

Chapter 1

Overview of Operations Management

Before we delve into the technology at hand, the System Center Configuration Manager product, it's important to define what operations management is, what it defines, and why we need it. As an IT manager, you are not responsible for certain key business activities. When those activities are being processed on your servers, however, you become a critical piece of the puzzle in overall IT systems management. You may control the SQL servers, but they house information that is critical to day-to-day operation of the Billing department, for example. Suddenly, you start to see how everything ties together. A missing or damaged link in the chain, or an unplanned removal of the chain, may cause much more damage than you originally thought.

This is just one of the many reasons Microsoft created the Microsoft Operations Framework (MOF), which is based on the IT Infrastructure Library (ITIL). The idea behind MOF and ITIL is to create a complete team structure with the ultimate goal of service excellence. Numerous groups fall under the IT Department tag, but we often see many of them acting as separate departments rather than as one cohesive unit. Desktop support, application developers, server support, storage administrators, and so forth are all members of IT, but they are not always as unified as they should be.

System Center Configuration Manager 2007 was built with MOF and the ITIL in mind, so we will start the book by describing both for background. But SCCM is much more than just a mechanism to deploy software. In this chapter, you learn how we define IT service management, how ITIL is the foundation, and how MOF expands ITIL, but you will also learn about the Dynamic Systems Initiative and all of the Microsoft System Center products.

Understanding IT Service Management

ITIL and MOF were introduced as a way to deliver consistent IT Service Management (ITSM). Some of the key objectives of ITSM are:

- ◆ To align IT services with current and future needs of the business and its customers
- ◆ To improve the quality of IT services delivered
- ◆ To reduce the long-term cost of service provisioning

Think of ITSM as a conduit between the business and the technology that helps run the business. Without a proper conduit in place, one cannot function properly without the other. ITSM is about process, *not* about software products.

Exploring the IT Infrastructure Library

Before we dig into the inner workings of ITIL Version 2, it is important for the ITIL beginner to understand that ITIL, and its counterpart Microsoft Operations Framework (MOF) Version 3, are not based on technology. Both ITIL and MOF are based on IT processes. This is important to understand before proceeding. Readers interested in IT processes and procedures, as well as how the Microsoft System Center family of products fits into these processes, should find the rest of this chapter very interesting. For those of you who yawned and rolled your eyes, we'll meet you back at Chapter 2.

If you start researching ITIL, you will find that it is a series of books that describe an approach to IT service management. Originally created in the United Kingdom to address strict operations management standards, ITIL has become the accepted standard in IT service management. The library is owned by the UK government's Office of Government Commerce (OGC). If you really want to get cozy with ITIL, be prepared to spend a lot of time reading. In its original form, the ITIL volumes were at a count of 60 books. These books were created by industry leaders of the time and described best practices for IT processes.

There is much more to ITIL than just the books, however. ITIL as a whole includes the books, certification, ITIL consultants and services, and ITIL-based training and user groups. ITIL is mainly updated by its own user group, known as the IT Service Management Forum (itSMF). The last piece of the puzzle, ITIL certification, is administered by the Netherlands Examination Institute for IT (EXIN) and the Information Systems Examination Board (ISEB).

ITIL can be divided into two categories: Service Support and Service Delivery. The two categories include numerous processes. Service Support is described as the practice of disciplines that enable IT Services to be provided. Without those disciplines, which we'll outline shortly, any attempt to provide IT Services would potentially be unmanaged and possibly chaotic. Underlying this division is the difference between what is considered a *user* of the system and what is considered a *customer* of the system.

Now you may be thinking, "I run an internal network. Everyone on my network is a user; we don't have any customers who connect into the network." In all actuality, every administrator (admin) has both users and customers on their network, and often the same individual can be both a user and a customer. For example, HallieM is a *user* of the network when she interacts with the Service Desk. HallieM is also a *customer* of the network when she obtains certain services from another department, such as services that she must pay for or services that have Availability Management in place, as would be the case with e-mail and database services. Table 1.1 shows the breakdown of the difference between service support and service delivery.

SERVICE DESK

We will first look at the Service Desk, as it is unique among the items in Table 1.1. The Service Desk is a *function*, unlike the other items listed, which are processes. All incident reporting and service requests are routed through the Service Desk. It is the function that ties the service providers with the users, keeping users informed of service events and actions that may impact their day-to-day activities. The Service Desk becomes a single point of contact for customers and users to interact with the IT department. This approach helps expedite the call process by managing it in a timely and satisfactory way.

INCIDENT MANAGEMENT

Incident Management is the mechanism by which the Service Desk records, updates and tracks the enterprise "fires." The Incident Management process is mainly concerned with restoring normal

TABLE 1.1: ITIL Service Support and Service Delivery Differences

CATEGORY	FOCUS	AREAS
Service Support	User Focused	Incident Management Problem Management Configuration Management Change Management Release Management
Service Delivery	Customer Focused	Service-level Management Financial Management Availability Management Capacity Management Service Continuity Management

service operations as soon as possible. This will help minimize any adverse effects on business operations and will ensure high levels of service quality and availability. Service-Level Agreements (SLAs) will determine what a “normal” service operation is. Information is collected about the incident to allow changes or enhancements in the environment to prevent future incidents. This information can also be used to compare against SLA compliance metrics and service quality information.

PROBLEM MANAGEMENT

The Problem Management process is mainly concerned with minimizing the impact of incidents and problems. The goal is to reduce incident resolution times by providing insights for known errors and removing the underlying causes. This strategy improves IT service quality by helping the Service Desk resolve incidents at the time of logging. If an incident can be resolved at the time of logging, business impact is reduced, business efficiency is improved, and IT efficiency is improved.

The problem-management process should not only be considered a “reactive” approach, however. When dealing with Incident Management, problem control, or error control, it is very reactive. The problem-management process can be viewed as “proactive” when you consider how it is used for problem prevention.

Problem investigation and diagnosis are used when known errors are created. During this investigation and diagnosis time, insight details of the known errors are distributed until a fix for the problem is found. This approach helps with the staffing of the incident-management process, thus ensuring there aren’t too many IT staff members duplicating work while trying to fix the same issue.

CONFIGURATION MANAGEMENT

The Configuration Management process is responsible for keeping an accurate and up-to-date model of the entire IT infrastructure. It uses this information to help support a number of areas by doing the following:

- ◆ Allowing for assessment of Change or Problem Management functions
- ◆ Allowing financial information to be gathered to help determine lease, rental, maintenance, and support costs for IT infrastructure components

- ◆ Supplying information about component performance and reliability to support capacity and Availability Management
- ◆ Improving security by identifying the location and details of assets, making it difficult for unauthorized changes to be carried out undetected
- ◆ Helping with legal obligations by identifying the location of unauthorized software, determined by enabling authenticity checks on software and making sure current, correct versions of the software are being used

Configuration Management uses this information to identify relationships between items that are going to be changed and any other components of the infrastructure that an item is tied to. Such a strategy enables the owners of the other components to be notified and involved in the impact-assessment process.

CHANGE MANAGEMENT

The Change Management process is used to ensure that standard methods are used when implementing change, and for developing and documenting reusable processes. Implementing a change management system can reduce the possibility that a change in the environment could cause a failure, thus resulting in an incident.

The IT infrastructure is constantly changing. Patches, service packs, updates, bios updates, and so forth are released on an almost daily basis. Having a safe and repeatable process in place is vital to service management.

RELEASE MANAGEMENT

Changes in the environment often result in the need for new versions of software, new hardware, new documentation, and so forth. The Release Management process works closely with Change Management and Configuration Management to produce a secure and managed rollout of the new item. Consequently, physical changes to the environment are taken into account and the transition to live operation is successful — including both hardware and software releases.

The quality of a new version of software is tested in this process, along with tests to determine whether patches and updates are going to affect a piece of “approved” software. In this way, the process guarantees that only the authorized versions of software releases are being installed.

SERVICE LEVEL MANAGEMENT

The Service Level Management (SLM) process is responsible for creating SLAs and making sure Operation Level Agreements (OLAs) are met at all times. During this process, changes to the environment are assessed to determine the effect on SLAs.

SLAs play an important role in SLM. They help set expectations for IT by determining what the customer’s service-level requirements are, and they help customers by having a measurable understanding of what “good” service is. Both sides can agree on timelines for deliverables for everything from service upgrades to updates, to incident resolution. SLAs also provide a clear understanding of what value customers are receiving from IT and can be used as a basis for charging for IT services. This brings us to the Financial Management process.

FINANCIAL MANAGEMENT

The Financial Management process is responsible for determining the costs of IT services as well as calculating the return on IT service investments. It is also a key in the role of recovering costs

from customers if you charge for your services. As mentioned earlier, having SLAs in place to manage expectations is very important.

Budgeting can become much more accurate as well because Financial Management is responsible for tracking costs of IT assets and resources. Financial management allows you to break down the money spent on IT services so you can clearly view where IT budget money went. Due to budgeting being more accurate and a much more precise data point, it helps support future business decisions on IT investments.

If you are considering charging for IT services, a fair recovery system is determined by data gathered through the financial-management process. Charging for internal services has its advantages and disadvantages. One advantage to charging for IT services is that it helps customers and users see the value of IT. Customers and users may also behave differently if they are faced with a “charging” model. Such a model helps the customers decide whether the services they are receiving are cost-justified. Using a model could lower the demands on the IT department.

One of the disadvantages of charging for services is that the customer has the ability to take business or services elsewhere, which could have a severe effect on budgeting. Also, charging systems are often expensive, and the cost of such a model could offset the money that is generated by the system.

CAPACITY MANAGEMENT

The Capacity Management process involves determining the required service delivery, the current service delivery, and the IT infrastructure, and ensuring that all current and future capacity and performance requirements from the business are met. Capacity management also needs to take into account changes in new technology and the improvement in performance that new technology brings to the table. Basically, this process is responsible for identifying the current service delivery as well as the service delivery potential at any given time.

Capacity management is responsible for making sure business requirements for system capacity are met at all times. Again, this does not directly relate to a technical capacity. It is related to the business requirements for the system, not necessarily the performance of the system.

IT SERVICE CONTINUITY MANAGEMENT

The IT Service Continuity Management process ensures that an organization can continue to function with predetermined and agreed-on levels of IT services to support the minimum business requirements following an interruption to the business. The idea behind this process is that the organization will always have a base level of IT services that are required at all times.

Each IT service is examined to determine the minimum level it can function at to meet the business requirements. A plan is then put in place to guarantee that this level of service can be reached at all times under any circumstances.

AVAILABILITY MANAGEMENT

The Availability Management process deals with the design, implementation, and management of IT services to guarantee that certain business requirements for availability are obtained. This requires information from both Incident Management and Problem Management to determine why an IT service failed and the time it took to resume service. This process can help IT departments meet SLAs that define availability levels. These SLAs cannot be met without a thorough understanding of the availability and reliability of IT components.

Availability Management is a very high-profile process. Take an accounting server offline during a month-end run and see what kind of attention it gets. Because of this high-profile status,

it is beneficial to have a single process owner for all availability issues to ensure that consistent and comprehensive measures are taken for managing and improving availability to IT systems.

Exploring the Microsoft Operations Framework

As stated earlier, the Microsoft Operations Framework (MOF) is the basis of System Center Configuration Manager 2007. The MOF was developed by Microsoft and a group of partners to expand on the best practices developed by ITIL. MOF includes a plethora of resources that are available to help you achieve mission-critical system reliability, manageability, supportability, and availability with Microsoft products and technologies. These resources are in the form of white papers, operations guides, assessment tools, best practices, case studies, templates, support tools, courseware, and services. All of these resources are available on the official MOF website at www.microsoft.com/mof.

How MOF EXPANDS ITIL

While ITIL is based on IT operations as a whole, MOF has taken the route of providing a service solution as its core. MOF focuses on the release and life cycle of a service solution, such as an application or infrastructure deployment.

Because ITIL was based on a philosophy of “adopt and adapt,” Microsoft leveraged that strategic fundamental basis for the MOF. Although Microsoft supports ITIL from a process perspective, Microsoft decided to make a few changes and add a few things when it built MOF. One of these changes and additions includes moving to a “prescriptive” process model. Microsoft defines the ITIL process model as “descriptive.” It has more of a “why” approach, whereas MOF has more of a “prescriptive,” or “how,” approach.

MOF also introduced the concept of Service Management Functions (SMFs). As Table 1.2 illustrates, there are now 21 SMFs that describe the series of management functions performed in an IT environment. All of these SMFs map to an ITIL-based best practice for performing each function. Notice that the SMFs are grouped into *quadrants*, a concept we explain in the section “The Microsoft Operations Framework Process Model” shortly.

MOF also extended many of the existing processes in ITIL and created new processes. These will be discussed later in the chapter.

MOF also introduced the Team model. This gives the MOF two core models; the Team and Process models. The Team model was added to fill a gap in ITIL, which identifies roles for the process owner of each operation process, whereas MOF creates seven distinct role clusters that describe the functional role or team:

Service Primary responsibility is to make sure all IT services are at a satisfactory level to customers and users. This is done by creating SLAs and ensuring that they are being met on a regular basis.

Infrastructure Responsible for ensuring that plans are in place to keep networking, telecommunications, hardware, and software running in order to satisfy business requirements.

Support Maps to the Service Desk, Incident Management, and Problem Management functions in ITIL.

Operations Responsible for making sure that the day-to-day tasks of running the IT systems are met, according to SLAs.

Partner This is more of a “virtual” team in the IT department, usually made up of outsource vendors, IT partners, resellers, service providers, consultants, and so forth.

TABLE 1.2: MOF Quadrants Breakdown

QUADRANT	SMF
Optimizing	Service Level Management Financial Management Services Continuity Management Availability Management Capacity Management Workforce Management
Changing	Change Management Configuration Management Release Management
Operating	System Administration Security Administration Service Monitoring and Control Job Scheduling Network Administration Directory Services Administration Print and Output Management Storage Management
Supporting	Service Desk Incident Management Problem Management

Security Responsible for data confidentiality, data integrity, and data availability.

Release Transitions a release between development or test environments into production. A release could be a new software package, an update, a patch, and so forth. The release role also has the responsibility of maintaining accurate inventory management and asset management.

The Risk Management discipline was added to recognize that the management of risk is its own management discipline. ITIL only provides discussion about handling of risk for each IT operations process.

Explicit management review checkpoints are also built into MOF to guarantee that there is involvement by management at each key step in the process. The ITIL books do not include these checkpoints. This is another added value that Microsoft provides with MOF.

THE MICROSOFT OPERATIONS FRAMEWORK PROCESS MODEL

The MOF Process model breaks down a complex environment into an easy-to-manage and easy-to-understand set of functions, thanks to the numerous SMFs that Microsoft added when they created the MOF. SMFs are just a portion of the overall Release Cycle that MOF employs.

Microsoft defines a *release* as any change, or set of changes, that is incorporated into a managed environment. A release includes not only changes in applications or operating system updates, but also changes in operations processes or changes in the physical environment. These releases have a defined life cycle. The life cycle is defined by quadrants, Operations Management Reviews

(OMRs), and SMFs. The four quadrants are essentially categories, defined by the different SMFs that each quadrant contains. SMFs are groups of best practices; each category explains the activities of an operations environment. These quadrants reflect those found in Table 1.2.

The Changing Quadrant

The Changing Quadrant is a group of SMFs that define the proper introduction of approved changes into a well-managed IT environment. This can include changes in applications, hardware, and systems, as well as changes in policies and procedures. The Changing Quadrant maps to the ITIL discipline of Service Support. The three SMFs that reside in the Changing Quadrant are Change Management, Configuration Management, and Release Management.

Change Management The Change Management SMF is intended to place a rigorous process for introducing change into a well-managed IT environment with minimal impact to the operations of that environment. In the most efficient and well-managed enterprises, there are Change Advisory Boards as well as special subcommittees such as the Change Advisory Boards — Emergency committee.

Configuration Management Configuration Management is all about being able to identify, maintain revisions, and track every version of processes, procedures, documentation, hardware, software or any other component within the enterprise. Once this catalog manifest has been achieved, these attributes can become potential Configuration Items (CIs), which then build into an overall model with the environment.

Release Management Release Management is the culmination of Change and Configuration Management to inject or deploy change into the environment. This can be a single change or multiple changes that have been developed, tested, and packaged for a deployment. The goal of Release Management is to record and track changes into an environment with success, accountability, and the least impact possible to the environment.

The Operating Quadrant

The Operating Quadrant is a group of SMFs that are used to monitor, control, manage, and administer service solutions to achieve and maintain service levels. All of the SMFs in the Operating quadrant are items that Microsoft has specifically added to expand ITIL.

System Administration The day-to-day administration of services and systems in an IT infrastructure. This could include user and group account administration; administration of file, print, database, and applications servers; low-level monitoring; and troubleshooting of the systems in the IT infrastructure.

Security Administration The administration of security in an IT infrastructure. This includes monitoring the environment in both a reactive and proactive way, thus ensuring that the environment is safe from attack. This is accomplished in many ways, including identification and authorization control, access control, and auditing.

Service Monitoring and Control The near real-time monitoring and alerting of the health of an IT environment. This SMF ensures that SLAs are in place and that business requirements for IT services are being met.

Job Scheduling The administration and scheduling of jobs and processes so that an efficient sequence is utilized. This could include scheduling batch jobs to maximize system throughput and utilization and to meet SLAs.

Network Administration Administration of the network to ensure that the network operates at an efficient level at all times. This includes the administration of people, processes and procedures, vendors, and service providers, as well as the administration of the network hardware.

Directory Services Administration The administration of resources in Active Directory, such as users, applications, servers, printers, and so forth. The goal of this SMF is not only to make sure that directory access is always available, but also to ensure that information from the directory is available via a simple and centralized process.

Storage Management The administration and control of data, both electronic and physical, for the purposes of restoration and historical archiving. This includes both onsite and offsite storage. Storage Management was put into place to help guarantee the physical security of backups and archives.

The Supporting Quadrant

The Supporting Quadrant is a group of SMFs that identify, assign, diagnose, track, and resolve incidents and problems in a timely manner within SLAs. The Supporting Quadrant maps to the ITIL discipline of Service Support. The three SMFs that reside in the Supporting quadrant are Service Desk, Incident Management, and Problem Management.

Service Desk Almost identical to the Service Desk within ITIL, the Service Desk should be the primary point of contact for an organization to receive customers' problems, concerns, questions, complaints, or requests. This function can also bridge or broker other technical resources that work independently across multiple geographic locations.

Incident Management Incident Management is the process by which, when an issue or occurrence is detected, the correct support resource can address and resolve the incident as quickly as possible. This process allows an organization to better understand the impact an incident has on the overall SLA, as well as mapping recurring issues and potential financial impact.

Problem Management In conjunction with Incident Management, Problem Management leverages the data results from the Incident Management process to trend repeating incidences, prioritize, and analyze root causes. Without this important process, IT can be perceived as a "budgetary black hole" as well as impacting customers' productivity by repeating incidences.

The Optimizing Quadrant

The Optimizing quadrant is a group of SMFs that help maintain business and IT alignment by attempting to decrease IT costs while maintaining or improving service levels. The Optimizing quadrant introduces three new SMFs to help expand the base ITIL disciplines.

Workforce Management This function was added specifically to address staffing issues in the IT infrastructure team. It helps with the process of attracting, developing, and retaining a properly trained and prepared IT staff. It also ensures that the work environment is safe and efficient.

Security Management This function was created to help an IT infrastructure define and communicate the business's security plans and policies, based on the guidelines and regulations that apply to that business.

Infrastructure Engineering Infrastructure Engineering is the conduit and link between the people, process, and technology of an IT Department. These reusable and consistent standards, policies, and procedures in the Infrastructure Engineering SMF could be linked to any other SMF to help coordinate engineering policies and standards.

Service Level Management The process of Service Level Management is where the rubber meets the road. This process defines which services are offered and supported, and at what cost to the business. Most organizations we have spoken and worked with have unwritten expectations or assumptions (“... we expect the application 100% of the time,” “... my e-mail is running slow,” and so on), but few have well-defined, written SLAs. As organizations start defining and agreeing on service levels, along with seeing the cost of doing business we’ve seen drastic behavior modifications or acceptance.

Capacity Management The art and process of Capacity Management understands what an organization has and how it’s performing, knowing its current and future capabilities, and optimizing for existing and future needs. The art is bringing together business, services, and appropriate, optimized resources, which achieve the agreed SLAs of the customer.

Availability Management As noted previously, it’s an expectation within the Service Level Management process for an application to be available 100 percent of the time. So it becomes apparent that Availability Management has become one of the most important aspects with an IT service organization. Availability or the occurrence of an incident has a tremendous impact on customer perception of the IT services being provided.

Financial Management In order for an organization to meet its requirements within the Service Level Management process, there are business demands for fiscal responsibility from a cost and budgetary perspective. In other words, for every request (action) there is a financial impact (reaction). At the end of the day, there needs to be a cost/benefit analysis.

Service Continuity Management Another reason you should work towards achieving a well-defined SLA is preparing for the worst to happen: losing a hard drive, having an incorrect network configuration, having a WAN link trunk cut, or having a network administrator accept another job, for example. A customer or consumer of IT services doesn’t really care about the “hows” or “whys” of making things happen; they just want their things to happen.

In order to keep things happening, an organization must adopt a Service Continuity Management process. This ensures keeping the business running or documenting risks which the business is willing to accept when taking an incident. This is a fine balance of resilient systems, failover or recovery options, and risk management.

Operations Management Reviews

Because the Microsoft Operations Framework is depicted as a circle, it is a continually evolving set of processes. Along with the distinct processes, continual customer feedback is always a part of the process in order to further refine them. Along with the four distinct SMF quadrants are the Operations Management Reviews (OMRs), which are process review assessments that include the appropriate stakeholders.

OMRs are either event-based or time-based. The Change Initiation and Release Readiness reviews are event-based and occur at the initiation and final installation of a review into the target environment.

Change Initiation Review The Change Initiation Review is triggered when approval has been requested for a proposed change to the environment. This begins the process of actually

implementing the release. Investments in money, time, equipment, and staff will now begin to work on the process and get it ready for release.

Release Readiness Review The Release Readiness Review determines when a release is confirmed as ready for production. The proposed release is checked to ensure standards, policies, and quality; metrics are in place to support the release.

The Operations Review and Service Level Agreement Review occur at regular intervals to assess the internal operations as well as performance against customer service levels.

Operations Review The Operations Review is a regularly scheduled review to assess and improve IT operations based on business need and SLAs. Operations reviews use information from operations guides, company policies and procedures, and operating-level agreements to measure and evaluate the performance of the operations staff.

Service Level Agreement Review The Service Level Agreement Review is a regularly scheduled review to assess and improve the alignment of business needs with IT service delivery defined in SLAs. During this review, the operations staff and service-level management take current information and measure that against published SLAs to determine whether the service has met its service-level requirements.

Within these four quadrants is a collection of 21 SMFs. Each quadrant consists of a group of SMFs that divide the quadrant into logical procedures and tasks. Each SMF is assigned to a home quadrant, but SMFs are by nature cross-functional and cross-quadrant. If you look back at Table 1.2, you can see how these processes define an SMF, each of which is a series of actions or operations that are designed to achieve a goal. Each process is then broken down into procedures, which allows for coordination between departments. Each procedure has a series of tasks that must be performed to complete the procedure. The *task* is the lowest level of effort on a project.

ITIL VERSION 3 AND MOF VERSION 4

In April 2008, Microsoft released MOF Version 4, which is based on ITIL Version 3. Although there is somewhat of a realignment of service management functions and the like, the basic fundamentals still remain true. MOF v4 consists of four phases that include sixteen SMFs. The four phases and goals are:

Plan Plan and optimize an IT service strategy to support business goals and objectives.

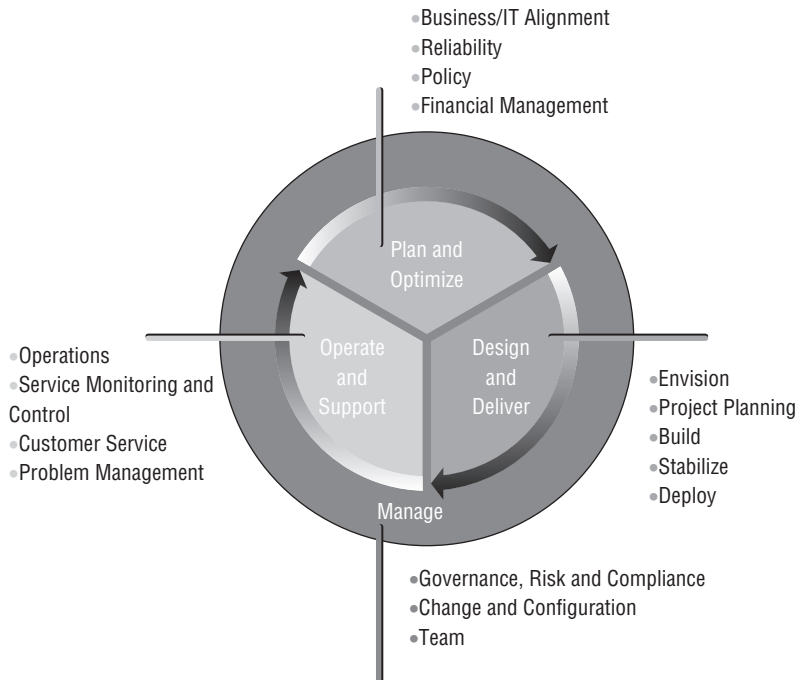
Deliver Ensure IT services are developed effectively, deployed successfully, and ready for operations.

Operate Ensure IT services are operated, maintained, and supported in a way that meets business needs and expectations.

Manage This is the foundation of the IT service life cycle. Provide operating principles and best practices to ensure that the investment in IT delivers expected business value at an acceptable level of risk. This phase focuses on IT governance, risk, compliance, roles and responsibilities, change management, and configuration. Processes in this stage occur during all phases of the life cycle.

Within each phase, service management functions define the people, process, and activities required to align IT services. These functions are shown in Figure 1.1.

FIGURE 1.1
Microsoft Operations
Framework 4.0



Tying It All Together

Microsoft set out to provide you with tools that help you manage your IT systems. They achieved this by integrating systems management tools and knowledge of the systems to help you with day-to-day operations of the environment, as well as ease your troubleshooting efforts and time and improve planning capabilities. Microsoft took ITIL and MOF, and created a “family” of products — known as the System Center — that helps you in your quest to align with the practices set forth in those documents.

DYNAMIC IT

The System Center family of products helps IT organizations capture and use information to design more manageable systems and automate IT operations. As software becomes more and more complex, thus introducing new components and systems to the infrastructure, the infrastructure will in turn become much more complex. For example, an inventory application moves from being client/server-based, to multi-tier, to a web service-based application. As the application grows and more users start using it, the decision is made to install a hardware load balancer in front of it. Then the data is moved to a Storage Area Network (SAN) to give the IT Department better control over backup and recovery options.

Because of these changes, many different “teams” in the IT Department are involved with this “application.” You quickly see how a change to the application can affect more than just the application developers. You now have to coordinate changes with the Web Server Team, the database administrators, the Networking Team, and the Storage Team.

Whether these teams are made up of one person (you), or they are made up of dozens of people, you quickly realize how complex the infrastructure can become, and why there is a need for

management of these distributed systems. Dynamic IT is a vision to build software that incorporates ITSM capabilities and MOF best practices with the software (System Center) in order to match IT capabilities and operations with business needs.

Dynamic IT will help IT organizations deliver end-to-end offerings that will:

- ◆ Increase productivity and reduce costs across the entire IT organization
- ◆ Reduce time and effort required to troubleshoot and maintain systems
- ◆ Improve system compliance with business and IT policies
- ◆ Increase responsiveness to changing business demands

SYSTEM CENTER

Before looking at the System Center family of products, let's first look at the different System Center management disciplines that were introduced by Microsoft to help define IT Service Management:

- ◆ Operations Management
- ◆ Change Management
- ◆ Configuration Management
- ◆ Release Management
- ◆ Asset Management
- ◆ Data Protection Management
- ◆ Problem Management
- ◆ Capacity Management
- ◆ Incident Management

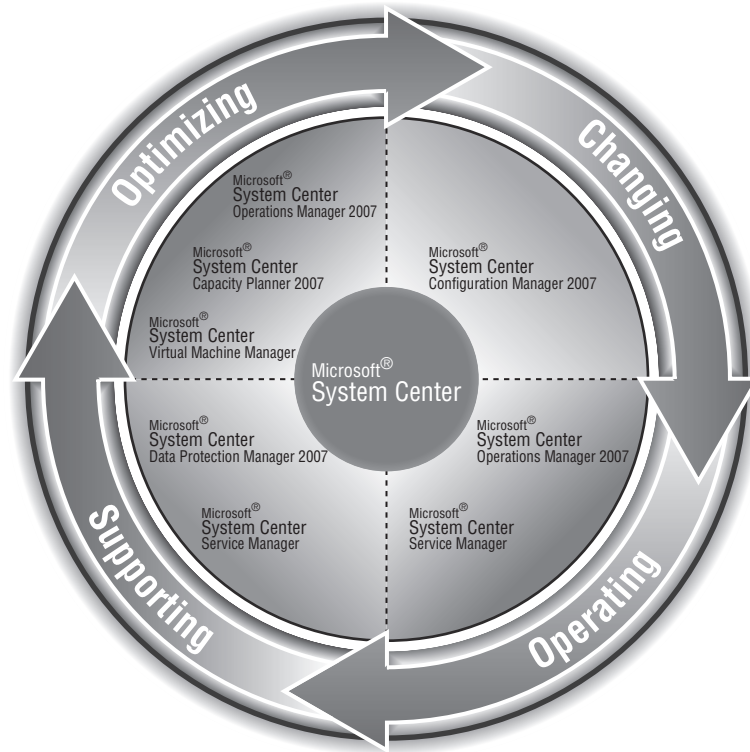
Looking at this list and Microsoft's plan for the System Center family of products, you can quickly see how they have embraced this framework. Through internal products, close work with partners, and acquisitions of software from other companies, Microsoft has addressed each one of these disciplines with products within System Center. As an alignment to the System Center brand, all management products within Microsoft will be rebranded with the System Center logo and family name. As Figure 1.2 illustrates, the Microsoft System Center family is at the heart of management tools.

System Center Operations Manager Formerly Microsoft Operations Manager (MOM). This product provides you with tools to help you proactively monitor your network as well as reduce the complexity associated with managing an IT infrastructure.

System Center Configuration Manager Formerly Systems Management Server (SMS). This product provides a comprehensive solution for the Change Management and Configuration Management disciplines. It touches Release Management and Asset Management as well because it is often used to roll out patches and updates and has a widely used inventory feature.

System Center Data Protection Manager Data Protection Manager (DPM) is a backup and recovery product that gives the end user some recovery options to help take some of the

FIGURE 1.2
Microsoft System Center
product alignment



burden off the IT staff. DPM is a centralized backup solution that captures changed files to disk, providing rapid and reliable recovery. The primary focus is on Microsoft Server and application workloads such as SQL Server, Exchange Server, Virtual Server/Hyper-V, Windows File Server, and SharePoint Portal Server.

System Center Capacity Planner Capacity Planner is a tool to be used in pre-deployment scenarios when planning a new deployment, infrastructure changes, or upgrades. It provides best-practice guidance and hardware-specific knowledge to help planning around Exchange 2003 and 2007, as well as MOM 2005 and Operations Manager.

System Center Service Manager This is another product that touches more than one management discipline. Service Manager will introduce Microsoft's configuration management database (CMDB), which will be populated with data from other System Center products, a workflow engine for automation of IT processes and integration, a common data reporting warehouse, and a self-service portal and knowledge base. Service Manager will address key processes such as Incident Management, Problem Management, Change Management, Asset and Configuration Management, End User Self-Service, and Performance Reporting.

System Center Virtual Machine Manager Virtual Machine Manager (VMM) is a new solution to address managing virtual infrastructures (Microsoft and VMWare), providing a unified management tool for host (physical) and guest (virtual) machines, identification of underutilized hosts, and rapid provisioning of guests.

System Center Mobile Device Manager Mobile Device Manager (MDM) is a new solution that addresses key scenarios inherent to mobile devices. These scenarios include:

- ◆ Making a Windows Mobile 6.1 or higher device a fully qualified member of an Active Directory Domain
- ◆ Mobile VPN with dual factor authentication access
- ◆ Active Directory Group Policy enablement of over 125 Group Policy attributes specific to mobile devices
- ◆ Over the air (OTA) provisioning
- ◆ Remote device wipe

System Center Essentials System Center Essentials (SCE) is a new management solution that is targeted at the emerging small to midsize business segment. This solution is designed to manage up to 500 workstations and 30 servers providing unified reporting (i.e. assets, capacity, software deployment, and so on), proactive monitoring, change, and configuration management.

Defining Operations Management

There is often some confusion when it comes to the actual definition of *operations management*. Microsoft's System Center family of products comprises several products that span a wide range of "management" ground. The most confusing overlap of this area is between systems management and operations management. This section looks at the difference between the two.

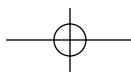
Systems Management

Systems management is typically defined as software that is used to centrally manage large groups of computer systems. This software contains the tools to control and measure the configuration of both hardware and software in the environment.

Microsoft's solution in this arena is a product called System Center Configuration Manager 2007. Configuration Manager provides remote tools, software update management (otherwise known as patch management), software distribution, hardware and software inventory, software metering, desired configuration management, operating system deployment, and much more. With each capability of Configuration Manager you take advantage of, you can reduce the total administrative effort required to maintain the systems within your environment, thus lowering the total cost of ownership (TCO) of the resources that are being fully managed.

Operations Management

Now that you have an understanding of what falls under the category of systems management, we can focus on operations management. *Operations management* is mainly focused on ensuring that business operations are efficient and effective through processes that are aimed at improving the reliability and availability of IT systems and services. You accomplish this by gathering information from your current systems, having the proper people in place to decipher that data, and having proper procedures in place to carry out any tasks that may arise if there is a current or potential problem in your environment.



16 | **CHAPTER 1** OVERVIEW OF OPERATIONS MANAGEMENT

The System Center solution that addresses this need is System Center Operations Manager. Operations Manager provides you with the information you need (i.e., performance, security, scalability, knowledge, and so on) to help reduce time and effort in managing your IT infrastructure by automating service tasks and giving you a proactive approach to determining possible problems.

