The MCSE™ Windows® 2000 Server Cram Sheet

This Cram Sheet contains the distilled, key facts about the Windows 2000 Server exam. Review this information last thing before entering the test room, paying special attention to those areas where you feel you need the most review. You can transfer any of the facts onto a blank piece of paper before beginning the exam.

INSTALLING WINDOWS 2000 SERVER

1. Winnt.exe is used for upgrading 16-bit operating systems. Remember these switches:
   - **/e**—executes a command
   - **/s**—specifies the source of the installation files
   - **/u**—specifies the unattended answer file
   - **/udf**—specifies the Uniqueness Database File (UDF)
2. Winnt32.exe is used for upgrading 32-bit operating systems. Remember these switches:
   - **/s**—specifies the source of the installation files
   - **/unattend**—specifies the unattended answer file
   - **/udf**—specifies the Uniqueness Database File (UDF)
3. Setup Manager is used to automatically install Windows 2000 Professional and Windows 2000 Server.
4. System Preparation Tool, sysprep, removes the security identifiers (SIDs) so that the disk can be duplicated.
5. DCPROMO is the command used to promote a member server to a domain controller.
6. When upgrading to Windows 2000 Server:
   - Upgrade the PDC first, BDCs after the PDC, and member servers at any time.
   - Upgrade NT 3.51-4.0 Servers straight to Windows 2000 Servers.
   - Upgrade NT 3.1-3.5 Servers to NT 4.0 or 3.51 Servers, and then upgrade to Windows 2000 Server.

HARDWARE DEVICES

7. Device Manager is used to configure hardware, update drivers, and install system devices. Use the Update Driver button to update drivers.
8. IRQ settings:

IRQ	Device	IRQ	Device
0	System Timer	8	Realtime Clock
1	Keyboard	9	Unassigned
2	Secondary IRQ	10	Primary SCSI controller
3	COM 2 and 4	11	Secondary SCSI controller
4	COM 1 and 3	12	PS/2 Mouse
5	LPT2 or sound	13	Unassigned
6	Floppy	14	Primary hard drive controller
7	LPT1	15	Unassigned

9. Driver signing verifies that a digital signature was added to the driver by Microsoft.
   - Windows File Protection—prevents system files from being replaced by files that are not signed
   - System File Checker (sfc.exe)—verifies correct system file versions
   - File Signature Verification (sigverify)—scans and logs file signature information

NETWORKING SERVICES

10. DHCP—dynamically assigns TCP/IP addresses to client computers
    - If a router does not support DHCP traffic, a DHCP/BOOTP Relay Agent must be configured.
    - Automatic Private IP Addressing (APIPA)—Windows 2000 computers automatically assign themselves an IP address (169.254.0.1 to 169.254.255.254) if they cannot obtain one from a DHCP server
11. DNS resolves computer and domain names to IP addresses.
    - Active Directory Integrated Zones—replicate DNS information throughout the domain increasing the fault tolerance of DNS information
    - Full zone transfer—sends all of the zone data to receiving servers
    - Incremental zone transfer—sends only zone data that has changed, reducing zone transfer traffic
12. NWLink is the protocol used to communicate with systems using IPX/SPX. The correct frame type must be configured for communication between systems.
13. CSNW enables clients to use file and print resources of NetWare servers.
14. GSNW (includes CSNW and NWLink) enables servers to act as a gateway, for Microsoft servers and clients, to NetWare servers, acts as a gateway for file and printer resources.

USERS AND GROUPS

15. Domain Local Group Scope can have users from any domain in the forest, but they can only access recourses in the local domain.
16. Global Group Scope can only have users from the local domain, but they can access resources in any domain in the forest.
17. Universal Group Scope can have users, global groups, and other universal groups from any domain in the forest, and they can access resource in any domain in the forest. Only available in native mode.
18. Group Policy Objects (GPOs) implementation order: Windows NT system policies, local group policy, site policy, domain policy, OU policy, child OU policy.

STORAGE

19. Basic and dynamic storage can be formatted in FAT, FAT32, and NTFS 5.0. When creating sets or volumes the storage types must be the same.
    - Volumes, sets, striped sets, and striped volume are not fault tolerant. If one disk fails all the data is lost.
    - Mirrored sets and mirrored volumes are fault tolerant. If one disk fails, all of the data is available on the other half of the mirror. If both disks fail, all the data is lost.
    - Striped set with parity (RAID 5 set) and striped volume with parity (RAID 5 volume) are fault tolerant. If one disk fails, the data is still available. If two or more disks fail, all the data is lost.
20. Basic storage can use either four primary partitions or three primary partitions with extended partitions as space allows. Use the Upgrade To Dynamic option to convert to dynamic storage without data loss.
    - To repair a mirrored set, use the options: Repair Volume and Resynchronize Mirror.
    - To repair a RAID 5 set, use the options: Repair Volume and Regenerate Parity.
    - A partition or striped set cannot be repaired. The data must be recovered from a backup.
21. Dynamic storage enables you to create volumes, spanned volumes, mirrored volumes, striped volumes, and RAID 5. It was developed to expand storage, increase fault tolerance in the storage, and improve your ability to recover damaged storage.
    - To repair a mirrored volume, use the option: Reactivate Mirror.
    - To repair a RAID 5 volume, use the options: Reactivate Disk and Repair Volume.
    - A volume, spanned volume, or striped volume cannot be repaired. The data must be recovered from a backup.
22. The following errors and fixes may occur when adding storage from other computers.
    - Failed: Incomplete Volume—part of a volume has been imported. The rest of the volume must be imported for data on the disks to be accessible.
    - Failed Redundancy—part of a mirrored volume or RAID-5 has been imported. Data is accessible, but there is no fault tolerance in the imported volume.
23. A mounted volume represents a folder in an existing directory. File system must be NTFS. Used to save drive letters and add space to existing volumes.

PERMISSIONS

24. When combining share and security permissions: Calculate the total share permissions and the total security permissions, then take the most restrictive permission for the total access permission to the resource.
25. Share permissions are assigned to a folder that will be a network resource for users. Share permissions do not affect locally accessing resources. Combine and take the highest access level to calculate share permissions.
26. Security permissions, only accessible on an NTFS volume, protects files and folders at the local computer and over the network. Combine and take the highest access level to calculate security permissions.
27. Deny Access means that the user cannot access the resources regardless of other permissions.

28. Copying and moving NTFS permissions or compressed files and folders.

Same NTFS Volume	Different NTFS Volume
Copy	Inherits NTFS permissions. Inherits NTFS permissions.
Move	Retains its NTFS permissions. Inherits NTFS permissions.

29. Disk quotas are used to set space restrictions on users. Quotas can only be implemented on an NTFS volume, are tracked independently for each volume assigned, are calculated by the uncompressed, and are based on file ownership.

PRINTERS AND IIS 5.0

30. Internet Printing Protocol (IPP) is used to access, manage, and print to print devices through a Web page.
31. To manage a network printer, type "http://*servername*/ printers".
32. To find a network printer, type "http://*servername*/ printers/*share_name*.print".

NETWORK RESOURCES

33. Windows Installer is used to manage the installation of software on remote computers. Uses a file with an .msi extension, which replaces the setup.exe.
34. Software Installation And Maintenance is used to deploy and manage the software throughout an organization. Can use GPOs to widely distribute.
35. Remote Installation Services (RIS) is used to remotely install Windows 2000 Professional.
36. Distributed file system (Dfs) is used to create a logical hierarchical file system, made up of shared folders from different locations, but they are seen by the users as one common logical file system.
37. Terminal Services is used to run applications on the server's desktop from a client, without using client resources. The two modes are: Application Server mode and Remote Administration mode.
38. Routing and Remote Access is a program that is a software router and a program used to authenticate and access resources using different types of connections.
    - Remote Access Server—provides dial-in access to the network
    - Virtual Private Network (VPN)—provides a secure connection to the network through an Internet connection
    - Network Router—facilitates communication between different networks

SECURITY

39. Security Configuration And Analysis Tool is used to configure a server against security holes and attacks, and uses different security templates to analyze and secure the computer.
40. Security permissions, only available on NTFS volumes, should be used to secure local resources.
41. Group Policy Objects (GPOs) are implemented to control user's local desktops, computer settings, and user rights.
42. Encrypting File System (EFS) uses public key encryption to secure files and folders on an NTFS volume. Only the user who encrypts a file or folder can access it. A recovery agent is used to decrypted files that have lost their keys or the original owner is unavailable to decrypted.

TROUBLESHOOTING

43. Backup Program is used to back up and recover data.
    - Supports hard drives, floppies, tape drives, CDROM, and removable disks.
    - System State data: the Registry, system startup files, Component Services Class Registration database, Certificate Services database, Active Directory database, and sysvol.
    - ntdsutil.exe is used to perform an authoritative restore of Active Directory database information.
44. Advanced Startup options accessed using the F8 key on bootup: Safe Mode, Safe Mode With Networking, Safe Mode With Command Prompt, Enable Boot Logging, Enable VGA Mode, Last Known Good Configuration, Directory Services Restore Mode, Debugging Mode, and Boot Normal.
45. Recovery Console, used after the Advanced Startup options fail, starts and stops services, accesses the server's drives, copies files, deletes files, logs on to the server, and formats a server's hard drives. To preinstall, run winnt32.exe /cmdcons.
46. The emergency repair disk (ERD), used after Advanced Startup and Recovery Console have failed, contains information about Windows 2000 Server system settings that helps repair damaged boot sector and system files using the Windows 2000 Server CD-ROM.
47. Boot disk, used to boot a computer with a corrupt master boot record (MBR), a corrupt boot sector, a missing NTLDR file, a missing ntdetect.com, or a failed mirror.
    - Contains the NTLDR, BOOT.INI, and NTDETECT.COM files.
    - ARC path in the BOOT.INI can be edited to boot to another location. multi(0)disk(0)rdisk(0)partition(1) or scsi(0)disk(0)rdisk(0)partition(1)
    - multi(0) signifies the first controller, multi(1) signifies the second controller, and so on.
    - scsi(0) signifies the first controller without the SCSI BIOS enabled, scsi(1) signifies the second controller without the SCSI BIOS enabled, and so on.
    - rdisk(0) signifies the first disk on the controller, rdisk(1) signifies the second disk on the controller, and so on.
    - disk(0) signifies the first disk on the controller without the SCSI BIOS enabled, disk(1) signifies the second disk on the controller, and so on.
    - partition(1) signifies the first partition on the disk or rdisk, partition(2) signifies the second partition on the disk or rdisk, and so on.
48. The Performance tool consists of System Monitor and Performance Logs And Alerts. It is used to monitor objects and counters.
49. Task Manager is used to monitor programs, track system performance, and maintain processes. Process priority can be set using Task Manager or the command line: /realtime, /high, /abovenormal, /normal, /below normal, /low.
50. Disk Defragmenter scans the hard drive for data that is fragmented and tries to relocate the data to contiguous space for better read/write performance.
51. Disk Cleanup is used to scan a selected hard drive, reports how much disk space it can free up, and then prompts for input on files to delete.
52. Network Monitor is used to view network statistics and packet information.
53. Event Viewer is used to access log files that are being compiled by the server.
54. Regedit and Regedt32 are used to edit the Windows 2000 registry.

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