

Hands-On Microsoft Windows Server 2008

Chapter 9 *Server and Network Monitoring*

Objectives

- Understand the importance of server monitoring
- Monitor server services and solve problems with services
- Use Task Manager for server monitoring
- Configure and use Performance Monitor

Introduction to Server Monitoring

- Server monitoring is performed for several reasons
 - To establish a baseline of performance so problems can be more easily identified when they occur
 - To prevent problems before they occur and to diagnose existing problems
- **Benchmarks or baselines**
 - Provide a basis for comparing data collected during problem situations with data showing normal performance conditions

Introduction to Server Monitoring (continued)

- Sample benchmarks that you might establish include the following:
 - Test benchmarks of disk, CPU, memory, and network response before releasing a new operating system, server hardware, or a complex application to users
 - Slow, typical, and heavy usage of disk, CPU, memory, and other server resources for each server
 - Slow, typical, and heavy usage of the combined network and server resources
 - Growth of use of network and server resources at specific intervals, such as every six months to a year

Monitoring Server Services

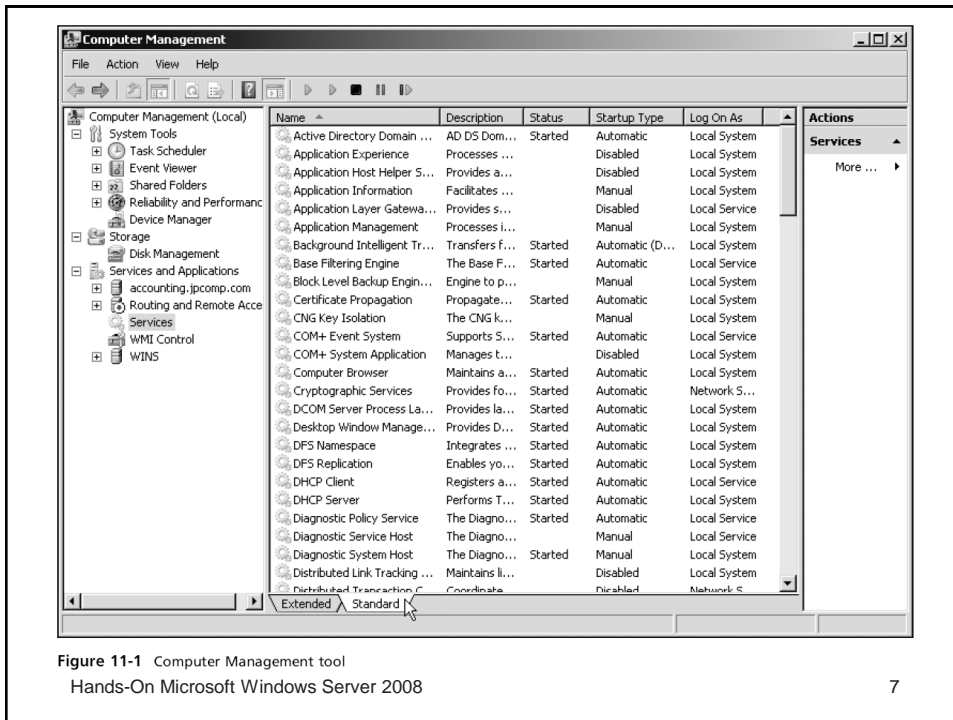
- Servers are always running a number of services

Table 11-1 Sample Windows Server 2008 services

Service	Description
Active Directory Domain Services	Enables Active Directory services for a network and must be running to enable users to log on to the network (when Active Directory is installed)
Computer Browser	Keeps a listing of computers and domain resources to be accessed
DHCP Server	Enables clients to obtain leased IP addresses (when the DHCP Server role is installed)
DNS Server	Enables resolution of DNS names and IP addresses (when the DNS Server role is installed)
File Replication	Replicates the Active Directory elements on multiple DCs (when Active Directory is installed)
Plug and Play	Enables automatic detection and installation of new hardware devices or devices that have changed
Print Spooler	Enables print spooling

Accessing Server Services

- You can access server services through Server Manager or the Computer Management tool



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Solving a Problem with a Service

- When you experience a problem on a server that is associated with a service
 - Check the status of the service to make sure that it is started or set to start automatically
- You can start, stop, pause, resume, or restart a service
 - By right-clicking it and clicking any of these options
- You can check dependencies by double-clicking a service and clicking the Dependencies tab
- Pausing a service takes it offline to be used only by Administrators or Server Operators

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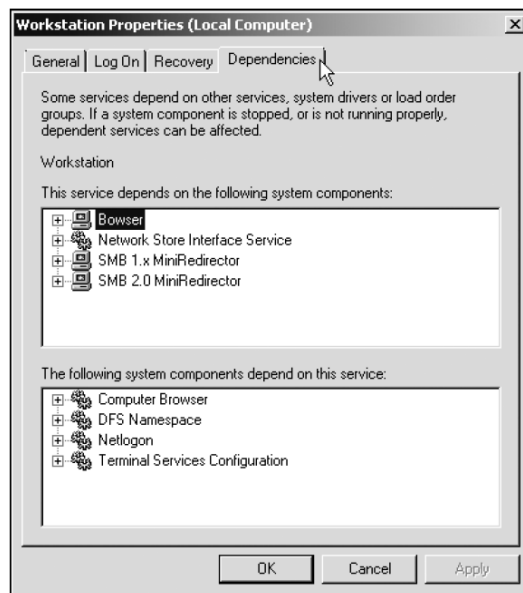


Figure 11-2 Workstation service dependencies

Using Task Manager

- Windows Server 2008 includes the Task Manager tool
 - Can be used to monitor applications and processes running on a server

Monitoring Applications

- You can use Task Manager to view applications running on the server
 - By pressing CTRL+ALT+DEL while logged on as Administrator or as a member of the Administrators group

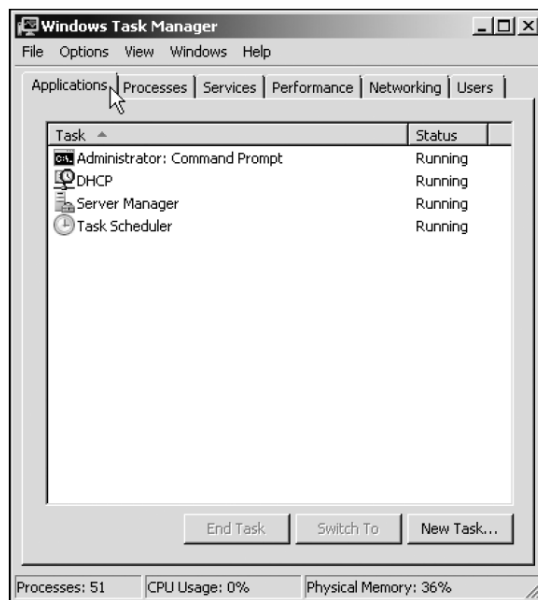


Figure 11-4 Task Manager Applications tab

Monitoring Applications (continued)

- If you right-click an application, several active options appear in a shortcut menu, as follows:
 - Switch To
 - Bring To Front
 - Minimize
 - Maximize
 - End Task
 - Create Dump File
 - Go To Process

Monitoring Processes

- The Processes tab lists the processes in use by all running applications
- If you need to stop a process, simply highlight it and click End Process
- The Processes tab also shows information about each started process

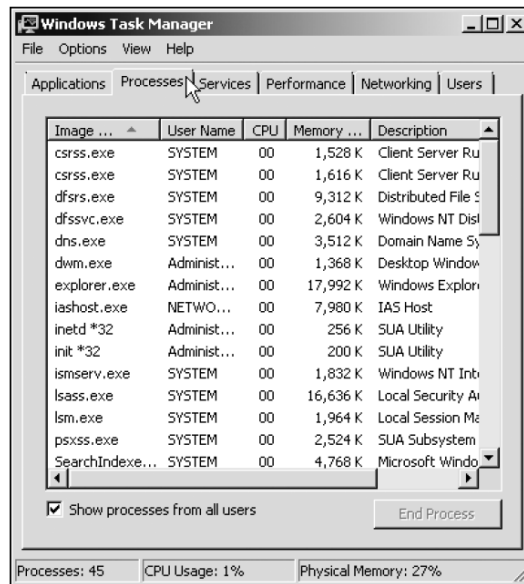


Figure 11-6 Processes tab

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Monitoring Processes (continued)

Table 11-2 Task Manager process information

Process information	Description
Image Name	The process name, such as WINWORD.EXE for Microsoft Word
User Name	The user account under which the process is running
CPU	The percentage of the CPU resources used by the process
Memory (Private Working Set)	The amount of memory the process is using
Description	Full or formal name of the process, such as Client Server Runtime process

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Setting Priorities

- Using the Processes tab within Task Manager
 - You can increase the priority of a process (or processes) in the list
 - So that it has more CPU priority than what is set as its default
- **Base priority class**
 - The priority at which a process runs is set in the program code of the application (for example inside the code of Microsoft word there is a priority for this program)
- If the base priority class is not set by the program, a normal (average) priority is set by the system

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Setting Priorities (continued)

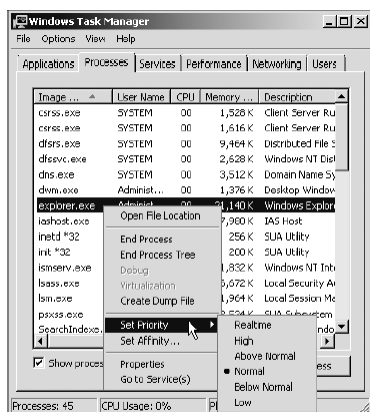


Figure 11-7 Setting the priority of a process

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Monitoring Services

- The Services tab in Task Manager shows the services that are started, stopped, or paused
- If you want to manage services using more management options
 - Use Server Manager or the Computer Management tool

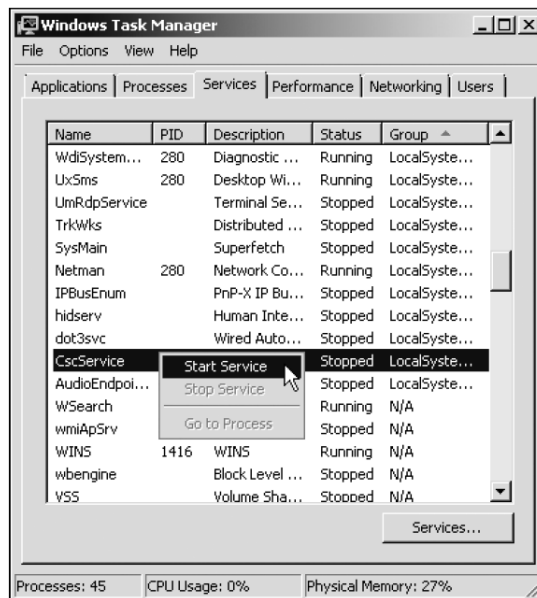


Figure 11-8 Starting a service from Task Manager

Monitoring Real-Time Performance

- The Performance tab shows critical CPU and memory performance information
 - Through bar charts, line graphs, and performance statistics
- **Handle**
 - A resource with a unique name, such as a file, used by other programs
- **Threads**
 - Blocks of code within a program

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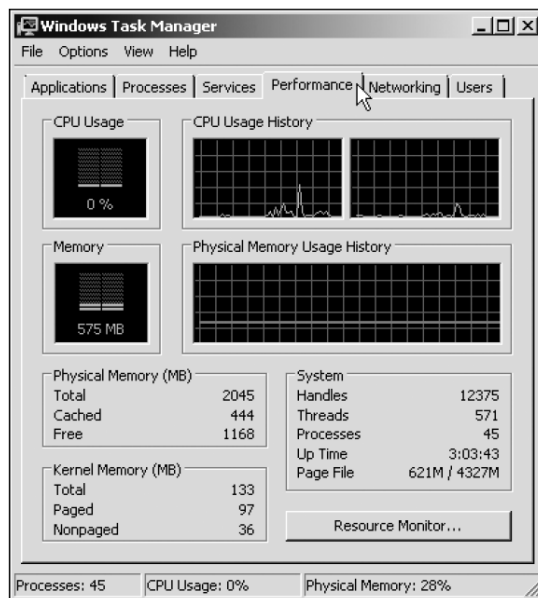


Figure 11-9 Performance tab

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Monitoring Real-Time Performance (continued)

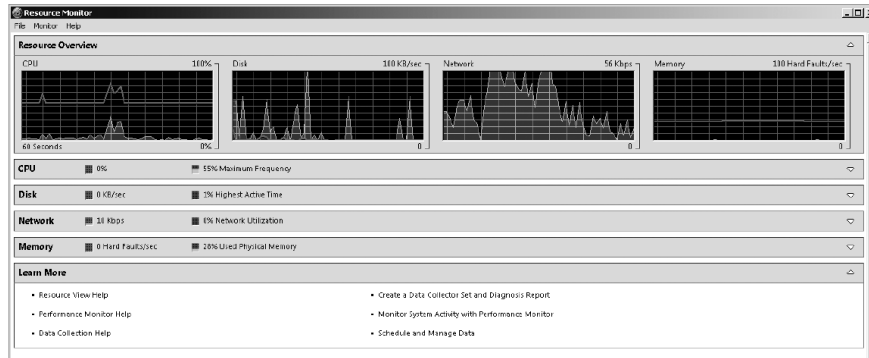


Figure 11-10 Resource Monitor

Monitoring Real-Time Performance (continued)

Table 11-4 Task Manager performance statistics

Statistic	Description
Physical Memory Total	Amount of RAM installed in the computer
Physical Memory Cached	Amount of RAM used for file caching
Physical Memory Free	Amount of RAM available to be used
Kernel Memory Total	Amount of memory used by the operating system
Kernel Memory Paged	Amount of virtual memory used by the operating system
Kernel Memory Nonpaged	Amount of RAM memory used by the operating system
Handles	Number of objects in use by all processes, such as open files
Threads	Number of code blocks in use, in which one program or process may be running one or more code blocks at a time
Processes	Number of processes that are active or sitting idle
Up Time	Amount of time since the server was last booted
Page File	The size of the page file

Monitoring Network Performance

- The Networking tab in Task Manager enables you to monitor network performance
 - On all Network Interface Cards (NICs) installed in the server
- This information can be valuable if you think there is a problem with a NIC in the server
 - And you want an immediate determination if it is working

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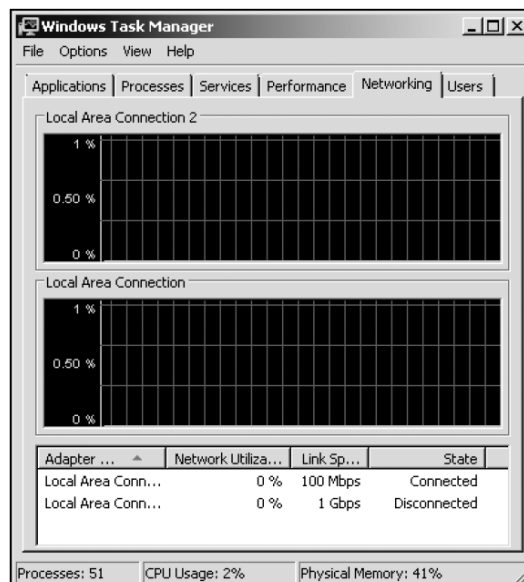


Figure 11-11 Networking tab

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Monitoring Users

- The Users tab provides a list of the users currently logged on
- You can log off a user by clicking that user and clicking the Logoff button
 - Ensures that any open files are closed before the user is logged off (Why? Because if there is any unsaved job it will be lost by logging off)
- Another option is to Disconnect a user

Using Performance Monitor

- **Performance Monitor**
 - Can be used to monitor components such as hard disks, memory, the processor, a network interface, a started process, and the paging file

Monitoring System Components

- When monitoring the performance of a server, four objects are often used:
 - Processor
 - Memory
 - Physical disk
 - Network interface

Capturing Data Using Performance Monitor

- Performance Monitor is a tool within the Reliability and Performance Monitor
- **Counter**
 - An indicator of a quantity of the object that can be measured in some unit, such as percentage, rate per second, or peak value, depending on what is appropriate to the object.
 - Example on counters: Counter on processor, Network Interfaces, CPU, Hard disk, Memory,..etc

Monitoring System Components (continued)

Table 11-6 Sample objects and counters for performance monitoring

Object	Counters / Descriptions
Processor	% Processor Time — Percentage of time for threads to process % Privileged Time — Time spent by the CPU for system activities in privileged mode % User Time — Percentage of time spent processing user threads
Memory	Available Bytes — Physical memory currently available for use Committed Bytes — Amount of virtual memory currently being used Pages/sec — Number of hard page faults per second
Physical Disk	% Disk Time — Amount of time the disk spends working Avg. Disk Bytes/Transfer — Average number of bytes transferred between memory and disk during read and write operations Disk Bytes/sec — Speed at which bytes are transferred Current Disk Queue Length — Number of requests waiting to be processed
Network Interface	Bytes Total/sec — As measured across the NIC, number of bytes sent and received per second

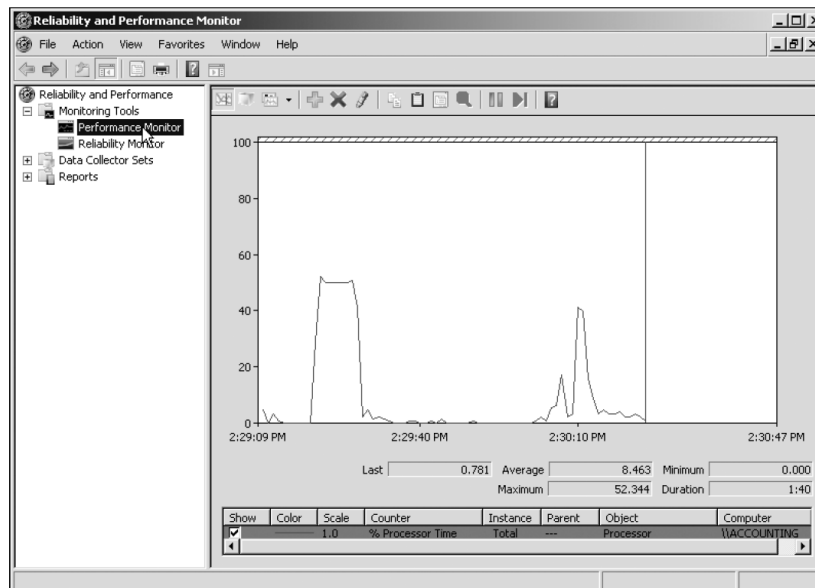


Figure 11-12 Performance Monitor (started from the Administrative Tools menu)

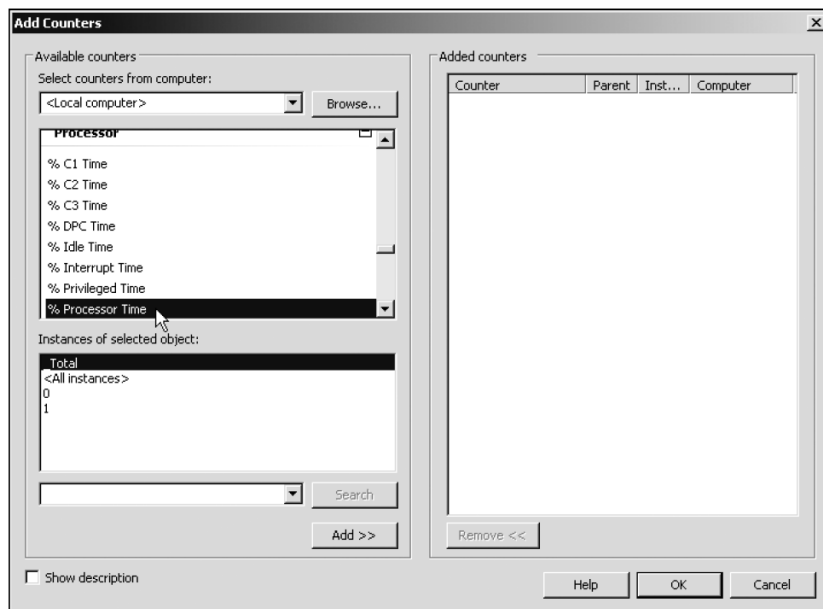


Figure 11-13 Selecting the % Processor Time counter
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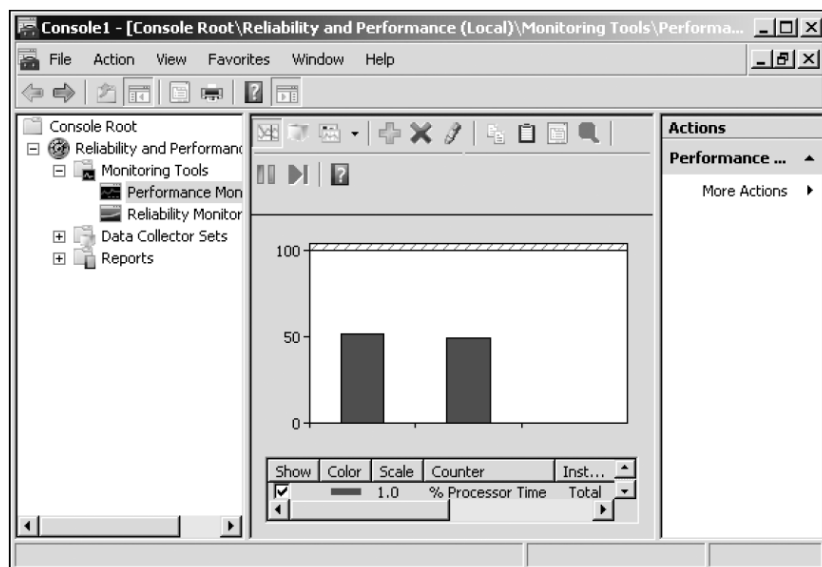


Figure 11-14 Histogram bar mode (from the MMC snap-in)

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