

Module 3

Command Prompt and Tools

Objectives

1. 1.3 Use appropriate command line tools

COMMAND PROMPT

What is the Command Prompt?

1. Evolved from the days of DOS when everything was done through the command line interface (CLI)
2. Stand alone application in Windows XP, Vista, 7, & 8
3. Used to:
 - A. Automate processes
 - B. Create batch files
 - C. Perform troubleshooting and diagnostic tasks
4. Accessed by
 - A. Typing cmd into Run
 - B. Typing Command Prompt in search
 - C. Start → All Programs → Accessories → Command Prompt

Command Switch

1. Added to the command by adding a space, a fore-slash (/), and a single letter:

COMMAND /switch

2. Used to modify commands
3. Common command switches:
 - A. /P for page
 - B. /W for wide format
 - C. /S for system
 - D. /? Can be used to display the available switches and their use

Basic DOS Commands

Command	Function
DIR	Displays the contents of a directory
CD	Changes to a specified directory
MD	Creates a new directory
RD	Removes a directory
DEL	Deletes a file
TREE	Lists all of the directory and subdirectory names on a specified disk.
DELTREE	Deletes directory, subdirectory, files
COPY	Copies a file
CLS	Clear screen

Basic DOS Commands

Command	Function
ATTRIB	Displays file attributes +/- a,r,h,s
LABEL	Change the name of the drive or disk
DATE	Sets the System Date
REGEDIT	Registry Text Editor
REN	Rename a text file
PROMPT	Changes the appearance of the DOS prompt. C:\>PROMPT \$P\$G

Control Panel Commands

Tool	Command	Description
Control Panel	control	Opens the control panel
Programs and Features	appwiz.cpl	Add or Remove Programs panel
Network Connections	ncpa.cpl	Enable or disable network connections panel
Internet Options	inetcpl.cpl	Opens Internet options panel
System	sysdm.cpl	System properties panel
Windows Firewall	firewall.cpl	Firewall panel

Command Line Tools

Tool	Command	Description
Convert	convert	Converts a FAT16 or a FAT32 logical drive to NTFS
Registry Editor	regedit	Displays and changes entries in the registry
Cipher	cipher	Displays and changes encryptions applied to files and folders using NTFS file system
Compact	compact	Displays and changes compressions applied to files and folders using NTFS file system

Windows 7 Maintenance Tools

Tool	Command	Description
Disk Cleanup	cleanmgr	Deletes unused files to make more disk space available
Task Manager	taskmgr	Lists and stops currently running processes
Windows Update	wuapp	Updates Windows by examining the system, comparing it to available updates on Microsoft Web site, and recommending updates
Repair Disk	recdisc	Create a system repair disk

Microsoft Management Consoles

Tool	Command	Description
Microsoft Management Console	mmc	Opens a new management console
Event Viewer	eventvwr.msc	Records and displays system problems
Performance Monitor	perfmon.msc	Reports information about performance problems
Computer Management	compmgmt.msc	Console provides access to snap-ins used to manage and troubleshoot a system
Disk Management	diskmgmt.msc	Displays and changes partitions on hard drives and formats drives

Command Line Troubleshooting Tools

Tool	Command	Description
Check Disk	chkdsk	Checks and repairs errors on logical drive
System File Checker	sfc	Verifies the integrity of all protected system files and corrects problems
Driver Signing and Digital Signatures	sigverif	Verifies that drivers, software, and system files have been approved by Microsoft
Defragment	defrag	Command-line tool to defragment logical drive or floppy disk; similar to Disk Defragmenter
Repair Disk	recdisc	Create a system repair disk
IP Configuration	Ipconfig	Display, release, or renew the IP configuration

Command Line Troubleshooting Tools

Tool	Command	Description
Device Manager	devmgmt.msc	Displays and changes device drivers and other hardware settings
Services	services.msc	Graphical version of SC
Runas	runas	Runs a program using different permissions than those assigned to currently logged-on user
Service Control	sc	Communicates commands to Service Controller
System Configuration Utility	msconfig	Controls settings used to troubleshoot a failing system
Administrative Tools	Control admintools	Displays the administrative tools window

System Information

Tool	Command	Description
System Information	msinfo32	Displays information about hardware, applications and Windows; useful when troubleshooting
System Information	systeminfo	Displays system Information in a command-prompt window

Recovery Console Tools

Tool	Command	Description
System Restore	rstrui	
Fix Boot Partition	fixboot	Writes a new partition boot sector to the system partition that you specify
Fix Master Boot Record	fixmbr	Writes a new master boot record to the drive that you specify
Boot Recovery	bootrec	Troubleshoot and repair MBR, a boot sector, Boot Configuration Data store

Need-to-Know Commands

Disk Partition

1. diskpart

2. Manage partitions and volumes of a hard drive

3. Actions:

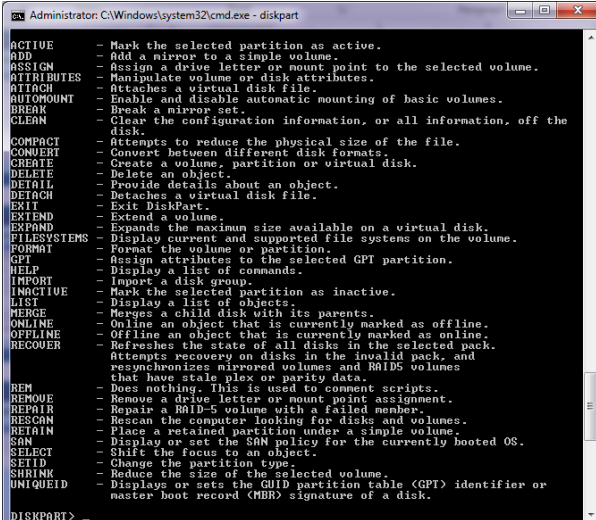
A. Mark partition as active

B. Assign a drive letter

C. Convert to a different format

D. Format a drive

E. Expand or Shrink a volume



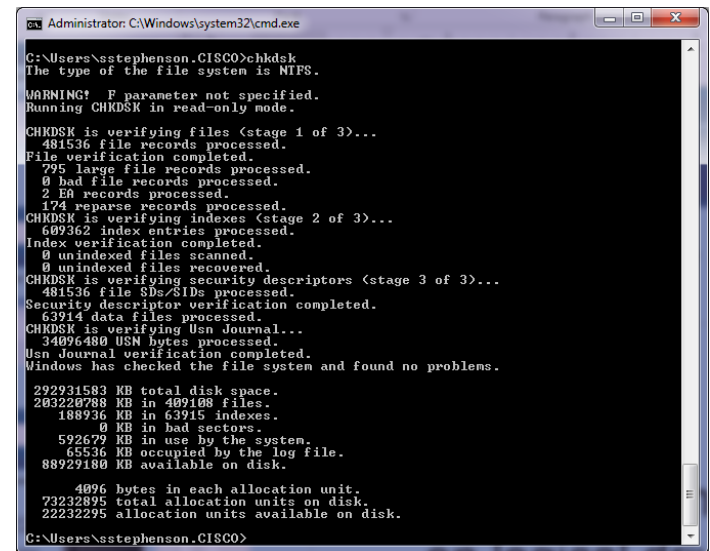
```
Administrator: C:\Windows\system32\cmd.exe - diskpart
ACTIVE           - Mark the selected partition as active.
ADD              - Add a mirror to a simple volume.
ASSIGN           - Assign a drive letter or mount point to the selected volume.
ATTRIBUTES      - Manipulate volume or disk attributes.
ATTACH           - Attaches a virtual disk file.
AUTOMOUNT       - Enable and disable automatic mounting of basic volumes.
BREAK           - Break a mirror set.
CLEAN            - Clear the configuration information, or all information, off the
disk.
COMPACT         - Attempts to reduce the physical size of the file.
CONVERT         - Convert between different disk formats.
CREATE          - Create a volume, partition or virtual disk.
DELETE          - Delete an object.
DETAIL          - Provide details about an object.
DETACH          - Detaches a virtual disk file.
EXIT            - Exit DiskPart.
EXTEND          - Extend a volume.
EXPAND          - Expands the maximum size available on a virtual disk.
FILESYSTEMS     - Display current and supported file systems on the volume.
FORMAT          - Format the volume or partition.
GPT             - Assign attributes to the selected GPT partition.
HELP            - Display a list of commands.
IMPORT          - Import a disk group.
INACTIVE        - Mark the selected partition as inactive.
LIST            - Display a list of objects.
MERGE           - Merges a child disk with its parents.
ONLINE          - Online an object that is currently marked as offline.
OFFLINE         - Offline an object that is currently marked as online.
REFRESH        - Refreshes the state of all disks in the selected pack.
RECOVER         - Attempts recovery on disks in the invalid pack, and
resynchronizes mirrored volumes and RAID5 volumes
that have stale plex or parity data.
REM             - Does nothing. This is used to comment scripts.
REMOVE          - Remove a drive letter or mount point assignment.
REPAIR          - Repair a RAID-5 volume with a failed member.
RESCAN          - Rescan the computer looking for disks and volumes.
RETAIN         - Place a retained partition under a simple volume.
SAN             - Display or set the SAN policy for the currently booted OS.
SELECT         - Shift the focus to an object.
SETID           - Change the partition type.
SHRINK          - Reduce the size of the selected volume.
SHRINK          - Reduce the size of the selected volume.
UNIQUEID        - Displays or sets the GUID partition table (GPT) identifier or
master boot record (MBR) signature of a disk.

DISKPART>
```


Need-to-Know Commands

Check Disk (Disk Integrity Scan)

1. `chkdsk c: /f /r`
2. Check and repair errors on logical drive
3. Switches
 - A. `/f` fix errors on disk
 - B. `/r` locate and recover bad sectors



```
Administrator: C:\Windows\system32\cmd.exe
C:\Users\sstephenson.CISCO>chkdsk
The type of the file system is NTFS.

WARNING! F parameter not specified.
Running CHKDSK in read-only mode.

CHKDSK is verifying files (stage 1 of 3)...
481536 file records processed.
File verification completed.
795 large file records processed.
0 bad file records processed.
2 EA records processed.
174 reparse records processed.
CHKDSK is verifying indexes (stage 2 of 3)...
609362 index entries processed.
Index verification completed.
0 unindexed files scanned.
0 unindexed files recovered.
CHKDSK is verifying security descriptors (stage 3 of 3)...
34896480 USN bytes processed.
Security descriptor verification completed.
63914 data files processed.
CHKDSK is verifying Usn Journal...
34896480 USN bytes processed.
Usn Journal verification completed.
Windows has checked the file system and found no problems.

292931583 KB total disk space.
263228788 KB in 489188 files.
188936 KB in 63915 indexes.
0 KB in bad sectors.
572679 KB in use by the system.
65536 KB occupied by the log file.
88929180 KB available on disk.

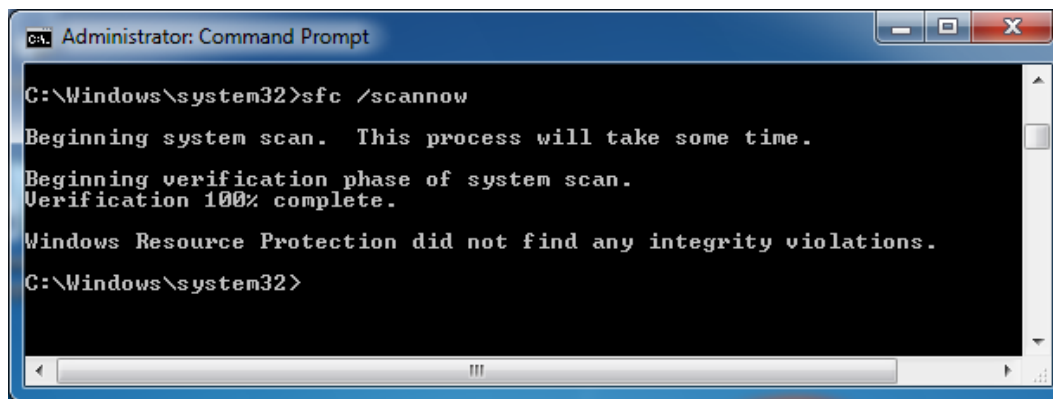
4096 bytes in each allocation unit.
73232395 total allocation units on disk.
22232295 allocation units available on disk.

C:\Users\sstephenson.CISCO>
```

Need-to-Know Commands

System File Checker

1. `sfc /scannow`
2. Scans the integrity of all protected system files and replaces incorrect versions with correct Microsoft versions

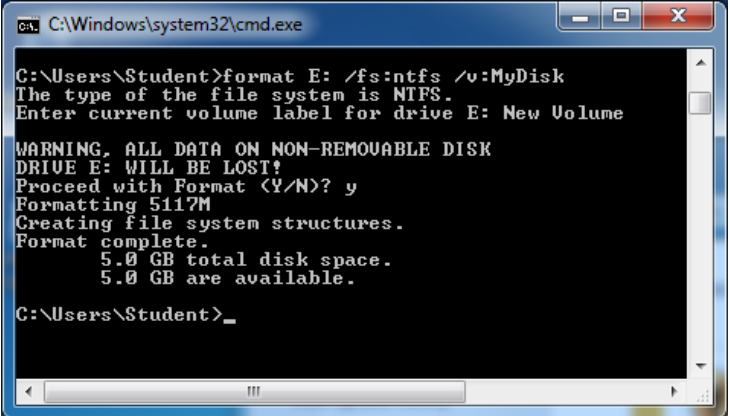


```
Administrator: Command Prompt
C:\Windows\system32>sfc /scannow
Beginning system scan. This process will take some time.
Beginning verification phase of system scan.
Verification 100% complete.
Windows Resource Protection did not find any integrity violations.
C:\Windows\system32>
```

Need-to-Know Commands

Format (XP and higher)

1. `format D: /fs:NTFS /v:MyDisk`
2. Format a disk for use with Windows
3. Erases contents
4. Fdisk was the equivalent in DOS through Windows ME
5. Switches:
 - A. `/fs:filesystem` File system used
 - B. `/v:label` Volume name
 - C. `/q` Quick format



```
C:\Windows\system32\cmd.exe
C:\Users\Student>format E: /fs:ntfs /v:MyDisk
The type of the file system is NTFS.
Enter current volume label for drive E: New Volume

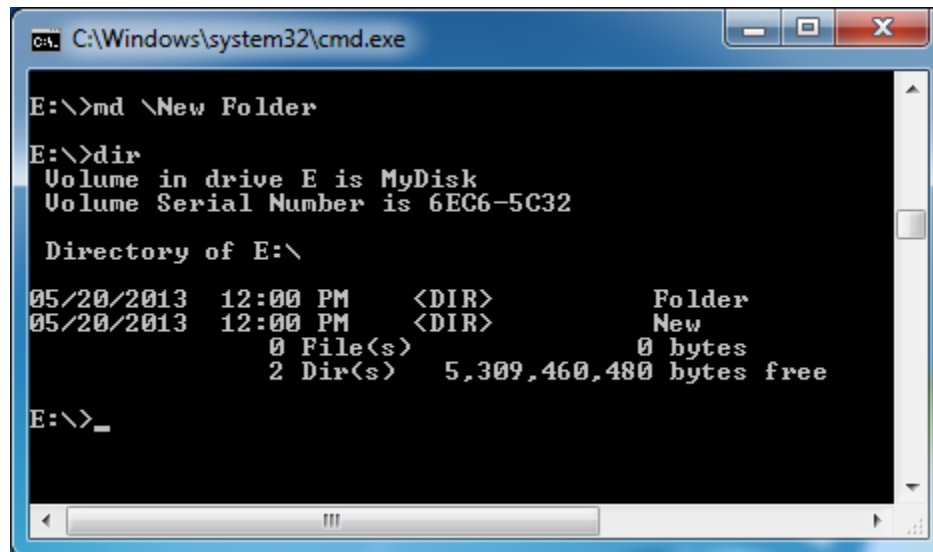
WARNING, ALL DATA ON NON-REMOVABLE DISK
DRIVE E: WILL BE LOST!
Proceed with Format (Y/N)? y
Formatting 5117M
Creating file system structures.
Format complete.
5.0 GB total disk space.
5.0 GB are available.

C:\Users\Student>_
```

Need-to-Know Commands

Make Directory

1. md
2. Create new directories (folders)



```
C:\Windows\system32\cmd.exe

E:\>md \New Folder

E:\>dir
Volume in drive E is MyDisk
Volume Serial Number is 6EC6-5C32

Directory of E:\

05/20/2013  12:00 PM    <DIR>          Folder
05/20/2013  12:00 PM    <DIR>          New
              0 File(s)          0 bytes
              2 Dir(s)   5,309,460,480 bytes free

E:\>_
```

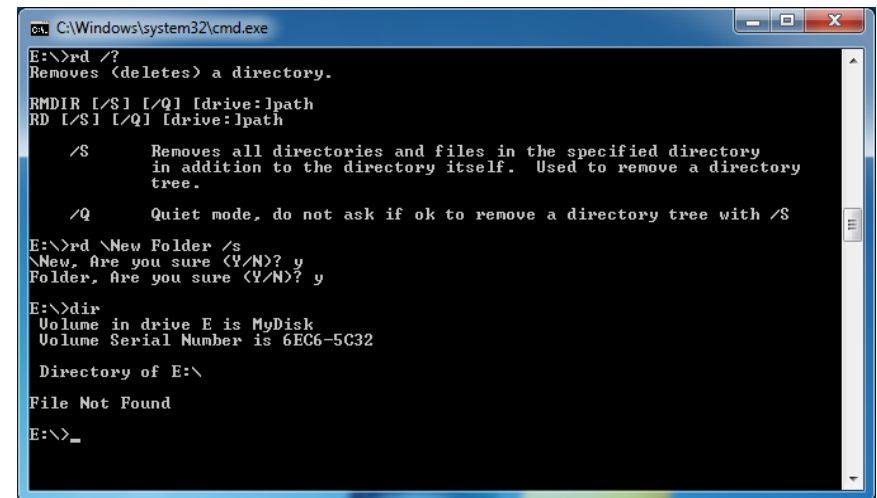
Need-to-Know Commands

Remove Directory

1. rd
2. Remove a folder that is empty
3. Switches

A. /s Remove all directories and files

B. /q Removes without asking permission



```
C:\Windows\system32\cmd.exe
E:\>rd /?
Removes (deletes) a directory.

RMDIR [/S] [/Q] [drive:]path
RD [/S] [/Q] [drive:]path

    /S    Removes all directories and files in the specified directory
          in addition to the directory itself. Used to remove a directory
          tree.

    /Q    Quiet mode, do not ask if ok to remove a directory tree with /S

E:\>rd \New Folder /s
\New, Are you sure (Y/N)? y
Folder, Are you sure (Y/N)? y
E:\>dir
Volume in drive E is MyDisk
Volume Serial Number is 6EC6-5C32

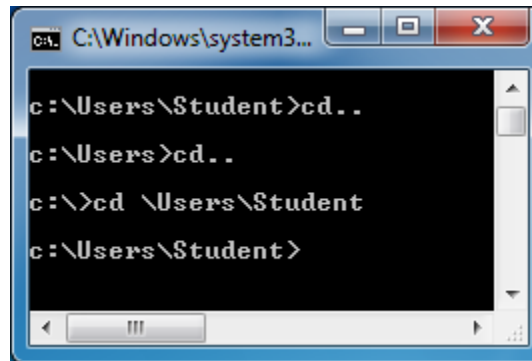
Directory of E:\

File Not Found
E:\>_
```

Need-to-Know Commands

Change Directory

1. `cd`
2. Change locations in a volume
3. `cd ..` Backs up one level to the parent directory
4. `cd /d Path` Change drive in addition to directory



```
C:\Windows\system3... - [ ] X
c:\Users\Student>cd ..
c:\Users>cd ..
c:\>cd \Users\Student
c:\Users\Student>
```

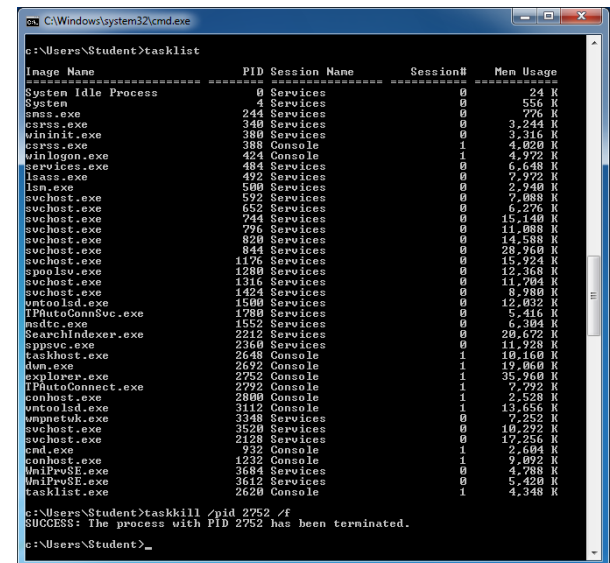

Need-to-Know Commands

Task Kill

1. `Taskkill /pid PID# /f`
2. Terminate tasks running on a local or remote machine
3. Switches

A./t Terminate process and any child processes it started

B./f Forcefully terminate



```
c:\Windows\system32\cmd.exe
c:\Users\Student>tasklist

Image Name                PID Session Name        Session#    Mem Usage
-----
System Idle Process        0 Services              0             24 K
System                    4 Services              0             556 K
smss.exe                   244 Services              0             776 K
csrss.exe                  340 Services              0             3,244 K
wininit.exe                380 Services              0             3,316 K
csrss.exe                  380 Console                1             4,020 K
winlogon.exe               424 Console                1             4,972 K
services.exe               484 Services              0             6,648 K
lsass.exe                  492 Services              0             7,972 K
lsn.exe                    500 Services              0             2,940 K
suchost.exe                592 Services              0             7,088 K
suchost.exe                652 Services              0             6,276 K
suchost.exe                744 Services              0             15,140 K
suchost.exe                796 Services              0             11,088 K
suchost.exe                820 Services              0             14,588 K
suchost.exe                844 Services              0             28,960 K
suchost.exe                1176 Services             0             15,924 K
spoolsv.exe               1280 Services              0             12,368 K
suchost.exe               1316 Services              0             11,704 K
suchost.exe               1424 Services              0             9,980 K
untdiag.exe               1500 Services              0             12,032 K
IPAutoConnSvc.exe        1780 Services              0             5,416 K
ndis.exe                  1552 Services              0             6,-304 K
SearchIndexer.exe        2212 Services              0             20,672 K
spoolvc.exe               2360 Services              0             11,928 K
taskhost.exe              2438 Console                1             10,160 K
dmn.exe                   2692 Console                1             19,060 K
explor.exe                2752 Console                1             35,268 K
IPAutoConnect.exe        2792 Console                1             4,972 K
conhost.exe               2800 Console                1             2,528 K
untdiag.exe               3112 Console                1             15,656 K
wmpnetwk.exe              3348 Console                1             9,252 K
suchost.exe               3520 Services              0             10,292 K
suchost.exe               4128 Services              0             17,256 K
cmd.exe                   492 Console                1             2,604 K
conhost.exe               1232 Console                1             9,092 K
WinPcap.exe              3684 Services              0             4,788 K
WinPcapSE.exe             3612 Services              0             5,420 K
tasklist.exe              2620 Console                1             4,348 K

c:\Users\Student>taskkill /pid 2752 /f
SUCCESS: The process with PID 2752 has been terminated.

c:\Users\Student>_
```


Need-to-Know Commands

Copy or Xcopy or RoboCopy

1. Copy source destination /v

2. Commands used to copy files and folders

```
C:\Windows\system32\cmd.exe
C:\Users\Student>copy /?
Copies one or more files to another location.

COPY [A] [AU] [AN] [A] [+Y] [Z] [L] [A] [+B] source [A] [+B]
[+ sources [A] [+B] [+ ...]] destination [A] [+B]

source Specifies the file or files to be copied.
/A Indicates an ASCII text file.
/B Indicates a binary file.
/D Allow the destination file to be created decrypted
destination Specifies the directory and/or filename for the new file(s).
/V Verifies that new files are written correctly.
/A Uses short filename, if available, when copying a file with a
non-8dot3 name.
/Y Suppresses prompting to confirm you want to overwrite an
existing destination file.
/-Y Causes prompting to confirm you want to overwrite an
existing destination file.
/Z Copies networked files in restartable mode.
/L If the source is a symbolic link, copy the link to the target
instead of the actual file the source link points to.

The switch /V may be preset in the COPVCMD environment variable.
This may be overridden with /-V on the command line. Default is
to prompt on overwrites unless COPY command is being executed from
within a batch script.

To append files, specify a single file for destination, but multiple files
for source (using wildcards or file1+file2+file3 format).

C:\Users\Student>
```

```
C:\Windows\system32\cmd.exe
C:\Users\Student>xcopy /?
XCOPY source [destination] [A] [M] [D[:date]] [P] [S [E]] [U] [W]
[C] [I] [Q] [F] [L] [G] [H] [R] [T] [U]
[O] [A] [J] [K] [L] [M] [Z] [B]
[EXCLUDE:file1[+file2[+file3]...]

source Specifies the file(s) to copy.
destination Specifies the location and/or name of new files.
/A Copies only files with the archive attribute set.
Doesn't change the attribute.
/M Copies only files with the archive attribute set,
turns off the archive attribute.
/D:m-d-y Copies files changed on or after the specified date.
If no date is given, copies only those files whose
source time is newer than the destination time.
/EXCLUDE:file1[+file2[+file3]... Specifies a list of files containing strings. Each string
should be in a separate line in the files. When any of the
strings match any part of the absolute path of the file to be
copied, that file will be excluded from being copied. For
example, specifying a string like work\ or .obj will exclude
all files underneath the directory obj or all files with the
obj extension respectively.
/P Prompts you before creating each destination file.
/C Copies directories and subdirectories except empty ones.
Copies directories and subdirectories, including empty ones.
Same as /S /E. May be used to modify /I.
/AU Prompts you to press a key before copying.
/AV Prompts you to press a key before copying.
/CONT Continues copying even if errors occur.
If destination does not exist and copying more than one file,
assumes that destination must be a directory.
/Q Does not display file names while copying.
/FS Display full source and destination file names while copying.
/LS Displays files that would be copied.
/G Allows the copying of encrypted files to destination that does
not support encryption.
/H Copies hidden and system files also.
/O Overwrites read-only files, but does not copy files. Does not
include empty directories or subdirectories. /I /E includes
empty directories and subdirectories.
/U Copies only files that already exist in destination.
/A Attributes. Normal Xcopy will reset read-only attributes.
/AO Copies using the generated short name.
/RO Copies file ownership and ACL information.
/CO Copies file audit settings (simplex /O).
/Y Suppresses prompting to confirm you want to overwrite an
existing destination file.
/-Y Causes prompting to confirm you want to overwrite an
existing destination file.
/Z Copies networked files in restartable mode.
/B Copies the Symbolic Link itself versus the target of the link.
/J Copies using unbuffered I/O. Recommended for very large files.
```

```
C:\Windows\system32\cmd.exe
Started: Mon May 20 11:39:34 2013
Usage :: ROBOCOPY source destination [file [file...] [options]

source :: Source Directory (drive:\path or \\server\share\path).
destination :: Destination Dir (drive:\path or \\server\share\path).
file :: File(s) to copy (names/wildcards: default is *.*.*)

:: Copy options :
::
/S :: copy Subdirectories, but not empty ones.
/E :: copy subdirectories, including Empty ones.
/LEV:n :: only copy the top n levels of the source directory tree.
/Z :: copy files in restartable mode.
/ZB :: use restartable mode; if access denied use Backup mode.
/EFSSRAW :: copy all encrypted files in EFS RAW mode.

/COPIY:copyflag[s] :: what to COPY for files (default is /COPY:DAT).
(Copyflags: D=Data, A=Attributes, I=Instants).
(S=Security-NFES ACLs, O=Owner info, U=auditing info).

/DCOPY:I :: COPY Directory Timestamps.
/SEC :: copy files with SECURITY (equivalent to /COPY:DATS).
/COPYALL :: COPY ALL file info (equivalent to /COPY:DATSOU).
/NOCOPY :: COPY NO file info (useful with /PURGE).
/SECFIX :: FIX file SECURITY on all files, even skipped files.
/ILMFIX :: FIX file ILMes on all files, even skipped files.

/PURGE :: delete dest files/dirs that no longer exist in source.
/MIR :: MIRROR a directory tree (equivalent to /E plus /PURGE).

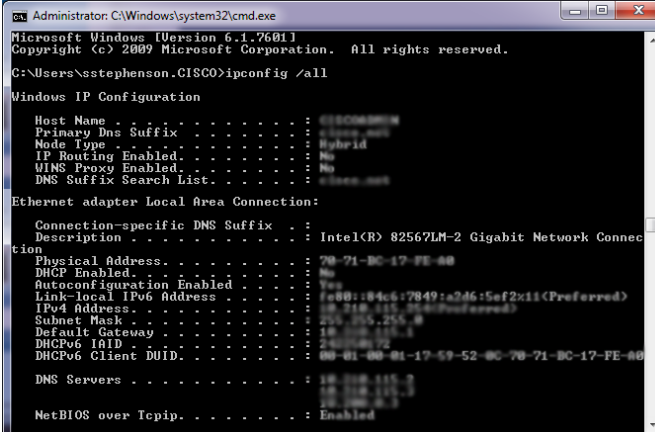
/MOU :: MOVE files (delete from source after copying).
/MOVE :: MOVE files AND dirs (delete from source after copying).

/A+:{IRASHCNET} :: add the given Attributes to copied files.
/A-:{IRASHCNET} :: remove the given Attributes from copied files.
```

Need-to-Know Commands

IP Configuration

1. Ipconfig
2. Display information about the IP address, MAC address, and other network settings
3. Switches
 - A. /all (Display all settings)
 - B. /renew (Renew DHCP)
 - C. /release (Release DHCP)



```
Administrator: C:\Windows\system32\cmd.exe
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\sstephenson\CISCO>ipconfig /all

Windows IP Configuration

Host Name . . . . . : CISCOSTEPH
Primary Dns Suffix . . . . . : cisco.com
Node Type . . . . . : Hybrid
IP Routing Enabled. . . . . : No
WINS Proxy Enabled. . . . . : No
DNS Suffix Search List. . . . . : cisco.com

Ethernet adapter Local Area Connection:

Connection-specific DNS Suffix . . : 
Description . . . . . : Intel(R) 82567LM-2 Gigabit Network Connec
tion
Physical Address. . . . . : 78-71-BC-17-7E-88
DHCP Enabled. . . . . : No
Autoconfiguration Enabled . . . . : Yes
Link-local IPv6 Address . . . . . : fe80:194c:67849:a2d6:5ef2x11(Preferred)
IPv4 Address. . . . . : 192.168.1.100(Preferred)
Subnet Mask . . . . . : 255.255.255.0
Default Gateway . . . . . : 
DHCPv6 IADID . . . . . : 
DHCPv6 Client DUID. . . . . : 00-01-00-01-17-59-52-8C-78-71-BC-17-7E-88

DNS Servers . . . . . : 
NetBIOS over Tcpip. . . . . : Enabled
```

Summary

In this module we discussed:

1. What is and how to access the Command Prompt
2. Command switches
3. Common types of commands
4. Specific troubleshooting commands

Glossary and Terms

- **Switch** – Add functionality to a command.
- **Cmd** – Shortcut for the command prompt.
- **Command Prompt** – Built in to DOS systems and a program in NT systems used to input commands.
- **chkdsk** – Check Disk
- **sfc** – System File Checker
- **diskpart** – Disk Partition
- **md** – Make Directory
- **rd** – Remove Directory
- **cd** – Change Directory
- **ipconfig** – Internet Protocol Configuration