Become ITIL Foundation Certified in 7 Days

Learning ITIL Made Simple with Real-life Examples

Abhinav Krishna Kaiser

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Printed on acid-free paper

Dedicated to my family who sacrificed several evenings and weekends while I hammered on the keyboard

Contents at a Glance

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About the Author

Abhinav Krishna Kaiser is a consulting manager at a global corporation. His experience is varied, and he has worked in IT Service Management Consulting and Training, DevOps Consulting and Training, Operations and Delivery Management, and Project Management.

As a management consultant, Abhinav has consulted with a number of customers to solve problems, design solutions, create value, and achieve intended outcomes. Abhinav is a certified ITIL Expert and Project Management Professional (PMP). He is COBIT certified as well. He is a telecommunication engineer by academics, but proceeded to work in various management roles, and his name has become synonymous with ITIL on various online channels.

Abhinav demonstrated his management consulting abilities in his early days, and this earned him a number of challenging assignments across the globe. He has led numerous engagements to design, implement, and operate ITIL-based service management environments in a number of countries, across five continents. His ability to foresee risks and anticipate challenges has helped him turn the tide in his favor during his assignments. With a fervor toward learning, Abhinav has turned his attention toward DevOps and Agile project management frameworks.

Abhinav is an accredited ITIL trainer for expert-level certifications, and he has conducted hundreds of classroom and online trainings on various ITIL certifications and topics. With a strong grasp of ITIL and effective training techniques, he has transformed the careers of several IT professionals. He has reviewed video trainings on PluralSight (formerly TrainSignal) for the ITIL foundation and intermediate offerings. Abhinav's YouTube channel, Abhinav on the Tube, has received favorable reviews for his incident management training videos.

Workshop in a Box: Communication for IT Professionals is Abhinav's first book, published in May 2015. The book helps IT professionals help overcome communication barriers that exist in IT and become better communicators.

Abhinav started writing blogs and technical articles in 2004. His articles have been highly appreciated for their simplicity, clarity, and the ease with which complicated topics are broken down. He has written articles for *Tech Republic* and *PluralSight* web sites. He writes regularly on his personal blog: Abhinav PMP | Inspiring Management (`http://abhinavpmp.com`).

Bengaluru, the silicon city of the Eastern hemisphere, is Abhinav's abode. He lives with his family. He is a bibliophile and enjoys reading both fiction and nonfiction works.

About the Technical Reviewer

Sumit Jha is an author, a thought leader, and an expert in IT strategy, SIAM, ITSM, and Transformation. He has as been instrumental in setting up and managing service management practices in multiple organizations. He ideated or formulated strategies for creation of Next Generation Service Management offerings and Go-To-Market Strategy for leading IT services companies. He delivered over 50 service management consulting assignments for various banking and finance, telecom, media, manufacturing, health care, and energy and utilities customers across the world.

He has helped many organizations define or evolve their organizational policies for service management and shaped their IT strategies. He transformed and turned around multiple failing accounts (customers). He has also been an entrepreneur for close to five years, building strategies and business and product solutions for his customers.

He authored *Making SIAM work: Adopting Service Integration and Management for Your Business* (the first book on SIAM), *Tackling Roadblocks During IT Implementation*, and an e-book *ITIL & Cloud Computing-A Glance*.

Acknowledgments

I thank Brendon Joseph, who was my team leader when I started my journey in ITIL. Without his insistence, I don't know if I would've taken up my first ITIL training.

I also thank all the organizations that I have worked in for believing in me, my managers who turned over the reins to projects that taught me the nuances of ITIL, my customers who questioned the logic and have helped me shape and reflect on the designs, and my team, without whom I wouldn't have been able to complete the projects I embarked on. I also thank my students in various classroom and online trainings who helped me think like a trainer. Finally I thank my online readers who pestered me for a long time, asking why I hadn't written a book on ITIL yet.

Preface

When my first book, *Communication for IT Professionals*, got published, many people told me that they were surprised that it was a book on soft skills rather than on ITIL, due to my prowess in ITIL circles. I knew it was forthcoming, and as it happens often in the movies, an opportunity came knocking when my debut book hit the stands. An acquisition editor from Apress asked me if I was willing to publish a book on ITIL. We shook hands, and within a month, we set the ball rolling.

I have worked as an ITIL trainer. ITIL concepts are pretty dry, you may start mumbling them one after another. So, I found a way to make this interesting. I always explained the concepts with a couple of examples, one from non-IT and the other from IT. This trick worked, and the training feedback further justified my faith in providing examples. Even when I wrote articles on ITIL-based topics, I always added an example. And the appreciation came in! This is the approach that I have undertaken in this book. You will find plenty of examples to relate to and quickly learn the topic rather than memorize phrases for passing the examination.

I signed the book contract while I was working in Sydney, and wrote a few chapters before moving back to Bengaluru for the arrival of my second child. I lost the momentum that I had gathered in Sydney, and the book schedule got delayed, at least by four months. Toward the end, I burned the midnight oil a number of days to finish shaping the book that people always wanted me to write.

Although I have done several ITIL implementations, trainings, and consultations, the journey of *Become ITIL Foundation Certified in 7 Days* taught me several possibilities and new approaches that I hadn't thought of earlier. It helped to tighten my hold on the ITIL framework.

I am heartbroken that this book project that I traversed the past year has ended. However, it gives me a chance to look toward future book projects. I have several ideas: advanced ITIL topics, DevOps, project management, and last but definitely not the least priority, a fiction book. Time and ideas will dictate my next book!

Introduction

The people who undertake ITIL Foundation certification are more often than not IT professionals who work full time and are trying to cram training and certification exams in between. *Become ITIL Foundation Certified in 7 Days* is designed and organized for IT professionals who have the will to go the extra mile and have the motivation to learn and grow.

The book is organized to enable you to be certification exam ready by the end of the seventh day. It is structured to help you study for a couple of hours a day, and in seven days time, without any additional reading, write the ITIL Foundation exam successfully.

I have considered that each day you have around three hours to spare for ITIL Foundation preparation, and in just a week of preparation will earn you the certification that can turn your career on its head.

The book is structured based on the lifecycle phases of ITIL. So the journey through the book will take you through step-by-step building blocks on IT services and how they evolved and were designed, implemented, and maintained.

If you wish to skip ahead, you are not going to miss the connection, as each chapter stands on its own and elaborates on the specifics. However, it is common to find references and interfaces to previous phases.

Chapters 1 and 2 offer general management topics and can be used outside of ITIL too. However, these chapters are included as the information is used heavily in ITIL and forms the basis of many activities, processes, and functions. Chapter 3 introduces the ITIL lifecycle phases, and Chapters 4 through 8 are dedicated to each of the phases in ITIL. The final chapter, Chapter 9, provides all the tips and tricks you need to pass the exam. As a bonus, in this chapter, I have answered several frequently asked questions (FAQs) on ITIL-based careers. Alternatively, you can read Chapter 9 first, and then start from the first chapter to give you the context for questions you might have on the choice of an ITIL career.

CHAPTER 1

Service Management as a Practice

Activities in the information technology (IT) industry can be broadly categorized into IT projects (waterfall, agile, etc) and IT service management. The design, development, testing, and creation of computer programs, mobile applications, telecommunications, data processing, and analytics engines, among others, come under the IT projects' scope. The IT products that are developed need to be maintained on an ongoing basis. They need to be fixed when they break down. Thus, the IT service management sector must take care of the maintenance of these IT products. Maintenance activities include upkeep of the infrastructure and software the way it was designed to work. It further includes activities like monitoring jobs, patching, performing administrative tasks, handling batch tasks, and optimizing performance.

IT projects are driven through frameworks such as Waterfall and Agile methodologies. IT service management, on the other hand, runs on frameworks such as ITIL (Information Technology Infrastructure Library), COBIT (Control Objectives for Information and Related Technology), or MOF (Microsoft Operations Framework).

Let's start by discussing the importance of service management.

1.1 Importance of Service Management

When you buy a product, say a smartphone, what are some of the things that you will consider? You would look at the features, brand, and price for sure. But what else comes up on the list? Perhaps service-related options such as cost of servicing, warranty, availability of service centers, parts covered under the service, and turnaround times are important. In fact, today, a brand gets its value not only from the products it has on the market, but also on the service factor. Apple makes the most popular phone today in iPhone. What else makes the iPhone click? The international warranty, proximity to Apple stores across the globe, professional approach to fixing problems, and the no nonsense approach to keeping the customer happy are of foremost importance.

I repeat. A brand gets its value from the services it offers. Think of all the cars you have owned and the service comfort you have had within the service provider. Yes, the service provider plays a major role in keeping things in motion. It could be the tangibles such as your iPhone 7 or your Chevrolet car. Or, it could be intangibles such as electricity,

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mobile Internet, and landscaping. The services offered collectively fall under service management, which branches out toward various specializations like IT, hospitality, and medicine. According to the ITIL publication, service management is defined as:

> *A set of specialized organizational capabilities for providing value to customers in the form of services.*

The specialized organizational capabilities point to the technical maturity, experience, customer service, and service frameworks that the service provider brings to the table in servicing the customers, meeting their needs, and creating value.

1.2 Introduction to IT Service Management

There was a time when there was business and then there was IT. Businesses had their set of practices and IT was a supporting agent, helping businesses achieve their tasks, like supplying the business with a word processor for drafting contracts and providing them the ability to compute complex formulas. Without IT, businesses could survive, although surely with some inconvenience.

Today, the world of business has been turned on its head. You take IT out of business and the business will cease to exist. In other words, there is no business without IT. The business relies on IT for its sustenance and IT is not a support function anymore. Rather, it is a partner that enables businesses to achieve their goals and succeed in beating their competitors. Try to think of a midsize business where IT may not be involved. Aha! I know your results came up blank. To reiterate, IT is a part of the business and there is no looking back.

IT service management is defined as the implementation and management of quality IT services that meet the needs of the business. IT services are provided by IT service providers (the entity that provides IT service to internal and external customers) through an appropriate mix of people, processes, and information technology.

There is increased pressure on IT to deliver on its services. IT must deliver services that not only meet its objectives, but also does it effectively and efficiently. And it must be done at a minimal possible cost. The competition in the IT service management industry is fierce. You have some of the biggest names playing ball, cutting down on the IT costs, and providing the best in class service. The world of IT service management is challenging with ever changing technology, exciting with innovative ideas coming into play, and at the same time a race that can be won only if you couple technology with management.

1.3 Welcome to the World of ITIL

The history of ITIL is nebulous and inconsistent. It started sometime during the late 1980s as a collection of best practices in IT management. A department in the UK government, known as the OGC (Office of Government Commerce), sanctioned the coalition. Basically, the best practices of various IT departments and companies in the United Kingdom were studied and documented. It is believed that most of the initial practices that constituted ITIL came from IBM.

The first version of ITIL was bulky and lacked direction with a compilation of over 30 books. The second version of ITIL was cut down to nine books in 2000, but mainly revolved around two books: service delivery and service support. The ITIL certifications were based on these two books as well. ITIL v2 introduced ten processes, five each from service delivery and service support. I started my ITIL journey with ITIL v2.

ITIL v2 was process centric. IT organizations were expected to operate around the ITIL processes. The processes were interconnected but lacked a broader vision and a flow to move things along.

The shortcomings and inadequacies in v2 gave rise to ITIL v3 in 2007. It had an excess of 20 processes, spanning across the entire lifecycle of a service, from conception up to a point where the service runs on regular improvement cycles. I will delve into the details in the Chapter 2.

ITIL v3 came out with five books, each book spanning a lifecycle phase of an IT service.

ITIL v3 has penetrated across most IT organizations. Even the conservative IT organizations have embraced the ITIL v3 service management framework with open arms. The framework is rampant in the industry today and enjoys the monopolistic nature, except for Microsoft, which adheres to a derivative version of ITIL, the Microsoft Operations Framework.

In 2011, ITIL v3 received a minor update where a couple of new processes were added along with some minute changes in definitions and concepts.

The latest version of ITIL is referred to as ITIL 2011 and some people refer to it as ITIL v3 2011, indicating the version and the revision year. It's been close to a decade since the new stable version was introduced, and colloquially people refer to it as simply ITIL, without any versions or revision years appended to it. ITIL currently has 26 processes and four functions.

1.4 Why ITIL Is Successful

ITIL has been dominant for the past two decades. There are no other service management frameworks that are competing for space. It is also quite lonely in the club of service management frameworks. Why do you think this is the case?

A lot of things have worked in ITIL's favor. It has a single objective—to deliver value to the business. To deliver unparalleled value, it has adopted the following characteristics:

- ITIL is based on best practices
- ITIL is nonprescriptive
- ITIL is vendor and technology neutral
- ITIL is nonproprietary

Let's examine each of these characteristics in detail.

1.4.1 ITIL Is Based on Best Practices

One of the chief reasons why ITIL is so successful is because it was born out of the management practices across leading IT services organizations. ITIL borrowed all its concepts from the best practices that existed at the time and has built on this stable foundation since then. Don't forget that the best practices discussed here are a result of efforts from the leaders of the IT services industry and invaluable experiences that made these companies successful in the first place.

1.4.2 ITIL Is Nonprescriptive

ITIL is a framework, not a set of policies and rules, but rather a set of guidelines and best practices. It has been time tested and adopted from the leading organizations and has gone through several iterations of improvements since its inception.

ITIL does not prescribe what the organizations must do. It describes the best practices in achieving service management-related objectives, and the organization implementing it is free to tweak and bend the process around the edges as needed. In other words, it gives you the flexibility that is needed, considering every service provider organization is different and no two businesses (customers) are the same.

1.4.3 ITIL Is Vendor and Technology Neutral

ITIL can be implemented across various technologies and across any organization. There are no limits, and any advancement in technology, including the cloud-based services, does not make ITIL obsolete.

I have seen ITIL implemented in hardcore IT services organizations, manufacturing companies, health care, retail, banking; in short, in any industry. I have worked on ITIL that was implemented in the legendary mainframe systems, as well as the modern SAP, data warehousing, mobile application, and cloud services technologies. ITIL has been just as effective with physical servers as it is with virtual machines. ITIL can work with the Waterfall methodology of project management, as well as the Agile methodology. Devops too! In short, it works no matter what you bring to the table.

1.4.4 ITIL Is Nonproprietary

ITIL is owned by the UK government. The mantle has been handed to Axelos to develop and manage the copyrighted ITIL publication, along with training and certification.

Organizations are free to implement ITIL. They are not required to pay any royalty, nor do they need to inform Axelos that they have implemented ITIL. The nonproprietary nature has made this service management framework far more popular and has brought in a number of experts to collaborate. Just like open source!

1.5 Best Practices Trump Proprietary Knowledge

As mentioned earlier, best practices are collated from various organizations. Some organizations may be doing a great job in gathering requirements, while others focus on identifying improvements. So, when you take the best of such organizations and bring that together, you have knowledge that is enviable.

Proprietary knowledge, on the other hand, stays within close quarters, and fewer heads have been banged together to come up with proprietary knowledge, which may be good, but not as diverse and experienced as public frameworks such as ITIL.

Proprietary knowledge is developed for the sole purpose of meeting the organization's objectives. It is not meant to be adapted and flexed to meet other organization objectives. Moreover, if you are adopting proprietary knowledge, you are expected to pay a fee or royalty of some kind. Public frameworks are free.

When you can get an all-you-can-eat buffet for free, why would you opt for a paid a-la-carte dinner?

1.6 Introduction to IT Service

As mentioned earlier, ITIL v3 is a framework that is centered on IT services. So, it is imperative to first understand the meaning of a service, according to ITIL. Here is the official definition of an IT service:

> *A service is a means of delivering value to customers by facilitating outcomes that customers want to achieve, without the ownership of specific costs and risks.*

I will break the definition down, part by part, and also provide examples to help you comprehend the concept, which will be the core for everything else you will learn from this point forward.

1.6.1 Understanding the Definition

The best way to understand anything that is complex is to break it into parts. This is my method for understanding the concept of IT services.

The first section of the definition states: means of delivering value to customers by facilitating outcomes that customers want to achieve.

IT services in ITIL are defined from a customer viewpoint. Essentially, an IT service must deliver value to the customer. The value delivered must be something that the customer considers as helpful. Let's take the example of an IT service that is quite common across the board: the Internet. An Internet service delivers value to customers to help them achieve their objectives. So, it fits the bill of what an IT service is all about. If the Internet service provider (ISP) were to provide speeds upward of 100MB per second for a customer who only checks e-mails, it would be overkill. The high speeds offered by ISPs are generally appreciated by gamers and social networking users. In contrast, the customer who uses Internet for checking e-mails does not find any special value between

a high-speed Internet and a normal Internet connection. But for a user who hogs a lot of bandwidth, it is valuable. To summarize, the value of an IT service is derived from the customer's standpoint. So from this example, value to one customer may not be value to another.

Now the last part of the definition states: without the ownership of specific costs and risks.

The customer enjoys the service but does not pay for specific costs. Instead, they pay for the service as a lump sum. For example, in the Internet example, the customer pays for the high-speed Internet a fixed sum every month, not a specific price for the elements that make up a service, such as the infrastructure that supports it, the people who maintain and design, and the other governmental regulation costs. Instead, the customer just pays an agreed amount.

The final part of the definition states that the customer does not take ownership of the risks. Yes, but the Internet service provider does. What are some of the risks that exist in the IT world pertaining to ISPs?

- Fiber cuts
- Availability of support technicians
- Infrastructure stability among others

1.6.2 Understanding ITIL with a Non-IT Example

When I train ITIL students in a classroom setting, they often understand ITIL better when I relate the concepts of ITIL with non-IT examples. I am going to leverage on this teaching maturity in this book and provide non-IT examples at all crucial junctures.

Let's take an example of a lawn mowing service. It's a simple service and quite common in most parts of the world. The customer hires a landscaping company to mow the vast areas of lush lawn. The landscaping company sends in two landscapers, each handling a lawn mowing machine.

In this example, the customer pays an agreed rate to the landscaping company, and as per the agreement, the entire area where there is overgrown lawn will be mowed to 25 mm height. The landscaping company conveys the requirements to their landscapers, who go ahead and do what they are supposed to.

Let's relate this example to the ITIL service definition: delivering value to customers by facilitating outcomes that customers want to achieve. The customer gets value through the mowing of the lawn. This is exactly the service that the customer wanted in the first place and he has gotten it.

From the definition: without the ownership of specific costs and risks. The customer is paying a certain agreed amount to the landscaping company and not paying the specifics, such as the hourly wage for the landscapers, rent for the mowing machines, and other costs like fuel for mowing machines. The customer also does not own the risks. If the landscapers get hurt during the lawn mowing operation, it is not the customer's problem. If the mowing machines stutter and stop working, once again, the customer is not responsible. In other words, the customer does not own the risks that come from the service.

Thus, both parts of ITIL service are satisfied with the lawn mowing service example. I hope you now have a better understanding of the concept of ITIL service. If you have doubts, I suggest you reread these sections before proceeding any further.

1.7 Main Stakeholders in Service Management

Who are the stakeholders? The *Oxford* dictionary states a stakeholder is a person or persons having an interest or concern in something. So, this something here is service management. In a service management organization, you have a number of stakeholders, whom you'll learn about during our journey in learning ITIL. But the main ones who are absolutely necessary are:

- Customers
- Users
- Suppliers

1.7.1 Customers

Customers are perhaps the most common group across all businesses, projects, and management frameworks. The person who pays for the commodity or the delivery that he is getting in return is a customer. In service management, a customer pays for the service.

I will again explain with an example. An accounting company contracts with an Internet service provider to provide high-speed Internet. The accounting company is the customer as it is paying for the services. Simple enough?

1.7.2 Users

Now it gets confusing. You thought that a user was a customer, and now you will see that they have a different role, a prominent one, differentiated from the customer role. A user is someone who uses the service, not necessarily the one who pays for the service. A customer can also be a user, but the distinction is between the person paying and the one using the services.

In the earlier example, the accounting company's employees will use the Internet. They are the users. They don't pay for the service, they only use it.

At home, I pay for my Internet connection. I use the Internet as well. So, I am both the customer and the user.

1.7.3 Suppliers

The service provider leverages other parties to deliver the services. These third parties are referred to as suppliers, and they could provide hardware, software, services, or people.

Let's go back to the earlier example involving the accounting company obtaining Internet service through an ISP. The cabling between the ISP and the accounting company is managed by a different company. This other company is referred to as a supplier, as they are supplying their goods and services to the service provider, not to the customer.

1.8 Internal and External Customers

Not all customers are the same. They come in different shapes and colors. However, in the IT service management area, customers can be broadly divided into two types:

- Internal customers
- External customers

In this section, I'll explain the two types of customers and the differences between them. Figure 1-1 depicts the concepts of internal and external customers.

1.8.1 The Concept

In Figure 1-1, you will see two organizations: A and B. Organization B has multiple business units and an IT team as well. Organization A merely has business units and no IT team.

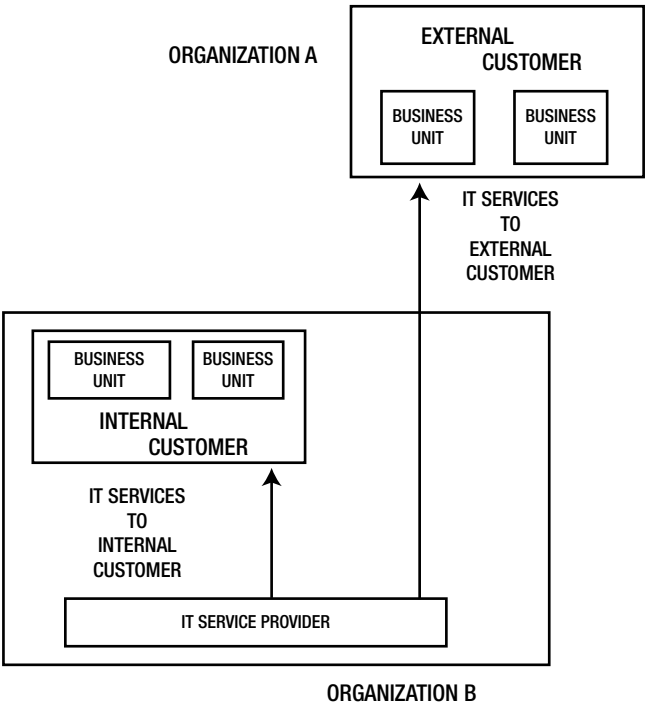

Figure 1-1. *Internal and external customers*

The business units within Organization B get their IT support from their own organization's IT team. As the business units and the IT teams are embedded within the same organization, the business units are considered to be internal customers for the IT teams.

Now you can guess who the external customers are, can't you? Organization A's business units get their IT support from Organization B. The key here is that the IT support is being provided for an entity outside the organization. This setup essentially makes Organization A external customers for the IT team sitting in Organization B.

1.8.2 The Difference

There is a world of difference between internal and external customers. Because internal customers are from the same organization, the level of service offered can be lax compared to that for an external customer. It is quite likely that an IT team could find themselves relaxed with the internal customers compared to external customers. Ideally, no organization would like their internal users being treated unequally over external customers. So, as a good practice, there are similar service-level agreements (SLA) in place between customers (for both internal and external) to set an expectation and to measure against it.

At the end of the day, it is really just business. The difference between internal and external customers is merely measured in terms of finances. External customers pay real money, and hence their importance is at a high. Internal customers, on the other hand, are an obligation, something that organization must tend to and cannot live without. The internal IT team charges the internal business units notionally. No real money gets transferred between the business units and the IT team, but is noted only in the ledgers. It's like taking money out of your left pocket and depositing it into your right pocket.

1.9 Processes

ITIL is made up of processes. Just as with services, you cannot get into the nitty gritty of ITIL if you don't understand the concept of a process. I will give you some examples to emphasize its importance, so that your foundation is strong for what you have to build on for your career. First, the official definition. ITIL defines a process as:

> *A structured set of activities designed to accomplish a specific objective. A process takes one or more inputs and turns them into defined outputs.*

You could envision a process as a set of activities that you need to perform, one after another, to achieve something. Each activity that you perform sets the precedence for the next one, and then the next. The objective of a process would be to achieve an output that is along the expected lines and as desired.

Now for an example to make the concept simple and digestible. A process is very similar to a recipe for cooking a dish. In a recipe, you have several steps that you need to follow, as instructed, to get the dish you desire.

Let's look at the recipe for an egg omelet. It goes something like this:

Step 1: Break a couple of eggs into a bowl

Step 2: Whisk it until it becomes fluffy

Step 3: Add salt and pepper to the mixture

Step 4: Heat a nonstick frying pan, and melt some butter until it foams

Step 5: Pour the egg mixture onto the pan, and tilt the pan until it covers the base

Step 6: Cook for a minute or two, and flip the omelet and cook it for a minute more

Step 7: Serve the omelet hot with toasted bread

You need to follow the steps to the tee to get an egg omelet. You cannot interchange any two steps to get the same output. In IT language, this is the process to make an egg omelet.

The main aspect of a process is the interconnectivity between the individual steps, and collectively, all the steps work toward a common goal, a common objective that is desired.

1.9.1 Characteristics of a Process

The comparison of a recipe with the ITIL process is the first step toward understanding it. Going one level deeper, every process has characteristics that orient the outcome toward the objective at hand.

There are a number of characteristics that a process must possess in order to be one, and the main ones are:

- Processes are measurable
- Processes deliver specific results
- Processes serve customers
- Processes respond to specific triggers

Let's looks at these characteristics in detail.

1.9.1.1 Processes Are Measurable

Every process that is defined in ITIL must be measurable. This is the only way to understand how the process is performing, and the only way you can set benchmarks for future improvements.

Some measurements could be derived from the triple constraints of project management, such as time, cost, and scope. Along with it, a process could be measured on productivity (efficiency) and the quality it delivers (effectiveness).

1.9.1.2 Process Deliver Specific Results

If you start following the recipe for an egg omelet but end up fixing scrambled eggs, the recipe has failed in its purpose and its reason to exist. Likewise, a process exists to deliver results that are predefined and as desired. In other words, there is an outcome that is along the expected lines at the end of a process cycle.

1.9.1.3 Processes Serve Customers

Without customers, service management has no meaning. ITIL has no basis. And, that translates to processes being irrelevant. So, in order for a process to function, it needs to serve a customer. Whether the customer is internal or external is irrelevant.

1.9.1.4 Processes Respond to Specific Triggers

When do you start fixing an egg omelet? When you are hungry. When your loved ones are hungry. When your customers order one (if you are a restaurateur). The common thread is that there is a spark that sets off the need to prepare an egg omelet. This spark is the trigger that sets the motion in play. I will discuss this further in the next section.

1.9.2 The Process Model

One level deeper takes us to processes. I mentioned earlier that a process will contain a specific trigger, an input, and an output. Apart from the core basics, there are other components that make a process rugged and open for improvements.

In Figure 1-2, the middle block (process) consists of the essentials. It contains the list of activities (remember the steps in the recipe example?), procedures and work instructions for detailing the activities, roles for those who play their part in the process, improvements if any, and metrics for measuring performance.

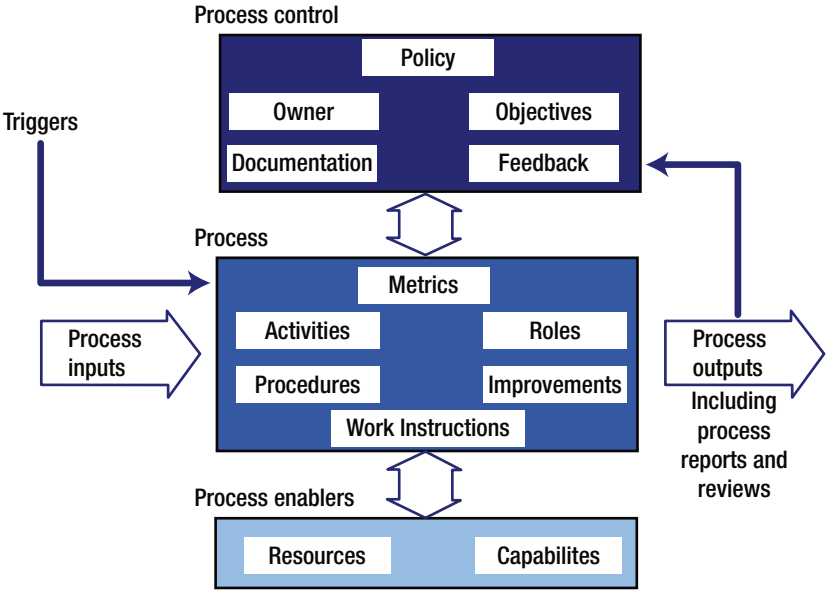

Figure 1-2. *The Process Model*

Every process needs governance to control and guide the process toward efficiency and effectiveness. This is represented in the top block: process control. It contains policies, identifies process owners, lists process objectives, and, most importantly, receives feedback about a process (generally from the output) and uses it to improve the process.

The final block in the process model is the process enabler. Basically, this block consists of components that are needed to support the process and its activities. For a process to be implemented and operationalized, you need resources such as people, capital, infrastructure, application, and information. You would also need expertise or capabilities that come from people, knowledge, management, organization, and other processes.

1.10 Functions

Before I discuss functions, let's take a look at organization structures. It is quite common these days for there to be teams with people who have expertise in one area. Examples could be the networking team, the Unix team, the Windows team, the Java team, and the web development team. It is also in vogue that teams are carved out based on the depth of knowledge. An example would be a Network L1 team (junior), Network L2 team (senior), and Network L3 team (expert teams, the architects). L1 teams consist of people with less experience and the tasks they are asked to take care of are quite basic and administrative in nature. For an L2 team, it gets a little more complicated, and they could be asked to troubleshoot and diagnose outages. A L3 team could be your top notch team who not only provides support when L2 needed but also helps architecting networks.

The teams that I have been referring to are known as functions in ITIL, nothing more, nothing less. There are only four functions that are defined in ITIL, and all of them come into play during the entire lifecycle of ITIL framework. The official definition of a function is:

> *A team or group of people and the tools or other resources they use to carry out one or more processes or activities.*

Intersect Between Processes and Functions

There are processes and there are functions in ITIL. While there are 26 processes, there are only four functions. Processes don't run by themselves. They need people to carry out the individual process activities. And the people the processes look for come from functions. To state it simply, functions provide the resources needed by the processes to complete their objectives.

Within the organization where you work, there are verticals—say banking, retail, and insurance. There are processes that cut across all the verticals of the organization such as human resources. The people in the verticals perform their role in the human resources process, which is horizontal cutting across all verticals, even though they are a part of a function. This would be an example of how a process leverages on functions for carrying out the set objectives.

Figure 1-3 illustrates the intersect that I have explained. You can replace the functions with the verticals in your organization and the processes with the common processes such as travel process, promotion processes, and others to establish a better understanding.

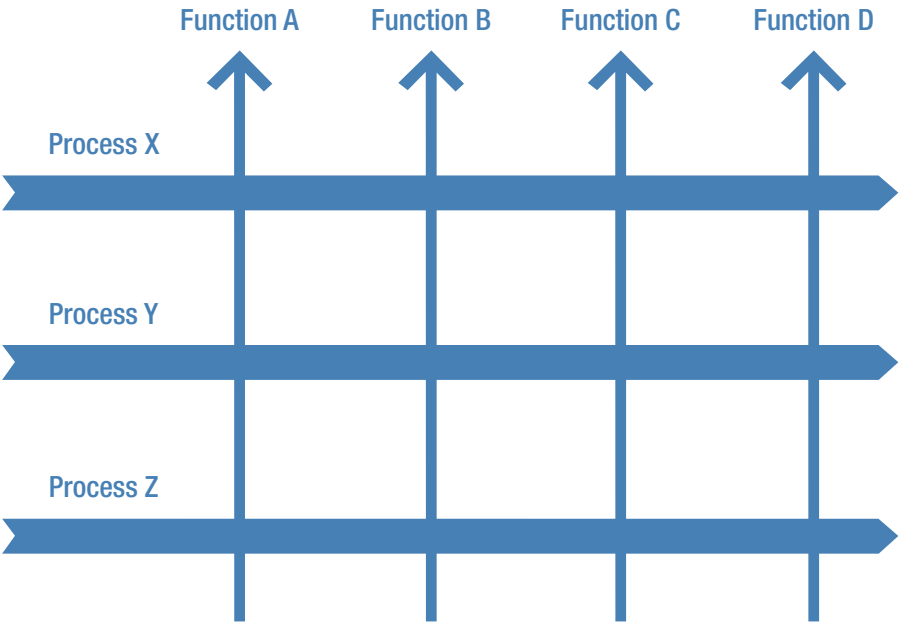

Figure 1-3. *Intersect between processes and functions*

1.12 Practice Exercises

1. Which of the following is NOT defined as a part of a typical process?
   a. Inputs
   b. Metrics
   c. Work instructions
   d. Tools
2. ITIL is developed based on:
   a. Proprietary knowledge
   b. Best practices
   c. Existing standards
   d. Customer requirements
3. Who is an internal customer?
   a. Teams within the customer organization
   b. Separate organization
   c. Same organization as the service provider
   d. Supplier organization

4. What does an IT service offer customers?
   a. Value and outcomes
   b. Contracts and agreements
   c. Customer service and technology
   d. Processes and functions
5. Which of the following is NOT a characteristic of a process?
   a. Processes deliver specific results
   b. Processes are measurable
   c. Processes are prescriptive
   d. Processes serve customers

1.13 Summary

In this chapter you were introduced to the exciting world of ITIL, its importance, its history, and the IT service management industry. I introduced the concept of an IT service, which is the fulcrum on which ITIL runs its processes. I also presented the various stakeholders that you can expect to find in an ITIL environment. Lastly, I discussed processes and functions. I will delve deeper into the individual processes from Chapters 4 onward. Functions are discussed in detail in Chapter 7.

In the next chapter, you will be introduced to the concepts that are an integral part of the ITIL environment.

CHAPTER 2

Generic Concepts

ITIL is a de facto standard for IT service management. However, service management per se is based on certain management basics that need to be well understood before I start to explain the specifics.

In this chapter, I will introduce a number of service management concepts. These concepts are generic, and whether or not you are dealing with ITIL, you probably either have already used them or will soon start using them. This chapter lays the foundation for understanding ITIL.

2.1 Utility and Warranty

ITIL has something to offer to IT professionals from all technical and management areas. The concepts of utility and warranty are dear for those who are geeks by nature and academics at heart. ITIL derives heavily from digital electronics, so if you can read the circuit, you will pretty much understand the logic. Figure 2-1 diagrams the logic of the utility and warranty of ITIL.

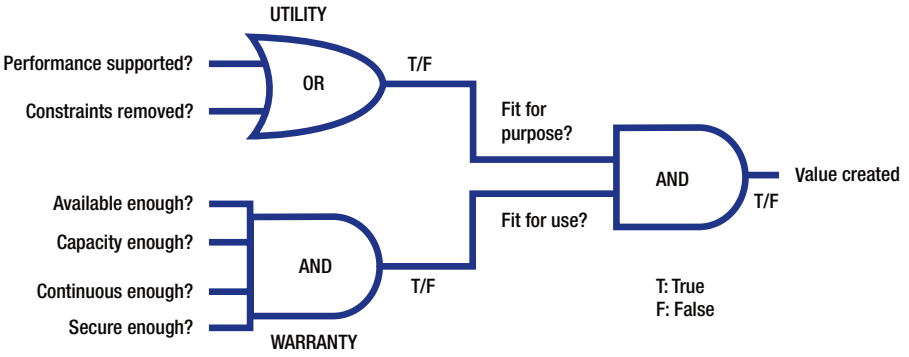

Figure 2-1. *Utility and warranty logic diagram*

A. K. Kaiser, *Become ITIL Foundation Certified in 7 Days*, DOI 10.1007/978-1-4842-2164-8_2

Chapter 1 discussed IT service. A service provides value to the customer; nothing more, nothing less. The value is seen by the customer, not just as defined by the service provider. A service provider may embellish the features of a service by uplifting its capabilities and downplaying its competitors. At the end of the day, this is a marketing tactic. But what counts is what the customer perceives about the service that the service provider has to offer. The customer may not buy into all the facts and figures and, based on the customer's previous experience, they might downplay a service.

For example, a lawn mowing company might claim to provide unparalleled lawn mowing service, where the lawn will be mowed within the agreed timeline, the length of the grass will be even across the yard, and the service provided will be noiseless and hassle free. But the customer has used this service provider once before and knows that some of the things claimed are to taken with a grain of salt. So, here, the customer sees value in this service from his standpoint but not from the way the service provider projects it.

2.1.1 Elements That Create Value

Value is created from a service. I have already discussed IT service in Chapter 1 and described its value proposition. To break it down further, let's say that it creates value only if it is fit for the purpose and fit for the use. Most of the time, these terms are used and abused in IT organizations without anyone knowing the actual meaning of them. So let's try to understand what these two terms actually mean. Figure 2-2 presents a diagram of this concept.

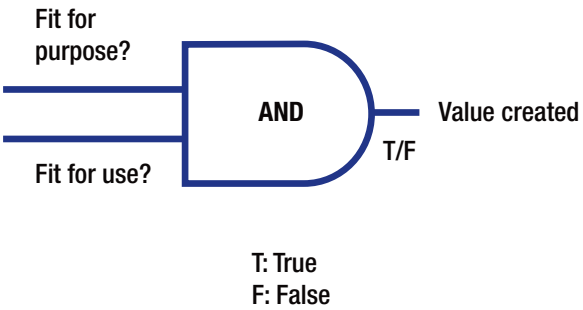

Figure 2-2. *Value creation logic gate*

Fit for purpose refers to a service's functionality. Does the service come with all the features and functions that it is supposed to carry? Does the service meet all the functional requirements? If yes, then one of the inputs into the AND gate will be TRUE, and that takes us one step closer to creating value. A mobile service provider's core service is to provide the ability to talk over cellular phones. If this is achieved, then we can consider it fit for purpose.

On the other hand, *fit for use* refers to the ability to make use of the service functionality. Through the service functionality, you are given the capability to achieve certain outcomes. But can you make use of the service? If you can, this input to the AND

gate will be TRUE. If fit for purpose is also TRUE, then you create value. If any one of the inputs is FALSE, then value cannot be created. It's like having a mobile network and a capable mobile instrument but lacking sufficient bandwidth to allow you to slot your calls through. It's like having a top-notch, state-of-the-art television set but no electricity to run it.

Creating value is represented through an AND gate. Refer to Table 2-1 to help you understand when the value is created.

Table 2-1. *Creating Value Through the AND Gate*

Fit for Purpose	Fit for Use	Value Created?
TRUE	TRUE	YES
TRUE	FALSE	NO
FALSE	FALSE	NO
FALSE	TRUE	NO

2.1.2 Utility of a Service

The utility is the functionality offered by a product or a service to meet a particular need.

The logic diagram in Figure 2-3 shows an OR gate for the utility part of a service.

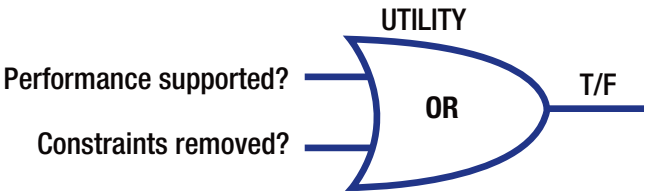

Figure 2-3. *Utility of a service*

For a service to be fit for purpose, it needs to meet any one (or both) of the following criteria:

1. Performance supported
2. Constraints removed

These criteria are represented through an OR gate, and Table 2-2 provides the conditions when the service would be fit for purpose.

Table 2-2. *Conditions for a Service to Be a Fit for Purpose*

Performance Supported?	Constraints Removed?	Fit for Purpose?
TRUE	TRUE	YES
TRUE	FALSE	YES
FALSE	FALSE	NO
FALSE	TRUE	YES

For a service to create value, it needs to meet certain criteria. One such case is its performance. A service must inherently improve the performance of the business outcomes that the customer desires. For example, a mobile phone service must provide the customer efficiency to enable better communication.

The second criterion for which fit for purpose is applicable is the constraints that can be removed through the service. If the service can remove the barricades for a customer, it might fulfill the terms of the service being fit for the purpose. The mobile service provider, by providing the ability to make calls while you golf, removes the constraints that usually would exist if you had to stop midgame, head back to your office, and make the call. In this instance the constraints have been removed through the service the mobile phone offers.

For a service to be fit for purpose, it should boost performance or remove the constraints. If it can do both, even better.

2.1.3 Warranty of a Service

> *Warranty provides assurance that a product or a service will meet its agreed requirements.*

Warranty comprises four parts:

1. Is the service available when needed?
2. Is there sufficient capacity available?
3. Is the service continuous?
4. Is the service secure?

All four criteria must be met for the service to be fit for use. This is represented through an AND diagram, as shown in Figure 2-4.

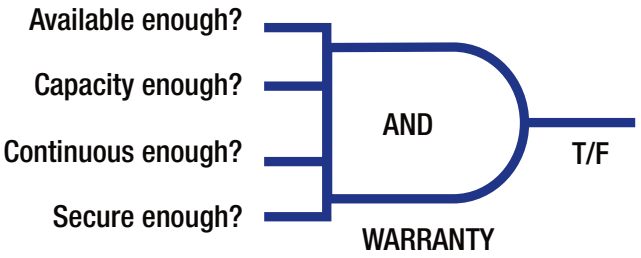

Figure 2-4. *Warranty of a service*

Table 2-3 provides the criteria for ensuring that the service is fit for use. It is not complete for all permutations and combinations. The AND gate provides a FALSE output whenever any of the inputs are FALSE.

Table 2-3. *Criteria for a Service Fit*

Available Enough?	Capacity Enough?	Continuous Enough?	Secure Enough?	Fit for Use?
TRUE	TRUE	TRUE	TRUE	YES
TRUE	TRUE	TRUE	FALSE	NO
TRUE	TRUE	FALSE	TRUE	NO
TRUE	FALSE	TRUE	TRUE	NO
FALSE	TRUE	TRUE	TRUE	NO

In the following illustrations, I provide examples for each criterion that needs to be met for the service to be fit for use.

2.1.3.1 Available Enough?

You subscribe to a cell phone service and pay a premium for that service. You are now head out on holiday. When you reach your resort, you are flabbergasted to see that the mobile service provider does not have coverage inside the resort. Is the service providing you any value, although the provider claimed to provide many features? Definitely not!

2.1.3.2 Capacity Enough?

You are stuck in a traffic jam. You want to call your partner to inform him that you wouldn't be joining him for dinner, thanks to the awful city traffic. You have service coverage, but the call does not go through. The service provider does not have sufficient capacity to handle calls from that particular cell tower. Even though there is coverage, if you are not able to make calls, is the service adding value? Nope.

2.1.3.3 Continuous Enough?

You are in the midst of the telephone round of an interview for a company based overseas. The call drops every few minutes, distracting you from the ideas you want to state and thereby causing you to lose your train of thought. The service has coverage and sufficient capacity, but is it giving you the value you perceive? Heck no!

2.1.3.4 Secure Enough?

You are calling your human resources department to discuss the appraisal your manager has given you. How would you feel if the conversation you are having from the confines of your home, with the HR person on a different continent, is accessible over the cloud by your manager? Is the service giving you value? You know the answer.

To sum up from these example, for the cell phone service warranty conditions to be met, the service must be available, have sufficient capacity, must be continuous, and must be secure. Without any one of these elements in place, the cell phone service is not fit for use and does not add value.

2.2 Assets, Resources, and Capabilities

Earlier I mentioned the functional aspects of a service that create value for customers. Now let's look at the practicalities that support creating value from services. Figure 2-5 illustrates the various resources and capabilities that typically contribute toward creating value from services.

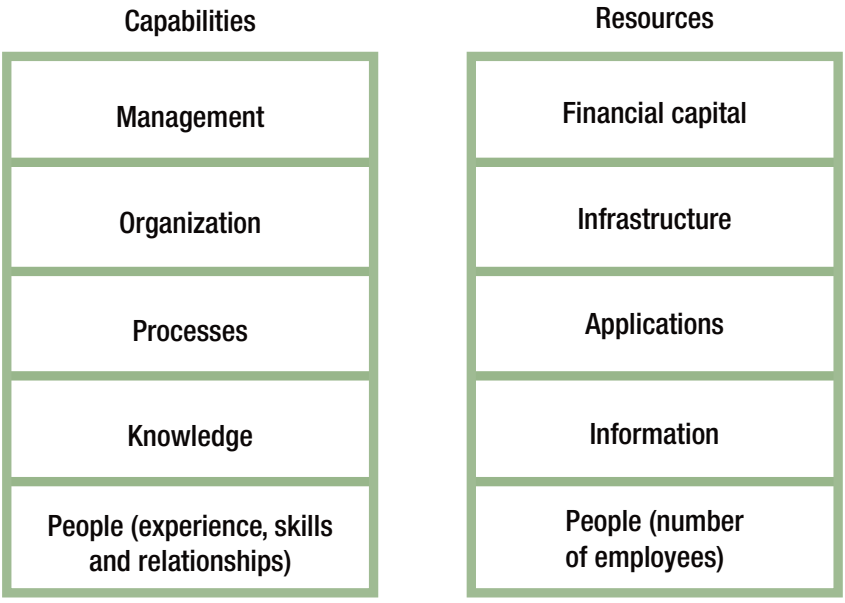

Figure 2-5. *Resources and capabilities*

You need both resources and capabilities to create value from services.

2.2.1 Resources

Resources are direct inputs that are needed upfront to create value. Resources generally include:

- *Financial capital*: Think of it as the seed money needed to start a business to deliver services.
- *Infrastructure*: Various IT and non-IT infrastructures that contribute toward service creation (servers, routers, offices, data centers, etc.).
- *Applications*: The many applications that you need to leverage to create a service (analyzer tools, BI, accounting, auditing tools, etc.).
- *Information*: The basic information needed to start a service, like what the requirements are, who is looking for what kind of service, etc.
- *People*: The most important component of a service. In this case, I am not referring to the skill sets but rather the manpower needed to carry out service activities.

2.2.2 Capabilities

Capabilities are a direct representation of an organization's maturity, history, and its experience. It is driven mainly by components that are impalpable such as experience, leadership, and knowledge. The main components of capabilities are:

- *Management*: A company driven by good management skills, extracting profits, brand value, and customers by motivating the resources in the right direction.
- *Organization*: Much like management, where the organizational skills come in handy in using the time, energy, finances, and people and turning them into something of value.
- *Processes*: The building blocks of a service; they need to be at their optimal best, structured around ruggedness, and bound by objectives.
- *Knowledge*: Companies mature just like individuals do with experience. A company's knowledge and experience in dealing with various situations and the capabilities that are needed to provide solutions make it an apt component of value creation.
- *People (again)*: Under resources, we considered people by themselves, but under capabilities, it is the skill sets of people that are the focus. In this case, people's maturity, technical and managerial capacity, and experience make up the capabilities.

2.2.3 Assets

Each of the items discussed under resources and capabilities are generally called *assets*.

If these assets (resources and capabilities) contribute toward designing and running a service (thus creating value), they are referred to as *service assets*. Examples of service assets are infrastructure, networks, applications, and the organizational leadership that provides direction and governance.

When the resources and capabilities are leveraged by a customer to achieve business outcomes, these resources and capabilities are referred to as *customer assets*. Examples of customer assets are people (both as a resource and capability), applications, and processes. Note that it is highly likely that service assets and customer assets can be the same, as the same set of assets are leveraged to deliver services to a customer (service asset) and are leveraged by a customer to achieve business objectives (customer asset).

> *Asset: Any resource or capability.*
>
> *Service asset: Any resource or capability used by a service provider to deliver services to a customer.*
>
> *Customer asset: Any resource or capability used by a customer to achieve a business outcome.*

2.3 Types of Service Providers

A service provider is someone who provides service to the customer. In today's world, the person offering the service could be embedded in your team or your organization or an outside entity.

In ITIL, and in this book, when I refer to the term service provider, I am referring to the nuance of an entity delivering service, and it is applicable to each of the service provider types that I am going to discuss.

2.3.1 Type 1: Internal Service Provider

The first type is an internal service provider. When I say internal, I am referring to the service provider organization that is embedded inside business units. The service provider is exclusive to each of the business units.

Business units are also referred to as towers (or verticals) in an organization. Examples include a banking business unit, a retail business unit, and a research and development business unit. So, in each of these business units, a service provider team exists. In this structure, an organization will end up having as many service provider teams as the number of business units.

Pros: The service provider is localized to the business unit and the customers can expect personalized service. This structure allows the service provider to be aware of the business unit's requirements, expectations, and unstated needs. This is a distinct advantage in servicing the customer.

Cons: The financial side of things will not look pretty. This is an expensive proposition for an organization as the organization decentralizes the service provider organization by setting up multiple service providers (one each in a business unit).

2.3.2 Type 2: Shared Service Unit

Let's say that an organization has multiple business units, and each business unit has an IT team sitting inside it. If the organization were to pull the IT teams out, centralize them, and reallocate responsibilities to the centralized team to cater to all of the business units, you would be looking at a type 2 shared service unit kind of a service provider.

Pros: Shared service units are more economical versus internal service providers. Centralization helps optimize the manpower, infrastructure, and the applications needed to deliver services.

Cons: Customers will start to miss the personalized service that is available with the internal service provider. This may lead to possible gaps between expectations and reality.

2.3.3 Type 3: External Service Provider

Outsourcing has been in vogue for a couple of decades, and it is the way of the present and the future. In this type, the service provider it outside your organization but does everything the same as an internal or shared service provider would.

Pros: Outsourcing works for the simple reason that businesses can concentrate on their core activities and let someone else take care of IT. And, it is also evident that delivering services through external service providers is an economical option as compared to hosting your own service providers. When you are a customer, outside the organization, you can demand what you want and how you want it. If the service provider is inside your organization, the process might not go as smoothly simply because of the office politics at play.

Cons: More often than not, your service provider might communicate in a way you are not used to. This might have made some people uncomfortable a few years ago, but is not as much of a factor today.

2.4 Types of Services

Next up on the list are the types of services that exist. Let's dissect it from a higher altitude and identify the boundaries that exist.

Figure 2-6 shows three subsets of services. This is the area of focus in this section. The customer is still in view as well. I discussed this role enough already, so the customer has the basic roles of enjoying the services and paying for it.

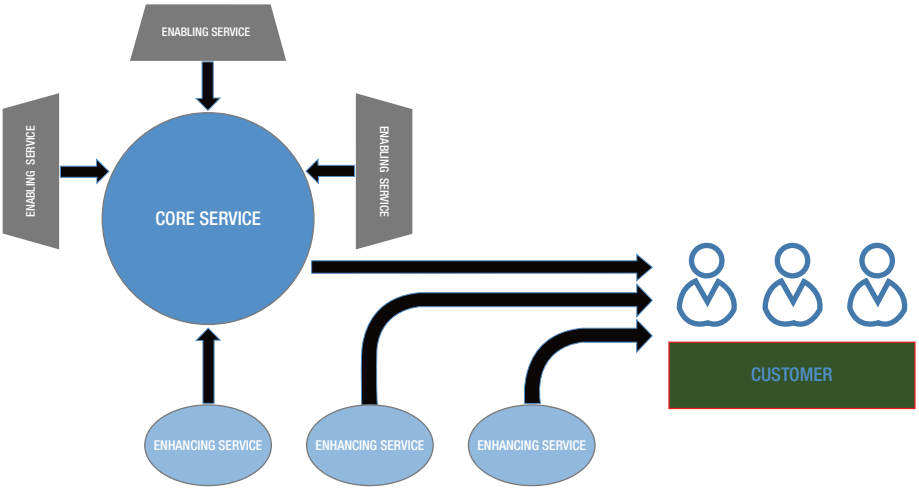

Figure 2-6. *Types of services*

A service can be divided into three components:

1. Core service
2. Enabling service
3. Enhancing service

2.4.1 Core Service

A core service is at the heart of the service that is delivered to the customer. It delivers the basic outcomes that the customer is interested in. The value representation for the customer starts with the core service, and it drives the money the customer is willing to pay for.

Example: I signed on with a cellular service provider to make and receive calls on the go. The most basic service that a cell phone service provider offers is the ability to make and receive calls. This is the core service.

2.4.2 Enabling Service

For the core service to work, you need services that can support it. These services are the enabling or supporting services. Enabling services are generally not customer facing, and the customer may or may not see them. The customer does not pay for them individually, but the payment that goes toward a core service gets back charged internally for the enabling service.

Example: Sticking with the cellular service example, what services do you think are needed to support the core service: making and receiving calls? 1. A service for installing and maintain cell towers. 2. A network service for routing your calls. 3. Software service for accounting and billing. This list could get pretty long. I hope you get the idea. All the aforementioned services work in the background and exist to support the core service, without which, the cell phone service may not function like it should.

2.4.3 Enhancing Service

Enhancing services provide the excitement factor to the customer. They add on to the core service, providing a number of services that most often excite the customer into paying more for the service. The enhancing services on their own may not function, so it is necessary for them to be piggybacked on the core service for their deliverance.

A core service can exist without enhancing service but the reverse is not possible. But the presence of enhancing services differentiates the service provider from others in the market.

Example: I can make and receive calls. Okay. What else? When I looked at the service brochure, I was more interested in what else the service provider could offer as the calling part was a given. I was offered 4G Internet, Internet hotspots around the city, voicemail, SMS, and others. These additional features helped me make my decision in choosing the service provider.

2.5 Contracts and Agreements

There are contracts and agreements that exist between various entities in the service management world. It is a formality that helps set the expectations and, in some cases, legally binds them to it. In a generic sense, an agreement is a formal understanding between two parties and a contract brings legality into the picture. A contract may be appended to an agreement to legalize the underlying expectation. Let's look at the types of agreements and contracts that are normally used in IT service management.

2.5.1 Service-Level Agreement

A service-level agreement (SLA) is a formal understanding between the service provider and the customer. It defines the customer's expectations in terms of the service levels. The document is usually drafted, agreed to, and signed by signatories from both sides of the table. Figure 2-7 illustrates the service-level agreement.

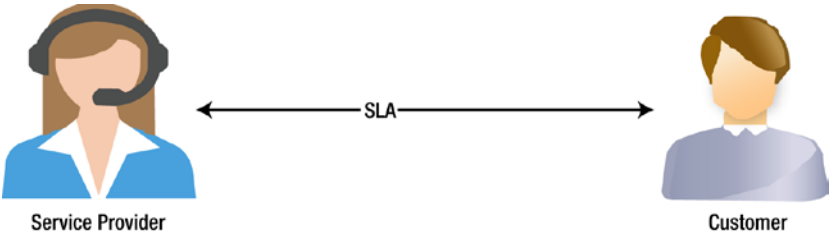

Figure 2-7. *Service-level agreement*

Example: When I signed on with my Internet service provider, I was given the following SLA:

Internet speed: 100MBps for wired connection

Resolution response: 6 business hours

Issue resolution: 16 business hours

My service provider was basically setting the expectations by stating that I would get a minimum of 100MBps when I connect my laptop directly to their fiber optic line. If I report an issue, such as loss of Internet connection or slow speeds, they were allowed a maximum of six business hours to respond to my request and 16 business hours to resolve the issue. These are published on their web site, and even in the e-mails that I received. Through the SLA, the service provider is setting an expectation on when the services will be back up.

2.5.2 Operational-Level Agreement

Operational-level agreement (OLA) is similar to SLA, except that it's signed between a service provider and another entity within the same organization. The agreement exists to facilitate the provision of services to the customer, as shown in Figure 2-8.

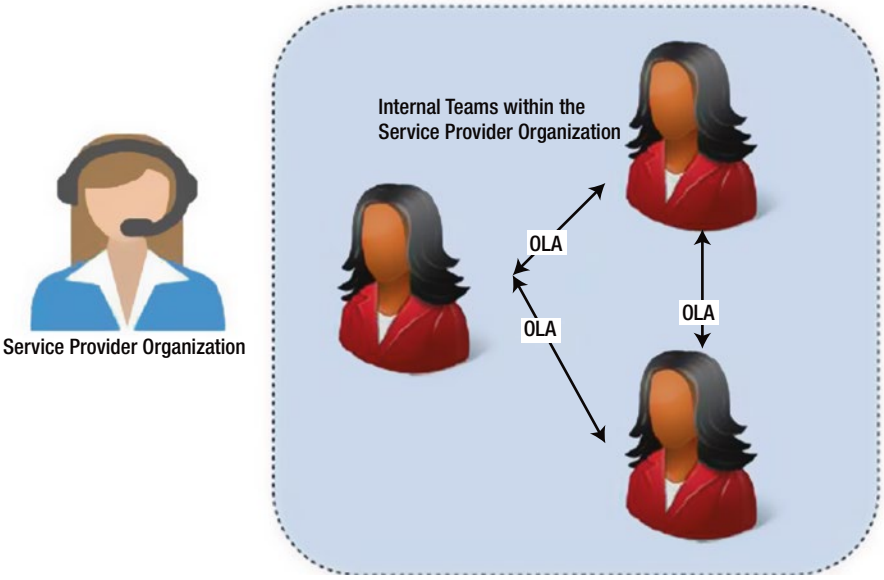

Figure 2-8. *Operational-level agreement*

Example: The OLA exists to support the SLA. In the example provided for SLA, if the customer is expecting resolution in under 16 business hours, the service provider must have OLAs that are aligned to it.

One form of the OLA could be:

Service desk will spend no more than two hours to resolve the issue.

If service desk is unable to resolve the issue within two hours, then the incident gets escalated to the Level 2 support team.

The Level 2 support team has ten business hours to resolve the incident. If they are unable to do it within that time, the incident gets escalated to the Level 3 support team.

The Level 3 support team is expected to be the expert in resolution, and they are given six hours to resolve the incident.

The idea behind setting the OLAs in this example is to ensure that the SLA is adhered to.

2.5.3 Underpinning Contract

Underpinning contracts (UC) are signed between service providers and suppliers. The suppliers include those who deliver products or external services. The service or products sourced from the suppliers support directly or indirectly the delivery of service to the customers. This contract documents the targets that are to be achieved by the supplier. It also provides the supplier's and service provider's responsibilities in the context of

receiving services and products from the supplier. The UC targets must be aligned with the SLA targets that are defined and agreed to with the customer. Figure 2-9 provides an illustration.

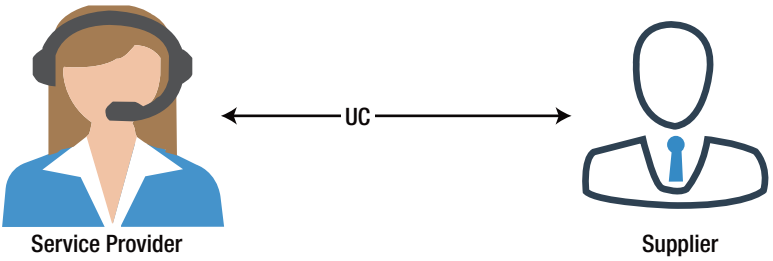

Figure 2-9. *Underpinning contracts*

Example: In the same example, let's say that a component needs to be replaced. So the service provider needs to have a contract with a multiple hardware supplier(s) to meet the SLA agreed with the customer. The SLA might state that the maximum amount of time that can be taken to fix the breakdown is four hours. To make this happen, the service provider agrees to a UC with the supplier to delivery the component within two business hours to ensure that the component can be replaced and services be brought back up before the four-hour deadline.

2.6 Practice Exercises

1. Which of these statements are correct?
   - i) Utility of a service is fit for use.
   - ii) Warranty of a service is fit for purpose.
     - a. i and ii
     - b. i
     - c. ii
     - d. Neither i nor ii
2. Who are the customers for type 1 service providers?
   - a. External customers
   - b. Suppliers
   - c. Entire organization
   - d. Entire business unit

3. For a service provider who provides cable TV, what type of a service is the cabling?

   a. Enabling service

   b. Enhancing service

   c. Business service

   d. Core service

4. What does an IT service offer customers?

   a. Value and outcomes

   b. Contracts and agreements

   c. Customer service and technology

   d. Processes and functions

5. A service-level agreement is signed between which of these two parties?

   a. Customer and supplier

   b. Supplier and service provider

   c. Service provider and customer

   d. Customer and government

2.7 Summary

In this chapter, I touched on various management topics that are not unique to ITIL alone. These included the concept of creating value through utility and warranty and the various components (assets, resources, and capabilities) that create an IT service. Further, I discussed the three types of service providers and the three types of services. Lastly, I described the various agreements that exist in IT service management: SLAs, OLAs, and UCs.

In the next chapter, you will be introduced to the ITIL service lifecycle, which consists of five distinct phases.

CHAPTER 3

ITIL Service Lifecycle

The ITIL service management framework we have today was not born overnight. It has evolved through years of trials, errors, and endurances. Service organizations learned the art of IT service management through trial and error. The practices that worked were continued forward, and these successful practices and activities laid the foundation for the ITIL as we know it today.

My first experience of ITIL was the second version of ITIL, two versions previous to the current version. When I picked it up (ITIL v2) and read through it, cover to cover, I was amazed at how all the aspects of service management were brought forth and shaped. So when ITIL v3 was introduced, a reporter who had insight into the changes described ITIL v3 as a paradigm shift and strategically different. And my first taste of ITIL v3 just blew my socks away!

While ITIL v2 introduced two silos—service delivery and service support—to carry out various service management activities, ITIL v3 spun a story in the service management world that brought about the idea of creating an IT service, progressing onward to further developmental and deployment stages of IT services. The IT service story in ITIL v3 is a good one. Its flow and logic make it rugged, flexible, and adaptable to IT service provider organizations.

In this chapter, I will introduce the lifecycle of IT services and how a service can be incepted, designed, built, tested, and transitioned into operations. The story does not end here; - it adopts Deming's quality principles (discussed in chapter 8 - Continual Service Improvement) to provide momentum and mature over time.

3.1 ITIL Service Lifecycle

ITIL v3 (ITIL henceforth) was derived from various high-level activities that encounter an IT service, and each of these high-level activities were introduced as phases in the ITIL service lifecycle. The five phases are:

1. Service strategy
2. Service design
3. Service transition
4. Service operations
5. Continual service improvement

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These five phases are represented in Figure 3-1. It shows service strategy at the core to indicate the importance and involvement of a sound strategy in the inception of IT services. Service strategy provides guidance around existing and new IT services. Surrounding service strategy includes service design, service transition, and service operations. Service design provides the direction pertaining to realization of a service. The IT services that are identified in the service strategy are defined and designed and blueprints are created for its development. These designs are built, tested, and implemented in the service transition phase. After implementation, the services move into a maintenance mode. Maintenance of services is handled by the service operations phase. Continual service operations envelop the other four phases. The depiction shows that all four phases present opportunities for improvement, and the continuous service improvement will provide the means to identify and implement improvements across the service lifecycle.

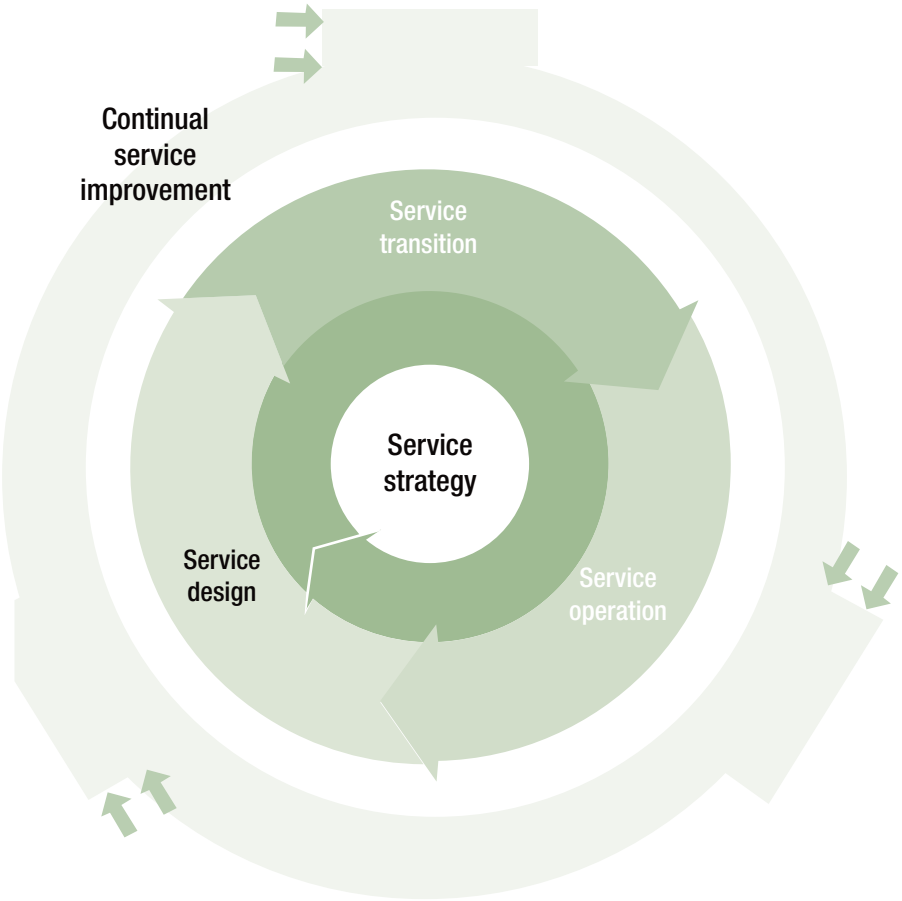

Figure 3-1. *ITIL service lifecycle*

Did you notice that every single phase in ITIL has "service" in it? This is not happenstance, but rather strongly indicates that ITIL is service-centric, and it revolves around services that provide value to customers.

In ITIL, there are 26 processes spanning across the lifecycle phases. As mentioned earlier, the phases are based on high-level objectives. The processes embedded within lifecycle phases provide support in realizing the phase objectives. Figure 3-2 provides the entire list of processes in ITIL.

Core ITIL lifecycle publication	Processes described in the publication
ITIL Service Strategy	Strategy management for IT services Service portfolio management Financial management for IT services Demand management Business relationship management
ITIL Service Design	Design coordination Service catalogue management Service level management Availability management Capacity management IT service continuity management Information security management Supplier management
ITIL Service Transition	Transition planning and support Change management Service asset and configuration management Release and deployment management Service validation and testing Change evaluation Knowledge management
ITIL Service Operation	Event management Incident management Request fulfilment Problem management Access management
ITIL Continual Service Improvement	Seven-step improvement process

Figure 3-2. *Complete list of processes in ITIL*

Apart from these processes, there are four functions, all embedded within the service operations lifecycle phase:

1. Service desk
2. Technical management
3. Application management
4. Operations management

You will learn more about functions in Chapter 7.

3.1.1 Service Strategy

Service strategy is at the core of IT services. It is the heart of service management. The main intent of ITIL and IT service management is to create value for customers. The value creation starts at the service strategy lifecycle phase.

In this phase, the question "Why do it?" is posed before the question "How to do it?" The core intent of this phase is to develop a strategy and create services that add value to customers. In order for the service provider organization to flourish financially, everything must be business as usual at the end of the day.

Suppose you find a gadget online that prepares noodles using flour. And, you are in a country where noodles are found in every shelf in the market, including the ones made from exotic grains. Plus, finances don't justify preparing your own noodles when you compute the gadget's cost and the raw materials needed (not to mention the time that is spent). Would it add value to create noodles on your own or just buy some? There is a good likelihood that this gadget would flop in the market. Why? The strategy is all wrong. The company that manufactured it didn't spend time finding out what creates value for the customer and what the customer really needs. Perhaps a gadget to shred vegetables would've been a better gadget to launch!

The most important aspect of service strategy is to understand the customer, identify customer's needs, and fill those voids. If the provider can do this, even a dim-witted service or product would take off exponentially, until someone else finds a competing service or a product to counter yours.

To explain with another non-IT example, let's say that a landowner identifies a location in a popular neighborhood that lacks a decent mall in the vicinity. Building one would be like striking gold; you have customers waiting to lap up what you have to offer once it is built. This move can potentially be termed as a successful strategy.

Specifically, with ITIL, service strategy's role is to provide guidance on creating value through IT services. The idea is to introduce services that has the potential to succeed, and garner market.

3.1.2 Service Design

At the end of the service strategy lifecycle phase, smart heads (read: leadership) have thought over and have provided direction and guidance on which services to offer. The outcome of the service strategy is like the idea that an entrepreneur comes up with. Whether the idea would come to fruition will become known in time.

The service design lifecycle phase answers the question "How do I do it?" It takes the idea and comes up with solutions and designs that give wings to the ideation process set forth in the previous phase.

The success of a service depends primarily on the service design phase. While strategy plays an initial part, the solution to make it happen is equally important.

Tablet computers have existed for a long time. My earliest memory of it was the Palm Pilot in the 1990s, and I started using Windows-based tablet PCs in the early 2000s. They were commonly called PDAs (personal digital assistants). But it was not until the introduction of iPads in 2010 that led to an explosion in the demand for the touch portable computing devices. They stepped in and became synonymous with the tablet computers.

What are the differences between an iPad and all the other personal hand-held devices that came prior to it? In my opinion, it is the iPad's design that made the difference. The strategy was out there, since the 1980s, but the lack of a good design didn't take the early versions to the pinnacle as you would expect. This is my interpretation of the tablet computer history and its relation to design, others may see it differently. But the key takeaway is to highlight the importance of design. Before I end this topic, I would honorably mention Android tablets, which are competing with the iPads neck to neck. There is nothing better than two good designs fighting for fame on a strong foundation built on wise strategy.

Remember the non-IT example that I used under the service strategy topic? After identifying the location, the landowner will have to hire the best architects to bring the most value money can buy on the land that is most sought after. The architectural designs that the architects come up with become the blueprint that gives insight on paper as to what things would look and feel like once they are realized.

3.1.3 Service Transition

The output of the service design is a set of design documents, which gives you the designs pertaining to all aspects of a service. The next task is to develop the service based on the designs. In the ITIL world, this is called the service transition, where the designs are transitioned into production environments through development, testing, and implementation.

The service transition lifecycle phase answers the question "What do I develop and deploy into production?" To achieve the objectives of service transition, you could either employ service design lifecycle activities, hardware delivery lifecycle (HDLC) activities, or any other framework that delves into building a system/service and deploying it into the intended environment. ITIL is flexible like that, it can integrate seamlessly with any of the frameworks you can throw at it.

Going back to the example earlier in this chapter, there are architectural drawings from the previous design phase. These designs are handed over to a qualified builder to construct the mall as per the architectural designs. The builder constructs the mall in this phase as per the plan and brings it to a state where it could be operationalized. This is exactly the role of the service transition phase.

3.1.4 Service Operations

Service operations is the most popular phase in the ITIL service lifecycle. Reasons are twofold:

1. Operations run for a long time. I am trying to avoid the word infinite here, as there is nothing guaranteed in this world. So, in effect, operations run for a long time, which translates into most service management practitioners working under the service operations lifecycle phase.

2. As the phase runs the maximum amount of time, it has the maximum number of touch points with the customer. Moreover, operations is considered to be the first point of interaction for a customer on a regular basis. (You will find out more about this in Chapter 7.)

Service operations entails maintenance and making sure the services are running as per the plan—status quo is achieved. Under service operations, there is no new development, no deployments, and only maintenance. Some maintenance activities could include health checks, fixing issues when they arise, and ensuring recurring activities are scheduled and run as planned. This will be discussed in detail in Chapter X.

Drawing on the previous example, the mall owner takes possession of the mall, rents out the shops, and sets the ball in motion for it to run smoothly. For it to be operationalized, he needs to hire people who can manage various areas of the mall and employees who can carry out day-to-day tasks, like cleaning, security, marketing, etc. He also needs to set up daily/weekly/monthly/yearly activities to ensure required activities to keep the mall functioning. Examples could be monthly generator checks, security audits, four-hour restroom janitorial services, etc. You get the drift?

By looking at this simple example, you can easily see the activities that are needed in operations. The operations phase in IT service management is a lot more complicated and requires plenty of minds to work out various aspects of it.

3.1.5 Continual Service Improvement

The final phase in ITIL is continual service improvement. While I call it the final phase, it does not necessarily come into play after the service operations phase. If you look at Figure 3-1 closely, you will observe that this phase encircles all of the other four phases. There is meaning to this. This phase takes input from any of the other phases to carry out its process activities. You can also say that it does not fit in the lifecycle phases as it does not roll once the previous phase has completed its delivery. But remember that this is the phase that keeps the ball rolling, the service breathing. You will learn more about this later in this book.

I strongly believe that if something does not grow, it is as good as dead. This is true with our careers, bank accounts, or anything else you might think of, except of course our waists! This concept applies to services too; if they do not improve over time, IT services wither away and something else takes its place. The objective of the continual service improvement (CSI) phase is to identify and implement improvements across the four lifecycle phases; be it improvements in strategies, designs, transition, or operations, CSI is there to help. It is also the smallest phase of all the phases in ITIL.

In keeping with the example, in the fully functional mall, you might have thought that general maintenances should be sufficient for upkeep and ongoing operations. It may be good for a brief period but not for long. Competition heats up with other malls competing with it in terms of amenities, parking availability, and aesthetics, among others. If our mall does not improve in due time, customers are going to lose interest, and sales will start to dwindle. So, to keep up with the growing demands, the mall owner must find ways to make the mall exciting for shopkeepers as well as for customers, perhaps providing space underground for a public transit station, valet parking for certain customers, free high-speed Internet for customers, and installation of moving walkways. These improvements need not happen overnight, it can be a process set over days and months. But the important thing is to keep improving the mall on a regular basis.

3.2 ITIL Roles

ITIL is a harbinger of employment. It has introduced a number of roles, all useful and necessary, that are the most sought after in the IT industry today. As mentioned earlier, ITIL has 26 processes, and each of these processes needs to be owned, managed, and practiced. Automation has its place in ITIL, but machines cannot do what people can, even in the age of machines ruled by Skynet.

3.2.1 Roles vs. Designations

Roles and designations are different. Often, people get confused and believe that one is synonymous with the other, which is not the case. Designations provide you a hierarchy based on your organization's structure. It places you in the pyramid based on your experience, salary, and maturity. ITIL roles, or any other roles, tell you which activities you will be performing and which areas of ITIL are under your supervision. It does not delve into the seniority of the people performing it. It is up to the organization to map the right designations with the ITIL roles. In many cases, a designation *analyst* will perform the role of a change manager in a particular organization. In another organization, a designation *senior manager* could be performing the same role.

So, to conclude, in ITIL, whenever roles are referred to, we are referring to the activities that a person will be performing as a part of this role and not the person's designation.

3.2.2 Generic vs. Specific

Every ITIL process brings to the table at least a couple of roles. So it brings plenty of employment opportunities, plus, customers would be happier dealing with people with the right skill set and with the organization that has clarity over people owning and managing respective areas. So with 26 processes in the pipeline, you are looking at over 50 different roles at a minimum.

I am not going to define each and every role in this section. Here I will provide insight into the generic roles that can be slotted against respective processes to define specific roles.

For example, the generic role for somebody who owns the process is a process owner, and the person managing the activities is the process manager. For these roles to be defined specifically for a particular process, say the incident management process, we need to define the specific role as that of an incident management process owner or an incident manager. At a higher level, the generic role will define what a process owner does, and specifically at the process scope, we define the objectives and responsibilities of an incident management process owner.

3.2.3 Generic Role: Service Owner

In Chapter 2, I explained what a service is. So, this service, which provides value to the customer, must have an owner to ensure somebody has accountability. The person who owns the service, end to end, and the person without whose consent no changes would be done is the service owner.

In the mall example, the mall owner is accountable for the shopkeepers and the customers. He owns the place, so he puts his signature across all changes being made to it, in other words, he approves enhancements and modifications and decommissions if any. He is the service owner in ITIL terminology.

3.2.4 Generic Role: Process Owner

I also introduced the concept of a process Chapter 2. A process is a set of coordinated activities that exist to meet the defined objectives. This process, or the series of coordinated activities, needs an owner, someone who has a finger on the pulse to check if the process is fit for the purpose, and that it is subjected to continuous improvements. He is the process owner. He will be accountable for the process deliveries, be it in terms of effectiveness or efficiency.

In the mall example, there will be several processes defined and implemented. One such process is the process to maintain diesel generators. The maintenance process could go something like this: weekly general checks on Sundays at 10 P.M. Detailed monthly checks on the first Sunday of a month at 11 P.M. Checks are done based on a checklist. If minor repairs are identified, they are carried out during the maintenance window. If a major repair is identified, a suitable window is arranged, all necessary resources are mobilized and repairs are carried out by a specialist team. This diesel generator process cannot be orphaned. It needs somebody to own it and ensure that it is meeting its objectives: no outages owing to the generators.

3.2.5 Generic Role: Process Manager

We know what a process is and who the owner is. It is unlikely that an owner will actually manage things on his own. He will hire people who can manage the process for him. Process managers ensure that the processes run as per its design and achieve what it's meant to. Since they are close to the works, they are in a good position to suggest improvements to the process owner. A decision to accept or reject the suggestions is made by the process owner.

A process manager is accountable for the operational management of the process, which defines coordinating activities between various parties; monitoring, developing, and publishing reports; and, as mentioned earlier, identifying improvement opportunities.

In the diesel generator maintenance process, the process owner hires an electrical engineer to manage the maintenance activities and to report on the outcomes. The maintenance manager is responsible for ensuring that technicians involved have the right skill set and are following the right set of instructions in carrying out the maintenance activities. If the manager finds that the weekly checks are not adding value, he can suggest to the process owner to shelve the weekly checks and set it for every two weeks. As mentioned earlier, the decision to make the checks every two weeks is made by the owner, not the manager.

3.2.6 Generic Role: Process Practitioner

Anyone who plays a part in the process is a process practitioner. This may be the manager or the owner, or someone who may not be part of the process hierarchy. To rephrase, people who are responsible for carrying out one or more activities in a particular process are process practitioners.

In the generator maintenance process, technicians have the responsibility to check the generators based on a checklist. They are process practitioners. It is also likely that the technician is a process practitioner for multiple processes, depending on the number of processes he is acting on. For example, he could also be responsible for electrical maintenance, electrical repairs, and elevator maintenance, thus being a process practitioner in each of these processes.

3.3 RACI Matrix

In an organization, it is important that roles and responsibilities be clearly defined. When there is ambiguity over responsibilities for activities, it often leads to inefficiency within the system. You might have seen in your own organization that a lack of clarity over roles and responsibilities can end up in a mess, where both of the perceived responsible parties duplicate activities or both leave them to the other to act on.

RACI is an acronym for Responsible, Accountable, Consulted, and Informed. According to the ITIL service management framework, these four types of roles can be used to define all responsibilities and ownerships in an organization.

Responsible: The person who is responsible to carry out the activity gets this tag. He is the person who actually gets the job done. Examples could be your process manager and process practitioner, who are responsible for managing activities and performing deliveries, respectively.

Accountable: The person who owns the activity. He is the person who is the decision maker. Examples are the service and process owners. It is important to remember that although in the real world you could have joint ownership, in the world of ITIL, there is no joint ownership. An activity has a single owner. It can never be shared across two individuals.

Consulted: In any organization, you have subject matter experts who need to consulted before and during activities. These people play the role of a catalyst in the service management organization. They do not own anything, nor do they get their hands dirty in the actual operations. But, they provide their expertise in successful execution of the activity. Examples are corporate lawyers and technical architects.

Informed: There are the people who just like to soak in the information. They do not have any role in the activity, but would like to be informed of the progress or the lack of it. They are, in other words, stakeholders without the power of making decisions. Examples are users and senior management.

3.3.1 Understanding RACI with an Example

Here is an example of how a RACI looks. It has activities to be performed as a part of a process in several rows. Those who would play a role in the process figure in the column. We get a matrix by putting the activities and the roles together, as shown in Figure 3-3.

Activities	Mall Owner	Maintenance Manager	Maintenance Engineer	Customer
Schedule maintenance activities	C	AR	I	
Sponsor maintenance activities	AR			
Perform maintenance activities		A	R	I
Communication to customers	A	R		
Fix issues with diesel generator	I	AC	R	

Figure 3-3. *RACI for maintenance activities in the mall example*

In the example, for the activity, *Schedule maintenance activities*, this is owned and performed by the maintenance manager (AR represents Accountability and Responsibility in the respective cell). So, both the accountability and responsibility lie with him. For this activity, he is consulting (represented by C) with the mall owner on suitable dates, and informing (represented by I) the maintenance engineer on the maintenance schedule.

Let's look at the final activity: *fix issues with diesel generator*. In this activity, the accountability lies with the maintenance manager, but the person performing the fixing is the maintenance engineer. The engineer consults with the manager regarding this activity, as the manager is an experienced hand in diesel generators. The mall owner is merely informed on this activity.

3.3.2 Ground Rules on RACI Matrix

Developing a good RACI matrix takes experience and good insight into the activities on hand. However, there are a few ground rules that will aid you in your RACI creation endeavors:

1. For every activity, you can have only one person accountable.
2. Responsible, consulted, and informed can be spread across multiple roles, although I have not illustrated this in the example.
3. A single role can don various hats, such as accountable and responsible for the *Sponsor maintenance activities* by the mall owner.
4. Accountable and responsible are mandatory for every single activity.

5. Consulted and informed are optional, if you are not informing anyone of an activity, you may not have the informed role for the particular activity, *Sponsor maintenance activities* is an example.

6. Identify and document as many activities as possible in the RACI matrix, as long as the activities have specific deliverables coming from it.

3.4 Practice Exercises

1. Which phase overarches all other phases?

   a. Service operations

   b. Continual service improvement

   c. Service design

   d. Service strategy

2. Which phase in ITIL provides direction on how an IT service will be realized?

   a. Service operations

   b. Service transition

   c. Service design

   d. Service strategy

3. The person who is accountable for ensuring all the process activities are carried out is the:

   a. Process manager

   b. Process owner

   c. Service owner

   d. Process practitioner

4. Which of these is NOT true in a RACI matrix?

   a. Two or more people cannot be responsible for the same activity.

   b. Two or more people cannot be accountable for the same activity.

   c. Two or more people cannot be consulted for the same activity.

   d. Two or more people cannot be informed for the same activity.

5. The primary objective of service transition phase is to:

   a. Implement IT services into production

   b. Ensure all services are working as expected

   c. Transition services from the supplier to the service provider

   d. Develop a transitional framework for the organization to transform its services based on the market trends

3.5 Summary

In this chapter, I introduced the ITIL lifecycle and its phases. I also explained the differences between designations and roles, and the various generic roles that exist in the ITIL world. Lastly, the most important concept for ensuring that roles and responsibilities are unambiguous, the RACI matrix was introduced and explained with an example.

In the next chapter, I will delve into the service strategy lifecycle phase and introduce the service strategy processes and their associated concepts.

CHAPTER 4

Service Strategy

A strategy delineates a territory in which a company seeks to be unique.

—Michael Porter

A strategy can make or break a company's present and future. All companies need direction to be governed and directed in the path that brings value to the customer and sustenance to the service provider. In this chapter, I will discuss the service strategy phase in detail and all the associated processes.

A strategy is nothing but a plan, a plan for a company to survive, grow, and accomplish the set objectives. Likewise, in the IT service management industry, an IT services organization requires a strategy to develop and offer services to its customers. These services must cater to the customer, as well as the well-being of the service provider organization.

The official definition of ITIL service strategy defines how a service provider will use services to achieve the business outcomes of its customers, thereby enabling the service provider to meet its objectives.

4.1 Purpose of Service Strategy

Why does service strategy exist? Why does any other strategy exist? If you are a student of finances and understand business, you know that any business exists for the purpose of making money and expanding the company. In an IT services organization, the business grows by offering services that customers want to buy. Customers buy services that help them, either personally or through servicing their customers. For the customer, the service offered must meet their requirements of value, if not, the customer goes elsewhere.

If you were to procure the services of an Internet service provider, you might realize that after using the services for a month it is not meeting your needs in terms of speed and latency. You then are bound to look for an alternate Internet service provider who can meet your expectations. The world of IT services is all about meeting customer's requirements, ensuring that the customer derives value from the delivered services and thereby growing the coffers of the IT service provider organization.

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To understand the purpose of the service strategy better, let me introduce the concept of the four Ps that provide a framework for the service strategy. This concept was defined by Henry Mintzberg in 1994. The four Ps of service strategy are:

1. Perspective
2. Positions
3. Plans
4. Patterns

The purpose of service strategy is to define the perspective, position, plans, and patterns that a service provider needs to be able to execute to meet an organization's business outcomes.

4.1.1 Perspective

Perspective gives the service provider organization the direction and the vision in developing IT services. It states what the company's focus is going to be. It provides directions on how the company will be viewed and how the services will be offered.

In the airline industry, for example, Cathay Pacific is viewed as an airline where the service offered by its cabin and ground crew is exemplary.

4.1.2 Positions

Position provides the strategy around competing with others in the industry. It provides direction on how the company would differentiate itself from others and how it is going to position itself in taking on competition. The service provider could teeter off anything that glistens in the eye of the customer; it could be low cost, excellent service, or a wide range of services to choose from.

For example, Jetstar Airways in Australia is viewed as a low-cost air carrier that has an excellent safety rating. People are aware of the limited amenities on the flight, yet they prefer to fly on Jetstar for financial and safety reasons.

4.1.3 Plans

This one is straightforward. Plans describe the actions that need to be taken for the company to reach its goals from its current position. Plans look at the perspective and positions as the end goal and chart the strategic activities for reaching it.

All organizations typically come up with plans and goals to achieve in the next quarter, next year, and in five years to come. These plans and objectives are dictated by the company's board members. Such plans act as a guiding star for all the upcoming organizational activities.

4.1.4 Patterns

The plans that are set forth may not be a one-time activity. A plan needs to be repeated and duplicated over a period of time, such as reaching out to customers with a marketing campaign over a period of time with appropriate gaps.

Patterns are critical for an organization's survival. One such example is the timing for when consumers buy certain products. In the United States and other Western countries, Christmas is the time when people shop like no other time. So, organizations plan to launch their products just before Christmas. Typically, you will see Apple release their products during the September to October period.

4.2 Objectives of Service Strategy

Service strategy as a phase has specific goals and objectives to achieve in order for the service provider organization to become competent and a major player in the market. The following are the objectives of service strategy:

1. Define the strategy for the service provider organization and provide direction for the company to head toward.
2. Identify which services are going to be developed as a part of service offerings.
3. Identify the customer base.
4. Roadmap for identifying and exploiting market opportunities in the IT service industry.
5. Plan to obtain funds for developing services.
6. Plan on how services will be delivered to the customer.

4.3 Value of Service Strategy

The whole premise of ITIL is creating value for the customer through IT services. Value blooms from the seeds sown in the service strategy phase. When I say value, it can be interpreted in a number of ways and is highly subjective. Value to one customer may not be value for another. Value is defined from the perspective of the customer. So, the customer's perception of value dictates the well-being of the IT service management organization.

Service strategy can influence the customer's perception of value by:

1. Being proactive to customer's demands rather than reacting to increased loads.
2. Understanding customer's explicit and implicit needs and delivering on both counts.
3. Making certain that there are competitive advantages for the customer.

4. Ensuring that the customer makes a positive return on investment on the IT services' costs.

5. Opening a transparent communication channel between the customer and the IT service provider to ensure that the implicit requirements don't fall through the cracks.

4.4 Value Creation

How do you know that you have created value for the customer through IT services? There is no easy answer for this. Perhaps, if you were running a courier company, you could have confidently claimed that you delivered the tendered papers to a government organization, there were no delays, you charged economically, and you have quantified value to your customer.

What if you are running a service whose value cannot be quantified, like an insurance company where customers haven't yet filed claims? How will the customer know that you have created value? You could say that you have given your customers peace of mind by covering all eventualities. But, the reality is, you don't know if the customer has perceived your definition of value.

So, in effect, whether value is created for the customer is judged and perceived by the customer. The service provider, at best, can research his customers and come up with possible solutions that can make the customer happy. And in the end, he still cannot be sure that value was created for the customer. This is due to the fact that value is always measured through the eyes of the customer. However, there are two other components that define value apart from customer perception. They are illustrated in Figure 4-1.

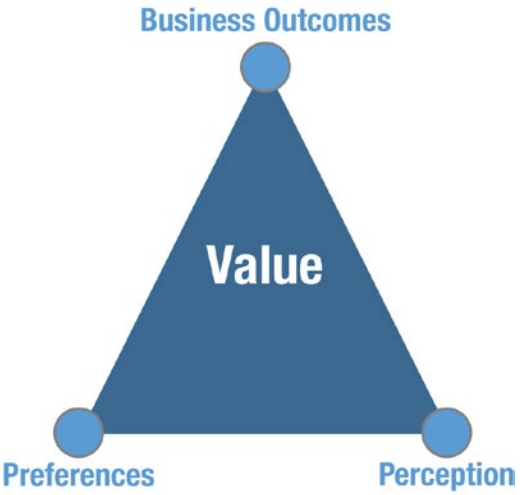


Figure 4-1. *Components of value*

Service strategy defines value based on three components:

1. Business outcomes
2. Customers' preferences
3. Customers' perception

Value is defined not only strictly in terms of the customer's business outcomes; it is also highly dependent on the customer's perceptions and preferences.

The value depends on what the business is able to achieve as a result of the services that you provide. If the service does not meet the customer's preferences, then it is not in tune with what the customer expects. Lastly, customers' perception matters. It is the customer who must see the value; it cannot be measured, and it can only be understood by the customer.

Perception is a funny thing. It may depend on a number of factors such as the various bells and whistles that a service comes plugged with, the service provider's track record, the service provider's brand value, the customer's self-image, and the customer's past experiences with other service providers. So, from this list, you can see that the service provider is not at an advantage when it comes to the perception component of value, as things that are out of their control seem to dictate the value proposition. The best the service provider can hope to do is influence the perception toward positivity. Figure 4-2 illustrates how the customer perceives value from the delivered services.

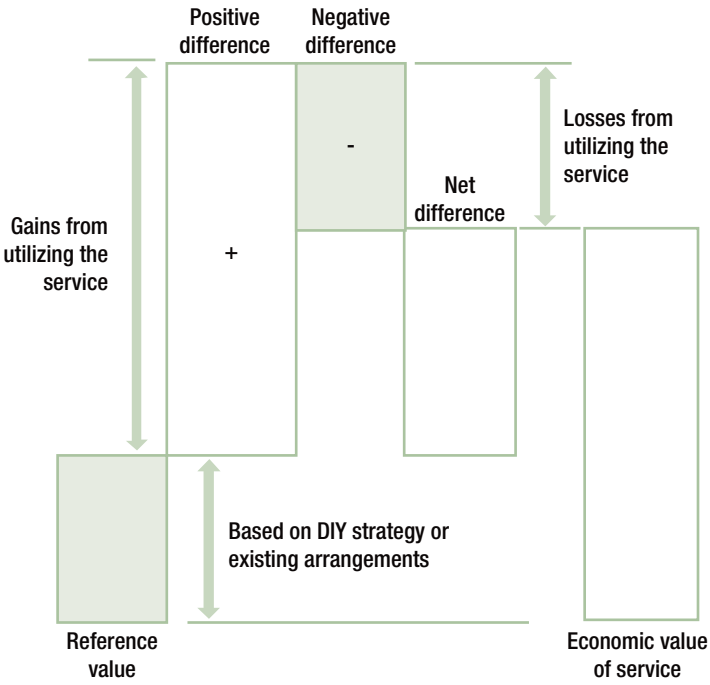


Figure 4-2. *Perception of value*

The first vertical bar from the left is the reference value for the customer. This is the benchmark that the customer has set, based on the current engagements or DIY (do it yourself) strategies. The bar next to it indicates the positive difference that the service has provided. An example could be HD streaming that the customer is able to enjoy, thanks to high-speed Internet. The world is not without problems. When the Internet goes down or acts erratically, it leaves a bad taste in the customer's mouth. This leads to negative difference resulting from the service. These are the perceived losses from utilizing the service.

The difference between the positive and negative differences is the actual value, as perceived by the customer. The overall economic value of a service is the difference between the positive and negative differences, plus the reference value that the customer has set.

4.5 Patterns of Business Activity

IT services are aligned with business activities. Business activities in turn are aligned with business outcomes. In other words, IT services drive business activities and business activities deliver business outcomes.

Whenever business activities are performed, IT services are expected to deliver. This cycle generates demand for IT services, and when IT services are leveraged, customer assets are utilized. The customer assets are generally leveraged in a pattern.

For example, in a bank, there are month-end activities that are run on the last day of the month. These activities in turn bring about special focus for the people involved, additional activities they perform, additional load on the IT infrastructure, usage of applications, and a host of other activities.

To support the business activities, an IT service provider must understand the patterns of business activity to ensure that:

1. All people resources are fully available.
2. Infrastructure is error free.
3. Sufficient network bandwidth and storage space are provided.
4. Escalation channels are in place.

In effect, the month-end activities present a pattern of business activity (PBA) and are dynamic in nature. It is also important to note that the same set of services cater to various PBAs. In the same example, the infrastructure support caters to month-end activities as well as the daily routine activities. Since the same services support multiple PBAs, it is critical that they are well understood and planned for.

4.5.1 PBA with Example

Let's say that a customer hires personnel based on a number of factors, such as attrition due to appraisals, salary hikes, customer deliveries, new projects, etc. The service provider is tasked with providing all IT services to employees when they are onboarded.

Figure 4-3 illustrates the hiring pattern. It has a couple of dips, once in mid-year and the second during Christmas. Otherwise, the pattern ascends and descends between the troughs.

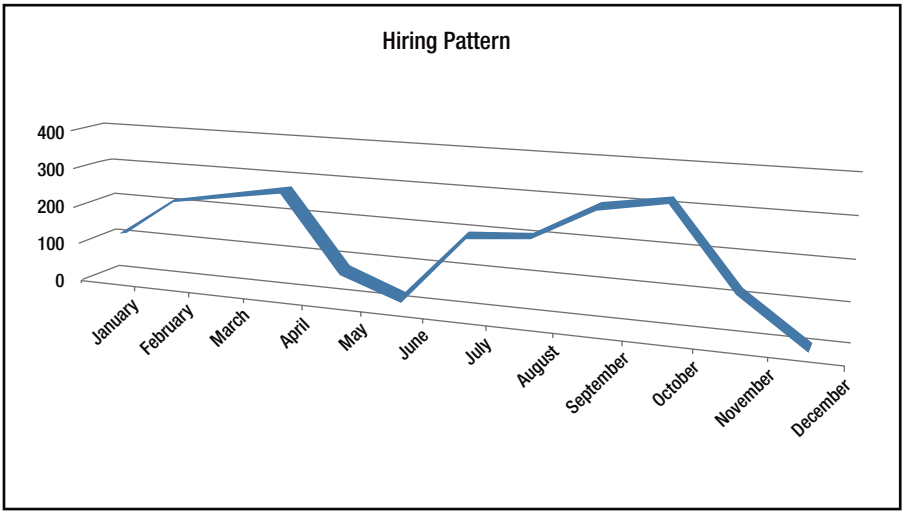


Figure 4-3. *Hiring pattern for a customer organization*

The service provider needs to provide IT services when employees are onboarded. This includes laptop provisioning, creating e-mail addresses, login ID creation, and access to business applications. The service provider can provide IT services if he is aware of the patterns of the business activity, in this case hiring. When he knows the pattern, he can plan ahead and order the necessary hardware, software, and plan respective IT activities around the pattern.

Let's say that the service provider is unaware of the PBA. He will be forced to work reactively during the peak months by placing hardware orders and mobilizing IT resources at the twelfth hour and breaching all the SLAs pertaining to IT provisioning. Likewise, if the service provider can build PBA profiles for all the customers, he will be better placed to plan IT activities well ahead of time and to mobilize resources in time.

4.6 Risk Management

> *The greatest risk is really to take no risk at all. You've got to go out there, jump off the cliff, and take chances.*
>
> —Patrick Warburton

Risks are inherent in every business, including the business of providing IT services. The world's most popular entrepreneurs wouldn't have reached peaking heights if they hadn't taken risks at various instances. An IT service provider has to take risks in order to come out on top.

When a service is conceived, it comes inherent with risks. They cannot be avoided. The smart thing would be to identify and manage them. It is like harnessing the sun's rays for power generation rather than staying indoors during the day.

A risk is a possible event that could cause harm or loss or affect the ability to achieve objectives.

There are two parts to risks:

1. The first is being pro-active and assessing risk. Based on the assessments, mitigation activities are planned and implemented.
2. No matter how pro-active an organization is, it may not be able to avoid the risk triggers (e.g., economic recessions). For such instances, risks need to be managed when they materialize.

4.6.1 Risk Assessment

Planning plays a major role in ITIL and it involves assessing risks before they materialize. It is an exercise that needs to be done at various stages of the service lifecycle. In most organizations, there are separate risk management teams that think of the worst possible thing that can happen to an IT service and start mapping it out with the impacts and the possible mitigations that can be achieved. Who said there is no place for pessimists in ITIL?

Under assessment of risks, there are two major activities:

1. Risk identification
2. Risk analysis

4.6.1.1 Risk Identification

Risks have to be identified before they happen. The best way to do this is by having brainstorming sessions with all stakeholders. When you brainstorm risks, just start listing them out. It could be as silly as the janitor tripping over power cables in the datacenter. Well, it's not silly really, as there have been instances of it that have been widely case studied.

After identifying the risks, add a column for identifying the possible impact coming from the risk. For the janitor tripping over power cables, the impact is not primarily servers shutting down, but the impact that the customer faces, say web sites going offline or business applications losing connection to databases.

The placeholder for this information is a risk register. It is a fancy name for the spreadsheet or Word document where all the identified risks are recorded.

4.6.1.2 Risk Analysis

After you think you have identified all the risks (which is impossible), add another column next to the risk to identify the probability that the risk could materialize:

- Datacenter losing power during janitorial activities: Low
- End users losing connectivity to business applications: Medium
- Employees taking sick leave in December: High

Also, you would expound on the potential impact that you identified in the previous activity—risk identification. There are two ways to analyze an impact: quantitative and qualitative. In one column, you could quantify the impact by providing numbers for the impact, such as 100 users impacted and losses amount to $10,000. In the next column, you can describe the impact in words, the things that cannot be quantified. Such as the company losing the brand image and facing legal action from customers.

The next item on the agenda to analyze is the mitigation actions. For every identified risk, you need to come up with a plan to mitigate it. Remember that you cannot avoid all risks, so you need a concrete plan to handle them when risk events are realized.

4.6.2 Risk Management

Risk management is twofold: pro-active and reactive, with the emphasis being on being pro-active.

Reactive risk management is straightforward. You have a risk register that lists all the risks against the mitigation actions. When it happens, whoever is in charge needs to take mitigation action and see it through the day. Nothing fancy about it, but it's a necessity.

Pro-active risks can be managed by reviewing the risk register regularly. Basically in this activity, smart people in the room look at every risk and the probability of it happening and review if it is still the case. If the probability has changed, the risk register is updated. It is possible that the janitor tripping over the power line is no longer a risk one year after it was recorded, as janitors are no longer allowed to enter datacenters. Perhaps air quality issues where resolved because there is a new technology in place that automatically sucks all the dust through its ducts, and the air conditioning comes with improved air purifying filters that ensure 99.99% dust-free air.

Risk management overall is an interesting activity. Although you play the devil's advocate, it helps you understand the stability of the service and keeps you better prepared for the worst to come. As the adage goes, *expect the best and plan for the worst.*

4.7 Governance

Governance is a way of organizing, amplifying, and constraining power.

—Rebecca MacKinnon

IT must be tightly aligned with the business to ensure that the business gets what it needs. Governance helps IT service providers achieve this alignment. In fact, governance is perhaps the only thing that brings the customer and the service provider under the same umbrella and achieves synchronization.

The alignment is brought about by defining common vision, policies, processes, and the governance structure for regular engagements.

Governance ensures the service provider's strategy is in sync with the customer. It ensures that there are sufficient touch points and control mechanisms to define the processes, roles, responsibilities, and measurements. They police the implemented processes for compliance and adherence.

The lack of governance leads to chaos. The business does not get what it wants, because the policies and processes would not be defined based on its needs. It would be a matter of time before things start to wrap up and end the business relationship. In the IT service management world, lack of a proper governance model has been identified as the major reason for failure to deliver on contractual obligations, leading to loss of the customer base.

4.8 Service Strategy Processes

There are five service strategy processes in the ITIL 2011 version. These processes are aligned to the service strategy phase's objectives and are aimed toward providing guidance for the service provider to strategize, govern, and manage the outcome of the services. However, for the ITIL foundation examination, three processes are in scope:

- Service portfolio management
- Financial management for IT services
- Business relationship management

I have touched on some concepts pertaining to the two processes that are omitted from the ITIL Foundation syllabus in the preceding sections. These processes are:

- Strategy management for IT services: I explained the concept of value that comes out of this process.
- Demand management: Patterns of the business activity concept are tagged under this process.

All the service strategy processes will come into play across the service lifecycle, although it has been explicitly mentioned under the service strategy phase.

4.8.1 Service Portfolio Management

A portfolio is a collection of assets. A financial portfolio is a familiar term where in all the assets we own, such as shares, money in the bank, and bonds, among others, are collectively addressed by the term. Likewise, in the IT service management world, a service provider's assets are the services that it has in its repertoire. These services are

known as the service portfolio; I will explain this further in the next section. Management of the service portfolio is the essence of service portfolio management.

The service portfolio is the asset that makes or breaks the service provider. It is the only arrow in the quiver that will differentiate one provider from the other service providers in the market. It is the only reason why customers would do business with a provider. In short, it is everything!

Portfolio management is the process where the service provider starts to take shape. It defines what services can make it to the assets, based on the business outcomes and the strategic objectives. Furthermore, the process provides guidance around measuring, tracking, and monitoring the services.

4.8.1.1 Service Portfolio

The service portfolio is a database that consists of all the services in various stages of its lifecycle. It represents where the investments are made, across various markets and all customers. It consists of services that are in use, that are retired, those getting developed, and those undergoing improvements. In all, it provides a bird's eye view into the service provider's assets—the services.

There are three parts to a service portfolio, as represented in Figure 4-4:

- Service pipeline
- Service catalog
- Retired services

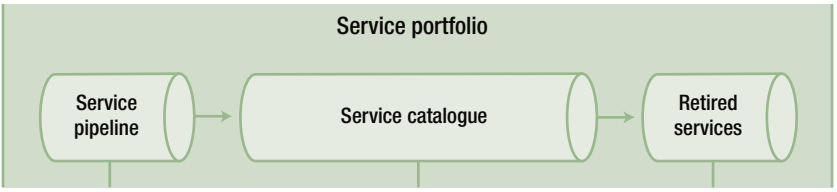


Figure 4-4. *Service portfolio*

4.8.1.1.1 Service Pipeline

The service pipeline is a subsection of the service portfolio that consists of all services that are under development, including the ones that are in the conception stage. It also represents where the majority of new investments go in. This list is generally not visible to the customer, except when services are nearing the end of development stages and entering into testing and pilot phases. This helps service providers get assured business even before the service is implemented.

To state an example, a service provider who is in the business of mobile phone service has to launch new services every few months to stay competitive and ahead in the market. If it is developing new services, the provider may not want its competitors to have knowledge of the new service. Ideally, it would like to inform the market once the service

is ready to be launched. That's when the competitors would learn about it as well, most likely too late for them to react and start matching services.

For this example, the mobile phone service provider needs to create new services fairly regularly to stay competitive. This is perhaps true for all service providers in other areas of IT as well. Every company must apportion some of their budget toward creating new services and improving existing services. If new services fail to kick off on a regular basis, the service provider will soon find itself in the back of the line and playing catch up for the rest of its lifetime. This showcases the importance of the service pipeline and the criticality it brings to the table.

What are some of the triggers for creating new services or improving existing services? Here are some:

- Feedback regarding existing service
- Customer requests for a new service
- Competitors launching a new service
- Service provider has new strategic objectives
- New technological advancements
- Lack of outcome from existing services

4.8.1.1.2 Service Catalog

The service catalog is the database of all services that are currently available. The service catalog is visible to the customer, in fact, the service provider will showcase it every time he sits down with the customer in order to get new business.

Service catalog is discussed at length in Chapter 5. Service catalog management is a process that resides in the service design phase. However, as the service catalog is an integral part of the service portfolio, I will discuss the topic here and connect it to the interfacing databases.

A service catalog is like a restaurant menu. It has all the live services listed, including the ones that are going to be live in the near future. For every listed service, there a brief description of what the service delivers, how to request it, who to contact, and, most importantly, the cost of availing the service.

The services listed in the service catalog are in the operational phase, in the sense that the service has been fully developed and is working as per the design. There could be improvements to the service, but they are not made public unless they are ready for deployment.

Imagine you head to a restaurant and glance through the menu items: appetizers, entrees, soups, meals, desserts, etc. All the items listed are available for delivery. They would not list items in there that are not delivered, right?

It is common for a service provider to maintain multiple service catalogs, depending on the customers and market spaces. For example, a service provider may rank the customers as gold, platinum, or diamond and provide varied services, with differentiating SLAs and cost points.

4.8.1.1.3 Retired Services

Services once conceived, developed, and operationalized will not run forever. Everything has a shelf life, and it's the same case with services too. Some services move out of the service catalog into another database called retired services. This repository contains all the services that have been disengaged. This is not visible to the customer, unless they specifically ask for it.

There are a number of reasons why services get disbanded:

1. Technological advancements bring in new services, and new services replace the existing ones
2. Lack of interest from customers
3. Operationalizing services does not meet the financial objectives of the service provider
4. Legislative ruling could bring an end to services, like Voice over Internet Protocols (VoIP) in certain countries

It is also worthwhile thinking about why we need to maintain an additional database featuring all the retired services. Here are some reasons to do so:

1. Rule of the land might impose keeping records of all retired services
2. Legislative policies can change and bring some services back to life, like VoIP
3. New services that replaced the existing ones are not meeting business objectives, so there is a dire need to fall back to the old and tested (also a popular Hollywood theme where antiquated soldiers are better than the new breeds)
4. Recycling is popular with services too. New services might leverage certain parts of the older services to deliver outcomes. Why reinvent when you can rebadge?

4.8.1.2 Objectives of Service Portfolio Management

Service portfolio management exists to support the service provider in creating the right mix of services that make them competitive and attractive and achieve business outcomes. It also ensures that the investments are getting tracked, and if there are any services that are not generating income or not achieving business outcomes, then providing guidance toward retiring them.

The overall objectives of the service portfolio management are:

1. Before a service gets developed, there is a lot of analyses and investigations that are done to ensure that the right services that generate regular income and provide business outcomes are incepted. This is the primary objective.
2. Manage the portfolio of services that are offered to customers.

3. Track investments across the lifecycle of a service to ensure that the majority of the funds are going toward services that are bearing maximum fruits and achieving business outcomes.
4. Control what services are being offered, at what service levels, and at what level of investment.
5. Keep a finger on the pulse whether the services are on the path of strategic objectives of the organization and appropriately responding to events (like technological breakthroughs, market orientation, and customer preferences) appropriately.
6. Retire services that are no longer viable for the organization to continue maintaining.

4.8.1.3 Scope of Service Portfolio Management

All the services that are developed by the service provider, the services that are offered to customers, and the services for which customers pay for come under the scope of service portfolio management.

More specifically:

1. Services that are in the development stage
2. Services that are in the operational phase, offered to customers
3. Services that are no longer in use, retired

4.8.2 Financial Management for IT Services

Financial management for IT services is needed to do business. It is the process that enables the service provider to understand what is being spent, how much is being allocated, and what is being charged to the customers. This process has the highest visibility across the echelons of the organization. It is controlled by the top tier in the organization but it flows down to every nook and corner of the organization. Every single team in IT will have a budget to play with, need to account for expenses, and advise on charging the customer.

For example, if the service provider is providing technical support to a customer's base, the service provider would have accounted for the number of PCs, servers, and other IT equipment that needs to be managed. A contract would be signed between the two parties listing the number of systems to be managed, at what costs, and at what levels, and how quickly the service provider can respond, resolve, and support the service.

Suppose the customer procures additional laptops and a couple more servers during the period of a contract; the service provider will have to charge the customer accordingly based on the updated numbers. Suppose computer administrators were asked to work

through the night due to month-end activities; the service provider must charge the customer accordingly. This mechanism of keeping track of what services were offered, and at what levels, and quantifying them accordingly is one of the key objectives of financial management of IT services.

Going deeper, I would like to rethink the definition of quantifying the returns to the customer. In fact, the goal of this process is not only to quantify the money part but also to quantify the value that the customer generated due to the service. If the customer can get the visibility due to value quantification, he will be keen on appreciating the service that is helping his organization rather than believing that IT is a necessary burden that he needs to learn to live with.

4.8.2.1 Objectives of Financial Management for IT Services

Financial management is a complex process as IT services are measured and charged in small fragments, including pay as you use. For the scope of ITIL foundation, I will discuss the high-level objectives of the process. They are:

1. Evaluate financial impact due to new strategies being conceived of or changing for the existing strategies. For example, when IBM went from being a product company to a service organization.
2. Secure funding for developing new services and operating new services.
3. Budget the expenses for the organization based on the projected incomes.
4. Account for the money spent on various services, on various customer-related activities, and other administrative costs.
5. Comply with regulatory and legislative requirements by carrying out appropriate financial activities.
6. Charge the customers as per contracts and recover costs if any.

4.8.2.2 Scope of Financial Management for IT Services

The entire service provider's organization comes under the scope of financial management. Generally, this process is handled separately by a team of finance experts, accountants, and legal experts with the process rolling up to the chief financial officer (CFO). For managing IT services, however, you need people who understand the service landscape, people who can speak the language of services and communicate better.

At a high level, financial management for IT services can be broken down into:

- *Budgeting*: This is a process that involves forecasting expenses for a finite term. It involves understanding all the intricacies of the organization and understanding expenses coming from all quarters of the organization. Budgeting does not stop at creating budgets for the service provider but also controls the flow of money to these avenues.
- *Accounting*: Once the budgets are set, expenses start to come in, usually from a number of channels, most expected and some unexpected. The accounting part of the process ensures that every penny spent by the organization is accounted for and is placed under a silo where it rightly belongs. At the end of the day, the beauty of accounting is to report the costs based on various factors, such as customers, services, departments, and administration.
- *Charging*: The service provider is required to recover the costs by charging the customer on a regular basis. The terms and conditions for recovery are most often mandated by the contracts. In addition, there could be cases where additional charging needs to be made. The source of charging, therefore, comes from sound accounting practices.

4.8.2.3 Business Case

A business case is a documented justification for supporting decision making. Business cases are used when a business objective needs to be achieved, for which certain actions need to be taken. They may or may not involve costs.

This document brings out the potential benefits or consequences if the recommendation is to be ratified. Also they look at the benefits and consequences from both qualitative and quantitative perspectives.

A business case will generally contain the following sections:

- Business objective to be achieved/problems to solve
- Analysis and assumptions
- Quantitative business impact
- Qualitative business impact
- Risks and mitigations involved
- Recommendations

Business cases are different for every service provider, as every service provider is different and their business objectives and the corresponding business impacts differ as well. Also, the perspective or the lens through which they view problems can also be different. The commonality between the service providers hinges on the business impacts

that the recommended action is likely to cause and the associated risks. An internal service provider may weigh the case in tight alignment with the business unit, whereas an external service provider may have eyes on the brand image and the financial impacts along with meeting the business obligations.

4.8.3 Business Relationship Management

Business relationship management (BRM) is a fairly new process to ITIL; although it existed in principle, it did not have a process on its own until the 2011 version. This process acts as a bridge between the customer and the service provider to ensure that the customer's requirements are well understood and the services are delivering business outcomes.

There is another process under the service design phase called the service-level management (SLM), which has existed for as long as I can remember. SLM links the customer on the service levels of the services and ensures that the services are delivered as per the signed contract. I will discuss the SLM process in detail in Chapter 5.

The process objectives for the BRM and the SLM are similar from a distance, but they differ in terms of what kind of touch points take place between the processes and the customers. BRM looks at the strategic and tactical levels, while SLM concentrates on the operational level. In essence, BRM acts as a big brother to SLM to ensure there is alignment between the processes and the list of items agreed to at strategic and tactical levels are materializing in the operations. The relationship between BRM and SLM in explained in detail in Chapter 5.

4.8.3.1 Objectives of Business Relationship Management

Do you remember the cartoon that depicts what the customer conceived as a deliverable and what the project actually delivered? Well, let's just say that the customer wanted a monster truck and he got a tractor instead. This kind of mismatch can be avoided if there is a communication line open at the highest levels of echelon of the organizations, to understand the customer's deepest needs and to meet those needs, rather than delivering just what is asked for. There are a number of case studies that suggest that business partnerships break not because of communication, but rather the lack of it. BRM plugs this gap.

These are the objectives of BRM:

1. Understands customer's perspective of IT services delivering business outcomes, leading to prioritizing services and service assets.
2. Ensure customer satisfaction levels are at a high, which is a good indicator whether or not the service provider is fulfilling the customer's needs.
3. Understand the customer's business, customer's pain points, and business drivers to facilitate services, providing value as the customer sees it.
4. Engage new and upgraded technology to serve the customer better with fitter service levels and quality of service.

5. Understand customer's requirements for developing new services or changing existing services.
6. Manage conflicts where necessary.
7. Provide a path for the customer to initiate and lodge complaints if services are not up to the expected levels. This ensures that the customer reaches out to the identified chain of command rather than going after the customer's favorites (usually the CEO).

4.8.3.2 Scope of Business Relationship Management

BRM is generally known as account management in most of the top service organizations. Each customer or a set of customers is assigned an account manager, depending on the size of the customer. The account managers are tasked with meeting customers on a regular basis, taking them out for dinner and drinks with the sole purpose of feeling the pulse of the customer and ensuring corrective actions if all is not well.

In the case of an internal service provider, it is unlikely that an account manager role is set up. One of the senior managers in the IT organization is tasked with putting on the hat of a business relationship manager and understanding the needs and pains of the customer's business.

The following come under the scope of BRM:

1. The business outcomes that the customer wants to achieve through service providers
2. All the services that are offered to the customer, pitched to the customer, how, when, where, and other details of the service
3. Technological advancements that could potentially impact the existing services
4. Customer satisfaction levels
5. Growth of services to meet customer's future needs
6. Feeling the pulse of the customer pertaining to the service provider

4.9 Practice Exercises

1. Which of these is NOT on of the four Ps associated with service strategy?
    a. Patterns
    b. Plans
    c. Process
    d. Positions

2. Value is defined from whose standpoint?

   a. Customer

   b. External service provider

   c. Supplier

   d. Internal service provider

3. Which of the following is NOT a component of the service portfolio?

   a. Service pipeline

   b. Service plan

   c. Service catalog

   d. Retired services

4. Why does the financial management process exist?

   a. To secure funding for IT services

   b. To develop finance processes for the service strategy phase

   c. To develop a relationship with the customer for getting more business

   d. To manage the service portfolio and the cost of all offered IT services

5. Which of the following is NOT an objective of BRM?

   a. Understand the customer's requirements

   b. Measure and report on the individual SLAs

   c. Manage conflicts

   d. Ensure customer is satisfied with the offered services

4.10 Summary

In this chapter, I explained the four Ps of service strategy and the value creation principle. I also discussed the patterns of business activity, risk management, and governance. I discussed the first set of processes in the ITIL framework, the processes that are embedded in the service strategy phase. I covered the following processes: service portfolio management, financial management, and business relationship management.

In the next chapter, you will learn about the second phase of ITIL service lifecycle—service design—the concepts of designing a service and the processes that belong to this phase.

CHAPTER 5

Service Design

Good design is making something intelligible and memorable. Great design is making something memorable and meaningful.

—Dieter Rams

Service design begins when the senior management in the organization has given the direction in setting up IT services. The vision for the service strategy is blueprinted in the service design phase.

Let's resume with the example of the mall that I previously discussed in this book. In the strategy phase, visionaries who understand business investing and demography decide that a mall built on a certain piece of land would be a great investment and help the community immensely. The decision to build the mall is made in the service strategy phase, and it is handed over to the service design phase to come up with the plans.

Service design is like a building architect who sits down and starts drawing plans using a software like AutoCAD. The architect designs how many floors the mall would have, how to allocate parking without sacrificing commercial spaces, determines what the layout will look like, and plans for the escalators, elevators, staircases, emergency exits, patios, and all other aspects of the mall. The design's objective is to ensure that minimal changes would be necessary in the future, so whatever needs to be thought of, or provisioned for, needs to be done now. You cannot expect to design something with plans to include major changes a few years down the line, which would defeat the purpose of a good design.

The output of the mall design is a set of architectural diagrams, 3D blow-ups, civil designs, and other associated plans. Everything is built first on paper. Not a single brick in laid in the design phase. Similarly, in the service design lifecycle phase, the technical, governance, and management designs are blueprinted based on the strategic direction, and this package is the overall outcome of the phase.

5.1 Purpose of Service Design

The mall example illustrates all the plans that will be designed in the design phase. Coming back to ITIL, the business runs around IT services. The service design phase is tasked with designing the IT services and its associated activities.

A. K. Kaiser, *Become ITIL Foundation Certified in 7 Days*, DOI 10.1007/978-1-4842-2164-8_5

Some examples of IT services include:

- Internet
- Cellular phone (calling, texting, data, etc.)
- E-mail
- Web hosting
- Text messaging

These are basic examples of IT services, but there are a number of other complex IT services that could be added to the list.

The purpose of the service design phase is to develop designs for the IT services that were envisioned in the service strategy phase, along with the policy and process documents that are necessary to control and govern the designed IT services. The designs must fit into the environment the customer is looking to deal with, ensuring maximum customer satisfaction and minimum costs while meeting all the quality requirements.

5.2 Objectives of Service Design

From the mall example, the underlying principle for the designs is to ensure that minimal improvements are foreseen in the future. So too, IT designers must ensure that they foresee the future of the IT services in play and design them with an eye to the future. If the designs are robust and can stand the test of time, then you can expect minimum improvements to be made over the course of time.

Let's say that the designers are tasked with designing a dynamic web site. The designers must be judicious in choosing the content management system (CMS) that is going to help them in the long run. They must opt for a popular CMS such as Wordpress rather than Drupal, which has a diminishing support base. The reason to choose Wordpress is to ensure that further updates that come about from the CMS developers will ensure that the web site will stay current, secure, and relevant. If Drupal is chosen, there is a possibility that development might stagger in a couple of years, or even come to a standstill, which will force the designers to transition to a different CMS and lead to major design changes, risks, and unwanted expenses.

The objective of service design is to ensure that IT services require minimal improvements during the course of its lifecycle. I am not implying that improvements are bad, but improvements must be grounded on changing requirements or triggered by unforeseeable events, rather than enhancing the drawbacks in the service. You don't want to have to build a restroom in the mall after it goes live, because the architect overlooked providing one.

Also, the services designed must be scalable, customizable, and resilient to internal and external conditions. The policies, processes, standards, guidelines, metrics, Key Performance Indicators (KPI), and SLAs are defined during this phase.

5.3 Value of Service Design

ITIL is based on the premise of creating value to the business, and the service design, the biggest phase, has a major role to play in it. It is the phase where the design of value proposition gets under way and is blueprinted. Service strategy provides the basic framework to create value, and the service design fits the pieces of the puzzle into its creation.

This phase is key to the service provider organization, and it determines the set of activities that start to give the service portfolio a shape, its bone structure, the elements needed to align business processes to the technical components. Further, service design caters to the ever growing demand in building a design that stands the test of time, technology, load, and plan for the future. The strategic relationship building that starts in the earlier phase needs the backbone from the operational feedback, and this phase caters to it. Service design acts as a conduit for translating the financial aspects of a service into a plan that fits the budget and is cost effective for the customer to sustain using the services.

The business can derive the following value components from the service design phase:

1. The business depends on reducing its overall expenditures, therefore maximizing its profits. Service design helps in reducing the total cost of ownership (TCO) and supporting the business in its business goals.

2. Businesses are like rivers, they need to keep flowing, merge with tributaries, and maximize their outflow. For this to happen, the services they leverage off of must be consistent and available. A solid quality design can help achieve it.

3. Change is the only constant, be it business services or IT services. Service design's place is to ensure that the implementation of new or changed services is seamless.

4. Businesses and IT cannot run on parallel tracks. Both swim in the same waters, often by joining hands and collaborating. IT must know which business processes are critical and ensure that it aligns its priority, urgency, and resources in delivering them to the critical parts of the business. Service design must enable the business.

5. The value of IT services comes from its effectiveness. If the IT does not deliver on its services, businesses cannot deliver on their outputs. It's a critical success factor, and the service design phase has a major role to play in it.

6. Business leaders are expected to make critical decisions that are bound to have short-term and long-term effects. Service design provides the base data, information, and knowledge to act as a catalyst for making such judicious decisions.

7. The business needs to comply with regulatory and legislative policies of the land. The service design must support the business in inheriting these compliances from the IT services front.

5.4 Four Ps of Service Design

An effective design needs to consider the entire landscape—past, present, and future—identify stakeholders, and plan for contingencies, among others. At a high level, there are four areas that need to be comprehended to develop an effective design, as shown in Figure 5-1:

1. Processes
2. Products
3. People
4. Partners

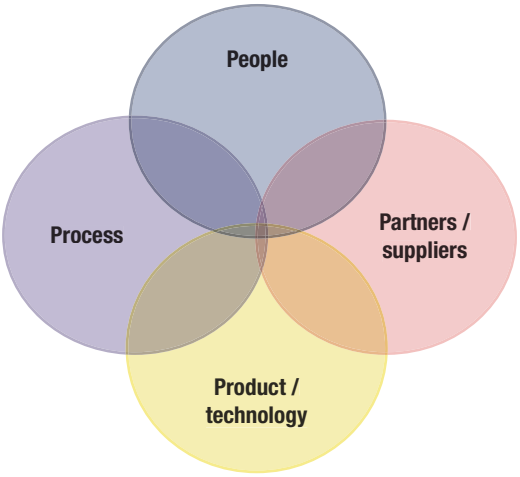


Figure 5-1. *Four Ps of service design*

5.4.1 Processes

Processes are an integral part of any IT service. During the design of IT services, processes are hard at work to bring form and structure. Once IT service is designed, processes are necessary for deployments and for keeping track of configurations, and processes form the basis for governing changes. Once implemented, processes drive operations, maintaining status quo. To sum up, processes are the foundational elements of the ITIL framework, and these processes need to work together and interface with one another to provide robust and stable IT services to customers. Think of it like the edutainment cartoon *Captain Planet and the Planeteers*, where five individual elements when brought together created the superhero called Captain Planet. In IT service management, the superhero is none other than IT services, and for it to be effective, efficient, cost effective, and consistent among all other jewels, you need the individual processes to interlock, interface, combine, and work toward the common objective.

Service design is the phase where all the processes, including the ones in other phases, are designed, along with its interfaces, KPIs, RACI, and other components.

5.4.2 Product

Products comprise a twofold system. The first branch is the service design, which is the output of the service design phase. Products also extend beyond design to technological components that are leveraged to implement, support, measure, and improve services across the entire lifecycle of an IT service.

For example, for an ATM service to maintain service over a period of time, it must have an IT security product to keep hackers at bay, a business program to communicate with banks, and a monitoring tool to provide status updates.

5.4.3 People

Leveraging on technology is good and automation is fantastic. But who drives, controls, and operates technology? Who makes decisions on operational, tactical, and strategic situations that arise on a fairly regular basis? People.

The service design phase identifies the necessary skill sets that people need to possess to design, implement, and support IT services. They also identify the training requirements to upskill people and influence the culture in the organization.

If a new service is being introduced, how many people will be needed to design, implement, and support it? The loading of resources is yet another responsibility that comes under the ambit of service design.

5.4.4 Partners

The days of a single organization delivering all services are over. Services are so complex and diverse that a single organization cannot manage everything. It needs partners and suppliers to work alongside and deliver on the service objectives. I will discuss in detail the role of partners and suppliers under the supplier management process later in this chapter. But for now, a key ingredient in making an effective service is partners, and they must be considered while drawing roadmaps and blueprints in the service design phase of the ITIL service lifecycle.

5.5 Five Aspects of Service Design

There are five aspects that service design must consider apart from the four Ps to ensure that a holistic view of services is taken rather than the individual elements of the service. The five aspects, as shown in Figure 5-2, are:

1. Service solutions for new or changed services
2. Management information systems and tools
3. Technology and management architectures

4. Processes
5. Measurement methods and metrics

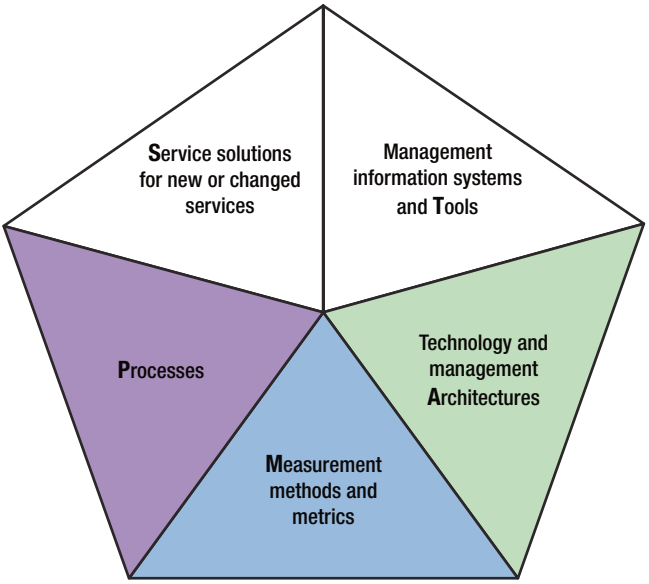


Figure 5-2. *Five aspects of service design*

5.5.1 Service Solutions for New or Changed Services

The service solution for new or modified services is at the heart of IT services. The solution obtains the requirements from the service portfolio management process, and it is developed under the technical and financial constraints. For example, technological specifications such as SAP-based solutions and financial constraints are based on the financial agreements made with the customer. An economical IT service will not have a high availability design. The solution must also comply with the service-level agreements.

5.5.2 Management Information Systems and Tools

Tools are an integral part of IT service solutions. They are required in automation, reporting, and monitoring and are identified based on the existing tool sets, service requirements, and their functionality.

5.5.3 Technology and Management Architecture

No organization will start as a green field. They will have some services and would like to start adding additional IT services. In such cases, the new architecture and technologies must interface with the existing architecture and technological components. This is applicable for the management structure in organizations as well.

5.5.4 Processes

IT services, new or modified, require processes for transition and maintenance. Every process comes with its own objectives, and they must be aligned to meet customer requirements and interface with existing processes.

5.5.5 Measurement Methods and Metrics

Measurement forms the basis for feeling the pulse of IT services and identifying service improvements. It is critical to know what needs to be measured in order to find loopholes and performance initiatives. Service design is at the best juncture to define measurement methods and the metrics needed for the rest of the service lifecycle.

5.6 Service Design Package

The main output of the service design phase is the service design package (SDP). This is yet another term you need to remember, and remember well, for the sake of the examination.

The SDP is a set of plans, blueprints, and architecture for the IT service. It also contains all the necessary documents required for service transition and operations.

The service design phase produces a service design package for the following:

1. When a new service is getting introduced
2. When a major change is being done to a service, like an overhaul of the entire IT infrastructure
3. When a service is getting decommissioned

The typical contents of a service design package are:

- Business goals
- Service contracts
- Service applicability
- Functional requirements
- Operational requirements
- Design and topology

- Service program
- Service transition plan
- Operational acceptance plan
- Service acceptance criteria
- Organizational readiness assessments

It is illustrated in Figure 5-3.

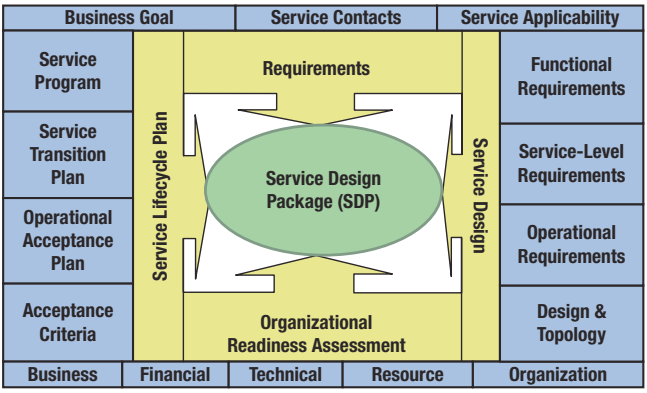


Figure 5-3. *Service design package*

5.7 Service Design Processes

Service design is the biggest phase in the ITIL lifecycle. It encompasses eight processes, and each process looks at the service from a different facet. Together, they provide all the design parameters of an IT service.

The eight processes under service design are:

1. Service-level management
2. Service catalog management
3. Information security management
4. Availability management
5. Capacity management
6. Supplier management
7. IT service continuity management
8. Design coordination

5.7.1 Service-Level Management

Service-level management is a key process in which the customer and the service provider agree to specific service levels. The process ensures that the service levels are met and due course of action ensues if there is failure to do so.

I discussed key concepts on contracts and agreements involving service-level agreements, operational-level agreements, and underpinning contracts in Chapter 2. In this section, I will delve deeper to understand the nuances of the service-level management process.

5.7.1.1 Objectives of Service-Level Management

Service-level management exists to constantly sync with the customer at a tactical and an operational level. It's a means to formal agreements, understanding and meeting expectations, and to keeping a finger on the IT service pulse.

The following are the prime objectives of service-level management:

1. Understand service-level expectations, document, agree to, and track service levels on a regular basis
2. If the service levels are not up to par, take corrective actions
3. Ensure that the customer and IT are on the same page in understanding and delivering on customer expectations
4. Work with the IT teams to improve the quality of services
5. Work with the business relationship management to improve the relationship with the customer
6. Warrant service levels that are specific and measurable for every IT service delivered to the customer
7. Ensure customer satisfaction through the delivery quality of service
8. Define and document operational-level agreement (OLA) with the IT teams, derived from the service-level agreement (SLA)
9. Report and manage all service-level breaches to closure
10. Ensure service risks are identified and mitigated pro-actively

5.7.1.2 Service-Level Requirements

Before I move further, there is yet another term you need to understand, which has not been discussed so far in this book. Service-level requirements (SLRs) are the set of expectations that the customer puts on the table with respect to IT services (or aspects of it). SLRs are aligned to business objectives and form the basis for negotiating and agreeing to service levels between the customer and the service provider.

To state a few examples of SLRs, the customer might ask for critical incidents to be resolved within the hour, might ask for changes to the systems be implemented within a day, and might ask for 100% availability of Internet service. Not all SLRs are feasible, even by the top service providers. In fact, the cost of services tends to go up exponentially as the service-level requirements hit the high percentage. So, the art of negotiation is to find the balance between the service levels and the cost of providing services.

Then there are some SLRs which are impossible to match, even by the best of service providers, perhaps implementing system changes within a day. Not all changes may be feasible given the timeline, as changes need to be developed, tested, and then deployed. It takes a lot of planning, coordinating, risk measures, and countermeasures. If the service provider signs off on an SLR stating that all changes would be implemented within a day, he would be setting himself up for a grand failure.

Ideally SLRs are captured in the service strategy phase by the service portfolio and business relationship management processes. But, this is at a high level. Specifics are not discussed until the agreements are charted. When the contracts are set in stone, the ball passes to the service-level management to obtain specific requirements from the customer, who then translates them into workable SLAs.

When SLRs have been determined, the next activity is to come up with service-level targets (SLT). SLTs are hard to come up with in the first instance. Generally, initial SLTs are defined, and over a period of time, they are refined and finalized. SLTs are a commitment made by the service provider against an aspect of a service. Examples of SLTs might be:

- More than 95% of the incidents will be resolved within 8 hours
- Configuration management database (CMDB) will be greater than 99.5% accurate

When SLTs are agreed to, they go into the SLA document. SLAs are finalized, signed off on, and then make their way into an addendum to the business contract. I will explain this process in detail in the next section.

5.7.1.3 SLA Frameworks

SLAs can be drafted in a number of ways. The two most popular types in vogue are service-based and customer-based SLAs. Figure 5-4 illustrates the service- and customer-based SLAs.

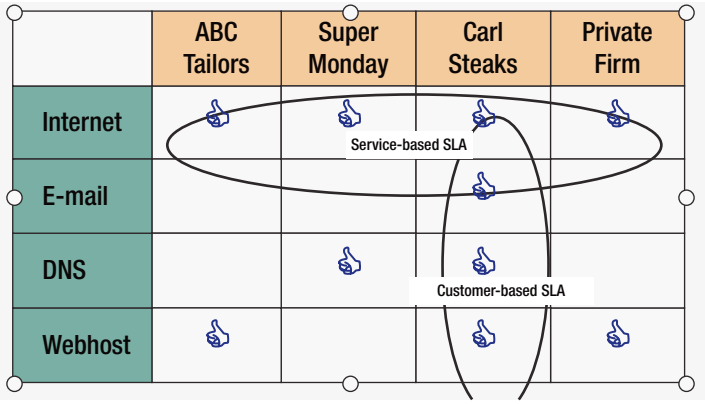


Figure 5-4. *Service-level agreement frameworks*

In a service-based SLA, the service that is being offered has a common set of SLAs for all customers. There are no tweaks and customizations for these SLAs. These services are common for all customers, as all service components would be shared across customers. So, it would be impossible for a service provider to provide different service levels to specific customers.

For example, the service that I have picked up as shown in Figure 5-4 for Internet has 99.9% availability and maximum ping time of 22ms for all customers. Customers cannot negotiate for anything more nor need to settle for subpar service levels. Not that customers would ask for reduced service levels, I am just trying to get the concept across. You may have also encountered such service levels when you tried to buy webhosting services. The service provider quotes a service level, and there is no discussion around it. You take it or leave it. If you want better service levels, you opt for a better service like Virtual Private Server (VPS) hosting.

In customer-based SLAs, every service that the service provider offers is up for negotiation in terms of service levels. The customer can negotiate the service levels, and the service provider will be in a position to fulfill them. This is possible because the service components such as the infrastructure and applications are built for a specific customer and can be changed as per SLRs. Of course, there will be specific costs, and it normally goes up exponentially for every decimal increase in the service levels.

In the illustration in Figure 5-4, the customer Carl Steaks is picking up a bunch of services, at the service levels that he requires. Rest assured, there will be costs for service levels that are above the threshold.

When it comes to SLA frameworks, there are provisions to be as flexible as a service provider can be, and as rigid as the webhost service provider offering shared boxes for customers to host their web sites. Remember that everything comes at a cost; and better the service levels, the more the customer has to shell out.

5.7.1.4 Multilevel SLA Framework

There is a third kind of SLA framework that makes it multilevel, offering more flexibility and stability for the service provider. The top of the SLA line, and the SLA framework that dictates to every customer and to each service, is the corporate-level SLA, as illustrated in Figure 5-5.

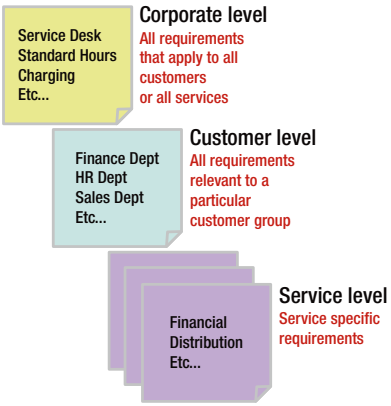


Figure 5-5. *Multilevel service-level agreement*

The corporate-level SLAs are decided at the corporate level, meaning the service provider's top most decision layer has decided that the SLAs for specific parts of the service or supporting activities' are set in stone and cannot be changed.

For example, the service desk's timing for reaching out to the customer is common across all platforms. It cannot be altered at a customer's request or for a critical service requiring extended coverage.

There could be various reasons why corporate SLAs are framed. It could include legislation or laws, cost balances, or other strategic reasons that will benefit the service provider. By taking a stand that certain SLAs will not change, the service provider may well prove that he is not going to be partial toward any of his customers, no matter how much money is involved. This could be a marketing gimmick or a principled stand. What matters for you in this book is understanding the concept of multitiered SLAs and the level of trumping between the SLA frameworks.

In Figure 5-5, you can see that corporate-level SLA is top tiered. So the levels set at this magnitude cannot be overridden by customers or services. The next tier is the customer-level SLA. So SLAs agreed to with customers for specific services stand, even if a specific service has different service levels across the board.

The last in the pecking order is the service-level SLAs. Whatever is left over from corporate- and customer-based SLAs belongs to the service-based SLAs.

5.7.1.5 Service Reporting

Reporting is a major activity in all business areas, and it is not just restricted to IT. Reporting gives clarity with numbers. What the reports do is quantify the delivered service levels and set up the agenda for upcoming discussions for meeting stakeholders.

In the ITIL world, IT services come tagged with various SLAs to measure the service levels against a number of aspects of services. Reports are pulled with the actual service levels and compared with the agreed to SLAs.

SLA documents define the reports that need to published and also the frequencies. Some reports may be pulled more regularly than others, for example, a weekly change report versus a CMDB accuracy report that is pulled every three months. For some critical services, a daily report comes in handy as well. The service provider must agree with the customer on the reports that will be produced, how often they will be generated, their format, and their distribution lists.

There are exception reports, where the report does not get generated if the service levels are met, but instead, get generated if the SLA is missed or in some cases stays on the borderline. Examples could include a breach in SLA resolution time for critical incidents or a breach in SLA for implementation of normal changes.

Service providers must work toward automating all of their reports to ensure consistency and cut back on resource costs. There are a number of advanced reporting tools in the market that can automate many reports and create dashboards to monitor the delivery of services in real time.

Merely procuring a tool will not do the job. Service providers need reporting specialists to create reports for all their service obligations and provide other internal reports that can help the organization to reduce the total cost of ownership, increase productivity, and help it be more efficient. The art of reporting is a delicate skill and it is rare to find professionals who can produce reports that hit the right chords, meaning using filters to get what information is needed and to make the reports visually appealing. It is not a role that can be ignored.

5.7.1.5.1 SLAM Chart

SLAM is an acronym for service-level agreement monitoring. It is a color-coded report on the service level not using numbers but the RAG (red, amber, green) status, as shown in Figure 5-6.

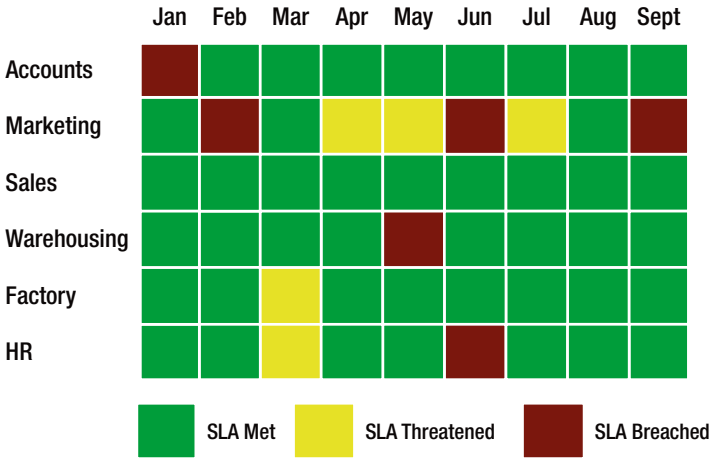


Figure 5-6. *Service-level agreement monitoring chart*

If the service levels are faring well, such as Sales, across all the reported months, the cell corresponding to the month and service is shaded green. If the service levels have breached for certain periods, as in Accounts in January, it is shaded red. And if the service levels are in borderline, such as HR and Factory in March, the cell gets shaded amber.

It's a visual tool that helps senior managers and higher management to feel the pulse of the services on the fly. In cases of amber cells, the report might suggest that the service provider come up with actions aiming to get the status back to green. If it is red, the SLAM report goes deeper to find the cause and to come up with corrective and preventive actions, which I will discuss during the problem management process in Chapter 7.

5.7.1.6 Service Reviews

Service reports are the basis for conducting service reviews. Service reviews are generally meetings between the service provider and the customer, and they are planned meetings that happen at a regular frequency: monthly or quarterly. Additionally, there could be half-yearly or annual service review meetings between the senior management of both the organizations.

Service review meetings follow service reports. So, there needs to be alignment between the two activities. For example, if the service reports are mandated to be published on the fourth business day of every month for the previous month, the service review meeting can be planned to be conducted every seventh business day, giving time for both parties to plan their respective meeting strategies.

In service review meetings, the service-level manager or a designate is generally the chairperson, and a minute taker must be assigned well beforehand. All discussions must be documented and actions must be tagged with a timeline, along with an associated owner. This could be either from the service provider or customer. Minutes are supplied to both parties, including the senior management, for visibility and guidance.

Usually, service breaches are discussed in detail in service review meetings. The service provider must come prepared not only with an answer to what caused the breach, but also to find a permanent solution to prevent it in the future.

In some cases, the service provider might find it unfeasible to meet certain SLAs. In such cases, service review meetings are the forum to discuss whether the SLAs need to be tweaked to make them realistic.

I personally look forward to being in service review meetings. No matter how much we prepare, the other party always throws a curve ball at you, and it is also interesting from the service provider standpoint to hear customer's observations on service deliverance, something you might have rated trivial might end up being a big deal for the customer.

5.7.1.7 Service Improvement Plan

More often than not, the outcomes of service review meetings are seeds to improve the quality of services. The initiation to improve services might come as a result of suggestions or recommendations and as one of the components on the contract document.

It is extremely critical for services to improve, and not stagnate by barely keeping their head above water. When I say improve a service, what aspect of the service am I referring to? Remember the resources and capabilities I discussed in Chapter 1 that make up the service? There were ten service assets within the resources and capabilities, and improving any or multiple assets leads to service improvement.

Let's say that you are looking at the people aspect of a service. Getting mature resources to work on services, those who can resolve incidents quickly, improves the quality of service. Getting a technology upgrade to bypass certain service constraints and deliver better on business outcomes is another example of service improvement.

To state a real-life experience, when I started out, I was working for a customer whose users used to call the help desk to get passwords reset. At the time, automated password resets were not as common as they are today. When we implemented a self-help password reset enhancement, the customer greatly benefited by the increase in productivity of his employees. The service provider, who was my employer at the time, benefited by reducing the headcount at the help desk. It was a win-win situation. Who said service improvements benefit the customers alone?

A service improvement plan (SIP) is a document that contains all the identified aspects of a service that could potentially undergo improvements. The instigation for the SIP items comes from the service review meetings. Service-level management initiates the SIP and it gets carried out in the continual service improvement lifecycle phase (see Chapter 8).

It is also not uncommon for contracts to list the projected service improvements. The underpinning contract could state that the cost of services should reduce by 10% year on year. While inflation hits the world, how in the world can the cost of services decrease? Mainly from service improvements. Such clauses mandate service providers to work diligently toward improving services, not just maintain the existing services. Of course, service improvements need a budget of their own.

Let's say that a user requests a laptop. As per the process, the team that fulfills the request reaches out to the user's manager, obtains approval, and then places an order

with the procurement team to create a purchase order. This coordination between various parties requires a good amount of effort. Instead, I automate the process; I don't skip any steps, but I remove the coordination efforts using the power of automation. I would design the tool to seek the manager's approval when the request is raised. After the manager's approval, I route the ticket directly to the procurement team. In this example, I have taken out the middleman. This translates to more efficient and cost-effective service.)

5.7.1.8 SLM vs. BRM

The SLM works with ears to the ground and is tasked with dealing with all issues pertaining to service quality. The BRM, on the other hand, works closely with the business and is aligned to the customer's current and future requirements. BRM also acts as a conduit for the customer to share their feedback.

The BRM and the SLM processes are similar in principle, but they differ in the outcomes they are trying to achieve. The BRM works at a strategic level (as discussed in Chapter 4). It works with customers to understand the pains, requirements, and desires to formulate and tailor IT services to their needs. On the other hand, the SLM process works with the customer during and after the IT service delivery stage. It works with the customer in ensuring that the service levels are met and making sure pain points and other runway-level issues are handled.

The BRM process works at the strategic level and at times at the tactical level. The SLM process works at the operational level and at times at the tactical level. Although at a tactical level, both BRM and SLM are involved, there is no overlap between their responsibilities as laid out in the process.

The BRM is required to act as the big brother as strategy feeds into tactics and operations. The SLM must work within the ambit of the services and can take support from the BRM to align with the strategy. Likewise, BRM needs to interface with the SLM quite stably as the operations on the ground are the basis for all discussions with existing customers.

5.7.1.9 SLM Interfaces

As the SLM process deals with measuring and reporting service levels, in principle it must interface with every ITIL process. This is in fact true for all processes. None of them can work in isolation. They require at least one or multiple process to provide triggers, inputs, and feedback on output. In the case of SLM, the following sections discuss some of the critical interfaces.

5.7.1.9.1 Business Relationship Management

As discussed earlier, there are differences in interfacing between the SLM and the BRM.

5.7.1.9.2 Service Catalog Management

The SLM interfaces with the service catalog management for obtaining service information and associated service levels from the service catalog.

5.7.1.9.3 Incident Management

The incident management process interfaces with the SLM process by ensuring that the service levels pertaining to incident management, such as response and resolution times, are adhered to and provide the means to measure it. Also, the incident management process provides the data and recommendations for negotiation of service levels.

5.7.1.9.4 Supplier Management

The SLM works with the suppliers to implement agree to SLAs and ensure that the SLAs with the suppliers are aligned with the customer SLAs. The supplier management process is responsible for providing service-level measurements achieved by all suppliers to the SLM.

5.7.1.9.5 Availability, Capacity, IT Service Continuity, and Information Security Management

Similar to the incident management process, these processes provide respective service levels achieved through them and provide recommendations during service-level negotiations.

5.7.1.9.6 Financial Management of IT Services

The financial management for IT services process interfaces with the SLM process in identifying the cost of building and providing services to customers.

5.7.2 Service Catalog Management

I don't want to hear the specials. If they're so special, put 'em on the menu.

—Jerry Seinfeld

The exercise of marketing IT services starts with cataloging them and making them known to potential customers. This is the essence of service catalog management. It is the process that ties together the various services of the service provider to provide a unified view in an effort to provide quality services to the customer.

5.7.2.1 Service Catalog

I discussed the service catalog in Chapter 4. The service catalog is one of the three parts of the service portfolio, and the most crucial one in terms of design, operations, and continual improvements.

A service catalog is a list of all your operational services, which are available for customers to leverage. The purpose of the process is to ensure that all the live services are listed and are accurate at any given time.

Think of a service catalog as a restaurant menu. A menu lists all the appetizers, entrees, main courses, drinks, and desserts the restaurant serves, along with the price for every item on the menu. The customer looks at the menu, decides what he wants, and places an order. Typically, you would not find dishes that are not served listed on the menu. If any of the dishes were served at a previous time but are no longer available, they would be duly taken out of the menu.

In a similar vein, a service catalog lists all the operational services that the service provider offers, along with other aspects such as the details of the service, who the point of contact is, and the cost and specifications. As with the restaurant menu, the services that are no longer offered (retired services) are taken off of the list.

Apart from the live services, the service catalog may also contain services being prepared to be deployed in the near future. However, whether or not to-be-live services make it into the service catalog is at the discretion of the service provider. In a practical sense, it is a good marketing trick to ensure that your customers start seeing yet-to-be-launched services, with the aim of getting buyers before the service has launched.

To state an example, think of your mobile service provider. They all have their services listed on their services menu. And the new services, such as 4G Internet, which was introduced sometime in 2014, would have made it to the list of services even before it was launched.

Figure 5-7 is a view of a service catalog tying in with the customer's business processes and in the backend with the supporting services. When the customer looks at the service catalog, he will see services A, B, C, and D on the menu along with their depictions but not the supporting services (a, b, c, d, and e) that enable the customer-facing services.

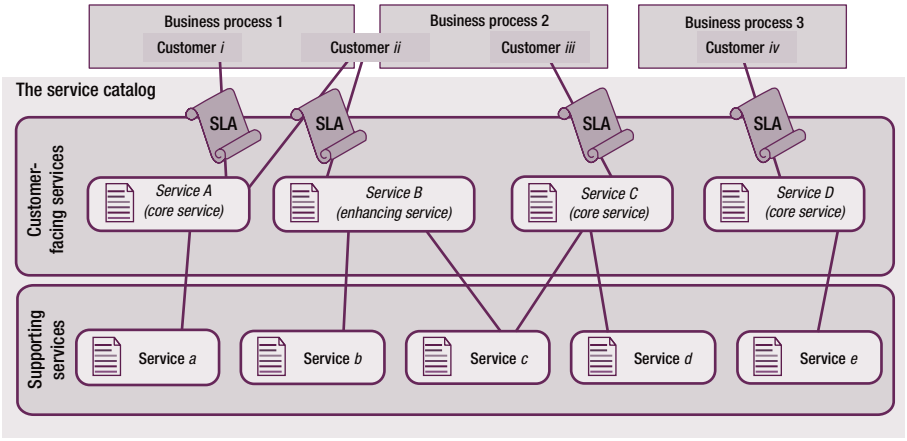


Figure 5-7. *Service catalog with service types*

5.7.2.2 Service Catalog Structure

A service catalog can be drafted in a number of ways, depending on the maturity of a service provider. The structure of a service catalog can be as detailed to drill down to the individual service components or can be simple with basics hooks and bolts. The deeper a service catalog structure drills into, the better control an organization is going to leverage and there are endless possibilities of improvements resulting from it.

I will discuss two views of a service catalog structure in this book.

Figure 5-8 depicts a two-view service catalog, one for the customer and one for the support teams providing technical support. While the customer sees the menu that I discussed in this section with all the services he can buy and enjoy, the backend of this service catalog is visible only to the support teams. The backend may or may not look anything like what the customer sees. More often than not, it is completely different. While the customer sees a service he can use, the support team sees services in a way that makes more sense for the geeks in us.

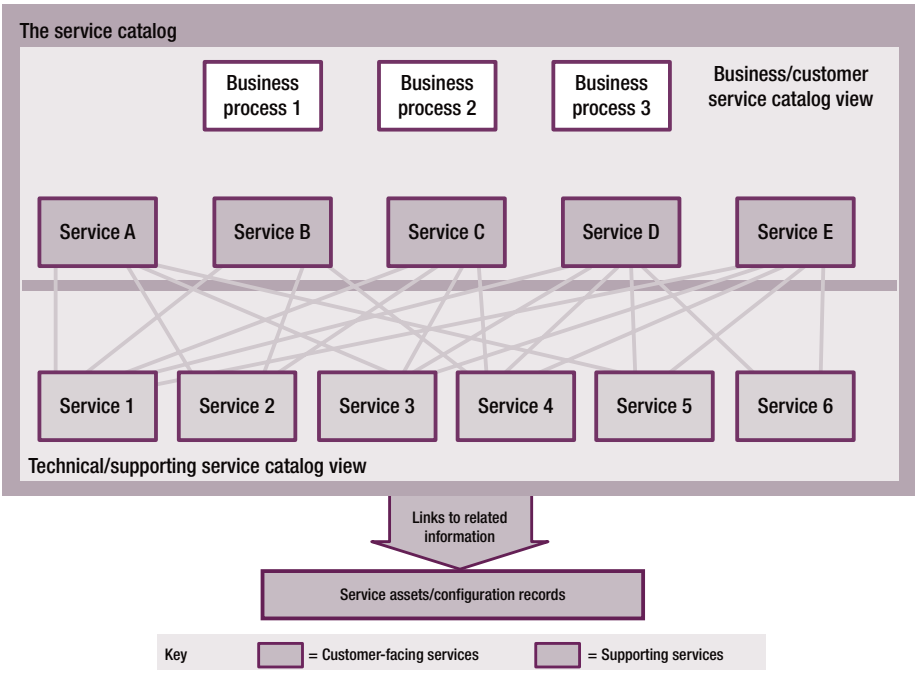


Figure 5-8. *Two views of a service catalog (business and technical service catalog)*

To state an example, a customer purchasing mobile phone service will see the following options on the service catalog:

1. National calling
2. International calling
3. 4G Internet
4. Voicemail
5. Messaging

As a customer, you connect with these services, and you are pretty sure that you need one or more of the services listed. This is illustrated by services A, B, C, D, and E in Figure 5-8.

The technical teams from the service provider organization have a list of services that they support. The services they support are not the list of what the customer sees (services A, B, C, D, and E). Instead, technically grouped services replace the service catalog, along with the mapping between customer-facing services and technical services.

For the mobile phone service provider example, the technical services could be:

1. Antenna
2. Server
3. Networks
4. Messaging software
5. Storage
6. Applications

These technical services are depicted by services 1, 2, 3, 4, 5, and 6 in Figure 5-8. The technical services are interlinked/mapped to the customer services. In this example, the mapping looks something like this:

1. National calling: Antenna, Server, Networks
2. International calling: Antenna, Server, Networks
3. 4G Internet: Server, Networks, Applications
4. Voicemail: Server, Storage, Networks, Applications
5. Messaging service: Blackberry Software, Server, Storage, Networks

The reason for mapping business services to technical services is to enable support teams to troubleshoot and support the services in a better fashion. Suppose the Blackberry service stops working; the support teams are aware that the Blackberry software, server, storage, and networks make it up. So, they can start troubleshooting the technical services to identify the smoking gun. Suppose the Blackberry software is getting an upgrade; the technical teams are aware that the supporting services need to

be considered before going ahead with the upgrade. The examples and the level of detail I am providing is just the very tip of the iceberg. The iceberg goes very deep, and the journey is exciting.

To arouse your interest in the drilling down and mapping services, the technical services are further mapped into individual technical components, and it drills down to the basic infrastructure that makes up the service, such as servers, switches, load balancers, etc.

There is another view of a service catalog that does not go deep downstream but rather segregates on the types of customers. An example is shown in Figure 5-9.

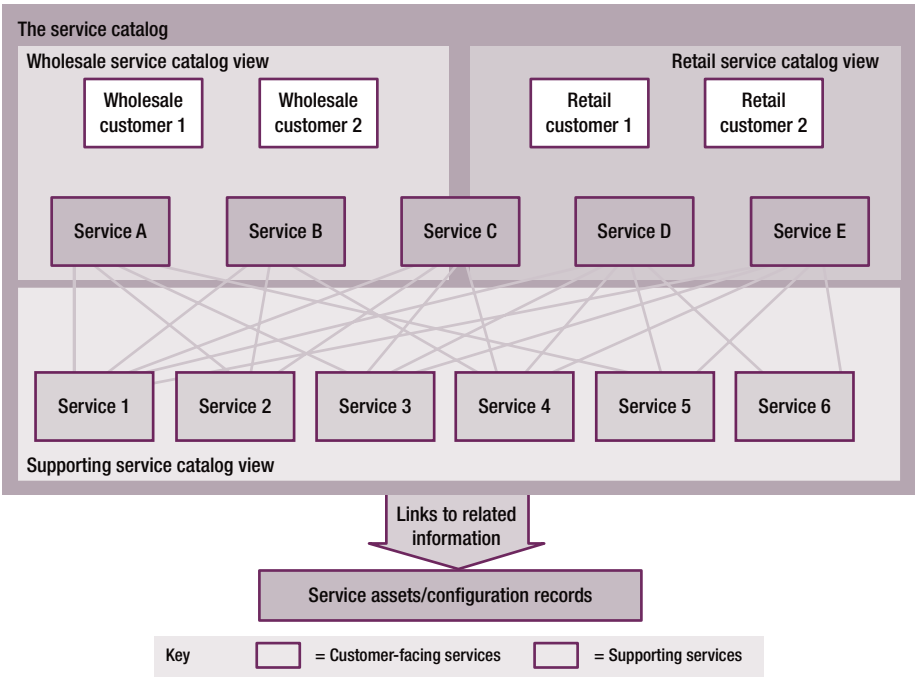


Figure 5-9. *Three-view service catalog*

You might be aware of the terms B2B and B2C: business to business and business to customer. A B2B or a wholesale customer, as in the example, is one in which the customer is not an individual but rather an organization. For example, if a customer organization procures services from an Internet service provider, this customer will see the wholesale service catalog, which will be at a higher scale, lists prices for hundreds and thousands of users, and is managed with a dedicated business relationship and service-level managers.

On the other hand, the B2C transaction, such as an individual purchasing cable TV, mobile service, and Internet service, is viewed as a retail customer, and that person is shown the retail service catalog, the catalog that is generally put on web sites and in flyers, and is more often than not made public. All the terms of the service are listed next to the service, and you buy it directly from the service provider. You may or may not

have a relationship manager. Mostly, you may never talk to a soul in the service provider organization, unless you have issues. In some cases, issues are sorted out by bots today.

5.7.2.3 Objectives of Service Catalog Management

From the service catalog management, these are the expected objectives:

1. Manage the service catalog end to end, including technical and customer service catalogs
2. Keep the catalog accurate at any given point in time, including the operational services and, if necessary, the soon-to-be-operationalized services as well
3. Ensure the right parties with access are able to view the catalog, for example, a business customer must be able to view the wholesale catalog while an individual must be able to view the retail catalog
4. Support other processes by providing the information it requires
5. Support in defining services and service definitions
6. Maintain dependencies with the service portfolio and other service catalogs in the organization
7. Maintain dependencies with the service components (configuration items; this will be discussed in Chapter 6)

5.7.3 Information Security Management

> *Passwords are like underwear: you don't let people see it, you should change it very often, and you shouldn't share it with strangers.*
>
> —Chris Pirillo

> *The only truly secure system is one that is powered off, cast in a block of concrete and sealed in a lead-lined room with armed guards.*
>
> —Gene Spafford

Information security management is a process that deals with the security of data, especially the customer data. Remember from Chapter 1 when I discussed value derived from services using logical gates, one of the aspects that provided warranty of a service was information security. If warranty fails, then the utility part of a service ceases to make sense, hence failing the entire service objective. In effect, this is one of the most important processes within the ITIL service lifecycle.

This is a governance process that ensures that risks rising from information security perspective are identified and dealt with appropriately. It manages all aspects of IT security, be it application data, sensitive business information, or the data center security.

5.7.3.1 Confidentiality, Integrity, and Availability

There are three information security-related terms that secures the security aspects of information. They are confidentiality, integrity, and availability.

Confidentiality is the protection of information from unauthorized access. In other words, only those with access to information are able to access it. Service providers and customers store information on servers, share points, and other file servers, and these data could contain sensitive business strategies, tactics, credit card information, or personal information of the end users. This information needs to be secured through methods known best to information security professionals, such as encryption and safeguarding.

Integrity is the protection of information from getting modified by those who are not authorized to do so. It tightly integrates with confidentiality and goes a step further in protecting the interests of all the involved parties. Information is valuable if it is accurate, and when it is modified by unauthorized users (read: hackers), the sabotaged data will pull companies down faster than a speeding bullet. There are several ways integrity is protected these days, cryptography being one of them.

The last of the tenets of information security is availability. It ensures that the authorized parties have access to information when they need it. If you provide the right level of encryption through confidentiality, ensure integrity through cryptography, but fail to provide accessability to those authorized, the whole exercise of securing information is counterproductive, right? The value from service comes from parties having the availability to access information when they desire to access it. Hackers have found a way to breach information security by blocking access to information through distributed denial of service (DDoS) attacks. A number of popular web sites such as Facebook go down due to such attacks fairly regularly. In this sense, denial of access to information is a breach in achieving information security objectives.

5.7.3.2 Information Security Policy

> *Every nation has to follow a certain policy: Commercial, trade, various other types of policies.*
>
> —APJ Abdul Kalam

A policy is the guided path with lights at the periphery to ensure that you don't stray from the principles set forth. A policy draws boundaries and drafts rules for play. In the ITIL service lifecycle, an information security policy provides the rules and boundaries that are necessary for ensuring that the information security management objectives are met, meaning CIA components are adhered to.

All policies must be driven by senior management, and only in this case does it become effective and get the value treatment that it deserves. The senior management must completely endorse the policy guidelines and ensure sufficient communication goes out to the rest of the organization to show their faith and commitment to it. When there is backing from senior management on policies, the rest of the organization falls in line and starts to comply with the policy controls.

Policies do not cover the service provider alone, but also encompass customers. You do not want customers to carry out illegal activities using your services, do you? Information security policies are always made a part of SLRs, SLAs, OLAs, and UCs.

According to the ITIL service design publication, these are some of the various policies that make up information security policy. This list is not comprehensive:

- An overall information security policy
- Use and misuse of IT assets policy
- An access control policy
- A password control policy
- An e-mail policy
- An Internet policy
- An antivirus policy
- An information classification policy
- A document classification policy
- A remote access policy
- A policy with regard to supplier access to IT service, information, and components
- A copyright infringement policy for electronic material
- An asset disposal policy
- A records retention policy

A detailed study of the listed policies is not within the scope of the ITIL Foundation exam.

5.7.3.3 Objectives of Information Security Management

To state it plainly, information security management exists to keep customer information, data, assets, and all aspects of customer resources safe. If we take a step back, the customer will have certain policies and guidelines in place for business security. The purpose of information security management is to align with the business security and ensure that CIA is intact.

Further, the objectives of information security management are as follows:

1. *Confidentiality*: Information can be accessed only by those who are authorized.
2. *Integrity*: Information is accurate, complete, and is in verbatim condition.

3. *Availability*: Information is available when required to those who are authorized.
4. *Authenticity*: Transactions between various parties (enterprise to enterprise or enterprise to vendor and other relationships) are trustworthy.

5.7.3.4 Scope of Information Security Management

As mentioned earlier, the information security management must be based on the business security policies and other customer security requirements. This is the best way of protecting the customer's interests. In lieu of this, the following areas come under the scope of the information security management:

1. Understand customer's security requirements, both present and future, and align information security policy accordingly
2. Define, maintain, communicate, and enforce information security policy
3. Implement IT security controls in line with the information security policy
4. Assess security risks pro-actively and manage security risks in case of eventuality
5. Reduce risks (using a process such as problem management)
6. Manage and assess supplier's security controls to ensure alignment with the information security policy
7. Manage (pro-actively fight) security-related incidents and problems within the delivered services

5.7.4 Supplier Management

Supplier management is a key process in the delivery of IT services to customers. The process helps to bring the customer and his deliverables on board and in line with the customer's requirements, and they are aligned to the SLAs as agreed to with the customer.

The service provider is tasked with providing end-to-end IT services to the customer. However, it is unlikely that he has all the required resources to deliver services. He needs other parties/companies/organization to deliver bits and pieces of the service, so that the service provider can join the dots and deliver it as an IT service.

For example, an IT company wins a bid to provide e-mail services to an organization. At a high level, to provide e-mail services, the company requires servers, storage, software, people, and networks. Typically IT service providers have the necessary maturity, skill sets, people, and processes. They are dependant on suppliers for procuring hardware infrastructure such as servers and storage, network infrastructure such as switches and routers, and software for handling and managing e-mails (such as Exchange or Lotus Notes). No service provider would ever think of manufacturing hardware, software, and having their own network. So, pairing with suppliers is essential.

Traditionally organizations have called this process vendor management, as it is mainly involved in procuring products. But now there are a lot of services that are obtained through suppliers such as phone connectivity, leased lines, software as a service (SaaS), and IT professionals.

5.7.4.1 Types of Suppliers

Not all suppliers fall into the same category, and each is as important as another. Every supplier plays his part in the delivery of IT services, and it is key for the service provider to identify the types of suppliers and prioritize their importance in a workable fashion. In other words, some suppliers may have a seat at the table during management meetings and some don't. Who makes it or misses out depends on the supplier's type.

It works the other way as well. A service provider may spend more time with key suppliers over others. ITIL recommends that the supplier management process spend more time with key suppliers as their deliveries have the most impact to the delivery of IT services, and any misalignment will lead to breaches and penalties.

The value and importance of suppliers is best explained through Figure 5-10. The x axis indicates risk and impact and the y axis shows the value and importance of suppliers. In this simple matrix, there are four types of suppliers based on the risk, impact, value, and importance:

1. Strategic suppliers
2. Tactical suppliers
3. Operational suppliers
4. Commodity suppliers

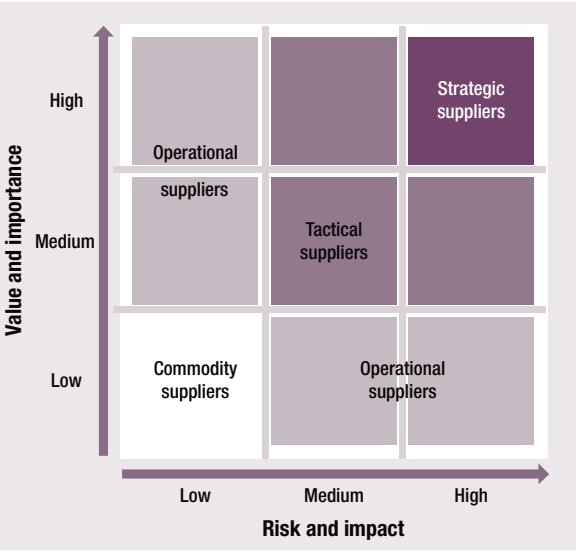


Figure 5-10. *Types of suppliers*

5.7.4.1.1 Strategic Suppliers

Suppliers that support service providers transform and support strategically the business of delivering IT services located at the top of the competition and are called strategic suppliers. These suppliers are normally referred to as partners, which indicates a partnership of sorts to ensure that the supplier respects and meets the commitments coming from his end. Considering their importance to service deliverance, it is important to prepare some suppliers as partners and make them more than accountable for their side of the bargain.

You might have seen companies boasting of having technology partners, media partners, and other appropriate partners. Welcome to the new world, where achievement comes through collaboration, and there is a dire need for partners, rather than merely suppliers! The trend started a few years ago and will continue to flourish over the next several years.

I worked for Atos, a French IT service provider, sometime back. The organization has been the IT partner for the Olympics since 1989, and they are not referred to as an IT service provider by the IOC (the company that manages Olympics) because the Olympics events today hinge on the success of IT, unlike in past events. So, it is extremely critical for the IOC that Atos succeeds in its promised delivery to make the Olympics events a success. Hence the term partner is fitting, although there is no joint sponsorship of the Olympics events.

In the case of strategic suppliers, the supplier management activities are taken care of by a senior person and is directly overseen by the senior management. Yet, the activities partaken come under the ambit of the supplier management process. Yes, there might be caveats and different sets of controls for strategic suppliers, but that does not take them outside the ambit of the process.

The management involves regular conversations, meetings, follow ups, performance reviews, steering committee meetings, and other bicommunicational exercises. During the interactions, it is imperative that the service strategy and design resources be a mandatory presence more often than not.

5.7.4.1.2 Tactical Suppliers

Tactical suppliers are important but not as important as the strategic ones. They are not referred to as partners, but rather just suppliers. They provide support in the service provider's tactical activities.

This can best be explained with an example. A service provider buys a bid to support a customer on the floor. The customer is a well-established supermarket based across the major cities in a country. So, in other words, the customer is spread out and the service provider needs to have an IT personnel presence in every city and in every neighborhood in which the supermarket operates. The service provider takes a tactical decision in aligning with a supplier who is in the business of providing IT support to home users across the country. By leveraging the reach of the supplier, the service provider is able to broaden his scope into servicing every supermarket in the chain. The supplier therefore is an important one, as he supports tactical deliverance of services to one or more of the service provider's customers.

Unlike strategic suppliers, the management of tactical suppliers is handled by the middle layer of the service provider management organization. The supplier management process supports performance reviews, regular meetings, and implementation of performance improvement measures.

5.7.4.1.3 Operational Suppliers

The third tier of suppliers is important operationally but not otherwise. These suppliers do the basic things that run certain smaller sections of the IT service provider organization.

An example could be provision of telephone lines for the service provider organization to make local and international calls. There could be multiple operational service providers providing the same type of services, one acting as the backup to the other or working in parallel.

Operational suppliers are managed directly by the service provider's operational teams. The suppliers' management process helps in coordinating and tracking their performance.

5.7.4.1.4 Commodity Suppliers

Commodity suppliers, as the name suggests, provide commodities that more often than not do not impact the delivery of IT services to the customer. The products they deliver can be sourced through a different commodity supplier, which entails the dependence on individual commodity suppliers.

An example of a commodity supplier would be a company that delivers products such as coffee beans for the vending machine, ink cartridges for the printers, and other items to this effect.

5.7.4.2 Objectives of Supplier Management

I have discussed enough suppliers and how they are required to be aligned to the customer's requirements rather than their own interests, which is one of the main objectives of a supplier. Think about it, if the customer's requirement for a resolution is five business hours and the service provider agrees and signs it off on the SLA, the supplier who is delivering a part of the service must adhere to the same set of SLAs. He cannot agree to a different timeline (more is not okay, less is good). All the supplier contracts and supplier-related information are stored in a database called the supplier and contract management information system (SCMIS).

Here are the top goals or objectives of the supplier management process:

1. Suppliers form a part of the business, so it is imperative that the primary objective of the process is to ensure that the service provider obtains value for the money
2. Ensure through service-level management that the SLAs with suppliers are aligned with the customer's SLAs

3. Support service-level management in SLA negotiations and agreements
4. Ensure relationships with the suppliers flourish through rapport-building exercises
5. Track and manage supplier performance and conduct supplier performance review meetings to ensure corrective and preventive actions are undertaken by the supplier
6. Manage SCMIS with supplier policies, processes, procedures, and other related documents

5.7.4.3 Scope of Supplier Management

The scope of the supplier management process starts with suppliers, ends with suppliers, and encompasses everything in between. This includes management of suppliers and their contracts. It includes continuing a relationship by championing through dedicated supplier managers. These relationships help in resolving conflicts and help the supplier understand the customer and the customer's requirements better.

The process has a significant role to play in today's consideration of suppliers' dependence on delivering IT services. ITIL recommends that a separate process be tailored for every supplier based on their importance and the role they play in value generation. When each supplier is carefully managed through processes and work activities, the sums of their individual activities generate synergy through value creation and achieving business outcomes. If a supplier is adding more value, then the service provider must spend more time with him, and vice versa.

From the scope perspective, supplier management process includes the following:

1. Categorization of suppliers based on risk and impact versus value and importance
2. Contract and SLA negotiations and agreement
3. Management of SCMIS
4. Draft, implement, and enforce supplier policy
5. Supplier assessment and evaluation
6. Contract initiation, renewal, review, and termination
7. Track and manage performance reviews
8. Identify improvement opportunities and work with supplier to deliver the identified opportunities
9. Resolve conflicts and disputes

5.7.5 Availability Management

Being available is more important than being desirable.

—Constance Chuks Friday

If you are invited for a dinner at a friend's place, only your presence will give your friend the satisfaction of having enjoyed your company. You cannot be absent and still expect the hosts to have the same satisfaction. Availability is the key for whatever we are able to enjoy today. Even customers who enjoy IT services can only enjoy them if they are available. Take it away from them, and then the anger bombards the call centers night in and night out. No matter how wonderfully you served your customer up to that point in time, everything would be forgotten and you would be viewed as the lousiest service provider in the world. My point being, availability of a service is key for an IT service provider to exist in the business of providing services.

Availability is defined in ITIL as the ability of an IT service or other configuration item to perform its agreed function when required. It is represented as a percentage. Normally, you would see availability as one of the main marketing techniques used by webhosting service providers. They promise availability that is very close to 100% (99.9999% is what my webhost promises). Whether they achieve it or not is generally unknown. As a retained consumer, they do not share reports with me, and as I don't employ any monitoring tools to monitor my web sites, I don't have a faintest clue when my web site goes down. But, it may not work the same way for business customers, where the business goes into hundreds of thousands to millions of dollars. Businesses get regular availability reports and reports on demand as well. They can dispute claimed availabilities as they have mechanisms to track that from their end.

5.7.5.1 Service and Component Availability

Availability comes at a cost. When customers negotiate the availability of a service, it all comes down to cost. Let's just say that a customer is billed US$1 million for 99% availability. If the customer requests an availability of 99.9%, the bill may jump to US$2.5 million, add another decimal integer, the figure might shoot up multiple times, say US$5 million for 99.99% availability. This concept is best explained in Figure 5-11. This image is from Mysql, and it represents how the costs shot up for every single decimal point. Referring to the figure, service providers and businesses offer 99.9% availability, which comes at a reasonable cost, which translates to eight hours of acceptable outage in a month. SaaS and webhosts provide 99.99% availability, which translates to around 50 minutes of outage in a month, which is not very much at all. If you want better than this, such as for government and defense organizations where availability is of the essence for doing what the CIA and the Pentagon does around the clock, they are able to accept grudgingly an outage of five minutes, which is an incredible availability of 99.999%.

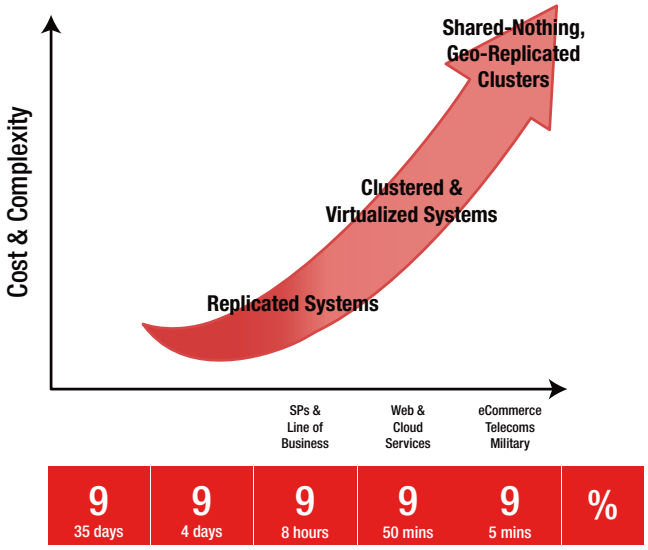


Figure 5-11. *Availability versus cost*

Why does the cost shoot up exponentially as availability increases by every decimal? To state it plainly, the cost of availability is expensive. The complexity of the infrastructure and supporting applications dictates the costing. The service design takes into account the agreed SLA levels for availability and designs the availability of services accordingly. If the customer wants to have 99.999% availability, the service provider needs to ensure that there is sufficient resilience to take into account all possible disruptions. For example, the service must have at least a couple of resilience layers. If the primary fails, the secondary takes over. If both the primary and secondary fail, then there is a tertiary layer that is ready to take over. The customer would keep using the services, as though nothing happened, all through the failures of the primary and secondary. In fact, as a backup to the tertiary, high availability designs ensure there is a disaster recovery site, with real-time replication, and it will automatically take over. I will discuss disaster recovery under the IT service continuity process later in this chapter.

It is a common sight these days for servers to be set up in a clustered environment, network devices to have multiple failovers, and applications and data to have multiple copies of replication, lying in different parts of the globe, to cater to disasters for every kind. To architect such high-availability designs requires additional resources, storage requirements, people, and other add-ons. This is the reason for the inflated costs for every decimal point in availability.

5.7.5.1.1 Service Availability

Service availability is the availability of a service measured end to end. When I say end to end, I mean all aspects of a service need to be available for it to be counted toward availability. If any of the aspects are unavailable, even the tiniest bit, it adds up toward unavailability of the service.

For example, let's say you buy a webhost service, which is the core service, and it comes with e-mails as an enhancing service. If the e-mail service goes down and the web site stays up, it is still considered unavailable service.

5.7.5.1.2 Component Availability

Interconnected components make up a service. Each component's availability can be measured as well to ensure that the services offered are stable. Examples of components are servers, routers, load balancers, switches, and others.

Component unavailability may not lead to service unavailability if the high-availability design is employed with resilience. If resilience is not factored in, due to various reasons starting from costs and requirements, component availability could very much lead to service availability.

Let me further explain this with an example. Let's assume in a high-availability design, a critical core switch is backed by an autofailover facility. If the switch fails, the traffic is automatically routed to a backup switch. The service is not affected, as the switchover takes place before users can notice it. This high-availability design is expensive. So, not all services and not all organizations opt for high-availability design. In a normal design, if the core switch fails, the concerned team is made aware, and they manually replace the core switch with a good one. The notification and replacement takes a certain amount of time, leading to service downtime. So, in the first instance, although the component (core switch) failed, the service was unaffected. The component availability was affected but the service availability was unaffected. In the normal design, the component took down the service with it. So, component availability affected the service availability.

5.7.5.2 Aspects of Service Availability

There are a few terms and formulas that you need to learn as a part of this process. When was the last time you dealt with mathematical formulas, was it in college?

You are required to remember these formulas and definitions from a Foundation examination perspective.

5.7.5.2.1 Availability

Availability is defined in ITIL as the ability of a service, component, or CI to perform its agreed function when required.

$$\%Availability = \frac{Agreed\ \ Service\ \ Time - Downtime}{Agreed\ \ Service\ \ Time}$$

Agreed service times are based on the SLA. If the contract says that the agreed service time is Monday-Friday 9 A.M.-7 P.M., and in a particular month, if there are 22 days, then:

$$Agreed\ \ Service\ \ Time = 10\ \ hrs\ \ x\ \ 22 = 220\ \ hrs$$

In this particular time, if there is a downtime on the first and second Monday between 10 A.M. and 2 P.M., then the monthly downtime is eight hours. Plugging the figures back into the availability formula:

$$\%Availability = \frac{220-8}{220} = 96.36\%$$

If there is a downtime outside the agreed service time, it is not considered in the availability reports. However, it could still be recorded and reported, but penalties, if any, will not apply to downtime outside the agreed service time.

5.7.5.2.2 Reliability

It cannot get any simpler than this. This term refers to the reliability of a service. It measures how long a service or a component can function without disruptions. When I learned ITIL in version 2, this term was referred to as *mean time between failures* (MTBF). Many old timers like me still call it MTBF, and understand MTBF better than the simple word reliability!

$$Reliability = \frac{Agreed\ \ Service\ \ Time - Downtime}{Number\ \ of\ \ Breaks}$$

In the example that I considered above, plugging the numbers for reliability gives me:

$$Reliability = MTBF = \frac{220-8}{2} = 106\ \ hrs$$

5.7.5.2.3 Maintainability

Maintainability is the measure of recouping from a service or a component failure. In other words, how quickly the service or component is brought back up after it had failed. This term is also referred to as *mean time to restore service* (MTRS). In some organizations, the warranty period is also considered downtime, which is not accurate within the principles of ITIL.

Anyway, here's the formula for maintainability:

$$Maintainability = \frac{Total\ \ Downtime}{Number\ \ of\ \ Breaks}$$

Plugging the numbers:

$$Maintainability = MTRS\frac{8}{2} = 4\ \ hours$$

That concludes the math lessons in ITIL. You can relax.

5.7.5.2.4 Serviceability

When you measure availability, reliability, and maintainability of a supplier, all three put together under a single term, ITIL calls it serviceability. It is an important term considering that the three underlying aspects of a supplier may very well impact the overall availability of a service. Hence the customer, in his right, can demand measurements and reports from all associated suppliers to provide their serviceability numbers on a preagreed schedule.

5.7.5.2.5 Vital Business Functions

Some parts of the business are more critical than others. These critical business activities are referred to as vital business functions (VBFs) in ITIL. When availability is designed, it is important for the business to identify VBFs to ensure that they get the highest priority in terms of high and continuous availability.

A bank has several functions. An ATM that disburses cash is important, but its effect is limited to a particular geography and to a limited number of users. On the other hand, a central processing unit that processes transfers from and to all banking accounts affects a whole lot more users compared to an ATM. If it were to go down, a major mass of all banking customers would be impacted. So, comparing the two banking functions, we can draw conclusions that the transfer system is more critical and can be considered a VBF. Another point to note is that the identification of VBFs is done by the business and not by the IT service provider.

When availability is designed, VBFs are given priority. They are fitted with multiple layers of resilience, and the design costs are far more expensive compared to an ATM availability design.

VBFs can be provided with extra care and protected from failures using special designs such as:

- *High availability*: High-availability design is a well-known concept in the IT industry, where multiple layers of resilience are built for individual components. Any component failure is compensated with other similar components with no human intervention. The end user will continue to work, as though nothing had ever happened.

- *Fault tolerance*: IT services or individual components continue to work the way they should even after anomalies or failures. Their design is embedded with their ability to function and to meet their objectives, even when they fail.
- *Continuous operation:* Some businesses can never stop, such as mining and health. They need to operate continuously. There are no options for planned downtime. One of the special designs allows IT services to continue functioning 24/7, even though certain individual components are brought down for maintenance or replacement.
- *Continuous availability*: Similar to continuous operation, the objective of this design is to achieve 100% availability. There are no planned or unplanned downtime options.

5.7.5.3 Objectives of Availability Management

Availability management exists to set the right availability expectations with the customer and to ensure that the service provider is meeting its end of the bargain. We have looked at various aspects of availability management, so you must have a fairly good idea of what its objectives are. Here's the list:

- Develop a high-availability plan to reflect the right set of availability parameters for all services, including future ones
- Maintain availability plans across the service lifecycle, remembering that the availability plan needs to be relooked at whenever major service designs are made
- Achieve service availability targets by pro-actively managing service assets
- Provide advice to other parts of the service provider organization on availability-related queries and concerns
- Provide assistance to incident and problem management process, as any outage impacts availability of services
- Continuous improvement of design to increase availability, provided that the costs do not exceed the agreement with the customer

5.7.5.4 Scope of Availability Management

Availability management is an overarching process across the service lifecycle. In short, it is active throughout the stages, and it ceases to exist when the service is decommissioned. Its scope includes the following:

1. Monitoring of components and IT services, including providing criteria for categorizing events
2. Defining techniques and methodologies to measure availability
3. Automating recovery of components and IT services through development of scripts
4. Developing availability plans with availability targets that are in line with agreed SLAs
5. Providing necessary guidance during design of services with respect to expected availability targets
6. Periodically conducting tests on components and services to check the in-built resiliency
7. Finding ways to pro-actively improve availability of services

5.7.6 Capacity Management

> *Men are wise in proportion, not to their experience, but to their capacity for experience.*
>
> —George Bernard Shaw

Capacity management is similar to availability management, in the sense that it is a key component of service warranty and extends across the service lifecycle. The process deals with the capacity of services and other aspects of a service where capacity comes into play.

Let's say that you are hungry for Italian food, and there's a Jamie's Italian restaurant down the street. You have been planning on dining there for a long time, but things haven't been favorable for a quiet evening dinner. You check their web site and find the restaurant is open (available) until 11 P.M. You head to the restaurant, and check with the maitre d' for a seat. The maitre d' shrugs and apologetically tells you that the restaurant is full, and there are reservations running up to closing time. In this example, the restaurant was available, meaning service was available for use. But, it did not have sufficient capacity to service you. Being available was not sufficient, there needed to be enough capacity as well!

You probably have faced many scenarios such as this one. In Sydney and elsewhere, one of the most frustrating "available, but no capacity" moments is when I go to park my car in mall parking lots. There are multiple levels of car parking available, but capacity is full the whole time. Likewise, in the IT field, we may have Internet connectivity, but on a Sunday evening, the speeds are terrible, thanks to a lack of capacity.

Capacity management deals with the capacity within the IT services. As you have seen in my examples, being available isn't enough, there needs to be sufficient capacity as well. But, you don't want to have excess capacity when you don't need it. Excess capacity leads to higher costs of services. So, a customer expects to have the right capacity and at the right time.

5.7.6.1 Capacity Plan

> *All you need is the plan, the road map, and the courage to press on to your destination.*
>
> —Earl Nightingale

They say that good planning is half the battle. It's true in business, in life, and even in service management—capacity management specifically.

When I discussed availability management earlier, I barely touched on the topic of an availability plan. It was not even a side note, but rather just a bullet. But capacity management has an entire section dedicated to it. Why do you think this is the case?

Once you get a plan for availability of different services, they don't change over time unless there is a renewed demand from the customer or negotiating from the service provider to bring the availability percentage down. If none of the parties intervene, the availability plan sticks to what it is. A regular review, maybe once a year, is all it takes to keep it breathing. Capacity management is a different ballgame. Capacity is a living creature; it keeps growing over time. Monitor your hard drive usage. You barely filled a third of it when you bought your laptop, and within a year, you are looking around for an external hard drive. In the age of information, data never ceases to grow. Every transaction, every conversation, every plan, every design, and every yin and yang occupies space, demanding space, and the need for additional capacity will just be a matter of time.

To cope with the growing demand for capacity, there is a dire need for planning to work better than ever. The capacity plan, as we call it in ITIL, is a living document that needs to be used as a bible for trending, demand planning, design changes, and every other trigger you can think of.

The capacity plan consists of the current capacities in the IT infrastructure, application capacities, and other related capacities such as people workload. The plan also would contain results of business intelligence and trending capacities to include the future capacity to look forward to the next quarter, six months, and a year. These trends give a heads up for increasing capacities, upgrading design, and technology to meet the capacity needs and to take measures to curb unnecessary capacity overload.

From my consulting and operational experience, I can tell you that this powerful planning tool is hardly being made use of in most organizations. When things go pear-shaped, organizations jump into action and perform emergency capacity upgrades. In other words, capacity management has become a reactive activity, and the entire art of planning is lost in the midst of putting out fires and dealing with issues when they arise.

5.7.6.2 Capacity Management Subprocesses

Capacity management is like a onion—it has multiple layers, and for every layer you peel out, a new one gets uncovered. To do a complete capacity management planning and implementation, you need to look at capacity management from a number of levels. They are referred to as subprocesses of capacity management:

1. Business capacity management
2. Service capacity management
3. Component capacity management

Remember the names of these subprocesses, especially from a Foundation exam perspective.

5.7.6.2.1 Business Capacity Management

Business capacity management is the highest layer. It provides a structure for taking future demands from the customer and porting them into plans, designs, and roadmaps for upgrading capacities. It ensures that the right amount of capacity is available at the right time.

Business capacity management leverages various models, such as trending, predictive modeling, and getting future requirements from customer to source the future capacity requirements.

Let's say that an organization is planning on acquiring a few smaller organizations in its quest for growth. The capacity management is expected to understand the potential increase in capacity is a result of the acquisition. Based on the capacity changes, capacity management must analyse the impact to the infrastructure and make necessary plans to designs for the forecasted capacities.

Inputs for this subprocess mainly come from the service strategy lifecycle phase, which has an ear to the customer, and as the saying goes, the ear is the avenue to the heart. Service portfolio management in the service strategy phase plays a big part in shaping the future capacity requirements by introducing new services, new processes, and new technology to cater to it.

5.7.6.2.2 Service Capacity Management

One layer deep, the service capacity management drives the operational side of capacity management. It manages the capacities of the IT service usage on a regular basis and places control mechanisms to ensure that the capacities are in check. One way to do this is to program thresholds on the monitoring tool to raise a warning message at some capacity and throw out errors at a higher threshold.

A real-life example is the iCloud service that sends out e-mail when you near the 90% capacity mark, warning you that backups may not be possible if you don't buy more capacity. At the next threshold capacity, it warns you that the backup did not take place as you didn't have sufficient capacity. This happens with every single service that we use on

a day-to-day basis. Other examples include broadband Internet data usage, minutes on your mobile phone, and bandwidth usage of your web sites.

This subprocesses also keeps an eye on the performance of capacities and its related SLAs as agreed to with the customer. On an agreed term, service capacities are measured and reported back to the service-level management process and to the customer. It also aids business capacity management in predicting future capacity requirements.

5.7.6.2.3 Component Capacity Management

The innermost layer in capacity management is the component capacity management. It deals with the capacities of individual components that make up the service. It deals with the management of the individual components and places control mechanisms around it.

Just as in services, automated thresholds are placed to ensure there is a warning before the storm. Examples could include the warning message from a storage server when it reaches 80% disk capacity. Let's say that the storage management group ignores it, and when it reaches 90%, it sends out an exception alert. Still no response at 95%, so it triggers an incident, which will force the teams to act on it at the earliest. This is the reactive phase that I was referring to earlier. This is the reality today. Teams don't gear up before the storm, but rather take corrective measures when the storm is about to hit.

5.7.7 IT Service Continuity Management

IT is the lifeline for all of us today, and living without it is unthinkable. Whether we deal with communicating with people, medical operations and scans, entertainment, or even the day-to-day work we perform, in one form or another, they are all connected somehow to IT. So it is imperative that IT services provide some kind of insurance, which does not deal with penalties and compensation, but rather a ring of resilience outside the normal resilience discussed in the availability management process.

IT services come in all shapes and sizes, mainly from the criticality perspective. Not all IT services are equally critical. IT service continuity management (ITSCM) is expensive, so it mainly covers critical services. For example, a customer dealing with a call center leverages on telephony and Internet from a service provider. For his business, telephony would be a critical IT service considering he is in the business of making and receiving calls. For another customer who is in the business of content writing for blogs, Internet would be a critical IT service, but telephony would not be critical. So, how does the service provider decide which IT services to take into the ring of an additional layer of resilience and which ones to leave out?

It's simple really. The service provider doesn't have to make that choice. It asks the customer to pick out critical services, and the customer would be firmed up with the IT service continuity process. I will discuss the entire process in the next section.

So what exactly is this resilience that I am talking about, you might ask?

Suppose a customer obtains e-mail service from a service provider. The servers hosting the e-mail IT infrastructure, database, and applications are in a single data center in one part of the city. Let's say that this part of the city gets flooded, or gets hit by a riot or earthquake, and the data center as a result becomes inaccessible or powered down. The business still has to continue. And without e-mails, as the critical service for this

business, business activities cannot function. So the customer would want to be ensured that IT service continuity process is shielding its IT service. The service provider should have built servers, databases, and applications (maybe something like a stripped-down version) and have set up a real-time replication in another data center located in another city. So if the main data center were to go down, the traffic for e-mail services would switch automatically to the backup data center located in the other city, and the customer could keep working as though there were no drop in IT services. The IT service continuity is what the customer gets by enrolling in the process and paying a special premium for it.

IT service continuity, or disaster recovery (DR) as it is popularly known, will not come into play unless there is an incident that cannot be resolved within the SLA. It is enacted only when resolution seems unlikely and most definitely when disaster strikes.

5.7.7.1 Scope of IT Service Continuity Management

As mentioned earlier, ITSCM comes into the picture only if disaster strikes. Normal outages that can be resolved within the SLA and maybe just outside it are dealt with through the incident management process.

The scope of IT services that needs to be protected from disasters is not a decision that the service provider makes. It has to come from the business. The business, on the other hand, may not know the various IT services that are important to it. They would only know the business services that are critical for them. The business would have a process to cater to disasters, and this process is called the business continuity management (BCM). The BCM will give insight into which business services are critical to the customer, and the IT service provider will map critical IT services based on the critical business services. This is illustrated in the ITSCM lifecycle in Figure 5-12.

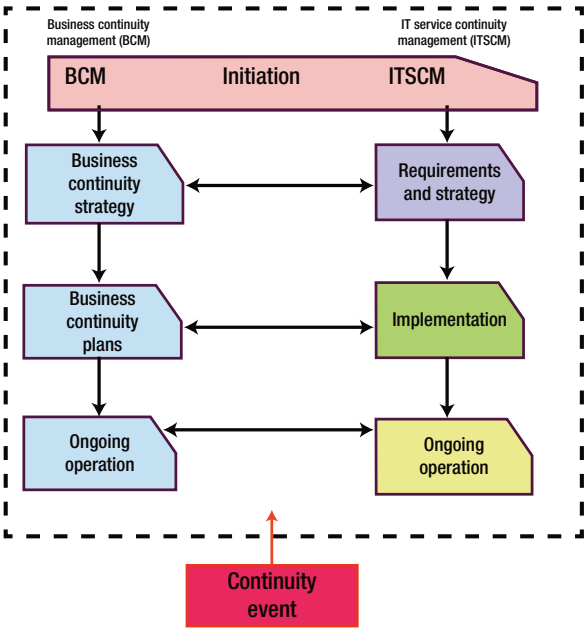


Figure 5-12. *IT service continuity management lifecycle*

The output of BCM will be a business continuity plan (BCP). The BCP is a document that provides the recovery details for the business to undertake during a disaster. Say, for example, in a bank, the foreign exchange department is valued as critical, and in case of a disaster, the business decides to shift its operations to another country. This document consists of the details around how they plan to do it, not from an IT perspective but from a business perspective.

The corresponding plan for the IT service provider is the IT service continuity plan (ITSCP). It is derived from the BCP and aims to support the BCP activities. In the earlier example, the business's plan is to move foreign exchange operations to another country. The ITSCP will support it by developing the list of activities it will take to shift operations to another country. An ITSCP for this scenario could be something like "inform other country's IT team on the BCP invocation, route all traffic to another country, retrieve data from backup, and perform tests."

ITSCM covers all service assets, including infrastructure, applications, networks, technical teams, and other items that contribute to a service. The BCM is responsible for taking care of seats, users, and other items relating to business processes.

The scope of ITSCM process extends to the following items:

1. Development of ITSCM and ITSCP, and these would eventually become a part of the customer's BCM process and BCP document
2. Business impact analysis (BIA) to identify business impact when IT service is nonoperational

3. Agreement with the customer on ITSCP, and what services it encompasses
4. Risk assessment and risk management
5. Regular disaster recovery drills to ensure that the provisions made in the ITSCP are in working order
6. Maintenance of the ITSCP on an ongoing basis, and changes may be needed when major design changes are performed

5.7.7.2 Objectives of IT Service Continuity Management

At a high level, ITSCM exists to ensure that the ITSCM is in sync with BCM, and ITSCP with BCP. When disaster strikes, recoveries need to be done as per the ITSCP, at the agreed timelines.

Specifically, the objectives of ITSCM include:

1. Develop ITSCP in line with BCP to support business continuity management of the customer organization
2. Conduct BIA exercises on a regular basis, and after major changes to ensure that the ITSCP is aligned to customer requirements
3. Perform risk assessment, and manage risks when they occur, along with the business, availability, and information security management processes
4. Advise change management on all major changes, in line with the ITSCP
5. Advise all other processes and the business on ITSCM-related activities
6. Conduct regular drills to ensure service continuity designs work as per the plan
7. Provide guidance to improve availability of services
8. Negotiate with suppliers and agree to ensure that the ITSCP is supported and provisioned in conjunction with supplier management process

5.7.7.3 Business Impact Analysis

BIA is an analysis methodology that helps in identifying critical IT services for the customer's organization. This tool helps to spell out all possible impacts when services go down.

For example, I am an author, and work full time writing books, articles, and blogs. If I were to lose Internet, I will:

1. Not meet my writing targets
2. Not make money writing, which is a financial loss
3. Not meet my legal obligations as I fail on my SLAs
4. Lose readership base, which puts me at a competitive disadvantage over my peers

In this example, I have broken down the impacts of losing a critical IT service. The first three items on the list are black and white, and they are often referred to as hard impacts. The last in the list, losing readership base, is a soft impact, as it is my perception of the impact, and it cannot be quantified as I did with the others. To summarize, BIA deals with both the hard and soft impacts of the customer if he potentially loses IT services.

In this exercise, the analysis is done against every single service that is offered to a customer. The results are tabulated and compared and decisions are made in identifying the critical services. All the IT services that are leveraged by the VBF can be tagged as critical IT services, as VBFs are critical to the customer's organization.

Here are some items that are considered when BIA is performed:

- Direct financial losses
- Indirect financial losses
- Loss of reputation
- Competitive disadvantage
- Legislative and regulatory losses
- Health and safety risks
- Embarrassment
- Loss of control

ITIL recommends that this exercise be conducted by obtaining data and feedback from across all hierarchical levels in the organization. A senior management member can provide the estimated losses in terms of numbers, a middle-level manager can provide operational losses, including productivity losses. A junior staffer can provide runway details like the customer's direct feedback, and they can also provide insight into the pulse of the customer. After gathering feedback from all levels, the numbers and the feedback need to be tallied to ensure that one layer's exaggeration does not lead to wrong IT services being termed critical, and vice versa.

5.7.7.4 Risk Assessment

I have touched on risk assessment and management in the risk management process in the service strategy lifecycle phase. The area surrounding risks is critical to organizations, and generally they hire many risk management experts to deal with risks in the organization and their mitigation. In service strategy, it is looked at from a strategic perspective. Here, I'll delve deeper and embed risk mitigations in the design of IT services.

There is a distinct difference between risk assessment and risk management. Risk assessment deals with the possibility of threats and the potential impact the risks bring to the table. It also works with various design processes to reduce risks in the system. It is somewhat like having a backup diesel generator (DG) and an uninterrupted power supply (UPS) for data centers housed in countries where power shutdowns are common. Risk management, on the other hand, looks at the response when risks materialize. For all the identified risks, a mitigation action (risk management responses) is identified, and when the risk materializes, the planned responses are carried out to the tee.

To reduce risks, here are some countermeasures undertaken by IT service providers:

1. Storage Area Network (SAN) and Network Area Storage (NAS) storage solutions for ensuring multiple resilience layers to secure data
2. Full, incremental, and differential backups to ensure data are safeguarded
3. Installation of diesel generators (DG) and uninterrupted power supply (UPS)
4. Autofailover for IT components like servers, switches, and routers
5. Elimination of single point of failures in service design

5.7.8 Design Coordination

There are seven processes in the service design lifecycle phase, excluding the design coordination. All seven processes contribute to the design of IT services. They do not work in isolation, and yet they need to be coordinated and brought under a single umbrella for alignment with the objectives, sequencing, timelines, and synergies. The process that connects various dots in the service design lifecycle phase, that manages end-to-end design activities, and that communicates evenly with all other design processes is the design coordination process. It is like a project management process, setting objectives, tracking, measuring, and resolving conflicts if any arise.

Design coordination is a small process as it does not add anything directly to the design of IT services. But it opens up communication channels between processes and provides all the support that is needed for achieving design objectives. Although it is a small process, it is an important and integral part of service design.

5.7.8.1 Objectives of Design Coordination

The main objective of design coordination process is to ensure that the service design objectives are met. The complete objectives include:

1. Aligning with various design processes toward the common goal involving various technologies, processes, architectures, and systems
2. Ensuring consistency in design across processes, partners, personnel, standards, frameworks, and architecture
3. Ensuring that the service design aligns to the direction set by the service strategy phase and conforms to the governance and architectural requirements
4. Managing conflicts with various teams, resources, schedules, and costs
5. Managing communication between various parties such as internal teams, suppliers, customers, and other stakeholders
6. Managing design-related activities by coordinating between various involved parties
7. Creating service design package (SDP) for new and changed IT services
8. Obtaining requirements from the service strategy phase and ensure transition to the service transition phase, the phase responsible for building and implementing the services
9. Performing quality and sanity checks for all inputs and outputs coming in and out of service design phase
10. Ensuring that the service design processes improve continually, and churn out robust designs and quick turnaround
11. Defining the entry and exit criteria for service designs

5.7.8.2 Scope of Design Coordination

The scope of the design coordination process extends to all service design processes. But the question we should be asking is whether the process must be involved for all design-related activities. The answer to the question is for the service provider to decide.

For example, development of a new service requires major coordination efforts, so yes, design coordination is definitely needed. A simple change involving a few configuration modifications can leave out design coordination. A major change that is being implemented across the customer landscape involving major design changes needs to be coordinated between various stakeholders. So the service provider must think through such scenarios and come up with a policy that draws boundaries for design coordination.

When design coordination is involved, it includes:

1. Providing support to projects through the service design processes and related activities
2. Maintaining service design policies, processes, standards, guidelines, and other relevant materials
3. Resolving conflicts among service design processes and related activities
4. Prioritizing activities when conflicts occur
5. Conducting reviews on service design processes to improve effectiveness and efficiency
6. Planning resource requirements for current and future needs
7. Ensuring customer and service requirements are met in the service design package
8. Ensuring that the SDP is handed over to service transition as per the agreed terms and timelines

5.8 Practice Exercises

1. Which of these statements are correct?

   i) The objective of service design is to ensure that IT services require minimal improvements during the course of its lifecycle.

   ii) The purpose of the service design phase is to develop designs for the IT services that were envisioned in the service strategy phase.

      a. i and ii

      b. i

      c. ii

      d. Neither i nor ii

2. Which of these best describe processes in the four Ps of service design?

   a. Processes are designed for the rest of the service lifecycle in service design.

   b. Processes are designed for the service design phase under the four Ps of service design.

c. Processes are developed by suppliers in alignment with the customers.

d. Processes have to be tested with other Ps that are listed in the service design phase.

3. What is a service design package?

a. Package delivered to the service design phase from the service strategy phase.

b. Design documents of an IT service and its requirements through each stage of its lifecycle.

c. Policies consisting of design functionalities.

d. Designs supplied by the supplier organization for deployment and improvement.

4. SLAM stands for:

a. Service-level access management

b. Service-level agreement manager

c. Service-level agreement management

d. Service-level agreement monitoring

5. Which process is responsible for recording the current details, statuses, interfaces, and dependencies of all services?

a. Service-level management

b. Service catalog management

c. Supplier management

d. IT service continuity management

6. Which of the following are a constituent of a service design package?

i) Business goals

ii) Service contracts

iii) Knowledge management database

iv) Service transition plan

v) Operational acceptance plan

a. i, ii, iii, and v

b. i, ii, iv, and v

c. i, ii, iii, iv, and v

d. i, ii, and v

7. If the contract says that the agreed service time is Monday-Friday 9 A.M.-9 P.M., and in a particular month, if there are 22 days, what is the total time of service for the month?

   a. 220 hours

   b. 22 days

   c. 264 hours

   d. 198 hours

8. Which process includes component, service, and business subprocesses?

   a. Availability management

   b. Supplier management

   c. Service-level management

   d. Capacity management

9. Which of the following types of suppliers DO NOT exist?

   a. Strategic suppliers

   b. External suppliers

   c. Operational suppliers

   d. Tactical suppliers

10. Which of the following are the key terms in information security management?

    i) Confidentiality

    ii) Authenticity

    iii) Integrity

    iv) Availability

        a. i, ii, iii, and iv

        b. i, ii, and iii

        c. i, iii, and iv

        d. i, ii, and iv

5.9 Summary

In this chapter, I described the service design lifecycle phase and explained its objectives, scope, value, and the four Ps of service design. I also described the processes embedded within the service design phase. The processes that were presented were service-level management, supplier management, availability management, capacity management, IT service continuity management, and design coordination.

In the next chapter, you will learn about the ITIL service transitions lifecycle phase.

CHAPTER 6

Service Transition

Transitions themselves are not the issue, but how well you respond to their challenges!

—Jim George

The service strategy has been drawn. Blueprints have been developed. The next logical step is to develop and implement the services. Service transition takes care of this.

Hopefully you have begun to see a trend in each of the lifecycle phases presented so far. Every lifecycle phase has a specific role, and the role can be carried out sequentially. You cannot implement a service without a strategy getting mapped out and designed. Likewise, as you will see in the future phases as well, they have a specific role to play.

When I mention developing and implementing a service, I am talking about giving wings to the design to make it fly. Say, for example, the service that has been designed is an e-mail service involving an Exchange server, Outlook clients, and web accessibility. To implement it, the service transition must procure the recommended servers, software, network, and other pieces of the service that are absolutely necessary. Once they are procured, servers need to be built, software needs to be deployed, networks need to be configured, and the entire service must be tested end to end. This is the role of service transition, to implement services and to ensure that they are developed and implemented as per the designs, and then once the service stabilizes, hand it over to service operations to maintain the status quo.

For a service involving application development, let's say you are developing a new software to cater to customers for their bandwidth usage. The software design is obtained from the service design lifecycle phase. Service transition must build, test, and deploy IT services. Upon deploying, the service transition phase verifies the functionalities, and when all the functionalities are working as designed, it is handed over to application support to perform ongoing operational activities.

6.1 Objectives of Service Transition

Service transition exists to ensure that the design elements get translated into working blocks of service components and are integrated with the existing services, or work independently as a standalone service, meeting the service strategy and service design objectives.

A. K. Kaiser, *Become ITIL Foundation Certified in 7 Days*, DOI 10.1007/978-1-4842-2164-8_6

Service transition does not come into play until new services are introduced, but it does have a role whenever changes are made to services, including retirement of services.

In short, service transition acts as a bridge between service design and service operations. Service design is the phase that develops blueprints, and service operations ensures that the services are maintained as per the requirements, design, and as mandated. Service transition ensures that the service design (which is on paper) gets built, tested, and handed over to service operations.

The overall objectives of service transition are:

- Planning of service changes, including risks, impacts, and management
- Managing risks, end to end, for new services, retired services, and for services undergoing changes
- Building and deploying services as per the service design
- Providing feedback to service design on the performance of services, so that the right expectations are set with the customer
- Policing all changes to ensure only those with business value get implemented
- Building and managing the individual service components and their respective relationships, to aid in risk and impact assessment of changes, and to support incident troubleshooting
- Maintaining a knowledge database on all services

6.2 Scope of Service Transition

The ITIL service transition lifecycle phase acts as a bridge between service design and the actual services that will be leveraged by the users. It plays a big part in translating the designs on paper into actual servers, configured network switches, application development, testing, deployment, evaluation, and handover to operations. It is a critical phase as it builds and deploys IT services into production through rigorous evaluation, testing, and validation.

The scope of service transition is massive considering that it guides the IT service provider to transition new, modified, and retired services. It touches technology, people, people's behaviors (in terms of process adherence), vendors, and the entire service provider organization.

Specifically, the scope includes:

- Introduction of new services: all components of new services such as building, testing, deployment, training, and handover
- Managing changes to services: hardware and software, including build, test, deployment, and handover
- Retirement of services: hardware and software

- Acting as a guardian for innovation and minimizing unintended consequences
- Transfer of services to other service providers

The service transition lifecycle phase plays a major role when management of IT services changes hands from one entity to another or one model to another, such as:

- Outsourcing of services to an external company
- Insourcing of services from an external organization
- Co-sourcing with another service provider
- Transfer of services from one service provider to another
- Offshoring of services
- Near-shoring of services
- Transfer to service integrators
- Mergers and acquisitions
- Joint ventures with other organizations
- Downsizing and upsizing

6.3 Value of Service Transition

The service provider and customer organizations can benefit from a standardized service transition framework which is based on best practices and lessons learned from previous service transition projects. None of these transitions are smooth, be in IT or in life. Changing to new ways of working changes the behaviors of people and the processes involved, and it is associated with a learning curve that is not going to be straightforward. A standardized service transition framework can alleviate problems by ensuring that transitions are effective, efficient, and conform to service objectives.

The values obtained from service transition are:

- Accurate estimation of service transition constraints such as scope, schedule, and cost
- Better management of risks and assessments
- Ensure changes succeed and don't lead to unintended consequences
- Make service transition processes as simple and easy to follow for seamless adoption
- Play a pivotal role in ensuring service transition assets are shared between services
- Resolve conflicts between various service transition projects

- Reduce service transition efforts
- Set the right expectations on the services from various parties: customers, senior management, suppliers, and other stakeholders

6.4 Service Transition Processes

Service transition is a major phase for ITIL applicability and popularity in terms of roles in organizations. You might find roles such as change managers, release managers, and transition managers being touted for opportunities and acquisition. There are five processes in the ITIL foundation syllabus that you will study in the service transition phase:

1. Change management
2. Release and deployment management
3. Service asset and configuration management
4. Knowledge management
5. Transition planning and support

6.4.1 Change Management

Change management governs all the changes performed on the IT services that are offered to customers. It ensures that only the necessary changes go through after proper validation, approvals, and analysis. This process is the gatekeeper for any new services that get introduced, services that are retired, and all the major and minor modifications that are done to IT services.

> *A change in ITIL is defined as an activity performed (generally on a configuration item) that affects IT services (either positively or negatively). It could be modification of existing configuration, additions, or decommissions.*

Here are some examples of changes:

- Implementation of optic fiber Internet service to the customer organization
- Transition of e-mail services from Exchange to Gmail
- Decommissioning of mainframe computers
- Adding extra memory to servers
- Changing ownership of a core switch
- Adding an IP to blacklist on firewall

- Modification of a batch job
- New version release of an iPhone app
- Upgrade of an enterprise application

6.4.1.1 Objectives of Change Management

I mentioned that change management is a governance process. It is a process that controls the changes that go into the IT environment. It is a process that acts as a gatekeeper, vetting, analyzing, and letting through only the qualified changes.

According to ITIL, the official definition of change management is that it controls the lifecycle of all changes, enabling beneficial changes to be made with minimum disruption to the services. This is change management in a nutshell: Ensure only beneficial changes go through, remove the wheat from the chaff, and ensure that if anything were to go wrong, the risks are well understood, mitigated, and prepared for with minimal disruption.

To expand on this, the way this process works is somewhat like the changes that get funneled through the change management process. Only the changes that pass all the criteria set forth, that are of good quality, and are deemed beneficial to customers or service providers in general are approved for implementation. You should also know that the buck stops with change management for providing approvals. Implementing changes is managed through the release and deployment management process, which works in tight integration with the change management process. To reiterate, change management is accountable for providing approvals, and the release and deployment management process is accountable for implementation and postimplementation activities. I will discuss release and deployment in detail later in this chapter.

Digging deeper into change management, the output or the objectives of change management are as follows:

- Respond to the customer's ever changing needs (technology upgrades and new business requirements) by ensuring that value is created
- Align IT services with business services when changes are planned and implemented
- Ensure all changes are recorded, analyzed, and evaluated by the process
- Ensure only authorized changes are allowed to be prioritized, planned, tested, and implemented in a controlled manner
- Ensure changes to configuration items (CIs; you will learn about this under service asset and configuration management process later in this chapter) are recorded in the configuration management system
- Ensure business risks are well understood and mitigated for all changes

6.4.1.2 Scope of Change Management

Change management applies to all changes that are performed on the IT services. But what is the definition of a change? I have provided examples of changes when I introduced the process. The official definition of what a change is:

> *Change is the addition, removal, or modification of anything that could have an effect on IT services.*

Yet, the scope is not clear. An IT service can spread far and wide, including the suppliers who support the service, the IT professionals who manage it, and the documentation for it. Does changing any of these peripheral components call in a change? Yes, but it depends on the agreement between the service provider and customer organization. Managing more items requires more time and resources, which adds up to expenses. If the customer wants to have absolute control over the IT services, then yes, every single element that makes up a service must come into the purview of change management. In the real world, this is often not the case, owing to the financials. Many of the indirect components are ignored in the interests of reducing expenses, and some companies find innovative ways of controlling the peripheral objects using standard changes and service requests.

From my experience, there is much more to change management than addition, removal, and modification of IT services. Take the example of running an ad hoc report. You are not adding, removing, or modifying anything, just reading data from the database. Yet, you possess the power in your hands to break systems with the wrong set of queries that goes searching in each and every table, that utilizes the infrastructure's resources, and could potentially cause performance issues to the IT service. In this case, if you bring this through to change management, they can possibly identify the resource consuming queries and shelve them or schedule them to be run during off-peak hours.

To define scope, ITIL takes a holistic approach to define what can be categorized a change. It scopes changes based on the five aspects of design:

1. New or modified services, where functional requirements are changing, translating to resources and capabilities
2. Management information systems (reporting and communication) and tools
3. Technology and management architecture
4. Policies, processes, and components derived from processes, such as templates, guidelines, etc.
5. Measurement systems, metrics, key performance indicators (KPIs), and associated methodologies

6.4.1.3 Types of Change Requests

Not all changes are the same. They come in all shapes and sizes. You cannot use the same yardstick for all changes. You need different policies and processes to handle various types of changes. In this section, I will introduce the three types of changes, which will act as a guideline for organizations to further customize the change types based on their respective requirements.

The three types of change requests are:

1. Normal changes
2. Emergency changes
3. Standard changes

6.4.1.3.1 Normal Changes

All the changes that are planned (unlike the emergency changes that cannot be planned), and those that are not pre-approved (the standard changes) are normal changes. In effect, the maximum number of changes in an organization is initially categorized as normal changes.

Normal changes are generally associated with all the bells and whistles of the change management process and are often well analyzed, tested, mitigated, and verified. The maturity of an organization's change management process is often measured through the normal change process and the metrics and KPIs associated with it.

Examples of normal changes would be a major upgrade from Windows Server 2008 to Windows Server 2012, implementation of a program to handle the supply chain, and decommissioning of mainframe servers.

Normal changes are discussed in detail later in this chapter.

6.4.1.3.2 Emergency Changes

Changes that are necessary to urgently fix an ongoing issue or crisis are considered emergency changes. These changes are mostly implemented as a resolution to a high-priority incident. The nature of such changes requires swift action, whether it is getting the necessary approvals or the testing that is involved. Generally, emergency changes are not thoroughly tested, as the time availability is minimal. In some cases, they may go through without any testing, although this is not recommended, even for an emergency change.

The success of emergency changes reflects the agility of an organization and the change management process to act on disruptions in a time-constrained environment and to come out unscathed in the eyes of the customer and your competition. Emergency change management supports the incident management process in the resolution of incidents, especially major ones.

Examples of emergency changes are replacement of hardware infrastructure and restoring customer data from backup volumes.

6.4.1.3.3 Standard Changes

Normal changes that are low risk and low impact in nature can be categorized as standard changes. I specifically use the word "can" in the previous sentence, as categorization of changes as standard is at the discretion of the service provider and customer organizations.

Any organization will have a good chunk of low-risk and low-impact changes. In my estimate, it should run up to 50% or thereabouts. The service provider's responsibility to deliver agile change management depends on their ability to identify standard changes from the normal change list and obtain necessary approvals to standardize them.

Standard changes have distinct advantages and create value for customers. They follow a process that is less stringent and are free from multiple approvals and lead times that are often associated with normal changes. This provides the service provider the arsenal needed to implement changes on the fly, which increases productivity and also helps deliver better value to the customer.

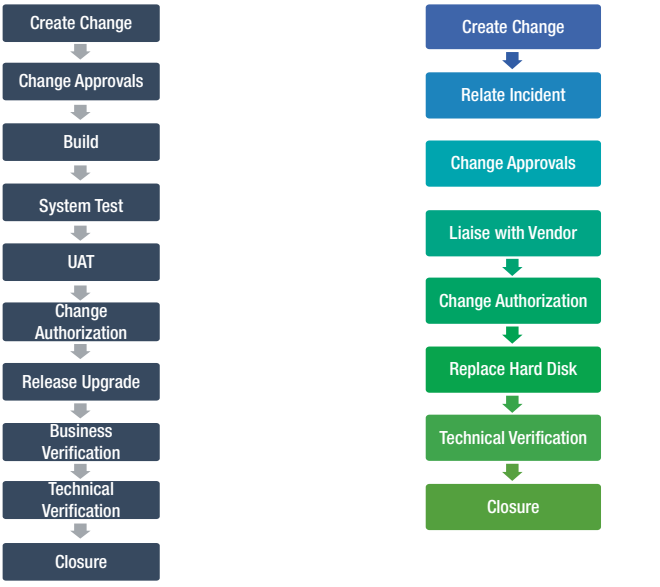
Examples of standard changes include minor patch upgrades, database reindexing, and blacklisting IPs on firewalls.

My expertise is in value creation, and standard changes often deliver maximum value with minimum effort. Organizations must make an effort to identify standard changes and provide able controls around them to ensure that standard changes don't go uncontrolled and are reined in with governance and rugged process.

6.4.1.4 Change Models

In the previous section I discussed the types of change requests at a high level. Going a few hierarchies down, every type of change can be further broken down based on the technology involved, personnel, customer requirements, and change management policies.

For example, the steps involved in introducing a software upgrade and replacement of a hard disk are different. A single standardized process to incorporate all types of changes, irrespective of the technology involved, will not present the best that the change management process can offer. So it is necessary, in the interests of the service provider to improve delivery, to create change models for different types of changes. In Figure 6-1, I provide examples of change models for a software upgrade and for hard disk replacement.



Change Model for Software Upgrade

Change Model for Hard Disk Replacement

Figure 6-1. *Examples of two change models*

> *Change model is a repeatable way of dealing with a particular category of change. A change model defines specific agreed-upon steps that will be followed for a change of this category.*

Not all organizations opt for change models. They run with change management processes that are standard for all technologies, teams, and customers. This has its limitations, although the concept of standardizing sounds good on paper. Tailoring the process through change models helps improve delivery and provides better control and governance of changes. Generally speaking, every change model must contain the following:

- Individual steps for processing changes, including mitigation and risks
- Identifying dependencies and chronology of change activities
- Identifying responsibilities and accountabilities (basically RACI) for individual activities
- Relating service-level agreements (SLA) and KPIs for every activity
- Escalation matrix associated with the process

6.4.1.5 Change Remediation

There is no assurance that all changes that go in will come out undaunted and successful as planned. You need an alternate plan if the change were to fail. The actions taken to nullify the change (back out or rollback) or to invoke service continuity plans are called change remediation. It is an important part of the change plan to ensure that the IT services do not affect the customer.

When any change proposal comes in, it is imperative that the change plan consist of a section to detail the back-out procedures. Not all changes can be backed out. For example, reloading of an operating system after disk format is not reversible. In such cases, an alternate plan must be in place to ensure that the IT service that is being changed does not affect the business services it supports. In extreme cases, when changes fail, IT service continuity plans are invoked. Say, for example, a live database is being altered and the change breaks down, taking down the entire customer's business. In such cases, IT service continuity plans will power the business continuity plans to ensure that businesses come back to life at the earliest possible time.

All changes are inherently risky. The spectrum of risk depends on the particular change. Risks can be identified accurately when change remediation plans are spelled out. Say, for a particular change, change remediation is to invoke service continuity plans. This is a high-risk change and needs to be handled with the utmost care. In effect, all changes must include change remediation plans to ensure that risks are identified fully and completely. Only when the risks are identified can appropriate decisions and actions be taken to mitigate the risks.

A change window is the timeframe between the start of the change and when the change is to be complete—implemented and verified. The back-out plans must be in line with the change window and ensure that the plan to back out a change is during the change window and not outside it.

A typical change plan consists of an implementation plan with various phases, triggers, and milestones. At every milestone, the plan spells out what is expected. If the expected output is not as per the plan, then a remediation plan is also drafted in line with it. So it becomes transparent for change implementers and change managers to expect as planned or to rollback if things don't go as intended. This way, there is no space for ambiguity or speculation.

6.4.1.6 Change Advisory Board

The change advisory board (CAB) exists to support the change management team and to make decisions on approving or rejecting changes. To state it simply, it can be described as an extension of the change management role, and it exists to ensure that the proposed changes are nondisruptive, scheduled to minimize conflicts, prioritized based on risk and impact, and analyzed for every possible outcome to the hilt.

In an organization, you can have multiple CABs to support change management. A typical example would be a change being represented in an infrastructure CAB before it goes into the enterprise CAB, and perhaps followed by a global CAB. The essence of having a CAB is important, not the way it gets implemented.

It is critical for the change owner to present the complete change to the CAB, with all the possible details. This will help the CAB decide on authorization to proceed with it. The CAB has the authority to ask for additional information to be gained, additional tests to be conducted and presented back to them, and to ask that changes be rescheduled. In some cases, the CAB can reduce the scope of the change to ensure minimal impact, for business and technical reasons.

6.4.1.7 Lifecycle of a Normal Change

This section will explain the normal change process. Of the three types of changes (normal, emergency, and standard), the normal change process is elaborate, lengthy, and contains the most elements of the change management process.

Figure 6-2 indicates a typical workflow for the normal change management process. At first glance, it looks complicated, but as I break it down, you will understand that it is logical, and perhaps this will give you insight on how changes are recorded, approved, and implemented. The blue boxes indicate process activities and the yellow boxes indicate the people/team who is responsible for carrying out the activity.

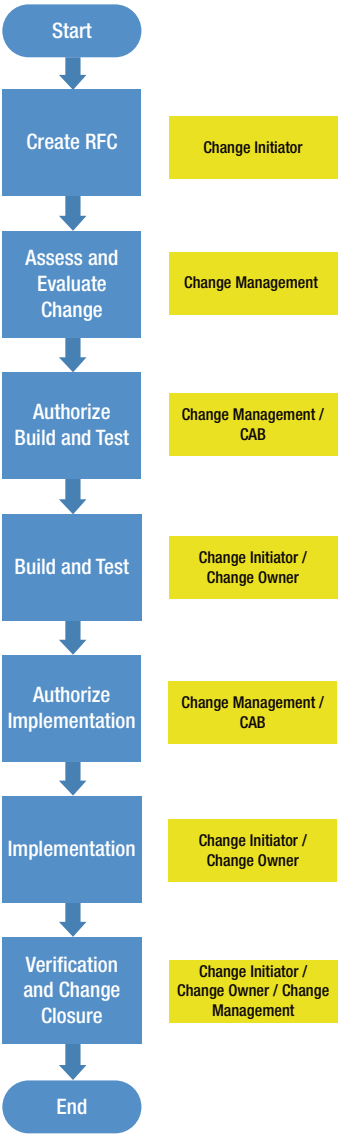


Figure 6-2. *Normal change process workflow*

6.4.1.7.1 Create a Request for Change

A request for change (RFC) is a proposal initiated to perform a change. At this stage, the RFC is just a document with the change proposal. It is generally raised by the customer team or the technical team. There are no approvals or authorizations to perform the change.

The RFC document consists of all the necessary information pertaining to the change. RFCs will vary for every organization. The information needed, the format, the depth, and the necessary technical jargon are dictated by the change management policy. Generally speaking, an RFC consists of the following fields:

- Change number
- Trigger for the change
- Change description
- Configuration items that are changing
- Change justification
- What happens if the change is not implemented
- Change start and end date and time
- Change category (major, significant, minor)
- Who is involved in the change
- Test plan
- Implementation plan
- Back-out plan
- Verification plan

In most ITIL change management implementations, the RFC is directly available on IT service management tools such as ServiceNow and BMC Remedy. The details required are collected using web forms. A few years back, before the ITSM tools were a luxury, RFCs were presented in the form of Microsoft Excel templates. IT stakeholders used the copies of the template to populate and sent RFCs to change managers for processing and approval. This process was rather cumbersome as it was manual and was not governed using a system that applied the same yardstick for all change requesters. Change management has come a long way with the application of digital technology.

6.4.1.7.2 Assess and Evaluate Change

The RFC is analyzed and evaluated for risk, impact, and conflicts. The change management team is responsible for performing the assessment. They typically understand the change details, check if the right stakeholders are indeed carrying out the change, and check for conflicts with connected systems and related changes going in during the same change window, among other conflict criteria. When the change is free of conflicts and is fully scoped and documented, it is scheduled to be presented in the CAB meeting.

In this activity, the role of the change manager is critical as the change manager alone would have visibility across the organization's changes and are in the best position to identify conflicts, if any arise. For fantasy fanatics, you could think of change managers as the first line of defense against potential malicious changes.

I worked as an enterprise change manager at one stage in my career. The role was daunting, and knowing that the entire billion-dollar organization depended on your foresight and analysis was a scary thought. It was a challenging role that I enjoyed during my heydays in an operations role.

6.4.1.7.3 Authorize Build and Test

The change manager calls for a CAB meeting of all stakeholders, from technical and business lines in the organization. I will explain CAB in detail in the next section.

In the CAB meeting, the change manager chairs the meeting and presents the change. The CAB provides its approval for building and testing the change. The forum provides authorization for developing the change, and this is the most critical approval in the change management process.

6.4.1.7.4 Build and Test

The build and test process, which includes software development, unit testing, system integration testing, and user acceptance testing, is not part of the change management process. I have included it under the change management process to provide continuity in the process activities. These activities belong to the release and deployment process, which is the next process discussed in this chapter.

6.4.1.7.5 Authorize Implementation

The test results are presented back to the change governance body: change management and the CAB. Based on the results, the change management team provides authorization to implement the change in the production environment.

This is yet another important activity, as all the identified testing activities must be completed successfully before the change is allowed to be implemented into the production environment.

6.4.1.7.6 Implementation and Verification

The implementation and verification process is not part of the change management process per se. Like the build and test activity, this one comes under the release and deployment management process.

In this activity, the technical team will deploy the change in the production environment during the approved change window and perform postimplementation verification to ensure that the change is successful. If the change is not successful, it will be rolled back to the previous state if possible.

6.4.1.7.7 Review and Change Closure

A postimplementation review (PIR) is conducted to ensure that the change has met its objectives. During this review, checks are performed to identify whether any unintended side effects were caused. There are lessons to be learned from changes. If there are any such candidates, it is fed into the knowledge management database (KMDB).

After the successful completion of the PIR, the change ticket is closed with an appropriate status, such as implemented successfully, change rolled back, change caused incident, or change implemented beyond the window.

The responsibility for carrying out this activity generally falls to the change management team, but some organizations have the change owners and change initiators close the change with the correct status.

6.4.1.8 Composition of the Change Advisory Board

The composition of the CAB consists of stakeholders from the business as well as from the service delivery. It can also include suppliers, legal experts, business relationship managers, and other stakeholders as identified by the chairperson.

CABs are dynamic. They could different for every change that comes up for discussion. For a particular change, you may have Supplier A, network manager, exchange manager, and IT security. For another change in the same CAB meeting, you may have Supplier B, application delivery head, and SAP manager as CAB members. Some organizations might insist on a set of permanent members of CAB who sit in on all proposed changes, during every single CAB, and additional approvers (dynamic) would come and go as necessary.

No matter who sits on the CAB as an approver, the change manager, who is responsible for all the change management activities, is the chairperson of the meeting and decides on CAB members, the changes that get represented on the CAB, and the final decision of the CAB.

Potential CAB members include:

- Change manager as chairperson
- Customers
- Suppliers
- IT security
- Service owners
- Business relationship managers
- Application delivery managers
- Operations managers
- Technical subject matter experts
- Facilities managers
- Legal representation

6.4.1.9 Emergency Change Advisory Board

Emergency changes require urgent attention and quick decisions. A CAB will not work for assessing emergency changes. These changes may happen in the middle of the night and require people to spring into decision-making mode to approve or reject changes. The need of the hour (literally) to help change management decide on approvals is the emergency change advisory board (ECAB).

The need for emergency changes pops up through incidents. It is possible that carrying out an emergency change (unsuccessfully) could impact the service more than the incident itself. So, in all necessity, there is a need for a few extra pairs of eyes to look at the proposed emergency change and provide the approval in the most awkward hours of the night (or day).

In most cases, a change ticket will not be created when approvals are sought. Change documentation may be done retrospectively for emergency changes. So it is imperative that emergency changes are approved based on what is heard and what was relayed.

An ECAB is comprised of key members who provide their decision on the proposed change. ECABs mostly happen over a phone line, and its extremely unlikely that there would be the luxury of members sitting across from one another. In some instances, the ECAB members may provide their approval individually, but not while they sit in a gathering. Individual responses are collected, and the change manager uses his wisdom in providing a direction for emergency changes.

Not all emergency changes call for an ECAB. Most of these are approved directly by the change manager if the ECAB rights are delegated. The critical ones, where entire enterprises could possibly be negatively impacted, would call for an ECAB to make decisions. The emergency change management process should not be exploited to push nonemergency changes under the guise of emergency changes.

It is possible that ECABs could ask service delivery teams to convert an emergency change to a normal change if a workaround exists to keep the service running.

An example could be a database containing customer information that has gone corrupt and the database team wants to restore data from backup tapes. They wish to do it as an emergency change to ensure that the customer's data are present before the customer's business starts in the morning. An RFC for performing an emergency change is raised. An ECAB is convened and approvals are sought. Change documentation may be done retrospectively. The database team restores the customer's data from the backup tapes, and the emergency change is a success. During the business hours, the change document gets created with all the bells and whistles, and it goes through the entire cycle of obtaining approvals for visibility and to keep other stakeholders who were not involved in the ECAB process informed.

There is a specific place for ECABs, and they have a specific job to do. This process must not be abused with trivial emergency changes knocking on the doors of ECAB. It dilutes the process and forces the ECAB members to lose focus on what really requires their attention.

6.4.1.10 Change Management Interfaces

Change management is seated in the midst of all operational and transitional processes. In other words, change management is necessary for most ITIL processes to carry out their respective activities. It is a process that interfaces with operation and transition processes for operational changes, with design processes for tactical changes, and with processes from the service strategy for strategic changes.

This section will touch on the most important change management interfaces within the IT service management space. They include:

- *Release and deployment management*: Change management interlocks tightly around release and deployment management. While change management is responsible for obtaining change approvals, release and deployment management is responsible for building, testing, implementing, and verifying of changes.
- *Service asset and configuration management*: The service asset and configuration management process (which I will discuss later in this chapter) deals with configuration items, the individual elements of a service. Examples are servers, routers, load balancers, firewalls, applications, and the operating system. The process supports change management in identifying downstream and upstream impacts of the proposed change to a configuration item.
- *Incident management*: Change management has a special two-way relationship with incident management. Incidents are disruptions to services, and the incident management process deals with restoring services. To restore services, at times, changes need to be performed. Say, for example, a hard drive needs to be replaced or a database needs to be restored from backup tapes. These incident-resolving activities cannot be performed on the fly, but they need to go through change management for its assessment, approval, and authorization. It is also true that changes that go south often result in disrupted IT services, which gives rise to incidents. In this case, a change is the trigger for an incident, and in the previous instance, it was the other way around. Hence, the special two-way relationship between the two processes.
- *Problem management*: Problems are incidents where the root cause is unknown. Problem management looks at identifying the root cause and finding a permanent solution for repetitive incidents. A permanent solution, more often than not, calls for a change to be implemented. For example, the investigation of a problem could result in a recommendation to upgrade a particular software to the latest version. This action requires a change to be raised.

- *IT service continuity management*: Although IT service continuity management works mostly in the background and gets under way during disasters, it has a significant linkage with the change management process. Any major change involving design modifications calls for a revision or review of IT service continuity plans, procedures, and work instructions. IT service continuity has a permanent seat at the CAB for changes involving design changes. In every change meeting, this criterion needs to be assessed for potential changes in IT service continuity actions.
- *Capacity management*: Similar to IT service continuity management, capacity management needs to be in play for major changes and changes involving adding, removing, or modifying capacity levels. Suppose an upgrade to a technology is being proposed, one of the mandatory checks would be from the capacity management process to assess capacity requirements and to ensure required capacities are available.
- *Information security management*: As indicated earlier, IT security has a permanent seat in the CAB and is one of the important stakeholders for change management to function. Information security is most relevant in today's world, and every change performed has the potential to create loopholes and vulnerabilities that could be exploited by hackers.

6.4.1.11 External Interfaces of Change Management

As mentioned earlier, change management is in the middle of all IT activities. This does not necessarily mean that ITIL processes alone interact with the process, but they interact and interface with a number of practices and frameworks in the projects and programs world.

Changes have triggers and, generally, demands and new requirements come from the business. The business has a similar change management process to govern the business side of things. The two change management sectors, business change and IT change, must talk to each other, pro-actively and regularly, to ensure that business requirements get translated into IT changes.

There is yet another type of change management for managing organizational changes, such as managing people, their behavior, and the changes that could unsettle them. IT change management needs to interface with organizational change management to ensure IT changes are accepted with open arms.

Suppliers play a major role in IT organizations today. Often, changes performed at the IT service provider end impact the supplier and vice versa. Therefore, it is necessary that the supplier change management process conforms to the IT change management process and policy controls.

In any organization, you have project lifecycles dictated by Project Management Institute (PMI) and Prince2 frameworks. Then you have the service management framework based on ITIL. The amalgamation between the frameworks is in the change management process. For example, a new software developed using the PMI

framework needs to be introduced into production, and to do this, it needs to go through change management. Likewise, programs also interact and interface heavily with the change management process. The specifics of interfacing are outside the scope of ITIL Foundation syllabus.

6.4.2 Release and Deployment Management

While change management owns the approval side of things, release and deployment management process is in charge of the technical side of the change. It ensures that the change is built as per plan, tested as defined in the blueprints, and deployed as per the implementation plan.

6.4.2.1 Objectives of Release and Deployment Management

The purpose of release and deployment management is to ensure that the release succeeds without compromising the integrity of the live services through the build, test, implementation, and verification phases.

The objectives of release and deployment management include:

- Draft the release and deployment plan and get an agreement on it with all stakeholders, including customers
- Ensure that all releases are routed through the change management process
- Build release packages as defined in the release and deployment plan
- Test (unit, system integration, and user acceptance as necessary) release packages as defined in the release and deployment plan
- Ensure the integrity of release packages are stored in definitive media library (DML) and logged in configuration management system (CMS)
- Implement/deploy releases from DML as per the release and deployment plan
- Track releases on CIs through various stages: install, verify, and backed out if needed
- Track deviations in releases in the knowledge management database to ensure future releases are deviation free
- Record risks during the entire transition management process and identify mitigation actions
- Transfer knowledge of maintaining the release package to service operations lifecycle, by conducting sessions and handholding

6.4.2.2 Scope of Release and Deployment Management

As mentioned earlier, all changes come under the ambit of the release and deployment management process. I earlier mentioned that build, test, implementation, and verification are the key activities of this process. However, it is possible that certain activities, such as building and testing, may not be applicable for all changes, say for hardware changes where parts get replaced. There is no build and perhaps not a lot of testing that could be done unless the hardware is placed on the network.

In principle, the scope of release and deployment management starts at the build stage and traverses through testing, deployment, and verification and ends when the responsibilities are handed over to service operations for maintaining the status quo.

The set of configuration items that could possibly come under the release and deployment management process is defined by the customer. The following set of CIs generally figure in most implementations:

- Hardware CIs such as servers, routers, switches, and storage
- Virtual servers such as VMWare and Citrix
- Virtual storage servers
- Software and applications
- Database
- Staff training (handover to service operations) and training to users
- Documentation regarding release packages and the results of its key activities

6.4.2.3 Four Phases of Release and Deployment Management

The release and deployment management has four major activities. These activities are referred to as the four phases of release and deployment management:

1. Release and deployment planning
2. Release build and test
3. Deployment
4. Review and close

The four phases of release and deployment management are shown in Figure 6-3.

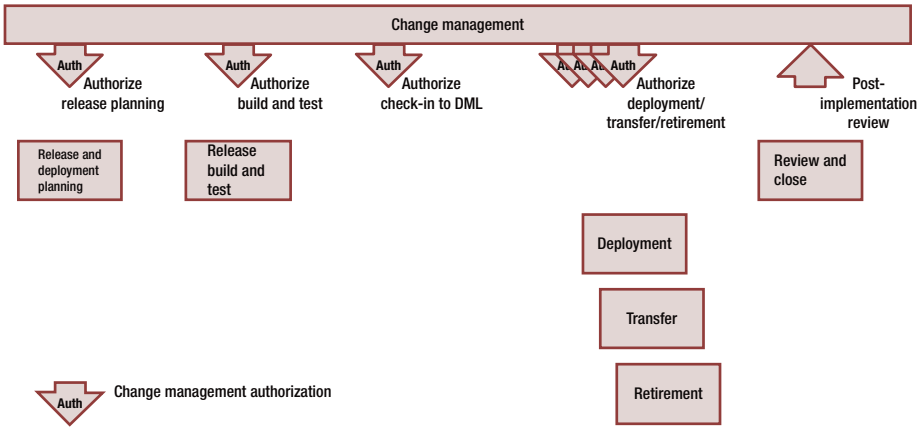


Figure 6-3. *Four phases of release and deployment management*

6.4.2.3.1 Release and Deployment Planning

A good amount of planning has to go into release activities. A good plan is equivalent to half of the job being done. To ensure that the release is successful, it is critical that the architects and other experts brainstorm various possibilities, risks, and mitigations.

Before the plan gets under way, the change management typically provides approval to start the planning process. However, in practice, the approval to create release and deployment plans is provided from a different body such as a transition management group or a group that governs the projects that are chartered. In principle, these bodies govern the changes made to the system, and this can be the equivalent to change management authorization to create release and deployment management plans.

6.4.2.3.2 Release Build and Test

The release and deployment plans are submitted to the CAB. The plans are dissected from every possible angle to identify loopholes and vulnerabilities. Upon successfully passing the CAB and change management scrutiny, the authorization to build and test the change is provided.

Building a change amounts to code development, getting hardware ready, or the prerequisites for building the change.

There are various types of testing. The most popular ones are unit tests (UTs), where individual components of a change are tested in isolation. Upon successful testing, the individual components are conjoined and a system integration test (SIT) is performed. After it successfully passes, users are asked to test the function in the user's environment to check whether the change meets the requirements that are needed. This is called user acceptance testing (UAT). The testing is deemed complete after the user provides the okay that all elements of the change meet the requirement and are good to proceed.

The definitive media library (DML) is a repository where all the original codes, software licenses, and other software components are stored, physically and logically.

When the release and deployment management provides ample proof that the testing has been successful, the change management provides authorization to store the code/software in the DML. DML is explained in detail later in this chapter.

6.4.2.3.3 Deployment

The results of the release and deployment testing are brought before the CAB once again, and the results are vetted for possible complications and unseen bugs. When the CAB and change management are happy with what they see, they authorize it for deployment during the planned change window.

Deployment is a common term for implementation. It could include retiring of services or transferring services to another service provider as well. For simplicity, I'll just refer to it as deployment.

Deployment of release packages is a specialized skill and calls for alignment of a number of parameters. There are a number of approaches to the release package. The big-bang approach is used when all the CIs are targeted to receive the package at the same time. Say there are 10,000 workstations that need to be pushed with a security patch. All 10,000 systems will receive the release package during the same window. This method is rarely employed as it has the ability to choke the network. And, if there are any mishaps, all the targeted systems could be affected, causing severe damage for the customer. The most popular approach is a phased approach, where the release is staggered through multiple phases to minimize complications and avoid network choke. In the same example involving 10,000 systems, it could be phased to target 1,000 systems a day, and to run the entire release cycle for ten days. Further details on release deployment is outside the scope of ITIL Foundation exam and this book.

6.4.2.3.4 Review and Close

After deployment, the release and deployment management process conducts a review to check the performance of the release and assesses the targets achieved. Lessons learned are documented in the KMDB. The release is closed after the review.

6.4.3 Service Asset and Configuration Management

Service asset and configuration management (SACM) is one of the most critical processes in the ITIL Framework. This process acts as a foundation/prerequisite for all other operational and transitional processes to carry out their respective objectives.

6.4.3.1 Service Assets and Configuration Items

There are two parts to this process: service assets and configuration items.

Service assets are individual elements that make up a service. In Chapter 2, I discussed service assets. The ten service assets are managed under this process. The entire lifecycle of the service assets, beginning with initiation, the changes it undergoes,

and finally retirement, is managed, controlled, and tracked in the SACM process. Examples of service assets are monitors, laptops, datacenters, and servers.

> *A service asset is any resource or capability that could contribute to the delivery of a service.*

Not every service asset is a CI, but every CI is a service asset. A CI is the fundamental component of a service that can be configured, tracked, accounted for, and controlled. For example, in an e-mail server involving servers, routers, and exchange application, each server, router, switch, application, and firewall can be called a CI. Why? Because these CIs can be tracked, controlled, accounted for, and audited.

> *A configuration item is a service asset that needs to be managed in order to deliver an IT service.*

Who decides what can or cannot be a CI? It is at the discretion of the customer. If the customer is willing to shell out more to control and manage deeper than the servers, like the hard drive, processor, or RAM inside a server, then he might as well label them as individual CIs. But it is not prudent to take the CI level as low as the components of a server or any other equipment, as management then becomes complicated. Moreover, when you plot the value generated against the depth of CIs, by going deeper into the components, the value derived is negligible.

Every CI has a number of attributes attached to it. Attributes are various details that get recorded against a CI, such as owner, location, date of commission, status, and configuration. All these attributes are controlled through change management. This means that if any of the attributes have to be changed, the configuration manager or whoever wants to make the change should take it up with the change management process team. Attributes on configuration items cannot be changed on the fly.

Figure 6-4 illustrates the attributes of a server.

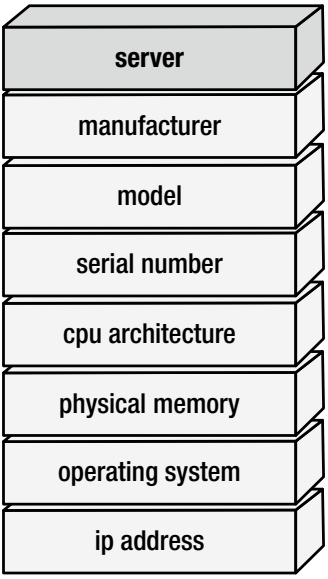


Figure 6-4. *Illustration of a configuration management database model*

Any service asset that is critical or that directly impacts a service is a configuration item. This definition gives rise to a number of types of CIs that could potentially be leveraged in a service provider organization. Human CIs (workforce management), document CIs (document management), business CIs (the business processes that connects business side of things), software CIs (business applications and in-house developed software), and hardware CIs (server, router) are some examples. An organization can choose to hand over only software and hardware CIs to SACM, human CIs to HR departments, and document CIs to documentation teams. It is entirely their decision how to manage the CIs appropriately.

6.4.3.2 Configuration Management Database

A configuration management database (CMDB) is a repository containing all the CIs including their relationships. An example of a CMDB model is illustrated in Figure 6-5.

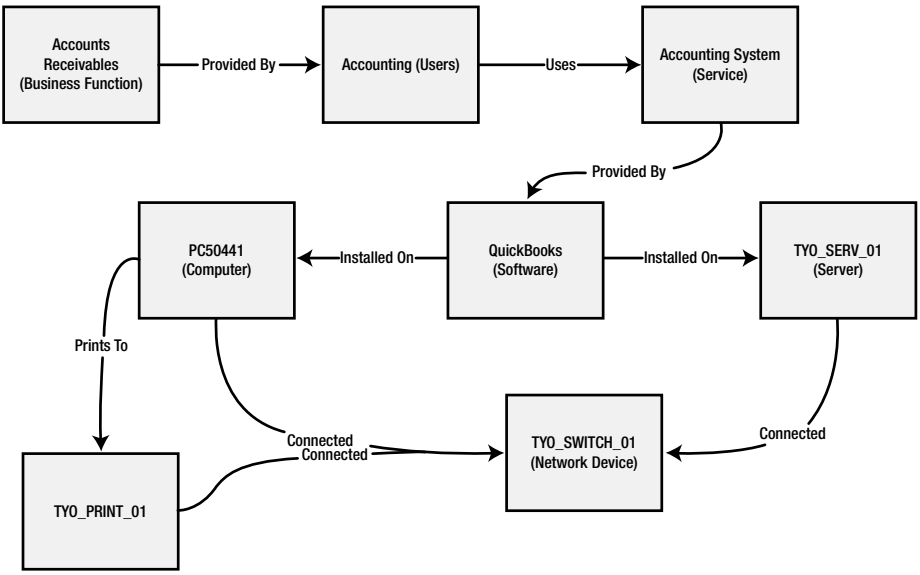


Figure 6-5. *Configuration management system illustration*

Within the CMDB, you can have multiple services, the individual CIs, and their relationships. Most modern ITSM tools, such as BMC Atrium, offer placeholders to record the upstream and downstream impacts. If you pick up a service and would like to see it visually, to see how CIs connect to one another, you will see an array of connections between the CIs, as illustrated in Figure 6-5. Using this visual image, other processes such as incident management can troubleshoot incidents with ease, and processes like change management can identify upstream and downstream impacts with a click of a button. Imagine if this were not in place, the whole activity involving analysis and troubleshooting would be tough.

In an organization, you could have multiple CMDBs depending on the requirement, business structure, and customer obligations. For example, you can have a CMDB for business units A, B, and C, a CMDB separately for customer ABC, and yet another CMDB for internal infrastructure and software. There is no limit, as long as the logic makes sense to manage, control, and keep matters uncomplicated.

6.4.3.3 Configuration Management System

The configuration management system (CMS) is the super database that contains all the CMDBs and more in its ecosphere. It is the layer that integrates all the individual CMDBs along with other databases in the IT service management space, such as known error database, incident records, problem records, service request records, change records, and release records. Figure 6-6 provides an illustration of a CMS.

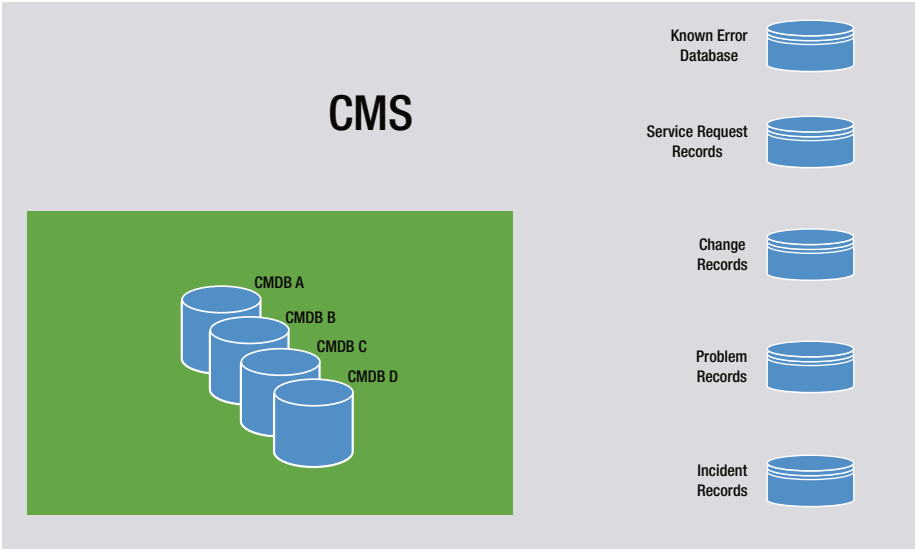


Figure 6-6. *Attributes of a server*

It is possible that some CIs within a CMDB talk to other CIs in another CMDB. The overview of all the relationships between the CIs is provided in the CMS.

The CMS holds the CI data as well as other databases such as incident records, so service providers and customers alike can utilize the CMS in identifying all the incidents raised against a CI and the number of times they have failed on a regular basis.

6.4.3.4 Definitive Media Library and Definitive Spares

The DML is a repository for storing all licensed copies of procured software and software that has been developed in house. The repository can be an online one or a physical one, but it needs to be access controlled.

The software that gets accepted into the DML is controlled by the change management process, and only those copies that are authorized by change management into the DML are allowed to be used during the release and deployment management process. The software that gets into the DML is expected to be analyzed, quality tested, and checked for vulnerabilities before getting accepted.

In case of a physical DML where CDs, DVDs, and other storage media are used, it is expected that the storage facility is fireproof and can withstand normal rigors of nature and secure against media thefts.

The DML is ideally designed during the service design lifecycle phase and the following are considered during the planning stages:

- Medium to be used and the location for the master copies to be stored
- Security arrangements for both online and offline storage
- Access rights, who has access, and how it is controlled
- Naming convention for the stored media to help in easy retrieval and tracking
- What types of software go into the DML, for example, source codes or packages
- Retention period
- Audit plan, checklist, and process
- Service continuity of DML if disaster strikes

Definitive spares (DS) is a repository for storing hardware spares. Generally, all organizations store a certain amount of stock, mostly pieces of critical infrastructure, to be use to quickly replace hardware in case of an incident. And then there are stocks that are needed for the operational consumption and ever increasing demands of the customer.

Like DML, DS must be secured, tracked, managed, and controlled. However, change management generally does not get involved in controlling the items that go in and out of DS, as the gravity of compromising intellectual property and master copies of licensed versions can be very messy as compared to hardware spares. SACM process oversees the overall functioning of the DS.

6.4.3.5 Objectives of Service Asset and Configuration Management

The SACM process exists to ensure that the service assets that deliver the services are governed, controlled, managed, and tracked across their lifecycles. All attributes of service assets and CIs, including relationships, come under the ambit of SACM.

The objectives of SACM are:

- Ensure service assets are identified and are managed
- Identify, control, record, report, audit, and verify configuration items
- Maintain CI versions, baselines, attributes, and relationships
- Ensure CIs are controlled through change management, and only authorized changes can trigger changes to CIs
- Ensure CIs are accounted for, managed, and protect the integrity of it
- Maintain all CIs including their correct statuses, relationships, and attributes in the configuration management database

- Maintain historical information of CIs and their planned states as well
- Ensure CMDB is accurate at all times
- Support other processes by providing accurate and up-to-date configuration and asset management data

6.4.3.6 Scope of Service Asset and Configuration Management

Let's looks at the scope of the service asset and configuration management individually.

6.4.3.6.1 Asset Management

The asset management part of the SACM process is where the accountability of all the service assets happens. Under this, the service assets are identified, accounted for, managed, and controlled. The type of assets that will be individually managed will be at the discretion of the service provider organization.

For example, the service provider might decide to include the monitor as a part of a desktop, and not manage the monitor individually but under the whole unit of a desktop computer.

The question to ask is how well a service provider is able to manage the service assets, without any compromises to the users, service provider personnel, and to the services. Based on this, the service design lifecycle phase deems whether certain service assets are within or outside the scope for individual management. Remember that every single asset has to be managed. Whether they would be managed individually or as a group is at the service provider's discretion.

In most organizations, service assets have a financial value associated with them. The user group that enjoys the service will be charged for the assets leveraged. For example, if I am using a laptop, each year my business unit gets billed a certain amount of money for the laptop that I use. Of course, it is notional charging, where an actual exchange of money does not take place. But, it is a good practice to keep track of assets and their financial information across the organizational units.

6.4.3.6.2 Configuration Management

The customer decides the scope of CIs in their organization. I discussed this earlier. Based on the customer scoping, all CIs that directly impact services by their presence of lack thereof will generally be brought under the purview of the SACM process. In short, every identified CI is in scope, including the ones in stores and DML.

Remember that both hardware and software pieces of the service are considered CIs. Hardware CI examples include servers, routers, datacenter, and racks. Software CIs include operating systems, business applications, and licensed software.

The complete management of CIs, which encompasses the CI attributes, the relationships, and the configuration baselines, is brought under the management of SACM and is governed through the change management process.

6.4.4 Knowledge Management

The journey of a thousand miles begins with one step.

—Lao Tzu

As people start working in the IT field, they begin to understand the business of IT and become aware of the required work etiquettes. They learn to handle stakeholders and customers, they start managing teams, start leading engagements, and then move on to greater heights. This is a typical maturity cycle for an IT professional.

Likewise, organizations also go through a maturity lifecycle. It takes time, experience, and learning that the work brings in. One of the secrets to maturing on a fast-paced ladder is learning to capture knowledge, document experiences, and analyze failures. The ones who do these the best will learn from their mistakes and focus on new targets every time they set their sights on a goal. Knowledge management is the key to success, even for an organization that has matured over the years.

It is critical for organizations to avoid reinventing the wheel. If there is an SLA breach, the service provider organization must have learned from the past to jump into action right away rather than sit on the analysis bench. Current standards expect them to hit the ground running, and the only way they can achieve this is with the backbone created by a knowledge architecture that provides the right information at the right point in time.

Risks are inherent in every IT organization. One such risk is the attrition caused by employees jumping ship. What are the mitigation plans if there is excess attrition? Companies learn from the past and from the experience of others to (a) offer industry standard salaries and benefits, (b) provide growth opportunities for employees, and (c) maintain bench strength. When risk comes calling, they start enacting the plans executing measures to retain talent and to protect delivery to their customers. A not-so-mature organization might falter in being reactive to the situation and come up with actions after the eventuality and not before or during the risk proceedings.

6.4.4.1 Objectives of Knowledge Management

Knowledge management exists to support the service provider organization to succeed and to be better prepared for the decisions it needs to undertake. It is not a process that a is customer facing, but it's effects make a difference in how decisions are made, customers are managed, and issues are dealt with.

The purpose of the knowledge management process as per the ITIL service transition publication is to share perspectives, ideas, experience, and information; to ensure that these are available in the right place at the right time to enable informed decisions; and to improve efficiency by reducing the need to rediscover knowledge.

The objectives of knowledge management are:

- Support the service provider organization to make sane decisions based on the wealth of information, experience, and learning
- Support the service provider to better efficiency and effectiveness of the services delivered to the customer

- Help in reducing the total cost of ownership by eliminating the need to reinvent the wheel
- Align the service provider personnel with the organization's goals, objectives, and the principles that are leveraged to deliver services to the customer
- Manage the service knowledge management system (SKMS), which acts as a source of wisdom, information, and a library to rely on
- Provide the means to gather data, vet for usability, store for the future, and retrieve when needed

6.4.4.2 Scope of Knowledge Management

The knowledge management process appears in the service transition publication, but it does not necessarily mean that it gets acted upon in the service transition lifecycle phase alone. It is an overarching process that has a significant role to play in all five lifecycle phases and every process within the phases.

The knowledge management process gets designed in the service design phase and is implemented in the service transition phase, but it finds wide usage in the service operations phase where day-to-day operational activities bring in plenty of data points and the staff actively look for direction in the SKMS.

Service strategy also employs knowledge management in recording the strategic decisions, reminiscing on the previous decisions, and gaining the wisdom of the operational data to take decisions. For service design to be successful, it needs to reuse previously created designs and architectures. Service transition can lean on knowledge management to get aid in implementation strategies of the past, the successful strategies employed, and to chart a future course of action. Continual service improvement, which is a lifecycle phase that overarches across all other phases, is similar in nature to the knowledge management process. It heavily relies on the data available to complete its objectives.

6.4.4.3 Data-to-Information to Knowledge-to-Wisdom Concept

The data-to-information to knowledge-to-wisdom (DIKW) concept emphasizes the importance of data collection and indicates the lifecycle of its transformation. It is generally depicted through a pyramid structure, as shown in Figure 6-7.

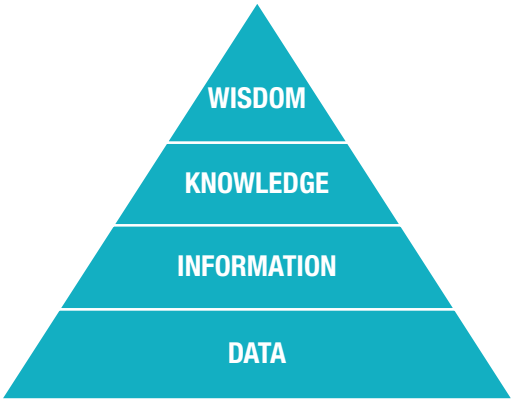


Figure 6-7. *The data-to-information to knowledge-to-wisdom pyramid model*

Across the ITIL lifecycle phases, data are extracted during every process. Reports are prepared, and analysis is performed and presented to various stakeholders. All this is possible because the right set of data is captured in the first place. The DIKW pyramid/model showcases how the data, which are nothing but numbers, can go through various stages of transformation in becoming something usable and useful and to trigger improvements.

6.4.4.3.1 Data

Data are the most basic units that you can capture. Examples can be 54 incidents, 23 services, 6 changes, and so on. They indicate a number or quantify the element that is measured. But they are mere numbers, and numbers by themselves don't mean anything. Think about it. If I say 22 movies, am I conveying information that you could use without providing some additional information?

Data are a set of discrete facts.

So, to put it simply, data by themselves are useless. They are a set of discrete facts, and every organization captures tons of data daily. Unless you pad them up with relevancy, they are as good as junk. Let's see how data can be made useful.

6.4.4.3.2 Information

Numbers don't tell you the story behind them. Unless you have the context associated with the numbers, they mean zilch. Information, as the word literally indicates, provides you the basic context to go with the data.

Information comes from providing context to data.

For example, "54 incidents were raised yesterday and 23 services have been offered to customer ABC" means a whole lot more than the using just the numbers themselves.

To create information, data should be padded with contextual information, answering questions pertaining to who, what, when, or where. An example is shown in Figure 6-8.

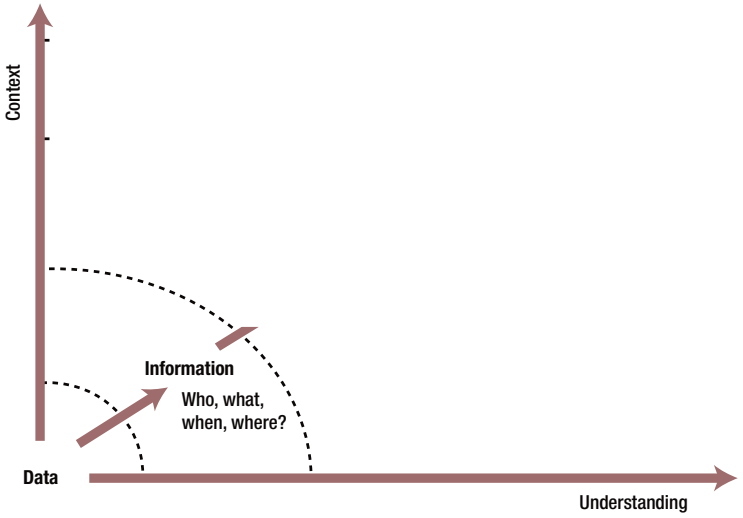


Figure 6-8. *Adding data to information*

Information exists in various forms. It can be embedded in a document, in an e-mail, or PowerPoint presentation. However, the key or the main purpose of storing information is to retrieve information when it is needed. Also information is meant to be reused, rejigged, and ported for various tangential and derivative needs.

6.4.4.3.3 Knowledge

"Knowledge is power" is a popular aphorism derived from the Latin phrase *scientiapotentia est*. It is a powerful weapon to possess because it is a culmination of people's experiences, ideas, thoughts, and insights. The result of all these factors transforms information into knowledge.

> *Knowledge is composed of the tacit experiences, ideas, insights, values, and judgments of individuals.*

In the process, the knowledge tries to answer the "how" part of the information. How did the 54 incidents get raised? How are we offering 23 services to the customer? Figure 6-9 illustrates the question asked for transforming information to knowledge.

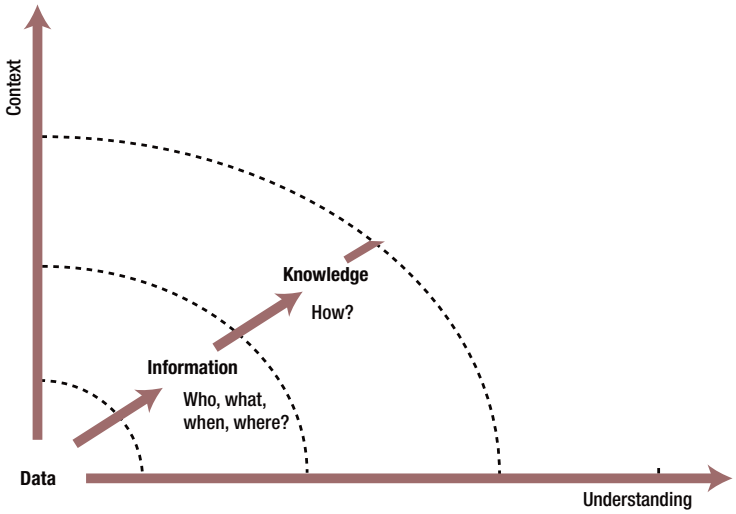


Figure 6-9. *Data to information to knowledge*

The answers to these questions require excessive analytical skills, and sound analysis is made possible by the person doing it.

6.4.4.3.4 Wisdom

Wisdom is the highest echelon in the knowledge management process. While data, information, and knowledge lie in the reactive quadrant, capturing, recording, and analyzing events, wisdom sits on the pro-active front, making decisions in tune with the process and organizational objectives.

The outcome of knowledge, which is the result of the analysis, is leveraged to make sound decisions. These decisions can potentially have a lasting impact on the services offered and the future of the company. Therefore, wisdom is placed in the top-most tier as it has the most potential to impact the service provider.

Wisdom creates value for the service provider organization and for the customer. Remember that services exist to create value. They create value by asking the most basic question: Why do we do what we do? By tackling the source and by keeping their sights on the targets, the wisdom of people helps organizations achieve their goals through informed decisions. This is depicted in Figure 6-10.

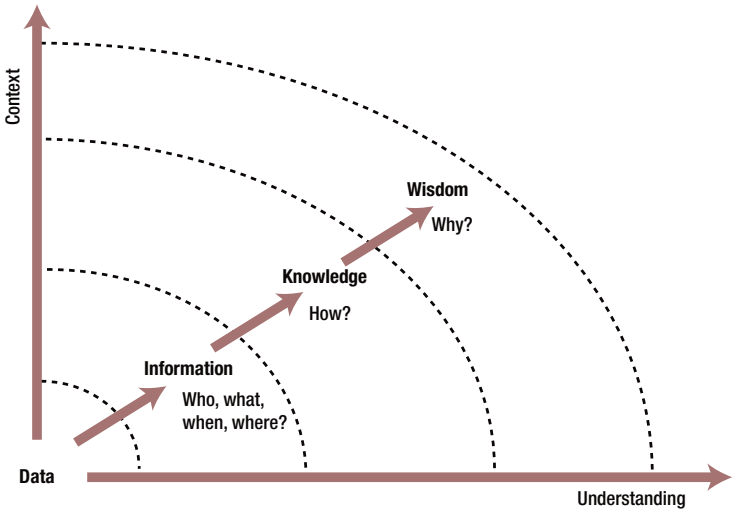


Figure 6-10. *Data to information to knowledge to wisdom*

Instead of focusing on the incidents in the system, wisdom asks the question: Why are incidents getting raised in the system? By answering the question, organizations can find themselves in a good position for minimizing incidents.

6.4.4.4 Service Knowledge Management System

The service knowledge management system (SKMS) is the mother of all repositories. It is the superset of all other databases in the service provider organization, and these individual databases are needed to manage the lifecycle of services.

Figure 6-11 depicts the hierarchy or the structural components of the SKMS. It consists within itself, the configuration management system mainly. As mentioned earlier, the CMS consists of multiple configuration management databases. Apart from the illustrated databases, the SKMS also consists of:

1. Policy and process documents
2. Financial documents like budget and accounting
3. Service portfolio
4. SLRs, SLAs, OLAs, and UCs
5. Business continuity and IT service continuity plans
6. Service improvement plans
7. Definitive media library
8. Supplier and contract management information system
9. Capacity and availability plans

10. Various reports, internal and customer facing
11. Known error database
12. Knowledge database
13. HR records

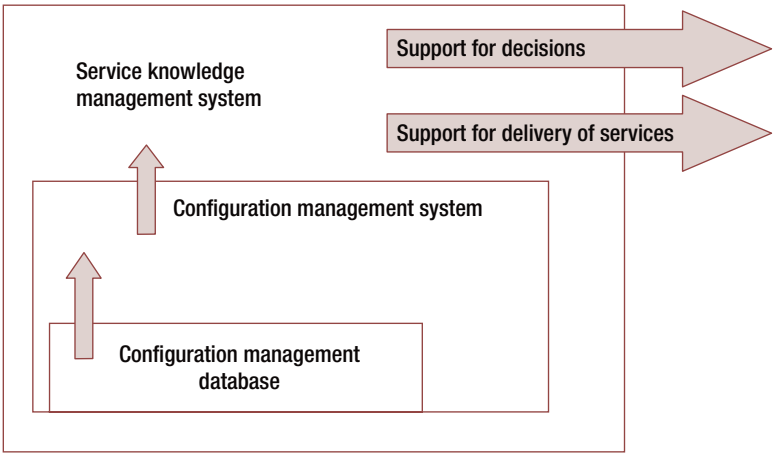


Figure 6-11. *Service knowledge management system*

This list is by no means comprehensive. Anything and everything that is related to the service provider organization pertaining to design, management, and delivery of IT services goes into the SKMS.

6.4.5 Transition Planning and Support

Transition planning and support (TPS) is a minor process in the service transition lifecycle phase and it exists to manage and control the other processes within the phase. It is similar to the design coordination process discussed in Chapter 5. Management roles such as transition manager are housed in this process.

6.4.5.1 Objectives of Transition Planning and Support

There are a number of processes within the service transition lifecycle, each looking at a different aspect of transitioning services into production. So there is a need for a single entity to overarch the processes and to ensure that they are aligned to the service design lifecycle phase and the overall objectives of the service provider organization. This requirement brings in the TPS process to manage the activities of the service transition phase.

The ITIL publication states that the purpose of the transition planning and support process is to provide overall planning for service transitions and to coordinate the resources that they require.

The objectives of TPS include:

- Support in planning and obtaining resources needed to transition service design plans and the strategies set forth by the service strategy lifecycle phase
- Ensure that the service operations phase has all the knowledge and support needed to manage services on status quo
- Coordinate between various suppliers, internal teams, and projects within the organization
- Transition services per the service design plans within the constraints of time, cost, scope, and quality
- Implement processes, technology, and management information system as envisioned by service strategy and as designed by service design
- Ensure that standard processes and policies are the norms for suppliers and internal teams to achieve the service provider's and customer's objectives
- Manage risks that arise during the service transition lifecycle phase
- Monitor the performance of transition activities and take improvement actions

6.4.5.2 Scope of Transition Planning and Support

All transitional activities come under the scope of transition planning and support process. To be specific:

- Manage service transition policies, processes, guidelines, and standards
- Ensure all the service transition activities adhere to the policies and processes set forth
- Manage conflicts as and when they arise
- Create budgets for the transitions in pipeline
- Ensure service transitions coordinate with project and program management activities to ensure service design and development is controlled

An organization may not work on a single service at any given point in time, so there is a need to manage multiple transitions with limited resources and time, which comes under the scope of TPS.

6.5 Practice Exercises

1. Which of these statements is correct?

   i) Change management is responsible for obtaining approvals for changes.

   ii) Release and Deployment Management is responsible for deploying releases.

   a. i and ii

   b. i

   c. ii

   d. Neither i nor ii

2. Which of these best describes service transition?

   a. Ensure services are improved on a regular basis

   b. Ensure that the designed services are deployed effectively into operations

   c. Ensure that the status quo is maintained during this phase

   d. Ensure that the services are designed based on the strategic direction

3. Which of these are changes?

   a. Modifications performed to a server

   b. Alterations to business activity

   c. Modified business outcome

   d. Movement of vehicle parking areas

4. Which of these is a release and deployment management approach?

   a. Strategic shift approach

   b. Diminutive layered approach

   c. Drill-down approach

   d. Big-bang approach

5. A configuration item is a:

   a. Resource or capability that delivers service

   b. Knowledge management database that covers configuration of items

   c. Repository to store media and related assets

   d. Service asset that needs to be managed in order to deliver an IT service

6. Which of these statements best describes the purpose of knowledge management?

   i) Provide consistent and standardized means of delivering decisions.

   ii) Share perspectives, ideas, experience, and information.

      a. i and ii

      b. i

      c. ii

      d. Neither i nor ii

7. Which of these is NOT a phase of the release and deployment management process?

   a. Review and close

   b. Release and deployment planning

   c. Build and test

   d. Implement and verify

8. Which of these doesn't belong in a CMS?

   a. KMDB

   b. CMDB

   c. KEDB

   d. Incident records

9. Which of these is NOT a type of change?

   a. Nonstandard change

   b. Standard change

   c. Emergency change

   d. Normal change

10. The transition planning and support process exists to:

    a. Provide overall planning for transitional activities

    b. Provide overall design management for transitional activities

    c. Coordinate with service operations to understand transitional requirements

    d. Provide guidance to transition managers on transitional capabilities

6.6 Summary

In this chapter, I discussed the service transition lifecycle phase and explained its objectives, scope, and the value it brings to the table. I also discussed the processes embedded within the service transition phase: change management process, release and deployment management process, service asset and configuration management process, knowledge management process, and transition planning and support.

In the next chapter, you will learn about the ITIL service operations lifecycle phase, which consists of five processes and four functions.

CHAPTER 7

Service Operations

Our business is about technology, yes. But it's also about operations and customer relationships.

—Michael Dell

In the end, all business operations can be reduced to three words: people, product, and profits.

—Lee Iacocca

They say that you need to put your money where your mouth is. For a service provider, most of the action takes place in the service operations lifecycle phase. The customer always tends to remember service operations over all other phases as his interactions mostly happen in this area. The service provider also bills the maximum amount of the total contract in the operations phase. Yet, this is not the best place to put your money, although the mouth is wide open. You will find out the reasons soon enough!

Service operations deals with maintaining services that have been implemented in the service transition phase. In this phase, no functional or nonfunctional modifications are performed to the service. A status quo is maintained, ensuring that the service runs as it was designed to. The service operations phase runs the longest in terms of timeline, is the biggest in terms of staff strength, and, most importantly, the customer generally forms a perception of the service provider through the operational phase achievements.

If the strategy is innovative, the design is sound, and the transition is perfect, then you can expect service operations to be less noisy and probably peaceful. In reality though, this never happens. Strategies are bound to change over time, designs have flaws, either manmade or limitations owing from technology, and transitions are rarely event free. Technological innovations and advancements bring in changes to IT services through the service design phase. These changes are implemented by the service transition phase, and the service operations phase must maintain them. For maintaining them, the resources utilized in this phase must be trained on the new technology. Plus, during the transition, and in the initial period, it is likely that the maintenance will become tricky due to new technology, and glitches are quite common in introductions. SLAs are not always met, customer satisfaction runs high and low, and human errors ensure that service operations managers have challenging times while they lead the operational activities.

A. K. Kaiser, *Become ITIL Foundation Certified in 7 Days*, DOI 10.1007/978-1-4842-2164-8_7

I have worked in service operations for a good portion of my career, and it is not something that I would like to focus my memory cells on. The usual run-of-the-mill day included taking calls on the fly, sleeping when the customer is sleeping, and juggling vacation plans in sync with peers. Now the good part. Service operations hires the most people in the IT service management industry. ITIL professionals have job security in the next decade or so, thanks to service operations, and I don't see this changing. And most importantly, service operations brings about challenges that were previously unheard of. Service operations can often cause service architects much frustration in trying to find the root cause of new issues and problems. This phase has its ups and downs. It depends on how you accept it, and which part of your career you decide to jump into. The earlier the better.

7.1 Objectives of Service Operations

The service strategy phase has decided which IT services to offer, and there is a strategic direction in the decision. Based on the strategy, the service design phase prepares the blueprints and various designs for these services. The service transition phase uses these designs and builds the service. After developing it, these services are tested, piloted, and implemented in the production environment. After successful deployment, the service transition's scope ceases and service operations takes over. The objective of the service operations phase is to maintain the services and to ensure that the services operate as they were designed to.

It is important to get a sound design for the services and then to implement them fully, complying to the designs. It is equally important that the service operations process be designed using rugged process principles and optimized to ensure that the service operations are optimally staffed (to keep costs in check) and are scalable. Note that service operations provides value to the customer, but not to the service. Service operations provides inputs and pointers for improving services and the problem management process (discussed later in this chapter), especially in looking at services holistically and minimizing incidents.

The list of objectives of service operations is rather short, although this is the longest running phase. They are:

- Deliver service operations effectively and efficiently as per the agreed terms
- Build and maintain business satisfaction in IT through delivery of services
- Minimize the impact to the business caused by an outage of services
- Optimize service costs and improve the quality of service
- Provide access to users (to servers, switches, applications, physical locations) who have received valid authorization

7.2 Scope of Service Operations

The scope of the service operations encompasses all things operational:

- All IT services that are delivered to customers come under the scope of service operations to maintain status quo (e.g., Internet service and telephony).
- The service operations phase has five processes and four functions under it. Apart from this most of the processes from other phases are triggered or have touch points with the service operations phase (e.g., capacity and change management).
- Technology drives IT services. It is imperative that the service operations phase involved in managing services will by default leverage the technology that is used (e.g., SaaS and cloud computing).
- No matter how far we have progressed technologically, we need people to manage, maintain, and fine tune the infrastructure and applications. Without people there is no service to the customer. The service operations phase hires and utilizes the maximum number of human resources across all other phases (e.g., people managing incidents and people managing data centers).

7.3 Value of Service Operations

For a customer, the most value is derived from the service operations phase, as it encompasses the maximum number of touch points between the customer and the service provider. All the customer's deliveries are realized in the service operations phase. Therefore, it is imperative that service operations be given the utmost importance during its design, implementation, and execution.

Value for the customer can be quantified as:

- Reduce service downtime
- Reduce the frequency of interruptions
- Reduce labor wastage, which is a result of service outages
- Reduce unplanned costs by optimizing plans during outages and identifying root causes
- Provide service operational data to other processes for their consumption to identify improvement opportunities
- Provide service operational data for continual service improvement and recommending service improvements
- Provide inputs to other processes for automating operational activities

- Enact customer's security policy by complying with all the policy controls
- Provide accesses to those (customers and IT) approved and deprive access to others

7.4 Communication in Service Operations

Communication plays an important role in the IT service management area, more so in the service operations phase. There are a number of interactions between the service provider, customer, and other parties in the service operations phase. Figure 7-1 illustrates the number of communication channels in a typical small setup and shows five key stakeholders who are involved in day-to-day communicational activities: customer, user, supplier, IT management, and IT staff. The number of communication channels is 5C2 = 10.

$$(5\ C\ 2) = 5!/(2!*3!)$$
$$= (5*4*3*2*1)/(2*1*3*2*1)$$
$$= (5*4*3)/(3*2*1)$$
$$= 60/6 = 10$$

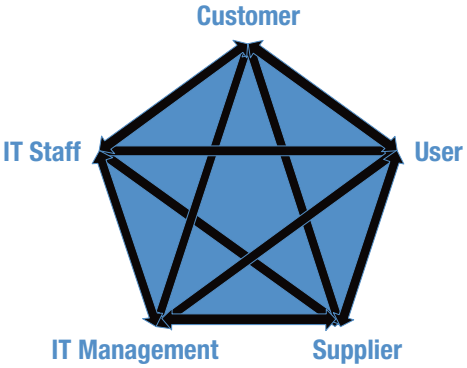


Figure 7-1. *Communication channels*

This is a conservative figure. The number of communication channels increases as the number of teams involved and the users involved increases. The bottom line is that communication in service operations matters as it plays a major role in relaying information between stakeholders. So the service provider organization should take notice of the communication plans set forth and ensure there is standardization of communicational etiquettes, quality, and a common code for communication to ensure effective and efficient operations.

I have given the utmost priority to communication in all the projects that I have run and the services that I have delivered. All customer communications were planned much earlier, along with styles and templates to ensure that the customer experienced uniformity in all communication. Communication makes or breaks the service management-business relationship.

You can refer to my first book, *Communications for IT Professionals* (Packt Publishing, 2015), which delves into the nitty gritty of communication platforms, channels that form an integral part of your work life. That book can help you develop your communication skills, and you will reap the benefits such as increased customer satisfaction, effective work delivery, and career advancement.

The different types of communication you can expect in service operations are:

- Routine operational communication, such as providing updates and confirming actions
- Communication regarding changes and releases
- Shift handovers
- Performance and service-level agreement (SLA) reports
- Presentations for training, performance showcasing, and initiatives
- Project-related communication
- Classroom and web-based trainings
- Scheduled meetings with customer and internal teams

7.5 Service Operations Processes

Service operations is the most popular and important phase, and the processes that are a part of it are most sought after. The five processes of service operations are:

1. Event management
2. Incident management
3. Request fulfillment management
4. Problem management
5. Access management

Incident and problem management processes are considered the major processes, while event, request fulfillment, and access management processes are minor in importance of service delivery.

7.5.1 Event Management

Event management is a minor process in the service operations lifecycle phase. But it is a process that can change the landscape of operations for the better, and it is a process that is the closest to the services delivered. This process provides the ability of being pro-active to the service provider, and this, in my opinion, is invaluable. What is an event? The ITIL Service Operations publication gives this definition:

> *An event is any change of state that has significance for the management of a configuration item (CI) or IT service.*

You have services, and these services are made up of various components. You could have multiple types of events taking place for any of the services or components. Examples could be an administrator logging in to a core router. A service that stops working as it should is also an event. A hard drive that is almost full is considered an event. In short, anything that changes a service's state is an event.

> *The event management process deals with the various nuances of events, and how each event correlates to further action or inaction from interfacing processes is the essence of it.*

This process is primarily operated through the use of technology and managed by administrators who have experience in managing event management tools and toolsets. For example, there are monitoring tools that keep a pulse on services or components to ensure that they are working as they should. One such monitoring tool keeps pinging IT components like the router or servers at regular intervals. As per design, an acknowledgment ping should be received. If the monitoring tool does not receive an acknowledgment after three consecutive pings, it raises a warning alert (a notification that a threshold has been reached, something has changed, or a failure has occurred). Alerts are often created and managed by system management tools and are managed by the event management process, with appropriate teams in place to take urgent action. If, for example, there is no acknowledgment after a ping, the monitoring tool will raise an error alert that gets converted to an incident and the incident management process takes over.

7.5.1.1 Objectives of Event Management

Event management exists to keep track of all events occurring in the IT environment. The event may not necessarily be associated with failures or warnings, but can be informational in nature, such as an administrator logging in with a wrong password.

The process's purpose is to track and manage all events in the lifecycle of a service. When events are detected, most events just go into the record but some will initiate follow-up actions to be carried out by various teams. The logic is built in the design of the event management to capture events that make sense and then take appropriate optimized follow-up actions.

The event management process comes into play in the operations phase of the service lifecycle. This is the phase that calls for real-time monitoring and on-the-fly actions. Any lapses in the services, even for a few minutes, could cost the customer big time with irrecoverable losses. So it is critical that event management is tuned to perfection to ensure that the pulse of the service is clearly heard and follow-up actions are unambiguously drafted and designed.

Automation of monitoring activities is one of the biggest features of event management. While monitoring in real time is automated, even the actions to undertake during warnings and exceptions are generally automated to ensure standardization of operational activities, quick turnaround, and to increase productivity. Technology, therefore, is the biggest ally in designing and implementing the event management process.

The overall objectives of event management include:

- Detect all state changes of IT services and IT components (CIs) that are in scope
- Identify the complete flow of follow-up actions on the detected events, such as logging incidents and firing e-mails to stakeholders
- Act as an interface for other processes to trigger their operational activities
- Support the service-level management (SLM) process with figures and numbers required for computing the service-level agreement (SLA) achievement status
- Support the continual service improvement (CSI) phase with necessary data to suggest improvements to services and processes

7.5.1.2 Scope of Event Management

Event management comes into play when services, infrastructure, or applications are required to be monitored for change of status. The following come under the ambit of event management:

- When services are broken down, the constituent elements or the individual components that make up a service are configuration items. CIs are a classic case of event management in action. Not all CIs are brought under the process as controlling every single one of them is cumbersome and does not justify the cost associated with it. Generally, only the critical CIs are identified and brought in scope. An example would be a core switch for a datacenter or a server that hosts a banking web site.
- Service environment can come into the scope of the event management process as well. For example, a data center will have the air temperature and smoke detection automated to control the changes in the environment and to alert stakeholders if the situation goes awry.
- IT and physical security are in the priority list for all IT organizations. Any intrusions or virus attacks need to be dealt with quickly. This requires automation built into rugged layers of control.
- A typical IT organization owns thousands of licenses of various software that are needed to support and deliver services. Or it could just be the software licenses that customers use. To keep track of software licensing and compliance, the event management process can play a major role to avoid breaching contracts and to ensure that only the authorized versions are being used.

- You don't need event management when things go haywire. You need it when you have to find out the number of assets an organization owns or to get regular data on various parameters of a service.

7.5.1.3 Types of Events

All events are not the same. Events are broadly categorized under different types, as presented in the sections that follow.

7.5.1.3.1 Exception Events

These events signify errors. They are classified in the top-most tier and normally require immediate attention. Examples are:

- Server is unreachable
- Hard disk space has exceeded the threshold limits
- Administrator has tried to log in with an incorrect password
- PC scan reveals malware

7.5.1.3.2 Warning Events

These events exist to warn about an impending exception. They throw out a warning stating that things will soon take a wrong turn if not dealt with quickly. They are important, because they help an IT organization be pro-active and to prevent exceptions. Examples include:

- Memory usage is hovering close to the acceptable threshold
- Turnaround time for a certain transaction is not within the optimized limits
- Temperature in the datacenter is not at the ideal level

7.5.1.3.3 Informational Events

These events convey information, and I am not talking about information pertaining to errors or warnings, but rather general information. These events do not call for urgent action from IT staff and are generally recorded for compliance and audit purposes. Examples include:

- User has logged in to a server
- New folder created on a sharepoint drive
- Hardware technician has entered the datacenter

7.5.2 Incident Management

Incident management is the most popular ITIL process, from the perspective of the number of jobs the process creates. Quite naturally, most ITIL professionals are aware of the principles that the process lives by.

In addition, the process runs the longest, and with maximum touch points with various stakeholders in the service lifecycle. The incident management process is primarily responsible for the customer satisfaction and the agility with which service interruptions are handled.

I have worked a number of years in the incident management process area, some as an incident manager and mostly as the incident management process owner. The process is lively and you always end up learning something new every time a new situation comes up. You cannot get bored with the process, as every situation is different, and even in two similar situations, the potential responses could vary. It is also the process that has kept me up all night on certain days and has kept the senior management of the customer organization at the edge of their seats throughout.

If you need to be exact about the incident management process, you can state that it is a reactive process with no pro-active side to it. And I would agree. It reacts to situations, and its efficiency depends on how quickly and efficiently the service outage is managed. The customer does not get upset if there are service outages, but the customer would definitely employ some disgruntled tactics when the restoration goes beyond the expectations set. I will discuss service interruptions and the expectations surrounding them in the next section.

7.5.2.1 What Is an Incident?

You are quite well aware what a service is at this junction. If a service such as e-mail, Internet, or voicemail faces an outage, if the end users cannot use the IT services, this situation is referred to as an incident. The ITIL service operations publication defines an incident in this way:

> *An incident is an unplanned interruption to an IT service or reduction in the quality of an IT service or a failure of a CI that has not yet impacted an IT service (for example, failure of one disk from a mirror set).*

The IT service that the customer uses or enjoys comes with certain specifications and parameters. A classic example could be that Internet service will be available at 100MBps speed with certain ping rates.

- Let's say that the Internet stops working. Then an incident is required to be raised.
- Let's say the speed of the Internet drops to 55MBps, then there is degradation in the quality of service, so an incident is required to be raised.
- Let's say that the Internet is being offered through a specific router that has an automatic failover mechanism in place, and if one of the routers fail but does not cause an interruption to the service, an incident is still required to be raised.

The examples above help you disseminate the definition of an incident as specified in the ITIL publication.

An incident is raised when:

- There is an interruption to the IT service
- The quality of the IT service is degraded
- A component that supports delivering a service fails, even though there is no impact to the IT service

If you can get a handle on the triggers for an incident, consider yourself on a good footing for getting a solid grip on the incident management process and the job opportunities that come calling.

7.5.2.2 Objectives of Incident Management

Incident management exists to fight fires in the service disruptors and to ensure that these disruptions are managed. Its purpose is to ensure that the services are restored as quickly as possible and to ensure that the service outage causes minimal damage to the business. Plus, the incident management process is tasked with ensuring that relevant service levels are upheld and the quality of service is maintained.

Let's say a printer is not working, then the printing service for the affected user is disrupted. In this example, the main objective of the incident management process is to ensure that the service becomes operational as soon as possible, whether it entails repairing the printer, replacing the printer, or routing the print queue to another printer in the vicinity, which is decided by the process during the course of resolution. The point to note is that the restoration of the service has to happen as quickly as it can be practically done.

The other objectives of the incident management process are:

- Follow a common process and procedure to ensure that restoration is efficient and response is prompt
- Ensure there is full transparency and visibility of incidents to the business and the internal IT staff
- Restore services professionally to enhance the business's perception of the service provider
- Design incident priorities and related activities in alignment with the business
- Maintain good customer satisfaction (CSAT) for the restoration and related activities

7.5.2.3 Scope of Incident Management

All services that are offered to customers come under the scope of the incident management process, including the enhancing and enabling services.

The scope of the incident management process can be better explained through the following:

- Disruptions to services reported by users by calling the service desk or using a web form to report it or other acceptable means such as chat, e-mail, and so forth
- Disruptions to services reported by IT staff
- Failure of CIs reported by IT staff that haven't disrupted the service (due to redundancy)
- Failure of CIs reported by event management tools
- Threshold breach of CIs reported by event management tools
- Anomalies detected by IT staff or potential incident cases (such as the hard drive filling up on a storage server)

7.5.2.4 Incident Prioritization

Consider a real-life scenario of a company that employs 100,000 employees and there is a support team which of about 100 technicians. At any given time, around 1% of the employees raise incidents for issues faced by them—1,000 tickets. So you have 100 IT staff to handle 1,000 incidents. They cannot handle them all at the same time. They need to pick and choose which ones to work on first and follow up with the rest. How do they pick and choose? The answer is in prioritization of incidents.

Not all incidents carry the same weight in terms of their impact and urgency. Some are more urgent, some cause more impact than others, some may not be urgent, and some are neither grossly affecting nor urgent.

To state some examples:

- Finance application at the end of the month will cause a major impact and it needs to be fixed urgently
- Finance application in the middle of a month will cause major impact but it may not be urgent
- The PDF viewer not displaying in the right format for a single user is low impact and not urgent
- Network connectivity for an entire floor of business users causes a great impact and is urgent
- The e-mail application not working for a VIP user is low impact but is very high on the urgency list

Incident priority therefore can be determined based on impact and urgency:

Incident Priority* = *Impact* × *Urgency

Impact refers to the business impact, which is definitely a factor that drives the incident priority. Business impact normally refers to the following:

- Financial losses
- Productivity losses
- Loss of reputation
- Regulatory or legislative breaches

Urgency is a measure of how quickly or how swiftly the incident needs to be resolved. It may demand a majority of the staff be dedicated to a particular incident immediately or indicate resolution when IT resources become available.

To determine the priority of an incident, let's imagine a 3×3 matrix for deriving the incident priority based on impact and urgency, as shown in Figure 7-2.

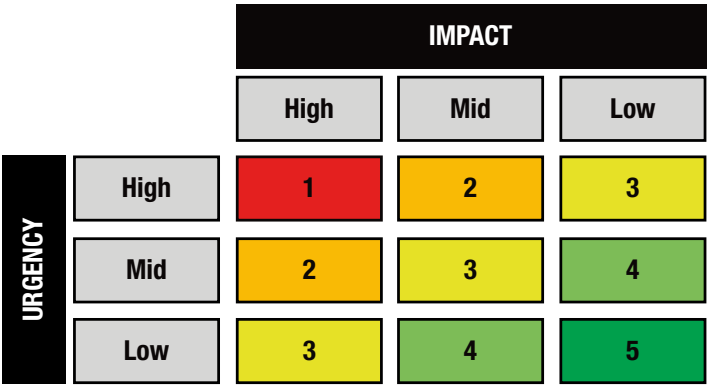


Figure 7-2. *Incident priority matrix*

As per the matrix, a high impact and a high urgency incident would be classified as priority 1. A medium impact and urgency incident is prioritized as 2, and so on. The matrix shown here is too simple to be used in the real world. There are far too many permutations and combinations to consider in rating the priority of an incident, but the principle is the same.

Response SLA is the target set for technicians to respond to incidents, say by acknowledging and accepting the incident in their respective queues. For example, an incident was logged at 10 A.M. and the defined response SLA is 30 minutes. In this case, the technician is expected to accept the incident before 10:30 A.M.

Resolution SLA is the target set for technicians to resolve incidents. For example, an incident was logged at 10 A.M. and the defined resolution SLA is one hour. In this case, the technician is expected to resolve the incident before 11 A.M.

Now that we have the priorities considered and determined, each of the priorities comes with its own set of response and resolution SLAs. These SLAs are drawn during the

service design phase under the service-level management process. A sample response and resolution SLA for various priorities is shown in Figure 7-3.

Response and Resolution SLAs for Incidents

Incident Priority	Response SLA	Resolution SLA
P1	15 minutes	2 hours
P2	45 minutes	6 hours
P3	2 hours	1 day
P4	1 day	3 days

Figure 7-3. *Response and resolution SLAs for incidents*

In the example, the highest priority, P1, has a response SLA of 15 minutes and resolution SLA of two hours. This requires the technical team to acknowledge the incident within 15 minutes (start working on the resolution) and the P1 incident is required to be resolved before two hours. Say, for example, a very sensitive banking application that allows foreign exchanges to transact is down. This outage will cost the bank a significant amount of financial loss and the bank will lose customer perception. Also, it could face the government's wrath as well owing to regulatory norms. To ensure that such a scenario is contained, a P1 priority with stringent timelines will allow the maximum resources to be allocated at the earliest possible time to resolve the incident.

Incident priorities and parameters for setting the priority are different for every customer. The service provider is expected to adhere to the requirements put forth by the customer and charge them accordingly based on the number of resources and assets utilized in fulfilling the service obligations.

7.5.2.5 Major Incidents

Major incidents, as the name suggests, are severely impacting incidents that have the potential to cause irreparable damage to the business. So the ITIL service management suggests that major incidents be dealt with through a different lens. This can be done by having a separate process, a more stringent one of course, with stricter timelines and multiple lines of communication. Many organizations institute a separate team to look into major incidents and hire those with specialized skill sets to be exposed to the pressure that this job inherits.

The people who work solely on major incidents are called major incident managers. They have all the privileged powers to mobilize teams and summon management representatives at any time of the day (or night). They run the show when there is a major incident and become completely accountable for the resolution of the incident. The pressure on them is immense, and it calls for nerves of steel to withstand the pressure from the customer, service provider senior management, and all other interested parties.

I once worked as a major incident manager and was heading a major incident management team not too long ago. The job entailed keeping the boat floating at all times, and any delays from my end could potentially jeopardize the lives of miners across the globe. During a major incident, there could have been two or three phones buzzing with action, e-mails flying daggers into my inbox, and chat boxes flashing and roaring. It is a good experience when you think about it in hindsight and a time I will cherish.

In a typical organization, you will have the service desk working on low-priority incident resolution. I will discuss the service desk later in this chapter. To track, manage, and chase incident-related activities, there are incident managers who keep tabs on all occurrences. When a major incident hits the queue, none of these groups take responsibility, but they call in the experts (major incident managers) to manage the situation. In some cases, the service desk and incident managers might validate the incident priority before calling the major incident line.

It is a good practice to let the whole service provider team and the customer organization know that a major incident is in progress to make sure that everybody knows that certain services are down and to avoid users calling the service desk to report on the same incident. A few good practices in this regard include sending out e-mails at the start and end of major incidents, flashing messages on office portals and on ticket logging pages, and playing an interactive voice response (IVR) message when users call the service desk.

7.5.2.6 Incident Management Lifecycle

An example of a generic incident management lifecycle is shown in Figure 7-4. Remember that the objective of the incident management process is to resolve incidents as soon as possible, and this process helps to make it happen. You can come up with your own process to achieve the goal. The steps shown in the ITIL publication provide guidance on how to indicate the typical incident management process.

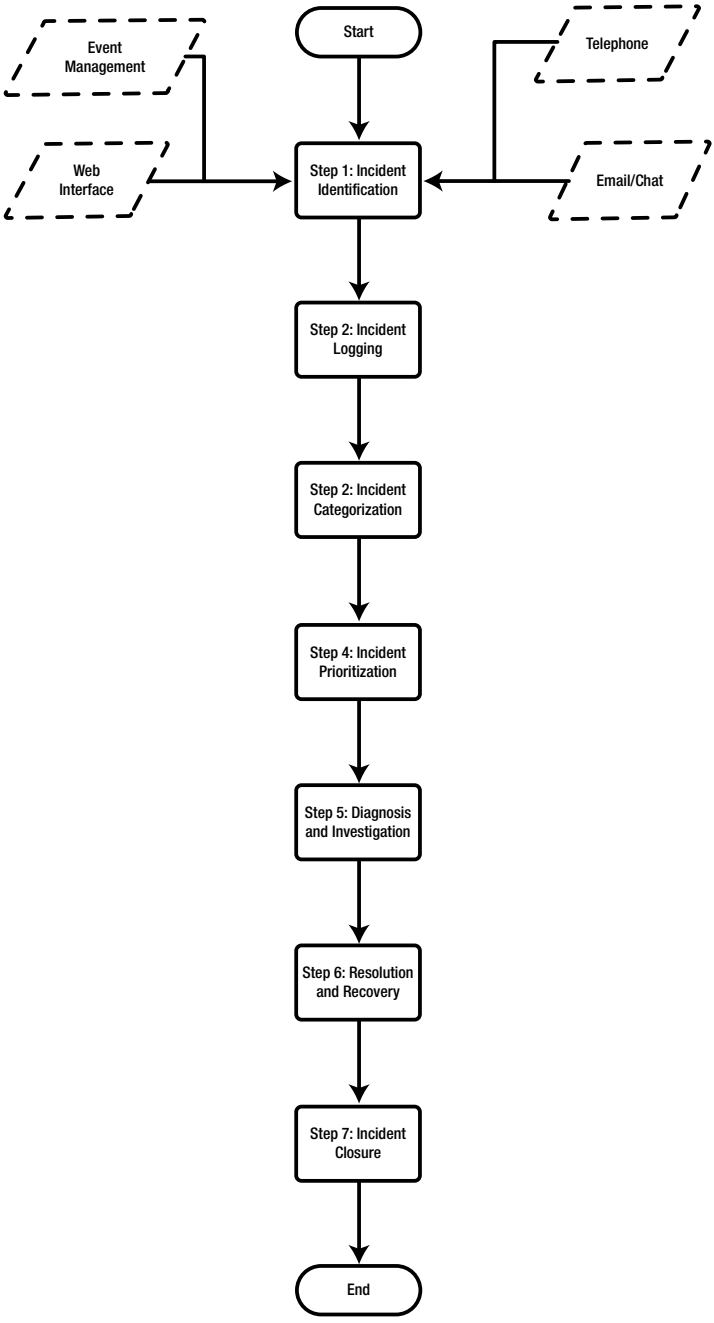


Figure 7-4. *Incident management lifecycle*

In the incident management process lifecycle, there are seven steps to achieve the objective. I will explain each of the steps in the sections that follow.

7.5.2.6.1 Step 1: Incident Identification

There needs to be a mechanism to identify incidents, they don't show up at the doorstep by themselves. Incident identification or triggering of incidents can happen in a number of ways. Remember that a process gets kick started when they are fueled by the identified triggers. It is important that all the triggers are identified during the process definition stage. The more the merrier, but controlling all the known triggers requires plenty of effort and could lead to misidentification of incidents if they are not curtailed. The most commonly used incident management triggers are:

- *Event management*: In the event management process, I discussed the output of the process triggering the incident management process. For example, a server that goes down raises an exception with an event management tool. The tool is configured to translate the exception into an incident ticket on the ITSM ticketing tool such as ServiceNow, CA IT Service Management, and BMC Remedy.
- *Telephone*: One of the oldest forms of raising complaints is to pick up the phone and complain about a broken down service. To raise an incident, users have the option of calling the service desk. The trigger in this case is the phone call by the users. It is also possible that IT staff could find a fault in one of the systems and call the service desk.
- *E-mail/chat*: Instead of calling in, users can opt for a passive form of communication through e-mail or real-time chat. They would still be interacting with the service desk and getting them to raise an incident on their behalf.
- *Web interface*: In today's world of cutbacks, the service desk is often replaced by self-help mechanisms. ITSM ticketing tools provide the front end for users to raise their own tickets without the aid of the service desk. In a way, it is good that precious resources can be used elsewhere. But it could also lead to a good amount of misidentified incidents that could add to the flab that you don't like to see.

7.5.2.6.2 Step 2: Incident Logging

All incidents that are identified should be logged, with a timestamp that is unalterable. Incidents are generally logged directly into the tool by the user if there is a web interface. And the event management tools can also create incidents based on the threshold levels and the designed algorithms. The service desk raises incidents on behalf of end users when they call, e-mail, or chat about their issues.

An incident ticket has a number of fields associated with it, primarily to support the resolution of the incident and to control the various parameters and pull reports as necessary. Some common fields that are found on incident tickets are:

- Incident number (unique)
- End user name
- End user team name
- Incident logger name
- Time of logging the incident
- Incident medium (phone/chat/web/e-mail)
- Impact
- Urgency
- Priority
- Category
- Related CI
- Incident summary
- Incident description
- Assigned resolver group
- Assigned engineer
- Status
- Resolution code
- Time of resolution/closure

7.5.2.6.3 Step 3: Incident Categorization

Not all incidents fall into the same bucket. Some incidents are server based, some network, and some application/software. It is very important to identify which bucket the incident falls under, as the incident categories determine which resolver group gets assigned to resolve it.

For example, if there is an incident logged for the loss of Internet, you need the network team in charge of handling network issues to work on it. If this incident gets categorized incorrectly, say applications, the incident will be assigned to a resolver group that specializes in software troubleshooting and code fixes. They will not be able to resolve the incident. They are required to recategorize and assign it to the right group. But the effect of wrong categorization is that the resolution takes longer and this defeats the purpose of the incident management process. So it is absolutely imperative that the team that is logging the incident is specialized in identifying the incident types and categorize them correctly.

In cases of autologged incidents, event management tools are designed to select a predetermined category that does not falter. User-raised incidents are automatically categorized based on the keywords mentioned in the incident summary and description. It is quite possible that the incident could be categorized incorrectly in this scenario, but in the interests of automation, this is the price we have to pay.

7.5.2.6.4 Step 4: Incident Prioritization

Earlier I discussed extensively incident prioritization. This is the step where the process of incident prioritization gets acted upon.

The service desk measures the urgency and impact and sets the incident priority. Event management tools have the ability to set the right priority based on an algorithm. User-created incidents are normally assigned a default priority, and the resolver group changes the priority once it begins resolving the incident.

Incident priorities are not set in stone. They can be changed throughout the lifecycle of an incident. It is possible that the end user has hyped the impact of the incident and could have gotten a higher priority incident raised. During the resolution process, the resolver group validates the impact and urgency and alters the priority as needed. Some critical incidents are monitored after resolution. The observation period could see the priority pushed down until closure.

7.5.2.6.5 Step 5: Diagnosis and Investigation

The service desk performs the initial diagnosis of an incident by understanding the symptoms of the incident. The service desk tries to understand exactly what is not working and then tries to take the user through some basic troubleshooting steps to resolve the incident. This is a key substep, as it provides the necessary data points for further investigation on the incident. It is analogous to a doctor asking you about the symptoms you have: Do you have throat pain? Do you have a cough? Do you have a cold? Do you have a headache? You get the drift. Likewise, the service desk is expected to ask a series of questions to provide the necessary information to resolve the incident quickly, which is the objective of the incident management process.

Not all incidents can be resolved by the service desk. They get functionally escalated to the next level of support, generally referred to as level 2, or L2. The L2 group is normally a part of an expert group, such as the server group, network group, storage group, or software group.

The resolver group diagnoses the incident with the available information, and if needed, calls the user to obtain more information. It is possible that the service desk's line of questioning could be on the wrong path, and perhaps the resolver group must start all over again by asking the right set of questions.

Investigation of the incident digs deeper into the incident by understanding one or more of the following thought processes:

- What is the user expecting to obtain through the incident?
- What has gone wrong?
- What are the sequence of steps that led to the incident?

- Who is impacted? Is it localized or global?
- Were there changes performed in the environment that might have upset the system?
- Are there any similar incidents logged previously? Are there any KEDB articles available to assist?

7.5.2.6.6 Step 6: Resolution and Recovery

Based on the investigation, resolutions can be applied. For example, if the resolver group determines that a particular incident is not localized, there is no reason for it to resolve the incidents on the user's PC, but rather it starts troubleshooting in the server or network. Or perhaps it brings in the experts who deal with global issues.

The success of resolution rides on the right path of investigation. If the doctor you are seeing prescribes the wrong medicines as the line of investigation was completely way off, the chances of recovery are close to nil, isn't it?

For incidents that are widespread in nature (affecting multiple users), once the resolution is applied, various tests have to be conducted by the resolver group to be absolutely sure that the incident has been resolved, and there is generally a recovery period to observe the incident and be on the lookout if anything were to go wrong again. In some of the accounts that I have handled in major incident management, it was a regular practice to keep major incidents open for at least a week, to observe, and to hold daily/hourly meetings with stakeholders to check the pulse and to keep tabs on things that could go wayward.

7.5.2.6.7 Step 7: Incident Closure

When an incident is resolved, it is normal practice to confirm with the user before closing the incident ticket. The confirmation is generally made by the service desk, not the resolver group. So the process for postresolution of an incident is that the incident gets assigned to the service desk for confirmation and closure of the incident.

Some organizations feel that this step adds too much overhead to the service desk and prefer to forgo this confirmation. They keep the incident in resolved status for maybe three days. An e-mail is shot out to the user informing him that the incident has been resolved, and if he feels otherwise, he is expected to inform back or to reopen the incident. If there is no response within three days, the incident would be autoclosed. I like doing this and have been a proponent of the autoclosure system as confirmation can be overbearing, and, from a user's standpoint, irritating to the customer to receive calls just to ask for confirmation.

After an incident has been closed, a user satisfaction survey goes out asking for feedback on the timeliness of the resolution, the ease of logging incidents, and whether the user was kept informed of the incident status throughout the lifecycle.

7.5.2.14 Incident Models

Not all the incidents logged are new. Most would have occurred in the past and resolved successfully through a series of steps. In the interests of resolving known incidents quickly, organizations can create standard incident models that help in quick resolution of incidents. These models contain all the steps that are to be taken to resolve the incident.

For example, if you have an incident that involves a particular supplier, to quicken the resolution, the incident would be predetermined with steps such as:

> Step 1: Log the incident ticket on the ITSM tool
>
> Step 2: Send an e-mail to the supplier with the details of the incident
>
> Step 3: When the incident is resolved, the supplier will respond back with an e-mail giving the details of the resolution
>
> Step 4: Update the resolution details and close the incident ticket
>
> Step 5: Call user and confirm resolution

For such models, the service desk could be used to run the predetermined steps and resolve incidents without intervention of the L2 or L3 support groups.

The ITIL publication has defined an incident model as a way of predefining the steps that should be taken to handle a process (in this case a process for dealing with a particular type of incident) in an agreed way.

The following set of steps are generally included in an incident model:

1. Steps to manage an incident
2. Parties responsible for carrying out the resolution steps
3. Chronological order of the steps
4. Activities that are to be performed before resolution using the incident model steps (such as turning on the safe mode and disconnecting from the Internet)
5. Timelines for completion of activities
6. Escalation matrices
7. Instruction to save certain artifacts (reports, screenshots, etc.)

7.5.2.15 Incident Statuses

During its lifecycle, an incident is bound to have several statuses just as we go through various stages of our lives (infant, kid, youth, adult, middle age and old age).

An incident typically goes through the following stages of its lifecycle, called the statuses:

Open ➤ Work in Progress ➤ Pending (If Needed) ➤ Resolved ➤ Closure

- *Open*: When an incident is logged, it goes into the open status. It generally remains in this state until the resolver group or the service desk takes ownership toward resolving the incident.
- *Work in progress*: When the resolver group starts diagnosing, investigating, and resolving the incident, the incident status gets changed to work in progress.
- *Pending*: This is not a mandatory status for an incident. However, some incidents may have to be placed in pending (or hold) status as the resolver group may be seeking additional information from the user or waiting for a change to be implemented to resolve the incident. In such cases, to indicate that the incident is not being worked on and to indicate dependencies, it is placed in pending status.
- *Resolved*: When the resolution is applied to an incident, the resolver group places the incident on resolved status. It is the prerogative of the resolver group to ascertain that the incident is resolved and to move the status appropriately.
- *Closure*: Moving the incident status to closure status generally requires the concurrence of the user who has raised it. As mentioned earlier, in some cases, incidents get automatically moved from resolution to closure after a certain number of days.

Setting the right incident status is important from the transparency and reporting standpoints. Incidents with the right statuses provide an accurate dashboard of how many incidents in the system are in the open, work in progress, pending, resolved, and closure stages. This helps in setting the right expectations and to take corrective actions if necessary.

Changing the incident statuses as and when activities are performed helps the management understand the resolution speeds and the kinks in the process. For example, if the majority of incidents are placed on pending status, awaiting the user to provide more information to aid in incident resolution, then perhaps there is a shortcoming in the way information is sought during the incident logging process.

7.5.3 Request Fulfillment Process

Incident management process exists to ensure that the service outages and degradation of services are dealt with on a timely basis and to bring the services back to normal. In the IT world, there is more than just the outages and degradations. This is where the request fulfillment management process comes in. It is a minor process that caters to various demands of the users and plays an important role in the delivery of IT services.

7.5.3.1 What Is a Service Request?

Service requests, as the name suggests, are requests from the users, on various aspects of the services. They are neither incidents nor change requests, but rather are characterized by nonimpacting, low cost, frequently occurring, and low risk. Examples of service requests include mailbox creation, software installation, printer replacement, new phone line installation, seeking information, and requesting a wireless mouse. In the examples provided above, they orient toward getting something new, having something modified, or removal of services. This is the essence of service requests. They are based on adding on (or modifying) various aspects of a service or enabling new services.

7.5.3.1.1 Service Requests vs. Incidents

Understanding the differentiating factors between incidents and service requests is crucial. Incidents are raised on the back of a service interruption, degraded service, or to prevent potential interruption/degradation. The services already exist in the user's ecosystem, and abnormality to it leads to an incident. Service requests are raised to obtain new services, to modify existing services, or to discontinue services. In short, there is a gulf between incidents and service requests.

Many organizations do not differentiate between service requests and incidents and treat both of them as incidents. This approach is not recommended. For starters, by putting incidents and service requests in the same bucket, the technician or the service desk is expected to resolve the service request during the same timeline as an incident. Remember that an incident is caused due to an outage or degradation of a service. And a service request is an add-on to existing services or a request for a new service. In principle, this should not be urgent. If incidents and service requests are bunched together, there is a fair possibility of service requests being resolved before incidents, thereby leading to prolonging loss of services to users, which defeats the purpose of incident management process and fails the service provider organization in its efforts to provide effective and efficient IT services.

It is highly recommended to keep incidents and service requests separate, and possibly handled by separate resolver teams. This will provide the right focus and ensure that incidents are prioritized over service requests. You should also know that service requests come with their own set of priority matrices, SLAs, OLAs, and KPIs. So the urgent service requests, such as creation of a mailbox, get fulfilled earlier than a service request raised for getting an additional LAN cable.

7.5.3.1.2 Service Requests vs. Standard Changes

Under the pretext of service requests, we are actually making tiny low-risk changes to the services. For example, adding a new mailbox requires a new entry to be made on the mailbox platform, and this can be seen as a change. From the change management perspective, it probably comes under the ambit of standard changes, as the changes we are foreseeing are low risk and low impact in nature. In effect, service requests are efficient replacements for the standard changes as the service requests are raised by users and fulfilled either by the service desk or resolver groups.

There is no specific line drawn in ITIL publications as to what constitutes a service request and what is a standard change. The practice in the IT industry is that any changes to services that involve users directly are under the service request umbrella, and the changes performed on the central infrastructure and software are handled within the scope of change management process as standard changes.

7.5.3.1.3 Service Requests and Service Catalog

In Chapter 5 I discussed the service catalog management process. This process gave insight into the world of services and the offerings from which customers could pick and choose. In a similar vein, there is a catalog of services that users can request from. All the service requests must be preconceived and put into this user-facing service catalog. This is a huge exercise for the service provider to undertake, and developing an accurate and complete service catalog takes a lot of effort, discipline, and good understanding of the customer and his business activities.

7.5.3.2 Objectives of Request Fulfillment Management

The prime objective of the request fulfillment management process is to ensure that service requests from the user community are fulfilled within the stipulated timelines. This is a minor process in the service operations lifecycle phase. The other objectives are:

- Make the user aware of the provisions of the service catalog and the process for requesting services
- Ensure that a list of service requests exists and is made available to users
- Efficiently and effectively handle all service requests to maintain customer satisfaction levels for the service request area
- Source (obtain from necessary suppliers or other entities) and deliver the service request components such as software licenses
- Provide support in taking complaints, compliments, and providing general information to the user community

7.5.3.3 Scope of Request Fulfillment Management

The scope of service requests is subjective in nature. You cannot put a finger on a boundary and name them as service requests. I made a point earlier stating that service requests are a subset of standard changes, so it is fair for organizations to place service requests under the change management umbrella. Not-so-mature organizations group service requests with the incidents, as discussed earlier. To summarize, the scope is to be deduced by the service provider organization on what will constitute service requests and how they will be handled.

Most mature organizations publish a service catalog, and users can only raise service requests that are listed in this catalog. Any additions or subtractions to this catalog will go through a separate channel and generally involve the change management process. All the items in the catalog are then broken down based on the activities that need to be performed to fulfill the service requests.

For example, a service request for ordering a new wireless mouse will proceed with the following activities:

Step 1: Approval from supervisor

Step 2: Approval from financial approver

Step 3: Store supervisor to check for availability in stores

Step 4: Source wireless mouse from stores if available, or else procure from designated vendor

Step 5: Deliver wireless mouse to user

Step 6: Obtain confirmation

Such work instructions are generally documented for every service request. They are stored in the service knowledge management system (SKMS). Some organizations make it more efficient by automating the approval process in the ITSM ticketing tool and integrating the service requests with the hardware/software asset database for sourcing options. This saves time and avoids delays pertaining to placing orders.

7.5.4 Problem Management

Problem management is the only other major process in the ITIL service operations phase. As the name suggests, it deals with problems. I will get to the crux of problems and other related terms in the next few sections. However, the way I represent the problem management process is as the investigation unit of the IT service provider organization. You might have seen the popular crime scene investigation television series, where crimes are solved by following the clues and lead to solving the crime committed. I had written an article in a popular training portal describing how problem management is the crime scene investigation of IT service management, and since then, many ITIL practitioners and students have used the terms interchangeably. I have received many comments commending my parallel observations.

In the IT world, there are problems. Say, for example, a bug in an application crashes it every time users try to access particular functions. The resolution of this problem is not simple. There is a workaround available, so this bug does not bring down the customer organization. But it needs to be fixed. So an investigation into the problem needs to be launched and software validation and compilation logs must be examined in detail. Tens of thousands of lines of codes must be analyzed, and the bug must be identified. After identifying the cause, a solution needs to be developed and implemented. All of these activities are done under the auspices of problem management. In short, problem management deals with identifying the smoking gun and finding a permanent fix.

7.5.4.1 What Is a Problem?

The ITIL service operations publication offers the following definition of a problem:

A problem is the underlying cause of one or more incidents.

In simple terms, there are incidents where the fix is yet to be found. The resolution of these incidents is not possible as the root cause of the incident is unknown. This is similar to a doctor prescribing medicines; if he does not know what the cause of certain symptoms are, he will not be on a strong footing to prescribe medicines. Likewise, to resolve incidents, the technical resolver groups must know the root cause of the problems. If they do not know the root cause, they start to shoot in the dark by asking users to restart machines, uninstall and reinstall software, and do other needless activities that most often amount to a waste of time and resources. But if the principles of problem management were to be applied and the root cause identified, the solution would follow as a matter of routine.

A problem gets raised when the root cause of an incident is unknown. Or a bunch of incidents with a common thread are unable to be resolved as the underlying root cause is yet to be identified.

7.5.4.1.1 Incidents vs. Problems

It is my experience that many IT professionals in the IT service management industry use the terms incident and problem interchangeably. This does more harm than good, especially if you are working in an organization that takes shape after ITIL, and especially if you are preparing for the ITIL Foundation exam. In this section, I will differentiate the two terms with examples, so as you move forward toward the process and other key terminology, there shouldn't be any doubt in the difference between incidents and problems.

Incidents are raised due to loss or degradation of services. They are raised by users, IT staff, or event management tools. When incident resolution is not possible, as the underlying root cause is unknown, the IT team will raise a problem.

In some instances, IT staff may resolve incidents without understanding the root cause. In such cases, a problem ticket is raised as well. For example, as a resolution step, the server is rebooted, and the incident gets resolved. However, the underlying cause of why the incident happened in the first place will remain a conundrum.

Remember that users and event management tools don't raise problems, but generally speaking, they can only come through the incident. Although, in a mature IT environment, you can configure event management tools to look for specific patterns of events and subsequently raise problems on the back of them. But, let's keep this discussion out of the scope and restrict problems to be derived only on the back of incidents.

Let's consider the example of a software application that crashes when it is initiated. The user raises an incident to fix this issue. The software resolution team tries to start the application in safe mode, uninstall and reinstall the application, and finally make changes to the operating system registry, but to no avail. When all hopes fail, they provide a heads-up to the problem management process to find the root cause and provide a permanent solution.

The problem management process, aided by experts in the software architecture group, debug the application, loading and running a series of tests to find the triggers that sparked the crash. They find out that the root cause of the crash was due to a conflict with a hardware device driver. They recommend a solution to uninstall the hardware device driver and update it with the latest driver. The recommendation works like a charm and the software application that used to crash now loads nicely without any fuss. This is the problem management process in action, working on iron-legged problems that can cause irreparable damage to the customer's organization if not dealt with on a timely basis.

7.5.4.2 Objectives of Problem Management

Problem management exists to reduce the number of incidents in the systems and to alleviate the client organization of losses that might occur through outages. Further, the process aims to reduce the impact caused by incidents that are generally an outcome of underlying errors in the IT ecosystem. The purpose of the process is to ensure that problems are managed across its lifecycle, starting from problem logging, followed by prioritization, categorization, investigation, resolution, and closure.

The objectives of the problem management process are:

1. Reduce recurring incidents
2. Prevent incidents that are caused through identified problems
3. In cases were incidents cannot be prevented, the process aims at reducing the impact of such incidents

7.5.4.3 Scope of Problem Management

The problem management process can be called into play in the service operations phase, generally with respect to incidents, as incidents are the first reported outage for services. Problem management can come in two flavors. It can react to incidents, and the incident facts and logs are used to investigate the underlying root cause. This is called *reactive problem management*. Or the process could be used pro-actively to preempt future incidents and identify and implement a solution. Recurring incidents are normally brought under the hammer to identify the common underlying root cause and solve it permanently and to avoid future incidents. This is called *pro-active problem management*.

The scope of problem management extends to:

- Resolution of problems caused by incidents
- Prevention of incident recurrences
- Reviewing major incidents to identify an underlying cause
- Analyzing event management logs to identify an underlying cause

7.5.4.4 Key Terminology Used in Problem Management

Problem management digs deep and the process brings a certain amount of complexity to the table. The complexity begins with a few terms that are used quite often during various stages of the process activities. It is key that you understand all the terminology discussed here. This will help you to use the correct terms at work and most definitely will bag you a few more right answers on the ITIL Foundation exam.

7.5.4.4.1 Root Cause

The root cause is the fundamental reason for the occurrence of an incident or a problem. Let's say you are in a bank and the ATM does not disburse the money you requested. The underlying cause, or the root cause, for the denial of service in this instance is attributed to a network failure in the bank. Likewise, for every incident there will be a root cause.

Only when you identify the root cause will you be able to resolve the incident. In the ATM instance, unless you know of the network failure, you cannot bring the ATM service back up. As discussed earlier, in some instances incidents can be resolved without knowing the root cause. However, to understand the root cause and eliminate the underlying cause, problem management must be brought in.

7.5.4.4.2 Root Cause Analysis

Identifying the root cause of an incident is no menial task. At times, the root cause may reveal itself, but many times it will become challenging to identify the root causes of complex incidents. You are required to analyze the root cause by using techniques that commonly fall under the activity of root cause analysis (RCA).

Remember that the outcome of RCA may not always result in finding the root cause of an incident. In such cases, RCA must be performed using complex techniques and with experts pertaining to related fields of technology and management.

7.5.4.4.3 Known Error

When the outcome of the RCA procedure yields results, the root cause becomes known. But it may not always be possible to implement a permanent solution. Instead, temporary fixes called workarounds are identified. Such cases where the root causes are known workarounds are found are called known errors.

There could be various reasons why solutions cannot be implemented. Commonly, permanent solutions come with a high price tag. Most organizations are price conscious these days and may not approve excess expenditures. Other reasons could include a lack of experts or people resources to implement the permanent solution or could cite governance or legislation controls that could prevent them from being implemented.

7.5.4.4.4 Known Error Database

Known errors are documented and are stored in a repository called the known error database (KEDB). The KEDB consists of various known errors, their identified root causes, and the workarounds that can be applied. The known error records are not permanent members of a KEDB. Known errors will cease to exist in this repository when the permanent solution is implemented. The known error records where permanent solutions are implemented are generally archived.

7.5.4.4.5 Workaround

As mentioned earlier, workarounds are fixes to solve incidents temporarily. Each incident could have one or multiple workarounds, but none of them will alleviate the problem permanently, and it may be required to revisit the workaround applied on a regular basis.

Let's say a printer on your floor is not working and you cannot wait until the technician can get around to fixing it. A classic workaround in this case is to print from a printer on a different floor. The workaround will solve your problem temporarily by providing a way to print, but it may not be a permanent solution as you may find it inconvenient to run to the next floor each time you need to print something. Another workaround could be that you don't print the document, but instead send the soft copy to the intended recipient.

7.5.4.4.6 Permanent Solution

When the root cause of a problem is known, the follow-up activity in problem management process is to identify a permanent solution. This solution permanently resolves the problem and contributes toward reduction in incident count and avoids future outages.

As mentioned earlier, permanent solutions come at a cost, and organizations may not always be willing to shell out the required capital. In such cases, permanent solutions are known but not implemented.

7.5.4.5 Problem Management Lifecycle

A generic problem management lifecycle is shown in Figure 7-5. This lifecycle exists to meet the prime objectives of the problem management process, which I touched on earlier. The process shown here is generic, and it could be used to create the process that fits specific requirements and organizational structures.

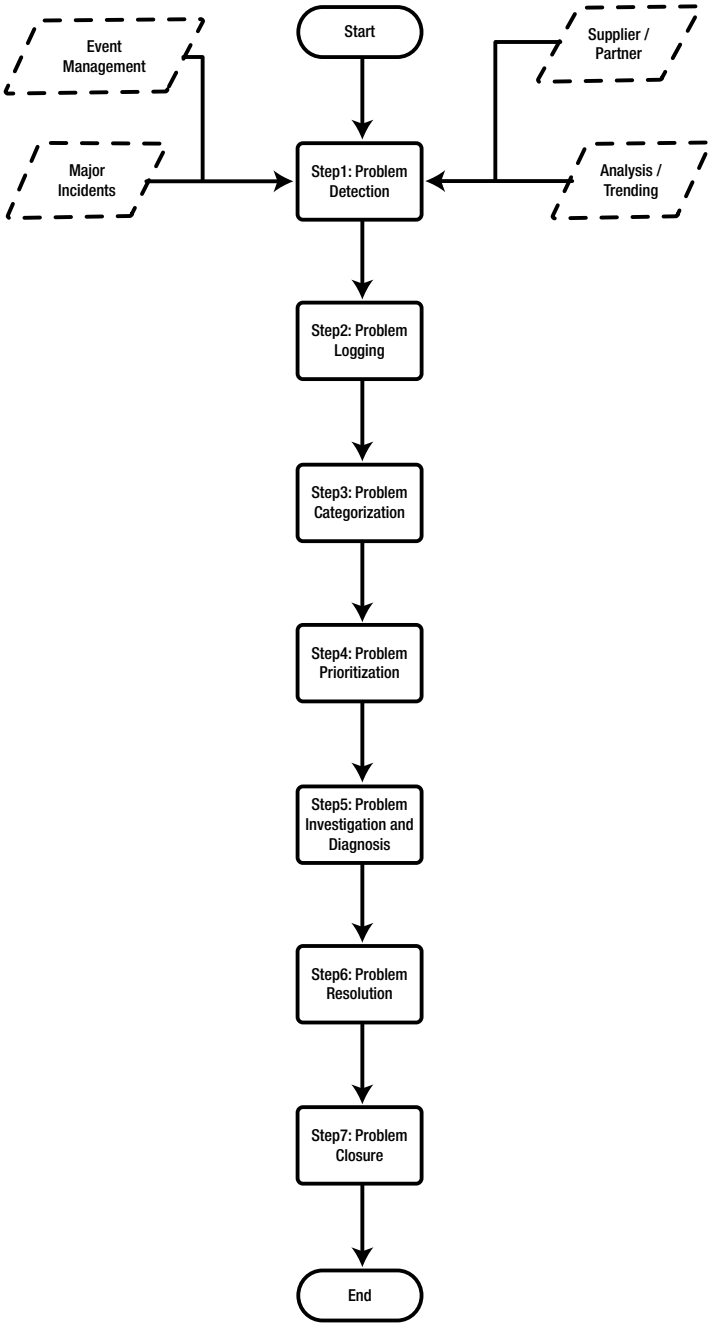


Figure 7-5. *Problem management lifecycle*

In the problem management process lifecycle, I have used seven steps to achieve the objectives. I will explain each of the steps in the following sections.

7.5.4.5.1 Step 1: Problem Detection

As with the incident management process, problems need to be detected for the process to be triggered. A problem can be identified from any source; it can come as an action item from the customer, a threat notification from regulatory departments, or loopholes identified by hackers. In the problem management lifecycle, I have considered the most common triggers for a problem. Remember that the triggers need to be identified beforehand to ensure that the process is well controlled and does not spiral into directions that were not factored in.

7.5.4.5.1.1 Event Management

These days, event management tools play a large role in keeping a finger on the pulse and to standardize monitoring and capture events that are of significance to IT service management. I discussed the application of event management tools in the incident management process. In a similar vein, these tools can be programmed to detect problems as well. For example, if a server being monitored goes down, an incident ticket is raised. Suppose the same server alternates between being offline and online at a preconceived number of times. The tools can then be programmed to raise a problem ticket for the problem manager to start investigation-related activities.

That being said, it is rare to see the event management tools used to raise problem tickets. I have seen such instances with a handful of implementations. To program problems on the automation solutions requires a certain amount of maturity for the service management organization to design, execute, and control.

7.5.4.5.1.2 Major Incidents

The most common source for triggering problems are major incidents. It is a common sighting in the process world to see major incidents tagged to problem investigations. Normally, toward the resolution of a major incident, a problem ticket gets created by the incident manager. While the major incident resolution brings logical closure to the major incident management process, it also gives rise to the problem management process to initiate investigations.

This is a good practice as major incidents can cause massive damage to clients, financial, productivity, brand image, among others. It is in the interests of all stakeholders that a problem investigation is performed for the major incident to identify the loopholes and come up with a preventive measure to ensure such outages do not happen in the future.

7.5.4.5.1.3 Partners/Suppliers

We live in a world where no single IT service provider organization can afford to provide all IT services. There is a need for having suppliers. I discussed this in Chapter 5. Suppliers handle specific areas in the delivery of IT services. Let's say that a particular

supplier provides networks, a supplier provides infrastructure, and a supplier manages applications. These suppliers would be the best sources for identifying problems in their respective areas, rather than a third party trying to identify a problem. Suppliers are one of the main triggers or sources of detecting problems. Suppliers are also referred to as partners to make them accountable for the overall delivery of IT services.

7.5.4.5.1.4 Analysis/Trending

I briefly touched on pro-active problem management earlier in this chapter. Pro-active problem management's objective is to forecast future problems and stop them from happening. In the movie *Minority Report*, the aim of the main crime fighting organization was to stop crimes before they actually took place. This concept of problem management is similar to the movie theme. How do you forecast what is going to happen in the future? We don't a crystal ball in IT nor do we have precogs as in the movie. But what we possess are historical data. These data can be dissected and when cross-sections are analyzed, we can see future problems. One of the techniques of doing pro-active problem management is to trend the incidents, or the common root causes of incidents. This will provide insight on what is generally going wrong. If we can concentrate our cognitive powers to these frequent occurrences and devise a way to fix them permanently, eureka, we can reduce recurring incidents. Along with this, we have reduced the incident count, potential outages, penalties, and brand image scarring, among others.

Another technique is use of the Pareto principle, where we identify the top 20% of the causes, which normally would be responsible for 80% of the incidents, and find a permanent solution for the identified incidents. If you could do this, you would reduce the incident count by 80%.

7.5.4.5.2 Step 2: Problem Logging

Problems that are detected need to be documented in a formal way to ensure that the problem goes through all the steps in its lifecycle.

Every problem ticket is likely to have all or a subset of these attributes:

- Problem number (unique)
- User details
- Problem summary
- Problem description
- Problem category
- Problem priority
- Incident reference number(s)
- Investigation details
- Resolution/recovery details

7.5.4.5.2.1 Event Management

Most event management tools today have the capability to autolog problems on the ITSM tool. If this capability is not available, the tool will raise alerts in the form of e-mails to the service desk function.

7.5.4.5.2.2 Major Incidents

Problems are logged by the incident manager or the service desk function, generally toward the end of incident resolution.

7.5.4.5.2.3 Partners/Suppliers

Suppliers or partners who identify problems either log problem tickets on their own or provide necessary input to the service desk function or the problem manager.

7.5.4.5.2.4 Analysis/Trending

Problem managers who perform the analysis activities raise the problem ticket based on their findings.

7.5.4.5.3 Step 3: Problem Categorization

All problems have to be categorized similar to incidents. Categorization will help in assigning the problem tickets to the right resolver groups and in reporting.

7.5.4.5.4 Step 4: Problem Prioritization

Some problems are more important than others. They need to be worked with more focus than others. How do you differentiate one problem from another? Through assigned priorities. This exercise is similar to that used for incidents.

Similar to the incident priority matrix, a problem priority matrix exists, and a timeline is associated with it to set targets for investigation and resolution. However, in the service industry, problem timelines are not strictly adhered to because incidents, as with investigations, tend to take longer than expected in cases of complex problems. Generally there will not be the resources assigned to problem management specifically, but rather this will be shared with incidents and changes. When an incident comes up during at the same time as a problem, the incident always takes priority, and resources will always fall short of the time needed to investigate problems and come up with a permanent solution.

7.5.4.5.5 Step 5: Problem Investigation and Diagnosis

Problem investigation and diagnosis starts with identifying the root cause of the problem. Getting to the root cause of the problem is the biggest challenge in this exercise. An RCA is the output of this step, and it involves various RCA techniques that are employed in getting to the root cause. Five why analysis, Ishikawa diagram, Pareto analysis, affinity

mapping, and hypothesis testing are the popular techniques used for RCA. A discussion about these techniques is outside the scope of the ITIL Foundation examination and hence this book.

To conduct a thorough investigation into a problem, suitable resources, referred to as problem analysts, must be assigned. They are technical experts who have the expertise to delve deeper into the cause of the problem. They will be aided by the KMDB and the CMS. The known error database (KEDB) will also be referenced to identify whether similar problems had occurred in the past and if so what resolution steps were undertaken.

In most cases, the problem analyst tries to re-create the problem to identify the root cause. After identifying the root cause, problem resolutions are developed, preferentially economical resolutions.

7.5.4.5.6 Step 6: Problem Resolution

In the previous step, the root cause of the problem is identified and a solution is developed to mitigate the problem. The solution can either be a permanent solution, which is preferable, or a workaround. You should also be aware that the solution implementation may come at a cost. The client might have to invest some capital into resolving problems, maybe adding extra infrastructure, procuring applications, developing connectors between applications, and leasing more bandwidth, among others. So financial approval from the sponsors will always precede the problem resolution activity. The financial approval will be based on the business case that the service provider develops and the return on investment that the resolution brings to the table. For example, if a particular resolution costs $1 million and can improve the client productivity by 10%, the client might be tempted to approve it. On the other hand, for the same $1 million, if the return on investment cannot be quantified, it may not get the nod. Implementation activities will be carried out through the change management process.

Resolution can also come in the form of a workaround. I discussed workarounds earlier in this chapter. Workarounds too will face the music from the change management process.

At the end of the resolution activity, KEDB will get updated. If a permanent solution is implemented, the KEDB record will be archived. If a workaround is implemented, the KEDB record will be updated with the necessary workaround details. In a workaround implementation, it is a good practice to keep the problem record open.

7.5.4.5.7 Step 7: Problem Closure

When a permanent solution is implemented, the problem record needs to be updated with the historical data (of the problem), resolution details, change details, and then closed with the appropriate status. If a workaround is implemented, keep the problem record open in an appropriate status to indicate that the problem is temporarily fixed using a workaround. The problem manager is generally responsible for closing all problem records.

7.5.4.6 Problem Management Interfaces

Problem management interfaces with a number of processes across the IT service lifecycle. The most commonly used interfaces are discussed in the sections that follow.

7.5.4.6.1 Incident Management

Incidents and problems share the closest interface as unresolved incidents due to an unknown root cause lead to problems. Moreover, recurring incidents also come under the scope of the problem management process. When problems are resolved, leading to an implementation of a permanent solution, the incident count comes down.

7.5.4.6.2 Change Management

Change management also plays an important part in interfacing with the problem management process during the solution implementation. All permanent solutions and workarounds that are identified in the problem management process go through the change management process before implementation. A request for change is raised by the problem management process to trigger the change management process for implementing solutions.

Change management keeps track of all changes that were implemented for solving problems and reports back to the problem management process, especially during anomalies.

When changes fail, an investigation is conducted to identify the reasons for the change failure. This investigation is performed by the problem management process.

7.5.4.6.3 Release and Deployment Management

The problem management process can be employed to identify problems arising from deployment activities. The release and deployment management process is a direct beneficiary of the problem management's investigation and permanent solution.

7.5.4.6.4 Service Asset and Configuration Management

The CMS is the foundation for all processes to carry out their activities accurately and effectively. Problem management also leverages the CMS to identify faulty CIs and use these relationships to arrive at the underlying root cause of incidents.

7.5.4.6.5 Seven-Step Improvement Process

The seven-step improvement process is a part of the continual service improvement (CSI) lifecycle phase, which will be discussed in Chapter 8. The process uses the existing incidents and problems to identify service improvements.

7.5.4.6.6 Availability Management

The availability management process aims at increasing the uptime and decreasing the downtime of IT services. The problem management process can help the availability management process achieve its target through pro-active problem management, proposing solutions that can prevent outages.

7.5.4.6.7 Capacity Management

Capacity-related problems require the capacity management process for support during the problem investigation. Maybe there is a problem pertaining to excessive storage allocations, which requires the capacity management process to provide input to solve the problem.

7.5.4.6.8 Service-Level Management

The service-level management reports on the performance of IT services, which is dependent on the incidents and problems in the system. The reduction of incidents brought forth and the improvements recommended by the problem management process are duly reported to the customer, and it drives the value proposition for the service provider.

7.5.5 Access Management

Access management is the final process in the service operations lifecycle phase. It is a minor process and it takes shape from the request fulfillment management process and the information security management process.

The purpose of the access management process is to provide access to various services and components of a service and to authorized or prevent access to unauthorized users. Examples could include access to applications, datacenters, IT offices, server administration, and accessing e-mails and Internet services.

The access management process is primarily based on the request fulfillment process, as the act of requesting and providing access falls under service requests and the activities follow the pattern set forth by the request fulfillment process. The essential principle of providing access to services and its components falls under information security management and is governed through various information security and access management policies.

7.5.5.1 Objectives of the Access Management Process

The objectives of the access management process are as follows:

- Provide access to authorized users and prevent access to unauthorized users
- Manage access provision under the boundaries set by the information security process

- Comply with the request fulfillment management process controls in providing, revoking, and changing accesses
- Ensure users' access is not exploited or improperly used

7.5.5.2 Scope of Access Management

Access management's scope covers the length and breadth of IT services provided to the customer and its related components. For examples, if the service offered to a customer is related to financial services, this includes all access to applications that fall under the financial services, access to administration of servers and switches that enable the service, access to security bays, among others.

Access management is usually a part of the request fulfillment process. It is highly unlikely that people would be deployed just to provide access. Access management activities will be grouped with other service request fulfillment activities, and the groups that fulfill service requests will be given the responsibility for providing access as well.

Providing access manually is becoming rare and could soon become a thing of the past. Access is grouped with the roles in the organization, and assignment of various roles by the human resources department will automatically provide access. This is possible through the identity management tools that integrate with various applications through plug-ins and are powered to provide and revoke access based on the assigned roles.

Access also comes in different flavors. Generally, you have the following accesses commonly assigned:

- Read only access
- Modify access
- Create access
- Super user access (includes deletion)
- Administrator access

The scope for providing, altering, and revoking access is derived from the information security policy and process. As I discussed under the information security management process, the process strictly adheres to confidentiality, integrity, and availability parameters. However, the access management process is only responsible for the confidentiality part of information security.

7.6 Functions

In Chapter 1 I briefly discussed the concept of functions and how they interface with processes. To reiterate, think of functions as a team or group of people who carry out process activities. In the IT industry, there are generally several teams: Unix team, Wintel team, SAP team, JAVA team, and Network team, to name a few. Each of these teams has a function, and their work is driven through processes. For example, the network team will work on incidents when a network incident is detected. And they also work on network changes, say if a switch is getting replaced.

There are four functions defined in ITIL service lifecycle based on the activities performed and the scope that falls under the respective teams. The four functions are:

1. Service desk
2. Technical management
3. Application management
4. IT operations management
    a. IT operations control
    b. Facilities management

Figure 7-6 depicts all the functions, including a few examples of teams embedded in the functions technical management and application management.

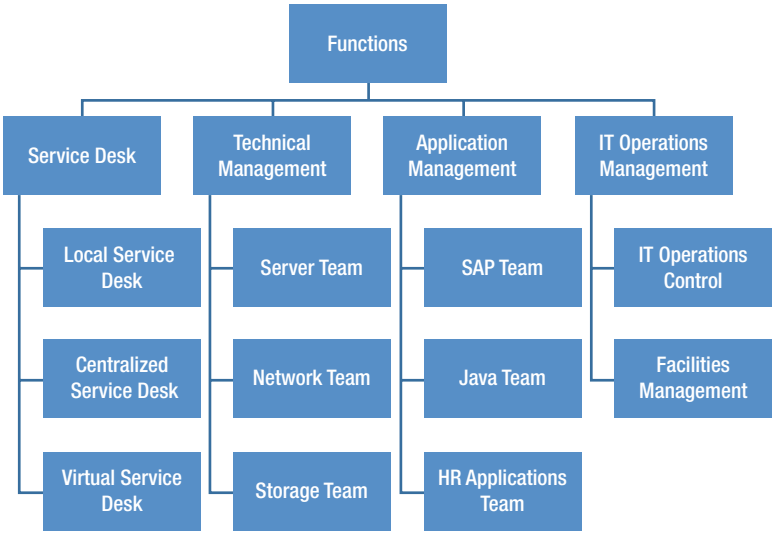


Figure 7-6. *Service operations functions (teams identified are illustration only)*

7.6.1 Service Desk

The most important function in service management engagements is the service desk. It is a team of people who carry out a number of activities under the pretense of various processes. When you dial the service or product help lines in your organization, your call is invariably answered by a service desk. When you send out e-mails requesting support, it is the service desk that processes it.

A service desk is designed to be the single point of contact for IT end users. Whenever they have to report incidents, they are required to reach out to the service desk for support, not to individual teams like the server and network team. If end users need to request services through the request fulfillment management process, they also need to reach out to a service desk.

Not only for end users, a service desk can also be scoped to be the first point of contact for suppliers, other process managers such as service-level management, and availability and capacity management. In short, a service desk is capable of carrying out a number of activities.

7.6.1.1 Benefits of a Service Desk

There was a time when a service desk did not exist in service management organizations. They didn't see the need for one at the time. Whenever users had to report incidents, they knew the technical people, and they would contact them directly. During those days (before the dawn of the information age), the numbers of IT end users were manageable. The direct rapport with technical teams helped them get the job done.

Today, there are thousands of IT end users working around the clock, in multiple locations, and using various IT devices to carry out their work. If the times when no service desk was available were to be imagined, think of all the calls that technical team would start to receive. How would the technical team ensure that the load was spread across the team? How would the technical team know whether the user was calling the right technician? How would they decide on the priority, which issues to work first and which ones to pick up later in the day or week? The answer is that it is impossible to think of IT service management functioning without a service desk. They channel triggers and route them to the right groups of people. They prioritize incidents and service requests to aid technical teams in acting on higher priorities first.

There was a time when IT service providers were required to provide a business case for installing service desks. Not anymore!

Here are the other benefits of having a service desk:

- Improves accessibility to IT staff for IT end users, customers, and suppliers
- Optimizes usage of IT resources
- Improves customer service and customer excitement
- Provides faster turnaround on service requests
- Optimizes the cost of providing IT support

Let me explain the last item here. The people who work at the service desk are not required to possess much experience, nor are they expected to be technically sound. It is a position that opens its doors for fresh college grads and those who wish to start their careers in IT. One of the main requirements for working at a service desk is good communication skills—telephonic and writing.

I mentioned that the cost of providing IT services is optimized. The service desk hires entry-level job seekers who are paid less than an experienced technical professional. So by hiring less-skilled resources, the operational costs are reduce, and this provides a win-win situation for the fresh graduates, IT service providers, and the customers (as the benefit of cost reduction is passed on to the customer).

7.6.1.2 Objectives of a Service Desk

The service desk exists to serve the purpose of being a single point of contact for IT end users. They primarily handle incidents and service requests but can also be equipped to take care of changes and communicate with users and other parties.

The other objectives of a service desk are:

- Log, categorize, and prioritize incidents and service requests
- Act as the first level of support for incident diagnosis and investigation
- Fulfill simple service requests that do not require technical expertise
- Resolve incidents and fulfill service requests during the first interaction with users
- Communicate with users on updates to incidents and service requests, such as confirmation of incident resolution and delay in stock arrivals
- Provide functional escalation of incidents and service requests for speedy turnaround
- Perform customer satisfaction surveys and related feedback activities
- Update CMDB (depends on the ITIL design and implementation)

7.6.1.3 Service Desk Structures

I am assuming that you have worked in more than one organization. Compare your current organization's structure with the previous organization's structure. There were definitely distinct differences between the two structures, right? Why do organizations choose to build their own structure and not follow a set structure based on certain standardized principles? The answer is strategy.

Strategy drives how organizations are to be structured. Some structures work better than others, while others might bring in synergy, generating more value with the same set of people. It is observed that traditional organizations typically opt for highly hierarchical structure, while start-ups and new age organizations go for flat organizations. There are advantages and disadvantages with both. As long as the advantages outweigh the disadvantages, organizations are convinced of their justification to opt for it.

As the service desk is manned by people, lots of them, it is imperative that the structuring needs some serious thinking. There can be a number of ways a service desk can be structured. As long as the core objectives of the service desk are met, it can be structured as needed. In this book, I will discuss three common types of service desk structures. This is an important topic from the service management perspective and also from an examination standpoint.

The three structures of a service desk are:

1. Local service desk
2. Centralized service desk
3. Virtual service desk

7.6.1.3.1 Local Service Desk

As the structure nomenclature indicates, a local service desk has a limited boundary and serves a subset of the overall function. It is a service desk that is particular for a specific office/location/region. This type is shown in Figure 7-7.

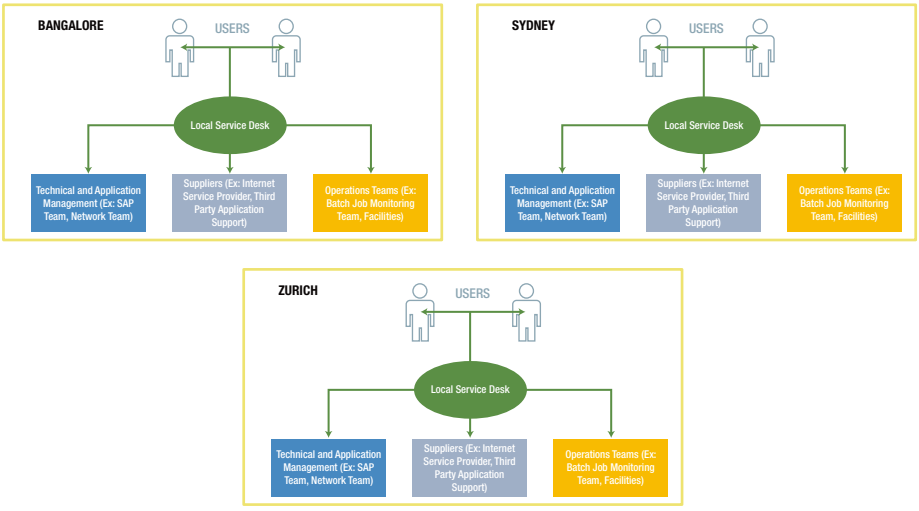


Figure 7-7. *Local service desk*

In Figure 7-7, I have considered three distinct locations that an organization is set up in, which is quite common these days: Bangalore, Sydney, and Zurich. Each of these locations houses a service desk. The service desk in Bangalore caters to the Bangalore location only, and the Sydney and Zurich location service desks cater to their respective locations as well. Within the location, the end users, technical teams, suppliers, and operations teams reach out to their respective service desk.

The advantages of a local service desk are:

- The service desk, end users, and the teams involved generally speak the same language, which leads to better understanding of the problem and the feedback provided by both the parties
- Sharing a similar culture helps develop rapport and reduce differences

- VIP users can be better served through customized service
- Increased customer satisfaction

The disadvantages of a local service desk are:

- Expensive option as the infrastructure, applications, and other aspects of a service desk have to be duplicated in every location
- Call volumes in a local service desk normally do not justify its existence
- Processes and tools within the organization may not be standardized and could lead to differential treatment

7.6.1.3.2 Centralized Service Desk

Organizations normally opt for a centralized service desk. There are distinct advantages, which has led to this being the most popular structure. An organization will mobilize and station a single service desk at a strategic location. This is shown in Figure 7-8.

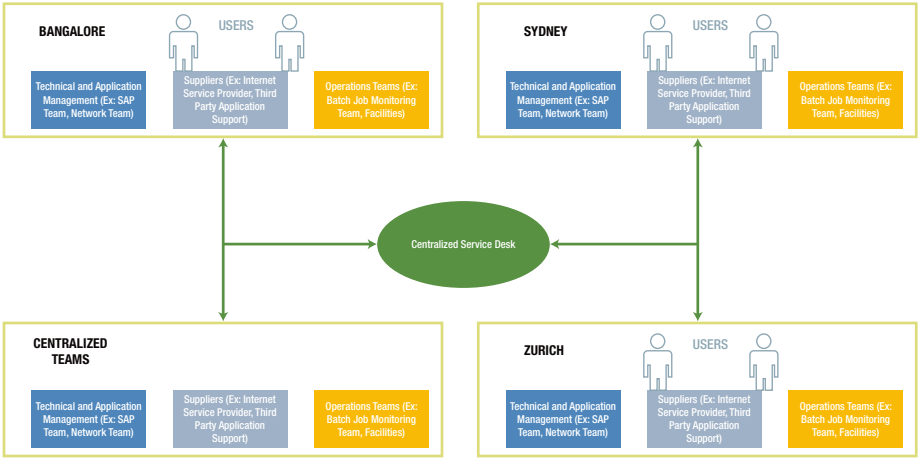


Figure 7-8. *Centralized service desk*

A centralized service desk is formed with a single service desk, instead of having a service desk at every location. In this example, the locations Bangalore, Sydney, and Zurich have no individual service desk, and a centralized service desk is formed, which caters to all the locations. The centralized service desk could be formed in any one of the existing locations or in a new location altogether. It does not matter where the centralized service desk is set up, but what matters is that the organization has only one service desk as a single point of contact for all end users and other stakeholders.

It is possible that the technical teams and suppliers are still localized. Yet, when they have to reach out to the service desk, they need to call the centralized service desk. In most organization setups, there are centralized technical teams that handle respective technologies from a central location as well. These central teams, if they need to, reach out to a centralized service desk.

A local presence may be installed if the organization sees the need to have hands-on support. This is totally optional.

The advantages of a centralized service desk are:

- Since there is a single setup, the cost of operations will be economical when compared to the local service desk setup
- Cost savings extend to optimizations made with the service desk resources, infrastructure, administration, and other indirect expenses
- Service desk can be operated with fewer resources
- Standardization can be achieved easily, as a single team following the same set of protocols is easier to achieve than multiple teams following a single set of processes, procedures, standards, and scripts
- Management has a better overview on the performance and effectiveness of a service desk in the centralized setup

The disadvantages of centralized service desk are:

- The local flavor, language and culture, will be lost on the users
- Some users may prefer proximity and personal touch for their support needs, and a centralized service desk may not provide this option for all the organizational locations

7.6.1.3.3 Virtual Service Desk

A centralized service desk is a good idea. But how easy or difficult is it to find the people, a location, willingness to work through the night, friendly regulatory controls to support 24/7 operations, and other bells and whistles that make it a reality? Through technology, we can achieve a centralized service desk without the co-location factor for service desk employees. We could have a centralized service desk even when service desk agents sit in different parts of the globe and operate as one unit. Let's look at how this is achieved.

Figure 7-9 represents a virtual service desk, and it is almost similar to the centralized service desk. It looks the same, as the underlying principle between the two setups is the same. But in a virtual service desk, we achieve centralization through technology. And the virtual service desk enforces usage of a common service knowledge management system (SKMS) to ensure standardization and easy exchange of information.

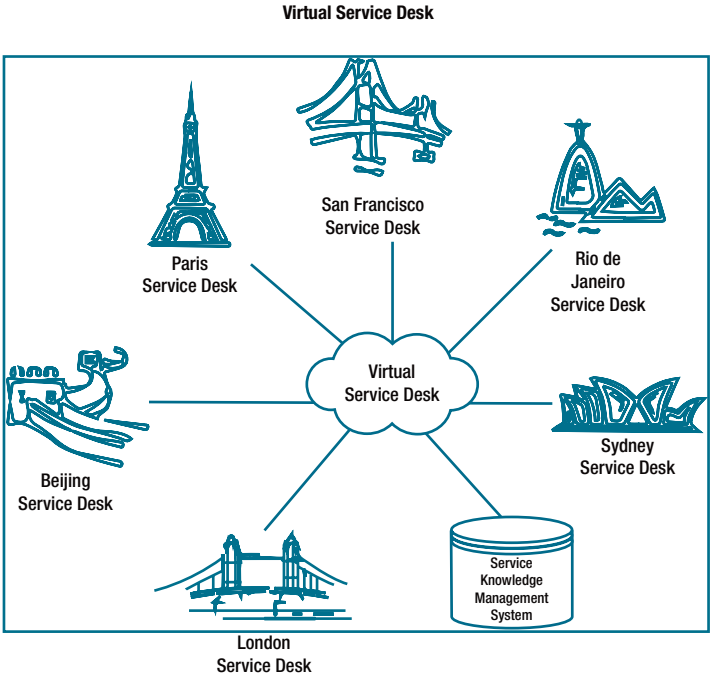


Figure 7-9. *Virtual service desk*

Today, we have the technology to bring service desk agents onto the service desk platform from the comfort of their homes. A number of housewives are working at call centers from their homes. The phones calls are routed to their personal lines or come in through voice over Internet protocol on the agent's personal computer. The end user will notice no difference between a centralized service desk and a virtual service desk, as the technology seamlessly integrates disjointed bits into a single unit.

Likewise, organizations are off-shoring, near-shoring, and outsourcing a number of service desks to countries where talent is available in plenty and where the operational costs are marginal when compared to the customer's market location.

In this book, I'll discuss two ways of creating a virtual service desk: the follow-the-sun model and the specialized service desk.

The follow-the-sun model works the best in a global organization that houses users across the globe and has a need to support the users 24/7 and 365 days a year.

Instead of having a centralized service desk in one single location, it can be spread across multiple locations across the globe. The concept of this model is that the service desk in a particular location is operational during their daytime. During the nights, the next service desk where it is still daytime takes over until nightfall.

Let's consider the example of an organization with service desk setups in Bangalore, Tokyo, and Detroit. Tokyo sees the first daylight, and the service desk becomes operational, say at around 9 A.M. local time. Calls from users from across the globe get routed to the Tokyo service desk. The service desk in Bangalore will become operational

at 9 A.M. local time. The Tokyo service desk closes down when the sun sets (6 P.M.). Calls from users will start landing in the Bangalore service desk. As daytime begins in Detroit (6 A.M.), the service desk in that city takes effect, and becomes operational. The service desk in Bangalore closes down, and the Detroit service desk takes over. As the day in Detroit comes to a close, the Tokyo service desk would start up the following day, and the cycle continues.

This model is in vogue with some major organizations. When you call the customer care line, you will notice that the call sometimes gets picked up by those with foreign accents (multiple accents), and at times by those with local accents. This, you may have observed, happens during a particular period of time. Say, when you call at night, somebody in India will be your service desk agent. And when you call during the day, you might hear a service desk agent speaking American English. This is virtualization chugging its wheels in the background, and you, as the user, will have called the same number each time, and all the technicalities of call routing are done in the backend. Isn't it cool?

The next type of a virtual service desk is not based on time, zones, or daylight. It takes shape based on the expertise in a particular area. In this service desk, it is possible to house different types of experts in different locations. And, through the power of IVR and routing, it is possible to route the call to the respective expert sitting across the globe.

Let's consider an example of an organization with the specialized service desk setup. When a user calls in, the IVR prompts him to select the type of problem that he is facing: Laptop, Desktop, Network, Storage, or Application. When the user selects laptop, the call gets routed to a laptop support group sitting in London. They will talk to him and take care of the resolution. If the user selects Application, the call gets routed to Manila, and application experts who are seated in Manila are responsible for the resolution of the user's application issue. Likewise, it is possible that expert teams are spread across the globe, and depending on the issue on hand, the respective service desk takes over.

This type of a setup is common in IT services organizations, as they normally tend to hire specific skill sets in particular locations.

The advantages of a virtual service desk are:

- Organizations can become resilient with virtual service desks, where they can bank on one or the other service desks if one was to fail and eliminate the single point of failure
- It can be a less expensive option compared to the centralized service desk, as deploying home-working professionals can reduce the resourcing costs
- It can also be less expensive if the organization doesn't have to shell out infrastructure costs because the service desk agents are working out of their homes
- There are rules in some countries to pay an additional wage if professionals are made to work beyond a certain time, which can be eliminated with a virtual service desk

The disadvantages of a virtual service desk are:

- Aligning all service desks on common processes, procedures, terminologies, and language is an onerous task and requires plenty of training, course corrections, and constant management
- Coordination between virtual service desk teams and technical teams can be challenging
- End users may feel a difference in service quality, as when they reach different service desks
- Plenty of management efforts are needed, and there is a need for automation to transfer tickets from one service desk to another

7.6.2 Technical Management

The technical management function is a team or a set of teams that handle IT infrastructure. They are accountable for the overall IT infrastructure management in the organization. There are various technical management teams that are employed, such as server teams, network teams, database teams, storage teams, and datacenter teams.

7.6.2.1 Technical Management Roles

The role of technical management is twofold. First, they possess the complete technical expertise that is needed to strategize, design, transition, operate, and improve IT infrastructure. The decisions pertaining to infrastructure (like say switching from one technology to another) are consulted with the technical management function.

Second, the resources who work on IT infrastructure are a part of the technical management function. They are all housed in this function and are deployed to various projects depending on their expertise, location and experience.

The objective of technical management is to ensure that the organization can get the right infrastructure personnel, as and when the need arises. The function forecasts and plans resources based on existing projects, projects in the pipeline, and resilience.

In a typical organization, the hiring structure will be based on a pyramid. The base of the pyramid represents lower-skilled resources, forming the majority of the function. The next layer is the higher-level resources. They are fewer in strength. So, as the level of expertise increases, the strength of technical resources reduces.

For example, for normal administrative activities, you need resources with minimal experience, say L1 resources. For advanced administrative activities, you need people with decent operational experience, L2 resources. Resources who are involved in transition and designs need to have in-depth knowledge of the technology, L3 resources. Strategic decisions are made by resources who have technical, managerial, and innovative skill sets.

7.6.2.2 Objectives of Technical Management

The objectives of the technical management function are:

- Develop stable and highly resilient infrastructure designs
- Design cost-effective infrastructure
- Maintain IT infrastructure by using adequate resources
- Ensure the right technical resources are deployed for on-time resolution of incidents

7.6.3 Application Management

Application management and technical management are two sides of the same coin. While technical management function takes care of IT infrastructure (hardware), application management is accountable for software management and its related activities.

The application management function is a team or set of teams that have expertise in managing applications. All applications, including enterprise and business applications, come under the scope of application management. They have the overall accountability across the lifecycle of an application, requirement gathering, decision to buy or build, application development, testing (unit, system, and UAT), deployment, retirement, and improvements.

7.6.3.1 Application Management Roles

The roles of application management are as follows:

- They are accountable for the applications knowledge and the intellectual properties pertaining to software development and provide the expertise to manage applications throughout their lifecycle.
- They works hand in hand with the technical management function, and together they are responsible for the knowledge and maturity of designing, building, testing, deploying, and improving applications.
- Resources to manage applications across the lifecycle come from the application management team. This function is typically divided into applications support and build groups such as the SAP team, Java team, web software team, etc. These resources will be deployed for all activities pertaining to applications maintenance across the service lifecycle.

- The resources in the application management lifecycle have to be trained and kept current in terms of the coding and applications technologies in vogue and must be brought up to speed whenever technology enhancements happen.
- Application management provides the expertise and guidance to the service operations lifecycle phase to manage and keep the applications in status quo during the operational phase. The target is to achieve the SLAs that are agreed upon with the customer and to ensure that applications' improvements lead to improvement in service to the customer.

7.6.3.2 Objectives of Application Management

The objectives of application management are:

- Provide wisdom in the build versus buy decision for applications
- Develop stable applications designs that can stand the test of time, are resilient, and are cost effective
- Develop and maintain resources with required skill sets to improve and maintain the applications in scope
- Ensure that the applications outages and issues are resolved within the customer agreed upon timelines
- Ensure that the applications meet the business objectives

7.6.3.3 Applications Development vs. Application Management

It was once believed that applications development and application management lived in separate worlds. Much to our horror, the two are closer related than ever before, and they have started to work as the same team and collaborate more than ever envisaged.

Applications development deals with development of an application. It follows a project management methodology such as Waterfall or Agile, and the product is made available after a finite number of days. The stages of an application development lifecycle are illustrated in Figure 7-10.

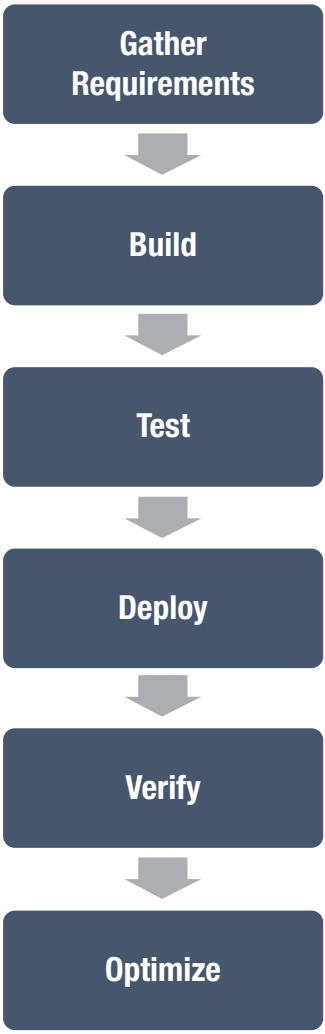


Figure 7-10. *Stages of applications development lifecycle*

Application management deals with the application with respect to the service offered to the customer. It deals with the strategy of build versus buy, the design and inclusion in the service, and how the application will meet the business outcome in transition, operation, continual improvement, and finally pull the plug (decommission) when necessary. Figure 7-11 illustrates the stages of application management.

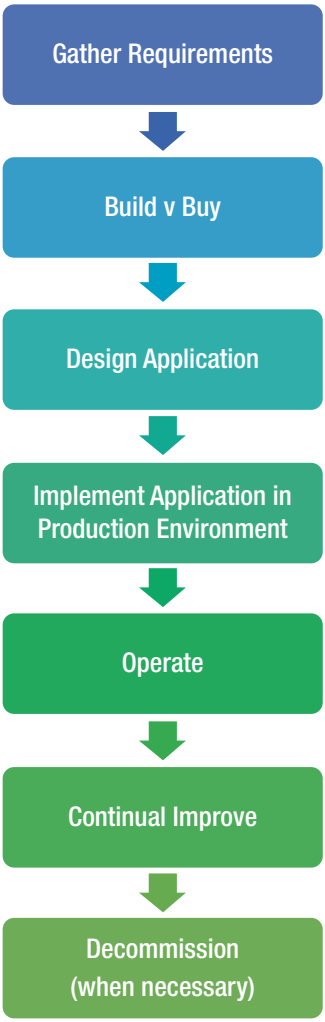


Figure 7-11. *Stages of application management lifecycle*

The differences between applications development and applications maintenance can be summarized as shown in Figure 7-12.

	Application management	Application development
Nature of activities	Perpetual.	One-time
Scope	All Applications providing business outcome (In-house and bought-in)	Generally in-house applications
Primary focus	Utility and warranty	Utility
Management mode	Service Management - Repetitive Activities	Projects (Waterfall, SCRUM etc)
Measurement	Measurement against SLAs	Project delivery and timelines
Cost	Indirect	Direct
Lifecycles	Typical Operation and Improvement	Software development

Figure 7-12. *Application management versus application development*

7.6.4 IT Operations Management

The objective of IT operations is to ensure that the services that are in production remain in status quo, and if there are any anomalies, they are detected early and resolved before they cause a bigger impact to the customer. The IT operations management is a function that is involved at the ground level, keeping their ears close to the ground and carrying out repeatable tasks that are necessary to keep the service floating above the surface.

This function is closely involved in monitoring the service, whether it is the hardware or the software. If anything were to go wrong, they would pick up the alert and act on it. If needed, they would functionally escalate to the technical and application management functions for support.

Note that the activities performed by the IT operations management are basic and are repetitive in nature. However, to be able to perform this task, the resources involved must undergo stringent training to ensure that mishaps are avoided from human error and subtrained resources.

However, today there is a conscious drive to automate repetitive activities, and most monitoring activities are taken care of by event management tools, which are capable of logging incidents and generating alerts as necessary. Yet, service provider and customer organizations rely on human resources to keep tabs on activities through command centers, which usually house large monitors with real-time activity and operations personnel sitting in front of them, feeding jobs, running scripts, and calling other command centers for action and counteraction.

As mentioned earlier, IT operations management is divided into two subfunctions:

a. IT operations control

b. Facilities management

7.6.4.1 IT Operations Control

IT operations control is a centralized monitoring and overseer of the operational activities in the service operations phase. Individual teams have their own setup to monitor and track operations, but what goes on inside IT operations control is service/tower/organizational-level monitoring and overseeing.

Its role includes the following:

- Monitoring of service and other towers from a central monitoring station, generally referred to as a command center, operations bridge, or console management, which monitors on a real-time basis and takes appropriate actions
- Monitoring of scheduled jobs and scheduling new jobs, undertaken by IT operations control
- Monitoring of incremental, differential, and full backups, and restoration of data from backups
- Centralized printing and electronic outputs, which includes collation and distribution within and outside the organization

7.6.4.2 Facilities Management

Management of services does not include hardware and software alone. It requires a place to house it all. This is where the facilities management comes in.

Its objectives include:

- Management of data centers, workplaces, AC cooling units, and other facilities, which includes regular maintenance activities
- Achieving cost reduction and stability by consolidating facilities, such as data center consolidation for management oversight cost reduction
- Providing physical security to sensitive areas and ensuring access to only the authorized personnel
- Management of facilities contracts if facilities management is outsourced to a supplier

7.6.4.3 Objectives of IT Operations Management

The objectives of IT operations management are:

- Ensure stability of an organization through maintenance activities governed by various processes, procedures, and work instructions
- Achieve cost reductions in maintenance of services through introduction of improvements
- Resolve issues arising in the monitoring space as quickly as possible to ensure that the services do not affect customer's activities to a great extent

7.7 Practice Exercises

1. Which of these statements is correct?

   i) Incident is disruption to a function.

   ii) A problem is the underlying cause of a request.

   a. i and ii

   b. i

   c. ii

   d. Neither i nor ii

2. Which of these best describes service operations?

   a. Ensure availability and capacity of services are in optimal positions

   b. Optimize services by using improvement cycles

   c. Ensuring changes performed cause minimal impact

   d. Maintaining status quo of services

3. Which of these is NOT a type of event?

   a. Error

   b. Exception

   c. Warning

   d. Information

4. What are known errors?

   a. Collection of errors that are known

   b. Incidents with root cause known and unknown permanent solution

   c. Incidents with root cause unknown and unknown permanent solution

   d. Incidents with undeterminable root cause

5. What is the best description of a service request?

   a. An incident

   b. A problem

   c. A standard change

   d. A piece of information

6. Which of the following is true regarding request fulfillment management?

   i) Approved by CAB

   ii) Can be preauthorized

   iii) Requested by users based on the preconceived list

   iv) Preceded by a problem

   a. i and ii

   b. i, ii, and iii

   c. ii and iii

   d. None of them

7. When does an incident become a problem?

   1. When the root cause is known

   2. When incidents have to be resolved urgently

   3. Never

   4. During event management process

8. Which of the following service desks depends primarily on technology?

   a. Local service desk

   b. Virtual service desk

   c. Centralized service desk

   d. Technological service desk

9. What is the best description of priority?

   a. Standard and nonstandard change

   b. Impact and urgency

   c. Warning and exception

   d. Accessibility and confidentiality

10. Which of the following incidents should be logged?

    a. All incidents

    b. Major incidents

    c. Incidents raised by IT staff

    d. Incidents raised by users

7.8 Summary

In this chapter, I discussed the service operations lifecycle phase and explained its objectives, scope, and the value it brings to the table. I also explained the processes embedded within the service operations phase. The processes that I explained include: event management process, incident management process, request fulfillment process, problem management process, and access management process. I also described the functions that are included under the phases of service desk, technical management, application management, and IT operations.

In the next chapter, you will learn about the ITIL continual service improvement lifecycle phase, which consists of a single process, and a number of new concepts to improve the quality of service.

CHAPTER 8

Continual Service Improvement

Without continual growth and progress, such words as improvement, achievement, and success have no meaning.

—Benjamin Franklin

If you are not improving, you are dying.

—Abhinav Krishna Kaiser

Everything in nature is bound to improve, although some improve in leaps and bounds and some more gradually. If something or someone doesn't improve, they wither and die. Take, for example, the theory of evolution. Certain characteristics have changed in us and in other living things over successive generations. They have always changed for the better, with successive generations bettering from their parents and forefathers in adapting to the environment. Mutations and genetic drifts are other improvements that are a result of evolution. So, in effect, we have survived all these years and will survive for years to come because we have improved and continue to do so.

Take, for example, the products and services we use every day. They have invariably improved, some products like mobile phones and televisions have seen exponential improvements, while others like air conditioners and irons have more or less improved at a snail's pace. In the service industry, Internet service has come a long way from dial-up connections to fiber optic-powered broadband, while e-mail service has taken baby steps. Yet, the common underlying element is that all services need improvement for them to survive, or a competitor who brings in a better performing service will run away with the market share.

In IT service management too, improvements are absolutely essential. The services that were conceived in the service strategy phase, designed in the service design phase, built and deployed in the transition phase, and maintained in the service operations phase have to remain relevant. The only way they can remain useful and competitive is if they improve, improvement in terms of what it can deliver, how quickly it can be

A. K. Kaiser, *Become ITIL Foundation Certified in 7 Days*, DOI 10.1007/978-1-4842-2164-8_8

delivered, and with a reduced rate of breakdowns. If you are providing application maintenance services, you are expected as a service provider to:

- Improve MTTR (mean time to resolve) for incidents
- Reduce outages by introducing monitoring alerts and through pro-active measures
- Provide change management that is dynamic and agile
- Reduce the cost of providing services by introducing improvements such as self-help options
- Increase the service window through automation

The continual service improvement (CSI) phase does not follow a sequence; instead it stretches across the other lifecycle phases. The CSI phase can be initiated during any of the other four phases, and improvements can be enacted on the strategy, design, build, deployment, and operational activities. The important factor in the CSI phase is that the CSI processes keep a close check on and monitor the services and processes for improvement opportunities.

8.1 Why Continual and Not Continuous?

The words continuous and continual are often used interchangeably, although there is a significant variance between the two terms. The term *continuous* is more in vogue, and it refers to actions that are unending. So, in our context, the improvements that we are referring to are unending, which is true to an extent.

The term *continual*, which is used in the context of improvements in this chapter and in ITIL, refers to improvements that are unending, but with breaks for the sake of stability. Continual refers to implementing an improvement and letting it stabilize for a period of time before embarking on the next improvement. Although the improvements are continuous in nature, the stabilization periods in between make it continual. This is illustrated in Figure 8-1.

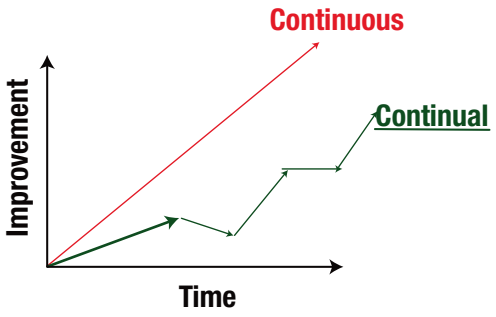


Figure 8-1. *Continuous versus continual*

In ITIL, continual service improvement is embraced as the need for stability prioritized over the number of improvements that can be done over a period of time.

8.2 Deming's Cycle

Deming's cycle is popularly known as the PDCA (Plan-Do-Check-Act). It is also referred to as PDSA (Plan-Do-Study-Act). It is an iterative cycle that guarantees improvements for the activity it has been applied to. PDCA can be applied to any activity, including IT services in the IT service management space.

Dr. William Edwards Deming is the man behind the concept, who is considered to be the father of modern quality control. PDCA is one of the many quality controls that he introduced. Deming is an American engineer, who became a legend in Japan after World War II. He is believed to have changed the manufacturing and business process in Japan more than any other individual not of Japanese origin. Japan honored him by inducting an annual quality management award known as the Deming Prize in 1951. The United States awarded him the National Medal of Technology in 1987.

8.2.1 The PDCA Cycle

The PDCA cycle can be applied to an activity or a set of activities that are planned in advance. In the IT industry, it is mostly applied to the service management function. The cycle is somewhat similar to *Kaizen* (continuous improvement in Japanese), where minor improvements are done at one time, and the cycle must be iterated to get the essence of it.

In the ITIL service lifecycle, the CSI phase relies on the PDCA cycle's principles for identifying and effecting improvements. The cycle can be applied to IT services as well as ITIL processes. The sections below examine each of the parts of the PDCA process, as shown in Figure 8-2.

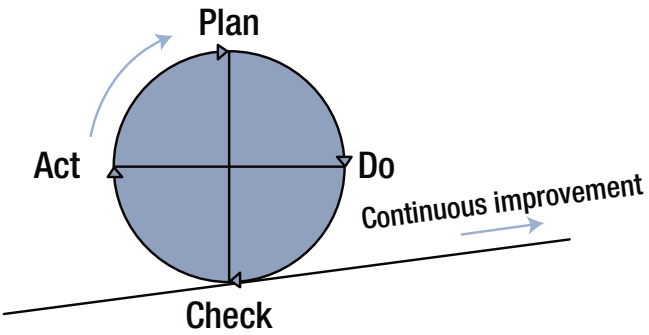


Figure 8-2. *Deming's PDCA cycle*

8.2.1.1 Plan

Any activity you need to undertake requires some planning. The first step in the cycle is to prepare a plan that will consider all the possible combinations of outcomes, risks, necessary resource requirements, among others.

The plan gets initiated based on various triggers that you have set forth for triggering the CSI cycle. For example, you could get feedback from a customer, the service provider organization could get penalized for breaching the SLA, or the service design may not fully meet all the customer's requirements.

Deming's cycle recommends that the improvements be made small and repetitively. So it is important that planning be based on improvements that are quick to realize and easy to adapt if necessary. Agile project management methodology works the best with the PDCA cycle.

A typical plan will have the deliverables that will be delivered by the end of the improvement project. The plan would also incorporate the timeline, cost, and scope the improvement covers. It's like any other project management plan, nothing fancy, nor is it any different.

Let's say you have identified a resolver group that is struggling to meet their target SLAs. To initiate a PDCA cycle for improving the SLA, you have analyzed and audited the incident tickets and, based on your analysis, you will come up with a plan. The plans could be as follows:

1. Develop a process for monitoring the queue
2. Provide technical trainings to the team members
3. Create hierarchical structure with team leads to share accountability

8.2.1.2 Do

The plans have to be executed during the Do phase of the PDCA cycle. This phase generally stretches for the longest duration as the planned activities are carried out in this step. Care must be taken to ensure that the project management's triple constraints (time, cost, and scope) are controlled to ensure success of the improvements being initiated.

By adopting the Agile project management methodology, the Do or the execution phase becomes less sluggish and easier to control and deliver.

In the example stated above, you will start developing a process to monitor their work queue, start providing technical training, and, with the help of the human resources department, create some team structure.

8.2.1.3 Check

The PDCA cycle mandates checking or vetting the applied improvement against its set objectives. For example, if you have stated initiatives to improve the SLA of a particular resolver group, the Check phase of the PDCA cycle checks, after a certain measurable period of time, whether the improvement has had any effect and whether the SLAs have improved since the last count.

Big bang improvements are a rarity. Improvements are generally miniscule, and the sum of the parts presents the big picture. In the same example, let's assume that the resolver group is sitting on a SLA of 60% and the target SLA is 90%. The improvement project that you have undertaken should not aim to take the SLA to beyond 90% in one go, as it could then be prone to failure. The prudent thing to do is to aim at improvement of 10% at a time. Once an improvement is completed, check what has been done right and determine the things that have been futile or wrong.

The activity of the Check phase is to conduct a thorough analysis of deliveries that were achieved and those that failed, including any partial results. The analysis must suggest what has gone right and wrong, and then outline the steps to undertake to bridge the actual results with the goals.

8.2.1.4 Act

The analysis conducted would provide pointers on what needs to be done to fill the bridge between what was planned and what was implemented. And the improvements that were listed are implemented in this part of the cycle.

This step is similar to the Do step, where execution is involved. In the Act phase, however, the execution is based on the gap analysis conducted in the Check phase.

Returning to the example above, let's say that during the Check phase you found out that the training is not effective. You need to fix the gap by identifying relevant training and putting the resolver groups into these training sessions.

8.2.1.5 Iteration

Figure 8-2 illustrated the PDCA cycle and the effect of iterations of this cycle. To achieve continual improvement, it is imperative that iterations be performed until the desired results are obtained. Figure 8-2 also indicated that running several iterations will move the wheel on an upward incline, leading to better results and improving the services or the processes in a desired pattern.

My advice is to iterate as long as you deem the results provide a return on investment that has been put in, and as long as it makes sense to improve a service or a process. But, it is important to make sure that the improvements implemented are continual in nature, so provide time between improvements for stabilization.

In the SLA improvement scenario, you can perform the PDCA cycle a number of times, across various resolver groups. There is no limit as to how many criteria you can pick in each iteration.

8.2.2 Another PDCA Example

8.2.2.1 Plan

Let's say you are building a web site. First, develop a plan on what you want to do along with rough sketches in a document. Think thoroughly on various aspects of web designing, such as the features you want to include, perhaps adding a newsletter module, a contact form, and so on. Make sure that it is all in writing.

8.2.2.2 Do

Whether you outsource it to a professional or develop the web site yourself is your choice. As I said earlier, this is a very simple step. But, the Do process must reproduce what the Plan step states.

8.2.2.3 Check

After the web site is developed, compare the plan with what you have on hand; there will be gaps that you need to bridge in the next step. Apart from this, analyze for any improvements that can be made like adding Ajax forms instead of a normal one. Document the gaps and the improvements that you wish to make in the same document.

8.2.2.4 Act

Let's say the Check step has uncovered some gaps in the web site development. The Act step undertakes activities to bridge the gap.

You have now completed one cycle of PDCA. Remember that this cycle is an iterative one, and you can take as many as you want to build a web site, which will improve every time it rolls through the cycle.

8.3 CSI Approach

As discussed earlier, improvements should be made in increments, and the sum of the parts will fully realize the desired enhancements to the services and processes. To achieve improvements, ITIL recommends a logical approach for making improvements. It is shown in Figure 8-3, and each item is discussed in the sections that follow.

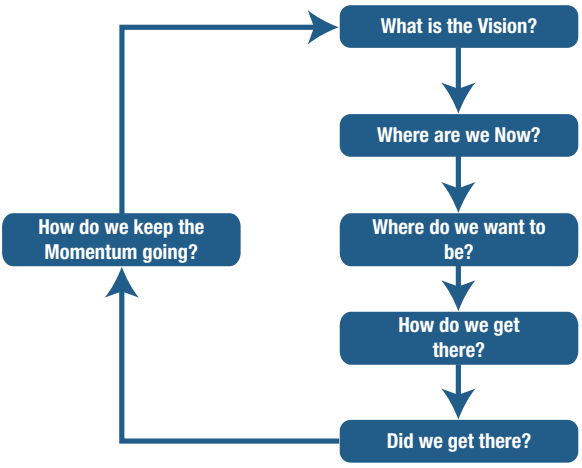


Figure 8-3. *Continual service improvement approach*

8.3.1 What Is the Vision?

Vision in the business context comprises the long-term goals and objectives for the organizations. Every business will therefore start with a vision, such as being a leader in mobile cell service with over 50% of the market share, and maybe spreading peace across the globe through spirituality and thoughtfulness.

8.3.1.1 Real-Life Story on Vision

McDonald's founder Ray Kroc was in a bar with a bunch of MBA students. He asked one of them: "What business do you think we are in?" The student duly replied: "You are in the business of selling hamburgers." Ray retorted: "I am selling hamburgers but that is not my business. My real business is real estate."

As a service provider organization, you must make sure that you understand your customer's vision. Unless you are in sync with it, you will start working toward selling hamburgers rather than the core business objectives.

The IT strategy must be based on the business vision, mission, goals, and objectives. This is the only way the service provider can understand and create value (through improvements) to the customer organization.

8.3.2 Where Are We Now?

Unless the present situation is known, it is impossible to measure the level of improvements applied at the end of the cycle. An assessment needs to be performed to gather the current establishment, setup, and performances. Perform a dipstick check to obtain a snapshot view, which will be used as a baseline for future comparison.

The assessment must be based on all aspects of a service such as people, technology, processes, and so forth. Only when all aspects of a service are obtained will it be possible to perform an unbiased assessment of the current baseline, not based on conjecture.

8.3.3 Where Do We Want to Be?

We know what the final goal is and we are aware of the current state of affairs. Now we need to know the targets that we aim to achieve. The answer to this question must come from the business alone, as the targets define the set of improvements, associated activities, and the respective service improvement costs that the customer has to bear.

Targets will generally come in lists. Attach priorities and timelines to each of the milestones, and obtain approval for these from the customer.

8.3.4 How Do We Get There?

We have a target in front of us, and the next step is to identify a set of steps to achieve the business targets or requirements. Basically we are looking at a plan, architecture, and solution to achieve and improve targets.

Some of the activities that you perform may be relevant to the individual improvement cycle, and some activities may contribute throughout the improvement

program. Identify such activities to ensure that they are aligned with the overall improvement program delivery.

8.3.5 Did We Get There?

The improvement solution gets implemented through the change management process. Once it is implemented, we need to verify whether the improvement execution meets the goals that the cycle wished to achieve.

In some places, improvements can be measured immediately, and in most cases, services need to be put under observation through monitoring, measuring, and reporting.

The expected target must meet or exceed the targets set by the customer, such as meeting or exceeding service-level agreement measurements, ensuring process compliance is high, and determining if the other measurements were met or exceeded.

8.3.6 How Do We Keep the Momentum Going?

As discussed earlier when I introduced Deming's cycle, improvements rarely come in a one-off pattern but rather take shape in small incremental steps. To achieve this, the cycle needs to keep rolling, and the service provider organization must not lose the momentum it is mounted on.

The service provider organization must put in measures to ensure that the improvement cycles are well controlled, tracked, and made accountable for their objectives. Sufficient improvement budgets must be made available well in advance to ensure that the organization does not lose momentum while the search for funds takes place.

8.4 CSI Register

A CSI register is a tracker for all identified CSI initiatives. It is a part of the service knowledge management system (SKMS). It is owned by somebody such as a CSI manager who is responsible for keeping it current and accessible to all stakeholders. In smaller organizations that cannot afford a dedicated position for this task, the problem manager steps in to take over.

This register consists of all the CSI initiatives, along with their category, priority, the teams involved, statuses, and other administrative details. The purpose of a CSI register is to bring together all the initiatives into a single repository and provide visibility to the service provider and customer organizations on the CSI initiatives and their respective lifecycle statuses.

The priority of the CSI initiatives is set by the customer, and based on this priority, improvement activities are initiated for solution and implementation. A higher priority improvement activity gets initiated first with stringent timelines, whereas you can expect a lower priority improvement action to be slotted if there is slack in the system or for when the resources have free time.

A CSI register can be as simple as an Excel sheet with various columns indicating necessary fields and details. Today, there are a number of IT Service Management (ITSM) tools that provide CSI register functionality, and these are fitted with abilities to

autoremind action owners before the milestone deadlines and will send out automated reports as per the crystal reporting structure.

8.5 Baselines

When you develop reports on performance achieved or any other similar reports, it is important to have a threshold defined. The performance threshold acts as a point of comparison, and it helps provide the context for the improvements or downturns. This threshold is called a baseline in ITIL. We use baselines in a number of processes in ITIL, such as creating configuration baselines in the service asset and configuration management process.

In CSI lifecycle phase, the baselines play an important role in measuring the level of improvement that was brought about through the undertaken improvement initiatives. It provides a basis for the extent of the improvements applied.

When a baseline is drawn, it needs to be documented, circulated, and agreed upon by all involved stakeholders to achieve transparency and agreement of the comparison marker. Baselines come in different levels: strategic, tactical, and operational baselines. When baselines are created, they need to be examined at all three levels.

If a baseline is not obtained before embarking on an improvement project, the extent of improvements achieved will be questioned, and the measurements taken postimprovements will be set as the baseline for upcoming improvements.

8.6 Types of Metrics

The performed improvements need to be measured to determine whether they have accomplished their intended purpose. This is achieved through metrics, which is defined in ITIL CSI as a scale of measurement defined in terms of a standard (well-defined unit).

Let's say that you have performed an improvement initiative to reduce the overall number of incidents. How do you measure it? Through metrics. For this example, the number of incidents logged in a calendar month is the metric that provides the needed measurement to vet whether the improvement has been effective. Generally speaking, metrics provide the quantitative view of the activity or the process or anything that needs to be measured.

Metrics are generally tailor made for the activity you are trying to measure. A metric defined for one activity cannot be readily used for another activity. Let's say that you have another requirement for a metric to measure the percentage of failed changes in a month. You cannot use the incident metric to measure this.

For failed changes, you need a separate metric:

$$\textit{Percentage of failed changes in a calendar month} = (\textit{failed changes} / \textit{overall changes}) \times 100$$

However, there are some generic metrics, such as number of incidents, number of changes, and percentage of service uptime, that can be used across the board.

Metrics come in three types to aid measuring CSI initiatives or any other activity that needs measuring:

1. Technology metrics
2. Process metrics
3. Service metrics

8.6.1 Technology Metrics

Technology metrics are the quantification of individual technological components such as measurements for servers, routers, applications, and so forth. They measure the effectiveness and efficiency of the components. These should be examined for various reasons:

1. They serve as an indicator to pinpoint faulty components in the system (which can possibly replaced)
2. If less than normal performing components are identified, either the design or its configurations can be analyzed and improved upon.
3. Component warranty can be invoked to obtain working components.

Examples include server uptime, number of breakdowns of a switch, or time taken for reindexing a database.

8.6.2 Process Metrics

Process metrics measure the effectiveness and efficiency of a process. These metrics are determined through critical success factors (CSF) and key performance indicators (KPIs). All the ITIL processes can be measured, and because measurements are the basis for assessing baselines and improvements, process metrics are employed. Every process will have specific process metrics. A process metric for a particular process cannot be applied for another process. Examples include average resolution time for incidents, percentage of changes rejected by CAB, and the number of knowledge articles created in a calendar month.

8.6.3 Service Metrics

Service metrics measure the effectiveness and efficiency of a service. These metrics are applied to measure end-to-end service performance. When we refer to service metrics, it is always end to end and not subsets of a service. At times it may be challenging to measure a service end to end. In such cases, we leverage technology and process metrics to derive service metrics. Examples include the percentage of uptime for Internet service, the number of transactions performed by a business application in an hour, and the average call drop rate in a calendar month.

8.7 CSFs and KPIs

The governance, tracking, and monitoring for services, processes, and projects are performed through two key concepts: critical success factors and key performance indicators. These two set the base for creating metrics and measurements and are also utilized to identify whether the improvements are effective. They are also employed to track the overall performance of various IT services, processes, and related activities.

8.7.1 Critical Success Factors

The official definition of a critical success factor, according to the ITIL CSI publication, is something that must happen if an IT service, process, plan, project, or other activity is to succeed.

In essence, for an IT service or an ITIL process to succeed, there are certain CSFs identified during the definition phase. These CSFs provide the various elements that are needed to achieve all the objectives set forth.

For example, "safeguard ATM machines" is a CSF in the banking industry, more specifically in the money disbursal services that the bank offers its customers. So for the money disbursal to happen successfully, it is critical that the ATM machines are safeguarded from thieves, skimmers, and hackers. It is a common occurrence in countries such as India where ATM machines are wheeled away in the middle of the night. In African and American countries, there have been countless cases of ATMs being rigged to capture the debit card information. To counteract this, the CSF mentioned in this example sets the direction.

Let's look at an IT example that we are familiar with. "Assess changes for risk and impact" is a CSF for the change management process. To elaborate, all changes need to be assessed for potential risks and impact before they are allowed to be implemented. This is necessary in the interests of the business and for service continuity. This CSF for the change management process ensures that for the process to succeed, assessment must happen.

8.7.2 Key Performance Indicators

Key performance indicators (KPIs) are the key components used to measure success. Simply put, they define the measure and the trends that make or break the output of a process or a project.

As the name states, they are performance indicators, and they indicate whether the performance is on the expected lines or going downhill.

In the IT service management industry, we use KPIs to measure the outcome of an IT service, a process, or a function.

Defining a KPI is an art driven by the maturity of an individual or the organization. It is of prime importance to identify individuals who can make a particular activity a stunning success or a lame duck. Identifying KPIs is not as easy as differentiating white from black, but rather is like picking out iron filings from a heap of sand. You need to use the magnetic wand, which in this case is the diligence of a mature professional.

For the ATM example stated earlier, the KPIs can be defined as: "Number of thefts decreased in a calendar month; decrease in percentage of hacked ATMs." These KPIs provide the desired trend that will set the wheels rolling toward achieving the objectives of a service or a process or anything that is being measured.

In the IT example, KPIs can be defined: "Decrease in percentage of failed changes in a calendar month." This KPI provides the desired trend (to reduce failed changes), and this can be achieved by assessing changes. The direction comes from the CSF and the measurements are analyzed through KPIs.

8.7.2.1 Some Examples of KPIs

Here are some examples of KPIs. They will help you define KPIs that are real KPIs and not just metrics or numbers:

1. Percentage increase of projects completed on time
2. Percentage increase in solved homicide cases in the city of New York
3. Percentage increase in the salary YOY

8.7.3 Relationship Between CSFs and KPIs

CSFs and KPIs are closely related. CSFs provide the high-level direction to be followed for the subject to succeed. The KPIs use the CSFs, or rather work within the boundaries of them, to define a desired trend. Every CSF can have one or multiple KPIs associated with it. You can clearly see this in the ATM example used above. For the single CSF, I provided two KPIs.

8.7.3.1 What Does ITIL Recommend?

The ITIL publication recommends that for every CSF, there needs to be at least two KPIs, but not more than five KPIs, to make processes and services efficient and effective.

In IT service management, it is a common practice for the KPIs to change over time. Normally, CSFs remain unaltered as they provide general direction for services and processes to succeed. However, KPIs are dependent on the environment, changes, updates, and other factors that matter to a service or a process and may change from time to time.

Figure 8-4 illustrates the relationship of CSFs to KPIs, starting from the vision I discussed earlier in the chapter that triggers the mission statement an organization will follow. This is followed by the objectives that are set at every level. Objectives of a process or a service provide the boundaries for CSFs to operate. Based on CSFs, the KPIs are defined. Metrics take the input from KPIs to identify what needs to be measured, with measurements being the final block in the chain.

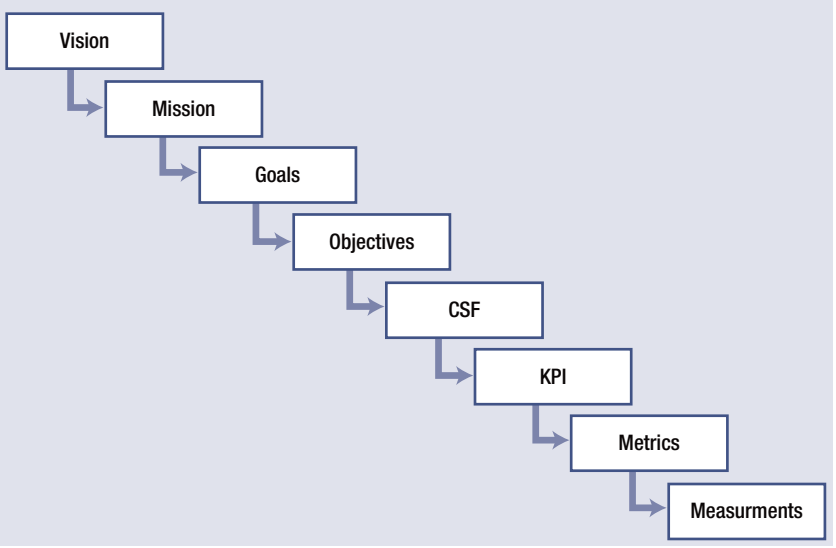


Figure 8-4. *Relations from vision down to measurements*

8.7.4 Seven-Step Improvement Process

There is just one process in the CSI lifecycle phase. The seven-step improvement process is based on the PDCA cycle and is derived from the CSI approach (both were discussed earlier in the chapter).

The seven steps also follow the knowledge management's data-information-knowledge-wisdom model, called the knowledge spiral, because the activities are set to be performed in cycles.

As mentioned earlier, CSI stretches across the other four lifecycle phases and can be triggered in any of the phases to identify and implement improvements. Figure 8-5 shows the steps involved in the seven-step improvement process. The details of the process are discussed in the sections below.

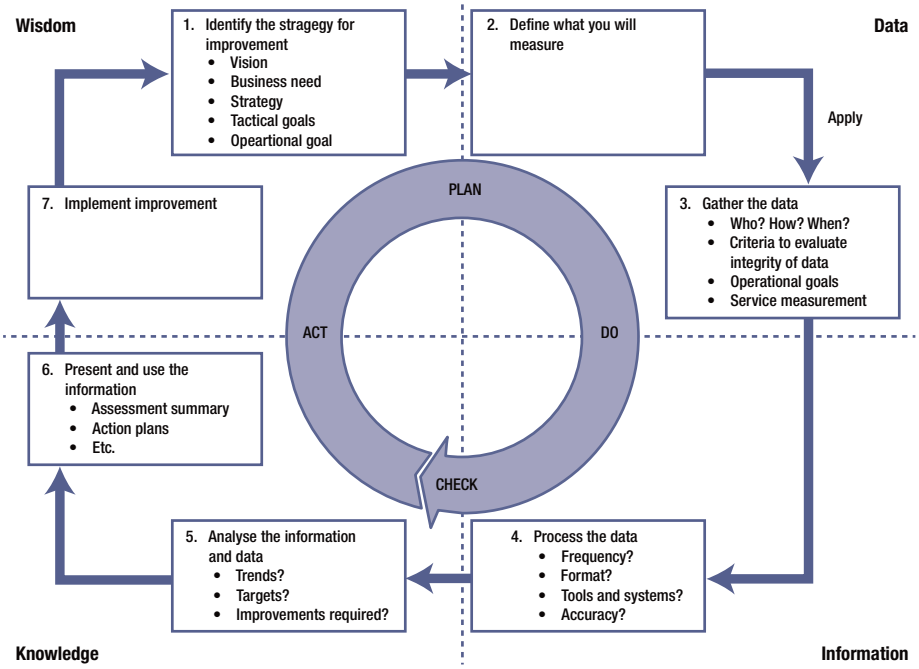


Figure 8-5. *Seven-step improvement process*

8.7.4.1 Step 1: Identify the Strategy for Improvement

The organization's leadership provides the vision, mission, and objectives to identify and implement improvements across the lifecycle. They can set specific targets to be achieved in each of the areas: strategy, design, transition, and operations. In most organizations, CSI is implemented in the design, transition, and operations lifecycle phases only. Strategy is normally left out of the scope, perhaps for reasons owing to junior resources manning the CSI activities.

8.7.4.2 Step 2: Define What You Will Measure

Once you have the scope established and objectives documented, you will have clarity on what activities need to be measured in order to measure improvements against the objectives. Referring to Figure 8-4 and comparing it with the service lifecycle, vision, mission, goals, and objectives are established in the service strategy phase. The CSF, KPI, metrics, and measurements are defined and designed in the service design phase.

8.7.4.3 Step 3: Gather the Data

In this step, based on the objectives, data are gathered through various sources. Data can come from the event management tools, service reports, feedback from the customer, feedback from the supplier, government regulations, and so forth.

This step concentrates on just getting the data and collating it. Analysis is not in scope.

8.7.4.4 Step 4: Process the Data

The data come from various sources, and they are in different formats. They need to be standardized to aid in analysis activities.

Processing of data and publishing the processed data must work in a cycle or in strict timelines based on the CSFs and KPIs.

8.7.4.5 Step 5: Analyze the Data

Data analysis and documenting conclusions are done in this step. This step starts to analyze the who, what, when, where, and how questions.

Conclusions are drawn based on the CSFs and KPIs that are in place, for example, if the KPI specifies that the desired trend is for incidents to decrease, the analysis presents a negative conclusion when incidents increase month after month.

This is an important step that requires the maximum amount of unwavering effort to analyze and present the right information to the management.

8.7.4.6 Step 6: Present and Use the Information

In this step, the analysis is presented to the management. It focuses on comparison between the improvement objectives against the actual implementation results. It tries to answer the question: Did we get there?

8.7.4.7 Step 7: Implement Improvements

Not all improvements identified are approved for implementation. The management makes a judgment call based on the business case. Most improvements identified come with an associated cost factor, some justified and some not. For example, a particular improvement may cost a huge sum of money but the expected output may improve by a small percentage. In business lingo, this means management might not find a viable return on investment on some improvements, which are eventually put on the back burner.

At the end of this step, a new baseline is set, which will be used for the improvements in the next cycle.

8.7.5 Objectives of Seven-Step Improvement Process

The seven-step improvement process is the only process listed in the CSI phase. It therefore inherits all the objectives of the phase and is solely responsible and accountable for identifying and implementing the process activities.

The objectives of the process include:

- Identify improvement opportunities across service management areas: services, processes, tools, governance.
- Cost is a major factor in service delivery. CSI has the onus to reduce the cost of providing services to customers, without affecting the quality of the service.
- Keep a finger on the pulse of what is being delivered to the customer and whether it is in line with the expectations. If it is misaligned, it is the responsibility of CSI to take corrective actions.
- Identify the metrics and measurements across services, processes, and tools to establish improvement opportunities.

8.7.6 Scope of Seven-Step Improvement Process

As discussed earlier, the CSI phase is leveraged. Its scope includes:

- Ensuring IT services, processes, technologies leveraged, suppliers, partners, and all activities are performed in the ITIL service lifecycle.
- Ensuring that the alignment of the current and future services offered is in line with the market offerings and customer's expectations.
- Keeping a tab on technological advancements to introduce state-of-the-art IT services that provide value, and reduce the cost of services.
- Examining the functions, and whether they are rightly staffed with people with specific capabilities who are placed in the right teams; if there is a lack of capability found, ensuring corrective actions are taken by the functional heads.

8.8 Practice Exercises

1. Which of these statements is correct?

   i) Deming's cycle exists to bring in regular improvements.

   ii) The PDCA cycle can be run in iterations.

   a. i and ii

   b. i

   c. ii

   d. Neither i nor ii

2. What is the correct sequence of the CSI approach?

   a. What is the vision? Where do we want to be? Where are we now? How do we get there? Did we get there? How do we keep the momentum going?

   b. What is the vision? How do we get there? Did we get there? Where are we now? Where do we want to be? How do we keep the momentum going?

   c. What is the vision? Where are we now? Where do we want to be? How do we get there? Did we get there? How do we keep the momentum going?

   d. What is the vision? Where are we now? Where do we want to be? How do we keep the momentum going? How do we get there? Did we get there?

3. Which of these is NOT a metric?

   a. Service metrics

   b. Technology metrics

   c. Business metrics

   d. Process metrics

4. Which of these is NOT one of the steps from seven-step improvement process?

   a. Process the data

   b. Where are we now?

   c. Implement Improvement

   d. Analyze the data

5. Key performance indicators are derived from:
    a. Critical success factors
    b. Customer satisfaction rating
    c. Metrics and measurements
    d. Service level requirements

8.9 Summary

In this chapter, I described the continual service improvement lifecycle phase and explained Deming's PDCA cycle. I also touched on the CSI approach and the seven-step improvement processes. I also presented a number of ITIL concepts such as baselines, metrics, CSI register, CSFs, and KPIs.

In the next chapter, the final chapter, you will learn some tips that will help you pass the exam with flying colors. Also, I will provide answers to FAQs about ITIL-based careers.

CHAPTER 9

ITIL Foundation Exam Tips and Tricks

Before anything else, preparation is the key to success.

—Alexander Graham Bell

To acquire knowledge, one must study; but to acquire wisdom, one must observe.

—Marilyn vos Savant

The ITIL Foundation examination is one of the most sought after examinations in the service industry. It is considered mandatory during employment in most of the organizations that provide IT services to customers.

I attended ITIL v2 training when I got started with service management. This was more than a decade ago. I did not pass the practice exam. I was flabbergasted. Then I sat down for the next two days trying to decipher the question pattern, the clues, and the giveaways. In the next practice exam, I scored 80%, and on the paper-based ITIL exam, I got just one question wrong. Still, I hadn't recovered from my failure in the first practice exam. I felt that it was the trainer's responsibility to help in the preparations for the certification exam. The trainer should have been there and done that, so he would be in the best position to provide an overview of the lay of the land. This is exactly what I plan to do in this chapter.

My training experience has further deepened my knowledge of the Foundation examination. I sometimes feel that I can read the question setter's mind. Not really! I have shared the tips that I am going to share with you in this chapter with my students, and more than 90% of my students have passed the examination in their first attempt. Moreover, a good number of my students have opted for my trainings in the ITIL Expert certification courses as well.

In this chapter, I will not only provide information on the ITIL Foundation examination, but I will also provide details on the more complicated certifications that follow the ITIL Foundation certification. As promised earlier, I will provide tips and tricks for answering the questions on the exam. Last but not the least, I will answer the most commonly asked questions regarding career choices that ITIL brings to the table.

A. K. Kaiser, *Become ITIL Foundation Certified in 7 Days*, DOI 10.1007/978-1-4842-2164-8_9

9.1 ITIL Certification Structure

Axelos, entrusted with the responsibility to develop, manage, and operate the good practices in service management through the ITIL Framework, offers a number of certification exams for individuals, based on depth of knowledge and the intentions for getting certified. Remember that organizations cannot get ITIL certified. If they wish to get certified on ITIL Framework, they have to opt for ISO 20000 certification. The ISO 20000 certification is also based on ITIL.

The various ITIL certifications are depicted in Figure 9-1.

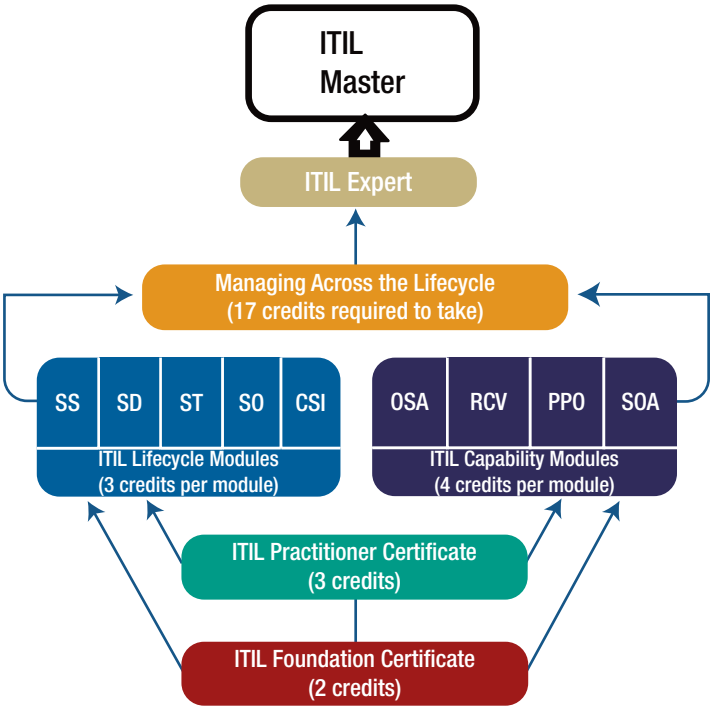


Figure 9-1. *ITIL certifications*

9.1.1 ITIL Foundation Certificate

ITIL Foundation certification is the test of ITIL concepts and awareness. It is ideally suited for entry-level professionals in the IT services industry.

Most ITIL-based jobs are in service operations, and for a service operations role, the ITIL Foundation certification is considered adequate. As most service organizations operate on the ITIL Framework, they expect new employees to hit the ground running when they start. For this to happen, there needs to be an alignment of processes,

terminology, and the ways of working. This is primarily the reason for employers to insist on the ITIL Foundation certification.

People often change career paths within the same organization. To change into a service management role, organizations insist that employees undergo ITIL training and probably be certified before the transition.

I have also had students who are primarily from the projects side of the industry, and they were keen to understand how the services operate, and to get the general awareness of IT service management, they took the ITIL Foundation certification course.

To sum it up, ITIL Foundation is for all those who are interested in getting a foothold in the IT service management space.

ITIL FOUNDATION EXAM FORMAT

Mostly online, although there are some training organizations that provide paper-based exams

Closed book: you cannot refer to any books, notes, or cheat sheets

There are 40 multiple choice questions, every question comes with a choice of four possible answers

Exam duration: 60 minutes

Each question carries 1 mark; wrong answers don't bog you down with negative scoring

You are required to give 26 correct answers to pass the exam: 65%

Foundation certificate only showcases that you have passed the exam and does not display the score you obtained on the exam

Instant results when you opt for online exams

ITIL Foundation certificate earns you two credits toward ITIL Expert certification.

9.1.2 ITIL Practitioner Certificate

ITIL Practitioner is a new certificate, introduced in February 2016. It is meant to be a standalone certification and not connected in a sequence with other certifications. The Practitioner certificate earns you three credits toward ITIL Expert certification.

To take this certification exam, ITIL Foundation certificate is a prerequisite.

The ITIL Practitioner certificate provides a basis to those who are looking to adapt and adopt ITIL principles in business institutions. The focus is on the management and business skills to implement ITIL best practices.

This new certification covers the following topics:

1. Continual service improvement approach as a guiding principle to identify and implement improvements in organizations
2. Organizational change management, the art of dealing with people during organizational changes
3. All-important communication between various entities, making communication effective and planned to address all gaps
4. Metrics and measurements, which are an essential elements of the CSI approach

Training is not mandatory to take the exam.

ITIL PRACTITIONER EXAM PATTERN

Scenario-based questions, each scenario will pose one or more questions. There are eight questions on the exam.

Exam duration: 95 minutes

Open-book exam; candidates can refer the ITIL Practitioner Guidance publication only

Multiple choice: each question will have four possible answers. Only one answer is completely wrong. Only one answer is completely right. The other two are partly right, one more right than the other.

You are expected to score 28 of a possible 40 marks: 70%

A wrong answer gives you 0 marks and the correct answer earns you 5 marks. The second-best answer earns you 3 marks. And the third-best answer earns you 1 mark.

9.1.3 ITIL Intermediate Certificate

Technically, the next certification in line after the ITIL Foundation is the ITIL Intermediate certification. This certification consists of nine individual certifications. Not all of the nine certifications are unique, but instead, they represent the two paths that you can take in your journey to becoming an ITIL intermediate or ITIL expert certified professional. Technically, even if you become certified in any one of the nine certifications, you are referred to as an ITIL Intermediate certified. You can take the ITIL Intermediate certification exam only when you are ITIL Foundation certified.

The two paths are:

1. Service lifecycle modules
2. Service capability modules

9.1.3.1 Service Lifecycle Modules

Service lifecycle modules are comprised of five individual certifications, each certification attributed to every phase in the ITIL service lifecycle. The individual certifications are:

1. Lifecycle Service Strategy
2. Lifecycle Service Design
3. Lifecycle Service Transition
4. Lifecycle Service Operations
5. Continual Service Improvement

The lifecycle module is meant for professionals who are interested in positions in service management. It provides ample advice, methodology, tricks, and techniques to manage and improve processes and process outcomes.

You are required to take a mandatory training workshop from an accredited training organization (ATO). The course is stipulated to run for three days, with the certification exam included on the final day.

ITIL INTERMEDIATE EXAM PATTERN

Scenario-based questions: each scenario will pose one or more questions. There are eight questions in the paper.

Exam duration: 90 minutes

Closed-book exam

Multiple choice: each question will have four possible answers. Only one answer is completely wrong. Only one answer is completely right. The other two are partly right, one more right than the other.

You are expected to score 28 out of a possible 40 marks: 70%

The wrong answer give you 0 marks and the correct answer earns you 5 marks. The second-best answer earns you 3 marks. And the third-best answer earns you 1 mark.

Each of the service lifecycle modules earn three credits toward ITIL Expert certification.

9.1.3.2 Service Capability Modules

Service capability modules consist of four individual certifications, and each certification consists of processes from one or more phases in the ITIL service lifecycle. The individual certifications are:

1. Operational Support and Analysis (OSA)
2. Planning, Protection, and Optimization (PPO)
3. Release, Control, and Validation (RCV)
4. Service Offerings and Agreements (SOA)

The service capability modules are designed for professionals who need in-depth knowledge to design and execute the processes. If you want to be a service management consultant, this is the module to undergo.

You are required to take a mandatory training workshop from an accredited training organization (ATO). The course is stipulated to run for five days, with the certification exam included on the final day.

SERVICE CAPABILITY MODULES EXAM PATTERN

Scenario-based questions: each scenario will pose one or more questions. There are eight questions in the paper.

Exam duration: 90 minutes

Closed-book exam

Multiple choice: each question will have four possible answers. Only one answer is completely wrong. Only one answer is completely right. The other two are partly right, one more right than the other.

You are expected to score 28 out of a possible 40 marks: 70%

The wrong answer give you 0 marks and the correct answer earns you 5 marks. The second-best answer earns you 3 marks. And the third-best answer earns you 1 mark.

Each of the service capability modules earn five credits toward ITIL Expert certification.

9.1.4 ITIL Expert Certificate

If you wish to possess and showcase overall ITIL expertise, ITIL Expert is the certification for you. As a prerequisite, you need to have earned at least 17 credits from the Foundation, Practitioner, and Intermediate certificates. There are several combinations that you could choose within the ITIL Intermediate certifications to be eligible for taking

the ITIL Expert certification exam. For example, you can take a select number of service lifecycle modules and service capability modules, or you can complete the entire set of lifecycle and capability modules. The choice is yours.

To become an ITIL Expert, you are required to pass the Managing Across the Lifecycle (MALC) exam. This exam gives you five credits, which takes you to a credit rating of 22 points, which is the minimum requirement to become an ITIL Expert.

The MALC exam covers the entire ITIL service lifecycle and tests your knowledge on the entire ITIL framework.

ITIL EXPERT EXAM PATTERN

Scenario-based questions: each scenario will pose one or more questions. There are ten questions in the paper.

Exam duration: 120 minutes

Closed-book exam

Multiple choice: each question will have four possible answers. Only one answer is completely wrong. Only one answer is completely right. The other two are partly right, one more right than the other.

You are expected to score 35 out of a possible 50 marks: 70%

The wrong answer give you 0 marks and the correct answer earns you 5 marks. The second-best answer earns you 3 marks. And the third-best answer earns you 1 mark.

9.1.5 ITIL Master Certificate

The ITIL Master certificate is the pinnacle of ITIL certifications. This is the final destination, and the ride is definitely not easy. The certification tests you on the basis of applying the ITIL principles, concepts, management techniques, and methodologies in the workplace.

The candidate is expected to present a thesis of a personal experience of service management, present the problem, and describe how the problem was solved.

This is a no-holds-barred certification. There is no prescribed syllabus. There is no training available. The master is expected to know the ins and outs of ITIL problem tackling and the solution that that can be developed and implemented.

To be eligible for the ITIL Master certification, the candidate must be ITIL Expert certified and should have at least five years' experience in a managerial or a leadership role.

9.2 ITIL Examination Providers

As discussed in Chapter 1, Axelos is the organization that owns the ITIL Framework. The company is a joint venture between the UK government and Capita. The ITIL publications were created by a massive team of ITIL experts and masters. When you read the publication, if you are sensitive to writing styles, you can observe the different styles across various sections and books.

However, Axelos does not conduct exams on their own, but instead, have partnered with examination institutes to conduct exams and to accredit training organizations and trainers. At the time of writing, the authorized examination institutes are:

- APMG International
- EXIN
- PeopleCert
- BCS, Learning and Development Ltd
- Acquiros

The most popular ones are APMG International and EXIN. The examination institutes frame their own question papers, based on the framework laid out by Axelos.

9.3 Foundation Exam Tips and Tricks

I first became ITIL Foundation certified in its second version: ITIL v2. I had worked for at least four years in this ITIL version before I became ITIL v3 certified. There was a world of change between the two versions, and for me, it was relooking at ITIL from whole different angle, and even after working in ITIL principles, I had to go through the cycle of exam preparation and the nerves on the exam day.

ITIL v3 was not as popular as it is now, and there weren't too many people to guide you along. It was strenuous but heartwarming when the PASS result was displayed on the screen.

When I started training for ITIL, I became aware of a number of techniques, patterns, and shortcuts that one could use to pass the ITIL exam. When you see exam papers for too long, you pick up the intricate details, variations, and patterns. The techniques I advocated worked as I expected, and my students, who attended a day and a half training session, were in a good position to take and pass the exam. I never asked them to study at home after the first day. It was not needed.

In this section, I will pass on the tips and tricks that have helped my students all along.

9.3.1 Preparation

Reading this book in its entirety is sufficient. I don't expect you to read any other material to pass the exam. However, the information provided in this book is based on the ITIL Foundation examination syllabus. There is much more to ITIL than what I have touched upon. My recommendation is that you just stick to this book before you take the ITIL

Foundation exam. When you are ITIL certified, then start reading the ITIL publications and other advanced ITIL books for getting deeper into the ITIL concepts. Of course, you have the hierarchy of ITIL exams, and that should also help you become closely acquainted with the Framework.

When I planned to take the ITIL v3 Foundation certification, I took off from work the previous day and studied for about five hours. As I mentioned earlier, it was sufficient for me as I was getting certified from a previous version, and I had ample working experience in ITIL. I don't expect the same to work for you. If it does, or even you cut down the time, kudos to you!

Here are my tips and tricks for preparing for the exam:

1. *Get ITIL Foundation Certified in 7 Days* is all that you need to pass the ITIL Foundation exam. I have broken down the book into seven sections based on a working professional's self-study availability. However, you know your schedule the best. Feel free to alter the timelines based on your schedule. However, I insist that you prepare a study plan before you start reading the book. Do not read the book by aiming to complete as much as possible.

2. Schedule the ITIL Foundation exam from one of the examination institutes (EI) before you start preparing for the exam. If you study first and then schedule the exam, you would be looking at a moving target for the exam date, and this, in my experience, is prone to failure.

3. Take plenty of notes. Although all the information you need is in printed form, it is not nearly equivalent to writing down your own notes, in your own hand and in your own words. Make notes at every juncture, including the tips and tricks that I am offering you in this chapter. Research has proven that taking notes helps you understand concepts better and helps you ask the right questions.

4. ITIL is old-school when it comes to definitions and keywords. Success on the exam stems from identifying the right keywords in the questions and the answer choices. So, it is imperative that you learn the definitions for ITIL concepts, or at least be familiar with the keywords. For example, an incident is a disruption to a service. The keyword to remember is *disruption* in this case. The objective of change management is to enable beneficial changes to be made and minimize disruption to IT services. In this definition, the keywords to remember are *enable beneficial changes* and *minimize disruptions*. Likewise, find the keywords, circle them, highlight them, underline them, do whatever is going to help you commit them to memory.

5. ITIL is best learned through examples. I have provided ample examples in this book. I encourage you to come up with your own examples to help you understand the topics better. If you have any questions on the topics presented in this book, reach out to me on my blog: http://abhinavpmp.com. I have helped thousands of ITIL seekers since 2009 through my blog, and I will answer your questions too.

9.3.2 Mock Exams

It is common with any certification that you attempt a few mock papers after you have studied all the topics. The same goes with ITIL Foundation exam. Here are some tips in relation to taking mock exams:

1. Axelos has provided a sample paper that you can download from their web site: https://www.axelos.com/certifications/sample-papers. You are required to register before you can download it.

2. Do not do the ITIL sample question paper before you have completed reading this entire book. Sample papers must be used to gauge where you stand in terms of understandability, and it is best leveraged when this entire book has been read, understood, jotted down, and digested.

3. Answer the Axelos sample immediately after you have completed this entire book. This will give you a good handle on how well you have understood the ITIL Framework. The real exam will be in the same pattern as this one, so in all probability, you can expect to find a few questions directly picked from the sample paper as well.

4. APMG is one of the EIs used to manage the ITIL Framework before Axelos was awarded the contract. They used to provide two sample papers. They are not available presently on the APMG web site. However, they do have a mock online exam that you can take: http://www.apmg-exams.com/index.aspx?subid=4&masterid=3#

5. There are a number of ITIL questions available on the Internet. Try to answer as many as possible. I cannot guarantee all the questions will be of the same quality as the exam questions, however, by the time you have completed the two sample papers, you will have a fair idea on what is a probable question and what isn't.

9.3.3 Examination Day

D-day brings in plenty of permutations: what ifs rule and the succeeding thoughts blur the machinations of ITIL that you have ingested over the past week or so. So, it is my rule of thumb to get plenty of sleep the night before, and then on the exam day, I don't review the material, and will probably watch a movie or a TV show to keep my mind off the clutter. But there is a lot more to the examination day, here they are:

1. I would try and schedule the exam in the first half of the day, when you are fresh and energetic.
2. It is important for you to know that the ITIL Foundation exam does not pose trick questions, where questions are twisted in a way to confuse candidates. The questions are straightforward as they are trying to test your awareness of ITIL concepts.
3. The ITIL Foundation exam is a test of the awareness of the concepts. The trickiest questions that you will encounter are those with negative connotations: Which of these is NOT a . . . ?
4. Read the question, fully, completely, and accurately. Understand what is being asked. Check and double check whether the question is in a negative connotation. After you understand the question, look at the answer choices.
5. You have 60 minutes to complete 40 questions. That's 1.5 minutes for every question, which is plenty of time in my opinion. Around half the questions on the exam would be straightforward, which can help you move on within half a minute. And there are some (in minority) that will make you think. Take time where you need it.
6. There will be some questions that you may not be confident of and need some time to think over. In such a scenario, leave the question unanswered and move ahead. Take on the easy and simple ones first, and then go back to the tougher ones.
7. There are no negative markings, a wrong answer doesn't end up deducting marks from the overall score. So you should at least attempt to answer all the questions.
8. Important one! If you are already working in an ITIL environment, students often answer ITIL Foundation examination based on their work experience rather than what they have studied in this book. Never make that mistake. What your organization has implemented may be a flavor of ITIL, with plenty of customizations. And what is offered in this book is pure ITIL, verbatim. So unlearn what you do at work and learn the ITIL concepts. Only use these concepts on the exam.

9. There is a simple way to spot the right answer. After you have read and understood the question, go through the four possible answers. Instead of picking the right answer, eliminate the incorrect ones first. Out of the four, two generally look highly unlikely. Then you are left with two possible answers to choose from, and this should be a cakewalk if you have read and understood the concepts as explained in this book.

10. A friend of mine believes that he gets the answer based on his first instinct. So he normally does not change his answer once he gets that feeling. He is an extraordinarily smart person, so for him, his first instinct is mostly the right direction. But I would not suggest that you take this approach too. When you read and reread the question and possible answers, you will start to frame the context, the interfaces, and the possible answers in your mind. This will help you come up with the right answer.

11. If you are working on a paper-based exam, be sure to darken the circles on the Optical Mark Reader (OMR) sheet completely. Since the answer papers are machine fed, you may end up losing out on half-shaded answers.

9.4 BONUS: FAQs on ITIL-Based Careers

On my blog and on my YouTube channel, many IT professionals, experiences ranging from debuts to those with ten years of experience, often ask me questions related to ITIL-based careers. Though hundreds of queries have come my way, the nature and the direction of the queries are similar. In this section, I will provide a list of frequently asked questions (FAQ) regarding careers in ITIL and answer them.

9.4.1 How Different Is ITIL from Project Management?

ITIL is a framework for service management. The activities that are performed as part of service management are generally perpetual, meaning that you will not have a definite end date. Project management, on the other hand, is finite. It has definite start and end dates. The project ceases to exist after it has ended, and then you generally move on to another project. To summarize, ITIL and project management are on different hemispheres. However, they do interface when you run service management projects such as upgrading the datacenter, optimization of a database, and decommissioning of mainframe computers.

9.4.2 Do I Need an IT Background to Become ITIL Certified?

You don't become ITIL certified for the heck of it, right? You try to find a role in line with ITIL and become employable through the certification. If you do not have an IT background, you can become ITIL Foundation certified, as long as you understand the concepts. However, for you to just start working in an ITIL organization, it will be a massive hill to climb. ITIL concepts are used in the workplace closely with the IT topologies and frameworks, and the disability sans IT knowledge will leave you wanting in every activity hurdle that you come across. My advice is that you enroll yourself in some IT training as well to become aware of the IT infrastructure, networks, and applications. To summarize, there is no ITIL without IT.

9.4.3 I Am in Software Development. I Want to Change My Career to ITIL-Based. What Can I Pick Up?

Software development follows project management methodology. Software support, however, works on service management. So if you want to switch over in a technical area, software support is the area that you should aim for. If you are interested in moving over to the management side of things, all the roles that ITIL has to offer are up for grabs. But for starters, you can aim at managing incidents by working as an incident manager or managing changes by working as a change manager. In short, on the management side of things, the roles are pretty interchangeable if you have the right kind of mindset for it.

For example, if you are a methodical and organized person, I recommend a change to a manager's role. If you are a communicator who can bring parties together, and if you like action, incident manager is the role to move into. And if you are the investigative type of a person, problem manager should be your pick.

9.4.4 What Are the Entry-Level Roles in ITIL?

Service desk is the most popular entry-level role in ITIL. Other roles that are offered to start are service reporting, operations control (monitoring batch runs), request fulfillment, and access management roles.

However, every organization might tag certain roles as entry level depending on their maturity and the expectations of their customers. I have seen certain organizations hire IT professionals with barely a year of experience as incident and problem managers. I have my reservations against hiring inexperienced professionals for such roles. I believe that these roles are developed with experience, and a less-experienced person may not see all the aspects that an experienced campaigner would be able to address.

9.4.5 What Is the Normal Role Progression in Service Operations?

Service operations offers the most number of jobs in any service provider organization. When it comes to progression, service desk followed by request fulfillment and access management are considered junior-level roles. The next role hierarchy in service operations is an incident manager followed by a problem manager. In some organizations, incident management is placed above problem management, as incidents are viewed as critical over problems. Incident management roles are divided into incident manager and major incident managers. The major incident managers are often experienced professionals with over ten years of ITIL experience under their belts. Although change management is a process under service transition, for most practical purposes, the roles are considered as service operations. Change manager roles are considered in line with the problem manager roles.

9.4.6 What Are the Technical Roles in ITIL?

There are a number of technical roles in ITIL. The processes that I discussed under service design offer technical ITIL roles. For example, an availability manager is expected to understand the technicalities of a service, infrastructure, and applications involved. An information security manager must have additional IT security-related certifications like CISA to be effective in the role. In service operations as well, the event manager plays a technical role rather than a management role. Other roles include the release manager, capacity manager, and IT service continuity manager, among others.

9.4.7 I Am Excellent at Customer Service. What Role Should I Aim for?

I recommend customer-facing roles for those who have a natural ability to connect and build rapport with people. These roles include the service-level manager, business relationship manager, and service delivery manager. Also, you will have sales roles in all organizations, where you are expected to meet customers and showcase the service management capabilities.

9.4.8 What Is the ITIL Role That You Have Enjoyed the Most?

This question was posed to me about five years ago. My answer was different then, it will be different now, and I am sure in years to come, it will change again based on my experiences in IT service management.

To answer the question, I enjoy working as a consultant. My job involves finding a solution to a business or a management problem, and providing all the plans necessary to implement it. The job involves plenty of customer interactions, makes full use of my ITIL expertise, and the short terms associated with consulting projects ensure that I don't get saturated over time.

9.4.9 What Roles Can I Play with the ITIL Foundation Certification?

Most of the roles are available for someone with an ITIL Foundation certification. However, if you want to grow within the ITIL environment and with the growing competition, it is important that you step on the gas and take the ITIL Intermediate certification to start with, and then aim for ITIL Expert certification.

9.4.10 What Do I Have to Do to Become Highly Successful in IT Service Management?

If you wish to succeed, then you must be a lifelong learner. There are many things to learn, everyday. ITIL is a service management framework. Likewise, you have COBIT that is picking up speed. COBIT aims at strengthening the governance framework and it interfaces seamlessly with ITIL. Devops is the flavor of the season. Most software organizations are moving into a devops environment, which is an integrated organization that works in both the development and support areas. If you are a quality buff, Six Sigma will give value to your brand and will help you progress.

The bottom line is that you identify what you are good at, where you want to be, and start to learn toward your target. Nothing is impossible to conquer, and you can do it if you have the right guidance and the willpower to carry you through.

9.5 Summary

In this chapter, I explained the various ITIL certifications that exist and the pertinent information regarding the certification examinations. Further, I offered plenty of advice, tips, and tricks for passing the ITIL Foundation exam. Lastly, I answered some questions regarding ITIL-based careers.

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A. K. Kaiser, *Become ITIL Foundation Certified in 7 Days*, DOI 10.1007/978-1-4842-2164-8

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