

UNC	Universal Naming Convention \\servername\shared name (It is used to access the shared folder)
MAC	Media Access Control
PDC	Primary Domain Controllers
BDC	Backup Domain Controllers
SMP	Symmetric Multi Processors
AMP	Asymmetric Multi Processing
EFS	Encrypted File System
FAT	File Allocation Table
HCL	Hardware Compatibility List
IIS	Internet Information Service
LSA	Local Security Authority
MMC	Microsoft Management Console
OU	Organizational Unit
RAS	Remote Access Service
RDP	Remote Desktop Protocol (used for Terminal Services)
RRAS	Routing and Remote Access Service
SID	Security Identifier
WINS	Windows Internet Name Service
GUID	Globally Unique identifier
IAS	Internet Authentication Service
UPN	User Principle Name (Username@domainname.com)
BIOS	Basic Input Output System
Net BIOS	Network Basic Input/Output System
ARP	Address Resolution Protocol
DVD	Digital Video Disk
GPO	Group Policy Object (LGPO Local Group Policy Object)
IPsec	Internet Protocol Security
ISP	Internet Service Provider
NAT	Network Address Translation
MBT	Master Boot Record
USB	Universal Serial Bus
POST	Power On Self Test
SCSI	Small Computer System Interface
SMTP	Simple Mail Transfer Protocol
URL	Uniform Resource Locator
RAID	Redundant Array of Independent Disk
IDE	Intelligent drive Electronics <i>or</i> Integrated Drive Electronics
FQDN	Fully Qualified Domain Name (full computer name) [computername.domainname.com]
OSPF	Open Shortest Path First (these two are routing protocols)
RIP	Routing Information Protocol
POP3	Post Office Protocol (used to receive the mails)
SMTP	Simple Mail Transfer Protocol (Used to send the mails)
SMPS	Switch Mode Power Supply
PING	Packet Internet Groper

VNC	Virtual Network Computing
EULA	End User License Agreement
CAL	Client Access License
TSCAL	Terminal Services Client Access License
UPS	Uninterruptible Power Supply
BIND	Berkeley Internet Name Domain
PXE	Pre boot eXecutable Environment
UDF	Uniqueness Database file
LDAP	Light weight Directory Access Protocol
ISDN	Integrated Services Digital Network
VLSM	Variable Length Subnet Mask
CIDR	Classless Inter Domain Routing
IGMP	Internet Group Management Protocol
FSMO	Flexible Single Master Operations
APIPA	Automatic IP addressing
NetBEUI	Net Bios Enhanced User Interface
UDP	User Datagram Protocol
FTP	File Transfer Protocol
Mbps	Mega bits per second
Ntds.dit	Nt directory services.directory information tree.
ICMP	Internet Control message Protocol
IGMP	Internet group Management Protocol
NNTP	Network News Transfer Protocol
RADIUS	Remote Authentication Dial In User service
SNMP	Simple Network Management protocol
VPN	Virtual Private Network
L2TP	Layer2 Tunneling Protocol
PPTP	Point to Point Tunneling Protocol
ADSI	Active Directory Service Interfaces
SUS	Software Update Service
SMS	System Management Service
WUS	Windows Update service
TFTP	Trivial File Transfer Protocol

List of important port numbers

15	➔	Netstat
21	➔	FTP
23	➔	Telnet
25	➔	SMTP
42	➔	WINS
53	➔	DNS
67	➔	Bootp
68	➔	DHCP
80	➔	HTTP
88	➔	Kerberos
101	➔	HOSTNAME
110	➔	POP3
119	➔	NNTP
123	➔	NTP (Network time protocol)
139	➔	NetBIOS
161	➔	SNMP
180	➔	RIS
389	➔	LDAP (Lightweight Directory Access Protocol)
443	➔	HTTPS (HTTP over SSL/TLS)
520	➔	RIP
79	➔	FINGER
37	➔	Time
3389	➔	Terminal services
443	➔	SSL (https) (http protocol over TLS/SSL)
220	➔	IMAP3
3268	➔	AD Global Catalog
3269	➔	AD Global Catalog over SSL
500	➔	Internet Key Exchange, IKE (IPSec) (UDP 500)

diskpart.exe This command is used for disk management in Windows 2003.

nltest /dsgetdc:domainname

replacing domainname with the name of the domain that you are trying to log on to. This command verifies that a domain controller can be located. Nltest is included in Support Tools

How to synchronize manually a client computer to a domain controller?

Windows 2000 (Win2K) and later computers in a domain should automatically synchronize time with a domain controller. But some times you may get a situation to synchronize manually.

To manually synchronize time, open a command-line window, and run

Net stop w32time

Run

w32time -update

Run

Net start w32time

Manually verify the synchronization between the client computer and a domain controller. Also check the System event log to ensure that the W32Time service has not logged additional error messages.

Properties

What are the properties of Taskbar?

We can see two tabs namely General, Advanced

What are the properties of Desktop?

The tabs that are there

Background

Screen saver

Appearance

Web

Effects

Settings

What are the properties of My computer?

The tabs that are there are

General

Network Identification

Hardware

Profile

Advanced

What are the properties of My Network places?

You will get one window, containing

Make new connection
Local Area connection
Now go to the properties of Local Area Connections

What are the properties of Internet Explorer?

What are the properties of a folder?

What are the properties of a Drive?

What are the folder options?

Double click on my computer → Tools → folder options

General

View

File types

Offline files

What are the properties of folder?

What are the properties of file?

What are the print options do u get when you give a print in word?

What are the icons available in Control Panel?

Around 27 icons are available in control panel

Accessibility options, Add/Remove Hard ware, Add/Remove Programs, Administrative tools, Automatic updates.

Key board, mouse, printer, Phone and modem, Scanner and cameras, Power options

System, Display, Network and dial up connections, Internet options, folder options
Date and time, Sounds and multi media, Regional settings, Users and passwords,
Scheduled tasks

What are the icons that don't get delete option on the Desktop (up to 2000 O. S.)?

- My Computer
- My Network Places
- Recycle Bin

Note: In Windows 2003 you can delete My computer, My network places. You can also get back them.

Right click on Desktop → Properties → Click on Desktop tab → click on customize desktop → select the appropriate check boxes.

Even in 2003 you cannot delete Recycle bin.

Note: You can delete any thing (even Recycle bin) from the desktop by using registry settings in 2000/2003.

What are the properties of Recycle bin?

General

- Check box for Display delete confirmation dialogue box

- Check box for whether to move a deleted to Recycle bin or directly delete





- Global options (applies to all drives)

Individual Partitions (for each partition there exist one partition)

How to configure the DNS?

Open the DNS Console

Then you will find there




-  DNS
 -  Server name
 -  Forward Lookup Zone
 -  Reverse Lookup Zone

Note: If you have selected create automatically zones during the setup, then it creates the root zone and domain zone under forward lookup zone.

If no zones are there under forward lookup zone first create root zone then create domain zone.

How to create a zone?

Right click on forward lookup zone → new zone →

-  Active Directory Integrated
-  Primary
-  Secondary

Select any one of above.

Note: The option **Active Directory Integrated Zone** is available on when you have installed the Active Directory; if you have not installed Active Directory the option is disabled.

Note: If you want to select a Secondary zone u should have already a primary zone or Active Directory Integrated zone.

DNS Name [_____]

Give the DNS name

Note: If you r creating a root zone then just type in the name box “.” (only dot)

Then click **Next**

Finish

After creating the root zone then create another zone with Domain Name

Right click on Forward Lookup zone → New zone → Active Directory Integrated
(you can choose any one) → DNS Name [____] → Next → Finish

Creation of zone in Reverse lookup zone

Right Click on Reverse lookup zone → New zone → Type Network Id → Next →
Name → Finish

After this

Right Click on zone → select Create associate Ptr (pointer) record → Next → finish

What tabs are there on properties of Domain?

General

Start of Authority (SOA)

Named servers

WINS

Zone transfers

What tabs are there on properties of sever?

Interface

Forwarders

Advanced

Root hints

Logging

Monitoring

Where to create the primary, secondary, Active Directory Integrated zones?

If you want to create an Active Directory integrated zone, the server must be Domain Controller.

If you want to create the Primary DNS, you can create on Domain Controller or Member server. But if create on member you could not get 4 options under the domain which are meant for Active directory.

You can create Secondary zone on a Member Server or on a Domain Controller. There is no difference between them.

What are the advantages with Windows 2000 DNS?

Or

What are the features of Windows 2000 DNS?

- Supports SRV (service) records
- Supports Dynamic Updates
- Supports IXFR (Incremental Zone Transfer)
- Supports security

Explain each one of the above?

In Windows 2000 Domain you need to have a DNS server to find different services. The SRV records identify these services.

When you enable the Dynamic updates, all the records in the zone are automatically created. As we add a computer to the domain, as we add a Domain controller to the domain the corresponding records are automatically created. I.e., you need to create a record in the DNS zone manually to identify those computers or services.

When an update is made in the Master it has to be replicated to the Secondary. Previously we used to transfer the entire zone (which is called AXFR (entire zone transfer)). But with Windows 2000 domain we transfer only the records that have been modified. This is called IXFR (Incremental Zone Transfer).

We get the security with Active Directory Integrated zone. We can set permission on Active Directory like who can use and who can't use the DNS. And also we have Secure Dynamic updates with Active Directory Integrated zone. By this only specified computers only can dynamically update the records in the zone.

What are the commands do we use for DNS?

Nslookup (and all interactive mode commands)
Ipconfig /flushdns
Ipconfig /registerdns

Note: A best strategy of using DNS in corporate network is use two DNS servers. One is on internal network and another one is between two firewalls. For more security keep the zone as secondary in the DNS server which is between firewalls.

How we make more available our DNS?

By adding more slave servers or By Windows 2000 clustering.

FAQ's on DNS

What is the purpose of forward lookup?

It resolves the Host names (Friendly Name) to IP addresses

What is the purpose of Reverse lookup zone?

It resolves the IP addresses to Host names

What is the difference between Primary zone and Secondary zone?

Primary zone has read and write permissions, where as Secondary zone has read only permission.

Note: Secondary zone is used for Backup and Load balancing.

How to check whether DNS is working or not?

Type the command “nslookup” at command prompt
Then it gives the DNS server name and its IP address

What is Dynamic Updates in DNS?

Generally we need to create a host record for newly joined computer (either client or Member server or Domain controller). If you enable dynamic Update option, then DNS it self creates associated host record for newly joined computers.

How to get Dynamic Update option?

Right Click on any zone → properties → on General tab u will get Allow Dynamic Updates? [_Yes/No/Secure Updates]

Note: Put always Dynamic Updates “YES”

Note: If it is Active Directory Integrated zone you will get above three options.

But if it is Primary or Secondary zone you will get only “YES/NO” (You won’t get **secure updates**)

What is name Resolution?

The process of translating the name into some object or information that the name represents is called name resolution. A telephone book forms a namespace in which the names of telephone subscribers can be resolved to the phone numbers.

What is BIND?**What are the ports numbers used for Kerberos, LDAP etc in DNS?****Additional Material****What is a zone?**

A database of records is called a zone.

Also called a zone of authority, a subset of the Domain Name System (DNS) namespace that is managed by a name server.

What is an iterative query?

The query that has been sent to the DNS server from a Client is called iterative query.

(i. e., iterative query is nothing but give the answer for my question, don't ask to contact that person or this person or don't say some thing else. Simply just answer to my question. That's all)

What is Recursive query?

Now your DNS server requests the root level DNS server for specific IP address. Now DNS server says that I don't know but I can give the address other person who can help you in finding IP address.

What Type of Records do you find in DNS database?

Host Record

Mail Exchange Record (MX record)

Alias

How to convert a Domain Controller to a member server?

Go to registry → Hkey_local_machine → system → controlset001 → control → productoptions

In that change product type from "lanmanNt" to "serverNt"

Or

Go to Registry then search for lanmanNt then change it as serverNt

Is there any possibility to have two Primary DNS zones?

No, you should not have two primary DNS zones. Why because if u have two primary DNS zones some clients contacts first one, some clients contacts second one according to their configuration in TCP/IP properties. Then you will get problems. Actually Primary DNS zone means Single master. i.e., master is only one that is only one primary DNS zone. But you can have as many as Secondary zones.

To overcome from above problem (i.e., single master problem) in Windows 2000 we have Active Directory Integrated zones, which are multi masters.

How to create a Secondary DNS zone?

To create a secondary zone you should have Primary DNS zone or Active Directory Integrated DNS zone.

You have to follow the same procedure as same as primary DNS configuration.

But at the time selection, select Secondary zone instead of primary zone. After that it asks the primary DNS zone address provide that address.

Create forward lookup zone and reverse lookup zone as usual.

Then,

Right click on forward lookup zone → New zone →



Active Directory Integrated
Primary
Secondary

Select Secondary zone

(**Note:-**The option Active Directory Integrated Zone is available on when you have installed the Active Directory; if you have not installed Active Directory the option is disabled.)

Then it asks for Primary DNS zone details, provide those details then click on finish.

Now go to Primary or Active Directory integrated zone then right click on zone name → properties → click on zone transfer Tab →

Select allow zone Transfers

Here you can see three options.

To any server

Only to servers listed on the Name servers tab

Only to the following servers

Select anyone and give the details of secondary zone (only in case of second and third option).

Click on apply, then **OK**

Note: In zone transfers tab you can find another option Notify, this is to automatically notify secondary servers when the zone changes. Here also you can select appropriate options.

Note: In secondary zone you cannot modify any information. Every one has read only permission.

Whenever Primary DNS is in down click on “change” tab on general tab of properties, to change as primary, then it acts as primary, there you can write permission also.

What is the default time setting in primary zone to *refresh, Retry, Expire intervals* for secondary zone?

The default settings are

To Refresh interval 10 minutes

To Retry interval, 15 minutes

To Expire after 1 day

Suppose the Secondary zone is Expired then, how to solve the problem?

First go to primary zone check primary zone is working or not.

If primary zone is working then go to secondary zone, Right click on zone name select the “Transfer from Master” then it automatically contacts the primary DNS, if any updates are there then it takes the updates from the Primary.

How to know whether the recent changes in Primary are updated to secondary zone or not?

Compare the *Serial Number* on *Start of Authority* tab in both secondary on primary DNS zone properties.

If both are same then recent updates are made to secondary zone.

If not (i.e., secondary is less than primary) click on “Transfer from Master”

How to change from Primary to Secondary or Secondary to primary or Active directory integrated to secondary or primary like that (simply one type of zone to another type of zone)?

Go to the properties of the zone click on general tab, there you can find the option called “**Change**” click on it then select appropriate option.

Then click on OK

How to pause the zone?

Go to properties of a zone → click on General tab → click on Pause button.

What system is used before DNS to resolve this host names?

How to know whether a DNS name is exist or not in the internet?

CBT nuggets

Iterative query

The query that has been sent to my DNS server from my computer.

Recursive query

The query that has been sent to other DNS servers to know the IP address of a particular server from my DNS server.

When you install a Windows 2000 DNS server, you immediately get all of the records of root DNS servers. So every windows 2000 DNS server installed on Internet has pre configured with the address of root DNS servers. So every single DNS server in the Internet can get root servers.

DNS requirements:

First and foremost has to support SRV records (SRV record identifies a particular service in a particular computer) (in windows 2000 we use SRV records to identify Domain controllers, identifying Global Catalogue, etc.

Second and third are not requirements but recommended.

Second is Dynamic Updates

Third one is IXFR (Incremental Zone Transfer)

Note: Most DNS servers support AXFR (i.e., Entire zone transfer)

In incremental we transfer only changes, but in AXFR we transfer whole.

How does DNS server know the root domain server addresses?

Every DNS server that has installed on Internet has pre configured with root DNS server addresses.

Every single server can get to the root. So that only every DNS server on the Internet first contacts root DNS servers for name resolution.

Where can you find the address of root servers in the DNS server?

Open the DNS console → Right click on the domain name → drag down to properties → click on Root hints. Here you can find different root server addresses.

Note: When you install DNS service in a 2000 server operating system (still you have not configured anything on DNS server), then it starts its functionality as caching only DNS server.

What is caching only DNS server?

What is a forwarder?

(Open DNS console → Right click on Domain name → Click on forwarder tab)

A forwarder is server, which has more access than the present DNS server. May be our present DNS server is located in internal network and it cannot resolve the Internet names. May be it is behind a firewall or may it is using a proxy server or NAT server to get to the Internet. Then this server forwards the query to another DNS server that can resolve the Internet names.

Dynamic Host Configuration System (DHCP)

What is DHCP?

How to install DHCP?

We can install DHCP by two ways

1) While installing Operating System

While installing Operating System, It asks at Network Settings whether u want **Typical settings** or **Custom Settings**

Select Custom Settings → Select Network Services → click on Details → Select DHCP → click on **OK**

2) Independently

Programs → Settings → Control Panel → Add/Remove Programs → Add/Remove Windows Components → Select the Network Services → Click on **properties** → Select DHCP → **OK**
(During the installation it asks for CD)

Note: When you have installed DHCP a icon will appear in Administrative Tools (DHCP)

How to uninstall DHCP?

Programs → Settings → Control Panel → Add/Remove Programs → Add/Remove Windows Components → Select the Network Services → Click on properties → Deselect DHCP → **OK**

How to open DHCP?

Start → Programs → Administrative Tools → DHCP

Or

Start → Run → dhcpgmt.msc

How to configure DHCP?

Open DHCP console by typing “dhcpgmt.msc” at run prompt

Now you will find in DHCP console

● DHCP

Right Click on DHCP → Click on Add Server

Then you will get a window

This server
[] BROWSE

Select the DHCP server

OK

Now you will get



DHCP



Servername.domain.com [IP address]

Note: Some time the window comes automatically with creating the “Add Server”. Such cases check the IP address whether it is correct or not. If it is wrong delete it and recreate it.

Now you have DHCP server.

Now you have to authorize the DHCP Server to provide IP addresses to the clients.

Who can authorize DHCP server in the entire domain?

An Enterprise administrator can only authorize DHCP server. No other person in the domain can authorize the DHCP server. Even if u r Administrator without enterprise administrator privileges you can't authorize the DHCP server.

Note: If it is not authorized a red symbol (down red arrow) will appear, if u authorize it then a green up arrow will appear.

How to authorize the DHCP server?

Login with Enterprise administrator privileges.

Right Click on Servername.Domainname.com

Click on Authorize

Then it will be authorized (Indication is you will get green up arrow)

Now you have to create scope.

Note: A scope is range of IP addresses that you want to allocate to the clients.

How to create a scope?

Right click on servername.Domainname.com

Click on New Scope.

Click on Next.

Type	Name	[_____]
	Description	[_____]

Note: Generally we give the name as Network ID.

Click on Next.

Start IP address	[_____]
End IP address	[_____]

(Provide the starting IP address and End IP address)

Click on Next

Note: If you want to any exclusion you can do.

Starting IP address [_____] Ending IP address [_____]

aaaaaaaaaaaaaaaaaaaaaaaaaaaaa	
Add	
Remove	

What is the default lease duration, minimum lease duration and maximum lease duration?

By default any system will get 8 lease days to use IP address.

Note: You can increase or decrease the Lease duration, You have assign at least minimum duration of 1 second and you can assign Maximum duration of 999 days 23 hours 59 minutes.

Note: If you haven't log on for 50% of the duration continuously the IP address will be released.

Click **Next**

Now you will get a Window asking whether you want to configure the options (DNS, WINS, and Router etc.)

You can configure the options now itself or you can authorize after completion of this. Select any one then click **Next**.

Click **Finish**.

Note: If u have selected "NO" in the above window you can configure above things anytime like below

Click on server option → configure options →

Select the required ones

Enter server name, IP address

Click OK

Now you have to activate the "Scope"

Right click on Scope → Click on Activate

Note: You can reserve IP address for specific Clients. Or You can Exclude IP address (without allocation) for future purpose.

The above things all are in server.

Now you have to configure Client system.

Go to Client System

Right click on My Network Places → drag down to properties → Right click on Local area connection → drag down to properties → select TCP/IP → click on properties →

Now you will get one window containing TCP/IP properties

In that select “assign IP address automatically” and select “assign DNS address automatically”

Click on “More” delete the DNS suffix if anything is there.

Click **OK**

Then the client takes IP address automatically from DHCP server.

The DHCP server also provides DNS, WINS, ROUTER addresses also.

Note: You must assign a static IP address for DHCP server.

(Generally in real time people will assign static IP address not only for DHCP server but also for all servers. Because if you assign automatic IP Address if DHCP is down then all servers will not function properly.)

Note: The DHCP server assigns IP address to the clients. But apart from that it also provides DNS address, default gateway, WINS address and so on, which are configured in DHCP server.

What is the protocol that is used for DHCP process?

Bootp

Why DHCP Relay Agent is used?

To extend DHCP services beyond routers (IF “bootp” is not installed in router)

What are the commands used for DHCP?

Ipconfig

Ipconfig /all

Ipconfig /release

Ipconfig /renew

What is the process of assigning IP address by DHCP service?

There are four stages in assigning IP address to a host by DHCP server.

- 1) DHCP discover
- 2) DHCP offer
- 3) DHCP request
- 4) DHCP Acknowledge

DHCP Discover:

When ever client has to obtain an IP address from a DHCP server it will broadcast a message called “DHCP discover” , which contains destination address 255.255.255.255 and source IP address as 0.0.0.0 and its MAC address.

DHCP offer:

The DHCP server on the network will respond to DHCP discover by sending a DHCP offer message to the client requesting an IP address.

DHCP request:

The client after receiving offer message will send a “DHCP request” message asking the DHCP server to confirm the IP address it has offered to it through DHCP offer message.

DHCP Acknowledge:

DHCP server will respond to the “DHCP request” message by sending acknowledge message through which it confirms the IP address to other machine.

Note: You can also enable DHCP in work group for dynamic allocation of IP addresses. Configure the server operating system in work group as a DHCP then go for client in TCP/IP properties select obtain IP address automatically. Then the client gets IP address from the DHCP server.

Note: You need not to configure DNS or anything.

Using APIPA

On occasion, a network PC boots up and finds that the DHCP server is not available. When this happens, the PC continues to poll for a DHCP server using different wait periods.

The Automatic Private IP Addressing (APIPA) service allows the DHCP client to automatically configure itself until the DHCP server is available and the client can be configured to the network. APIPA allows the DHCP client to assign itself an IP address in the range of 169.254.0.1 to 169.254.254.254 and a Class B subnet mask of 255.255.0.0. The address range that is used by APIPA is a Class B address that Microsoft has set aside for this purpose.

General Questions

What is the family of Windows 2000?

Windows 2000 Professional	(Desktop Operating System)
Windows 2000 Server	(Server Operating System)
Windows 2000 Advanced Server	(Server Operating System)
Windows 2000 Data center Server	(Server Operating System)

What is the family of Windows NT?

Windows NT workstation	(Desktop)
Windows NT 4.0 server	(Server)
Windows NT 4.0 Enterprise server	(Server)

What is the family of Windows 2003 family?

- Windows Server 2003, Web Edition
- Windows Server 2003, Standard Edition
- Windows Server 2003, Enterprise Edition
- Windows Server 2003, Data center Edition

What is the Difference between Desktop and Server?

In desktop system we cannot load Active directory.

In server system we can load Active directory. So that we can create a Domain in server, advanced server, Data center server.

In professional there is no fault tolerance on the hard drive (i.e., disk mirroring, RAID 5).

In server we have fault tolerance on the hard drive.

What is the difference between windows 2000 server and Windows 2000 advanced server, Data center server?

In Windows 2000 server we don't have Clustering, Network load balancing.

Where as in Windows 2000 advanced server and in Data center server we have Clustering and Network load balancing.

In 2000-Advanced server and Data center server we have more RAM and more Processors.

What are the minimum and Maximum configurations for Windows family?

Windows 2000 Operating System family						
OS Name	Processor	RAM (min.)	RAM (rec.)	Free Hard disk space	Supported	
					no. of Pros.	RAM
Windows 2000 Professional	Pentium / 133MHz	32 MB	64 MB	650 MB 1 GB (rec.)	2	4 GB
Windows 2000 Server	Pentium / 133MHz	128 MB	256 MB	Approx. 1 GB (Rec. 2 GB)	4	4 GB
Windows 2000 Advanced Server	Pentium / 133MHz	128 MB	256 MB	Approx 1 GB (Rec. 2 GB)	8	8 GB
Windows 2000 Datacenter Server	Pentium / 133MHz	128 MB	256 MB	Approx 1 GB (Rec. 2 GB)	32	64 GB

CPU Requirements for Windows Server 2003

Specification	Windows Server 2003, Standard Edition	Windows Server 2003, Enterprise Edition
Minimum recommended CPU speed	550 MHz	550 MHz
Number of CPUs supported	1–4	1–8

Minimum and Maximum RAM for Windows Server 2003

RAM Specification	Windows Server 2003, Standard Edition	Windows Server 2003, Enterprise Edition
Minimum recommended RAM	256 megabytes(MB)	256 MB
Maximum RAM	4 gigabytes (GB)	32 GB

What are the differences between windows 2000 professional and server versions?

In professional we don't have fault tolerance (Mirroring, RAID5) where as in all server versions we have.

In professional we cannot load Active Directory where as in all server versions we can.

In professional and 2000 server we don't clustering and network load balancing where as in 2000 advanced server and in Data centre server we have Clustering and NLB.

As you move from server to advanced server, advanced server to data centre server we get more RAM and more Processors.

What are the features of Windows 2000 professional?

Windows 2000 Professional improves the capabilities of previous versions of Windows in five main areas: ease of use, simplified management, increased hardware support, enhanced file management, and enhanced security features.

What are the features of windows 2000?

What are the Operating Systems can u upgrade to Windows 2000?

We cannot upgrade window 3.1 to windows 2000.

We can upgrade directly from windows 95/98/NT 3.51/NT 4.0 to Windows 2000.

If we have Windows NT 3.1/NT 3.50 first we need to upgrade to Windows NT3.51 or NT 4.0 then we can upgrade to windows 2000.

What is the primary difference between a workgroup and a domain?

A workgroup is a distributed directory maintained on each computer within the workgroup. A domain is a centralized directory of resources maintained on domain controllers and presented to the user through Active Directory services.

What is a Stand-alone computer?

A computer that belongs to a workgroup, not a domain, is called a stand-alone computer.

What is Domain Controller and Member server?

With Windows 2000, servers in a domain can have one of two roles:

Domain controllers, which contain matching copies of the user accounts and other Active Directory data in a given domain.

Member servers, which belong to a domain but do not contain a copy of the Active Directory data.

Member servers running Windows 2000 Server: A member server is a server that isn't configured as a domain controller. A member server doesn't store Directory information and can't authenticate users. Member servers provide shared resources such as shared folders or printers.

Client computers running Windows 2000 Professional: Client computers run a user's desktop environment and allow the user to gain access to resources in the domain.

Can you change the Name of a Domain Controller?

You cannot change the name of a server while it is a domain controller in windows 2000 domain. Instead, you must change it to a member or stand-alone server, change the name, and finally make the server a domain controller once again.

But you can change the name of a domain controller in windows 2003 Operating System.

Why do we need Multiple Domain Controllers?

If you have multiple domain controllers, it provides better support for users than having only one. Multiple domain controllers provide automatic backup for user accounts and

other Active Directory data, and they work together to support domain controller functions (such as validating logons).

What is the structure and purpose of a directory service?

A directory service consists of a database that stores information about network resources, such as computer and printers, and the services that make this information available to users and applications.

What is Active Directory?

Active Directory is a directory service, which stores information about network resources such as users, groups, computers, printers, and shares. Active Directory provides single point for organization, control, management.

Note: In a lay man language Active Directory is some thing like **Yellow Pages**.

What roles does a Main Domain Controller (the first domain controller in the entire forest) will have by default?

By default it gets 5 roles.

- Schema Master
- Domain Naming Master
- PDC Emulator
- Relative Identifier (RID)
- Infrastructure Master (IM)

Note: The above roles are called operations master roles.

What are the roles an Additional Domain controller will have by default?

By default you cannot get any role. But if you want to assign any role you can transfer from master.

What are the roles a Child Main Domain Controller will have by default?

By default it gets only three roles.

- PDC Emulator
- Relative Identifier (RID)
- Infrastructure Master (IM)

What are the roles a Child additional Domain controller will have by default?

By default it won't get any role. But if want to assign you can transfer from main child domain controller.

Explain the activities of each role?

1) Schema Master:

It will govern the Active Directory to all the Domain Controllers in a forest.

2) Domain Naming Master:

Maintains the unique Domain Naming System in a forest to avoid duplication.

3) RID master:

It assigns unique ID to every user account. (Domain + RID)

4) PDC Emulator:

If PDC is upgraded to windows 2000 it will send data to BDC's on the network.
(Replication of user Database)

If the user password is not matching in a particular Domain, then it will contact PDC emulator of first Domain Controller (Master Domain controller)

5) Infrastructure Master:

Maintains the infrastructure group proper files on the master Domain controller.

What are the roles must be on the same server?

Domain Naming Master and Global catalogue

What are the roles those must not be on the same Domain Controller?

Infrastructure Master and Global Catalogue

Note: If you have only one domain then you won't get any problem even if you have both of them in the same server.

If you have two or more domains in a forest then they shouldn't be in the same server.

What is Global Catalogue?

This is a database on one or more domain controllers. Each copy of the database contains a replica of every object in the Active Directory but with a limited number of each object's attributes.

Use of Global catalogue

Contains partial replica of all objects in the entire forest

Contains universal groups

Validates user principle names (UPN) when you are creating. This checks that any UPN exists with this name or not in the entire forest.

How to check the above roles to which server they have assigned?

Install support tools from CD

Programs → support tools → tools → cmd prompt (Go to the command prompt in this way only)

At command prompt type "netdom query fsmo"

What is FSMO?

Flexible Single Master Operations

Note: The above five roles are called FSMO roles.

How to check which server is having Global Catalogue?

First load support tools

Run → cmd → ldp

Then you will get a window there

Click on file → Select connect to → type the required server

Then you will get some information, at the bottom you can find “Global Catalogue” TRUE/FALSE. If TRUE is there then it is a global catalogue server. If FALSE is there then it is not a global catalogue server.

Note: By default the *Global Catalogue* service is enabled in Main Domain controller. And by default the *Global Catalogue* service is disabled in additional Domain Controllers. If you want to transfer Global Catalogue service from Main Domain Controller to Additional Domain Controller, then you can transfer.

How to transfer a role from on Domain Controller to another Domain controller?

Start → Programs → Administrative tools → Active Directory sites and services → Right click on Domain Name → First connect to the required server by the option “connect to”. Then → Right click on Domain Name → select Operations Masters → there you will get 3 roles tabs. → Select the required one → click on change tab → OK

How to start/stop a service from command prompt?

Go to the command prompt, type

“Net start *service name*” (To start a service)

“Net stop *service name*” (To stop a service)

Ex: “net start netlogon”

“Net stop netlogon”

What is a Domain controller?

Domain controllers, which contain matching copies of the user accounts and other Active Directory data in a given domain.

What is a Member server?

Member servers, which belong to a domain but do not contain a copy of the Active Directory data.

What is standalone server?

A server that belongs to a workgroup, not a domain, is called a stand-alone server.

What is standalone computer?

A computer that belongs to a workgroup, not a domain, is called a stand-alone computer.

Note: With Windows 2000, it is possible to change the role of a server back and forth from domain controller to member server (or stand-alone server), even after Setup is complete.

What is a client?

A client is any device, such as personal computer, printer or any other server, which requests services or resources from a server. The most common clients are workstations.

What is a server?

A server is a computer that provides network resources and services to workstations and other clients.

What is Main Domain Controller?

The first computer in the entire forest on which you have performed DCPROMO.

What is additional Domain controller?**What is child domain controller?****How to know whether a server is Domain Controller or not?**

You can find in three ways

- 1) By log on dialogue box
If it is a Domain Controller at Domain Names you won't get "this computer" option.
If you get "this computer" option in a server Operating System that must be a Member Server.
- 2) By My computer Properties
On Network Identification tab, the Properties button will be disabled.
- 3) By typing DCPROMO
If it is already a Domain Controller you will uninstallation wizard for Active Directory.
If it is not a Domain Controller you will get installation wizard for Active Directory.
4. You should see the share of netlog and sysvol ... just type netshare at the cmd prompt
5. You should be able to see the ntds setting in the winnt directory
6. You should see the ntds folder in regedit ..

Who will replicate the Password changes?

PDC emulator (immediately it replicates to all the Domain Controllers)

What are the file systems we have in windows?

FAT/FAT16/FAT32/NTFS 4.0/NTFS 5.0

How to convert from FAT to NTFS?

Convert *drive* /fs:ntfs

What is a forest?

Collection of one or more domain trees that do not form a contiguous namespace. Forests allow organizations to group divisions that operate independently but still need to communicate with one another.

All trees in a forest share common Schema, configuration partitions and Global Catalog. All trees in a give forest trust each other with two way transitive trust relations.

What is a Domain?

A group of computers that are part of a network and shares a common directory and security polices. In Windows 2000 a domain is a security boundary and permissions that are granted in one domain are not carried over to other domains

What is a user principle name?

username@domainname.com

What is Fully Qualified Domain Name?

Hostname.domainname.com (this is also referred as computer name)

How many hard disks can you connect to a system at a time?

Maximum we can connect four Hard disks (If we don't have CD ROM).

What are they?

Primary Master

Primary Slave

Secondary Master

Secondary Slave

Note: We cannot have two of same type at a time.

How types of disks are there in windows 2000?

Basic Disk

Dynamic Disk

Dynamic disk format does not work on a computer that contains more than one operating system. The only operating system that can access a hard disk using dynamic disk format is windows 2000.

What is a partition?

Disk Partition is a way of dividing your Physical Disk so that each section functions as a separate unit.

A partition divides a disk into sections that function as separate units and that can be formatted for use by a file system.

How many types of partitions are there?

Two types of partitions are there.

Primary partition

Extended partition.

What is the difference between primary and secondary partition?

A primary partition or system partition is one on which you can install the files needed to load an operating system.

How many partitions can you create maximum? (Among that how many primary and how many Extended?)

Maximum we can create 4 partitions in basic disk. Among that we can create maximum 1 extended partition. You can create 4 primary partitions if you do not have Extended.

What is a volume?

Disk volume is a way of dividing your Physical Disk so that each section functions as a separate unit.

How many types of volumes are there?

There are 5 types of volumes are there.

Simple

Spanned

Striped (also called RAID 0)

Mirror (Also called RAID 1)

RAID 5 (Also called striped volumes with parity)

What is the difference between partition and volume?

You have limitations on number of Partitions.

You don't have limitations on number of volumes.

You cannot extend the size of a partition.

You can extend the size of a volume.

What is active (system) partition?

The partition in which your current Operating System boot files are there.

What is system volume and boot volume?

The system volume is the one in which your boot files are there.

Whatever partition is marked as active that partition is called system partition.

The boot volume is the one in which your system files are there.

Note: In Windows NT and Windows 2000 by default the system files will be copied to **winnt** directory and in Windows 2003 by default they are copied into **Windows** directory.

What can you understand by seeing Logon Dialogue box?

If it is windows 2000 professional operating system, that may be standalone computer or a client in a domain.

If you can see the domain name, then it is client. If not it is standalone.

If it is Windows 2000 server family operating system, that may be standalone computer or member server or Domain controller.

If you can see the domain name, then it is either member server or Domain controller.

If not it is standalone computer.

You have domain name but you don't have this computer option then it must be domain controller.

You have domain name and also you have this computer option then it is member server.

1. **I have a file to which the user has access, but he has no folder permission to read it. Can he access it?** It is possible for a user to navigate to a file for which he does not have folder permission. This involves simply knowing the path of the file object. Even if the user can't drill down the file/folder tree using My Computer, he can still gain access to the file using the Universal Naming Convention (UNC). The best way to start would be to type the full path of a file into Run... window.

What are Unicast, Multicast, and Broad cast?

Unicast: Just from one computer to one computer.

Multicast: Those who ever register for a particular multicast group to those only.

Broadcast: To all the computers.

What is BIOS?

A computer's basic input/output system (BIOS) is a set of software through which the operating system (or Setup) communicates with the computer's hardware devices.

What is the advantage of NTFS over FAT?

You must use the NTFS file system on domain controllers. In addition, any servers that have any partition formatted with FAT or FAT32 will lack many security features. For example, on FAT or FAT32 partitions, a shared folder can be protected only by the permissions set on the share, not on individual files, and there is no software protection against local access to the partition.

- File and folder level security

- We can do disk compression
- We can do disk quotas
- We can encrypt files
- We can do remote storage
- We can do dynamic volume
- We can mount volumes to folders
- We can support Macintosh files
- POSIX sub system

Note: When you format the operating system with NTFS then Windows NT and Windows 2000 are only the operating systems that can read the data.

Note: The only reason to use FAT or FAT32 is for dual booting with previous versions windows 2000 O. S.

What is NetMeeting? What is the use of NetMeeting?

NetMeeting enables you to communicate with others over the Internet or your local intranet. Using NetMeeting you can:

- Talk to others
- Use video to see others and let others see you
- Share applications and documents with others
- Collaborate with others in shared applications
- Send files to others
- Draw with others in a shared Whiteboard
- Send messages to others in chat

What are the features will you get when you upgrade from Windows NT to Windows 2000?

Active Directory includes the following features:

- * **Simplified management** of network-resource information and user information.
- * **Group Policy**, which you can use to set policies that apply across a given site, domain, or organizational unit in Active Directory.
- * **Security and authentication features**, including support for Kerberos V5, Secure Sockets Layer v3, and Transport Layer Security using X.509v3 certificates.
- * Directory consolidation, through which you can organize and simplify the management of users, computers, applications, and devices, and make it easier for users to find the information they need. You can take advantage of synchronization support

through interfaces based on the Lightweight Directory Access Protocol (LDAP), and work with

directory consolidation requirements specific to your applications.

- * Directory-enabled applications and infrastructure, which make it easier to configure and manage applications and other directory-enabled network components.

- * Scalability without complexity, a result of Active Directory scaling to millions of objects per domain and using indexing technology and advanced replication techniques to speed performance.

- * Use of Internet standards, including access through Lightweight Directory Access Protocol and a namespace based on the Domain Name System (DNS).

- * Active Directory Service Interfaces (ADSI), a powerful development environment.

- * Additional features

Features Available with Upgrade of Any Server

The features in the following list are available when member servers are upgraded in a domain, regardless of whether domain servers have been upgraded. The features available when domain controllers are upgraded include not only the features in the following list, but also the features in the previous one.

- * Management tools:

- Microsoft Management Console Plug and Play Device Manager Add/Remove Hardware wizard (in Control Panel)
 - Support for universal serial bus New Backup utility

- * File system support:

- Enhancements to the latest version of the NTFS file system include support for disk quotas, the ability to defragment directory structures, and compressed network I/O.

- * Application services:

- Win32 Driver Model DirectX 5.0 Windows Script Host

- * Printer protocol support:

- Device and protocol support allowing choices from more than 2,500 different printers. Other printing enhancements are included, for example, Internet Printing Protocol support, which allows users to print directly to a URL over an intranet or the Internet.

- * Scalability and availability:

- Improved symmetric multiprocessor support

- * Security:

- Encrypting file system

Is there any situation to use the file system FAT or FAT32?

There is one situation in which you might want to choose FAT or FAT32 as your file system. If it is necessary to have a computer that will sometimes run an earlier operating system and sometimes run Windows 2000, you will need to have a FAT or FAT32 partition as the primary (or startup) partition on the hard disk.

Note: For anything other than a situation with multiple operating systems, however, the recommended file system is NTFS.

NTFS

Some of the features you can use when you choose NTFS are:

- * Active Directory, which you can use to view and control network resources easily.
- * Domains, which are part of Active Directory, and which you can use to fine-tune security options while keeping administration simple. Domain controllers require NTFS.
- * File encryption, which greatly enhances security.
- * Permissions that can be set on individual files rather than just folders.
- * Sparse files. These are very large files created by applications in such a way that only limited disk space is needed. That is, NTFS allocates disk space only to the portions of a file that are written to.
- * Remote Storage, which provides an extension to your disk space by making removable media such as tapes more accessible.
- * Recovery logging of disk activities, which helps you restore information quickly in the event of power failure or other system problems.
- * Disk quotas, which you can use to monitor and control the amount of disk space used by individual users.
- * Better scalability to large drives. The maximum drive size for NTFS is much greater than that for FAT, and as drive size increases, performance with NTFS doesn't degrade as it does with FAT.

Note:

It is recommended that you format the partition with NTFS rather than converting from FAT or FAT32. Formatting a partition erases all data on the partition, but a partition that is formatted with NTFS rather than converted from FAT or FAT32 will have less fragmentation and better performance.

What are the options do u get when you are shut downing?

Log off
Restart

Shut down

Stand by

Hibernate

Disconnect

Standby: Turns off your monitor and hard disks, and your computer uses less power.

A state, in which your computer consumes less electric power when it is idle, but remains available for immediate use. Typically, you'd put your computer on stand by to save power instead of leaving it on for extended periods.

In stand by mode, information in computer memory is not saved on your hard disk. If the computer loses power, the information in memory will be lost.

This option appears only if your computer supports this feature and you have selected this option in Power Options. See Power Options overview in Help.

Hibernation: Turns off your monitor and hard disk, saves everything in memory on disk, and turns off your computer. When you restart your computer, your desktop is restored exactly as you left it.

A state in which your computer saves any Windows settings that you changed, writes any information that is currently stored in memory to your hard disk, and turns off your computer. Unlike shutting down, when you restart your computer, your desktop is restored exactly as it was before hibernation.

Hibernate appears only if your computer supports this feature and you have selected the Enable hibernate support option in Power Options. See Power Options overview in Help.

Disconnect

A state, in which your Terminal Services session is disconnected, but remains active on the server. When you reconnect to Terminal Services, you are returned to the same session, and everything looks exactly as it did before you disconnected.

Disconnect appears only if you are connected to a Windows 2000 Server running Terminal Services.

Shut down

A state in which your computer saves any Windows settings that you changed and writes any information that is currently stored in memory to your hard disk. This prepares your computer to be turned off.

Restart

A state in which your computer saves any Windows settings that you changed, writes any information that is currently stored in memory to your hard disk, and then restarts your computer.

Log off

A state in which your computer closes all your programs, disconnects your computer from the network, and prepares your computer to be used by someone else.

When connected to a Windows 2000 Server running Terminal Services, Log off closes all programs running in your Terminal Services session, disconnects your session, and returns you to your Windows desktop.

What are the setup files that are used to install windows 2000?

If you are installing from the Operating system DOS the setup file is *winnt*.

If you are installing from Operating system windows 95/98, Win NT, Win 2000, the setup file is *winnt32*.

What is the error message do u get when you run “*winnt*” instead of *winnt32* on 32 bit windows operating system (like Win 95/98, Win NT, and Win 2000)?

You will get the following message in DOS mode screen.

Windows 2000 Setup

This program does not run on any 32-bit version of Windows.

Use WINNT32.EXE instead.

Setup cannot continue. Press ENTER to exit.

What are the switches that are available with winnt32?

Winnt32

Sets up or upgrades Windows 2000 Server or Windows 2000 Professional. You can run the winnt32 command at a Windows 95, Windows 98, or Windows NT command prompt.

winnt32 [/s:sourcepath] [/tempdrive:drive_letter] [/unattend[num]:[answer_file]]
[/copydir:
folder_name] [/copysource:folder_name] [/cmd:command_line]
[/debug[level]:[filename]] [/udf:id[,
UDF_file]] [/syspart:drive_letter] [/checkupgradeonly] [/cmdcons] [/m:folder_name] [
/makelocalsource] [/noreboot]

Parameters

/s:sourcepath

Specifies the source location of the Windows 2000 files. To simultaneously copy files from multiple servers, specify multiple /s sources. If you use multiple /s switches, the first specified server must be available or Setup will fail.

/tempdrive:drive_letter

Directs Setup to place temporary files on the specified partition and to install Windows 2000 on that partition.

`/unattend`

Upgrades your previous version of Windows 2000, Windows NT 3.51–4.0, Windows 98, or Windows 95 in unattended Setup mode. All user settings are taken from the previous installation, so no user intervention is required during Setup.

Using the `/unattend` switch to automate Setup affirms that you have read and accepted the End User License Agreement (EULA) for Windows 2000. Before using this switch to install Windows 2000 on behalf of an organization other than your own, you must confirm that the end user (whether an individual, or a single entity) has received, read and accepted the terms of the Windows 2000 EULA. OEMs may not specify this key on machines being sold to end users.

`/unattend[num]:[answer_file]`

Performs a fresh installation in unattended Setup mode. The answer file provides Setup with your custom specifications.

Num is the number of seconds between the time that Setup finishes copying the files and when it restarts your computer. You can use num on any computer running Windows NT or Windows 2000.

Answer_file is the name of the answer file.

`/copydir:folder_name`

Creates an additional folder within the folder in which the Windows 2000 files are installed. For example, if the source folder contains a folder called Private_drivers that has modifications just for your site, you can type `/copydir:Private_drivers` to have Setup copy that folder to your installed Windows 2000 folder. So then the new folder location would be C:\Winnt\Private_drivers. You can use `/copydir` to create as many additional folders as you want.

`/copysource:folder_name`

Creates a temporary additional folder within the folder in which the Windows 2000 files are installed. For example, if the source folder contains a folder called Private_drivers that has modifications just for your site, you can type `/copysource:Private_drivers` to have Setup copy that folder to your installed Windows 2000 folder and use its files during Setup. So then the temporary folder location would be C:\Winnt\Private_drivers. Unlike the folders `/copydir` creates, `/copysource` folders are deleted after Setup completes.

`/cmd:command_line`

Instructs Setup to carry out a specific command before the final phase of Setup. This would occur after your computer has restarted twice and after Setup has collected the necessary configuration information, but before Setup is complete.

`/debug[level]:[filename]`

Creates a debug log at the level specified, for example, /debug4:C:\Win2000.log. The default log file is C:\%Windir%\Winnt32.log, with the debug level set to 2. The log levels are as follows: 0-severe errors, 1-errors, 2-warnings, 3-information, and 4-detailed information for debugging. Each level includes the levels below it.

/udf:id[,UDB_file] indicates an identifier (id) that Setup uses to specify how a Uniqueness Database (UDB) file modifies an answer file (see the /unattend entry). The UDB overrides values in the answer file, and the identifier determines which values in the UDB file are used. For example, /udf:RAS_user,Our_company.udb overrides settings specified for the identifier RAS_user in the Our_company.udb file. If no UDB_file is specified, Setup prompts the user to insert a disk that contains the \$Unique\$.udb file.

/syspart:drive_letter

Specifies that you can copy Setup startup files to a hard disk, mark the disk as active, and then install the disk into another computer. When you start that computer, it automatically starts with the next phase of the Setup. You must always use the /tempdrive parameter with the /syspart parameter.

The /syspart switch for Winnt32.exe only runs from a computer that already has Windows NT 3.51, Windows NT 4.0, or Windows 2000 installed on it. It cannot be run from Windows 9x.

/checkupgradeonly

Checks your computer for upgrade compatibility with Windows 2000. For Windows 95 or Windows 98 upgrades, Setup creates a report named Upgrade.txt in the Windows installation folder. For Windows NT 3.51 or 4.0 upgrades, it saves the report to the Winnt32.log in the installation folder.

/cmdcons

Adds to the operating system selection screen a Recovery Console option for repairing a failed installation. It is only used post-Setup.

/m:folder_name

Specifies that Setup copies replacement files from an alternate location. Instructs Setup to look in the alternate location first and if files are present, use them instead of the files from the default location.

/makelocalsource

Instructs Setup to copy all installation source files to your local hard disk. Use /makelocalsource when installing from a CD to provide installation files when the CD is not available later in the installation.

/noreboot

Instructs Setup to not restart the computer after the file copy phase of winnt32 is completed so that you can execute another command.

What is the location of “hcl.txt” (Hard ware compatibility list)?

In Windows 2000 (either professional or any kind of server) CD, there is a folder called “support”. In the support folder the HCL.txt is placed.

What is the location of *winnt* and *winnt32*?

They are located in “i386” folder.

Where is the location of support tools?

In Windows 2000 (either professional or any kind of server) CD, there is a folder called “support”. In the support folder there is a sub folder called “Tools”

How to load support tools?

In the Windows 2000 CD (either professional or any kind of server),
Click on support → Click on tools → Click on setup.exe

How to load Admin Pack?

In windows 2000 CD (Only server family),
Click on i386 folder → Click on adminpak.msi

Or

Go to command prompt (in server operating system only) → Go to *winnt/system32* directory → type *adminpak.msi* or type *Msiexec /i adminpak.msi*

Note: Adminpak.msi is not included in the professional CD.

If you want to load the administrative tools in the local computer you can load. But you must have administrative permissions for the local computer to install and run Windows 2000 Administration Tools.

How do you install the Windows 2000 deployment tools, such as the Setup Manager Wizard and the System Preparation tool?

To install the Windows 2000 Setup Tools, display the contents of the Deploy. cab file, which is located in the Support\Tools folder on the Windows 2000 CD-ROM. Select all the files you want to extract, right-click a selected file, and then select Extract from the menu. You will be prompted for a destination, the location and name of a folder, for the extracted files.

How to create a boot floppy?

To create a boot floppy, open windows 2000 CD.

Click on boot disk folder → click on either *makeboot* or *makebt32*

Note: If you want to boot from MS-DOS then create floppy disk by using the command **Makeboot**.

What is Desktop?

The desktop, which is the screen that you see after you log on to Windows 2000, is one of the most important features on your computer. The desktop can contain [shortcuts](#) to your most frequently used [programs](#), documents, and printers.

Suppose if your CD is auto play CD. Then what is the key that is used to stop the auto play of the CD?

Hold the shift key for some time immediately after inserting the CD.

What is Netware?

Netware is a computer network operating system developed by **Novell**.

What is Network?

A network is a group of computers that can communicate with each other, share resources such as hard disks and printers, and access remote hosts or other networks.

The basic components of a network are:

- One or more servers
- Workstations
- Network Interface Cards
- Communication media
- Peripheral devices (such as printers)

What is network Interface card?

A Network Interface Card is a circuit board installed on each computer to allow servers and workstations to communicate with each other.

What are peripheral devices?

Peripheral devices are computer related devices, such as local printers, disk drivers and modems.

What is LAN driver?

The LAN driver controls the workstation's Network Interface card.

A LAN driver serves as a link between an operating system of a station and the physical network parts.

Why should we logon?

Login enables the user to use the resources and services, such as files, printers and messaging, which are available in the Network.

When the user Identity is authenticated and his or her rights to resources and services are determined.

When the user logs out, he or she is then disconnected from all parts of the network.

Drive Letters:

Each workstation can assign up to 26 letters to regular drive mappings. Drive letters that are not used by local devices are available for network drives.

Generally the Drive letters **A** and **B** represents floppy disk drives and **C** represents the local hard disk.

What do you call the right hand side portion (i.e., where the clock and other icons exist) of task bar?

System Tray or Notification area

What is Plug and Play?

Plug and Play hardware, which Windows 2000 automatically detects, installs, and configures.

What is the command to encrypt a file from command prompt?

Cipher.exe

What is the minimum and maximum configuration to create a partition in NTFS?

The minimum size to create a partition in NTFS is 8 MB.

The maximum size to create a partition in NTFS is the disk capacity.

How many ways can you install Windows 2000?

- 1) Insert the CD, boot from the CD, and install the O.S. (This is the best way)
- 2) Boot from the floppy, insert the CD, and install the O.S.
- 3) Install over the network or install over the Hard disk. For this you have to run the files WinNT or winnt32.

Note: WinNT is used when you r installing from the operating system other than Windows NT or 2000. (I.e., DOS, windows 95/98 or any other)

Winnt32 is used if you are installing from O.S. Windows NT or Windows 2000.

What is WINS and what it does?

WINS stands for Windows Internet Naming Service. It resolves NETBIOS names to IP addresses. WINS is used only when you need to access the NETBIOS resources.

What is there in the network before wins?

Initially the computers in the network used to communicate with broadcast. If there is less number of hosts, then there is no problem. But when there is more number of hosts on the network more traffic will be generated. So later they invented lmhost file (LAN Manager Host file). By this they configure the lmhost file of each computer with the entries of each computer's IP address and NETBIOS name. So each computer will look into its lmhost file to resolve NETBIOS names. But configuring each computer lmhost file manually is time consuming and more difficult. Later then invented centralized lmhost file. By this they configure lmhost on one server, and tell each computer to use that lmhost file. But in this you need to configure the centralized lmhost file manually. So Microsoft introduced WINS. By this you need to install WINS on a

server in the network and configure the computers to use that WINS server. That's all, you need not configure any thing on WINS server. The WINS server makes an entry automatically when a client is initialized to use WINS.

Note: A UNIX does not have ability to register into WINS database. But if a UNIX server is there in network and you need to resolve it, then for this you need to configure manually the entry of that UNIX server in the WINS server.

What is NETBIOS?

NETBIOS stands for Network Basic Input Output System. It is a naming interface, it is interface by which client can connect to access the lower level of the TCP/IP model to be able to communicate and access those resources.

We share resources with the NETBIOS interface in windows NT. This means that we are using NetBIOS name to connect the client to the server.

What is the length of NETBIOS name?

A NETBIOS name is 16 characters long. The first fifteen characters you can use for the server name, the 16th character is an identifier for what type of service it is registering.

What is the location of lmhost file (LAN Manager Host file) in windows 2000?

Winnt/system32/drivers/etc/lmhost.sam

Note: Extension represents that it is a sample file. You can create lmhost file with out that extension.

What are Windows 2000 WINS enhancements when compare to the previous versions?

- Better Management interface
- Better clients
- Replication can maintain persistent connections.
- Supports automatic partner discovery
- Integrates with DNS and DHCP
- Supports burst mode handling

What is the port used for Terminal Services?

3389

How to know 3389 is working or not?

Netstat -a (Displays all connections and listening of ports)

What are the different sub net classes are there?

Class A Addresses	1-126.x.x.x
Class B Addresses	128-191.x.x.x

Class C Addresses	192-223.x.x.x
Class D Addresses	224-239.x.x.x
Class E Addresses	240-254.x.x.x

What are the features and benefits of windows 2000 professional?

- Windows 2000 professional is an upgrade of Windows NT workstation. So we have the base code of Windows NT rather than Windows 95/98. So you get the security and stability of Windows NT. But from Windows 2000 we get some of the features of 95/98. Specifically **Plug and Play, Device manager.**
- We have **personalized start menus** with windows 2000.
- We can deploy software automatically.
- We also have Windows installer package.
- We have synchronization manager.
- We have Internet printing protocol.
- We have Kerberos V5 protocol technology.
- We have EFS (Encrypting file system).
- We have IPSec protocol.
- We have a support for **smart card**.
- We have secondary log on service.
- Kerberos 5 security protocol

And many more

Note: Suppose you have a computer in remote location. In that you have multiple operating systems. You want to restart it from here with a specific operating system. Then go to Properties of My computer → Advanced tab → settings → At this place set default operating system as required operating system. Then restart the computer.

Note: In windows 2000 if you want to update objects immediately we use **secedit /refreshpolicy refresh_machine** and another one. In windows 2003 the alternate command for this is **gpupdate**, type this command at run prompt then it updates automatically.

How can you know that Active directory is installed properly?

It will create a folder called **sysvol** under c:\windows. Within the sysvol folder you should have four folders, namely **Domain, staging, sysvol, staging area**. Apart from this you should have NTDS folder (In c:\windows) containing ntds.dit file and four log files.

How can you see the post screen when the system started?

When the system starts press the **Break** key. Then the post screen is stopped there only, to continue press **Enter**.

When a user logs on the start up options will be loaded. How to stop them? (The notification area icons)

When a user types user name and password, and presses enter immediately hold down **Shift** key. Then the above things will not be loaded.

What are the features of Active directory?

See the “benefits of Active directory” document in this folder.

1. What is the range of addresses in the classes of internet addresses?

Class A	0.0.0.0	-	127.255.255.255
Class B	128.0.0.0	-	191.255.255.255
Class C	192.0.0.0	-	223.255.255.255
Class D	224.0.0.0	-	239.255.255.255
Class E	240.0.0.0	-	254.255.255.255

Note: Class A, Class B, Class C are used to assign IP addresses. Class D is used for Multicasting. Class E is reserved for the future (Experimental).

What is hot swapping?

Replacing the hard disks other than active disk, when the computers on.

What commands do you need to execute before upgrading to windows 2000 to windows 2003?

Before upgrading to windows 2000 to windows 2003 insert the CD of windows 2003 then open 1386 folder, then at command prompt type the following commands.

Adprep /forestprep

Adprep /domainprep

(i. e., f:\1386(2003)>adprep /forestprep and f:\1386(2003)>adprep /domainprep)

If you are upgrading entire forest type the adprep /forestprep at root domain.

If you are upgrading only a domain then type the adprep /domainprep at root domain.

Note: You have to type the above commands on the server which has IM role.

Then only you have to upgrade your systems.

How to take backup?

Start→Programs→Accessories→System tools → backup → click on backup tab

There you can select the required one.

The system state backup includes the following files

- Boot files
- Com+ class registration database
- Registry

If the system is domain controller then apart from above files it takes backup of the following files also.

- Active directory
- Sys vol

Note: If you want to restore the system state backup on a domain controller you have to restart the computer in Directory Services restore mode, because you are restoring Active Directory when it is in active. If you want to restore Active Directory it should not be in active. If you restart the computer in Directory services restore mode the Active directory is not in active, so you can restore the Active directory.

You can restore Active Directory in two ways

- Authoritative restore

- Non Authoritative restore

Non Authoritative restore

- Restart the computer

- Press F8 to select Directory services restore mode

- Start → Programs → Accessories → system tools → Backup → Click on restore tab → Select the restore file → Click on restore now

- Restart the computer

Authoritative Restore mode

- Restart the computer

- Press F8 to select Directory services restore mode

- Start → Programs → Accessories → system tools → Backup → Click on restore tab → Select the restore file → Click on restore now

- Open command prompt

- Type ntdsutil

- Type authoritative restore

Note: Here you can restore authoritatively entire database or a particular OU. But you cannot restore a particular object.

- Type restore sub tree *distinguished name of OU*

Ex: research is a OU under yahoo.com, then you have to type distinguished name like **ou=research, dc=yahoo, dc=com**

What are the logical components of Active Directory?

- Organizational Units

- Domains

- Trees

- Forests

What are the physical components of Active Directory?

- Sites

- Domain Controllers

- Global Catalogue

Who can create site level Group Policy?

Enterprise Admin

Who can create Domain lever Group Policy?

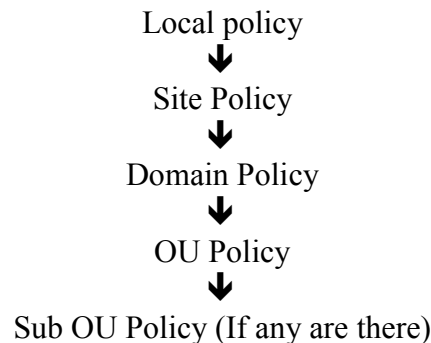
Domain Admin

Who can create Organization Unit lever Group Policy?

Domain Admin

Who can create Local Group Policy?

Local Administrator or Domain Administrator

What is the hierarchy of Group Policy?**Explain about Active Directory database.**

The information stored in the Active Directory is called Active Directory database.

The information stored in the Active Directory (i. e., Active directory database) on every domain controller in the forest is partitioned into three categories. They are

- Domain Partition
- Configuration Partition
- Schema Partition

Domain Partition

The domain partition contains all of the objects in the directory for a domain. Domain data in each domain is replicated to every domain controller in that domain, but not beyond its domain.

Configuration Partition**Schema Partition**

The schema partition contains all object types and their attributes that can be created in Active Directory. This data is common to all domain controllers in the domain tree or forest, and is replicated by Active Directory to all the domain controllers in the forest.

What is Global Catalogue?

The global catalogue holds a partial replica of domain data directory partitions for all domains in the forest. By default, the partial set of attributes stored in the global catalog includes those attributes most frequently used in search operations, because one of the primary functions of the global catalogue is to support clients querying the directory.

Explain about different groups in Active directory.

There are two types of groups are the in Active directory.

Security group

Distributed group

What is the protocol that is used for security in Windows 2000?

Kerberos V5

How many can you open Task Manager?

One can open Task Manager in three ways

- 1) Start → Run → Taskmgr → ok
- 2) Right click on Task bar → Select Task manager
- 3) Press CTRL + ALT + DELETE → click on Task Manager
- 4) Press CTRL+ Shift + ESC (short cut key)

How many ways do you have to determine whether a computer is Domain Controller or not?

There are several ways to determine

- 1) On **log on Windows** dialogue box see whether the **log on** field has *this computer* option or not. If it contains only domain names then it is a Domain Controller, if it contains *this computer* option then it is either Work station or Member server.
- 2) Start → Run → Type **netdom query fsmo** → The computer names that have been listed there are Domain Controller.
- 3) Search for **NTDS** and **Sysvol** folder in system directory, if they are there then it is a Domain Controller.
- 4) Start → Run → Regedit32 → Search for **NTDS** folder in HKEY_LOCALMACHINE
If you find that one then it is a Domain Controller.
- 5) Start → Programs → Administrative tools → Active Directory Users and Computers
→ Click on Domain Controller OU → the names that are listed there are the names of the domain controllers.
- 6) In 2000 you cannot change the name of the Domain Controller so Right click on My computer → Properties → Network Identification → There **Change** button is grayed out.

Sub Netting

Class C sub netting

IP address 198.100.98.0

Decimal mask 255.255.255.224

Convert 224 into binary $\rightarrow 11100000_{(2)}$

Maximum no. of combinations = 2^n (Where **n** is number of masked bits)

Note: Masked bit = 1, UN masked bit = 0.

Maximum number of subnets $\rightarrow 2^n - 2$

Maximum number of hosts/subnet $\rightarrow 2^m - 2$ (Where **m** is number of unmasked bits)

Now $224_{(10)} = 11100000_{(2)}$

Maximum no. of combinations = $2^n = 2^3 = 8$

Maximum no. of subnets = $2^n - 2 = 2^3 - 2 = 6$

Maximum no. of hosts/subnet = $2^m - 2 = 2^5 - 2 = 30$

Available combinations

0 $\rightarrow 000$ (This is not used for assigning IP address)

1 $\rightarrow 001$

2 $\rightarrow 010$

3 $\rightarrow 011$

4 $\rightarrow 100$

5 $\rightarrow 101$

6 $\rightarrow 110$

7 $\rightarrow 111$ (This is not used for assigning IP address)

Octant contains 8 bits, presently we have 3 bits (Remaining 5 bits are zeros)

00100000 = 32

01000000 = 64

01100000 = 96

10000000 = 128

10100000 = 160

11000000 = 192

Therefore modified subnets are

255.255.255.32

255.255.255.64

255.255.255.96

255.255.255.128

255.255.255.160

255.255.255.192

IP addressing for subnet 255.255.255.32

First IP address	198.100.98.33
Subnet mask	255.255.255.32

Second IP address	198.100.98.34
Subnet mask	255.255.255.32

Third IP address	198.100.98.35
Subnet mask	255.255.255.32

Fourth IP address	198.100.98.36
Subnet mask	255.255.255.32

↓
↓
↓

Last IP address	198.100.98.63
Subnet mask	255.255.255.32

IP addressing for subnet 255.255.255.64

First IP address	198.100.98.64
Subnet mask	255.255.255.64

Second IP address	198.100.98.65
Subnet mask	255.255.255.64

Third IP address	198.100.98.66
Subnet mask	255.255.255.64

Fourth IP address	198.100.98.67
Subnet mask	255.255.255.64

↓
↓
↓

Last IP address	198.100.98.95
Subnet mask	255.255.255.64

IP addressing for subnet 255.255.255.96

First IP address	198.100.98.64
Subnet mask	255.255.255.96

Second IP address	198.100.98.65
Subnet mask	255.255.255.96

Third IP address	198.100.98.66
Subnet mask	255.255.255.96

Fourth IP address	198.100.98.67
Subnet mask	255.255.255.96

↓
↓
↓

Last IP address	198.100.98.95
Subnet mask	255.255.255.96

IP addressing for subnet 255.255.255.128

First IP address	198.100.98.64
Subnet mask	255.255.255.128

Second IP address	198.100.98.65
Subnet mask	255.255.255.128

Third IP address	198.100.98.66
Subnet mask	255.255.255.128

Fourth IP address	198.100.98.67
Subnet mask	255.255.255.128

↓
↓
↓

Last IP address	198.100.98.95
Subnet mask	255.255.255.128

IP addressing for subnet 255.255.255.160

First IP address	198.100.98.64
Subnet mask	255.255.255.160

Second IP address	198.100.98.65
Subnet mask	255.255.255.160

Third IP address	198.100.98.66
Subnet mask	255.255.255.160

Fourth IP address	198.100.98.67
Subnet mask	255.255.255.160

↓
↓

Last IP address	198.100.98.95
Subnet mask	255.255.255.160

IP addressing for subnet 255.255.255.192

First IP address	198.100.98.64
Subnet mask	255.255.255.192

Second IP address	198.100.98.65
Subnet mask	255.255.255.192

Third IP address	198.100.98.66
Subnet mask	255.255.255.192

Fourth IP address	198.100.98.67
Subnet mask	255.255.255.192

↓
↓

Last IP address	198.100.98.95
Subnet mask	255.255.255.192

Another Example:
200.150.80.0

255.255.255.192

$192_{(10)} \rightarrow 11000000_{(2)}$

Class B Sub netting

Example:

IP address 140.80.1.0

Subnet mask 255.255.240.0

$240_{(10)} \rightarrow 11110000_{(2)}$

Here **n=4** (Because $148.80.1.0 \rightarrow 11111111.11111111.11110000.00000000$)

m= 12 (Because $148.80.1.0 \rightarrow 11111111.11111111.11110000.00000000$)

Maximum no. of combinations $\rightarrow 2^n = 2^4 = 16$

Max no. of subnets $\rightarrow 2^n - 2 = 14$

Max no. of hosts/subnet $\rightarrow 2^m - 2 = 2^{12} - 2 = 4096 - 2 = 4094$

Number of combinations (16)

00000000 = 0 (This is not used for assigning IP address)

00010000 = 16

00100000 = 32

00110000 = 48

01000000 = 64

01010000 = 80

01100000 = 96

01110000 = 112

10000000 = 128

↓

↓

11100000 = 224

11110000 = 240

(This is not used for assigning IP address)

Modified subnets are

255.255.16.0

255.255.32.0

255.255.48.0

255.255.64.0

255.255.80.0

255.255.96.0

↓

↓

255.255.224.0

IP addressing for modified subnets:

255.255.16.0 Subnet

IP address	140.80.16.1
Subnet mask	255.255.16.0

↓
↓

IP address	140.80.16.254
Subnet mask	255.255.16.0

And

IP address	140.80.17.1
Subnet mask	255.255.16.0

↓
↓

IP address	140.80.17.254
Subnet mask	255.255.16.0

And

IP address	140.80.18.1
Subnet mask	255.255.16.0

↓
↓

IP address	140.80.18.254
Subnet mask	255.255.16.0

And

IP address	140.80.19.1
Subnet mask	255.255.16.0

↓
↓

IP address	140.80.19.254
Subnet mask	255.255.16.0

And

IP address	140.80.20.1
Subnet mask	255.255.16.0

↓
↓

IP address	140.80.20.254
------------	---------------

Subnet mask 255.255.16.0

And 21, 22, 23, 24 up to 31.

255.255.32.0 Subnet

IP address 140.80.32.1
Subnet mask 255.255.32.0

↓
↓

IP address 140.80.32.254
Subnet mask 255.255.32.0

And

IP address 140.80.33.1
Subnet mask 255.255.32.0

↓
↓

IP address 140.80.33.254
Subnet mask 255.255.32.0

And

IP address 140.80.34.1
Subnet mask 255.255.32.0

↓
↓

IP address 140.80.34.254
Subnet mask 255.255.32.0

And

IP address 140.80.35.1
Subnet mask 255.255.32.0

↓
↓

IP address 140.80.35.254
Subnet mask 255.255.32.0

And 36, 37, 38, 39 up to 48.

Next subnets are 64, 80, and 96, up to 224.

Diagnostic Utilities

a) PING b) finger c) hostname d) Nslookup e) ipconfig f) Netstat
g) NBTStat h) Route i) Tracer j) ARP

PING:

Verifies that TCP/IP is configured and another host is available.

FINGER:

Retrieves system information from a remote computer that supports TCP/IP finger services

HOSTNAME:

It displays the host name.

NSLOOKUP:

Examines Entries in the DNS database, which pertains to a particular host or domain

NETSTAT:

Displays protocol statistics and the current state of TCP/IP concepts.

NBTSTAT:

Checks the state of current NetBIOS over TCP/IP connections, updates LMhost's cache or determines your registered name or scope ID.

Route:

Views or modifies the local routing table.

TRACERT

Verifies the route from the local host to remote host

ARP

Displays a cache of local resolved IP address to MAC address

What is Dedicated Line?

Any telecommunications line that is continuously available for the subscriber with little or no latency. Dedicated lines are also referred to as "leased lines."

Note: The other one is the Dial up line.

What is Dial up line?

Any telecommunications link that is serviced by a modem. Dial-up lines are ordinary phone lines used for voice communication, while dedicated or leased lines are

digital lines with dedicated circuits. Dial-up lines are generally much less expensive to use, but they have less available bandwidth.

What is FQDN (Fully Qualified Domain Name)?

Hostname.Domain.com

Give an Example for FQDN?

For example, the fully qualified domain name (FQDN) barney.northwind.microsoft.com can be broken down as follows:

- Host name: barney
- Third-level domain: north wind (stands for North wind Traders Ltd., a fictitious Microsoft subsidiary)
- Second-level domain: Microsoft (Microsoft Corporation)
- Top-level domain: com (commercial domain)

The root domain has a null label and is not expressed in the FQDN

How to know port 3389 (Terminal services) is working or not?
netstat -a (Displays all connections and listening of ports)

What is a host?

Any device on a TCP/IP network that has an IP address. Example includes servers, clients, network interface print devices, routers.

How is the host identified in the network?

By a TCP/IP address.

What is a Host name?

An alias given to a computer on TCP/IP network to identify it on the network. Host names are friendlier way to TCP/IP hosts than IP address.

A host name can contain A-Z, 0-9, ".", "-", characters.

What is Logon Credentials?

The information authenticate a user, generally consisting of

User Name

Password

Domain Name

What is the Refresh interval for Group Policy?

Refresh interval for Domain Controllers is 5 minutes, and the refresh interval for all other computers in the network is 45 minutes (doubt).

How many ports are there?

There are 65535 ports are there.

Note: The ports 0-1023 are called well known ports and all other ports are called Dynamic or private ports (i.e., 1024-65535)

How to do quick shutdown/restart?

Press **Ctrl +Alt +Del**, on the dialogue box you can **shutdown** button.

While pressing **shutdown** button hold **CTRL** key

What is native mode and what is mixed mode?

If some of your domain controller are Windows NT in the windows 2000 domain, that is called mixed mode. If you want to compatible with NT domain controller in windows 2000 domain you should be in mixed mode.

If all of your domain controllers are windows 2000 then you can change mixed mode to native mode. After changing to native mode you will some extra functionality to secure your windows 2000 domain.

Ex: On user account properties, click on **dial-in** tab then you can see some extra options.

How to change mixed mode to native mode?

Start → Programs → Administrative tools → Active directory users and computers → Right click on Domain → Drag down to properties → on **General** tab click on **Change mode** button → Click **Yes**

Note: By default windows 2000 will be loaded in mixed mode. You can change windows 2000 from mixed mode to native mode, but once if you change mixed mode to native mode you cannot change from native mode to mixed mode.

Note: When you are formatting the disk, if you set the block size as default, windows 2000/XP/2003 divides the partition into 4 KB blocks. When you are creating a file or folder it allocates space to that file or folder in multiples of 4 KB. When you create a new file first time it allocates 4 KB, after 4 KB is filled up it allocates another 4 KB size, it goes on like this until the disk space is completed.

Note: With windows 2000 advanced server and data centre server we can NLB cluster 2 to 32 servers. It supports clustering up to 2 nodes.

Note: With disk quotas we can track the usage of disk space for each user. We can limit each user to use certain amount of space.

What is latency?

The required time for all updates to be completed throughout all domain controllers on the network domain or forest.

What is convergence?

The state at which all domain controllers have the same replica contents of the Active Directory database.

How to force KCC to generate connection object immediately without delay?

Type the command **repadmin /kcc**. This command forces the KCC to generate connection object immediately without any delay.

What are the file names that we cannot create in Windows operating system?

The file names that cannot be created in Windows operating system are

- Con
- Prn
- Lpt1, Lpt2, Lpt3, Lpt4,, Lpt9
- Com1, com2 com3, com4, com5,, com9
- Nul
- Aux

Note: The file name **clock\$** cannot be created in DOS 6.22 or earlier versions of DOS.

What is QoS?

QoS stands for Quality of Service. With QoS we can reserve bandwidth to certain applications.

What is NAT?

NAT stands for Network Address Translation. It is a device between the Internet (i.e., public network) and our private network. On one NIC card it has valid Internet address; on the other NIC it has our private (internal) network address.

NAT is a device that translates one valid public IP address to more tuple internal private address.

We load Windows 2000 RRAS (Routing and Remote Access service) service into this Windows 2000 server and we turn in to a router. Now we add NAT protocol, so now onwards our internal clients sends their traffic through this router to the internet, when it passing through this NAT server it stripes off the internal network IP address and assigns a valid public IP address. So goes out and communicates with that valid public IP address, comes back in the NAT server stripes off the public IP address and replaces private IP address, sends the traffic back to that particular client.

For client perspective they don't know any thing except they are surfing internet.

We load RRAS in to windows 2000 server; we turn this server as router. Now we add NAT protocol, so that now on our clients can send traffic to internet through this router , as it passes through the NAT server this server stripes off the internal IP address and replaces with a valid public IP address. Then it goes to the internet surf the internet when it comes back through the NAT server, now NAT server stripes off the valid public IP address and replaces it with its internal IP address sends the traffic to that particular client.

How to go to the NAT options?

Start → Programs → Administrative tools → RRAS → IP routing → NAT

Note: Windows 2000 NAT can act as a DHCP server. So it is possible to give IP address with our NAT server. When you are doing this make sure that you don't have DHCP server in your network.

If you have less clients (5 or 6) then there is no harm assigning IP address through NAT, but if your network is big then best is to use DHCP.

How to enable DHCP service through NAT?

Start → Programs → Administrative tools → RRAS → IP routing → Right click on NAT → go to properties → Click on Address assignment → Select the option **automatically assign IP address by using DHCP**

Note: If don't want to use your NAT server to assign IP addresses clear the check box.

Note: NAT server contains at least two NIC, because one for internal IP address and another one for external (Public IP).

How to add public IP address pools to our NAT server?

Start → Programs → Administrative tools → RRAS → IP routing → click on NAT → on Right hand side you see network cards → click on external NIC (which has a valid public IP) → Click on Address pool tab → Click on add button → Give the pool of IP addresses.

Note: By default there is no access to the internal devices on the NAT network to outside clients. By default outside clients cannot access anything in our NAT network.

What are the limitations of Windows 2000 NAT?

- Supports only TCP/IP
- There is no support for IPX or other protocol.

No support for:

- SNMP (so we cannot do SNMP monitoring for our NAT devices)
- LDAP
- Com / Dcom
- Kerberos V5
- RPC
- IPSec

Note: Windows 2000 NAT doesn't allow L2TP traffic, it allows only PPTP traffic.

What is proxy?

NAT server helps the client to access Internet, whereas proxy server does everything for client. When a request comes from the client the proxy server surfs the internet and caches the results to its local disk, sends that result to the client.

With proxy we have performance improvement, because results are cached to the local hard disk.

With proxy we have security, because only one system in the internal network communicating with the Internet.

Rather than allowing clients to access internet by changing IP address, the proxy server does all the surfing for clients and caches to its local disk and gives to the clients.

How to install proxy server 2.0 on windows 2000?

There is a patch to install proxy on windows 2000. It doesn't install natively on windows 2000. You have to install along with the windows 2000 patch. You can download this patch from Microsoft website. Or you can get this in windows proxy CD.

Go to Proxy folder → Click on windows proxy update → click on the patch file → Go through the wizard.

This patch file invokes the proxy installation.

To configure the proxy settings

Start → Programs → Microsoft proxy server → Microsoft management console → we get MMC for Internet Information Service, because our proxy server is incorporated with in IIS service.

With proxy we have two types of caching.

Active caching

Passive caching

How to set proxy setting to the clients?

Right click Internet explorer → Click on connections → Click on LAN settings → Click use proxy server → type the IP address of the proxy server and port that we are using

What are the features of Microsoft proxy 2.0?

Active / Passive caching

User level control

IP filters

Access logs

Access to the internet for IPX clients

What we get with RRAS?

We will get with RRAS the ability to create a fully functional router with our windows 2000 server.

We will get quite a bit of Remote connectivity functionality. It also can support clients dialing in through phone lines, or through the internet through a virtual private network.

What IAS does for us?

Internet Authentication server gives us RADIUS server. RADIUS stands for Remote Authentication Dial in User Server, RADIUS is an industry standard.

Note: an IP address is assigned to every device that you want access on the network, and each have unique IP address. A client, server, every interface of router, printer and all devices on the network should have an IP address to communicate in the network.

Note: In class **C** address we have 254 clients for each subnet.

In class **B** address we have approximately 65,534 hosts per subnet.

In class **A** address we have millions of hosts per subnet.

Numbers can range from 0-255, but x.x.x.0 is used for identifying network and x.x.x.255 is used for broadcasting, so we use the numbers from 1-254.

Note: The portion between two firewalls is called screened subnet, in corporate network we call it as DMZ (De Militarized zone)

Who is responsible to assign Public IP address?

The responsible organization to assign IP address is **IntetNIC** (Internet Network Information Centre). This organization assigns public IP address to all individuals or organizations. But you can take IP address from ISP's (Internet Service Providers), because ISP's buys a pool IP addresses from **InterNIC** and then sells to others.

Note: **Tracrt** command traces the root (path) for which we are connecting.

Pathping is combination of tracert and ping. It displays path and some other information.

Note: When DNS stops you will see the event ID is 2.

When DNS starts you will see the event ID is 3.

When GC is enabled you will see the event ID 1119 on that particular server.

When time synchronization enabled you can see event ID's 35 and 37.

How to increase or decrease tomb stone interval?

By default tomb stone interval is 60 days. You can increase or decrease the tomb stone interval. You can decrease till 2 days. You can increase as much as you want.

To decrease tomb stone interval we use ADSI edit.

With windows 2000 we have the advantage being able to configure our Windows 2000 server with RRAS service, and turn our windows 2000 server into a router.

What are the functionalities of RRAS?

- Supports IP + IPX routing
- Supports numerous interface types
- IP filters
- Integrates with active directory
- Supports standard routing protocols
 - RIP version 1 or version 2 (Routing information protocol)
 - OSPF
 - IGMP (Internet Group Management Protocol)
This is for multicasting. Ex: Video conference sent to more people at a time.

What are Unicast, Multicast, and Broad cast?

Unicast: Just from one computer to one computer.

Multicast: Those who ever register for a particular multicast group to those only.

Broadcast: To all the computers.

Note: with RIP version 1 we cannot do CIDR /VLSM. To transfer the route table to the all routers RIP version 1 uses broad cast. With RIP version 2 we can do CIDR. To transfer the route table to all routers RIP version 2 uses multicast. Also with version 2 we have password authentication to transfer router table.

What is VPN?

VPN stands for Virtual Private Network. By using public media we are establishing a private secure connection. To communicate through VPN we use PPTP (Point to Point Tunneling Protocol) or L2TP (Layer2 Tunneling Protocol).

Most cases we use L2TP because this is more secure. The only one case that we use PPTP is only when we are trying to use VPN through a NAT server, another reason to use is if don't have windows clients that have capability to establish L2TP VPN connection.

RADIUS

RADIUS stands for Remote Authentication Dial in User Service. It is used to authenticate remote users. Instead of authenticating users at individual RAS server, we

pass a request to central server (RADIUS server), and let the authentication happen there. All RAS servers pass authentication requests to this central server (RADIUS server) that is doing the authentication. It is authenticating users based on Active Directory. It is also doing reporting, so it is doing accounting and authentication. With RADIUS authentication will take place at a central location. Now there is no need to maintain a local database of users for each RAS server. Whenever authentication is needed, the RAS server forwards the query to the RADIUS server.

Accounting means we keep tracking who is connected, how long, why they failed to connect etc., the information is all centralized here.

By centralizing accountability and authentication we are doing our RAS servers as dumb devices. So when a RAS server fails then there is no need to worry about the 100 or 1000 accounts we manually created on the RAS server, so that we can authenticate. All you need to do is swap out this device with another and configure it to pass the authentication to the RADIUS server.

Note: Terminology wise the central server is RADIUS server. Clients for RADIUS are RAS servers.

How to configure RADIUS client?

RADIUS client is nothing but RAS server. In Windows 2000 it is RRAS server.

Go to RRAS server → Start → Programs → Administrative tools → RRAS → Right click the server → drag down to the properties → click on security → Select **Authentication provider** as RADIUS server → Select **Accounting provider** as RADIUS server → Click on **configure** (at Authentication as well as at Accounting) → Add the server that is going to act as a RADIUS server → hit OK → Restart RRAS service.

How to create a RADIUS server?

To make server as a RADIUS server we install Internet Authentication Service.

Start → Settings → Control panel → Add/Remove programs → Add/Remove windows components → Select Network services → click on details → Select Internet Authentication service → Click on OK

Now you can open IAS MMC.

Start → Programs → Administrative tools → Internet Authentication Service → Right click on **client** → Add new client → give the names of RAS servers → Select the appropriate options → click finish

Note: One of the things you have to do is Register Internet Authentication service in Active Directory.

Administrative tools → Internet Authentication service → Right click at the root → select **Register service in Active Directory**

Now our IAS can access Active Directory so that it can authenticate users by using Active Directory or Active Directory database.

Note: Put your RAS server close to the clients. Put your RADIUS server close to the Active Directory database.

Tell me how to upgrade from 2000 to 2003?

Actually it is one month procedure. I will brief you important things.

Perform adprep /forestprep on the domain controller which has schema role.

This is one time operation per forest.

Perform adprep /domainprep on the domain controller which has IM role (You have to this in the domain for which you want up gradation)

This is one time operation per domain.

Now the following things are common to all domain controllers which you are upgrading from 2000 to 2003.

- Remove administrative tools and support tools
- Run the command winnt32.exe /checkupgrade only.
- Install any hot fixes, if there are any suggested Microsoft, or suggested by End market administrator (if they have any own applications)
- Then upgrade by running the command winnt32.exe from windows 2000 CD ROM

How do you take back ups?

On Monday we will take Normal backup.

Then we follow Incremental backup till Friday

Note: For incremental backup more no. of tapes are required. For differential backup much space is required on the tape, but we need only two tapes to restore the data.

How to know the MAC address of a Network interface card?

First type the **Ping IP address** (IP address of the Network interface card for which you want to know the MAC address)

Then it caches the MAC address.

Now type **Arp -a**

This command shows the cached MAC address of that particular NIC.

Note: If you install DCPROMO in member server then it will become Domain Controller, if you uninstall DCPROMO in Domain Controller then it will become Member server, if you are uninstalling DCPROMO on last domain controller then it will become standalone server.

Note: Always **file size** is less than or equal to **file size on disk** except when file compressed. If file is compressed **file size** greater than **file size on disk**.

The data replicated between domain controllers is called **data** and also called **naming context**. Once a domain controller has been established only changes are replicated.

The replication path that Active Directory data travels through an enterprise is called the **replication topology**.

The change will be replicated to all domain controllers in the site with in 15 minutes since there can only be three hops.

Note: Each domain controller keeps a list of other known domain controllers and the last USN received from each controller.

What is propagation dampening?

This is used to prevent unnecessary replication by preventing updates from being sent to the servers that are sent already. To prevent this domain controller uses **up-to-vector** numbers.

In windows 2000 SYSVOL share is used to authenticate users. The sysvol share includes group policies information which is replicated to all local domain controllers. **File replication service (FRS)** is used to replicate sysvol share. The “Active Directory users and computers” tool is used to change the file replication service schedule.

The DNS IP address and computer name is stored in Active Directory for Active Directory integrated DNS zones and replicated to all local domain controllers. DNS information is not replicated to domain controllers outside the domain.

What is the protocol that is used to replicate data?

Normally **Remote Procedure Call (RPC)** is used to replicate data and is always used for intrasite replication since it is required to support the FRS. RPC depends on IP (Internet Protocol) for transport.

SMTP may be used for replication between sites, where each site is separate domain, because SMTP can't replicate the domain partition.

Clustering: This is supported by only Windows 2000 advanced server and datacenter server. Cluster makes several computers appear as one to applications and clients. It supports clustering up to 2 nodes. You can cluster 2 to 32 servers. The “cluster service” must be installed to implement clustering.

Note: **FAT16** supports partitions up to 4 GB in Windows 2000.

FAT32 supports partitions up to 32 GB in Windows 2000.

NTFS supports partitions 7 MB to 2 TB.

When you are formatting a partition,

- If you enter the size less than 4 GB, on file system dialogue box you can see FAT, FAT32, and NTFS.
- If you enter the between 4 GB and 32 GB, on file system dialogue box you can see FAT32, and NTFS.
- If you enter the size more than 32 GB, on file system dialogue box you can see only NTFS.

Note: You cannot compress or encrypt folders on FAT partition.

Internet Information Service (IIS)

This is used to host web sites.

First install the IIS service.

How to install IIS?

Start → Settings → Control panel → add/remove programs → Add/remove Windows components → Select Application server → Select Internet Information Service → Click OK

How to open IIS?

Start → Programs → Administrative tools → IIS

Or

Start → Run → type inetmgr.exe → click OK

How to host a website?

Start → Programs → Administrative tools → IIS → Right click on **web sites** → Select **New** → Select website → Click Next → give description of the web site → Enter the IP address to use web site, enter the port number (by default port 80) → Enter the path for home directory → Select **Read, Run Scripts**, and **Browse** → Click finish

Note: If you want you can change the port number, but generally we don't change the port number. If you have changed the port number, then when typing URL you have to type the port number followed by the URL.

Ex: www.google.com:83

If you haven't typed any thing by default it takes the port number as **80**.

OSI Layers & Functions

Layer	Protocol	Responsibility
Application	FTP, HTTP, Telnet, DNS, TFTP, POP3, SMTP, News	Provides network services to the end users
Presentation	PCT, TIFF, JPEG, MIDI, MPEG	
Session	NFS, SQL, RPC, X Windows	
Transport	TCP, UDP	
Network	IP, IPX, ICMP, ARP, RIP, OSPF, IGRP, EIGRP, IPSec	
Data-Link	PPP, PPTP, L2TP, HDLC, Frame relay	
Physical		

WINS (Windows Internet Naming Service)

What is WINS and what it does?

WINS stands for Windows Internet Naming Service. It resolves NETBIOS names to IP addresses. WINS is used only when you need to access the NETBIOS resources.

What is NetBIOS?

NetBIOS stands for Network Basic Input Output System. It is naming interface by which client can access network resources. It manages data transfer between nodes on a network.

What is NETBIOS?

NETBIOS stands for Network Basic Input Output System. It is a naming interface, it is interface by which client can connect to access the lower level of the TCP/IP model to be able to communicate and access those resources.

We share resources with the NETBIOS interface in Windows NT. This means that we are using NetBIOS name to connect the client to the server.

What is the length of NETBIOS name?

A NETBIOS name is 16 characters long. The first fifteen characters you can use for the server name, the 16th character is an identifier for what type of service it is registering.

Note: Computer names are not the only names that are registered as a NetBIOS names, a domain name can be registered as NetBIOS name, any service on the network can be registered as the NetBIOS names, for example messenger service.

Note: Communication in the network happen IP address to IP address, ultimately MAC address to MAC address.

What is there in the network before WINS?

Initially the computers in the network used to communicate with broadcast. If there is less number of hosts, then there is no problem. But when there is more number of hosts on the network more traffic will be generated. So later they invented lmhost file (LAN Manager Host file). By this they configure the lmhost file of each computer with the entries of each computer's IP address and NETBIOS name. So each computer will look into its lmhost file to resolve NETBIOS names. But configuring each computer lmhost file manually is time consuming and more difficult. Later then invented centralized lmhost file. By this they configure lmhost on one server, and configure each computer to use that lmhost file. But in this you need to configure the centralized lmhost file manually. So Microsoft introduced WINS. By this you need to install WINS on a server in the network and configure the computers to use that WINS server. That's all, you need not configure anything on WINS server. The WINS server makes an entry automatically when a client is initialized to use WINS.

Note: A UNIX does not have ability to register into WINS database. But if a UNIX server is there in network and you need to resolve it, then for this you need to configure manually the entry of that UNIX server in the WINS server.

What is the location of lmhost file (LAN Manager Host file) in windows 2000?

Winnt/system32/drivers/etc/lmhost.sam

Note: Extension represents that it is a sample file. You can create lmhost file with out that extension.

What are Windows 2000 WINS enhancements when compare to the previous versions?

- Better Management interface
- Better clients
- Replication can maintain persistent connections.
- Supports automatic partner discovery
- Integrates with DNS and DHCP
- Supports burst mode handling

Note: Windows 2000 doesn't use WINS for its naming structure. Windows 2000 uses DNS for its naming structure. The only time that you need WINS in Windows 2000 environment is when you want resolve NETBIOS based resources such as NT file server. In native Windows 2000 environment there is no need to use WINS.

How to install WINS?

Start → Settings → Control Panel → Add/remove programs → Add/remove Windows components → Select Network Services → Select WINS → Click next → insert the Windows 2000 CD → click OK → click on finish

This is all you have to do in WINS server. Now go to each and every client and configure them to use WINS server.

How to configure a client to use WINS server?

Go to the client computer → Open TCP/IP properties dialogue box → Click on **Advanced** button → Click on WINS tab → give the IP address of WINS server → click OK

How to open WINS?

Start → Programs → Administrative tools → WINS

Or

Start → Run → winsmgmt.msc

How to see records in WINS database?

Open WINS MMC → Right click on **Active Registration** → Select either **find by owner** or **find by name** → Provide appropriate details → Then you can see records in WINS database.

How to configure an entry manually in WINS?

Open WINS MMC → Click on Active Registration → Right click on right hand side → Select new static entry → Enter the NETBIOS name and IP address → Click OK

Note: You can configure as many as WINS servers as you want on the network. No matter that which client is using which WINS server, but all WINS server should be configured to replicate the data with each other.

How to configure the WINS servers to replicate database with other WINS servers on the network?

Open WINS MMC → Right click on **Replication partners** → Select **New replication partner** → Give the IP address of the other WINS server → click OK

Note: By default WINS makes its replications partners as push/pull replication partners.

Note: Group policies won't apply for Windows 95/98 clients.

First create a shared folder and put installation files on that shared folder.

What is the program that is used to create .msi files when .msi files are not available?

Wininstall

How to deploy software using Group Policy?

Open the Group Policy Object → Here you have two places to set deployment of software, one is **software settings** under **computer configuration** and another one is **software settings** under **user configuration** → to set a package for either user or computer right click on appropriate **software installation** → Select New → Select package

→ Select the .msi file or .zap file of an application → Select either **assign** or **publish**

→ Click OK.

Perform the above procedure for each application that you want to deploy through Group Policy.

What is the different between deploying applications per computer or per user basis?

If you deploy applications per computer that applications will be deployed to that computer when the computer has started. If you deploy applications per user basis then applications will be deployed when a users logs on.

For computers you can only **assign** packages.

For users you can **assign** or **publish** packages.

What is **assign** of a application to a computer?

For computer we can only assign, we cannot publish. For computers **assign** means when the computer starts that time only those applications will be installed. For assigning applications to the computers we have to have **.msi** files.

What is difference between assign and publish of a package to a user?

When we assign an application

- Icons are placed (in start menu or on desktop), but application will be installed on demand. i.e., when you click on the icon then only application will be installed.

Or application will be installed when you are trying corresponding document.

Or go to Add/Remove programs add corresponding package.

When we publish an application

- Application will be installed when you are trying corresponding document.

Or go to Add/Remove programs add corresponding package.

Note: With assign we install a package in 3 ways where as with publish we can install in 2 ways.

To **assign** a package you have to have a **.msi** file.

To **publish** a package you have to have either **.msi** files or **.zap** files

Note: With **assign** you will get the more functionality than **publish**. So when it is possible for **assign**, choose **assign** only.

Note: When ever you have a .msi file then only you can repair or upgrade that application. With .zap you cannot do them.

How to install published applications through Add/Remove programs?

Start → Settings → Control panel → Add/Remove programs → Click on Add New programs → Click on required application → Click on add button.

How to upgrade an existing application in software installation folder of GPO?

How to apply service packs to an existing application in software installation folder of GPO?

How to delete a application from software installation folder of GPO?

How to set minimum password length through Group Policy?

Open GPO → Click on Computer configuration → Windows settings → Security settings → Account policies → Password policies → select minimum password length → give the number → click OK

What do we call the area between two firewalls?

The area between two firewalls is called DMZ (De Militarized Zone) or Screened subnet.

Note: Depending on the situation, Windows 2000 can be licensed in a per-seat or per-server mode. Per-server can be changed to Per-Seat once. Per-seat is a permanent choice. When licensing Windows 2000 Server, Client Access Licenses (CALs) must also be purchased for the number of clients that will be accessing the server, regardless of the desktop operating system that is installed on the clients.

Note: For Disk Management in Windows 2003 you can use command line tool **diskpart.exe** (New feature in Windows 2003). For more details type diskpart.exe at command prompt and then type “?”.

Note: **ForeignSecurityPrincipals** Container for security principals from trusted external domains. Administrators should not manually change the contents of this container.

Note: By default Search doesn't display hidden files. i.e., you are searching for a file which has **hidden** attribute, even though it exists your search doesn't display it.

Note: By default search doesn't displays hidden files. But if you want to search hidden files also you can search by modifying the following key in registry.

Mycomputer\HKEY_CURRENT_USER\SOFTWARE\MICROSOFT\WINDOWS\CURRENTVERSION\EXPLORER\

Here you can **search hidden** attribute. Click on this and change value from **0** to **1**.

File and folder Attributes:

Write → Users can copy and paste new files and folders and users can change folder attributes. However, users cannot open or browse the folder unless you grant the Read permission.

Read → Users can see the names of files and subfolders in a folder and view folder attributes, ownership, and permissions. Users can open and view files, but they cannot change files or add new files.

List Folder Contents → Users can see the names of files and subfolders in the folder. However, users cannot open files to view their contents.

Read & Execute → Users have the same rights as those assigned through the Read permission, as well as the ability to traverse folders. Traverse folders rights allow a user to reach files and folders located in subdirectories, even if the user does not have permission to access portions of the directory path.

What is the work FRS (File Replication Service)?

It is used to replicate both the contents of the SYSVOL share between domain controllers and the contents of Distributed File System (DFS) replicas.

What are the contents of SYSVOL folder?

SYSVOL includes the actual SYSVOL file share, the NETLOGON file share, all Windows 9x and Windows NT System Policies, and all Win2K and later Group Policy Objects (GPOs).

SYSVOL also contains all user and computer logon and logoff (and startup and shutdown) scripts. By default, SYSVOL is stored in C:\Windows\Sysvol, exists on all domain controllers, and should be identical on each domain controller in a domain.

What is Distinguished Name (DN)?

The DN identifies the domain that holds the object, as well as it provides complete path through the container hierarchy by which the object is reached. A typical DN is as follows. **CN=someone, CN=Users, DC=Microsoft, DC=com**.

What is Relatively Distinguished Name (RDN)?

The RDN is part of the name that is an attribute of the object itself. In the above example The RDN of the **someone** user object is “CN=someone”. The RDN of the parent object is “CN=Users”.

Note: The replication happen for every 5 minutes. Because if replication happen immediately for each modification there will more traffic, so it replicates modifications collectively that are done during default interval.

How do determine the Operating system type that you are working on?

Right click on My computer → Select properties → on general tab you can see operating system type and version.

ADSI edit:

When you open ADSI edit you can see 3 database partitions, i.e., **domain** partition, **configuration** partition, and **schema** partition. Under this you can see CN, and Distinguished names of different objects.

How to cluster two computers?

First go to one of the computer that is going to cluster.

Start → Programs → Administrative tools → Cluster administrator → You will get **open connection to cluster** dialogue box (if you wont get this dialogue box, then click on file → click on open connection) → Select **Create new cluster** → Go through the wizard.

Then go to the 2nd computer

Start → Programs → Administrative tools → Cluster administrator → You will get **open connection to cluster** dialogue box (if you wont get this dialogue box, then click on file → click on open connection) → Select **Add a node to the cluster** → Go through the wizard.

Note: In 2003 Cluster administrator installed by default.

In 2000 Cluster administrator installed when Cluster service component is installed.

How to install cluster service component?

Start → Settings → Control panel → Add/remove programs → Add/remove windows components → Select **Cluster services** → Click ok

Note: By using cluster Administrator you can configure, control, manage and monitor clusters.

Note: Clustering is only supported with Windows Server 2003, Enterprise Edition and Windows Server 2003, Datacenter Edition, Windows 2000 Advanced server and Data center server.

A cluster consists of at least two connected physical computers, or nodes, and a shared storage device, such as RAID-5 disk set channel. The cluster provides a redundant hardware solution. Because services can run on one or both of the nodes in the cluster, users can connect to either node in the same way that they would connect to a stand-alone server; thereby providing greater user availability.

What is failover?

Cluster service monitors the services on all nodes. If a node fails, Cluster service restarts or moves the services on the failed node to a functional node. This process is called *failover*. The ability to use multiple servers at all times reduces system costs while increasing reliability, because you do not have to dedicate servers for disaster recovery. When the failed node is restored, the resources may be returned to the original node. This process is called *failback*. Failover and failback in a cluster can be performed manually by the people who maintain the cluster or can occur automatically when there is an unplanned hardware or application failure.

What is active/active clustering and active/passive clustering?

Active/active clustering describes clustering when both members of the cluster are online and able to accept user service requests. This is different from active/passive clustering where only one member of a cluster provides service to users at a time. Active/passive is the preferred recommended cluster configuration.

In an active/passive cluster, the cluster includes at least one *passive* node and one or more *active* nodes. A node is active if it runs an instance of an Exchange virtual server (EVS). A node is passive if it does not run an instance of EVS (Exchange Virtual Server)

or any other application. A passive node is ready to take over the tasks of an active node whenever a failover occurs on any active node. Whether a node is active or passive may change over the lifetime of a node. After a failover, the passive node which now runs the failed-over EVS is an active node and the original node became a passive node. In an active/passive cluster, the active node is actively handling requests while the passive node is standing by waiting for another node to fail.

Similar to active/passive clustering, in active/active clustering, when one node fails or is taken offline, the other node in the cluster takes over for the failed node. However, because the failover causes the other node to take on additional processing operations, the overall performance of your Exchange cluster may be reduced.

Note: Microsoft recommends active/passive cluster configurations over active/active configurations. Active/active clusters have more limitations than active/passive clusters. Active/active clusters have a limit of 1,900 concurrent connections to a node hosting EVSs, and they are only supported on two nodes.

Note: Windows 2000 Advanced server supports 2 nodes clustering.

Windows 2000 Data center server supports 4 nodes clustering.

Windows 2003 Enterprise and Data center supports 8 nodes clustering.

Features of Active Directory:

Table 1. Features Enabled or Enhanced by Active Directory

Feature	Enabled by Active Directory	Enhanced by Active Directory
IntelliMirror		
Remote OS Installation Services (RIS)		
Delegation of Administration		
Multimaster Replication		
Global Catalog		
Active Directory Sites		
Kerberos Authentication		
Domain Trusts		
Quality of Service (QOS)		
File Replication Service (FRS)		
Group Policy		

Security Groups		
Domain Name System (DNS)		
Dynamic Host Configuration Protocol (DHCP)		
Routing and Remote Access Service		
Virtual Private Network (VPN)		
IP Security (IP sec)		
Telephony API (TAPI)		
File Services		
Distributed File System (DFS)		
Encrypting File System (EFS)		
Print Services		
Internet Information Services (IIS)		
Smart Cards		
Terminal Services		
Microsoft Certificate Server		
Services for NetWare		
Search Assistant		
Message Queuing Services		
Exchange 2000		

Kerberos Authentication

- Kerberos is the Internet standard security protocol for handling authentication of users or system identity.
- Kerberos allows UNIX clients and servers to have Active Directory accounts and obtain authentication from a domain controller.
- Services can impersonate users allowing middle-tier service to authenticate to a back-end data server on behalf of the user.

Scripts

Scripts are used to run commands automatically when a user logging on. Generally in small organizations scripts are used to map drives automatically.

How to create a Script?

Open note pad.

Write the script.

Save it as *.bat file in **net logon** folder.

Then go to the user properties for whom you want to run that particular script → Click on **profile** → type the file name in the **logon script** box. (Just type the file name, no need to give path of the file) → Click OK.

Example of a script for mapping drives.

Open a note pad file. Type the following information (with in the lines) as it is.

Net use p: [\\liveserver\common](#)

Net use x: [\\liveserver\pdata](#)

Save it as *.bat in **net logon** folder.

Note: The contents of a script file are nothing but command those we use at command prompt. A user can run these commands when he logs on and can get same functionality. But running all these commands at each log on will be difficult. So to automatically run all these commands at command prompt when ever a user logs on, we use scripts.

Note: The location of the **net logon** folder is My network places → Entire Network → Microsoft Windows Network → Click on Domain name → Click on Server name → Select **NET LOGON** folder.

Note: Actually **NET LOGON** is not a folder but it is share name of the folder %systemroot%\sysvol\sysvol\domainname.com\scripts. So there is no folder called NET LOGON in the server but it is share name **scripts** folder.

So when you save a script file it will be saved in the **Script** folder

Note: You have store scripts in Scripts folder. So when **Sysvol** is replicated to all Domain controllers in the domain these scripts are also replicated.

Note: In **Sysvol** folder policies and Scripts are stored in respective sub folders.

Suppose you have deleted **Active Directory Users and Computers** from **Administrative tools**, how to restore it?

Start → Programs → Right click on **Administrative tools** → Select All Users → Right click in the window → drag down to **New** → Select **short cut** → click on Browse → My computer → C:\Windows\System32 → Select **dsa.msc** → Click OK → Give the name as **Active Directory Users and Computers** → Click OK.

Note: You can add all **snap ins** in Administrative tools like this only.

Note: The same procedure applied for any thing to place in start menu, just right click on the parent folder select **open all users**, and create a short cut there, that's all.

How to dismount a volume through command line?

The command to dismount a volume through command prompt is

“fsutil volume dismount <volume pathname>”

How can I quickly find all the listening or open ports on my computer?

Usually, if you want to see all the used and listening ports on your computer, you'd use the NETSTAT command.

Open Command Prompt and type: C:\WINDOWS>**netstat -an |find /i "listening"**

This command displays all listening ports.

C:\b>**netstat -an |find /i "listening" > c:\openports.txt**

This command redirects the output to a file openport.txt in C drive.

C:\b>**netstat -an |find /i "listening" > c:\openports.txt**

This command is used to see what ports your computer actually communicates with.

Note: Suppose you have some roles on a domain controller. With out transferring the roles to other domain controller you have demoted the domain controller to a member server by the command **dcpromo**. Then what will happen?

When you demote a domain controller which has roles by the command **dcpromo**, during the demotion the roles will be transferred to the nearest domain controller.

What is the location of **device manager**?

Right click on **My computer** → drag down to **properties** → Click on **hardware** tab → Click on **device manager**

Or

Start → programs → Administrative tools → computer management → device manager

Or

Start → Run → type **compmgmt.msc**

Where do you get windows 2000 professional resource kit?

You get Windows 2000 professional resource kit along with Microsoft **technet** subscription.

Note: If you want to know complete information about system hardware, software and everything regarding system use the command winmsd.exe.

Note: Disk quotas cannot be applied to **groups** in Windows 2000/2003.

You can apply disk quotas to groups in Unix.

Windows Server 2003

When you first logon to a new installation of W2k3 the default desktop is blank apart from the **Recycle bin**. All the rest of the icons are moved to the start menu.

You can readjust the desktop to the old Windows 2000 style by the following way.

Right click on Taskbar → Select Properties → Click on **Start** tab → Select **Classic**

Right click on Start menu → Select Properties → Select **Classic Start menu**

What is Manage your Server Wizard?

When you first logon to the Windows 2003 you will get **Manage Your Server Wizard**.

A host of configuration and management tools have been brought together in the Manage Your Server Wizard. It also includes the ability to configure a profile – called a server role. There are 11 roles. (What are they?)

The roles are

- File server
- Print server
- Application server (IIS, ASP.NET)
- Mail Server (POP3, SMTP)
- Terminal Server
- Remote Access/ VPN server
- Domain Controller (Active Directory)
- DNS Server
- DHCP server
- Streaming Media Server

- WINS server

There is a role called “application server” but this provides IIS, ASP.NET and Web development functionality only and should only be selected if these are required.

How to add a role to a server?

Click on start menu → Choose Manage Your Server → Click on Add or Remove Role Icon → Highlight the role you wish to Add → Click Next

Note: When adding a role, depending upon your choice, you may be prompted to provide additional information to configure the role. You may be also prompted for the W2K3 CD if additional files are required.

You can remove a role from the server using this Wizard.

Click on start menu → Choose Manage Your Server → Click on Add or Remove Role Icon → Highlight the role you wish to Add → Click Next

By this if a role has not been added, it can be added. If it has already been added, you can remove it.

Note: If the role you want to add or remove is not listed in Manage Your server Wizard, go to **Add/Remove Programs**.

Note: You can change the computer name by using **Manage Your server Wizard**, you can also add it to a **Workgroup** or **Domain**.

Remote Administration (formerly Terminal Services in Administration Mode)

Remote Administration is now installed by default, you do not need to install Terminal Services separately as this is now solely for user Terminal Sessions. It will need to be enabled and access granted to the appropriate users.

Administrator has access by default but you must have a password set or otherwise you will not be able to logon.

Remote Administration can be configured by

Right Click on My computer → Select properties → click on Remote tab

Adding/Removing Users to Remote Administration

Click on the Select Remote user button → click on Add/Remove button → If adding either enter the full user name (Domain\username) or select Advanced and search for the user locally or in a domain.

Volume Shadow copy (Currently Not Recommended)

Volume Shadow Copy Service (VSS) was specifically designed to provide point – in – time snapshots of volumes and eliminated problems with backups of open files. It can also provide recovery of files for end users or Administrators without having to do a restore from backup.

The shadow copy process works on a schedule and is not recommended to be done more than once per hour. The default schedule is twice a day.

In order for the copy to work you will need to set aside a certain amount of space on the same or another volume.

Users can access the previous versions of the files through Explorer. If they have Windows 2000 then they will require the installation of a software to enable the Explorer options.

Note: In Windows 2003 you can add upto 32 servers can work in a NLB.

In Windows 2003 you can add upto 8 server to participate in a cluster.

Windows System Resource Manager (WSRM)

Microsoft Windows System Resource Manager (WSRM) provides resource management and enables the allocation of resources, including processor and memory resources, among multiple applications. It has uses in enabling consolidation of applications but ensuring they are given the resources they require to run on a single server.

Note: WSRM only runs on Windows server 2003 Enterprise and Datacenter Editions.

WSRM allows administrators to control CPU and memory resource allocation to applications, services, and processors. This feature can be used to manage multiple applications on a single computer or multiple users on a computer that runs Microsoft Terminal Services. The WSRM architecture also allows administrators to manage resources on multiple systems. WSRM provides GUI as well as command line interfaces for resource management.

What is the location of the event log files in the system?

The location of event viewer log files is **%systemroot%\system32\config** . Here all event log files i.e., application log, security log, system log etc will be stored.

What are the switches that are available with **repadmin**?

Repadmin /showrepl → Shows replication status

Repadmin /failcache → Show recent failed cached replication events.

Repadmin /syncall → Synchronizes replication to all domain controllers in entire forest. If you want to synchronize to only one domain controller type the FQDN of the domain controller followed by the repadmin /syncall.

Nltest →

Replmon →

Adsiedit.msc →

How to associate a existing subnet object with a site?

Associating existing subnet with a site under the following conditions.

- When you are removing the site to which the subnet was associated.
- When you have temporarily associated the subnet with a different site and want to associate it with its permanent site.

Required credentials : Enterprise Admins

To associate an existing subnet object with a site

Start → Programs → Administrative tools → Active Directory Sites and Services →

Click on **sites** → Click on **subnet** container → Right click on the subnet with which you want to associate the site and click on **properties** → On the **site** box click the site with which you want to associate the subnet, click **ok**.

How to change the delay of initial Notification of an Intrasite Replication partner?

Or

How to change the default replication interval between domain controller with in a site?

The default Replication interval between the Domain controllers with in a site is 5 minutes (300 seconds). To change the interval follow the below steps

Log in as Domain Administrator → Start → Run → Regedt32.exe → Navigate to **HKLM\SYSTEM\CurrentControlset\services\NTDS** → Click on **Parameters** → Double click on **Replication notify pause after modify (secs)** → In the **base** box, click **decimal** → In the **value data** box, type the number of seconds for the delay → Click **OK**

How to change the Garbage Collection Period?

The Garbage collection period determines how often expired tombstones are removed from the directory database. This period is governed by an attribute value on the Directory services object in the configuration container. The default value is 12 (hours). Decrease the period to perform garbage collection more frequently. Increase the period to perform garbage collection less frequently.

Log in Enterprise Admin → Start → Programs → Support tools → Tools → ADSI Edit → Expand **Configuration** container → Expand CN= **Configuration** → Expand CN = **Services** → Expand CN = **Windows NT** → Right Click CN= **Directory Service** → click on **properties** → Click **Garbagecollperiod** → click **Set** → Click **OK**

How to change the Priority for DNS SRV Records in the Registry?

To prevent Clients from sending all requests to a single domain controller, the domain controllers are assigned a priority value. Client always send requests to the domain controller that has the lowest priority value. If more than one domain controller has the same value, The clients randomly choose from the group of domain controllers with the same value. If no domain controllers with the lowest priority value are available, then the clients send requests to the domain controller with the next highest priority. A domain Controller's priority value is stored in registry. When the domain controller starts, the Net Logon service registers domain controller, the priority value is registered with the rest of its DNS information. When a client uses DNS to discover a domain controller, the priority for a given domain controller is returned to the client with the rest of the DNS

information. The client uses the priority values to help determine to which domain controller to send requests.

The value is stored in the **LdapSrvPriority** registry entry. The default value is **0** and it can be range from **0** through **65535**.

Note: A lower value entered for **LdapSrvPriority** indicates a higher priority. A domain controller with an **LdapSrvPriority** setting of 100 has a lower priority than a domain controller with a setting of 10. Therefore, client attempts to use the domain controller with the setting of 100 first.

To change priority for DNS SRV records in the registry

Log on as Domain Admin → Start → Run → Regedit → HKLM\SYSTEM\CurrentControlSet\Services\Netlogon\Parameters → Click **Edit** → Click **New** → Click **DWORD value** → For the New value name, type **LdapSrvPriority** → Click Enter → Double click the value name that just you typed to open the **Edit DWORD Value** dialogue box → Enter a value from 0 through 65535. The default value is 0 → Choose **Decimal** as the **Base** option → Click **OK** → Close the Registry editor.

How to change the Weight for DNS Records in the Registry?

To increase client requests sent to other domain controllers relative to a particular domain controller, adjust the weight of the particular domain controller to a lower value than the others. All domain controllers starts with a default weight setting of 100 and can be configured for any value from 0 through 65535, with a data type of decimal. When you adjust the weight, consider it as a ratio of the weight of this domain controller to the weight of the other domain controllers. Because the default for the other domain controller is 100, the number you enter for weight is divided by 100 to establish the ratio. For example, if you specify a weight of 60, the ratio to the other domain controller is 60/100. The reduces to 3/5, so you can expect clients to be referred to other domain controller 5 times for every 3 times they get referred to the domain controller you are adjusting.

To change weight for DNS SRV records in the registry

Log on As domain Admin → Start → Run → regedit → HKLM\SYSTEM\CurrentControlSet\Services\Netlogon\Parameters → Click **edit** → Click **New** → Click **DWORD Value** → For the new value name, type **LdapSrvWeight**

➔ Click Enter ➔ Double click on the value name you just typed to open the **Edit DWORD Value** dialogue box ➔ Enter a Value from 0 through 65535, the default value is 100. ➔ Choose **Decimal** as the **Base** option ➔ Click **OK** ➔ Close Registry editor.

How to check Directory Database Integrity?

Prior to performing any other troubleshooting procedures relative to a suspected database problem, or immediately following offline defragmentation, perform a database integrity check.

Restart the domain controller in Directory Services Restore Mode ➔ Open command prompt ➔ Type **Ntdsutil**, press enter ➔ Type **files**, press Enter ➔ type **integrity**, press enter.

Note the status that is reported when the integrity check is completed.

- If the integrity check completes successfully, type **q** and press **Enter** to return to the **ntdsutil** prompt. Then go for semantic database analysis.
- If the integrity check reports errors, perform directory database recovery.

Semantic Database Checkup:

At **ntdsutil** prompt type **Semantic database analysis**, press enter ➔ At the **Semantic checker:** prompt type **verbose on**, and then press Enter ➔ at the **semantic checker:** prompt type **Go** and then press **enter**

Complete the Database Integrity check as follows:

- If no errors are detected in the status at the end of the procedure, type **quit** again to close Ntdsutil.exe, and then restart in normal mode.
- If **Symantic Database analysis** reports recoverable errors, then perform semantic database analysis with fixup. If errors are not recoverable, then either restore the domain controller from backup or rebuild the domain controller.

How to do metadata clean up?

If you give the new domain controller the same name as the failed computer, then you need perform only the first procedure to clean up metadata, which removes the NTDS settings object of the failed domain controller. If you will give the new domain controller

a different name, then you need to perform all three procedures.: Clean up metadata, remove failed server object from the site and remove the computer object from the domain controller container.

Log on as Enterprise admin → Open command prompt → Type **ntdsutil** → Type **metadata cleanup** → At the **metadata cleanup:** prompt type **connect to the server *servername***, Where *servername* is the name of the domain controller (any functional domain controller in the same domain) from which you plan to clean up the metadata of the failed domain controller, press Enter → Type **quit** and press Enter to return to the **metadata cleanup:** prompt. → Type **Select operation target** and press Enter → Type **List domains** and press Enter, this list the all domains in the forest with a number associated with each. → Type **select domain *number***, where *number* is the number corresponding to the domain in which he failed server was located, press Enter → Type **list sites**, press enter → Type **select site *number***, where *number* is the number of the site in which the domain controller was a member, press enter → Type **list servers in site** press Enter → Type **Select server *number***, and then press Enter where *number* refers to the domain controller to be removed. → Type **quit** press Enter, the metadata cleanup menu is displayed. → Type **remove selected server** press Enter.

At this point, Active Directory confirms that the domain controller was removed successfully. If you receive an error that the object could not be found, Active Directory might have already removed from the domain controller.

Type **quit**, and press Enter until you return to the command prompt.

If a new domain controller receives a different name than the failed domain controller, perform the following additional steps.

Note: Do not perform the additional steps if the computer will have the same name as the failed computer,. Ensure that the hardware failure was not the cause of the problem. If the faulty hardware is not changed, then restoring through reinstallation might not help.

To remove the failed server object from the sites

In the Active Directory sites and services, Expand the appropriate site → Delete the server object associated with the failed domain controller.

To remove the failed server object from the domain controllers container

In Active Directory users and computers, expand the domain controllers container →
Delete the computer object associated with the failed domain controller.

How to view the list of preferred list of Bridgehead servers?

To see all servers that have been selected as preferred bridgehead servers in a forest, you can view the *bridgeheadserverlistBL* attribute on the IP container object.

Log in Domain Admin → Open ADSI edit → Expand **Configuration container** → Expand **CN=Configuration,DC=ForestRootDomainName**, **CN=Sites**, and **CN=Inter-Site Trasports**. → Right Click on **CN=IP** and then click **properties** → In the **Select a property to view** box, click *bridgeheadServerListBL*.

The **Values** box displays the distinguished name for each server object that is currently selected as a preferred bridgehead server in the forest. If the value is **<not set>**, no preferred bridgehead servers are currently selected.

How to view replication metadata of an object?

Replication metadata identifies the history of attributes that have been replicated for a specified object. Use this procedure to identify time, dates, and Update Sequence Numbers (USNs) of attribute replications, as well as the domain controller on which replication originated.

To view replication metadata of an object

Log in as Domain Admin → Open command prompt and type the following command press enter.

```
Repadmin /showmeta distinguishedName serverName
```

```
/u:DomainName\Username /pw:*
```

Where:

- *Distinguishedname* is the LDAP distinguished name of an object that exists on *ServerName*.
- *Domain Name* is the domain of *ServerName*
- *Username* is the name of an administrative account in that domain.

Note: If you are logged on as an administrator in the domain of the destination domain controller, omit the **/u:** and **/pw:** switches.

How to verify the Existence of the Operations Master?

Or

How do you verify whether Operations Masters working properly or not?

This test verifies that the operations masters are located and that they are online and responding.

```
Dcdiag /s:domaincontroller /test:knowsofroleholders
```

```
Dcdiag /s:domaincontroller /test:fsmocheck
```

How to verify that Windows Time Service is Synchronizing Time?

To verify use the following commands.

```
Net stop w32time
```

```
W32tm -once -test
```

```
Net start w32time
```

How to verify Successful Replication to a Domain Controller?

Use Repadmin.exe to verify success of Replication to a specific domain controller. Run the **/showreps** command on the domain controller that receives replication (the destination domain controller). In the output under INBOUND NEIGHBORS, Repadmin.exe shows the LDAP distinguished name of each directory partition for which inbound directory replication has been attempted, the site and name of the source domain controller, and whether it succeeded or not, as follows.

- Last attempt @ YYYY-MM-DD HH:MM.SS was successful.
- Last attempt @ [Never} was successful.

To verify successful replication to a domain controller

Use the following command

```
Repadmin /showreps ServerName /u:domainName\Username /pw:*
```

Where servername is the name of the destination domain controller.

How to verify Replication is Functioning?

To check if replication is working, use the following command

Dcdiag /test:replications

To verify that the proper permissions are set for replication, use the following command.

Dcdiag /test:netlogons

How to verify Network connectivity?

To verify network connectivity first ping to the self IP address, and then ping to the default gateway, and then ping to the remote computer.

To verify that the routers on the way to the destination are functioning correctly. Use the **pathping** command.

Pathping <IP address>

What is the switch that is used to restart in Directory service Restore mode in boot.ini file?

Use the following switch along with the path.

/safeboot:dsrepair (I hope this switch is available in Windows 2003 only)

Suppose ipconfig /registerdns command is not working. What could be the problem?

The **dhcp client** service might be stopped. So go to the services.msc and enable the dhcp client service.

What are the functional levels we have in Windows 2003?

There are 2 types of functional levels in Windows 2003.

- Forest Functional Level
- Domain Functional Level

What is forest functional level in Windows 2003?

The functional level of Active Directory forest that has one or more domain controllers running Windows server 2003. The functional level of a forest can be raised to enable new Active Directory features that will apply to every domain controller in the forest.

There are 3 forest functional level.

- Windows 2000 (Supports NT, 2000, 2003 domain controllers)
- Windows server 2003 interim (supports only NT, 2003 domain controllers)
- Windows server 2003 (Supports only 2003 family domain controllers)

Note: When you raise the functional level to windows server 2003 interim or windows server 2003 you will get advanced forest wide Active Directory features.

What is domain functional level in Windows 2003?

The functional level of Active Directory domain that has one or more domain controllers running Windows server 2003. The functional level of a domain can be raised to enable new Active Directory features that will apply to that domain only. There are 4 domain functional level.

- Windows 2000 mixed (supports NT, 2000, 2003 domain controllers)
- Windows 2000 native (supports 2000, 2003 domain controllers only)
- Windows server 2003 interim (supports NT, 2003 domain controllers only)
- Windows server 2003 (Supports only 2003 domain controllers)

Note: When you raise the domain functional level you will get additional features.

Note: By default domain operates at the Windows 2000 mixed mode functional level.

How to raise forest functional level in Windows 2003?

Start ➔ Programs ➔ Administrative tools ➔ Active Directory Domains and Trusts ➔ Right click on the Active Directory Domains and Trusts ➔ Select **Raise Forest functional level** ➔ Select the required forest functional level ➔ click **OK**

Note: To perform this you must be member of **Domain Admin** group (in the forest root domain) or the **Enterprise admin** group.

How to raise domain functional level in Windows 2003?

Start ➔ Programs ➔ Administrative tools ➔ Active Directory Users and computes ➔ Right click on the domain name ➔ Select **Raise domain functional level** ➔ Select the appropriate domain level ➔ click **OK**

Note: If the functional level is windows server 2003 then you will get all the features that are available with 2003. When Windows NT or Windows 2000 domain controllers are included in your domain or forest with domain controller running Windows server 2003, Active Directory features are limited.

Note: Once if you raise the domain or forest functional level you cannot revert back.

Advantages of different functional levels:

When ever you are in **Windows 2000 mixed** mode the advantage is you can use Windows NT, 2000, 2003 domain controllers. The limitations are

- you cannot create universal groups
- You cannot nest groups
- You cannot convert groups (i.e., conversion between security groups and distribution groups)
- some additional dial in features will be disabled
- you cannot rename the domain controller.
- SID history disabled.

About cable modems

Unlike traditional modems, which convert analog and digital signals to exchange data over a telephone line, cable modems use Internet protocol to transmit data over a cable television line.

About digital subscriber lines

Digital subscriber lines, such as ADSL or DSL, are high-speed Internet connections offered by an Internet service provider (ISP). You operate as though you are on a network and are assigned an IP address.

About ISDN lines

Integrated Services Digital Networks (ISDN) are digital telephone services that can transmit digital and voice data at much faster speeds than traditional modems.

What is Automated System Recovery?

Windows server 2003 has some tools to assist the administrator in safeguarding the system against failure. One such tool is the Automated System Recovery (ASR) set that should be created after installing the server, after major changes are made and also schedule at a regular interval.

How to create an ASR set?

Logon as administrator or backup operator → start → Run → ntbackup.exe → Select **Automated System Recovery**

How to Recovering from a system failure with the ASR set?

Insert the original operating system Installation CD into CD drive → Restart your computer → boot from CD → Press F6 when prompted for Automated System Recovery → Insert the Floppy disks of ASR

How to redirect output of a command to a text file from command prompt?

To redirect output of a command to a text file use the following syntax,
Commandname > filename.txt

What is the command that is used to display and modify security permissions of a folder?

The command is **xcaccls.exe**.

What is teaming?

Teaming is the concept of combining two or more LAN cards for more speed. For **n** number of LAN cards there will be only one IP address. By teaming you can increase speed. For example if you are teaming 5 LAN cards of 100 MBPS now your network speed is 500 MBPS.

Note: You can assign one IP address to **n** number of LAN cards and at the same you can assign **n** number of IP addresses to LAN card.