

# CNT 4603: System Administration Spring 2013

## Managing And Maintaining Windows Server 2008 Part 2

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# Server Roles

- The previous set of notes introduced you to the basic layout and structure of the Server Manager interface in Windows Server 2008.
- This set of notes will focus more on the roles which can be assumed by the server and the various features that can be used in supporting those server roles.
- Most of the current versions of Windows Server 2008 have defined 17 different roles which can be applied to a server through the Server Manager interface.
- We'll briefly list these 17 roles on the next few pages.



# Server Manager In Windows Server 2008

- **Active Directory Certificate Services (ADCS):** ADCS provides services for creating and managing public key certificates, including HTTPS certificates.
- **Active Directory Domain Services (ADDS):** ADDS stores information about users, computers, and other devices on the network in a security boundary known as a domain. With resources and users, members of a domain to trusted hierarchy of domains (a forest), access to organization-wide information is secure. ADDS is required for installing directory-enabled applications, such as Microsoft Exchange Server and for applying group policies.
- **Active Directory Federation Services (AD FS):** AD FS provides Web single-sign-on (SSO) capabilities across separate organizations, enabling authentication across multiple web applications in various organizations using a single user account. This requires establishing a federated trust amongst the organizations.
- **Active Directory Lightweight Directory Services (AD LDS):** Provides a directory service that an organization can use to store information specific to an application that is separate from the organization's main AD. AD LDS runs as a non-operating system service and does not require deployment on a domain controller.



# Server Manager In Windows Server 2008

- **Active Directory Rights Management Services (AD RMS):** AD RMS provides granular protection on supported documents via AD RMS-enabled applications to not just protect documents and other digital information, but also to control the actions that authorized consumers of the information can take. For example, you might be able to view the document but not print it.
- **Application Server:** This is comprised of several components that are responsible for the deployment and management of .NET Framework 3.0 applications. Also supports remote application invocation
- **Dynamic Host Configuration Protocol (DHCP):** DHCP enables servers to assign, or lease, IP addresses to computer and other devices that are enabled as DHCP clients on the network. DHCP servers can also configure other aspects of IP including DNS servers, WINS servers, domain names, routers, and many other options.
- **DNS Server:** DNS resolves host names to IP addresses, both IPv4 and IPv6. Services that use host names make a request to a DNS server to resolve the name to an IP address to enable IP-based communication. Reverse lookup is also allowed.



# Server Manager In Windows Server 2008

- **FAX Server:** Fax Server sends and receives faxed and enables the management of fax resources.
- **File Services:** File Services provides the technologies for storage management, which includes control of the types of files stored on a server via file screens and quotas, file replication, distributed namespace management, NFS (Network File System), and support for UNIX clients.
- **Hyper-V:** Hyper-V was formerly called Windows Server Virtualization, and provides the services to create and manage virtual machines and their resources. Hyper-V requires 64-bit, virtualization-enabled processors.
- **Network Policy and Access Services:** Network Policy and Access Services delivers a variety of methods to provide users with local and remote network connectivity, to connect network segments, and to allow network administrators to centrally manage network access and client health policies. Access Services allows you to deploy VPN servers, dial-up servers, routers, and 802.11-protected wireless access.



# Server Manager In Windows Server 2008

- **Print Services:** Print Services enables the management of print servers and printers. A print server reduces administrative and management workloads by centralizing printer management tasks.
- **Terminal Services:** Terminal Services enables users to access Windows-based programs that are installed on a terminal server or to access the Windows desktop itself, from almost any computing device that supports RDP (Remote Desktop Protocol). Server 2008 has embedded technology that allows RDP traffic necessary for communication with a terminal server from a client to be encapsulated in HTTPS packets. This means that all communication is via port 443, meaning that no special holes are required in the firewall for access to terminal servers within an organization from the Internet.
- **Universal Description, Discovery, and Integration Services (UDDI):** UDDI Services provides facilities for sharing information about web services within an organization's intranet, between partners on an extranet, or on the Internet. UDDI promotes the prevention of duplication of effort through the reuse of existing development work.



# Server Manager In Windows Server 2008

- **Web Server (IIS):** Web Server (IIS) enables sharing of information on the Internet, an intranet, or an extranet. It is a unified Web platform that integrates IIS 7.0, ASP.NET, and Windows Communication Foundation. It also provides enhanced security, simplified diagnostics, and delegated administration.
- **Windows Deployment Services (WDS):** This is used to install and configure Windows operating systems.
- Many of these roles will also have roles services and there may be many dependencies between the roles.



# Installing And Removing Roles

- With the exception of the ADDS role, a server may assume several different roles, although it is just as common to see a server dedicated to a single role.
- Thus, it is possible to install several roles at one time on a given server. A server that is configured to be a domain controller and thus has the installed role of ADDS will not be allowed to assume any other role.
- The Server Manager uses a wizard to install roles that has a dynamic navigation area on the left side to show where in the installation process you currently are; this is in addition to enabling you to select stages of the install without having to use the Previous and Next buttons multiple times.





# Installing And Removing Roles

- In addition to installing the server role, the Server Manager will often prompt you to perform basic configuration to get the role up and running.
  - It's rare that a system administrator wants to just install a role...they want the service that the role enables.
- By saving the information obtained from these prompts when learning how to configure the role, the Server Manager allows the basic configuration to be set during the role installation process.
- You will install the ADDS role on a server in a subsequent project. You'll also install File and Print Services roles on a server in Project 3. This will give you some hands-on experience installing server roles using the Server Manager.



# Managing Features

- Although roles are the core purpose of a server, a feature is designed to assist the role in performing it's job or to improve the functionality of the server.
- For example, Windows Backup helps manage a server and keep it available. The Desktop Experience helps administrators listen to music on a server while working.
- The following few pages list the 35 features available in Windows Server 2008.



# Managing Features

- **Microsoft .NET Framework 3.0:** combines key features of the .NET Framework 2.0 with newer technologies for building applications. Used by several roles and features.
- **BitLocker Drive Encryption:** helps protect data on lost, stolen, or inappropriately decommissioned computers by encrypting the entire volume.
- **Background Intelligent Transfer Service (BITS) Server Extensions:** enables a server to perform file transfers by exploiting unused bandwidth on a network and enables resumable downloads from the last data received.
- **Connection Manager Administration Kit (CMAK):** generates connection manager profiles.
- **Desktop Experience:** includes features from Windows Vista, such as Windows Media Player, desktop themes, and photo management.
- **Failover Clustering:** enables multiple servers to work together to provide high availability of services. Often used with file and print servers as well as database applications.



# Managing Features

- **Group Policy Management:** makes it easier to understand, deploy, manage, and troubleshoot Group Policy implementations.
- **Internet Printing Client:** enables use of HTTP to connect to and use printers that are on Web print servers.
- **Internet Storage Name Server (iSNS):** provides discovery services for Internet Small Computer System Interface (iSCSI) storage area networks.
- **Line Printer Remote (LPR) Port Monitor:** enables users who have access to UNIX-based computers to print on devices attached to them.
- **Message Queuing:** provides guaranteed message delivery, efficient routing, security, and priority-based messaging between applications.
- **Microsoft Multipath I/O (MPIO):** provides for using multiple data paths to a storage device on Windows.
- **Network Load Balancing (NLB):** distributes traffic across several servers, using TCP/IP.



# Managing Features

- **Peer Name Resolution Protocol (PNRP):** enables applications to register on and resolve names from your computer, so other computers can communicate with the applications.
- **Quality Windows Audio Video Experience (qWave):** enables a networking platform for audio and video streaming applications on IP home networks.
- **Remote Assistance:** enables a remote person to view and share control of the user's desktop in order to troubleshoot and fix a problem.
- **Remote Differential Compression:** used as part of replication technologies to replicate only delta information in a compressed format in order to use minimal amounts of bandwidth.
- **Remote Server Administration Tools (RSAT):** enables remote management of Windows Server 2003 and Server 2008 from a computer running Server 2008. This is done by allowing remote activation of some of the management tools for roles, features.



# Managing Features

- **Removable Storage Manager (RSM):** manages and catalogs removable media and operates automated removable media devices.
- **Remote Procedure Calls (RPC) Over HTTP Proxy:** used by object that receive RPCs over HTTP. Enables clients to discover these object even if the objects are moved between servers.
- **Simple TCP/IP Services:** Supports older TCP/IP services and is intended for backward compatibility only.
- **Simple Network Management Protocol (SNMP) Services:** the Internet standard protocol for exchanging management information between management console applications.
- **Storage Manager for Storage Area Networks (SANs):** helps to create and manage logical unit numbers (LUNs) on FibreChannel and iSCSI disk drive subsystems.
- **Subsystem for UNIX-based Applications (SUA):** requires a downloadable set of support utilities (from Microsoft) to assist in running UNIX-based applications in a Windows environment.



# Managing Features

- **Telnet Client:** uses the Telnet protocol to connect to a remote telnet server and run applications on that server.
- **Telnet Server:** enables remote users, including those running UNIX-based OS, to perform command-line administration tasks and run programs using a telnet client.
- **Trivial File Transfer Protocol (TFTP) Client:** reads files from or writes files to a remote TFTP server. Most commonly used by embedded devices or systems that retrieve firmware, configuration information, or a system image during the boot process from a TFTP server.
- **Windows Internal Database:** a relational database that can be used only by Windows roles and features.
- **Windows PowerShell:** a command-line shell and scripting language designed to enhanced system administrators productivity. The scripting language is administrator focused with more than 130 command line tools designed to enable easier system administration and accelerated automation.



# Managing Features

- **Windows Protocol Activation Service (WAS):** generalizes the IIS process model by removing the dependency on HTTP.
- **Windows Server Backup (WSB):** enables backup and recovery of the operating system, applications, and data. Backups can be automatically schedules. Both graphical and command-line tools are available.
- **Windows System Resource Manager (WSRM):** an administrative tool that sets controls on how the CPU and memory resources are allocated. This tool is utilized for direct control over system performance. Reduces the risk of applications, services, or processes interfering with each other and causing a reduction in system performance.
- **Windows Remote Management IIS Extension:** enables a server to receive a management request from a client.
- **Windows Internet Name Service (WINS) Server:** provides a distributed database for registering and querying dynamic mappings of NetBIOS names for computers and groups used on a network.
- **Wireless LAN (WLAN) Service:** configures and starts the WLAN AutoConfig service.





# Viewing Server Information

- The Server Manager is a central portal for managing the server, and is the place to start for all thing server related, including troubleshooting.
- The Diagnostics console tree item does not have a main summary page similar to that of Roles and Features, rather it simply has a grouping of the main tools that are used for server diagnostics.
- These three tools are: (1) the Event Viewer, (2) Reliability and Performance, and (3) the Device Manager.
- The events associated with a particular role are accessible through the main page of a role. However, there are other times that a system admin might want to look at other event logs and these are available through the Event Viewer (see next page).



Server Manager (TESTBEDSERVER)

File Action View Help

Server Manager (TESTBEDSERVER)

- Roles
- Features
- Diagnostics
- Event Viewer**
- Reliability and Performance
- Device Manager
- Configuration
- Task Scheduler
- Windows Firewall with Adv...
- Services
- WMI Control
- Local Users and Groups
- Storage

### Event Viewer

#### Overview and Summary

Last refreshed: 9/26/2012 1:58:29 PM

To view events that have occurred on your computer, select the appropriate source, log or custom view node in the console tree. The Administrative Events custom view contains all the

#### Summary of Administrative Events

Event Type	Event ID	Source	Log	Last ho
Error	-	-	-	
	11	CAPI2	Application	
	20	WindowsUpda...	System	

#### Recently Viewed Nodes

Name	Description	Modified	Createc
------	-------------	----------	---------

#### Actions

##### Event Viewer

- Open Saved Log...
- Create Custom View...
- Import Custom View...
- View
- Refresh
- Help

##### Error

- View All Instances of This Event
- Help



# Viewing Server Information

- The Reliability and Performance MMC snap-in is the second item for Diagnostics and is new in Server 2008.
- This tool provides a fairly complete picture of the state of the health of your server.
- The next page illustrates a screen capture of the Reliability and Performance main screen for its server.



**Server Manager**

File Action View Help

Server Manager (TESTBEDSERVER)

- Roles
- Features
- Diagnostics
  - Event Viewer
  - Reliability and Performance**
  - Device Manager
- Configuration
  - Task Scheduler
  - Windows Firewall with Adv...
  - Services
  - WMI Control
  - Local Users and Groups
- Storage

**Reliability and Performance**

**Resource Overview**

CPU 100%    Disk 1 MB...    Netw... 10 M...    Mem... 100 Har...

60 Seconds    0...    0    0    0

<b>CPU</b>	0%	100% Maximum Frequency
<b>Disk</b>	160 KB/sec	0% Highest Active Time
<b>Network</b>	0 Mbps	0% Network Utilization
<b>Memory</b>	0 Hard Faults/sec	84% Used Physical Memory

**Learn More**

- Resource View Help
- Performance Monitor Help
- Data Collection Help
- Create a Data Collector Set and Diagnosis Rep...
- Monitor System Activity with Performance Mon...
- Schedule and Manage Data

**Actions**

Reliability and Perfor...    More Actions



# Viewing Server Information

- The last tool in Diagnostics is the Device Manager, which groups the various hardware devices known to your system by category.
- For each device you can select its properties and this will expose different information about the device, depending on the type of device.
- The next page illustrates the Device Manager main screen with some of the device subgroups selected.



**Server Manager**

File Action View Help

Server Manager (TESTBEDSERVER)

- Roles
- Features
- Diagnostics
- Event Viewer
- Reliability and Performance
- Device Manager**
- Configuration
- Task Scheduler
- Windows Firewall with Advanced Security
- Services
- WMI Control
- Local Users and Groups
- Storage

**Device Manager**

TESTBEDSERVER

- Batteries
- Computer
- Disk drives
  - Apple iPod USB Device
  - VMware, VMware Virtual S SCSI Disk Device
- Display adapters
- DVD/CD-ROM drives
- Floppy disk drives
- Floppy drive controllers
- Human Interface Devices
- IDE ATA/ATAPI controllers
- Keyboards
- Mice and other pointing devices
- Monitors
- Network adapters
  - Intel(R) PRO/1000 MT Network Connection
- Ports (COM & LPT)
- Processors
- Sound, video and game controllers
- Storage controllers
- System devices
- Universal Serial Bus controllers
  - Generic USB Hub
  - Intel(R) 82371AB/EB PCI to USB Universal Host Controller
  - Standard Enhanced PCI to USB Host Controller
  - USB Composite Device
  - USB Mass Storage Device

**Actions**

Device Manager

More Actions



# Configuring Windows Server 2008

- The next item on the Server Manager console tree is Configuration. This component allows for some general configuration capabilities for the server which are either not supported via specific roles or are generic to any server.
- As you can see from the screen shot on the next page, there are currently 5 items that Configuration can deal with in Server 2008.
- Let's look at the Task Scheduler in the most detail as this is something that is common to many servers and something system administrators tend to do a lot.



# Task Scheduling

- Its common to want to run a task regularly; for example, a backup of the system, or a disk defragmentation.
- Although you can set a timer or make an entry into your daily planner to remind you to do it, a better option is to have the OS perform the task automatically.
- Tasks can be scheduled at certain times, or when certain conditions arise, or triggers, are met.
- In Windows Server 2008 (and Vista and beyond), the Task Scheduler is a powerful tool and is used a great deal by the OS to perform many of its actions. There are a lot of scheduled jobs, with many running that you probably have no recollection of creating (which is fine, because you didn't!). (See next page for example.)





**Server Manager**

File Action View Help


Server Manager (TESTBEDSERVER)

- Roles
- Features
- Diagnostics
- Configuration
  - Task Scheduler**
    - Task Scheduler Library
    - Windows Firewall with Adv...
    - Services
    - WMI Control
    - Local Users and Groups
    - Storage

**Task Scheduler**

Task Scheduler Summary (Last refreshed: 2/18/2013 2:05:04 PM)

**Overview of Task Scheduler**





 You can use Task Scheduler to create and manage common tasks that your computer will carry out automatically at the times you specify. To begin, click a command in the Action menu.

Tasks are stored in folders in the Task Scheduler Library. To view or perform an operation on an

**Task Status**

Status of tasks that have started in t...






Summary: 9 total - 0 running, 9 succeeded, 0 stopped, 0 failed

Task Name	Run Result	Run Start
 Consolidator (last run succeede...		
 ServerCeipAssistant (last run su...		
 ServerRoleCollector (last run su...		
 SystemTask (last run succeeded...		

Last refreshed at 2/18/2013 2:05:04 PM

**Actions**

**Task Scheduler**

-  Create Basic Task...
-  Create Task...
- Import Task...
-  Display All Running Tasks
- AT Service Account Configu...
- View
-  Refresh
-  Help



# Task Scheduling

- The main details pane of the Task Scheduler has three sections.
- The first is just an overview that explains what the Task Scheduler does.
- The second is a summary of all the task executions over a certain time period and their status – that is, if the run was successful, and the start and end times. By default, the last 24 hours are displayed, but you can modify this to shown the past hour, 24 hours, 7 days, or 30 days.
- The third section, which illustrated on the next page, shows the Active Tasks. These are tasks that are enabled and have not expired. The next page illustrates this section of the Task Scheduler.



**Server Manager**

File Action View Help

Server Manager (TESTBEDSERVER)

- Roles
- Features
- Diagnostics
- Configuration
  - Task Scheduler
    - Task Scheduler Library
  - Windows Firewall with Advanced Security
  - Services
  - WMI Control
  - Local Users and Groups
  - Storage

**Task Scheduler**

Task Scheduler Summary (Last refreshed: 2/18/2013 2:05:04 PM)

- ServerRoleCollector (last run su...
- SystemTask (last run succeeded...
- UserTask (last run succeeded at...

**Active Tasks**

Active tasks are tasks that are currently enabled and have not

Summary: 17 total

Task Name	Next Run Time
Consolidator	2/19/2013 2:00:00 AM
IpAddressConflict1	
IpAddressConflict2	
LPRemove	
NAPStatus UI	

Last refreshed at 2/18/2013 2:05:04 PM Refresh

**Actions**

**Task Scheduler**

- Create Basic Task...
- Create Task...
- Import Task...
- Display All Running Tasks
- AT Service Account Configu...
- View
- Refresh
- Help



# Task Scheduling

- Notice on the next page, that an event can be scheduled based not only on time, but also based on an event that will trigger the task.
- The detailed view of the Active Tasks pane shown on the next page, illustrates a task to be run at 2:30am every 3 days and another task that is to be run at the logon of any user.
- Looking at the built-in tasks can be a good way of understanding how the system works and what the Task Scheduler is capable of handling.



**Server Manager**

File Action View Help

Task Scheduler

Task Scheduler Summary (Last refreshed: 2/18/2013 2:05:04 PM)

- ServerRoleCollector (last run su...
- SystemTask (last run succeeded...
- UserTask (last run succeeded at...

Active Tasks

Active tasks are tasks that are currently enabled and have not expired.

Summary: 17 total

Task Name	Next Run Time	Triggers	Local
QueueReporting		At log on of any user - A...	\Mic
ServerCeipAssistant	2/21/2013 2:31:37 AM	At 2:30 AM every 3 days	\Mic
ServerManager		At log on of any user	\Mic
ServerRoleCollector	2/21/2013 12:32:08 AM	At 12:30 AM every 3 days	\Mic
SystemSoundsService		At loa on of anv user	\Mic

Last refreshed at 2/18/2013 2:05:04 PM

Refresh

**Actions**

Task Sche... ▲

- Creat...
- Creat...
- Import...
- Displa...
- AT Ser...
- View ▶
- Refresh
- Help



# Task Scheduling

- You can create your own folders within the Task Scheduler Library.
- If you don't expect to create many scheduled tasks, create tasks that exist at the root of the library.
- However, if scheduled tasks are a larger part of your management, it makes sense to create a folder for custom-created tasks.
- To create new folders, right-click on the location in the Library in which you want to create a folder and select New Folder from the context menu, in the same way that you would with Windows Explorer. (See next page.)



**Server Manager**

File Action View Help

Server Manager (TESTBEDSERVER)

- Roles
- Features
- Diagnostics
- Configuration
  - Task Scheduler
    - Task Scheduler Library
      - Microsoft
        - Windows
          - Active Directory Rights Management
          - Bluetooth
          - CertificateServicesClient
          - Customer Experience Improvement F
          - Defrag
          - MUI
          - Multimedia
          - NetworkAccessProtection
          - PLA
          - RAC
          - Server Manager**
          - Tcpip
          - TextServicesFramework
          - UPnP
          - WDI
          - Windows Error Reporting
          - Wired
- Windows Firewall with Advanced Security
- Services
- WMI Control

**Server Manager 3 Tasks**

Name	Status	Triggers
ServerManager	Ready	At log on of any user
TrialTask1	Ready	At log on of TESTBEDSERVER\Administrator
TrialTask3	Ready	At 2:10 PM on 9/26/2012

General | **Triggers** | Actions | Conditions | Settings | History

Name: ServerManager

Author: Microsoft Corporation

Description: Task for launching Initial Configuration Ta

Security options

When running the task, use the following user account:  
Administrators

Run only when user is logged on

**Actions**

Server Ma... ▲

- Creat...
- Creat...
- Import...
- Displa...
- New F...
- Delete...
- View ▾
- Refresh
- Help

**Selected It... ▲**

- Run
- End
- Disable
- Export...
- Proper...
- Delete
- Help

