

CompTIA A + Domain 3 Study Guide Operating Systems

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The CompTIA A+ Domain 3 (220-701) and the Domain 2 (220-702) covers operating systems. This study guide covers both the 220-71 and 220-702 A+ certification domain objectives that cover operating systems. The two are directly related as you will see. As you go down the list of objects you need to fill in related information in the form of notes to better prepare for the CompTIA A+ certification.

The operating system domain makes up 20 percent of the 220-701 and 34 percent or 1/3 of the 22-702. As you can see this is a significant part of the overall exam. To find more webpage resource simply start your search using the following terms "Microsoft TechNet" followed by the desired topic. For example, Microsoft TechNet NTFS". The Microsoft TechNet website is a valuable collection of test related resources.

Some Sample TechNet resource web pages related to the objectives are listed below.

Microsoft 32-bit and 64-bit FAQ.

<http://windows.microsoft.com/en-US/windows-vista/32-bit-and-64-bit-Windows-frequently-asked-questions>

Upgrading to Windows 7

<http://windows.microsoft.com/en-US/windows7/products/upgrade>

Microsoft Assessment and Planning Tool Kit

<http://technet.microsoft.com/en-us/solutionaccelerators/dd537566>

Microsoft Collection of Networking Information Resource Center link

<http://technet.microsoft.com/en-us/windows/aa905087>

Perform a Windows 7 boot recovery.

http://answers.microsoft.com/en-us/windows/forum/windows_7-system/file-location-of-windows-7-operating-system-files/08c0ec57-ca26-4a6c-b709-032de93c676e

The CompTIA A+ domain objective study guide below is displayed in black and gray font. The black font areas represent the actual CompTIA Operating Systems Domain, while the gray font areas are additional questions and tips to help clarify the content as related to the test.

The CompTIA A+ objectives are always changing so be sure to check the CompTIA website for the very latest list.

The first section covers the 220-701 Operating Systems Domain.

3.0 Operating Systems and Software - Unless otherwise noted, operating systems referred to within include Microsoft Windows 2000, Windows XP Professional, XP Home, XP MediaCenter, Windows Vista Home, Home Premium, Business and Ultimate, Windows 7 Starter, Home Premium, Professional and Ultimate.

3.1 Compare and contrast the different Windows Operating Systems and their features

Windows 2000, Windows XP 32bit vs. 64bit, Windows Vista 32 bit vs. 64bit, Windows 7.

32-bit vs. 64-bit

Which operating system supports 32-bit and 64-bit addressing?

What is the difference between 32-bit and 64-bit systems?

What is the main advantage of 64-bit systems?

What hardware requirements are needed to support 64-bit?

What is the maximum amount of memory supported by 32-bit and 64-bit systems?

How does the video memory affect the total amount of memory for a 32-bit system?

Side bar, Aero, UAC, minimum system requirements, system limits.

Which operating systems support side bar, AERO?

What are the hardware requirements for AERO support?

Windows 2000 and newer – upgrade paths and requirements.

Windows OS Upgrade Advisor.

Microsoft Assessment and Planning Toolkit.

Describe how the OS advisor is installed and what it does.

Describe the Microsoft Assessment and Planning Toolkit.

Terminology (32bit vs. 64bit – x86 vs. x64)

Application compatibility, installed program locations (32bit vs. 64bit),

Windows compatibility mode

User interface, start bar layout

How is XP mode installed?

What is the main advantage of windows 7 XP mode?

3.2 Given a scenario, demonstrate proper use of user interfaces.

Describe how each of the items listed below is used. Also list which operating systems support Libraries and which operating systems can access Libraries.

Windows Explorer

Libraries in Windows 7

My Computer

Control Panel

Command prompt utilities

telnet

ping

ipconfig

Run line utilities

Msconfig

msinfo32

Dxdiag

Cmd

REGEDIT

My Network Places / Home Group

Location of basic network settings between OS versions

Task bar / systray

Administrative tools.

The common administrative tools are listed below. Know how to access each and what information each will reveal to you as a technician.

Performance monitor, Event Viewer, Services, Computer Management MMC

Practice using the MMC.

Task Manager

What key combination opens task manager?

What tabs (views) is available in task manager?

Start Menu

3.3 Explain the process and steps to install and configure the Windows OS.

This is straight forward. Know how to install all the common Windows OS starting With Windows XP. Be able to describe both a clean install and a system upgrade. A system upgrade is very tricky for Windows 7. See the related article at www.RMRoberts.com website (link here.)

File systems

FAT32 vs. NTFS

Directory structures

Compare and contrast the directory structures as related to the common Microsoft operating systems. What are the names of the unique folders located in each? For example, which operating system(s) contain the "Public" folder?

Create folders

Navigate directory structures

Files

Creation

Extensions

Identify what each file extension is used for.

doc

xlm

html

jpeg

avi

png

tiff

mpeg

wav

wma

exe

dll

txt

rar

zip

scr

com

pif

bat

Attributes

What are file attributes and how do you change them?

Permissions

What are file and folder permissions and how do you change them?

List the permissions associated with FAT32 file system and describe how they limit access.

List the permissions associated with NTFS file systems and describe how they limit access.

Verification of hardware compatibility and minimum requirements.

List the installation **minimum** and **recommended** hardware requirements for each of the Microsoft operating systems. Include notes for exceptions such as a basic operating system, and the use of features such as AERO and 64-bit vs 32-bit systems.

XP

Vista

Windows 7

Installation methods

Boot media such as DVD, CD, floppy or USB.

Describe how to configure BIOS setup so that the computer can boot from different media types to support the beginning of the installation.

Network installation

Describe how to install an operating system over a network.

Install from image.

What is an image and how is an image created? Be sure to include the name of any software utilities/tools associated with the creation of an image.

Recovery CD

What is a recovery CD and which operating systems use one?

Factory recovery partition.

What is a factory recovery partition and where is it generally located?

Operating system installation options

File system type.

What is the default file system for each operating system?

What other file systems beside the default can be used for each operating system?

Network configuration.

Repair install

How to perform an installation repair for each of the operating systems.

Disk preparation order

Which do you do first, format or partition a drive?

Format drive

How do you format a drive using the MMC?

How do you format a drive from the command prompt?

Partition

How do you partition a drive using the MMC?

How do you partition a drive from the command prompt?

What is diskpart?

Start installation

How do you start the installation process for each operating system?

How do you perform an anytime upgrade?

Device Manager

How do you access device manager?

Verify

How do you verify a hardware device is correctly installed by viewing in device manager and what symbols are used to indicate that a device is incorrectly configured or has a problem?

Install and update devices drivers

How do you install or update drivers from device manager?

Driver signing

What is driver signing?

User data migration – User State Migration Tool (USMT)

You should perform a data migration using USMT. Also identify which operating systems support USMT.

Virtual memory

What is virtual memory?

How do you configure virtual memory?

Where is virtual memory it located?

How much is recommended?

Configure power management

Define each of the following terms as related to power management.

Suspend

Wake on LAN

Sleep timers

Hibernate

Standby

Demonstrate safe removal of peripherals

The safe removal of peripherals simply means use the software interfaces rather than just unplugging the device.

3.4 Explain the basics of boot sequences, methods and startup utilities

List the major boot sequence of Windows operating systems, XP, Vista, and Windows7. Include the names and purpose of each file for example ntloader. Start each with the POST.

XP

Vista

Windows 7

Disk boot order / device priority

Where is boot order and device priority configured?

Types of boot devices (disk, network, USB, other)

Boot options

How do you access the Windows boot option menu?

Safe mode

What is safe mode and when should it be used?

Boot to restore point.

How do you "Boot to restore point" and why?

Recovery options

Identify each operating system recovery options. List which operating system uses ASR, ERD, and Recovery Console. You may wish to answer the next three objectives at the same time.

XP

Vista

Windows 7

Automated System Recovery (ASR)

How is ASR performed?

Emergency Repair Disk (ERD)

What is an emergency repair disk and when is it made?

Recovery console

What is the recovery console and how is it accessed?

This section is the 220-702 portion of the CompTIA A+ certification objectives.
2.0 Operating Systems - unless otherwise noted, operating systems referred to within include Microsoft Windows 2000, Windows XP Professional, XP Home, XP MediaCenter, Windows Vista Home, Home Premium, Business and Ultimate, Windows 7 Starter, Home Premium, Professional and Ultimate.

2.1 Select the appropriate commands and options to troubleshoot and resolve problems
Run each of the following commands and be able to explain the purpose of each command switch.

MSCONFIG

DIR

CHKDSK (/f /r)

EDIT

COPY (/a /v /y)

XCOPY

How does XCOPY differ from COPY command?

FORMAT

IPCONFIG (/all /release /renew)

PING (-t -l)

MD / CD / RD

NET

TRACERT

NSLOOKUP

[command name] /?

SFC

2.2 Differentiate between Windows Operating System directory structures (Windows 2000, XP, Vista, and Windows 7)

User file locations

Compare Windows operating systems file and directory structure. Which OS has the following folders: Public, Shared Folders, My Documents, Temp, Admin, Default User, User profile and program files

System file locations

Fonts

Where is the font folder located in the directory structure? Write complete path starting from C:/

Temporary

Where are temporary files located in the directory structure? Write complete path starting from C:/.

Program files

Where are program files located in the directory structure? Complete path starting from C:/

Offline files and folders

Where are offline files and folders located in the directory structure?

How do you create an offline file?

2.3 Given a scenario, select and use system utilities / tools and evaluate the results

Disk management tools

Explain how the following three disk management tools are used?

DEFRAG

NTBACKUP

Check Disk

Disk Manager

Active, primary, extended and logical partitions

Define the terms active, primary, extended and logical partition.

Mount points

What are mount points and which operating system and file system (FAT32, NTFS) are associated with a mount point.

Mounting a drive

How do you mount a drive?

FAT32, NTFS, FAT64 (exFAT)

Compare limitations of FAT32, NTFS, FAT64, and exFAT.

http://www.ntfs.com/ntfs_vs_fat.htm

<http://en.wikipedia.org/wiki/ExFAT>

<http://support.microsoft.com/?kbid=955704>

<http://social.technet.microsoft.com/wiki/contents/articles/5375.windows-file-systems-en-us.aspx>

What is the advantage of exFAT over NTFS?

What devices commonly use exFAT?

External hard drives

Flash drives

Drive status

Foreign drive

Healthy

Formatting

Active unallocated

Failed

Dynamic

Offline

Online

System monitor

Administrative tools

Event Viewer

Computer Management

Services

Performance Monitor

Device Manager

Enable

Disable

Warnings

Indicators

Task Manager

Process list

Resource usage

Process priority

Termination

System Information

System Restore

How do you perform a system restore?

Remote Desktop Protocol (Remote Desktop / Remote Assistance)

How to perform remote desktop and remote assistance?

Task Scheduler

How do you schedule task to run automatically?

Regional settings and language settings

How do you change the regional and language settings?

2.4 Evaluate and resolve common issues

Operational Problems

Windows specific printing problems

The next two items are printer problems.

Print spool stalled

Incorrect / incompatible driver / form printing

The next six items can be researched at the Microsoft TechNet website. You should identify the most common reason(s) for the error and how to correct it.

Auto-restart errors

Bluescreen error

System lock-up

Devices drivers' failure (input / output devices)

Application install, start or load failure

Service fails to start

Error Messages and Conditions

What should you do after receiving an error message?

Boot

The next three items as related to the boot process.

Invalid boot disk

Inaccessible boot drive

Missing NTLDR

Startup

The next two items as related to the startup process.

Device / service failed to start

Device / program in registry not found

Event viewer (errors in the event log)

System Performance and Optimization

The last six items are related to system performance and optimization.

Aero settings

How do you disable AERO features?

Why would you disable AERO features?

Indexing settings

Where to you configure index settings and what purpose does the index feature serve?

UAC

Side bar settings

Startup file maintenance

Background processes

After completing the study guide you can go on to take the practice test. Use the following link to locate the practice test for the CompTIA A+ Domain 3 220-701 and the Domain 2 220-702 cover operating systems.

This study guide is brought to you by www.RMRoberts.com

Please feel free to use it to help your students prepare for the certification exam or as preparation for your semester final examination.