



## **SharePoint Server 2010: Operations Framework and Checklists**

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# SharePoint Server 2010: Operations Framework and Checklists

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## Abstract

This document provides information, such as checklists for daily, weekly, and monthly tasks, which are related to the operations management of a Microsoft® SharePoint® Server 2010 environment. In addition, guidance is provided for using Microsoft System Center Operations Manager 2007 R2 to monitor a SharePoint environment.



### Tip:

To read more operations and monitoring topics, visit the [SharePoint Server 2010 Library](http://go.microsoft.com/fwlink/?LinkID=181463) (<http://go.microsoft.com/fwlink/?LinkID=181463>)

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# Operations Management and Monitoring of a SharePoint Server 2010 Environment

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This document details the operational processes, tasks, and tools that are required to operate and maintain a SharePoint Server 2010 environment. It explains how the management of SharePoint Server 2010 fits in with the overall Microsoft Operations Framework (MOF) model. It will help you design your approach to operational management and give you the means to implement processes and procedures that help keep your environment running smoothly.

Within a SharePoint Server 2010 environment, the procedures, roles, and responsibilities that are involved in operations should be formalized. You can use the Microsoft Operations Framework (MOF) to help model your organization's formalization efforts. Implementing SharePoint Server 2010 operations procedures according to the MOF processes requires:

- **Understanding MOF**

MOF is a collection of best practices, principles, and models that give you technical guidance about the management of IT projects such as daily SharePoint Server 2010 operations. MOF guidelines will help you achieve mission-critical production system reliability, availability, supportability, and manageability for Microsoft products.

- **Learning about best practices for the management of SharePoint environments**

We recommend that you implement proven and practical procedures to manage a SharePoint Server 2010 environment. Tried, tested, and documented methods of managing operations in your organization may be more efficient than developing your own methods.

- **Separating operations into daily, weekly, and monthly processes**

Document the operational tasks that are performed regularly in your company. Documenting how and when tasks are performed ensures that the information is preserved when members of the operations staff change jobs or leave the company. New employees also benefit from this documentation because it helps them quickly learn how your IT department conducts its SharePoint operations.

- **Deploying the tools required for operating a SharePoint Server 2010 environment**

Many tools are available to help troubleshoot problems, automate tasks, and aid in the monitoring and maintenance of your SharePoint Server 2010 environment. You can define a standard set of tools for your organization so that the tasks performed by your operations team are performed accurately, efficiently, consistently, and in a controlled manner. You should also implement processes to track incidents and major configuration changes.

For more information, see the following sections:

- [Microsoft Operations Framework](#)

- [Monitoring SharePoint Server 2010 with Microsoft Operations Manager 2007 R2](#)

## Microsoft Operations Framework

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The Microsoft Operations Framework (MOF) 4.0 is a collection of integrated best practices, principles, and activities that provide comprehensive guidelines for achieving reliability in IT solutions and services.

MOF provides question-based guidance that enables you to determine what is needed for your organization now, as well as activities that will keep the IT organization running efficiently and effectively in the future.

MOF 4.0 supports the integration of any policies, tasks, or activities based on other frameworks (such as ITIL, COBIT, and ISO 20000) with the Microsoft platform.

The guidance in MOF encompasses all of the activities and processes involved in managing an IT service: its conception, development, operation, maintenance, and—ultimately—its retirement. MOF organizes these activities and processes into service management functions (SMFs), which are grouped together in phases that mirror the IT service lifecycle. Each SMF is anchored within a lifecycle phase and contains a unique set of goals and outcomes that support the objectives of that phase. An IT service's readiness to move from one phase to the next is confirmed by management reviews (MRs), which ensure that goals are achieved in an appropriate fashion and that IT's goals are aligned with the goals of the organization.

## MOF and SharePoint Server 2010

It's important to understand the connection between sound operational practices, sound procedures, and a healthy SharePoint Server 2010 infrastructure. Well-documented, thorough operational processes and procedures ensure that all the components in an organization's environment, on which SharePoint Server relies, are managed efficiently and effectively through all the design, deployment, and supporting phases.

Changes to the components of an organization's infrastructure, such as firmware updates to routers and firewall rules changes, on which SharePoint Server relies can result in an unexpected outage. Modification in these areas can happen without the involvement of the organization's SharePoint team. By using MOF-based processes to help make sure that there is documentation of these service interdependencies, an organization can help minimize the chances of preventable outages and reduce the impact of scheduled changes.

## The MOF Service Lifecycle

MOF provides guidelines about how to design, plan, deploy, and maintain IT operational processes in support of mission-critical service solutions. Because MOF is a generic model, you must adapt many of the recommendations for use in your company. When you see references to "roles" in the MOF model, understand that a single person may be assigned

many roles, especially in small companies. However, even if a single person represents the whole IT department, the procedures and recommendations in this model are generally applicable.

MOF is a structured and flexible model that is based on the following resources:

- Microsoft Consulting Services (MCS) and Customer Support teams and their experiences working with enterprise customers and partners, as well as the internal IT operations groups at Microsoft.
- The IT Infrastructure Library (ITIL), which describes the processes and best practices that are required for the delivery of mission-critical service solutions.
- ISO/IEC 15504 from the International Organization for Standardization (ISO), which provides a normalized approach to assessing software process maturity.

MOF provides recommendations about how to design, plan, deploy, and maintain various Microsoft products, such as Microsoft® Windows® Server 2008, Microsoft® SQL Server® 2008 and SharePoint Server 2010 among others.

For detailed information about the Microsoft Operations Framework, see [Microsoft Operations Framework](http://go.microsoft.com/fwlink/?LinkId=21640) (<http://go.microsoft.com/fwlink/?LinkId=21640>). For more information about ITIL see [ITIL Service Management](http://go.microsoft.com/fwlink/?LinkId=202814) (<http://go.microsoft.com/fwlink/?LinkId=202814>) and [ISO](http://go.microsoft.com/fwlink/?LinkId=84073) (<http://go.microsoft.com/fwlink/?LinkId=84073>).

 **Note:**

The third-party Web site information in this article is provided to help you find the technical information you need. The URLs are subject to change without notice.

## Components of the MOF Service Lifecycle Model

An IT service lifecycle describes the various phases through which an IT service progresses. It begins with planning and optimizing the IT service to align it with the business strategy, continues through the design and delivery of the IT service, and onto its ongoing operation and support.

Underlying is a foundation of IT governance, risk management, compliance, team organization, and change management.

MOF maps the various essential processes and outcomes to the different phases of the IT Service lifecycle in order to deliver successful, low risk IT services that meet the business need and have a governance model that ensures compliance with rules and regulations.



**Figure 1 Microsoft Service Lifecycle**

The MOF lifecycle is composed of a foundation layer that supports three continuous phases:

- Manage Layer

- Plan Phase
- Deliver Phase
- Operate Phase

These components, taken together, form a circular lifecycle that can be applied to services that range from a single application to a complete IT landscape made up of multiple data centers.

Service management functions (SMFs) support each phase in the process model. It's important to note that although the model describes the MOF quadrants sequentially, activities from all quadrants can occur at the same time.

Briefly, the lifecycle phases involve the following activities:

- The **Plan Phase** provides guidance about how to plan for and optimize an IT service strategy. It helps to deliver services that are valuable and compelling for the organization, predictable and reliable, policy-compliant, cost-effective, and adaptable to changing business needs.
- The **Deliver Phase** helps IT professionals more effectively deliver IT services, infrastructure projects, or packaged product deployments, and it ensures that those services are envisioned, planned, built, stabilized, and deployed in line with business requirements and the customer's specifications.
- The **Operate Phase** helps IT professionals efficiently operate, monitor, and support deployed services in line with agreed-to service level agreement (SLA) targets.
- The **Manage Layer** establishes an integrated approach to IT service management activities. This integration is enhanced through the establishment of decision-making processes and the use of risk management, change management, and controls.

The MOF framework formally describes the steps that are involved in this improvement cycle, assigning responsibilities for each step and enabling the whole process to be managed. At the end of each phase, there is a review point. With a large IT department, this is likely to be a review meeting between the people or teams involved, such as release management, operations, and security. In a smaller company, review points are possibly only a checkpoint that indicates that you are ready to proceed.

## Service Management Functions within the Phases

Each phase of the IT service lifecycle contains service management functions (SMFs) that define the processes, people, and activities required to align IT services to the requirements of the business. Each SMF has its own guide that explains the flow of the SMF and details the processes and activities within.

Although each SMF can be thought of as a stand-alone set of processes, it is important to understand how the SMFs in all of the phases work to ensure that service delivery is of the desired quality and risk level. In some phases (such as Deliver), the SMFs are performed sequentially. In other phases (such as Operate), the SMFs may be performed simultaneously to create the outputs for the phase.



## Management Reviews

For each phase in the lifecycle, management reviews (MRs) bring together information and people to determine the status of IT services and to establish readiness to move forward in the lifecycle. MRs are internal controls that provide management validation checks, which ensure that goals are being achieved in an appropriate fashion and that business value is considered throughout the IT service lifecycle. The goals of management reviews, no matter where they happen in the lifecycle, are straightforward:

- Provide management oversight and guidance.
- Act as internal controls at the phase level of the IT lifecycle.
- Assess the state of activities and prevent premature advancement into the next phases.
- Capture organizational learning.
- Improve processes.

During a management review, the criteria that a service must meet to move through the lifecycle are reviewed against actual progress. The MRs make sure that business objectives are being met and that IT services are on track to deliver expected value.

The next paragraphs briefly introduce the supported phases, the structure of service management functions, and the involvement of teams when using the model.

## The Manage Layer



How is IT activity coordinated? What ultimately determines the way IT gets work done? That is the primary focus of the Microsoft Operations Framework Manage Layer, which integrates the decision making, risk management, and change management processes that occur throughout the IT service lifecycle. The Manage Layer promotes consistency in planning and delivering IT services and provides the basis for developing and operating a resilient IT environment. It also holds the processes related to defining accountabilities and associated roles.

The Manage Layer represents the foundation for the three phases of the lifecycle—Plan, Deliver, and Operate—and as such is called a layer rather than a phase. A phase consists of processes and activities that have mutual dependencies and are most effective when they occur within a bounded period of time. A layer is less bounded by time, pervades all phases, and influences how activities are performed.

The Manage Layer is focused on setting the appropriate management context, controls, processes, and activities that will result in additional business value, managed risk, and clear accountabilities when employing the SMFs in the phases.

The Manage Layer contains the following three service management functions (SMFs): Change and Configuration (CC); Governance, Risk, and Compliance (GRC); and Team.

*Goals of the Manage Layer*

The primary goal of the Manage Layer is to establish an integrated approach to IT service management activities. This approach helps to coordinate processes that are described in the SMFs in the three lifecycle phases.

This coordination is enhanced by establishing decision-making processes, employing risk management and controls as part of all processes, promoting change and configuration processes that are appropriately controlled, and dividing work so that accountabilities for results are clear and do not conflict.

Specific guidance is provided to increase the likelihood that:

- The investment in IT delivers the expected business value.
- Investment and resource allocation decisions involve the appropriate people.
- There is an acceptable level of risk.
- Controlled and documented processes are used.
- Accountabilities are communicated and have clear ownership.
- Policies and internal controls are effective and reliable.
- Meeting these goals is most likely to be achieved if IT works towards:
  - Explicit IT governance structures and processes.
  - IT organization and business sharing the same approach to risk management.
  - Periodic management reviews of policies and internal controls.

## The Plan Phase



What does business want from IT? Business wants services that are reliable, compliant, cost-effective and adaptable to the constantly changing needs of the business. The Plan Phase is where business and IT work as partners to determine how IT will be focused to deliver valuable services that enable the organization to succeed. Doing that requires the following:

- Understanding the business strategy and requirements and how the current IT services support the business.
- Understanding what reliability means to this organization and how it will be measured and improved by reviewing and taking action where needed.
- Understanding what policy requirements exist and how they impact the IT strategy. Policy requirements provide the financial structure to support the IT work and drive the right decisions. In addition, they create an IT strategy to provide value to the business strategy and make the portfolio decisions that support that IT strategy.

The IT strategy is the plan that aligns the organization's objectives, policies, and procedures into a cohesive approach to deliver the desired set of services that support the business strategy. Quality, costs, and reliability need to be balanced to achieve the organization's desired outcomes. During the Plan Phase, IT professionals work with the business to align

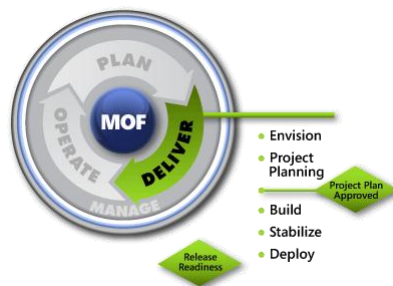
business objectives and functions with the capabilities and constraints of IT. The IT strategy is the result of this alignment and serves as a roadmap for IT. The strategy continually evolves and improves as organizations improve their optimizing skills and ability to adapt to business changes.

#### *Goals of the Plan Phase*

The primary goals of the Plan Phase are to provide guidance to IT groups about how to continually plan and optimize the IT service strategy to ensure that the delivered services are:

- Valuable and compelling.
- Predictable and reliable.
- Compliant.
- Cost-effective.
- Adaptable to the changing needs of the business.

## The Deliver Phase



The Deliver Phase is where the services are planned, designed, built, and deployed.

This process starts with an early form of planning called “envisioning,” moves through a more formal project planning stage, continues with the design and build stage, follows up with testing, and ends with deployment. Those managing a project can make several choices in terms of a management discipline to apply to the project.

Possibilities include Microsoft Solutions Framework (MSF), agile software development, Capability Maturity Model Integration (CMMI) process management, Scrum, and Project Management Institute (PMI). While MSF is the basis for the SMFs in the Deliver Phase, organizations can easily adapt the information in those SMFs to any management discipline.

#### *Goals of the Deliver Phase*

The primary goals of the Deliver lifecycle phase are to ensure that IT services, infrastructure projects, or packaged product deployments are envisioned, planned, built, stabilized, and deployed in line with business requirements and the customer’s specifications.

Specifically, that means ensuring that the project team:

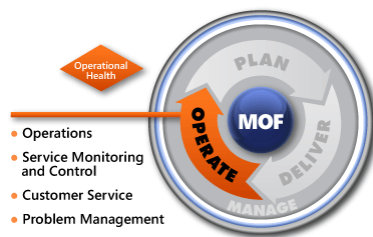
- Captures the business needs and requirements prior to planning a solution.
- Prepares a functional specification and solution design.
- Develops work plans, cost estimates, and schedules for the deliverables.
- Builds the solution to the customer’s specification, so that all features are complete, and so that the solution is ready for external testing and stabilization.
- Releases the highest-quality solution by performing thorough testing and release-candidate piloting.
- Deploys a stable solution to the production environment and stabilizes the solution in production.

- Prepares the operations and support teams to manage and provide customer service for the solution.

Meeting these goals requires:

- Alignment with the service management functions (SMFs) for this phase.
- Using periodic management reviews (MRs) to evaluate the effectiveness of the phase.

## The Operate Phase



The Operate Phase of the IT service lifecycle represents the culmination of the two phases that precede it. The Plan Phase focuses on how to determine the business's needs for IT services. The Deliver Phase focuses on how to design, plan, build, and deploy those services. The Operate Phase focuses on what to do after the services are in place.

It is, in effect, the steady state for the environment in which IT services exist.

This phase is characterized mostly by dedicated teams, which are teams that exist for ongoing work, with no specific end time in mind. The role types in those teams fall into two accountabilities: the Operations Accountability and the Support Accountability. The accountable role type for the Operations Accountability is the Operations Manager. The accountable role type for the Support Accountability is the Customer Service Manager.

The Operate Phase begins after a new service has been deployed in the Deliver Phase. The end of that phase is tied to the Release Readiness Management Review (MR). This review and the post-implementation review that occurs after deployment is complete, acts as a bridge between the Deliver Phase and the Operate Phase. It ensures the readiness of the release for deployment, including the operability and supportability of the release and the readiness of the target production environment to support and operate the deployed release.

In turn, the Operate Phase is supported by a management review, the Operational Health Review (OHR), which includes a review of service level agreements (SLAs) and operating level agreements (OLAs). This review evaluates performance-related metrics, and other business and operational indicators that help measure the overall health of the production computing environment.

### *Goals of the Operate Phase*

The primary goals of the Operate Phase are to ensure that deployed services are operated, monitored, and supported in line with the agreed SLA targets.

Specifically, that means:

- Ensuring that IT services are available by improving IT staff use and better managing workload.
- Ensuring that IT services are monitored to provide real-time observation of health conditions by ensuring that team members are trained to handle problems efficiently and quickly.
- Ensuring that IT services are restored quickly and effectively.

Meeting these goals requires:

- Alignment with the service management functions (SMFs) for this phase.
- Using periodic management reviews (MRs) to evaluate the effectiveness of the phase.

## Service Management Functions

Figure 3 Service management functions in MOF



MOF organizes activities and processes into service management functions (SMFs), which are grouped in phases that reflect the IT service lifecycle. Each SMF contains a unique set of goals and outcomes that support the objectives of that phase.

MOF 4.0 introduces a structure for its SMFs—one that emphasizes outcomes, results, and roles in a format that's easy to reference. Because every group, team, and company is unique, the SMFs are anchored by questions that support the decision-making process within your organization.

Service management functions (SMFs) define the roles of people or teams in the organization, such as support professional or system administration, to achieve organizational and IT goals and how they should be accomplished.

Although SMFs are cross-functional, the primary role of an SMF applies to a specific phase. For example, system administration is part of the operate phase, and release management is part of the delivery phase.

The used SMFs for the MOF phase of the cycle that each SMF applies to are globally described in the following sections.

### **Service Management Functions within the Plan Phase**

- Business/IT Alignment SMF  
Used to align business and IT strategy to ensure that IT services provide business value.
- Reliability SMF  
An SMF that is incorporated to understand, set targets for, and measure IT service reliability.
- Policy SMF  
The purpose of this SMF is to help the IT organization remain in compliance with directives and is for anyone with responsibility for IT policy.
- Financial Management SMF  
This SMF covers the responsibility for measuring and evaluating the costs and benefits—or more comprehensively, the business value—of IT services.

### **Service Management Functions within the Deliver Phase**

- Envision SMF  
Used to establish a project team, preparing and delivering a vision/scope document, and preparing a risk assessment.
- Project Planning SMF  
This SMF is used for preparing the functional specification, solution design and preparing work plans, cost estimates, and schedules needed for managing the builds.
- Build SMF  
The build SMF can be used during actual development of an IT service solution, where a development and a test lab are created, and during the preparation of an IT service solution for pilot deployment.
- Stabilize SMF  
Used for supporting the process of the release of the highest-quality IT service solution possible at the Release Readiness Milestone this SMF is used to test a feature-complete solution, prepare release candidate versions, deal with feedback, and fix reported issues.
- Deploy SMF  
This SMF is used when the team will be stabilizing the solution in the production environment and transferring responsibility for the solution from the project team to the Operations and Support teams.

### **Service Management Functions within the Operate Phase**

- Operations SMF

This SMF is used for managing the daily operations like the required work that is identified and to discover how a team can aim to reduce reactive time, minimize disruptions, and ensure that recurring tasks are executed well.

- *Service Monitoring and Control SMF*  
Using the Service monitoring and Control SMF, we can observe the health of the IT services and take action to minimize the impact of service and system incidents.
- *Customer Service SMF*  
Customer Service SMF is used to provide a positive experience for the service provider and the end-users and to address the complaints and issues that arise during the normal use of an IT service.
- *Problem Management SMF*  
The Problem Management SMF defines processes to provide root cause analysis to identify problems and to predict future problems.

### **Service Management Functions within the manage layer**

- *Governance, Risk and Compliance SMF*  
This SMF is used to support an organization and sustain its growth while managing the risk and constraints facing an IT environment.
- *Change and Configuration Management SMF*  
Ensures that changes are planned and controlled to deliver robust IT Services
- *Team SMF*  
Ensures clear accountability, team roles and realistic work assessment for using with agile, flexible, and scalable teams.

### **Management Reviews (MRs)**

For each phase in the lifecycle, management reviews (MRs) serve to bring together information and people to determine the status of IT services and to establish readiness to move forward in the lifecycle. MR's are internal controls that provide management validation checks, ensuring that goals are being achieved in an appropriate fashion, and that business value is considered throughout the IT service lifecycle. The goals of management reviews, no matter where they happen in the lifecycle, are straightforward:

- Provide management oversight and guidance.
- Act as internal controls at the phase level of the IT lifecycle.
- Assess the state of activities and prevent premature advancement into the next phases.
- Capture organizational learning.
- Improve processes.

During a management review, the criteria that a service must meet in order to move through to the next phases in the lifecycle are reviewed against actual progress. The MRs make sure that business objectives are being met, and that IT services are on track to deliver expected value.

The MRs, their locations in the IT service lifecycle, and their inputs and outputs are shown in the following table.

**Table 1. MOF Management Reviews**

MR	Owned by Phase	Inputs	Outputs
Service Alignment	Plan	<ul style="list-style-type: none"> <li>Results of the Operational Health Review</li> <li>Service Level Agreements (SLA)</li> <li>Customer input</li> </ul>	<ul style="list-style-type: none"> <li>Opportunity for a new or improved project</li> <li>Request for changes to SLA</li> </ul>
Portfolio	Plan	<ul style="list-style-type: none"> <li>Project proposals</li> </ul>	<ul style="list-style-type: none"> <li>Formation of a team</li> <li>Initial project charter</li> </ul>
Project Plan Approved	Deliver	<ul style="list-style-type: none"> <li>Business requirements</li> <li>Vision statement</li> </ul>	<ul style="list-style-type: none"> <li>Formation of the project team</li> <li>Approved project plan</li> </ul>
Release Readiness	Deliver	<ul style="list-style-type: none"> <li>Documentation showing that the release meets requirements</li> <li>Documentation showing that the release is stable</li> <li>Documentation showing that the release is ready for operations</li> </ul>	<ul style="list-style-type: none"> <li>Go/no go decision about release</li> </ul>
Operational Health	Operate	<ul style="list-style-type: none"> <li>Operating level agreement (OLA) documents</li> <li>OLA performance reports</li> <li>Operational guides and service-solution specifications</li> </ul>	<ul style="list-style-type: none"> <li>Request for changes to the OLA documents</li> <li>Request for changes to the IT services</li> <li>Configuration changes to underlying technology components</li> </ul>



## MOF Team Model Roles

The MOF Process Model and the MOF Team Model are the core models that define the Microsoft Operations Framework. The MOF Team Model provides guidelines for organizing teams and the functions and competencies of each role cluster. The role clusters in the Team Model work with the SMFs of the Process Model. The Team Model role clusters enable the SMF processes to be followed.

The MOF Team Model also suggests combinations of functions that should be kept separate. For example, the team that tests a change before it is released to the production environment should be separate from the team that developed the change. This can be critical to ensuring that changes to your SharePoint environment are effectively tested in a lab environment that mimics your production environment as closely as practicable. This practice ensures that unforeseen impacts that may result from implementing a change are identified and mitigated before a change is implemented in your production environment. Examples of this include, but are not limited to, installation of hardware firmware updates, application hotfixes, and service packs.

## Best Practices for SharePoint Environments

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Best practices are recommendations that are based on the knowledge and experience that IT professionals have gained across many environments. They provide standard procedures for typical tasks that your SharePoint administrators must accomplish daily, and list the tools that they should use to manage a SharePoint environment.

Typical tasks for SharePoint administrators include the following:

- **Capacity and Availability Management**

Define how and what to measure to predict future capacity requirements and to report about the capacity, reliability, and availability of your systems. You must ensure that servers that are running SharePoint Server are sized to handle the load on the system, and that unplanned downtime is kept under the levels defined in the SLA. Additionally, you will have to upgrade hardware to continue to meet the defined requirements.
- **Change Management and Configuration Management**

Control how changes are made to your IT systems. This should include testing, application feedback and contingency plans, documentation of all changes, and approval from management if problems occur. Keep a record of your software and hardware assets and their configurations.
- **System Administration**

Outline standard methods for doing administrative tasks, such as database administration and site administration.
- **Security Administration**

Have a detailed policy and plan which protects data confidentiality, data integrity, and data availability of your IT infrastructure. This includes day-to-day activities and tasks that are related to maintaining and adjusting the IT security infrastructure.

- **System Troubleshooting**

Outline methods for dealing with unexpected issues, including steps to prevent similar issues in the future.

- **Service Level Agreements**

Maintain a set of goals for the performance of your IT systems and regularly measure performance against these goals.

- **Documentation**

Document standard procedures, such as configuration information and lessons learned, and make them available to the staffs that need them. As changes to the configuration are made, update the documentation accordingly.

## Capacity and Availability Management

The purpose of capacity management and availability management is to measure and control system performance. We recommend that you implement capacity management and availability management procedures so that you can measure and control system performance. You need to know whether the system is available and whether it can handle the current and the projected demands by setting baselines and monitoring the system to look for trends.

### Capacity Management

Capacity management involves planning, sizing, and controlling service capacity to ensure that the minimum performance levels specified in your SLA are exceeded. Good capacity management ensures that you can provide IT services at a reasonable cost and still meet the levels of performance defined in your SLAs with the client. These criteria can include the following:

- **System Response Time**

This is the measured time that the system takes to do typical actions. Examples include, the time for a client to receive the “last byte” of a SharePoint site homepage, the time that Windows allowed to do a full backup of a SharePoint content database, or the time taken to download a specific document from a document library.

- **Storage Capacity**

This is the capacity of a storage system, whether it is a content database, a backup device, or a local drive. Examples include the maximum amount of storage space to be provided per site and the amount of time that backups should be stored before being overwritten.

Adjusting capacity is frequently a case of ensuring that enough physical resources are available, such as disk space and network bandwidth. Table 1 lists typical resolutions for capacity-related issues.

**Table 1 Typical resolutions for capacity-related issues**

Issue	Possible resolution
Slow logon to SharePoint sites	Introduce another domain controller to the site or increase network bandwidth
Slow retrieval of documents from a SharePoint site	Ensure an appropriate amount of bandwidth is available through to the end user, and be aware of the maximum size of documents allowed in SharePoint Server.
Recovery of a site from backup takes too long.	Split your site collections across multiple content databases or use quotas to decrease the maximum size allowed for sites.
Overall response of the SharePoint environment is slow.	Run tests to check that the existing front-end servers are capable of dealing with the load. Introduce a new front-end server if required.

Capacity is affected by system configuration and depends on physical resources such as network bandwidth. For example, if a SharePoint environment is configured to perform a nightly full backup, care must be taken to design the farm and network in such a way that the impact on the interactive performance experienced by end users is minimized.

Capacity management is the process of keeping the capacity of a system within acceptable levels and addresses the following issues:

- **Reacting to changes in requirements**

Capacity requirements have to be adjusted to account for changes in the system or the organization. For example, if you install a new custom application you have to understand its specific characteristics. For example, does it use Search Server? Does it integrate directly with SQL Server? It may be that you need to introduce a new server for search or add additional memory to maintain your existing performance levels.

- **Predicting future requirements**

Some capacity requirements change predictably over time. By tracking trends you can plan upgrades in advance. For example, the total size of a content database typically increases at a fairly constant rate. By looking at how the size of the content database has changed over the last six months, you can make predictions about when it is likely to reach the limits that you have put in place. Although the recommended maximum size of a content database is 50 GB, this will likely be determined by the SLA that you have set for disaster recovery in your environment.

## Availability Management

Availability management is the process of ensuring that any IT service consistently and cost-effectively delivers the level of availability that is required by the customer. Availability management is concerned with minimizing loss of service and with ensuring that appropriate action is taken if service is lost. In a SharePoint environment, you may be concerned about whether the Search Service is available, whether a content database is online, and so on. An SLA defines an acceptable frequency and length of outages and allows for certain periods when the system is unavailable for planned maintenance and unexpected failures.

If you have to provide reports to your management about the availability of systems, or if you have financial or other penalties associated with missing availability targets, you must record availability data. Even if you do not have such formal requirements, it is a good idea to at least know how frequently a system has failed in a certain time period, for example, system availability in the last 12 months and how long it took to recover from each failure. This information will help you measure and improve your team's effectiveness in responding to a system failure. It can also provide you with useful information if there is a dispute.

Measures related to availability are as follows:

- **Availability**

This is typically expressed as the time that a system or service is accessible compared to the time that it is down. It is typically expressed as a percentage. (You may see references to "three nines" or "five nines". These refer to 99.9% or 99.999% availability.)

- **Reliability**

This is a measure of the time between failures of a system and is sometimes expressed as mean (or average) time between failures (MTBF).

- **Time to Repair**

This is the time taken to recover a service after a failure has occurred and is sometimes expressed as mean (or average) time to repair (MTTR).

Availability, reliability, and time to repair are related as follows:

$$\text{Availability} = (\text{MTBF} - \text{MTTR}) / \text{MTBF}$$

For example, if a server fails twice over a six-month period and is unavailable for an average of 20 minutes, the MTBF is three months or 90 days and the MTTR is 20 minutes. Therefore,

$$\text{Availability} = (90 \text{ days} - 20 \text{ minutes}) / 90 \text{ days} = 99.985\%$$

Availability management is the process of ensuring that availability is maximized and kept within the parameters defined in SLAs. Availability management includes the following processes:

- **Monitoring**

Examining when and for how long services are unavailable.

- **Reporting**

Availability figures should be regularly provided to management, users, and operations teams. These reports should highlight trends and identify areas that are doing well and

areas that require attention. The report should summarize compliance with targets set in the SLAs.

- **Improvement**

If availability does not meet targets that are defined in the SLAs or where the trend is toward reduced availability, the availability management process should plan remedial steps. This should include working with other responsible teams to highlight reasons for outages and to plan remedial actions to prevent a recurrence of the outages.

Capacity and availability measurements are repetitive tasks that are ideally suited to automated tools and scripts such as Microsoft Systems Center Operations Manager, which is discussed later in this document.

## Change Management

Changes to your IT environment are inevitable. Changes include new technologies, systems, applications, hardware, tools, processes, and changes in roles and responsibilities. An effective change management system lets you introduce changes to your IT environment quickly and with minimal service disruption. A change management system brings together the teams involved in modifying a system. For example, deciding to take advantage of the Office Web Applications. This is an integrated SharePoint Service application that enables users to read and edit documents within a browser. The implementation of this service, after you have gone into production, requires the involvement of a several teams:

- **Test Team**

This team load-tests the Office Web Applications on a test server, in the process providing information on the expected usage patterns and expected performance of the productions servers.

- **SharePoint Administrators**

This team determines the deployment strategy and scripts the installation where possible. The team is responsible for ensuring that the change is deployed on the production environment and, it is responsible for administration afterwards. The team must understand the effect of the changes and incorporate them in procedures before the changes are put into production

- **Network Team**

This team is responsible for changes to firewall rules which allow access from the Internet to the Office Web Applications servers if required. The team is also responsible for ensuring that the amount of available bandwidth can support the additional load.

- **Security Team**

This team assesses security and minimizes risks. The security team must review known vulnerabilities and ensure that security risks are minimized.

- **User Acceptance Team**

This team is composed of users who are willing to test the system and offer feedback for improvements.

The change management process defines the responsibilities of each team and schedules the work to be performed, incorporating checks and tests where they are required. Change controls will vary depending on the complexity and expected effect of a change. They can vary from automatic approval of minor changes, to change review meetings, to full project-level reviews. To illustrate this better, the groups of changes are discussed in this section.

- **Major Changes**

Major changes have a global effect on the system and may require input from various teams. An example of this is upgrading from Office SharePoint Server 2007 to SharePoint Server 2010. Major changes affect many different teams and perhaps different systems. The change management process may follow a procedure that is similar to the Office Web Applications example discussed earlier, but it will probably include one or more change review meetings to inform the teams that will be involved in the change or be affected by the change.

- **Significant Changes**

Significant changes require significant resources to plan, build, and implement. Appropriate change controls should be introduced to ensure that the effect of the change is understood, deployment procedures are tested, and the rollback and contingency plans are ready. An example of a significant change is deploying a new service pack.

- **Minor Changes**

Minor changes do not significantly affect the IT environment, for example, modifying certain SharePoint security policies.

- **Standard Changes**

Standard changes are performed regularly and are well understood and documented. Examples include creating a new SharePoint site collection or configuring a new SharePoint content source. Regular changes should be documented in standard operating procedures (SOPs), but they do not require change controls. For example, a procedure for creating a new content database may state that the maximum number of site collections should always be set to 600, with the basic storage quota allowing for 250 MB of storage. The change management process should review all changes to the procedure, but it should not, for example, be involved in creating every content database.

The following example of change management examines how different teams interact and the actions that are performed when a new service pack is deployed. These actions are organized and managed by the change management process.

- **Raise a change request**

The security team has assessed the latest service pack and confirmed that it resolves a possible vulnerability in the production system. The team raises a change request to have the new service pack applied to all servers running SharePoint Server.

- **Service pack release notes review**

The SharePoint administrator team reviews the service pack release notes to identify the effect on the system.

- **A series of lab tests is done**

The SharePoint administrator team must perform test updates on a server in a non-production environment to decide whether the service pack can be applied successfully without affecting any of the installed applications and server systems. If there are third-party or internally-created applications that interface with SharePoint Server in a production environment, these should be also tested. These tests can also be used to estimate the time required to perform the upgrades.

- **Users are informed of the outage**

The SharePoint administrator team, communications team, or user help desk informs all affected users about the planned maintenance cycle and how long the service will be unavailable.

- **A full backup of SharePoint is performed before the upgrade**

The SharePoint administrator team must ensure that there is a valid backup in place to be able to revert to the original system state if the service pack installation fails. It is recommended that the backup be restored to a standby server to have this system readily available if there are problems.

- **The service pack is deployed**

The SharePoint administrator team does the installation during the planned maintenance cycle.

## **Managing the Timing of Changes**

We recommend that you implement a procedure for scheduling changes to avoid disruptions in overlapping sections of your work. For example, two teams may both be planning a minor change to a system. One team may be applying a service pack while another team is installing a custom Web Part that displays the weather in your location. Neither team is affected by the changes that the other team is planning, and each team may not necessarily know about changes that the other team is planning. If both changes occurred at the same time, there could be problems implementing the changes. Also, if there are issues after the changes have been applied, for example if the weather Web Part fails, it may be difficult to decide which change should be rolled back. There should be regular maintenance periods set up between IT and management to test the changes and accept them.

## **Configuration Management**

Configuration management is the process of recording and tracking hardware and software assets and system configuration information. It is generally used to track software licenses, maintain a standard hardware and software build for client computers and servers, and define naming standards for new computers. Configuration management generally covers the following categories:

- **Hardware**

This category tracks the pieces of equipment that the IT organization owns, where equipment is located, and who uses equipment. This information enables an organization to plan and budget for upgrades, maintain standard hardware builds, report on the value of IT assets for accounting purposes, and help prevent theft.

- **Software**

This category tracks software that is installed on each computer, the version numbers, and where the licenses are held. This information helps plan upgrades, ensure that software is licensed, and detect the existence of unauthorized (and unlicensed) software.

- **Standard Builds**

This category tracks the current standard build for the client computers and servers and whether the client computers and servers meet this standard. The existence and enforcement of standard builds helps support staff because the staff is required to maintain only a limited number of versions of each piece of software.

- **Service Packs and Hotfixes**

This category tracks which service packs are tested and approved for use and which computers are up-to-date. This information is important to minimize the risk of computers being compromised and to detect users who have installed unapproved updates.

- **System Configuration Information**

This category tracks the function of a system, the interaction between system elements, and the processes that depend on the system running smoothly. For example, a connector to a third-party e-mail system may be configured on a single server. The e-mail system's dependence on this server should be understood and contingency plans may be required if there is a failure. If a second connector is installed on another server, dependencies and contingency plans will probably change.

## **Implementing Configuration Management**

After you determine the purpose of your configuration management exercise and decide what items need managing, you need to implement configuration management by collecting data and reporting data. The simplest approach for small organizations is to collect data manually (number and model of client computers, operating system, software installed) and store it in a Microsoft Office Word or Microsoft Office Excel document. For larger, more complex, and constantly changing systems, the discovery of assets and collection of detailed information must be automated. Decide what information is relevant to your organization and record it in a database.

The configuration management database is a useful tool for support staff and management in the following areas:

- **Security Audits**



The database enables you to identify servers running SharePoint Server and client computer systems that need to have hotfixes applied or that have missed the installation of a service pack or the latest antivirus updates.

- **Software Installation**

If you identify client computers that already have Microsoft Office installed, this will save time if you are manually deploying Office.

- **Configuration Information**

If you maintain an up-to-date list of all settings that have been modified from their default, then you will be able to troubleshoot issues quickly and more effectively.

- **Planning Upgrades**

If a capacity review reveals that additional storage space is required on your SharePoint database servers, it's important to know if each server has an internal RAID controller. If they do, then are they the same model? Do they have the same number of disks installed? The configuration management database will indicate the type of disk that can be installed, the number, and the upgrade path in each case.

## **Tools Used for Configuration Management**

There are many tools to discover, audit, and report assets. Some of these tools are discussed in this section.

- **Automated Scripts**

You can write simple scripts to report items like the operating system, service pack level, and existence of software on a specific set of computers. You can write these scripts to an organization's exact requirements; however, the required number of scripts and their complexity can make scripts expensive to create and maintain.

- **Automated Tools**

Depending on the size of your business and your organizational needs, you may want to consider using automated tools. Tools such as Microsoft Systems Center Configuration Manager incorporate standard report templates (such as service pack level) and also enable you to create customized reports, for example, for a custom application. Microsoft Systems Center Operations Manager (SCOM) can also be used to report on hardware and software configurations.

SharePoint Server can be used to record configuration data and make it accessible to the appropriate IT personnel.

## **Relationship with Change Management**

Configuration management is closely related to change management. Configuration management identifies the need for change and identifies and records that a change has occurred. For example, the configuration management database can be used to identify servers that require a hotfix. Change management then defines the process for applying the hotfix.

Conversely, if a new software package is rolled out, the change management process should supply this information to the configuration management system. The configuration management tools will probably need to be configured to identify the new software so that they can discover and track where and when the software is deployed.

## System Administration

System administration includes the day-to-day administrative tasks, both planned and on-demand, that are required to keep an IT system operating smoothly. Typically, system administration tasks are covered by written procedures. These procedures ensure that the same standard tools and methods are used by all support staff.

In a SharePoint environment, typical system administration tasks include creating site collections, backing up and archiving sites, monitoring logs, maintaining and recovering documents, and updating antivirus software.

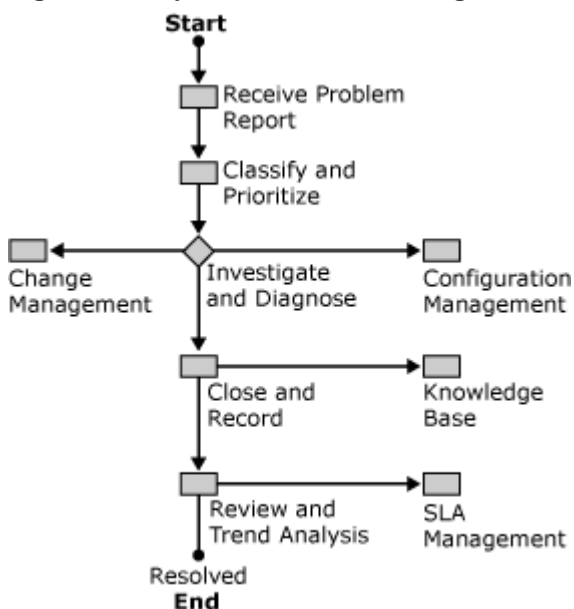
## System Troubleshooting

An organization must be prepared to deal with unexpected problems and should have a procedure to manage problems from the point at which they are reported until their resolution. Information about how support staff diagnosed a problem should be recorded and used in the future to avoid unnecessarily repeating completed work.

### System Troubleshooting Process

Figure 1.5 shows the system troubleshooting process and the interactions with other operations roles.

**Figure 1.5 System Troubleshooting Flowchart**



- **Classify and Prioritize**

This task is typically performed by the service desk. For example, a problem may be grouped as a software issue or a hardware issue. The problem is then routed to the appropriate support team for investigation. The rules for determining the priority of a problem, together with the time to respond and time to resolve, are typically defined in the SLA.

- **Investigate and Diagnose**

The appropriate support team diagnoses the problem and proposes changes to resolve the problem. If the solution is simple and does not require change control, the solution can be applied immediately. If the solution is not simple, a request for change should be raised and the proposed work should be managed by the change management process, frequently under a “fast-track” procedure. Any changes that are made should be recorded using the configuration management process.

- **Close and Record**

After testing the resolution, the problem should be closed. If there are lessons to be learned from the problem, an entry should be created in the knowledge base.

- **Review and Trend Analysis**

Periodic reviews of recent problems should be performed to identify problem trends. For example, if your users are experiencing frequent problems with slow logons to their SharePoint sites, network bandwidth issues may be the cause. Problem resolution times and the effect of any outages on system availability should be reviewed and compared with the SLA. The person who liaises with the customer on service issues, such as an account manager, should be informed of any significant problems.

## **Problem Management Tools**

Service desk tools enable staff to record, classify, and prioritize new problems. Tools will then provide the workflow processes to manage the problem “ticket” through investigation and diagnosis, often by more than one support team. Tools, which will frequently provide reports about resolution times and historical trends, may also include a knowledge base database, which can be used to search through past problems.

The Microsoft Knowledge Base is a useful record of support issues that have been encountered by Microsoft. For more information, see the [Microsoft Help and Support Web site](http://go.microsoft.com/fwlink/?linkid=14898) (<http://go.microsoft.com/fwlink/?linkid=14898>).

Third-party software typically requires customization to suit the organization’s needs, such as the organization of teams, reporting requirements, and measures required by the SLA.

## **Service-Level Agreements**

The service-level agreement (SLA) is a document that defines the services that your customer expects from you. The complexity and content of this document depends largely on whether customers are internal (within your company) or external.

## External Customers

If your customer is external, the SLA may be part of a legal contract with financial incentives and penalties for performance that falls inside or outside defined levels of service. Defining these levels of service should be part of the overall contract negotiation.

As with all contracts, it's important that both parties understand expectations. The SLA defines these expectations. The contents of the document should change infrequently and only because of negotiations with the customer.

## Internal Customers

If your customer is internal, you may still want to define the services that are expected of operations teams and of IT systems. The SLA may be created by the operations staff and intended as a set of goals for the availability of IT services within your organization. Alternatively, performance levels may be set by management and used as benchmarks when assessing staff performance.

## Typical Criteria

Service level agreements include components that define criteria of minimum levels of availability, support, and capacity.

- **Availability**

Define the hours and the operating systems on which sites and other SharePoint services will be available. Any routine maintenance that affects service availability should be defined. Define external factors that affect service, for example the loss of Internet connectivity.

- **Support**

Define the hours when support for a system will be available. Specify methods for customers to contact support staff, how incidents are grouped, and target time to respond and to resolve the incident. Define frequency and content of feedback to the customer.

- **Capacity**

Define the maximum allowed size of SharePoint sites and the steps to take if the limit is exceeded. Define the maximum allowed time to do standard tasks, such as the time to retrieve a document from a document library. Define the maximum number of users and agree to a process to follow to increase capacity if more users are added.

## Documentation

The Microsoft Operations Framework (MOF) model is composed of many service management functions. Documentation about how and when tasks are performed can be shared with members of the same team or with other teams. The method of storing and sharing documentation can vary according to the type of function. For example, the procedures for system administration may be stored as Word documents because they are likely to be printed and referenced frequently. Configuration management information may be

automatically generated and stored in a database for easy searching and indexing. Some documentation may be sensitive and should be restricted.

### **Document Management Systems**

A documentation management system acts as a central repository for documents and ensures that only the latest revision of a document is available. You can also consider archiving the older version of the document for reference purposes. SharePoint Server provides functionality suitable to this task.

### **Databases**

Several tools and management functions have been discussed that are suited to using databases. The configuration management process is likely to use automated processes that store large amounts of data that require indexing and searching. Support staff may search a database of past problems and resolutions when troubleshooting new problems.

It is likely that there will be different databases being used for different purposes. Decide if these databases should be linked or consolidated. For example, if the service desk identifies several problems with a common theme (such as new software causing a problem with a particular network card), the support staff can query the configuration database to predict how many computers might be affected.

## Monitoring SharePoint

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To ensure the availability and reliability of your SharePoint Server 2010 environment, you must actively monitor the physical platform, the operating system, and all important SharePoint Server 2010 services. Preventative maintenance will help you identify potential errors before an error causes problems with the operation of your SharePoint environment. Preventative maintenance combined with disaster recovery planning and regular backups will help minimize problems if they occur. Monitoring your SharePoint environment involves checking for problems with connections, services, server resources, and system resources. You can also set alerts to notify administrators when problems occur. Windows Server and SharePoint Server 2010 provide many monitoring tools and services to ensure that your SharePoint environment is running smoothly. The key advantages to daily monitoring are as follows:

- Ensures that the performance requirements of your service level agreements (SLAs) are being met.
- Ensures that specific administrative tasks, such as daily backup operations and checking server health, are being successfully completed.
- Enables you to detect and address issues, such as bottlenecks in the server performance or need for additional resources, in your SharePoint environment before they affect productivity.

The following maintenance tasks let you establish criteria for normal behavior of your environment and to detect abnormal activity. It is important to implement these daily maintenance tasks so that you can capture and maintain data about your SharePoint environment, such as usage levels, possible performance bottlenecks, and administrative changes.

By using and customizing the checklists in this document, you ensure that potential problems are discovered and remedial action taken as early as possible. The following sections describe specific monitoring tasks which then map to the checklists as described below.

Section	Topic	Checklist
<b>Diagnostic logging</b>	Running SharePoint Server	<a href="#">Check Event Logs</a> <a href="#">Check SharePoint Farm Backups</a>
<b>Usage data and health data collection</b>	View metrics	<a href="#">Check SharePoint Database Health</a>

<b>SharePoint Health analyzer</b>	Repair problems	<a href="#">Check SharePoint Health Analyzer</a>
<b>Web analyzer</b>	View metrics	<a href="#">Check SharePoint Health Analyzer</a>

## Diagnostic Logging

The Unified Logging Service (ULS) provides a single, centralized location for logging error and informational messages related to SharePoint Server and SharePoint solutions. Systems administrators have one place to look when they need to troubleshoot an issue or monitor the overall health of the environment.

SharePoint Server 2010 includes improvements that are related to the management of the Unified Logging Service (ULS or Trace Logs) logs and that make it easier for administrators to troubleshoot issues. These are described in the following sections.

For more information and best practices about diagnostic logging, see [Configure Diagnostic Logging](http://go.microsoft.com/fwlink/?linkid=194152) (<http://go.microsoft.com/fwlink/?linkid=194152>).

## Event Throttling

Event throttling enables administrators to control the types of event that SharePoint Server log based on the level of severity. The administration of throttling is divided into two sections:

### 1. Destination

Log entries can be reported in two places. The first is the “Event Log”, which is the standard Windows Event Log. Administrators can use the Windows Event Viewer application to review entries. The second is the ULS or “Trace Log”, a text based log format that is specific to SharePoint Server and is stored on the file system. The default location is *C:\Program Files\Common Files\Microsoft Shared\Web Server Extensions\14\LOGS*.

### 2. Category

The event throttling dial can be applied to specific categories which map directly to SharePoint Server functionality. This enables the administrator to increase the logging detail for SharePoint components individually, thereby managing the size of the logs and the amount of information to review.

The default settings for all categories are as follows:

- Event Log: Information
- Trace Log: Medium Level

During normal operation, these settings are an appropriate balance of detail and performance. During substantial reconfiguration of SharePoint Server, during the installation of custom solutions, or when SharePoint Server is experiencing issues, the throttling dial

should be turned down. This ensures as much information is available as possible for troubleshooting.

Finally, after completing any troubleshooting, logging can be returned to the default by selecting the “Reset to default” option in the throttling drop-downs. Settings that are not currently configured with the default option will appear in a bold font.

## **Correlation IDs**

Correlation IDs are GUIDs that are assigned to events which occur during the lifecycle of a resource request. This value is surfaced within error messages, the ULS logs, and tools like the Developer Dashboard. This value helps an administrator locate and isolate a specific request across the ULS log, Usage Logging database, and SQL Server Profiler data sets for debugging purposes.

For example, administrators can take the Correlation ID that appears on an error page in their browsers and then rapidly locate any related entries in the ULS logs through a simple search.

Correlation IDs also span machine boundaries. If a request, such as a front-end Web server calling a Web service on an application server, crosses a machine boundary the assigned Correlation ID can provide a complete overview of activities during the life-cycle of the request.

## **Event Log Flood Protection**

Event Log Flood Protection prevents the “Event Log” from being overwhelmed with many repetitive events. When Event Log Flood Protection is enabled (default), it will start trimming events after the same event is logged five times within two minutes. At this point it suppresses additional entries. After an additional two minutes, it throws a summary event that describes the number of times that the event would have been repeated. An administrator can modify these thresholds.



<p><b>Event Throttling</b></p> <p>Use these settings to control the severity of events captured in the Windows event log and the trace logs. As the severity decreases, the number of events logged will increase.</p> <p>You can change the settings for any single category, or for all categories. Updating all categories will lose the changes to individual categories.</p>	<p>Select a category</p> <table border="1"> <thead> <tr> <th>Category</th> <th>Event Level</th> <th>Trace Level</th> </tr> </thead> <tbody> <tr> <td><input type="checkbox"/> All Categories</td> <td></td> <td></td> </tr> </tbody> </table> <p>Least critical event to report to the event log  <input type="text"/></p> <p>Least critical event to report to the trace log  <input type="text"/></p>	Category	Event Level	Trace Level	<input type="checkbox"/> All Categories		
Category	Event Level	Trace Level					
<input type="checkbox"/> All Categories							
<p><b>Event Log Flood Protection</b></p> <p>Enabling this setting allows detection of repeating events in the Windows event log. When the same event is being logged repeatedly, the repeating events are detected and suppressed until conditions return to normal.</p>	<p><input checked="" type="checkbox"/> Enable Event Log Flood Protection</p>						
<p><b>Trace Log</b></p> <p>When tracing is enabled you may want the trace log to go to a certain location. Note: The location you specify must exist on all servers in the farm.</p> <p>Additionally, you may set the maximum number of days to store log files and restrict the maximum amount of storage to use for logging. <a href="#">Learn about using the trace log.</a></p>	<p>Path  <input type="text" value="C:\CommonProgramFiles%\Microsoft Shared\Web Server Extensions\14\LOGS\"/>  Example: C:\Program Files\Common Files\Microsoft Shared\Web Server Extensions\14\LOGS</p> <p>Number of days to store log files  <input type="text" value="14"/></p> <p>Restrict Trace Log disk space usage  <input type="checkbox"/> Restrict Trace Log disk space usage  Maximum storage space for Trace Logs (GB)  <input type="text" value="1000"/></p>						

**Figure 1:** In Central Administration, click Monitoring, and in the Reporting section, click Configure diagnostic logging.

## ULS or Trace Logging

Trace Logs can quickly consume disk space, especially when configured to use the more verbose output settings. To manage this growth, administrators can implement two types of restrictions:

- a) Administrators can determine the number of days that log files should be kept. By default this is set to 14 days.
- b) Administrators can also place a limitation on the overall disk space that log files can consume. This is disabled by default but provides for an additional layer of protection aimed at preventing excessive disk space consumption.

Use the following checklist to implement these features in your daily operations:

- [Check Event Logs](#)

## Usage Data and Health Data Collection

In addition to Diagnostic Logging, SharePoint Server 2010 also proactively logs information that is related to the overall health of the farm. As an administrator you can individually select which events are monitored, for example the usage of features, page load times, and search queries.

This functionality both consumes disk space and has a performance overhead. Like Diagnostic Logging, care needs to be taken to manage it appropriately. The following options are available to administrators:

1) Health Data Collection

Health reports are built by taking snapshots of various resources, data, and processes at specific points in time. The number of Timer Jobs to schedule will depend on the number of events that you selected to monitor. The frequency of these jobs can be modified to manage the performance impact.

2) Log Collection Schedule

The Log Collection Schedule Timer Job is responsible for collecting Usage Logs from the various servers in the farm, processing them, and then populating a centralized database from where they can be queried for reporting. Once processed, the logs are deleted from disk, freeing up the space they were consuming. The frequency of this job can be modified to manage the consumption of disk space.



**Note:**

Everything that is being logged to the Windows Event Viewer and to the SharePoint log files is also being stored in the SharePoint Server 2010 logging database. The logging database is also used by the SharePoint Health Analyzer and by SharePoint usage reporting.

Use the following checklist to implement these features in your daily operations:

- [Check SharePoint Database Health](#)

Microsoft SharePoint 2010 Central Administration » Configure web analytics and health data collection

Web Analytics tracking will log events whenever the selected events occur on your SharePoint system. Use the Web Analytics Reports once the collected data has been processed to better understand how your system is being used.

**Warning: this page is not encrypted for secure communication. User names, passwords, and any other information will be sent in clear text. For more information, contact your administrator.**

<p>Central Administration</p> <p>Application Management</p> <p>System Settings</p> <p>Monitoring</p> <p>Backup and Restore</p> <p>Security</p> <p>Upgrade and Migration</p> <p>General Application Settings</p> <p>Configuration Wizards</p>	<p><b>Usage Data Collection</b></p> <p>Usage data collection will log events whenever various events occur in your SharePoint deployment. Usage Logging enables analysis and reporting, but also uses system resources and can impact performance and disk usage.</p> <p><input checked="" type="checkbox"/> Enable usage data collection</p>
<p><b>Event Selection</b></p> <p>Logging enables analysis and reporting, but also uses system resources and can impact performance and disk usage. Only log those events for which you want regular reports.</p> <p>For sporadic reports or investigations, consider turning on logging for specific events and then disabling logging for these events after the report or investigation is complete.</p>	<p><b>Events to log:</b></p> <p><input checked="" type="checkbox"/> Content Import Usage</p> <p><input checked="" type="checkbox"/> Content Export Usage</p> <p><input checked="" type="checkbox"/> Page Requests</p> <p><input checked="" type="checkbox"/> Feature Use</p> <p><input checked="" type="checkbox"/> Search Query Usage</p> <p><input checked="" type="checkbox"/> Site Inventory Usage</p> <p><input checked="" type="checkbox"/> Timer Jobs</p> <p><input checked="" type="checkbox"/> Rating Usage</p>
<p><b>Usage Data Collection Settings</b></p> <p>Usage logs must be saved in a location that exists on all servers in the farm. Adjust the maximum size to ensure that sufficient disk space is available.</p>	<p>Log file location:</p> <p><input type="text" value="C:\Program Files\Common Files\Microsoft Shared\Web Server Extensions\14\LOGS\"/></p> <p>Maximum log file size:</p> <p><input type="text" value="5"/> GB</p>
<p><b>Health Data Collection</b></p> <p>Health reports are built by taking snap shots of various resources, data, and processes at specific points in time.</p> <p>Each element of the health logging system can be individual scheduled.</p>	<p><input checked="" type="checkbox"/> Enable health data collection</p> <p>Click the link below to edit the health logging schedule.</p> <p><a href="#">Health Logging Schedule</a></p>
<p><b>Log Collection Schedule</b></p> <p>A time job collects log files from each server and copies events into a database that is used for reporting.</p> <p>Log collection is required to support reporting, but the timer job can be scheduled based on the requirements and load patterns of your servers.</p>	<p>Click the link below to edit the log collection schedule.</p> <p><a href="#">Log Collection Schedule</a></p>
<p><b>Logging Database Server</b></p> <p>Use of the default database server and database name is recommended for most cases. Refer to the administrator's guide for advanced scenarios where specifying database information is required.</p> <p>Use of Windows authentication is strongly recommended. To use SQL authentication, specify the credentials which will be used to connect to the database.</p>	<p>Database Server</p> <p><input type="text" value="sp2010"/></p> <p>Database Name</p> <p><input type="text" value="WSS_UsageApplication"/></p> <p>Database authentication</p> <p><input checked="" type="radio"/> Windows authentication (recommended)</p> <p><input type="radio"/> SQL authentication</p> <p>Account</p> <p><input type="text"/></p> <p>Password</p> <p><input type="text"/></p>

**Figure 2:** In Central Administration, click Monitoring, and in the Reporting section, click Configure diagnostic logging.

## SharePoint Health Analyzer

SharePoint has a number of features that log and gather detailed statistics about all aspects of the health of the environment. The SharePoint Health Analyzer aggregates all of this data, identifies possible problems, then proactively looks for, and recommends solutions.

Many solutions that it finds will include a “Repair Now” link, which when selected will automatically resolve the problem. Other solutions will link to online help content which is constantly updated with the latest information about the problem.

Like the “Best Practices Analyzers” available for other platforms (such as Microsoft Exchange Server), Health Analyzer includes a set of rules which can be extended by developers and which is continuously compared to the existing settings and metrics drawn from your production environment. Rules are applied across a number of categories, including security, performance, configuration and availability.

Title	Failing Servers	Failing Services
<b>Category : Security (2)</b>		
Accounts used by application pools or service identities are in the local machine Administrators group.	SP2010	SPTimerService (SPTimerV4)
The server farm account should not be used for other services.		SPTimerService (SPTimerV4)
<b>Category : Performance (2)</b>		
Databases exist on servers running SharePoint Foundation.	SP2010	SPTimerService (SPTimerV4)
Web Analytics: Monitors the health of the Data Analyzer Light component.		WebAnalyticsService (WebAnalyticsService)
<b>Category : Configuration (3)</b>		
Missing server side dependencies.		SPTimerService (SPTimerV4)
Outbound e-mail has not been configured.		SPTimerService (SPTimerV4)
Built-in accounts are used as application pool or service identities.		SPTimerService (SPTimerV4)
<b>Category : Availability (3)</b>		
Drives are running out of free space.	SP2010	SPTimerService (SPTimerV4)
Drives are at risk of running out of free space.	SP2010	SPTimerService (SPTimerV4)
Database has large amounts of unused space.		SPTimerService (SPTimerV4)

**Figure 3:** In Central Administration, click Monitoring and in the Health Analyzer section click Review problems and solutions.

Because some rules are not applicable to every environment, an administrator may disable or modify rules to satisfy the needs of an organization.

For information about these settings see [Configuring rules](http://go.microsoft.com/fwlink/?LinkId=203133) (<http://go.microsoft.com/fwlink/?LinkId=203133>).

## Timer Jobs

The monitoring features in SharePoint Server 2010 use specific timer jobs to perform monitoring tasks and collect monitoring data. The health and usage data might consist of performance counter data, event log data, timer service data, metrics for site collections and sites, search usage data, or various performance aspects of the Web servers. The system uses this data to create health reports, Web Analytics reports, and administrative reports. The system writes usage and health data to the logging folder and subsequently to the logging database.

You might want to change the schedules that the timer jobs run on to collect data more frequently or less frequently. You might even want to disable jobs that collect data if you are not interested in them. You can perform the following tasks on timer jobs:

- Modify the schedule that the timer job runs on.
- Run timer jobs immediately.
- Enable or disable timer jobs.
- View timer job status. You can view currently scheduled jobs, failed jobs, currently running jobs, and a complete timer job history.

For more information about how to configure these settings, see [Configure SharePoint Health Analyzer timer jobs](http://go.microsoft.com/fwlink/?LinkID=200593) (http://go.microsoft.com/fwlink/?LinkID=200593).

Use the following checklist to implement these features in your daily operation:

- [Check SharePoint Health Analyzer](#)

## For More Information

For more information about configuring the Health analyzer, see [Configuring monitoring](http://go.microsoft.com/fwlink/?LinkId=203134) (http://go.microsoft.com/fwlink/?LinkId=203134).

## Web Analytics

The reports that the Web Analytics functionality in SharePoint Server generates provide detailed insight into how your SharePoint environment is being used, and how well it's performing. Administrators should become familiar with these reports and how they can create their own (directly in the browser) to plan future capacity and to produce benchmarks to compare with future farm configurations.

All of these reports can be used to help you decide if the current architecture remains “fit for purpose,” meaning that it meets the desired service levels.

The reports are broken down into three categories and can be reviewed based on Web Application, Site Collection, Site and Search Service.

## Traffic

The traffic reports help administrators answer questions such as the following:

- How much traffic does my farm serve? (# of Page Views)
- Who visits the most often? (Top Visitors)
- How do visitors find your site? (Top Referrers)

In addition, traffic reports provide statistics about the “Daily Unique Visitors”, “Top Destinations” and the browsers used, among others.

## Search

These reports focus on helping an administrator understand how people are using search. It does this by answering questions like the following:

- How many searches are being performed? (# of queries)
- What were people mostly searching for? (Top queries)
- What queries are failing? (Failed queries)

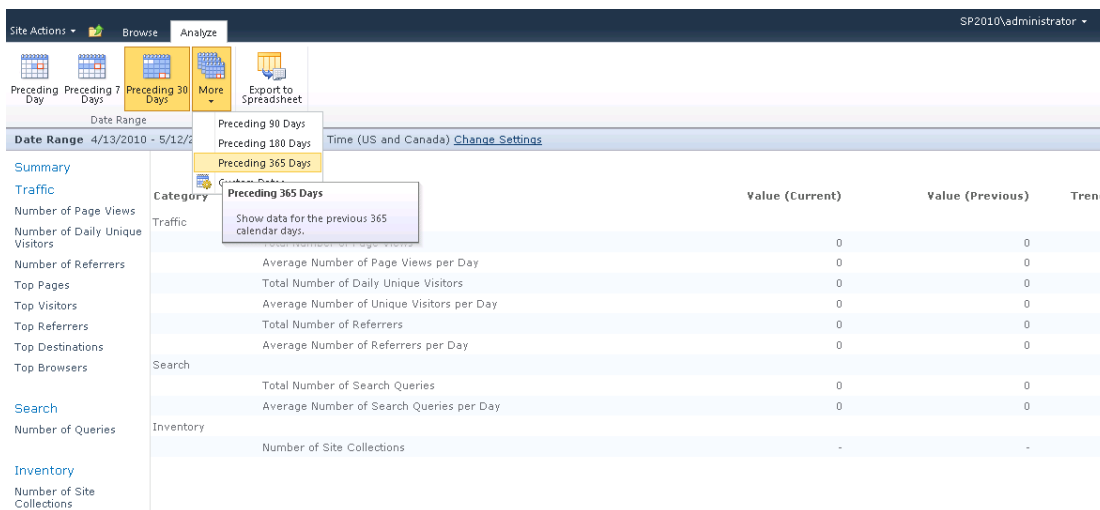
In addition, search reports provide statistics about “Best Bets”, “Search Keywords” and more. By using these reports you could, for example, review the most commonly used Search terms and then work with the appropriate people in the organization to match it to a new “Best Bet.” Adding the intelligence of people, to the intelligence of SharePoint Search makes for the best possible search experience.

## Inventory

These reports advise administrators about usage, answering questions like the following:

- How much disk space is being consumed? (Disk usage)
- How many sites have been created? (# of sites)
- What languages are in use? (Languages Usage)

While these reports are useful for capacity planning, they can also help you understand how well your information architecture is performing.



**Figure 4:** In Central Administration, click Monitoring and in the Reporting section click View Web Analytics reports.

Use the following checklist to implement these features in your daily operation:

- [Check health analyzer](#)

## How to check if SharePoint Server is “Alive”

The most basic element of IT service monitoring is the creation of a tool that monitors an application for a “heartbeat”, that is, a response from the application that verifies that it is in an operational state. This is particularly important with high availability designs that have a load balancer capable of automatically removing a server from the rotation when a heartbeat stops.

The most common approach to the implementation of a heartbeat for Web applications is a “HTTP Ping”, which essentially sends a request to a Web server and awaits a response.

The important thing to consider when creating such a “heartbeat” for SharePoint Server is that the product implements custom error messages. The result is that standard Web response codes (404, 401) can be “hidden” behind an HTML error page. In other words, simply checking that the server running SharePoint Server is correctly returning HTML is not enough to determine that the server is alive.

For this reason, we recommend that any heartbeat tool that you develop takes a more sophisticated approach to checking if SharePoint Server is alive. The actual implementation comes down to your requirements, but it might be that you develop a page that checks key SharePoint services and returns a very specific HTML page to represent an “alive” response.

## SharePoint Developer Dashboard

While the Developer Dashboard was primarily designed for developers, administrators may find it's a useful tool for debugging page-level performance problems. It provides detailed information on the performance characteristics of code that is running as part of the rendering of a SharePoint page. The report shows the following information:

- **Web server section**
  - Execution Time – The time that it takes to render a page
  - Current User – The user who is currently logged in
  - Page Checkout Level – Indicates if the page is checked out
  - Current SharePoint Operations – The number of SharePoint requests (SPRequest)
  - Log Correlation Id – The ID under which SharePoint Server writes messages to the ULS logs to see the relevant messages
- **Asserts and Critical Events section**

Here you will find errors and critical events. The messages include details about errors and their Correlation IDs. When a critical message has occurred you can drill down to the actual callstack of the message by clicking the critical event.
- **Database Queries section**

Here you can find every database query that has occurred during the rendering of the page together with the execution time.

You can drill down and see more information by clicking about the query:

  - Query Text: the full SQL Server query.
  - Callstack: Displays the full SQL Server call stack.
  - IO Stats: Allows you to see how extensive the read/writes are on the specified SQL Server query.

- **Service Calls section**  
The service calls section displays the requests to SharePoint Web services. This gives you an indication of the response time from a Web service call, which allows you to determine if it's taking longer than expected.
- **SPRequest Allocations section**  
In this section you can check whether the SPRequest objects are properly disposed.
- **WebPart Events Offsets section**  
This section displays how long each Web Part takes to render.

More information about enabling and disabling the dashboard is available in [Appendix A: Enabling the Developer Dashboard](#).

## Custom Applications and Object Disposal

One of the most difficult to troubleshoot, most persistent and severe issues that a SharePoint administrator can encounter is the incorrect management of SharePoint objects in custom applications. It's critical to the reliability of your environment that governance processes are put in place to ensure that custom code complies with the published best practices around the disposal of objects in the SharePoint Object Model. When these objects are not disposed correctly you introduce memory leaks which in turn can introduce system downtime and instability.

### What are the best practices concerning object disposal?

Correct object disposal is just one best practice that SharePoint developers should be aware of. It is however, probably the most critical, and most complex to apply.

The following resource is the recommended source for developers surrounding the aspects of proper object disposal.

- [Using Disposable Windows SharePoint Services Objects](http://go.microsoft.com/fwlink/?LinkId=203135)  
(<http://go.microsoft.com/fwlink/?LinkId=203135>).

### How do I know I have a memory leak?

Here are the two most common ways to determine you have a memory leak:

- 1) Review your ULS logs

SharePoint Server constantly tracks the lifecycle of objects to proactively report potential issues that are related to object disposal. It does this by recording potential issues in the ULS logs as follows:

*“An SPRequest object was not disposed before the end of this thread. To avoid wasting system resources, dispose of this object or its parent (such as a SPSite or SPWeb) as soon as you are done using it. This object will now be disposed”*



Because these events occasionally may be “false positives,” administrators should be concerned with either an exceptionally large number of these errors (the ULS will actually provide an object count), or a change in the frequency, especially soon after a change to the environment, such as the installation of a new solution.

## 2) Application Pool Recycles

The most common symptom that is associated with a memory leak is usually described as “The application pools recycle intermittently”. The result is down time. The challenge for an administrator is that this downtime happens intermittently, which makes it difficult to reproduce and to debug. Most commonly this problem typically occurs during peaks in usage.

The reason this occurs is due to a protective mechanism built into application pools. Because the SharePoint objects are not being disposed correctly, the .NET garbage collector is not able to reclaim the memory consumed by the objects. This results in the memory leak, which in turn, results in a potentially dramatic increase in memory consumption. Application pools, by default, are configured to automatically recycle when they consume too much memory, and this is the intermittent instability.

Reviewing the event viewer for application pool recycle events is critical to isolating and identifying memory leaks in custom applications.

Other common symptoms which suggest that you may have a memory leak include database connectivity issues.

## How can I check solutions for memory leaks?

Microsoft has released the [SharePoint Dispose Checker Tool](http://go.microsoft.com/fwlink/?LinkId=203138) (<http://go.microsoft.com/fwlink/?LinkId=203138>) which quickly identifies possible issues with the disposal of SharePoint objects in custom applications. The tool only requires access to the solution assembly to work, and it can also be integrated into a developer's build process.

# Operations Management

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Operations management involves the administration of an organization's infrastructure components and includes the day-to-day administrative tasks, both planned and impromptu, which are required to keep an IT system operating smoothly. Typically, operations management tasks are covered by written procedures. These procedures provide all support staff with the same standard tools and methods.

In a SharePoint Server 2010 environment, examples of system administration tasks include creating Web Applications, backing up and archiving sites and site collections, monitoring logs, and maintaining service applications.

## Standard Procedures

Several resources can help you define what standard procedures are required in your organization and how to perform them. For more information about how to administer your SharePoint environment, see [Operations](http://go.microsoft.com/fwlink/?LinkID=89152) (<http://go.microsoft.com/fwlink/?LinkID=89152>). Because each company is unique, you will have to customize and adapt these references to suit your requirements.

Standard procedures will change, and documentation will occasionally need to be revised. As changes are made, your change management process should identify how each change is likely to affect various parties. The change management function should be used to update and control the documentation.

The tasks that need to be performed can generally be separated into the following general categories:

- [Daily Tasks](#)
- [Weekly Tasks](#)
- [Monthly Tasks](#)
- [As Needed Tasks](#)

When preparing documentation for operations management, checklists are useful to help make sure that the required tasks are performed at the appropriate time. For detailed information about how to prepare operations checklists, see the sample checklists located in [Operations Checklists](#).

Frequently, change management takes over where system administration finishes. If a task is documented by a standard procedure, it is part of the system administration function. If there is no standard procedure for a task, it should be handled by using the change management function.

## Centralized Versus Decentralized Administration

Roles and responsibilities for performing system administration tasks depend on whether the organization follows a centralized model, a decentralized model, or a combination of both.

### Centralized Model

In a centralized model, one or several administrative groups maintain complete control of the SharePoint environment. This administrative model is similar to a data center where all administration tasks are performed by a single information technology group. Roles and responsibilities within the team should be defined according to experience and expertise.

### Decentralized Model

Decentralized organizations are located in several geographic locations and have servers running SharePoint Server and teams of administrators in different locations. For example, there may be local administration staff and one or more servers running SharePoint Server for each office in each country. Alternatively, there may be a cluster of servers running SharePoint Server and an administrative team for North America and one for Europe. Sometimes, you may want administrators to be responsible only for their own geographical area and restrict permissions to administer resources in other areas.

In SharePoint Server, you can do this by managing users in Central Administration where the rights of administrators can be set by using permissions and policy.

## For More Information

For more information about delegating control of SharePoint Server, see [Security and Protection](http://go.microsoft.com/fwlink/?LinkID=89441) (<http://go.microsoft.com/fwlink/?LinkID=89441>).

## Daily Tasks

To help ensure the availability and reliability of your SharePoint Server 2010 environment, you must actively monitor the physical platform, the operating system, and all important SharePoint Server, IIS, and SQL Server services.

Preventative maintenance helps you identify potential errors before an error causes problems with the operation of your SharePoint environment. Combined with disaster recovery planning and regular backups, you minimize the impact of problems that might arise.

Monitoring your SharePoint environment involves checking for problems with connections, services, server resources, and system resources. Microsoft Windows Server 2008, SQL Server 2008 and, of course, SharePoint Server itself, provide many monitoring tools and services to help make sure that your SharePoint environment is running smoothly.

The key advantages to daily monitoring are as follows:

- Meeting the performance requirements of your service level agreements (SLAs).
- Completing successfully specific administrative tasks, such as daily backup operations, and checking server health.
- And probably the most important one: detecting and addressing issues upfront, such as bottlenecks in the server performance or need for additional resources before they affect productivity.

The daily maintenance tasks that you are going to use depend on your organization and your organization's needs. It is important to have daily maintenance tasks in place so that you can capture and maintain data about your SharePoint environment, such as usage levels, possible performance bottlenecks, and administrative changes. See the following sections for information about tasks that you can perform daily:

- [Performing Physical Environmental Checks](#)
- [Performing and Monitoring Backups](#)
- [Checking Disk Usage](#)
- [Checking the Event Viewer](#)
- [Monitoring Server Performance](#)
- [Monitoring Network Performance](#)

## For More Information

To help organize tasks that are performed daily, see the [Daily Operations Checklist](#). To learn more about how to monitor SharePoint Server 2010, see [Monitoring SharePoint Server 2010 with Microsoft Operations Manager 2007 R2](#).

## Performing Physical Environmental Checks

Before you check performance, availability, and functionality of your SharePoint environment, you should check the physical environment. For example, determine whether the server and its connections are fully secured in a rack, and determine whether the server room temperature is appropriate.

Perform the following physical environmental inspections:

- **Physical security measures**  
Physical security protection such as locks, doors, and restricted-access rooms must be secured. Check for any unauthorized and forced entries and signs of equipment damage.
- **Temperature and humidity**  
High temperature and humidity can cause hardware components to overheat. Check temperature and humidity to help make sure that the environmental systems such as heating and air conditioning can maintain acceptable conditions and function within the hardware manufacturer's specifications.
- **Devices and components**

Your SharePoint environment relies on a functioning physical network and related hardware. Ensure that routers, switches, hubs, physical cables, and connectors are properly connected and operational.

## For More Information

For information about other important daily operations tasks, see [Daily Tasks](#).

## Performing and Monitoring Backups

Performing backups of your servers is your first line of defense when planning for a disaster. You must have a well-planned and well-rehearsed disaster recovery plan for your SharePoint environment.

Your disaster recovery plan should include backing up SharePoint configuration and content daily. By backing up your SharePoint environment regularly you reduce the possibility of losing data as a result of a power outage, hardware failure, or any number of other events.

While performing a backup doesn't affect the state of your SharePoint environment, it does require significant system resources, which in turn, can have a negative impact on the performance of your environment. For this reason, backups are typically run outside of business hours or when the system sees its lowest demand from end-users.

SharePoint Server 2010 makes it possible to configure and schedule backups on various levels:

- [Back up a Web application](http://go.microsoft.com/fwlink/?LinkId=203218) (http://go.microsoft.com/fwlink/?LinkId=203218)
- [Back up a service application](http://go.microsoft.com/fwlink/?LinkId=203219) (http://go.microsoft.com/fwlink/?LinkId=203219)
- [Back up a farm configuration](http://go.microsoft.com/fwlink/?LinkId=203220) (http://go.microsoft.com/fwlink/?LinkId=203220)
- [Back up search](http://go.microsoft.com/fwlink/?LinkId=203221) (http://go.microsoft.com/fwlink/?LinkId=203221)
- [Back up the Secure Store service](http://go.microsoft.com/fwlink/?LinkId=203222) (http://go.microsoft.com/fwlink/?LinkId=203222)
- [Back up a content database](http://go.microsoft.com/fwlink/?LinkId=197242) (http://go.microsoft.com/fwlink/?LinkId=197242)
- [Back up databases to snapshots](http://go.microsoft.com/fwlink/?LinkId=203223) (http://go.microsoft.com/fwlink/?LinkId=203223)
- [Back up customizations](http://go.microsoft.com/fwlink/?LinkId=203224) (http://go.microsoft.com/fwlink/?LinkId=203224)
- [Back up a site collection](http://go.microsoft.com/fwlink/?LinkId=197243) (http://go.microsoft.com/fwlink/?LinkId=197243)
- [Export a site, list, or document library](http://go.microsoft.com/fwlink/?LinkId=197239) (http://go.microsoft.com/fwlink/?LinkId=197239)
- [Back up or archive logs](http://go.microsoft.com/fwlink/?LinkId=203226) (http://go.microsoft.com/fwlink/?LinkId=203226)

These capabilities mean you can design a backup/restore and disaster recovery strategy that meets the specific requirements of your organization.

Most of these options also provide for two different types of backup:

- Full – Complete backup of all the content, including full history.
- Differential – Backup of only the content that has changed since the last full backup

In addition to backing up SharePoint content and configuration, you should also consider backing up all logged events and performance data. This includes information that is being logged in the event viewer, SQL Server logs and SharePoint ULS log files.

No matter which backup strategy you choose, proactively monitoring the successful completion of your SharePoint backups is critical to the success of your disaster recovery plan. Regular testing of the disaster recovery plan for your organization's SharePoint infrastructure should be performed in a lab environment that mimics your production environment as closely as possible.

A disaster recovery plan is necessary to ensure high availability of your SharePoint environment. A solid backup and recovery strategy is an important part of that; however you should also strongly consider a separate fail-over strategy. This is an environment that is a duplicate of your production environment but only comes online, by using a DNS change, in the event that your primary environment becomes unavailable for any reason.

For more information about disaster recovery planning, see [Plan for disaster recovery](http://go.microsoft.com/fwlink/?LinkId=203228) (<http://go.microsoft.com/fwlink/?LinkId=203228>).

### For More Information

For information about other important daily operations tasks, see [Daily Tasks](#).

For more information about backup operations, see [Backup](#) (<http://go.microsoft.com/fwlink/?LinkId=203229>).

For more information about recovery operations, see [Recovery](#) (<http://go.microsoft.com/fwlink/?LinkId=203230>).

## Checking Disk Space

SharePoint requires disk space to store its logs, search indexes, SQL Server databases, and SQL Server transaction logs.

You should monitor the amount of disk space available regularly to ensure that servers running SharePoint Server or SQL Server databases are not being negatively impacted by insufficient storage resources.

Comparing and maintaining statistical information about available disk space on each disk volume, and tracking the expected growth of the databases and transaction log files helps you with capacity planning.

You can check free disk space by using the following methods:

- **Windows Explorer** Use Windows Explorer to check for disk space on volumes that store SharePoint logs, databases and search indexes.
- **Performance monitor** Monitor disk space by running a script that will send you an alert message if the hard disk space falls below 100 MB. You can find a sample script on the [TechNet Script Center](http://go.microsoft.com/fwlink/?linkid=33284) (<http://go.microsoft.com/fwlink/?linkid=33284>).
- **Use Microsoft Operations Manager** Microsoft Systems Center Operations Manager (SCOM) can be used to alert administrators when volume space is constrained. For more information, see [Microsoft SharePoint 2010 Products Management Pack for Microsoft Systems Center Operations Manager 2007 R2](#).

## For More Information

For information about other important daily operations tasks, see [Daily Tasks](#).

## Checking the Event Viewer

You can use the Event Viewer to obtain information about service failures and warnings about system resources such as virtual memory and disk space. Use the Event Viewer to view and manage event logs; obtain information about hardware, software, and system problems that must be resolved; and identify trends that require future action.

Event Viewer maintains logs about application, security, and system events on your computer. It also provides a central location for installed applications, for example SharePoint Server and SQL Server, to report warnings and error conditions. This makes it vitally important to review event logs daily.

A server that is running a Windows Server 2008 operating system records events by default in three types of logs:

- **Application logs**

The Application log contains events logged by applications or programs. Developers of those applications determine which events to log. For example, a database program might record a file error in the Application log. Most events that are related to SharePoint Server will be found in the Application log.

- **Security logs**

The Security log records events such as successful and unsuccessful logon attempts, as well as events related to resource use such as creating, opening, or deleting files or other objects. For example, if logon auditing is enabled, attempts to log on to the system are recorded in the Security log.

- **System logs**

The System log contains events that Windows system components log. For example, the failure of a driver or other system component to load during start-up is recorded in the System log. The event types logged by system components are predetermined by the server.

SharePoint administrators can also create their own custom views of the Event Logs, for example, one that collects events that can negatively impact SharePoint Server. When creating a new view, choose “Event sources” and then select all sources that are related to SharePoint Server. For more information, see [Create a Custom View](#) (<http://go.microsoft.com/fwlink/?LinkId=203233>).

## Managing the Event Logs

In the SharePoint Central Administration you can throttle the amount and level of detail that Event Viewer logs. See Event Throttling.

 **Note:**

Do not use the maximum logging settings unless you are instructed to do so by Microsoft Product Support Services. Maximum logging drains significant resources and can give many "false positives," that is, errors that get logged only at maximum logging but are really expected and are not a cause for concern. We also recommend that you do not enable diagnostic logging permanently. Use it only when troubleshooting.

Within each Event Viewer log, Windows 2008 records informational, warning, and error events. Monitor these logs closely to track the types of transactions being conducted on servers running SharePoint Server. You should periodically archive / backup the logs or use automatic rollover to avoid running out of space. Because log files can occupy a finite amount of space, increase the log size (for example, to 50 MB) and set it to overwrite, so that Windows 2008 can continue to write new events.

The event viewer within Windows 2008 has some automated features which make monitoring easier:

- **Subscriptions** – Subscriptions will let you gather events from different servers. This is valuable for getting an overview of all the events that have occurred in your server farm. Within the properties of each of the above mentioned Windows logs (Application, Security and system) you have the ability to add a subscription, where you then establish a connection to the Event Log on a different server.

To make use of this feature you will need to enable the Windows Event Collector Service.

- **Attach Tasks** - Within the event viewer you are able to "Attach a Task" to either a specific log view or an individual event. For example sending an email message or running a program. This functionality basically integrates the Windows "Task Scheduler" tool with the Event Viewer.

Combining this functionality with Windows PowerShell opens up many opportunities for automating management and problem solving tasks. For example, you could write a Windows PowerShell script that kicks off a management workflow in SharePoint Server. This could then be attached to any events that require action from an administrator, thereby ensuring it gets done.

- **Microsoft Systems Center Operations Manager** - You can use Microsoft Systems Center Operations Manager (SCOM) to monitor the health of your server. The Microsoft SharePoint 2010 Products Management Pack extends SCOM by providing specialized monitoring of the critical services and components that make up SharePoint Server 2010. This management pack includes a definition of "good health" for a server running SharePoint Server and will automatically alert the administrator if it detects a state diverging from that and requiring intervention. For more information about Microsoft Systems Center Operation Manager and the SharePoint Management Pack, see the [Microsoft Systems Center Operations Manager](http://go.microsoft.com/fwlink/?LinkId=203235) (<http://go.microsoft.com/fwlink/?LinkId=203235>).



## For More Information

For information about other important daily operations tasks, see [Daily Tasks](#).

## Monitoring Server Performance

Microsoft SharePoint Server performance is affected by many factors such as system architecture, software, hardware, and network components. Make sure each server in your environment meets the SharePoint Server hardware and software requirements; see [Hardware and software requirements](http://go.microsoft.com/fwlink/?LinkID=119403) (<http://go.microsoft.com/fwlink/?LinkID=119403>).

Monitoring server performance helps to ensure your servers are functioning correctly and allows you to identify bottlenecks in the system. By reviewing and analyzing the data produced by performance monitoring, you can identify problems and apply corrective action.

You can also use the monitoring data to further enhance the performance of your servers by identifying areas that need additional resources. For example, you may need to increase your storage capacity to handle the growing number of users in your organization or increase memory when using more SharePoint services.

## Task Manager

Task Manager is a Windows Server 2008 tool that provides information about the processes and programs that are running on your local computer. You can use Task Manager to monitor key indicators of your computer's performance in real time. It shows you the status of the programs that are running and allows you to end programs that have stopped responding.

You can also assess the activity of running processes by using up to 15 parameters, and see graphs and data on CPU and memory usage. In addition, you can view the network status and see how your network adapter is functioning. If you have more than one user logged on to your computer, you can see who is connected, what they are working on, and you can send them a message.

## System Monitor

Using the System Monitor tool, you can define, collect, and view extensive data about the usage of hardware resources and the activity of system services on computers that you administer. System Monitor lets you monitor a single computer or several computers simultaneously. This flexibility can be helpful when you want to locate a problem within your SharePoint farm.

You specify the type of data that you want to monitor, the source of the data, and establish sampling parameters. You can even change the appearance of your System Monitor to use graph, histogram, or report views.

## Performance Logs and Alerts

With Performance Logs and Alerts, you can collect performance data automatically from local or remote computers. You simply need to select the counters relevant to the investigation you wish to perform, and a sampling interval.

The resulting data can be reviewed by using System Monitor or imported to a spreadsheet or databases for analysis and report generation.

Alerts can also be configured. This is a system-generated event that is triggered when counters that you are tracking perform outside predefined thresholds. When it does you can configure an action to occur, for example have a message be sent, a program executed, or an entry made in the application event log.

### Note:

The alert functionality depends on the Windows Server 2008 Messenger Service, the Windows Server 2008 Alerter Service, and the existence of the recipient account registration in the Windows Internet Name Service (WINS). The Messenger and Alerter services are disabled by default and must be enabled and started to allow network messages to be transmitted.

For more information about creating and configuring alerts in Windows Server 2008, see [Performance and Reliability Monitoring Step-by-Step Guide for Windows Server 2008](http://go.microsoft.com/fwlink/?LinkId=178005) (<http://go.microsoft.com/fwlink/?LinkId=178005>).

## For More Information

For information about other important daily operations tasks, see [Daily Tasks](#).

## Monitoring Network Performance

It is important to monitor your network performance because its performance can affect the performance of your SharePoint Server 2010 environment. You can monitor your network by using the following tools:

- Network Monitor
- Windows Management Instrumentation (WMI)
- Simple Network Management Protocol (SNMP)

You can also use third-party monitoring tools or Microsoft Systems Center Operations Manager (SCOM) to monitor your SharePoint system. For more information about SCOM 2007, see [Monitoring SharePoint 2010 with Systems Center Microsoft Operations Manager 2007 R2](#).

## Network Monitor

Network Monitor for Microsoft Windows collects, displays, and analyzes resource usage on a server and measures network traffic. Network Monitor exclusively monitors network activity. By capturing and analyzing network data and using this data with performance logs, you can

determine your network usage, identify network problems, and forecast your network needs for the future.

Download [Network Monitor](http://go.microsoft.com/fwlink/?LinkId=198217) (<http://go.microsoft.com/fwlink/?LinkId=198217>).

## Windows Management Instrumentation

Windows Management Instrumentation (WMI) helps you manage your network and applications as they become larger and more complex. With WMI, you can monitor, track, and control system events that are related to software applications, hardware components, and networks.

SharePoint Server 2010 provides many WMI classes that you can use to monitor and analyze SharePoint servers. The SharePoint 2010 SDK contains complete information about the SharePoint WMI providers, including many sample scripts to help you get started. You can download or view the [SharePoint 2010 SDK](http://go.microsoft.com/fwlink/?LinkId=166675) (<http://go.microsoft.com/fwlink/?LinkId=166675>) and [FAST Search: WMI classes](http://go.microsoft.com/fwlink/?LinkId=203240) (<http://go.microsoft.com/fwlink/?LinkId=203240>) from SharePoint 2010 Reference.

## Simple Network Management Protocol

Simple Network Management Protocol (SNMP) lets you capture configuration and status information about your network and send the information to a designated computer for event monitoring. For more information about SNMP, see SNMP in Windows Server 2008 Help.

## For More Information

For information about other important daily operations tasks, see [Daily Tasks](#).

## Weekly Tasks

As a best practice, perform the following tasks and procedures weekly:

- **Archive Event Logs**

If event logs are not configured to overwrite events as required, they must be regularly archived and deleted. This action is especially important for security logs, which may be required when investigating attempted security breaches.
- **Check for Security Updates**

Identify any new service packs, hotfixes, or updates. If appropriate, test these in a test lab and use change control procedures to arrange for deployment to the production servers.
- **Review SLA Performance Figures**

Check the key performance data for the previous week. Review performance against the requirements of the Service Level Agreement (SLA). Identify trends and items that have not met their targets.
- **Archive Data**

Archive data to CD, DVD, tape, or similar media. When a user leaves the organization or after a set period of time, information in SharePoint sites and site collections may need to be archived. This helps to keep the information stored by SharePoint Server relevant, and the overall online storage size manageable.

- **Environmental Tests**

Check periodically and maintain air conditioning, temperature and humidity monitors, and physical security measures.

- **Database Maintenance**

While SharePoint Server 2010 automatically performs a number of critical database maintenance tasks, administrators should be familiar with the maintenance tasks outlined in the [Database maintenance for Office SharePoint Server 2007](#)

(<http://go.microsoft.com/fwlink/?LinkId=111531>) whitepaper. While it describes tasks for Office SharePoint Server 2007, it remains relevant to SharePoint Server 2010.

To help organize your performance of weekly tasks, see [Weekly Operations Checklist](#).

## Monthly Tasks

As a best practice, perform the following tasks and procedures monthly:

- **Security Checks**

Depending on the level of security that your organization requires, it may be appropriate to perform regular audits of security such as firewall rules, user rights, group membership, delegate rights, and so on.

- **Capacity Planning**

Review capacity figures for the previous month, and produce a plan for any upgrades that may be required in the coming months to keep the system operating within limits specified by the organization's Service Level Agreements (SLAs).

- **Disaster Recovery Test**

Perform a system recovery for a single server to test your organization's documented recovery process. This test will simulate a complete hardware failure for one server, and make sure that the resources, plans, and data are available for recovery. Try to rotate the focus of the test each month, so that you test the failure of a different server or other piece of equipment every time. For example, Search Server, Database Servers, Business Connectivity Services, and so on.

### For More Information

To help organize your performance of monthly tasks, see [Monthly Operations Checklist](#).

## Impromptu Tasks

Perform the following tasks as necessary. However, they are frequently also covered by standard procedures:

- **Full Security Audit** You can perform this audit regularly, in response to an upgrade or redesign of the SharePoint environment, or in response to an attempted (or successful) security breach. The procedure may involve port scans on servers and firewalls, audits of security fixes, and third-party penetration tests.
- **Update Performance Baselines** Update performance baselines after an upgrade or configuration change. You can use baselines to measure performance changes and to detect problems that affect system performance.
- **SharePoint Health Analyzer** The health analyzer helps you to monitor your SharePoint environment which enables you to check for potential configuration, performance, and usage problems. See [SharePoint Health Analyzer](#).
- **SharePoint developer dashboard** The SharePoint developer dashboard offers you additional performance and tracing information that can be used to debug and troubleshoot issues with page rendering time. See [SharePoint Developer Dashboard](#).

### For More Information

For information about other tasks that you can perform to maintain your SharePoint environment, see [Operations Management](#).

## Operations Checklists

---

The SharePoint Server 2010 Operations Checklists provide guidelines for IT professionals to perform the required daily, weekly, and monthly maintenance tasks to keep your server running SharePoint Server performing optimally. Use the following checklists as is, or adapt them to suit your company's specific needs:

- [Daily Operations Checklist](#)
- [Weekly Operations Checklist](#)
- [Monthly Operations Checklist](#)
- [Summary Checklist](#)

### Daily Operations Checklist

Use these checklists to record daily operations. You can modify these checklists based on your organization's requirements.

#### Checklist: Check Backups

Complete this checklist to check backups.

Prepared by:

Date:

Completed	Task
	Make sure that the recommended minimum backup strategy of a daily backup completed successfully. This should be done according to the backup strategy in place at your organization.
	Check if the trace logs are being backed up.
	Verify that the previous backup operation completed.
	Analyze and respond to errors and warnings during the backup operation.
	Follow the established procedure for backup rotation, labeling, and storage.



Completed	Task
	Make sure that backups complete with the tolerance specified in service level agreements (SLA).
	Determine whether custom solutions are part of the backup plan. If not; include these in the backup plan.
	Confirm that the backup can be successfully restored.

## Checklist: SharePoint Farm Backups

Complete this checklist to check SharePoint Server backups.

Prepared by:

Date:

Completed	Task
	Perform backup  <b>Note:</b> If you are backing up the farm for the first time, you must use the <b>Full</b> option. You must perform a full backup before you can perform a differential backup.
	Verify if the backup operation completed  <b>Note:</b> Note: Check the backup or restore status in Central Administration.
	Analyze and respond to errors and warnings during the backup operation.

## Checklist: SharePoint Audit

Complete this checklist to check SharePoint services and functionality.

Prepared by:

Date:

Completed	Task
	Review the scheduled and important Timer Jobs, ensuring they are operational, and executing at the correct time.
	Record, review and compare the set of installed features with the previously recorded set. Note and confirm that any changes are authorized.
	Review, record and compare SharePoint policies with the previously recorded set. Note and confirm that any changes are authorized.

### Checklist: Check CPU and Memory Use

Use this checklist to record the sampling time of each counter.

Prepared by:

Date:

Completed	Task
	Examine <b>% Processor Time</b> performance counter.
	Examine <b>Available MBs</b> performance counter.
	Examine <b>% Committed Bytes in Use</b> performance counter.
	Check against a performance baseline to determine the health of a server.

Counter	Measured value	Time when recorded
% Processor Time		
Available MBs		
% Committed Bytes in Use		



## Checklist: Check Disk Use

Follow the checklist and record the drive letter, designation, and available disk space.

Prepared by:

Date:

Completed	Task
	Create a list of all drives and label them in three categories: <ul style="list-style-type: none"> <li>• Drives with transaction logs</li> <li>• Drives with queues</li> <li>• Other drives</li> </ul>
	Check disks with transaction log files.
	Check disk with trace log files.
	Check other disks.
	Use server monitors to check free disk space.
	Check performance on disks.


Drive Letter	Designation (drives with transaction logs, drives with queues, and other drives)	Available space MB	Available % free
<i>Your data here</i>			
<i>Your data here</i>			
<i>Your data here</i>			

## Checklist: Event Logs

Check event logs using the following checklist.

Prepared by:

Date:


Completed	Task
	<p>Filter application and system logs on the server running SharePoint Server to see all errors.</p> <ul style="list-style-type: none"> <li>• Check trace log</li> <li>• Check the Event Viewer</li> <li>• Check ULS logs</li> </ul> <p>If errors occurred in any of these logs, cross reference the Correlation IDs with the ULS log, the usage logging database, and the SQL Server 2008 profiler for debugging.</p> <p> <b>Note:</b> This process requires a significant amount of time to be completed successfully and confidently.</p>
	<p>Filter application and system logs on the server running SharePoint Server to see all warnings.</p>
	<p>Check the event log for recurring error messages.</p>
	<p>Respond to discovered failures and problems.</p>

## Checklist: Check IIS, IIS Logs and Performance

Complete this checklist to check IIS logs and performance and the status of services such as SharePoint services and SQL Server services. For more information about monitoring IIS logs and performance, see [Monitoring Activity on a Web Server](http://go.microsoft.com/fwlink/?LinkId=200915) (<http://go.microsoft.com/fwlink/?LinkId=200915>).

Prepared by:

Date:


Completed	Task
	<p>Examine event log and filter. IIS logs give you information about your changes.</p> <p> <b>Note:</b></p> <p>If you are a medium-size organization, examine your event logs weekly.</p>
	<p>Examine System Monitor for IIS performance to examine the output of performance counters. Examine the following performance counters:</p> <ul style="list-style-type: none"> <li>• Web Service counters to monitor the World Wide Web Publishing Service (WWW service).</li> <li>• Web Service Cache counters to monitor the WWW service cache.</li> <li>• Active Server Pages counters to monitor applications that run as Active Server Pages (ASPs).</li> </ul>
	<p>Check whether the application pools have enough memory or check if they are running correctly. In particular look for Application Pool recycle events, which may reveal a memory leak.</p>
	<p>Ensure that the application pools are recycled every day.</p>

## Checklist: SharePoint Database Health

Use this checklist for to verify health of your SharePoint database.

Prepared by:

Date:

Completed	Task
	<p>Check the number of transaction logs generated since the last check. Is the number increasing at the “usual” rate?</p>
	<p>Check the size of the site collections Check the number of site collections per content database.</p> <p> <b>Note:</b></p> <p>The size of the site collections and the number provide an estimate of the maximum size of a content database. This is an important number to consider when planning a backup/restore strategy. When the maximum is near or the size of the database is exceeding the limit defined, create additional content databases.</p>
	<p>Check the size of the content databases.</p>
	<p>Check Web Analytics reports for usage of site collections</p> <ul style="list-style-type: none"> <li>• Check the inventory</li> <li>• Check the search</li> <li>• Check traffic</li> </ul>

## Checklist: SharePoint Health Analyzer

Prepared by:

Date:

Completed	Task
	Check health reports
	Check Web Analytics reports
	Check diagnostic logs
	Check administrative reports

## Checklist: Security Logs

To effectively correct known and discovered security issues, complete the following checklist.

Prepared by:

Date:

Completed	Task
	View the security event log on Event Viewer and match security changes to known, authorized configuration changes.
	Investigate unauthorized security changes discovered in security event log.
	Check security news for latest viruses, worms, and vulnerabilities.
	Update and fix discovered security problems and vulnerabilities.
	If a server is running the SMTP service, ensure it does not relay anonymously or lock down to specific servers that require functionality.
	Verify that SSL is functioning for configured secure channels, for example SharePoint Central Administration.
	Update antivirus signatures.
	Check the Farm Administrators group to ensure it contains only authorized accounts.
	Confirm that all firewall configuration is active and that only authorized traffic is allowed. For example, settings prevent access to servers in the farm that does not service end users.
	Run a security report which outputs a full audit of the permissions assigned to sites to a file. This can be valuable in identify when security changes have been made.

## Weekly Operations Checklist

Use these checklists to record weekly operations. You can modify these checklists based on your organization's requirements.

### Checklist: Create Reports

Use this checklist to create status reports to help with capacity planning, service level agreement (SLA) reviews, and performance analysis.

Prepared by:

Date:

Completed	Task
	Use daily data from event logs and System Monitor to create reports.
	Report on disk usage.
	Create reports on memory and CPU usage.
	Generate uptime and availability reports.
	Generate database sizes.
	Create capacity reports from messages sent and client logons.
	Create reports on queue use, size, and growth.
	Create reports showing the number and growth of SharePoint site collections being created in the content databases.

### Checklist: Incident Reports

Use this checklist to create incident reports.

Prepared by:

Date:

Completed	Task
	List the top generated, resolved, and pending incidents.
	Create solutions for unresolved incidents.

Completed	Task
	Update reports to include new trouble tickets.
	Create a document depository for troubleshooting guides and analyses of outages.

### Checklist: Status Meeting

Use this checklist to conduct weekly status meetings during which the tasks are reviewed.

Prepared by:

Date:

Completed	Task
	Server and network status for the overall organization and segments.
	Organizational performance and availability.
	Overview reports and incidents.
	Risk analysis and evaluation including upcoming changes.
	Capacity, availability, and performance reviews.
	Service level agreement (SLA) performance, and review items that have not met target objectives.

### Checklist: SharePoint Database Maintenance

Use this checklist to conduct weekly status meetings during which the tasks are reviewed.

Prepared by:

Date:



Completed	Task
	Perform database consistency checks to ensure that your data and indexes are not corrupted. You can use the DBCC (Database Console Command) CHECKDB statement to perform an internal consistency check of the data and index pages and to repair errors.
	Measure and, if necessary, reduce database fragmentation. This is the result of many inserts, updates, or deletes to a table. When a table becomes fragmented, the indexes defined on the table also become fragmented impacting performance.

## Monthly Operations Checklist

Use these checklists to record monthly operations. You can modify these checklists based on your organization's requirements.

### Checklist: Capacity Planning

Use this checklist for capacity planning.

Prepared by:

Date:

Completed	Task
	Check SharePoint Server usage in Web Analytics reports.
	Check capacity and performance against service level agreement (SLA) requirements
	Review SLA requirements and capacity figures from previous month.
	Produce and implement upgrade path based on projected growth from previous growth data.

## Checklist: Hotfixes, Service Packs, Update Rollups, and Security Updates

Use this checklist to update your systems with hotfixes, service packs, update rollups, and security updates in your organization.

Prepared by:

Date:

Completed	Task
	Maintain a list of applied hotfixes, service packs, update rollups, and security updates.
	Check product and patch installation status in SharePoint Server. <ul style="list-style-type: none"> <li>• Verify that each server in the farm is running the correct version</li> <li>• Verify that each server is running the correct build version</li> <li>• Verify the status of each component in the farm</li> </ul>
	See if there are new hotfixes for Microsoft Windows Server, SQL Server, and SharePoint Server.
	See if there are service packs for Windows Server, SQL Server, and SharePoint Server.
	See if there are updates to complementary services such as Internet Information Services (IIS), Active Directory Domain Services, and DNS Server.
	Apply updates uniformly across servers and workstations in the organization.
	Perform critical security updates as soon as possible, based on company policy.

## Checklist: Documentation and Procedures

Use this checklist for documentation.

Prepared by:

Date:

Completed	Task
	Review SharePoint Server documentation to ensure it is still current based on changes introduced in Cumulative Updates and Service Packs. Update it if necessary.
	Review existing procedures, such as Backup, Disaster Recovery, Maintenance, and so on, to ensure that they account for changes introduced in Cumulative Updates and Service Packs.

## Summary Checklist

This checklist provides a summary of SharePoint Server 2010 operations tasks on a daily, weekly, and monthly basis. You can modify these checklists based on your organization's requirements.

### Checklist: Summary

Prepared by:

Date:

Completed	Daily
	Check backups.
	Check CPU/memory use.
	Check disk use.
	Check disk health (S.M.A.R.T.)
	Examine event logs.
	Check backups.
	Check Internet Information Service (IIS) performance.
	Check SharePoint Server database health.
	Check SharePoint Health Analyzer
	Check non-SharePoint Server connectors.
	Check security logs.
	Update virus definitions and scan for viruses.
	Verify that SharePoint Server and required Windows services have started correctly.

Completed	Weekly
	Create reports.
	Complete incident reports.

<b>Completed</b>	<b>Weekly</b>
	Meet to discuss status.
	Check and compose IIS logs.
	Check and compose SharePoint ULS logs.

<b>Completed</b>	<b>Monthly</b>
	Do capacity planning.
	Perform hotfixes, service packs, update rollups, and security updates.
	Perform disaster recovery test. Test one backup a month to restore.

## Monitoring SharePoint Server 2010 with Microsoft Systems Operations Manager 2007 R2

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Making sure that servers running SharePoint Server 2010 are operating reliably is a key objective for daily operations. Therefore, it should be systematically approached based on the principles outlined in the Microsoft Operations Framework (MOF). For more information about the MOF, see [Microsoft Operations Framework](http://go.microsoft.com/fwlink/?linkid=25297) (<http://go.microsoft.com/fwlink/?linkid=25297>).

A significant aspect of SharePoint Server 2010 daily operations is monitoring the health of the SharePoint components to achieve the following functions:

- Generate alerts when operational failures and performance problems occur.
- Represent the health state of servers and server roles.
- Generate reports of operational health over time so that you can estimate future demands based on usage patterns and other performance data.

## Overview of Microsoft SharePoint 2010 Products Management Pack for SCOM 2007 R2

The Microsoft SharePoint 2010 Products Management Pack is designed to be used for monitoring SharePoint events, collecting SharePoint component-specific performance counters in one central location, and for raising alerts for operator intervention as necessary. By detecting, sending alerts, and automatically correlating critical events, this management pack helps indicate, correct, and prevent possible service outages or configuration problems, allowing you to proactively manage servers running SharePoint Server and identify issues before they become critical. The Microsoft SharePoint 2010 Products Management Pack monitors and provides alerts for automatic notification of events which indicate service outages, performance degradation, and health monitoring.

The Microsoft SharePoint 2010 Products Management Pack is built to detect, diagnose, and alert on software and hardware incidents discovered by agents installed on servers running SharePoint Server.

- Health monitoring of SharePoint Server 2010, Search Server 2010, and Office Web Apps
- Monitors Events and Services and alerts when service outages are detected
- Monitors Performance and warns users when SharePoint performance is at risk
- Forwards users to up-to-date TechNet knowledge articles

This Management Pack monitors the following services:

Access Services	Document Conversions Launcher Service	Document Conversions Load Balancer
Excel Calculation Services	InfoPath Forms Service	Managed Metadata Web Service
One Note Service	PerformancePoint Service	PowerPoint Web Service
Project Server Service	Project Server Events Service	Project Server Queuing Service
Secure Store Service	SharePoint Server Search	User Profile Service
Visio Graphics Service	Word Conversion Service	Word Viewing Service

## Monitoring Scenarios

The Microsoft SharePoint 2010 Products Management Pack helps you do more monitoring with fewer people by monitoring the following key scenarios:

### Microsoft SharePoint 2010 Products Management Pack Monitoring Scenarios

Scenario	Description
Active Directory Domain Services (AD DS)	Monitors the application pool account for insufficient permission to add or read users from AD DS.
Authentication	Monitors for issues that result from improper configuration of the authentication provider.
Backup and restore	Monitors backup failures and recycle bin quotas.
Databases	Monitors for connectivity issues with SQL Server database servers.
Diagnostic system	Monitors events related to the health of the tracing infrastructure.
E-mail	Monitors connectivity with the SMTP server.
IIS	Monitors the application pool account for issues writing to disk or registry key.
Performance	Monitors performance counters.
Search	Monitors events that are critical to the sound operation of the Search Service.

Scenario	Description
State monitoring and service discovery	Monitors Windows NT service availability, including the following:  Microsoft SharePoint Foundation 2010 Timer  Microsoft SharePoint Foundation 2010 Tracing  Microsoft SharePoint Foundation 2010 Search  Microsoft Internet Information Service
Timer	Monitors events associated with the Timer service.
Web Parts and event handlers	Monitors events associated with failures to load event handlers and safe control assembly paths.

## More Information about the Microsoft SharePoint 2010 Products Management Pack for SCOM 2007 R2

The information contained in this document is designed to provide an overview of the capabilities of the Microsoft SharePoint 2010 Products Management Pack for SCOM 2007 R2. For detailed information about the pack, its installation and configuration, see [Microsoft SharePoint 2010 Products Management Pack for System Center Operations Manager 2007](http://go.microsoft.com/fwlink/?LinkId=203252) (<http://go.microsoft.com/fwlink/?LinkId=203252>).



## Appendix A: Enabling the Developer Dashboard

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The dashboard is turned off by default, but you can enable it by using the object model or Windows PowerShell. When the dashboard is turned on you will find information about the controls, queries, and execution time that occur as part of the page rendering process. This information appears at the bottom of the page.

The developer dashboard has three different modes:

1. **Off** - The dashboard will not be displayed.
2. **On** - The dashboard is rendered and accessible on each page.
3. **On Demand** - Enables the Developer Dashboard but hides it until a user manually clicks the **Developer Dashboard** icon.

### Enable Developer Dashboard via Object model:

```
SPPerformanceMonitor Dashboard = SPFarm.Local.PerformanceMonitor;
Dashboard.DeveloperDashboardLevel = SPPerformanceMonitoringLevel.On;
Dashboard.Update();
```

### Enable Developer Dashboard by using Windows PowerShell

```
Param ([String]$mode)
function Main()
{
    $dashboard =
    [Microsoft.SharePoint.Administration.SPWebService]::ContentService.DeveloperDashboardSettings;
    $dashboard.DisplayLevel = $mode;
    $dashboard.RequiredPermissions = 'EmptyMask';
    $dashboard.TraceEnabled = $true;
    $dashboard.Update()
    Write-Host "Configured Developer Dashboard with mode $mode."
}
```