

Study guide by [ExamNotes.net](http://ExamNotes.net)

## Supporting and Maintaining a Microsoft Windows NT Server 4.0 Network 70-244 STUDY GUIDE

### Exam Notes

#### Supporting and Maintaining a Microsoft Windows NT Server 4.0 Network

##### Links Of Interest For Exam:

Please see the Microsoft [Frequently Asked Questions](#) about exam 70-244

##### Skills Being Measured

Note: This certification exam measures your ability to support and maintain networks that use Microsoft **Windows NT Server 4.0** as a primary operating system. Before taking the exam, you should be proficient in the job skills listed below. In Other words, Although this is a Windows 2000 based exam, the focus will be in on Windows NT 4.0. You also need to ne familiar with 2000-based technology. This is definitely an elective to take AFTER doing the new Windows 2000 Core. Passing this exam will give you **MCP** status and will count as an elective towards **MCSE** certification.

##### Test Taking Notes

This test is not easy because you're already an NT 4 MCSE. Please do not go into the test cold. Prepare for it as if you were to prepare for any other MCSE exam. Also, make sure you prepare for this with multiple preparation tools to include hands on Lab, Book and CBT exams if you can. If you have a lot of experience with NT – book study should be enough.

Visit [Examnotes.net](http://Examnotes.net) for all your certification needs.

Visit [Cert21.com](http://Cert21.com) for the best online practice exams.

Visit [CertPortal.com](http://CertPortal.com) – most powerful IT certifications search engine.

# Maintaining, Troubleshooting, and Optimizing Servers

## Deploy service packs and hot fixes

As an NT administrator, you need to be familiar with service packs, hotfixes and how to deploys and install them.



First, you need to be familiar with where to find them. Going to the Microsoft web site will bring you to both updates and downloads that you can get online. Always remember that the software you get online will be more up to date than what you may have in your Technet CD's so go online first if you can. Points to remember is:

- o Make sure you test all hot fixes and service packs first in a lab environment
- o A hot fix is a software application to fix a particular problem
- o A service pack is a compilation of many hot fixes usually a few MB's in size
- o Get on as many lists as you can to be warned of any vulnerabilities and new fixes that are released for them
- o Refer to Technet, deployment guides and the Resource kits to help you roll out whatever it is you need to deploy. You can use Backoffice products like SMS 2.0 to help and aid in the roll out of your fixes
- o For a single machine connected to the internet at home you could use Windows update so it can scan your machine and tell you what fixes you need be it critical or non critical

### To access the Download Main Page:

- <http://www.microsoft.com/technet/download/default.asp>

### To Access the Download Search Page:

- <http://www.microsoft.com/downloads/search.asp?>

### To Access the Windows Update Page:

- <http://windowsupdate.microsoft.com/>

Be Familiar for the exam on basic Administration of "keeping up" with the maintenance of your server – like adding hot fixes and service packs.

Another great tip (not really related to the exam but references the above paragraph) is to get on a list to make you aware of current bugs on your systems

Here is one of the best: [NTBUGTRAQ](#)

Visit [Examnotes.net](#) for all your certification needs.

Visit [Cert21.com](#) for the best online practice exams.

Visit [CertPortal.com](#) – most powerful IT certifications search engine.

## Optimize, recover, configure, manage, and troubleshoot hardware

Be familiar with how to troubleshoot problems with NT 4. There is no Device Manager to work with that you are used to using with Windows 9x and 2000. There are limited troubleshooting tools in NT 4. With NT 4 you will have to know how to manually install and configure resources for Hardware so make sure you know your basics like IRQ's and how to manually add equipment.

## Types of hardware include processors, RAM, hard disks, RAID controllers, and network adapters

### Processors

Know how to manually add a processor or more than one for SMP. Know that you need to reinstall the OS if you want to add more than one CPU and the HAL has to be rebuilt around the new installation with multiple CPU's

### RAM

Know how to add memory and more importantly how to adjust Swap File usage after adding additional RAM. You need to go to the System Applet and go to Performance properties. Adjusting Virtual Memory is easy just remember the general rules of not putting it on an extended partition that is not on a completely separate physical disk. Follow the guidelines of adding half of physical to get a baseline of virtual or in other words if you have 128 MB of RAM then your swap size should start at 192. Half of 128 is 64 and added together you get 192. Adjust total swap on actual baseline performance of your server at peak times.

### Disks

Know how to of course add a new disk and configure it within Disk Manager (Creating Partitions and Logical Disks) but be prepared to answer concept questions on how to use RAID techniques like Breaking Mirrors and creating stripe sets.

### NIC's

Know how to add a NIC and how to Bind Protocols to it as well as adjusting the binding order.

## Back up and restore data

To back up data in NT you need to run NTBACKUP. This utility will allow you to run backups and schedule them. Remember - The Windows NT operating system is shipped with backup software called NTBACKUP and it is not an add on piece of software. This software is commonly referred to as the Tape Backup Utility (TBU). The TBU can be accessed either through a GUI interface or from the command line. The GUI cannot be used for scheduled backups, but the NTBACKUP command can be used in conjunction with the AT command and the Schedule services to accomplish scheduled backups. This backup software is a subset of the backup and restore software sold by Seagate Software and is repackaged by Microsoft to be included with Windows NT

Start > Programs > Administrative Tools > Backup

Or Start > Run > NTBACKUP

Visit [Examnotes.net](http://Examnotes.net) for all your certification needs.

Visit [Cert21.com](http://Cert21.com) for the best online practice exams.

Visit [CertPortal.com](http://CertPortal.com) – most powerful IT certifications search engine.

## NTBACKUP Command

```
ntbackup operation path [/a] [/v] [/r] [/d "text"] [/b] [/hc: {on|off}]  
[/t {option}] [/l "filename"] [/e] [/tape: {n}]
```

Be familiar with the command interface and running backups

## Types of backup

### Normal

This option indicates that you want to perform a full backup of the specified data. The files are marked on disk to indicate that this option was used.

### Copy

This option indicates that you just want to copy the files from the disk to the tape. The files are not marked on disk.

### Differential

This option indicates that you want to back up only the files that have changed since the last backup among the files that you specified. The difference between this option and the incremental option is that this option does not mark on disk that this option was used.

### Incremental

This option indicates that you want to back up only the files that have changed since the last backup among the files that you specified. The files are marked on disk to indicate that this option was used.

### Daily

This option indicates that you want to back up only the files that have changed that particular day. The files are not marked to indicate that this option was used

## Troubleshoot performance problems by using Task Manager, Event Viewer, or Performance Monitor

### Task Manager

Task Manager is a tool that you can use to find how your CPU and Memory are being handled. (You can use it to see if your CPU utilization is running at 100% or if you are going above the bounds of your Physical memory). You can also use it to stop and start entire running programs or just specific processes. It is not as robust as the 2000 version but still functions the same way. You can find it by right clicking the task bar or by doing a ctrl+alt+delete. Be familiar with how to use it for troubleshooting.

Visit [Examnotes.net](http://Examnotes.net) for all your certification needs.

Visit [Cert21.com](http://Cert21.com) for the best online practice exams.

Visit [CertPortal.com](http://CertPortal.com) – most powerful IT certifications search engine.

## Event Viewer

The Event Viewer in Windows NT is also a highly looked at item and not as robust as 2000's version. With NT, there is no MMC and snap in for the Event Viewer. You need to go into Administrative tools and select the Event Viewer program to run. A few things you should remember about and how to do for this exam is to know how to set up logging for one. You can also set up specific log sizes to control how big they get and you can also save them – they are Binary and unreadable without the Event Viewer.

Security Log: The Event Viewer is were you VIEW the logging but to set it up in the first place is to do it in User Manager. In User Manager, you can set up auditing of specific events that will appear in the log.

You can also view System events and Application based events in their own logs. Make sure you know that this is really it and with 2000 you have much more to look at like Directory logs, File Replications, DNS, etc. (It is more divided – which is better)

## Performance Monitor

Windows NT implements a number of automatic performance optimizations to ensure that any Windows NT will operate very well but you still need to tune your system or baseline it as each situation you are in as an administrator will be different. Knowing how to run PERFMON will help you tune your system for optimal performance. The Windows NT performance monitor provides the ability to inspect the performance of just about every process and resource that occurs in your computer. The performance monitor allows you to determine the exact cause of every performance-related problem your computer experiences. Know why you would do this: "Performance tuning is finding the resource that slows your system the most, speeding it up until something else has the most impact on speed, and then starting over by finding the new slowest resource. This cycle of finding the speed-limiting factor, eliminating it, and starting over will allow you to reach the natural performance limit of your computer in a simple, methodical way."

Starting the Performance Monitor

- Select Programs Administrative Tools Performance Monitor in the Start menu
- Select Add to Chart in the Edit menu
- Click Add to whatever you need to monitor
- You can add multiple items all at different colors - try not to make it too busy

Remember: PERFMON -Y to get it running

**Visit [Examnotes.net](http://Examnotes.net) for all your certification needs.**

**Visit [Cert21.com](http://Cert21.com) for the best online practice exams.**

**Visit [CertPortal.com](http://CertPortal.com) – most powerful IT certifications search engine.**

## Move, size, and add new paging files

Page Files – or better known as Virtual Memory is handled by the operating system and it is a way for the OS to “trick” app’s into thinking that they have more Physical Memory to work with by putting frequently unused data to a File (Pagefile.sys) to free up RAM. Know how to adjust this for the exam. Virtual memory is configured in the Control Panel System Applet and it is adjusted in Performance. Here are some guidelines although it is generally up to the administrators discretion on how they want to set it up.

- NEVER put the swap file on a Partition that is extended off a physical disk. In other words, if you have a Physical C:\ drive and partition it so it has an extended D:\ - you should not put the swap file on that D:\ partition because it will degrade performance. The best way to set it up is to have a separate disk that has nothing to do with the disk that has the System and Boot partitions and keep it completely separate
- Also, know that the general way to set it up is to take half your Physical RAM amount and take half off that – add it together and that is your minimum adjustment. 128 RAM – half = 64/ 128+64=192 and your minimum amount is 192 -??? Whatever you want to set it to
- If the virtual memory setting is configured too low, then the following Windows NT error can occur:

Your system is running low on virtual memory. Please close some applications. You can then start the System option in the Control Panel and choose the Virtual Memory button to create an additional paging file or increase the size of your current paging file.

## Configuring and Troubleshooting Users and Groups

### Server Roles

A Windows NT Server computer can have one of three roles in the domain:

#### PDC

- Primary domain controller
- Contains the master copy of the SAM; only one PDC is allowed per domain
- The PDC should be physically attached to the most central and high-speed network segment possible
- It should never be on an unreliable network link, such as a wireless network

#### BDC

- Backup domain controller
- Contains a copy of the master SAM; authenticates users; can be promoted to a PDC in case of PDC failure
- There may be several BDCs; however, none are required.

Visit [Examnotes.net](http://Examnotes.net) for all your certification needs.

Visit [Cert21.com](http://Cert21.com) for the best online practice exams.

Visit [CertPortal.com](http://CertPortal.com) – most powerful IT certifications search engine.

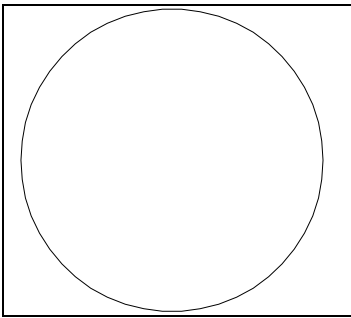
## Member server

- Can act as file, print, application, or communications server; does not authenticate users
- This server should be the highest-performing computer available

## Domain Models

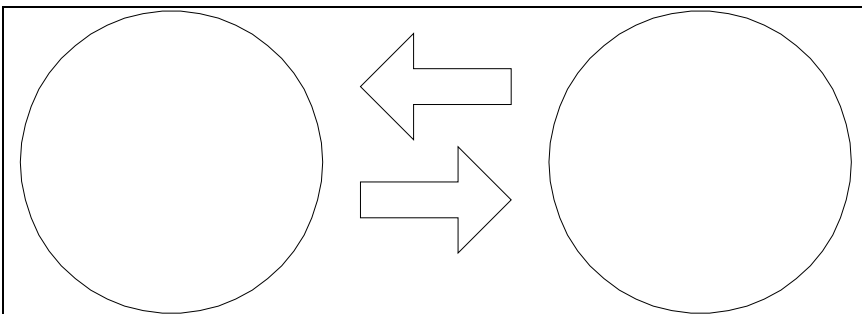
Windows NT Server supports the ability for one domain to "trust" another domain, thus giving the administrator of the trusted domain the ability to act as an administrator on the trusting domain. It also allows users in the **trusted** domain to access resources in the **trusting** domain. While this is a very useful capability, it also involves the setup and maintenance of these trust relationships. It is best to limit these trust relationships to a number that satisfies the organization's requirements without creating unnecessary complexity. They can get hairy...

### Single domain model



- This model involves no trust relationships
- A single PDC, along with its BDCs and resource servers, serves the needs of the entire enterprise
- This model provides ease of administration and involves **no trust relationships**

### Single domains with trusts



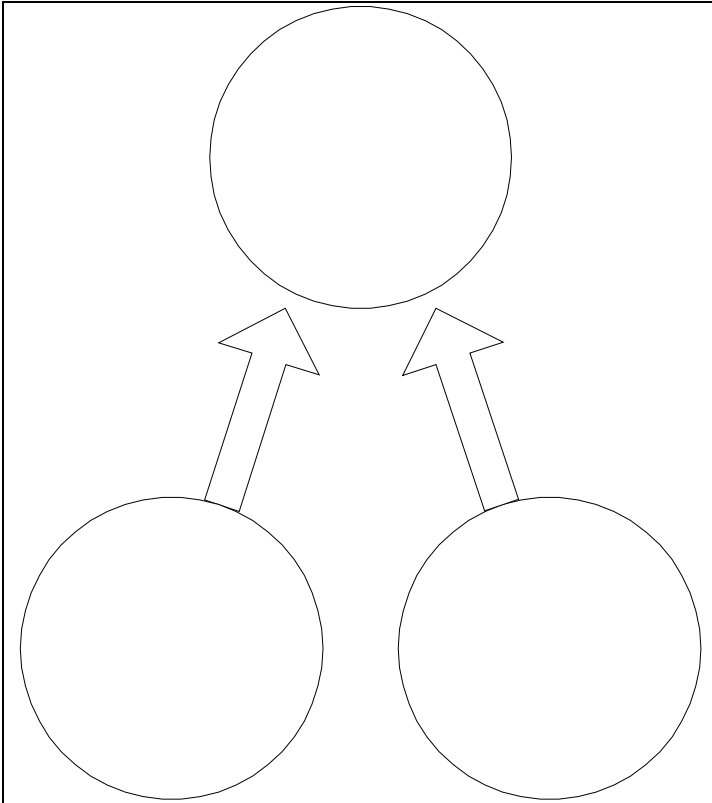
Visit [Examnotes.net](http://Examnotes.net) for all your certification needs.

Visit [Cert21.com](http://Cert21.com) for the best online practice exams.

Visit [CertPortal.com](http://CertPortal.com) – most powerful IT certifications search engine.

- Each domain could be in a bi-directional trust relationship with every other domain in the enterprise
- The total number of trust relationships that must be set up is equal to  $N*(N-1)$ , where N is the number of domains
- This model makes it possible for an administrator in any domain to manage the users and resources in any other domain
- Difficult to scale the domain model upward / add additional domains
- Best applied in small business situations

### Single master domain



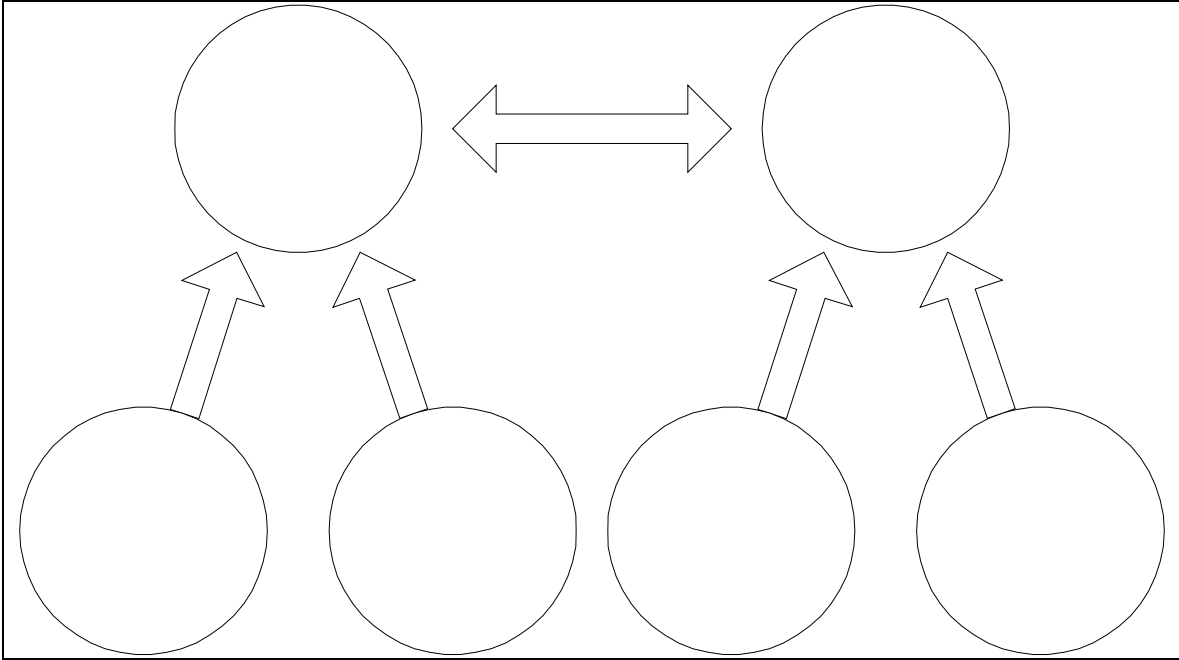
- In this model, a master domain is trusted by one or more other domains; however, these are one-way trust relationships
- In this scenario, the administrators of the master domain can administer the entire enterprise, while local administrators can only manage the users and resources of their own domain
- Any PDCs at remote sites should also be defined as BDCs for the master domain controller

Visit [Examnotes.net](http://Examnotes.net) for all your certification needs.

Visit [Cert21.com](http://Cert21.com) for the best online practice exams.

Visit [CertPortal.com](http://CertPortal.com) – most powerful IT certifications search engine.

## Multiple master domains



- This model is a hybrid of the second and third models above
- The master domains are linked in a "ring" of bi-directional trusts; that is, each trusts an upstream and a downstream domain, forming a loop
- Each business-unit level domain trusts all of the master domains

## Trust Relationships

A *trust relationship* is a link that combines two domains into one administrative unit that can authorize access to resources on both domains

There are two types of trust relationships:

### One-way trust relationship

- One domain trusts the users in the other domain to use its resources
- One domain trusts the domain controllers in the other domain to validate user accounts to use its resources
- The resources that become available are in the trusting domain, and the accounts that can use them are in the trusted domain
- If user accounts located in the trusting domain need to use resources located in the trusted domain, *that situation requires a two-way trust relationship*

Visit [Examnotes.net](http://Examnotes.net) for all your certification needs.

Visit [Cert21.com](http://Cert21.com) for the best online practice exams.

Visit [CertPortal.com](http://CertPortal.com) – most powerful IT certifications search engine.

## Two-way trust relationship

- Are two one-way trusts: each domain trusts user accounts in the other domain
- Users can log on from computers in either domain to the domain that contains their account
- Each domain can have both accounts and resources
- Global user accounts and global groups can be used from either domain to grant rights and permissions to resources in either domain
- Both domains are trusted domains.

## Creating a Trust Relationship Between Two Domains

- To create trust relationships, you use the Trust Relationships command on the Policies menu in User Manager for Domains
- Creating a one-way trust relationship requires two steps:
  - **First:** one domain (the domain that is to be the trusted domain) must add a second domain (the domain that is to be the trusting domain) to the list of domains that trust it
  - **Second:** Then the trusting domain must add the trusted domain to the list of domains that it trusts

## Logon scripts and the NETLOGON shared folder

Know how to setup a Login script (basically a batch file and where to put it – Netlogon SHARE which is really an Import and Export directory.) Also, make sure you assign the Script to the user when you make one. This will go in the “login script” area under the profile you made. Here are some (NT/2000) commands to assist you login script writing:

- AT Schedules commands and programs to run on a computer
- CACLS Displays or modifies access control lists (ACLs) of files
- CALL Calls one batch program from another.
- CD Displays the name of or changes the current directory.
- CHCP Displays or sets the active code page number.
- CHDIR Displays the name of or changes the current directory.
- CHKDSK Checks a disk and displays a status report.
- CLS Clears the screen.
- CMD Starts a new instance of the command interpreter
- COLOR Sets the default console foreground and background colors.
- COMP Compares the contents of two files or sets of files.
- COPY Copies one or more files to another location.
- DATE Displays or sets the date.
- DEL Deletes one or more files.
- DIR Displays a list of files and subdirectories in a directory.
- DISKCOMP Compares the contents of two floppy disks.
- DISKCOPY Copies the contents of one floppy disk to another.
- ECHO Displays messages, or turns command echoing on or off.
- ENDLOCAL Ends localization of environment changes in a batch file.
- ERASE Deletes one or more files.

Visit [Examnotes.net](http://Examnotes.net) for all your certification needs.

Visit [Cert21.com](http://Cert21.com) for the best online practice exams.

Visit [CertPortal.com](http://CertPortal.com) – most powerful IT certifications search engine.

- EXIT    Quits the CMD.EXE program (command interpreter).
- FC      Compares two files or sets of files, and displays the differences
- FIND    Searches for a text string in a file or files.
- FOR     Runs a specified command for each file in a set of files.
- FORMAT   Formats a disk for use with Windows 2000.
- FTYPE   Displays or modifies file types used in file extension associations.
- GOTO    Directs the command interpreter to a labeled line in a batch
- IF      Performs conditional processing in batch programs

There are MANY more but be aware of what you can use and what is useful. Also, be very strong with your **NET** commands like net share, etc

## Analyzing, Configuring, and Monitoring Security

### Analyze and configure the operating system environment and the user environment by using Security Configuration Manager

“You can use the Microsoft Security Configuration Tool set to configure security for a Windows NT-based or Windows 2000-based computer, and then perform periodic analysis of the computer to ensure that the configuration remains intact or to make necessary changes over time. This tool set is also integrated with the Microsoft Windows Administration Change and Configuration Management tool to automatically configure policies on a large number of computers in the enterprise”

Here is where you can get it: [Q245216](#)

Be comfortable with the following tasks:

- Apply the appropriate security template based on server function
- Analyze the current environment and customize existing security templates to meet organizational security requirements
- Implement auditing and monitor security
- Implementation includes configuring Audit policy, enabling auditing on objects, and analyzing audit logs

**Visit [Examnotes.net](#) for all your certification needs.**

**Visit [Cert21.com](#) for the best online practice exams.**

**Visit [CertPortal.com](#) – most powerful IT certifications search engine.**

## Implementation includes implementing the Syskey utility, configuring Server Message Block (SMB) signing, and enforcing usage of the appropriate version of Windows NT LAN Manager (NTLM)

Starting with SP3, Windows NT 4.0 supports Server Message Block (SMB) signing, to implement heightened security

SMB or CIFS (Common Internet File System) signing enhances security by insuring that every packet is signed for and verified.

This generally places an additional 10% - 15% overhead on the network

To implement SMB signing, use Regedt32:

- HKEY\_LOCAL\_MACHINE\System\CurrentControlSet\Services\LanManServer\Parameters
- Add Value names as type REG\_DWORD:
- EnableSecuritySignature and RequireSecuritySignature
- Set both values to 1 (enable). The default is 0 (disable).
- Reboot

## Permissions

You need to know NT based File and share permissions like the BACK OF YOUR HAND not only for this test but also for just about any other Windows based test. Know what you can do logged in as whomever with whatever permissions. Know how to configure the following:

- NTFS and share permissions
- Printer permissions
- Default permissions
- Multiple group membership
- The use of the Deny or No Access permission

## Accounts

Administrators typically group users according to the types and degrees of network access their jobs require. By using group accounts, administrators can grant rights and permissions to multiple users at one time.

There can be two types of group accounts:

## Global group

- Consists of several user accounts from one domain that are grouped together under one group account name
- A global group can contain user accounts from only a single domain — the domain where the global group was created
- "Global" indicates that the group can be granted rights and permissions to use resources in multiple (global) domains
- A global group can contain only user accounts and can be created only on a domain and not on a workstation or member server

## Local group

- Consists of user accounts and global groups from one or more domains, grouped together under one account name
- Users and global groups from outside the local domain can be added to the local group only if they belong to a trusted domain
- "Local" indicates that the group can be granted rights and permissions to use resources in only a single (local) domain
- A local group can contain users and global groups, but it cannot contain other local groups

Remember this:

- Local *CAN'T BE* added to Local
- Global can be added to Local
- Global can be added to Global

# Configuring, Managing, Troubleshooting, and Optimizing Network Services

## Configure and troubleshoot network connectivity

### Default gateway

The default gateway (Which is usually your router) is generally a host of many problems. If you move a PC from one segment to another you may find that because your IP stack configuration is wrong you will not get connectivity so be aware of how that all works and how to troubleshoot it. You don't really need to know how to subnet on this exam but you should know the basics of addressing, subnet masking and the default gateway and general issues resulting from DNS, WINS and DHCP server configurations in your Network Properties dialog box.

Visit [Examnotes.net](http://Examnotes.net) for all your certification needs.

Visit [Cert21.com](http://Cert21.com) for the best online practice exams.

Visit [CertPortal.com](http://CertPortal.com) – most powerful IT certifications search engine.

## Automatic Private IP Addressing (APIPA)

- Is used to automate Internet Protocol (IP) configuration of network connections
- By default, the computer first tries to contact a DHCP server on the network and dynamically obtain configuration for each installed network connection, as follows:
- If a DHCP server is reached and leased configuration is successful, TCP/IP configuration is completed.
- If a DHCP server is not reached or leased configuration fails, the computer uses APIPA to automatically configure TCP/IP
- When APIPA is used, Windows determines an address in the Microsoft-reserved IP addressing range from 169.254.0.1 through 169.254.255.254. This address is used until a DHCP server is located
- The subnet mask is set to 255.255.0.0.
- The range of IP addresses (from 169.254.0.1 through 169.254.255.254) used for APIPA is reserved by the Internet Assigned Numbers Authority (IANA)
- Any IP addresses within this range are not used on the Internet

To see if you are using APIPA:

- Type "ipconfig /all
- If the Autoconfiguration Enabled line says, "Yes", and the 'Autoconfiguration IP Address' is 169.254.x.x then the computer is using APIPA
- If the Autoconfiguration Enabled line says, "No", then the computer is not currently using APIPA

## Options for the Ipconfig utility and DHCP

You can use the example above – Just type one of the following:

- Ipconfig – will show you current TCP/IP configuration
- Ipconfig /all – will show you ALL of the current settings (DNS, etc)
- Ipconfig /release – will release the current IP config you have
- Ipconfig /renew – will query the DHCP server for a new lease

## Microsoft Internet Information Server (IIS) on the server

You will have to know the basics of IIS for the exam. IIS used to be an elective but now knowing IIS is mandatory knowledge. In Windows 2000 Server, it comes "ready to go" but for us older NT folks we remember the days of setting up IIS 2, 3 and the dreaded Option Pack. Be familiar with how to set up IIS on an NT server, how to upgrade it to IIS 4 and the basic configurations of getting a site up and running with the right permissions set up. Remember that this is an elective for the 2000 track and knowing IIS is tested very thoroughly on the new 2000 track. There is not excuse not to know it by the time you get to this exam.

Visit [Examnotes.net](http://Examnotes.net) for all your certification needs.

Visit [Cert21.com](http://Cert21.com) for the best online practice exams.

Visit [CertPortal.com](http://CertPortal.com) – most powerful IT certifications search engine.

## Last Tips

The beta for this blew many people away. People who thought that because they worked on NT for 2 or 3 years that they had this one "in the bag" but that is wrong

For every Windows exam you sit, study appropriately, use multiple study resources, practice hands on and don't under estimate what they may throw on an exam.

*Feel free to Email me or visit my site for additional help*

**Supporting and Maintaining a Microsoft Windows NT Server 4.0 Network  
70-244 MCSE Elective Study Guide**  
Compiled by Robert J. Shimonski

Please Visit his site here: <http://www.RSNetworks.net>

**Visit [Examnotes.net](http://Examnotes.net) for all your certification needs.**

**Visit [Cert21.com](http://Cert21.com) for the best online practice exams.**

**Visit [CertPortal.com](http://CertPortal.com) – most powerful IT certifications search engine.**