail store in two different countries, you can define an additional currency for the other country in addition to the base currency for one of the countries. This allows sales personnel from the other country to track sales in that country's currency. The conversion is done automatically by the system using the conversion rate defined.

The **Relationship Roles** section allows the management of labels that define the relationship roles. This type of relationship existed in previous versions of Dynamics CRM before the introduction of connections; this has been retained in the system for backward-compatibility. The connections are much more versatile and should be used for all new customizations.

One of the major limitations of relationship roles is that they can only be used to define relationships between accounts, contacts, and opportunities.

The entire **Business Management** screen is presented here:

Business Management	
 Fiscal Year Settings Set the start date, template, and display options for the fiscal year and fiscal period used for tracking sales goals.	 Goal Metrics Define and manage the kinds of goals that your organization tracks.
 Business Closures Create a list of holidays and other times when the business is closed.	 Facilities/Equipment Add facilities and equipment for service scheduling. Change information about resources or delete existing resources.
 Queues Create and manage service queues, and manage the membership of private queues. Establish criteria for automatic case creation.	 Resource Groups Add new groups and new members to existing groups for service scheduling. Update group information and delete groups or group members.
 Salespeople with Quotas Add new salespeople. Add quotas to salespeople. Edit information about salespeople and deactivate salesperson records.	 Sales Territories Create new sales territories and assign territory managers. Add and remove members, modify territory information, and delete territories.
 Services Add new services for service scheduling. Change service information and deactivate existing services.	 Sites Create new sites or office locations where service operations take place. Add and remove resources, change site information, or delete sites.
 Subjects Manage the subject hierarchy for your organization's products, literature, and articles.	 Currencies Add new currencies or change the exchange rates for existing currencies.
 Connection Roles Create, edit, and delete the standard labels used to define connections between records.	 Relationship Roles Manage the standard labels users can apply when they define relationship roles between accounts, contacts, and opportunities.

Service management

The **Service management** area has been introduced with Dynamics CRM 2013 Service Pack 1. It groups together settings around the service module. This area defines the following groups of settings:

- Case settings
- Service terms
- Templates
- Service scheduling

Case settings

The **Case settings** area groups configuration elements around the available case creation and routing processes. This area is, in particular, useful for grouping and categorizing rules around case processing.

The first option in this grouping, **Queues**, allows you to view and manage system queues. You can see a listing of system queues by selecting the All Queues view, you can manage the membership of private queues.

The **Routing Rule Sets** section is where you manage specific case-routing rules. Here, you can define special rules for how a case is to be handled. For example, you can specify that, when a created case matches specific criteria, it should be forwarded to a particular team, user, or queue. In order to define these, create a new **Routing Rule Set** field and within this set, create one or more **Rule Item** fields. Each **Rule Item** field defines the **If Conditions** section, meaning when this condition executes; as well as the **Then Conditions**, meaning the action that will take place. The following screenshot shows the conditions' configuration for routing:

The screenshot shows the 'Rule Criteria' configuration window. It is divided into two main sections: 'If Conditions' and 'Then Conditions'. The 'If Conditions' section includes a 'Clear' button, a 'Group AND' button, and a 'Group OR' button. Below these is a 'Select' button. The 'Then Conditions' section includes a 'Route To *' label, two radio buttons for 'Queue' (selected) and 'User/Team', and an 'Add to Queue' label with an empty text input field.

The **Subjects** area leads you to the same configuration of structured subject topics as the area in the **Business Management** screen.

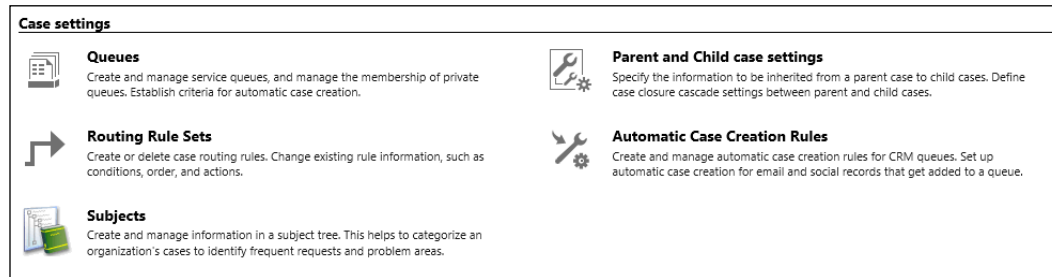
The **Parent and Child case settings** area allows you to define information about inheritance rules around related cases. Here, you can define cascade operations on related cases. For example, you can define a rule that allows you to close all child cases when a parent case with the same title and customer is closed. The following screenshot shows **Case Settings** configuration:

The **Automatic Case Creation Rules** area allows you to define rules for automatic case creation from incoming e-mails and special social records. On each case creation rule that is defined, you specify the conditions for case creation and the autoresponse setting. You can create new cases from incoming e-mails from senders who are not in the system, customer entitlements, or activities related to a resolved case.



For cases that have been newly created through automatic rules, if there is no routing rule to handle it, the rule owner becomes the owner of the case.

The following screenshot shows how the **Case settings** area looks:



Service Terms

The **Service Terms** area houses specific settings for SLAs, customer entitlements, and scheduling. The **Service Level Agreements (SLAs)** section allows you to define specific SLAs and assign them to a service schedule. Part of an SLA involves the definition of specific failure and warning times, and the other part involves associated actions.

There are two types of SLAs that can be defined in Dynamics CRM: standard or enhanced. The standard option was first introduced in Dynamics CRM 2013 SP1, while the enhanced option has been added to support extra functionality in CRM 2015. Some of the features of enhanced SLAs include the ability to pause an SLA when a case is on hold, add specific actions to an SLA (such as the ability to notify when an SLA has succeeded), and track SLAs on a case form by default.

The **Holiday Schedule** area allows you to define specific holidays that, once added to the system, are propagated into the service schedule and to notify users if scheduled service events overlap with these predefined holidays.

The **Customer Service Schedule** area allows you to define and manage organization-wide service schedules. Here, you define business hours by day level for the service activities. This can work in conjunction with SLA time tracking.

The **Entitlements** area allows you to associate a specific set of entitlements with a specific customer. Through entitlements, you can define the customer support level based on either the total number of hours or the number of cases. This entitlement can vary based on the product or service acquired by each customer. The following screenshot shows how the **ENTITLEMENT TERMS** window looks:

ENTITLEMENT TERMS	
Allocation Type*	Number of cases
Decrease Remaining On*	Case Resolution
Total Terms	--
Remaining Terms	--

Finally, the **Service Configuration Settings** area allows you to define system-wide settings for the entire organization. This basically links you back to the system settings, directly to the **service configuration** tab. Here, you can choose to enable or disable all SLAs and, if enabled, you can define on which case status an SLA is paused.

The following screenshot shows how the entire **Service Terms** section looks:

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 entitlement terms of service for 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.

Customer Service Schedule
Create and manage customer service schedules for the organization.

Templates

The **Templates** section groups together some of the settings that can be found directly under **Settings** in the **Templates** submenu with a newly defined **ENTITLEMENT TEMPLATE** window. The entitlement templates allow you to define and manage standard templates for entitlements and associate them with products. This way, a customer can be assigned to an entitlement through the use of a template when a product is purchased. The following screenshot shows the configuration **ENTITLEMENT TEMPLATE** window:

The screenshot shows the 'ENTITLEMENT TEMPLATE' configuration window for 'Product X-13 Entitlement'. The window is divided into several sections:

- INFORMATION**: Fields for Entitlement Template Name (Product X-13), Start Date, End Date, Restrict based on entitlement terms (No), SLA, and Description.
- ENTITLEMENT TERMS**: Fields for Allocation Type, Number of cases, Decrease Remaining, Case Resolution, and Total Terms.
- Products**: A search bar with 'Search for records' and a magnifying glass icon. Below it, a table with columns 'Name' and 'Product ID' is shown, with the message 'No Product records found.' and a pagination bar.
- Entitlement Channels**: A search bar with 'Name' and 'Total Ter' columns. Below it, a message 'No Entitlement Template Channel records found.' and a pagination bar.

The entire **Templates** section is presented here:

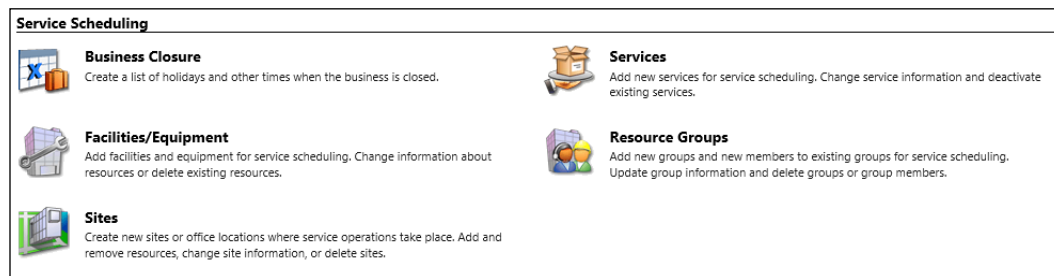
The screenshot shows the 'Templates' section with four categories, each with an icon and a description:

- Entitlement Templates**: Create and manage templates for creating entitlements.
- Email Templates**: Create and manage templates for email messages.
- Article Templates**: Create and manage templates for articles in the knowledge base.
- Contract Templates**: Create and manage templates for contracts.

Service scheduling

The last section of Service Management is Service Scheduling. Here, you have a collection of navigational menus collected from the **Business Management** section of **Settings** as they interact with the service module in one way or an other.

The following screenshot shows the **Business Closures**, **Facilities/Equipment**, **Sites**, **Services**, and **Resource Groups** options that need to be defined under **Service Scheduling**:



Templates

The **Templates** section under **Settings** allows you to define standard templates for knowledge-based articles, templates for e-mail messages, contract templates, and mail merge templates.

The **Article Templates** section allows you to create simplistic templates for knowledge-based articles through a wizard-based interface. You can create various sections within a template, and you have limited options to modify the text properties.

 An article template must be activated before it can be used to generate new knowledge-based articles.

The **Email Templates** area allows you to define specific dynamic templates to be used when e-mailing from the system. These templates can include dynamic data from related records as well as standard formatting supported by the most common e-mail clients.

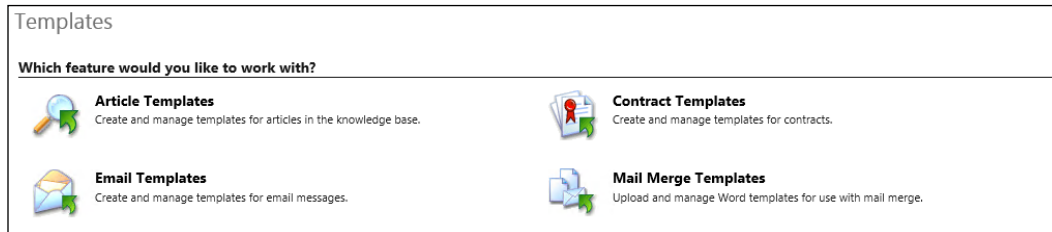
Dynamics CRM already comes with a set of predefined e-mail templates. You can modify these, remove them, or create new ones, as needed.

The **Contract Templates** area allows you to manage and create templates that define support contracts. Here, you can define the frequency of billing, service level, working hours, or schedule; you can also specify the type of allotment. You can have a contract limited by the number of cases, time, or coverage dates.

By default, a single service contract template is created in the system. You can remove it, modify it, or create a new one, as needed.

The **Mail Merge Templates** area allows you to upload mail merge templates created with Microsoft Word. Here, you can define the template properties, including the associated entity, language, and base Microsoft Word document to be used.

The following screenshot shows how the **Templates** section looks:



Product catalog

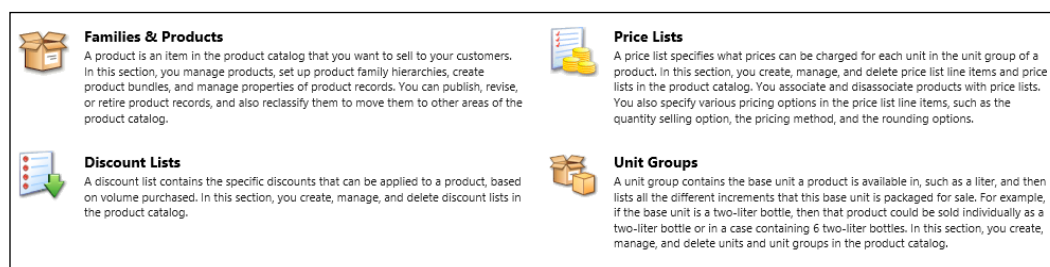
The **Product Catalog** area is where you configure the products and services that are offered and tracked through the application. Here, you configure products and/or services, prices, discounts, unit sizes, and price lists. Without these items being set up, the functionality of quotes, orders, and invoices is crippled.

In order to configure the **Product Catalog** and keep a track of all the dependencies, the items listed here must be configured in the following order:

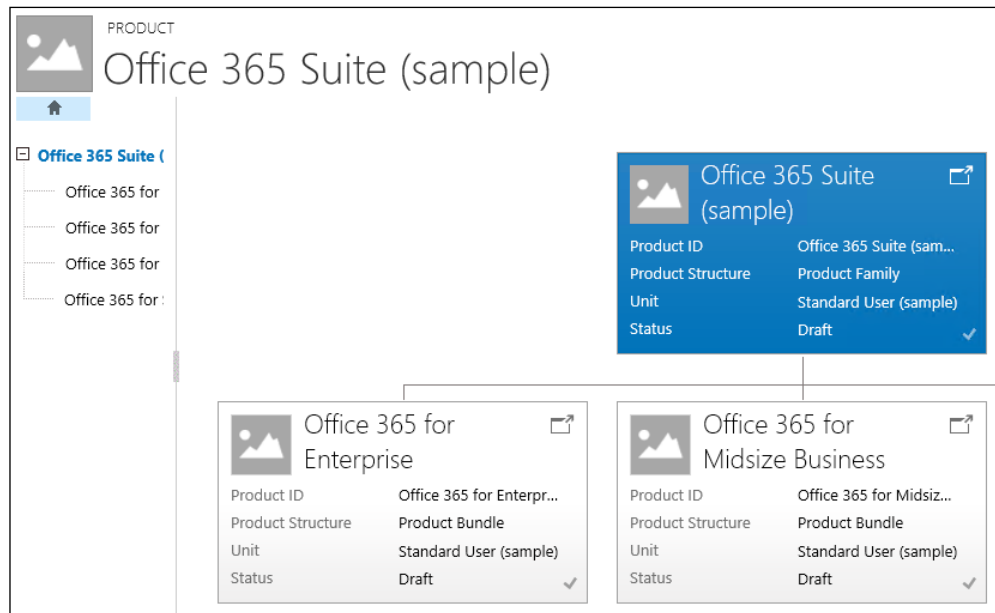
1. If volume discounts are to be used, the **Discount Lists** section must be created first.

2. Next, create **Unit Groups** and **Units**. Here, you can define the quantities that the products are being sold at. **Unit Groups** allows you to group by different categories of measurements. For example, if products are being sold by weight, length, unit, or a specific number of units, these products must be set up as available unit groups.
3. Create **Price Lists**. Each price list is a collection of items and their related prices. Products can be added to price lists later on, but you need to create an empty price list at this point.
4. Create **Products**. For each product being sold, a **Product** record must be created. As part of the **Product** record creation, link the product to a unit group and a default unit. This allows you to define how the product is sold. For example, if a product is sold by length, associate it with the **Unit Group** that defines lengths and the default length it is measured at.
5. Associate the product with the price list. Each **Product** on a **Price List** is a price list item. In addition, here you can associate discount lists. There is a limitation of a single discount list per price list. The opposite though allows you to associate the same discount list with multiple price lists.
6. Select **Default Price List**. If an opportunity has an associated **Price List** that does not include a particular item, the **Default Price List** is queried and the item is retrieved from there. As such, the **Default Price List** should include all the products and services available.

The following screenshot shows the options presented in the **Product Catalog** area:



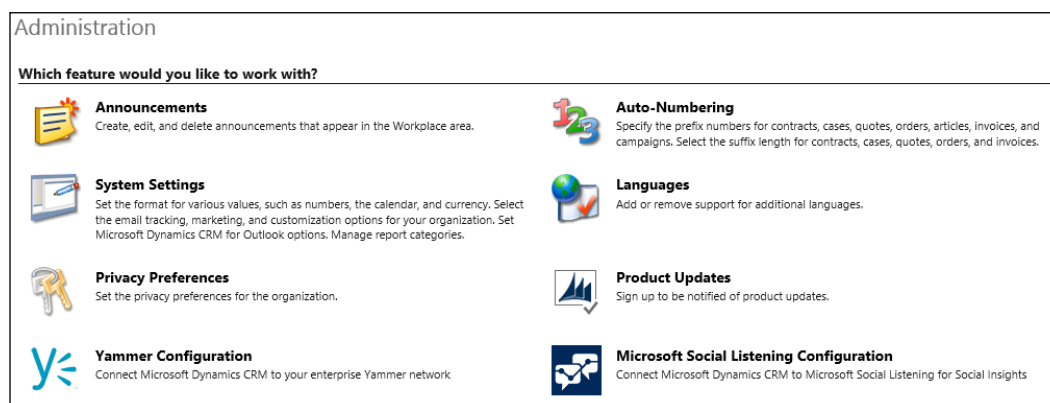
Starting with Dynamics CRM 2015, you now have the ability to create and group products by product families. This lets you define relationships between products and product templates and allows you to enhance the process of managing products and services. The new structure includes product families, product bundles, and individual products. Now, you also have a hierarchical visualization of products and services based on predefined relationships. Not only can you see a tree structure of the products but also a graphical display that can be reused on other forms.



Products are defined by properties, and now you can create properties across families of products. For example, you can create shared product properties, such as color, size, version, and so on, and share them across a family of products. These properties are then inherited in all the products of the family. They can be configured as read-only, read/write, or required and hidden, as needed.

Administration

The **Administration** area can be found by going to **Settings** and then **System**. Here, you are presented with the general system settings for the organization. The following screenshot shows the **Administration** window:



As you can see if you have worked with the previous versions of the product, the options have been reorganized and streamlined. The **Administration** section now includes only the organization's administrative items, while all the configurations related to security and other items have been moved and relocated to their own respective areas.

Let's take a look at each option individually and see what it does.

The **Announcements** area allows you to define organization-wide announcements. This can be used for the notifications that all system users should receive. When defining an announcement, you must provide a title and a body containing the announcement details. Additionally, you can provide a URL that links to additional details or an external source and an expiration date for when the announcement becomes irrelevant and should be removed.

This is a feature that was kept for backward-compatibility with Dynamics CRM 2011. For organizations that upgraded from Dynamics CRM 2011, the workplace area can be kept, and this is where these announcements are being displayed. With new organizations created in Dynamics CRM 2013 or newer, the workplace area has been removed. While you can still bring back the announcements area, you need to customize navigation in order to do so.

The **System Settings** area is where you can find all the necessary organization configurations. Here, the settings are organized in thirteen main categories.

The general area of system settings allows you to configure autosave on forms. Here, you can enable or disable autosave globally. You can also enable presence through integration with Lync. This will show users the statuses of other system users when they are taking a look at their own records. Here, you can also define name formatting, currency precision, currency display options, and sharing records on reassignment.

Also, in the general area, you can configure file extensions that are blocked from the system. While Dynamics CRM supports the attachment of files to records through the notes section, you should define limitations with regard to which files are allowed to be loaded in the system. By default, Dynamics CRM provides a list of the file types that are blocked. This is a good starting point, but it can be edited and enhanced as needed.

Starting with Dynamics CRM 2015, you can see enhancements with regard to search. The general area of system settings allows you to configure the settings around **Quick Find**. You can enable a limit on the number of records displayed in the search results as well as the entities that you can perform a search across. The new search now returns results across up to ten different entities, and here is where you configure this. The following screenshot shows the actual configuration interface presented by Dynamics CRM:

Set up Multi-Entity Quick Find for Default Search
You can include up to 10 entities in a multi-entity Quick Find. Move entities up or down to set the order results are displayed.

Available Entities		Selected Entities
Address	Add > < Remove Move Up Move Down	Account
Appointment		Contact
Article		Lead
Article Template		Opportunity
Business Unit		User
Campaign		Competitor
Campaign Activity		Activity
Campaign Response		Case
Case Creation Rule		
Connection		
Connection Role		
Contract		
Contract Line		
Contract Template		

The **Bing Maps** area of the **General** tab allows you to enable **Bing integration and input the Bing Maps key**. If **Bing maps** are not to be used, you can disable the functionality from here.

This section also provides settings around telephony. As before, both Skype and Lync are supported out-of-the-box, and you can enable automatic prefixing based on country or region.

With Dynamics CRM 2015 and up, you now have the ability to include customized help, and you can configure the custom help URL from here:



Set custom Help URL	
Use custom Help for customizable entities	☐ Yes ☒ No
Global custom Help URL	
Append parameters to URL	☐ Yes ☒ No

In addition, a new setting was added to the **General** tab that allows you to globally disable the navigation tour.

The **Calendar** area of **System Settings** presents you with a single option to configure the maximum duration of an appointment in days. This allows you to limit all the users in the organization to a maximum duration.

The **Formats** tab presents global options for the currency format, time, and date, as well as numbering formats. You can select a predefined format or customize your own as needed.

The **Auditing** tab allows you to globally enable or disable auditing as well as to configure auditing to be available to specific sections of the application.



Note that, once **Auditing** is disabled globally, all the settings at the entity level are disabled. You can enable auditing globally and then enable each entity as needed.

The **Email** tab presents options for globally configuring the e-mail processing method as server-side synchronization or e-mail router. You can select a predefined server profile that will dictate the default settings for all the newly created users. In addition, here you can configure e-mail tracking settings and the token to be used, as well as smart-matching settings to capture e-mails.

The **Marketing** tab allows you to configure mail merges and campaign responses; you can also unsubscribe settings.

The **Customization** tab allows you to configure Dynamics CRM to open in application mode. This will allow users to see the Dynamics CRM system in a way that mimics a desktop application.

On the **Outlook** tab, you can get options to configure Outlook synchronization. These are global settings, and they can be overwritten by user settings. As such, these settings serve as a template for all new users.

The **Reporting** tab allows you to configure the main report categories. New reports can be added to these categories for easy management and display filtering.

The **Goals** tab presents options for roll-up expiration time and frequency. Here, you can configure roll-ups to be recalculated at a set interval and to expire after a set duration in days.

The **Sales** tab deals with configuration around product state on creation, price list, allocation, and discounts. In addition, here you can find settings for product bundling and the maximum values for products and product properties.

On the **Service** tab of **System Settings**, you configure if **Service Level Agreements (SLAs)** are enabled and when an SLA is on hold. This allows you with Dynamics CRM 2015 to stop calculating an SLA while a case is either on hold, or while you are waiting for feedback from a customer.

Lastly, the **Synchronization** tab presents you with options to manage integration with Microsoft Outlook and Exchange. You can get to the preconfigured filters for synchronization and offline from here. In addition, you can define whether appointments are to be synchronized, the type of address to be synchronized on contacts, and whether you need to synchronize tasks.

The **Privacy Preferences** area is where you can configure error reporting at the global level. You can now disable error messages presented to users and choose to handle them automatically on behalf of the users.

The following screenshot shows how the **Privacy Preferences** window looks:

Privacy Preferences ?

Set Privacy Preferences for the Organization

Usage Reporting Error Reporting

Select your error notification preferences

You can set error notification preferences on behalf of your users. If you choose not to set error notification preferences, your users can specify their own individual error reporting preferences in their personal options.

☒ Specify the Web application error notification preferences on behalf of users

Every time a Web application error occurs when a user runs Microsoft Dynamics CRM:

☐ Ask the user for permission to send an error report to Microsoft

☒ Automatically send an error report to Microsoft without asking the user for permission

☐ Never send an error report to Microsoft

[View Privacy Statement](#)

OK Cancel

Yammer Configuration is where you configure Yammer integration as presented in *Chapter 5, Social Features in Microsoft Dynamics CRM*.

The **Auto Numbering** area allows you to configure the format for auto-numbering used at various places in the system. Entities supporting auto-numbering out-of-the-box include:

- Contracts
- Cases
- Articles
- Quotes
- Orders
- Invoices
- Campaigns

For each one of these entities, you can customize the formatting of the autonumbering generated, shown as follows:

Set Auto-Numbering ?

Specify prefixes for these entities. Select suffix length for the eligible entities.

Contracts Cases Articles Quotes Orders Invoices Campaigns

Prefix* CNR

Number 1000

Suffix Length 6 ▼

Preview CNR-01000-AS7FX3

Here, you can configure the **Prefix** to be used as well as the **Suffix Length**.

For more advanced rules around auto-numbering, it is recommended that you develop a plugin to generate these numbers. In this you can specify all the rules and the external sources you might need to use. For example, your unique numbers might come from an external system or be mapped to specific records from other systems.

Languages is where you manage system languages. When creating your organization for the first time, you select the default language. In addition, you can add as many other languages as needed from the available supported languages. In order to be able to manage other languages, the specific language packs need to be installed on the organization.

The **Product Updates** area is basically just a link to the online profile center, where you can opt to be notified of updates and set your communication preferences.

Here is how it is presented on the screen:

Microsoft Dynamics CRM Product Updates

Thank you for taking the time to fill out the following online form. If you do not want to submit your information, click **Cancel**.

* Indicates a required field

* To subscribe, select the communication(s) below and your preferred delivery format (HTML or Text).

Subscribe	Format HTML/Text	Communication Description
☐	☒ ☐	 Microsoft Dynamics CRM Product Update Notification (EN-US)

* My E-Mail Address

Required: E-Mail Address

The MSL configuration area allows you to configure integration with MSL. Social listening, which has been presented in *Chapter 5, Social Features in Microsoft Dynamics CRM*.

Security

The next area of settings that you are looking at is the **Security**. As a result of streamlining the administration of the platform, starting with Dynamics CRM 2015, you now have a new section called **Security**. As you can see in the following screenshot, we have now grouped in here all the settings related to **Users**, **Teams**, and the related **Security Roles**:

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.	 Teams Add new teams and new members to existing teams. Modify the team description and delete members from teams.
 Security Roles Create new security roles. Manage and delete existing security roles for your organization.	 Business Units Add new business units. Edit and deactivate existing business units. Change the parent business unit.
 Field Security Profiles Manage user and team permissions to read, create, or write information in secured fields.	 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.
 Positions Add new Position. Modify the Position description.	 Access Team Templates Add new team templates. Modify the team template description.

The **Users** area is where you can manage system users. We have a large variety of views in the users listing, with various filter options already created. You can see users by their status, ownership, roles, relationship, team, or social relationship. This **User** area is also the entry point to add new users to the system, disable users, or update their information.

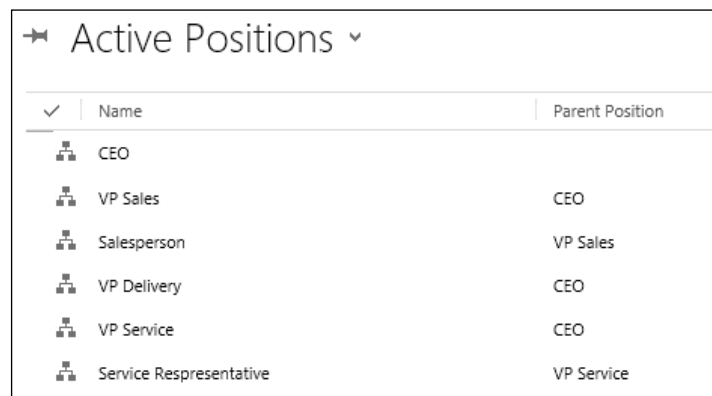
The **Security Roles** area is where you can define specific roles and permissions. There is a tight relationship here with the **Business Units** configuration, shown in the previous screenshot.

You can create as many security roles as needed, and you can assign one or more security roles to a user. The final permissions are determined by merging all the permissions allocated through all the security roles assigned to a user.

Security roles can be assigned to either a user or team. Assigning a security role to a team will give all team members the same permissions as the team.

The **Field Security Profiles** area is where you configure the read, create, or write permissions for users and teams. In order to have the secured fields working properly, you need to define rules around who has which permissions on those fields. The process involves three steps once a secured field has been added to an entity form. First, you need to create a field security profile. Then, associate users or a team to this profile. Lastly, you need to add the specific field permissions.

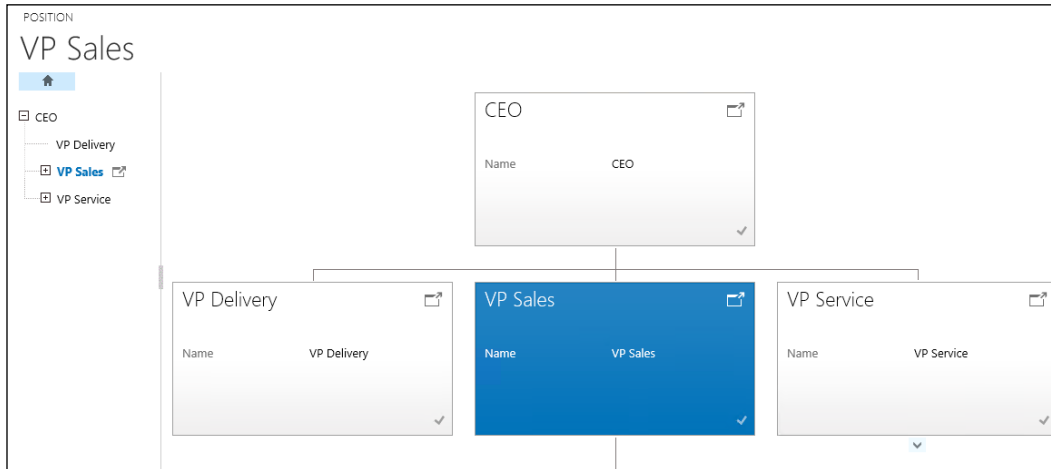
The **Positions** area is a new feature added with Dynamics CRM 2015. This area allows you to not only create standard relationships between roles, but also to visualize these relationships. The default view is **Active Positions**, and it presents a listing of the available roles in the organization. Observe that now you have a new column preceding each record, with a symbol representation of a relationship. The following screenshot shows a view with the relationship symbols presented. Clicking on the **CEO** relationship icon will show a graphical visualization of the resource breakdown structure:



Active Positions ▾		
✓	Name	Parent Position
	CEO	
	VP Sales	CEO
	Salesperson	VP Sales
	VP Delivery	CEO
	VP Service	CEO
	Service Representative	VP Service

This type of icons shows up in several places where you have visualization enhancements around relationships. Clicking on these icons allows you to see, and navigate visually through, the whole relationship tree.

The beauty of this new functionality is that you can also take these visual representations and reuse them on various records, as shown in following **Product** window:



The **Team** area allows you to define and manage teams in the system. Defining a team involves naming the team, assigning it to a particular business unit, defining who the team administrator is and the user creating the team by default, and determining and assigning the team members. Once a team is created, go to **Manage roles**; this allows you to associate one or more security roles with the team.

The **Business Units** area allows you to customize various business units and their relationships. Within every Dynamics CRM organization, there is one main business unit created on organization creation. Additional business units can be added as children of this main business unit or as children of its children.

With the business unit structure, you can create a tree structure of the parent-child business units. The purpose of using business units is mainly for security modeling. As part of configuring security roles, permissions allow you to configure access as follows:

- None selected
- User

- Business unit
- Parent-child business units
- Organization

The **Hierarchy Security** area is again a new feature introduced with Dynamics CRM 2015. It provides hierarchical visibility and is based on the user or manager relationships defined on the user accounts. Using this new structure allows configuration for read, update, append, append for a direct manager, and read permissions to roles above the direct manager. Using these relationships, you can create views that show the activities of all subordinate roles for presentation on dashboards and reports.

In this section, you can enable or disable the use of this feature. If it is enabled, you can define **Hierarchical Modeling** by selecting either a direct **Manager Hierarchy** or **Custom Position Hierarchy** as well as the maximum **Hierarchy Depth** for analysis. You can also define entity exclusions so that you only capture the relevant types of records. This is how the **Hierarchy Security** window looks:

The screenshot shows the 'Hierarchy Security' configuration window. At the top, there is a title 'Hierarchy Security' and a descriptive paragraph: '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.'

Below the description, there are three main sections:

- Turn on Hierarchy Modeling:** This section contains a checkbox labeled 'Enable Hierarchy Modeling', which is currently unchecked.
- Select Hierarchy Model:** This section contains two radio buttons. The first is 'Manager Hierarchy', which is selected, and has a 'Configure' link below it. The second is 'Custom Position Hierarchy', which is unselected, and also has a 'Configure' link below it.
- Hierarchy Depth:** This section contains a text input field with the value '100'.
- Exclude following entities from hierarchy:** This section contains two lists of entities. The 'Available Entities' list on the left includes: Account, Activity, Appointment, Campaign, Campaign Activity, Campaign Response, and Case. The 'Selected Entities' list on the right is currently empty. Between the two lists are two buttons: 'Add >' and '< Remove'.

Access Team Templates is where you define and manage templates for access teams. When creating these templates, you must define the related entity as well as the permissions. You can select one or more access rights to be allocated to each template.



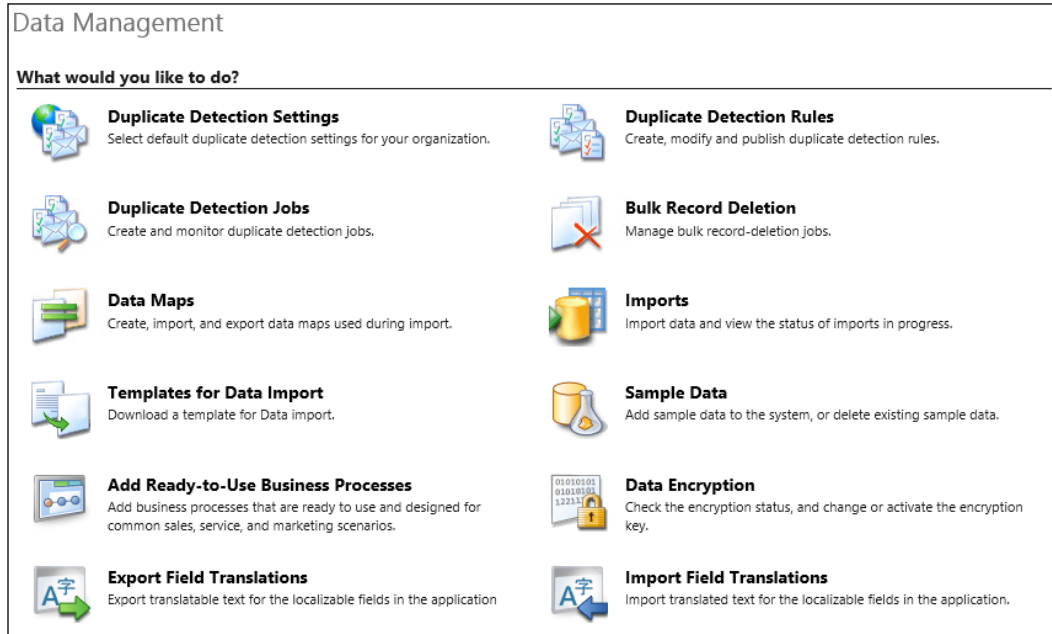
Note that, once a team template has been added, the associated entity needs to be updated. The entity's main form must be customized to include the new **Team Template** in the **Name** field.

Access team templates are used in relation to the entities enabled for the automatic creation of access teams. In the following screenshot, you can see how **Opportunity Sales Team Template** functions in the **Name** field:

The screenshot shows the 'Team template' form for 'Opportunity Sales Team Template'. The form has a title bar with 'Team template' and 'Opportunity Sales Team Template'. Below the title bar, there is a 'General' tab. The 'Name' field is labeled 'Name *' and contains the text 'Opportunity Sales Team Template'. The 'Entity' field is labeled 'Entity *' and contains the text 'Opportunity'. The 'Description' field is labeled 'Description' and contains the text 'Out of box Opportunity Sales Team Template'. The 'Access Rights' section is labeled 'Access Rights *' and contains a list of checkboxes: 'Delete', 'Append', 'Append To', 'Assign', 'Share', 'Read', and 'Write'. The 'Append', 'Append To', 'Read', and 'Write' checkboxes are checked.

Data Management

The **Data Management** section can be found by going to **Settings | System**. As you can see in the following screenshot, it is here that you configure **Duplicate Detection Rules** and **Duplicate Detection Jobs**, carry out a bulk record deletion, manage the mapping of imported data, and manage import jobs. You can also load or remove sample data for development environments from here.



The **Duplicate Detection Settings** section allows you to enable or disable duplicate detection and provides options for some of the most common scenarios when duplicate detection should run. You can check for duplicates on a record being created and updated or on Outlook going offline, coming back online, and during data import.

In the **Duplicate Detection Rules** section, you have the ability to enable some of the out-of-the-box rules provided or to create new rules and update the existing ones. For a rule to be active, it must be published. When you are editing rules, you must unpublish the rule first, make the necessary modifications, and then publish the rule again to make it available to all users.

The **Duplicate Detection Jobs** section allows a user to see existing duplicate detection jobs, the status of each job, and to create new jobs manually. Here, you have the option to select various views from a listing of six default system views. You can filter by jobs completed, jobs in progress, jobs not started, and recurring jobs. You can also filter by jobs belonging to the current user.

The **Bulk Record Deletion** section shows a listing of the system jobs and the status of each job. You can navigate to a particular job to get more details.

The **Data Maps** section allows you to manage saved maps for data import. Here, you see a listing of the existing data maps. You have a choice of views with filters for active, inactive, and personal data maps.

The **Imports** section is where you can see current and past import jobs as well as the result status. Various views allow you to select and display data based on predefined filters, including a listing of all the imports filtered by status or personal imports only.

The **Templates for Data Import** section is where you can extract templates for all the entities in the system. Here, you are presented with the option to select the entity you need an import template for and the ability to download it. You can use these templates to create new sets of data for import.

The **Sample Data** section allows you to populate your organization with sample data or remove this sample data. The sample data provided by Microsoft is just a subset of a populated record. You can use this sample data to test or demonstrate the functionality of the system.

The **Add Ready-to-Use Business Processes** section is an addition that comes with Dynamics CRM 2015. This will add a set of predefined business processes to the system. These can be used as a starting point for future customizations, or you can use them as such, if relevant. Once they are added, you can manage them along with all other custom business processes, as described in *Chapter 4, Business Processes*.

All these processes are installed as part of a solution named **Business Processes**. In order to remove these business processes, you can uninstall this managed solution.

The **Data Encryption** section is where you can check, change, or activate the encryption key. This is only available for organizations configured to use HTTPS.

In the **Export Field Translations** and **Import Field Translations** sections, you can manage translatable text for the various languages configured in your organization. Exporting the translations allows you to download a zipped package containing two XML files:

Name	Type	Size
[Content_Types]	XML File	1 KB
CrmFieldTranslations	XML File	117 KB

As you can see in the previous screenshot, the first XML file called **[Content_Types].xml** contains the type definition, while the second file called **CrmFieldTranslations.xml** contains the actual field definitions for each locale. The second file is, in fact, an Excel XML file that should be opened with Microsoft Excel.

Monitoring system jobs

System jobs, also known as asynchronous operations, are the way to create and manage the execution of asynchronous system operations. These operations include the execution of workflows, plugins running asynchronously, or other background jobs. These operations are managed in the database through records in the asyncoperation entity. The following screenshot shows the standard **System Jobs** view:

NEW ACTIVITY ▾ + NEW RECORD ▾ IMPORT DATA					
System Jobs					
E... All ▾ Vi... All System Jo ▾					
More Actions ▾					
✓	System Job Type	System Job Name	Regarding	Status Reason	Owner
Calculate Rollup...	Calculate rollup fields for the account entity		Succeeded	SYSTEM	
Bulk Delete	Delete completed system jobs		Succeeded	SYSTEM	
Bulk Delete	Delete completed process sessions for Sync Workflows		Succeeded	SYSTEM	
Calculate Rollup...	Calculate rollup fields for the account entity		Succeeded	SYSTEM	
Calculate Rollup...	Calculate rollup fields for the account entity		Succeeded	SYSTEM	
Calculate Rollup...	Calculate rollup fields for the account entity		Succeeded	SYSTEM	

You can filter the view of jobs by entity and also using the predefined system views available. These entity includes a listing of all the jobs as well as jobs by status. This makes it easier to find a particular job.

On opening a particular job, besides the status details about the job owner you can see the time when it was created and completed. For jobs that fail and are set to automatically retry, you have a **Retry Count** field presented on the job details too. The following screenshot shows the **Calculate rollup fields for the account entity** job details:

System Job: Calculate rollup fields for the account entity

Information

System Job : Information

General
Details

Related

General

Name: Calculate rollup fields for the account entity

Regarding: [Empty]

Job Owner *: SYSTEM

Retry Count: 0

Type: Calculate Rollup Field

Created On: 11/6/2014 6:53 PM

Completed On: 11/6/2014 6:53 PM

Details

Document Management

The **Document Management** area allows you to configure SharePoint integration. Integrating Dynamics CRM with SharePoint in this way provides an additional functionality for document management. As you can see in the following screenshot, you can now start to take advantage of all the document versioning features of SharePoint, as well as checkouts, checkins, and auditing:

Document Management

Which feature would you like to work with?

Document Management Settings
Select default document management settings for your organization.

Install List Component
Install List Component

SharePoint Sites
A SharePoint site is a record on a SharePoint server or in a site collection. SharePoint site records map to sites or records on a SharePoint server.

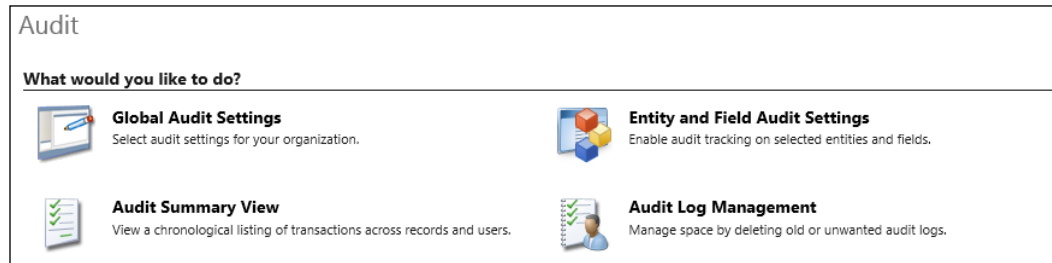
SharePoint Document Locations
A document location record maps to document libraries or folders on a SharePoint server. They are defined relative to a SharePoint document library record or a document location record. They can be associated with a Microsoft Dynamics CRM record.

In order to configure SharePoint integration, the following steps need to be followed:

- First, in the **Document Management Settings** area, there's a link to **Install List Component**. This takes you to the download center where you can get the **List Component**. This is a SharePoint component that must be installed on the SharePoint server you intend to use for integration. Select a SharePoint site collection you want to use for integration and deploy this component in there. In order to install this, you must be a site collection administrator.
- Once this is done, you can go to the **Document Management Settings** area and follow the wizard to configure integration. You must provide the URL to your SharePoint site collection, select the entities that will be integrated, and specify the format in which automatic folder creation will take place at the SharePoint end.
- If, during the configuration, the wizard detects that the site you are pointing to is not a SharePoint site or the list component is not installed, you will be prompted.
- The **SharePoint Sites** section allows you to see which integration points are configured. You can have multiple SharePoint sites configured in your environment.
- The **SharePoint Document Locations** section lists all the configured document locations in the system. Here, you can manage all the locations, add new ones, and modify or remove the existing ones.
- You can configure SharePoint integration to either automatically let CRM create the structure on SharePoint—you can customize the creation process so that you follow specific business rules around how to create the folder structure on SharePoint—or you can point each record individually to a specific document library and folder on SharePoint.

Auditing

Dynamics CRM allows extensive auditing down to the field level. This can be enabled on any organization. Careful attention should be paid to how much you need to audit, as this can have a negative impact on both performance and data storage. The more you audit, the more space you will require for the audit logs. The following screenshot shows the **Audit** window with all its features:



In the **Audit** window, you have options to globally enable or disable auditing, configure auditing at the entity and field levels, and manage and review the audit logs.

The **Global Audit Settings** option is where you can enable or disable auditing as well as configure auditing for the main modules in the system. This takes you back to the **System Settings** section, which you reviewed earlier in the chapter.

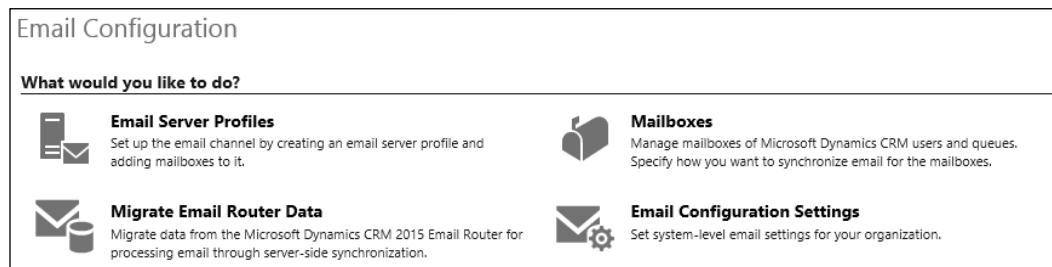
The **Entity and Field Audit Settings** option takes you to the configuration of the default solution. Here, you can go to each entity and manage auditing settings.

The **Audit Summary View** option presents the audit log in a way that allows you to sort and filter in order to easily retrieve the specific records you are looking for. The same view management functions apply just like any other view in the system.

The last option, **Audit Log Management**, allows you to present a listing of all logs, with the start and end dates. For managing space, you can remove older logs from this view.

Email configuration

This window of the **Email Configuration** area allows you to configure the type of e-mail integration used and to manage the various integration points and methods. The following screenshot shows how the **Email Configuration** window should look:



The **Email Configuration Settings** option allows you to configure global settings for e-mail. This leads you back to the **System Settings** section, which we covered earlier in the chapter.

The **Migrate Email Router Data** option allows you to move your configuration from the e-mail router to the new server-side synchronization available. For this functionality to work, you must have the old e-mail router available, the new server-side synchronization enabled and configured, and the organization must be using HTTPS.

The **Email Server Profiles** section allows you to configure one or more profiles for e-mail handling. You can configure both exchange and POP3-SMTP servers for integration with Dynamics CRM. This allows you to cover configuration for various types of e-mail servers, including public e-mail services from other third-party providers.

For exchange configuration, as long as the exchange server is in the same domain as our Dynamics CRM environment, you can use the **Auto Discover Server Location** option, which simplifies the configuration process.

For each profile that is created, you need to configure authentication rules, either by using specified credentials, Windows integrated authentication, or anonymously where supported. You can also specify same or separate credentials to be used for incoming and outgoing.

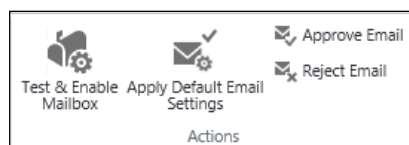
Once a profile is created, you can manage related mailboxes from within the profile or separately.

The **Mailboxes** option allows you to manage individual mailboxes separately. For each mailbox, you can configure the synchronization method as either using an **Email Server** Profile already created or including specific settings for incoming and outgoing e-mails; this can be configured in a similar way for appointments, contacts, and tasks. When an e-mail server profile is not being used, you can opt to use Microsoft Dynamics for Outlook, server-side synchronization, an e-mail router, or a forward mailbox as needed. You can do this for both incoming and outgoing messages. For the other items to be synchronized, including appointments, contacts, and tasks, the only available options are Microsoft Dynamics CRM for Outlook or server-side synchronization.



Note that the e-mail router option does not support synchronizing appointments, contacts, and tasks.

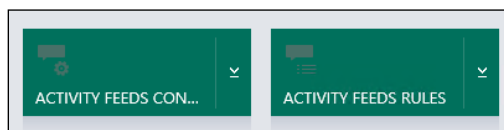
Once a mailbox is configured and the e-mail is approved, you get the following options. You can now test and enable the mailbox by clicking on **Test & Enable Mailbox** on the ribbon.



This runs a validation process and returns status messages regarding the success of your configuration. The process to test the configuration runs asynchronously, which can result in a slight delay before the actual result is displayed. You will first be prompted that the test has been scheduled. Once it's completed, you will get the final results.

Configuring activity feeds

The configuration of the **Activity Feeds** window is grouped into two separate menus on the **Settings** ribbon, shown as follows:



Activity feeds configuration

The **Activity Feeds Configuration** menu is where you get access to all the active and inactive post configurations. There are individual records for each entity that has activity feeds enabled. Each post configuration record contains a reference to the entity it applies to, a setting to enable or disable the activity feeds wall, as well as a grid with all the specific rules and their respective statuses as they apply to this entity.

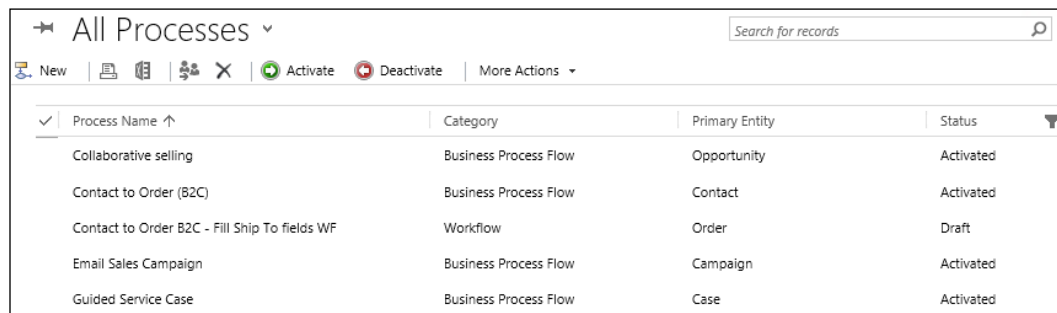
Activity feeds rules

Using the **Activity Feeds Rules** menu, you can get a list of all the rules configured in the system. The default view is **All Activity Feeds Rules**, which presents information about the rule, the entity it references, as well as the status. Each rule must be enabled for it to participate in the processing. You can enable or disable rules as needed at different times.

Process center

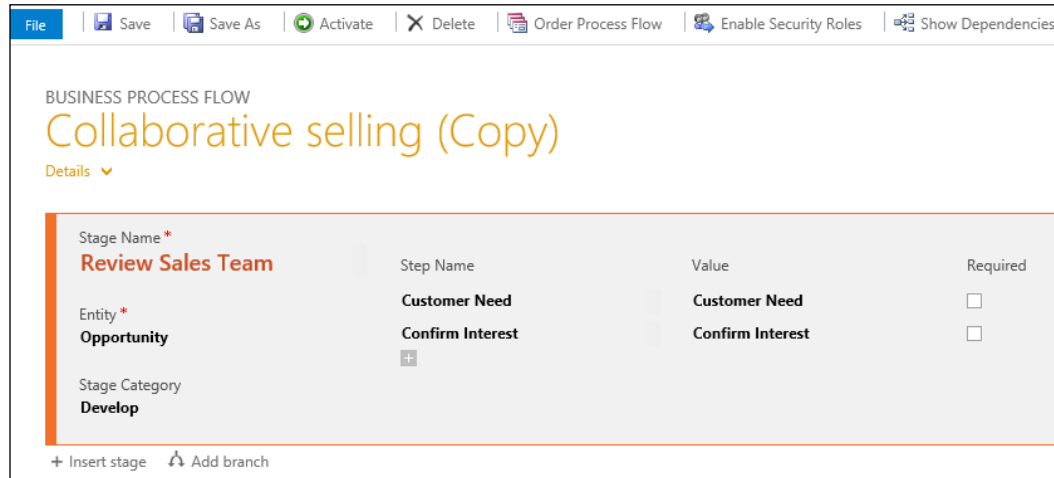
The **Process Center** area allows you to get configured business processes in your organization. You can filter and sort the view as needed to find the process you need to verify. The status is also presented in this view. A process must be activated to participate in the processing, and it must be put in the **Draft** folder while modifying it. Options to activate and deactivate the process are presented on the ribbon.

You can create new processes, such as **Business Process Flows**, **Workflows**, **Dialogs** or **Actions** from here. These were all described in detail in *Chapter 4, Business Processes*. The following screenshot shows the **All Processes** view:



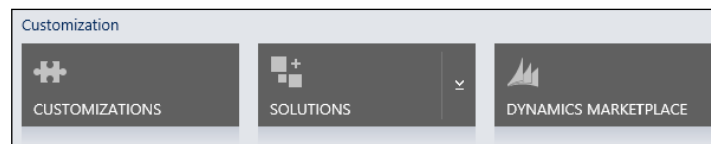
Process Name	Category	Primary Entity	Status
Collaborative selling	Business Process Flow	Opportunity	Activated
Contact to Order (B2C)	Business Process Flow	Contact	Activated
Contact to Order B2C - Fill Ship To fields WF	Workflow	Order	Draft
Email Sales Campaign	Business Process Flow	Campaign	Activated
Guided Service Case	Business Process Flow	Case	Activated

If a set of predefined business processes is added from **Data Management** to **Add Ready-to-Use Business Processes**, they can also be activated or deactivated from **Process Center**. These processes are not editable, though. If you want to make modifications, you must disable the original process, save it as a new process, and then start modifying it. Once done, reactivate the process. From the ribbon, shown in the following screenshot, select the **Activate** option with the green icon:



The customization area

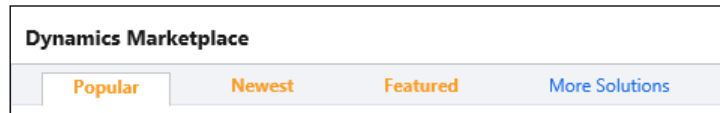
The **Customization** area is where most developers and solution and deployment administrators spend their time. As shown here, this area comprises three sections: **CUSTOMIZATION**, **SOLUTIONS**, and **DYNAMICS MARKETPLACE**:



Dynamics marketplace

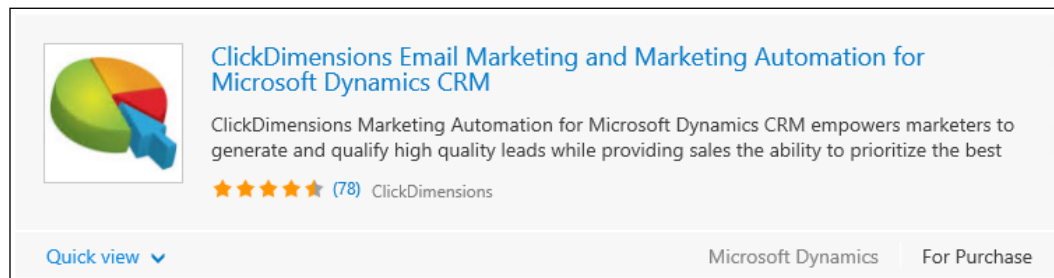
Dynamics Marketplace is the app store for Microsoft Dynamics CRM. Here, partners and **Independent Software Vendors (ISVs)** can commercialize their specific applications and solution extensions. This concept was introduced with Dynamics CRM 2011 and is meant to simplify the process of selling solutions for Dynamics CRM and to provide a common area for all solutions to be made available. While this is a good concept, not all ISVs commercialize their solutions through the Dynamics Marketplace.

Dynamics Marketplace is a searchable repository from within your Dynamics CRM organization. The following screenshot shows that you can filter the results by popularity and date, or you can navigate to the online repository:



The online repository is powered by Microsoft Pinpoint. Navigating to the repository allows you to further sort and filter a capability by business-specific needs, industry, price, version of Dynamics CRM, and whether the solution is certified by Microsoft Dynamics or not.

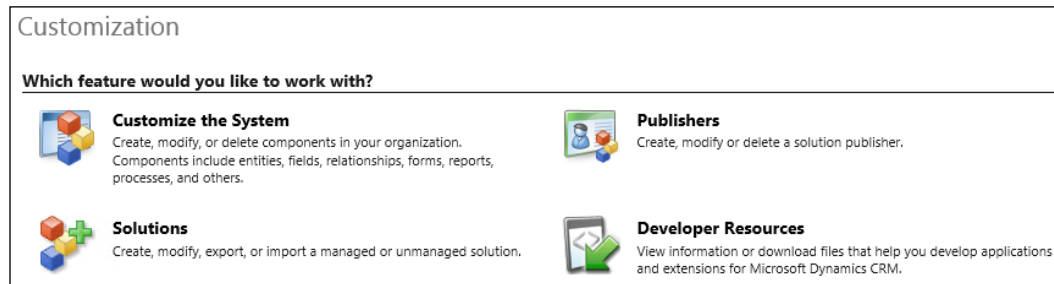
When you look at a particular solution in detail, you can see an extensive description of the solution, whether it is available for purchase or it is free, the business need, and the versions of Dynamics CRM it is compatible with. You can also see the community rating, which should give you pretty good feedback on how successful the solution is with other users. This screenshot shows you a condensed view of the **ClickDimensions** solution in the marketplace:



Expand **Quick view** to get access to additional details.

Customization

The **Customization** area is where you get access to all the developer options and the management of deployed solutions. The **Customization** windows looks similar to the following screenshot:



From this area, you can get access to the default solution by selecting the **Customize the System** option. Customizations that need to be ported to other environments they should not be done under this section, as they will need to be repackaged later at greater effort and cost. The base solution includes all the components that come standard with the system. Also, when deploying unmanaged solutions, those customizations are merged into the base solution.

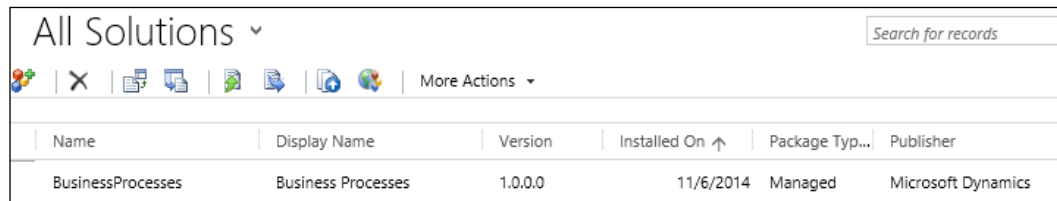
The **Publishers** option allows you to manage and configure solution publishers in your organization. All solutions have a publisher associated with them.

The **Developer Resources** option is where you find specific developer information about your organization. Here, you have access to the online developer center as well as details about organization-specific endpoints. You can see the discovery service URL, the organization service URL, the organization data service, and the protocols used for each.

Finally, the **Solutions** area links you back to the same solution management that is accessible directly by navigating to **Settings | Solutions**.

Solutions

The **Solutions** area is where you manage the various solutions deployed to your organization. Use the ribbon elements to organize the existing solutions, remove solutions, or deploy new ones. The following screenshot shows the **All Solutions** view:



Name	Display Name	Version	Installed On	Package Type	Publisher
BusinessProcesses	Business Processes	1.0.0.0	11/6/2014	Managed	Microsoft Dynamics

In *Chapter 3, Customizing Entities* we covered the details of how to work with solutions.

From the **Solutions** area, you can also export unmanaged solutions, import new solutions as needed, and as export and import translations across the entire organization.

Summary

Throughout this chapter, we took a detailed look at the administration of Dynamics CRM. While this is not an in-depth presentation of all the available administration options, because we can dedicate a whole book to this topic we went through all the available options and looked at what each area is for.

This chapter presented just enough information to get you familiar with the various administration options available with Dynamics CRM and where to find each option. For in-depth information about each of the particular topics, refer to the SDK available for download for the current version of Dynamics CRM at <http://www.microsoft.com/en-us/download/details.aspx?id=44567>.

Microsoft Dynamics CRM is a constantly-evolving platform. Currently, Microsoft is running on a rapid release cycle, with two releases a year, one minor in the spring and one major in the fall.

The Microsoft Dynamics CRM Customer Center portal is the best place to keep up with announcements of new features and versions.

It is available at

<http://www.microsoft.com/en-US/dynamics/crm-customer-center/get-ready-for-the-next-release.aspx>.

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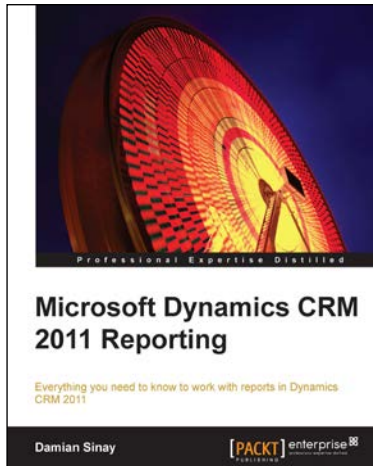
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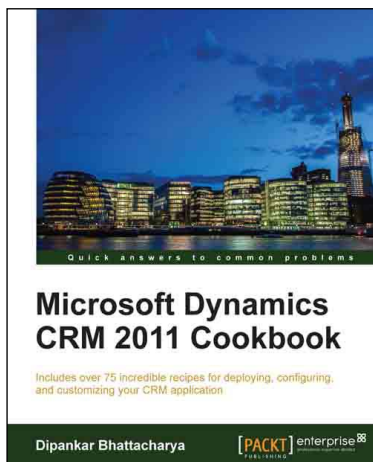
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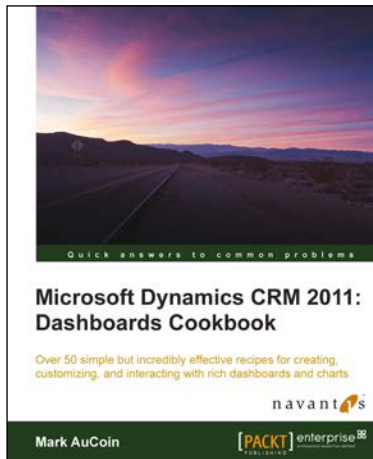
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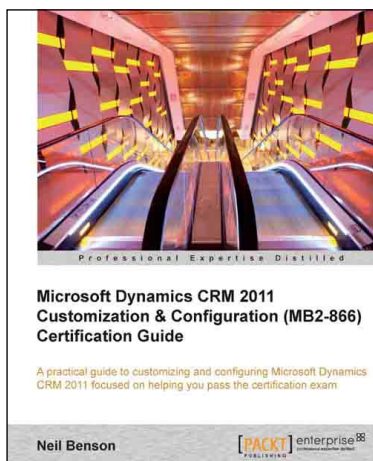
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