The Mac OS X Deployment v10.5 Exam
Skills Assessment Guide

To Register

This exam is offered at Apple Authorized Training Centers and Prometric Testing Centers worldwide. For information on exam registration, please visit training.apple.com/certification.

To learn more about Apple training offerings that can help you prepare for certification, please visit training.apple.com.

The Mac OS X Deployment v10.5 Exam (Prometric exam no. 9L0-619) is a computer-based test offered at Apple Authorized Training Centers and Prometric Testing Centers.

The exam is one of four required exams in the Apple Certified System Administrator (ACSA) 10.5 certification track. You must pass this exam, the Mac OS X Server Essentials v10.5 Exam, the Mac OS X Directory Services v10.5 Exam, and the Mac OS X Advanced System Administrator v10.5 Exam to become ACSA 10.5 certified.

You may take up to two hours to complete the exam, which consists of 64 multiple-choice questions that are based on the objectives listed in this guide.

The score required to pass is 70 percent. Eight demographic questions are presented but are not scored.

To prepare for the exam, read through the objectives in this guide to determine which areas you need to review. The primary reference source for this exam is the book: *Apple Training Series: Mac OS X Deployment v10.5* (Peachpit 2008).

You will not have access to any resources or references during the exam. Please note that the exam is based on Mac OS X and Mac OS X Server version 10.5.3, which was the most current version available at the time of publication. All references to Mac OS X, Mac OS X v10.5, Mac OS X Server, and Mac OS X Server v10.5 refer to version 10.5.3.

The number of test questions drawn from each knowledge area is indicated below. Please note that although this guide divides the objectives into eight knowledge areas, questions are presented randomly during the exam. Also note that UNIX commands and processes are shown in `monospace font` in the exam.

Deployment Planning

This topic has 5 items, drawn from the following objectives:

- Given access to the Internet, identify manufacturers of hardware that can physically secure Macintosh computers and peripheral devices.
- Without references, describe the issues regarding disposal of electronic equipment, including compliance with local, state, and federal regulations, cost, and storage and transportation of potentially hazardous materials.

- Without references, describe how a directory service system can be used in a software deployment to enforce usage policies, including access to applications or hardware.
- Given a description of a target audience, create policies regarding acceptable use of software and hardware.
- Given a document of software and hardware-use policies, develop a plan to communicate the policies to users.
- Given a list of equipment, including computers and peripherals, calculate the equipment's total power requirements.
- Given a hardware deployment plan, modify the plan to include details about how to physically secure the hardware.
- Given a plan for deployment of new hardware and a list of hardware being replaced, modify the deployment plan to include instructions about how to properly dispose of the obsolete hardware.
- Without references, define the following terms: amp, watt.
- Without references, describe physical security features built into Macintosh computers.
- Given a hardware deployment plan, identify context-appropriate considerations for physically securing the hardware.
- Given a description of a target audience, identify context-appropriate considerations to take into account when developing policies for acceptable use of software and hardware.
- Without references, identify appropriate temperature ranges for the operation of Macintosh computers.

Deploying Individual Items and Containers

This topic has 8 items, drawn from the following objectives:

- Without references, define the following terms: resource fork, bundle, package.
- Without references, describe the key issues in distributing files with resource forks.
- Without references, list at least two methods for distributing files with resource forks through mechanisms that don't support resource forks.
- Without references, describe the issues related to distributing bundled files.
- Without references, list methods for distributing bundled files to ensure that the bundle's contents remain intact.
- Without references, describe the advantages and disadvantages of using each of these methods for distributing a file or group of files: drag and drop, archiving, disk images.
- Given one or more files and the Finder, create a .zip archive of the files.
- Given one or more files and the command-line interface, create a .zip archive of the files.
- Given a .zip archive and the command-line interface, list the contents of the archive.
- Given an archived or zipped file and the Finder, retrieve the files from the archive
- Given an archive zipped file and the command-line interface, uncompress the files

- Given a collection of files, Apple Remote Desktop, and a Mac OS X computer configured to be managed by ARD, copy the files to the remote computer using drag & drop
- Given a collection of files, Apple Remote Desktop, and a Mac OS X computer configured to be managed by ARD, copy the files to specific locations on the remote computer using ARD's Copy command.
- Without references, state the command-line utility you should use to archive files with Mac OS-specific attributes and/or resource forks.
- Without references, list the image formats available when using Disk Utility to create disk images on a Mac OS X v10.5 computer.
- Without references, describe the key differences between each of the image formats that can be used when creating a disk image on a Mac OS X v10.5 computer.
- Without references, identify the command-line utility for manipulating and creating disk images.
- Without references, list the advantages of using disk images over .zip files.
- Without references, list the advantages of using .zip files over disk images.
- Given a folder of files and Disk Utility, create a disk image containing the files.
- Given a disk image and Disk Utility, resize the disk image so that additional files can be added to the contents.
- Given a disk image and Disk Utility, convert a disk image of one type, such as Read-only, to another, such as compressed.
- Given a disk image, modify the disk image to include a background image in the Finder window that provides the user with information about the disk image contents.
- Given a disk image, modify the disk image to include a file-system link to a location on the user's system, such as /Application/, to assist in the copying of files from the disk image to the correct location on the user's computer.
- Given a disk image, convert it to an Internet-enabled disk image.
- Given an extremely large disk image, segment the image so that it can be distributed as multiple smaller files.
- Without references, explain how an Internet-enabled disk image differs from other disk image types.
- Without references, explain how a bundled sparse disk image differs from a standard sparse disk image.

Deploying with Installation Packages

This topic has 13 items, drawn from the following objectives:

- Without references, define the following terms: installation package, metapackage, receipts, payload.
- Without references, describe the differences between the flat installation package format in Mac OS X v10.5, and the bundled format used in earlier versions of the operating system.
- Without references, state the versions of Mac OS X that support the new flat installation package format.

- Given a list of files in an unflattened installation package, describe the purposes of each of those files in an installation package.
- Without references, list three methods for distributing software using installation packages.
- Without references, list the types of scripts that can be added to a package in PackageMaker.
- Without references, describe when each type of installation package script runs.
- Without references, list alternative third-party solutions for creating and modifying installer packages.
- Without references, describe how the Repair Permissions command in Disk Utility determines which permissions to check and what to set them to.
- Without references, describe the benefits of inspecting installation packages before installation or distribution.
- Without references, describe how Mac OS X tracks the installation of packages.
- Given a folder of files and PackageMaker, create an installation package that will install the files in the correct locations on a system.
- Given two or more sets of files and PackageMaker, create a metapackage that contains an installation package for each set of files.
- Given a PackageMaker project and PackageMaker, add a license that will be displayed when the user opens the final installation package.
- Given a PackageMaker project and PackageMaker, add a "Read Me" document that will be displayed when the user opens the final installation package.
- Given PackageMaker and a PackageMaker project, add an image that will be displayed as the background for the Installer window when the user opens the installation package.
- Given PackageMaker and a PackageMaker project, add scripts to an installation package so that they run during the execution of the package.
- Given one or more scripts and PackageMaker, create an installation package that runs the scripts but does not install any files.
- Given PackageMaker, create a snapshot installation package of files that were installed or modified during a specific timeframe.
- Given an installation package, modify the package to include additional files.
- Given the command-line interface and a flat installation package, expand the package to a directory.
- Given an installation package, extract specific files from the package without installing all the files in the package.
- Given a receipt from a previously installed package, list the files that were installed by the package.
- Given an installation package, list the files that will be installed by the package.
- Given Disk Utility and a Mac OS X v10.5 computer that is not functioning properly after you have installed the payload of an incorrectly-built installation package, repair permissions issues caused by running the installation package.
- Given an installation package and a Mac OS X v10.5 computer, verify that the package installs its files and runs its scripts.
- Given SSH, an installation package, and a remote Mac OS X v10.5 computer, install the package's payload on the remote computer.

- Given a Mac OS X v10.5 computer, list the installation packages whose payloads have been installed on the Mac OS X system.
- Given the command-line interface and a Mac OS X v10.5 computer that is not functioning properly after you have installed the payload of an incorrectly-built installation package, repair permissions issues caused by running the installation package.
- Given a Mac OS X v10.5 computer and the command-line interface, identify the installation package receipts that are used when Disk Utility repairs permissions.
- Given a Mac OS X v10.5 computer and the `pkgutil` command, remove receipt data associated with an installed package.
- Given one or more installation packages, Apple Remote Desktop and one or more remote Mac OS X v10.5 computers, install the payloads of the package(s) on the remote computer(s).
- Given a PackageMaker project, identify the command-line utility that will display the files that an installation package will install.
- Without references, explain how Apple Remote Desktop can be used to open installation packages on one or more remote computers.
- Given a flat installation package and Flat Package Editor, display the contents of the package.
- Given a PackageMaker project file and a list of minimum system requirements for the target computers, configure the project so that the installation package will only install its contents on systems that meet the stated minimum system requirements.
- Without references, explain how to display a list of files that were installed by an installation package on a Mac OS X v10.5 computer.
- Without references, explain which files are effected when the Repair Permissions function in Disk Utility is used on a Mac OS X v10.5 computer.
- Without references, explain Apple's recommended format for an installation package's identifier.

Deploying Entire Systems

This topic has 9 items, drawn from the following objectives:

- Without references, state which files should be removed from a pre-configured system before imaging the system.
- Given a deployment plan and a description of a target audience, specify application and system configuration requirements for a custom image.
- Given a Mac OS X v10.5 computer connected to the Internet, list the currently available software updates provided by Apple.
- Given an image to be applied to one or more hardware systems with software installed, identify applicable software updates that should be applied to the image.
- Given a Mac OS X v10.5 computer, configure the main administrator account so that it is not visible to standard user accounts.
- Given a Macintosh computer with a new copy of Mac OS X v10.5 installed, configure the system to either not play the startup video or to play an alternate video.
- Given a Mac OS X v10.5 computer, configure the desktop to display a locked image embedded with an acceptable use policy.

- Given a Mac OS X v10.5 computer, configure the login window to display an organization-specific message, such as an acceptable use notice.
- Given a Mac OS X v10.5 computer, delete computer- or user-specific files that should be removed before creating a system image.
- Without references, describe how to determine the minimum version of Mac OS X should be used to create an image for a Macintosh computer.
- Without references, describe the two methods for creating a system image for deployment: creating an image of a configured system, and applying installation packages to a base OS image.
- Without references, compare the benefits of each of the two methods for creating a deployment system image.
- Given a Macintosh computer, boot the computer to boot into target disk mode.
- Given Disk Utility and a configured Mac OS X computer, create a disk image of the computer's hard disk.
- Given a disk image of a Mac OS X computer and Disk Utility, prepare the disk image for deployment.
- Given Terminal and a configured Mac OS X computer, create a disk image of the computer's hard disk.
- Given a disk image of a Mac OS X computer and Terminal, prepare the disk image for deployment.
- Given a Mac OS X 10.5 computer with a Boot Camp partition, create an image of a system that contains both the Mac OS X and the Windows/Boot Camp partitions.
- Given a disk image of a Mac OS X system, Disk Utility, and a target computer, restore the disk image to the target computer.
- Given a disk image of a Mac OS X system, Terminal, and a target computer, restore the disk image to the target computer.
- Given a network configuration, calculate the data rate and multicast IP address range values to be used by ASR when restoring computers across the network.
- Given a disk image, Terminal, and one or more Macintosh computers on the network, restore the disk image to the remote computer(s).
- Given a Macintosh computer, a second computer or an external hard drive, a Mac OS X Install DVD, and Disk Utility, create a base OS image.
- Given a base OS image and one or more installation packages, modify the base OS image to include files and configurations from the installation packages.
- Without references, state the format of the `asr` command when used to multicast images across the network.
- Without references, explain how ASR can be used to restore multiple computers simultaneously across the network.
- Given access to the Internet, list third-party alternatives for system image creation and deployment and the benefits of each.
- Without references, describe how Apple's Custom Software Solutions service can be used to deploy software on new Apple hardware.

Using NetBoot for Deployment

This topic has 16 items, drawn from the following objectives:

- Without references, describe how a NetBoot image ID is used by the NetBoot service to provide load balancing.
- Without references, state the minimum Mac OS version that can be imaged using System Image Utility.
- Without references, state the three image sources that System Image Utility can use to create images.
- Without references, describe the main difference between a NetBoot and Network Install.
- Given a list of files contained within a NetBoot image, describe the purpose of each file.
- Without references, describe how System Image Utility uses Automator actions to create images.
- Without references, define the following terms: Automator, Automator actions, Automator workflows, shadow files.
- Without references, describe the relationship between the inputs and outputs of Automator actions and how actions are combined to create a workflow.
- Without references, describe how Automator actions can be used to enhance the creation of a NetBoot image.
- Without references, describe the function of each of the primary Automator actions in System Image Utility.
- Without references, state how a Macintosh computer boots using a NetBoot server.
- Without references, state the minimum RAM requirement for Macintosh computers that boot using NetBoot service.
- Without references, state the network requirements for using NetBoot service to boot Macintosh computers.
- Without references, state the locations on a server where NetBoot images should be stored so that they are recognized by NetBoot service.
- Without references, describe how to configure a NetBoot server and a network so that the NetBoot service can be accessed across subnets.
- Given System Image Utility and a Mac OS X Install DVD, create a NetBoot or Network Install image.
- Given System Image Utility and an imaged Macintosh computer, create a NetBoot or Network Install image.
- Given System Image Utility and a disk image containing a system image, create a NetBoot or Network Install image.
- Given System Image Utility, an image source, and one or more installation packages, create a NetBoot or Network Install image that includes the packages.
- Given System Image Utility and an image source, create a System Image Utility project that includes an Automator action to create predefined user accounts.
- Given System Image Utility and an image source, create a System Image Utility project that includes an Automator action to define system configuration settings.
- Given System Image Utility and a Mac OS X Install DVD, create a System Image Utility project that includes an Automator action to select which installation packages provided by the Install DVD will be applied to a newly created image.

- Given System Image Utility and an image source, create a System Image Utility project that includes an Automator action to filter client computers based upon their MAC addresses.
- Given System Image Utility and an image source, create a System Image Utility project that includes an Automator action to filter client computers based upon their model type.
- Given System Image Utility and an image source, create a System Image Utility project that includes an Automator action to partition a disk before the disk image is installed on a target computer.
- Given a Mac OS X Server v10.5 computer and Server Admin, specify which network ports are used by NetBoot service.
- Given a Mac OS X Server v10.5 computer and Server Admin, specify which volumes are used by NetBoot service for the storage of image and client data.
- Given a Mac OS X Server v10.5 computer configured as a NetBoot server, a NetBoot image stored on the server, and Server Admin, configure the NetBoot service to allow the image to be used by client computers.
- Given a Mac OS X Server v10.5 computer configured as a NetBoot server, a NetBoot image stored on the server, and Server Admin, specify the file sharing protocol used to share the NetBoot image.
- Given a Mac OS X Server v10.5 computer configured as a NetBoot server, a NetBoot image stored on the server, Server Admin, and a list of client computers, configure the NetBoot service to restrict access to the image to specified computers.
- Given a Mac OS X v10.5 computer, and a Mac OS X Server v10.5 server hosting the NetBoot service, configure the client computer to temporarily boot using the default image provided by the NetBoot server.
- Given System Preferences on a Mac OS X v10.5 computer, and a Mac OS X Server v10.5 server hosting one or more images, configure the client computer to boot using a specific image provided by the NetBoot server.
- Given a NetBoot server and Server Admin, display the log files for the NetBoot service.
- Given a Mac OS X Server v10.5 computer configured as a NetBoot server and Server Admin, list the addresses of computers currently booted using the NetBoot service.
- Given a client computer that is unable to boot properly from a NetBoot server, troubleshoot the client and server.
- Without references, identify the tool used to create NetBoot images on a Mac OS X Server v10.5 computer.

Post-Imaging Deployment Considerations

This topic has 5 items, drawn from the following objectives:

- Without references, list the basic service settings that are established during initial server setup.
- Without references, describe several methods of automating the configuration of a fresh installation of Mac OS X server software.
- Without references, describe the file name conventions that Server Assistant uses to identify auto-setup files.
- Without references, describe the file name conventions that Server Assistant uses to identify the file containing an auto-setup file's pass-phrase.

- Without references, identify valid storage location(s) for auto-setup files.
- Without references, list the requirements for using auto-setup settings stored in a directory.
- Given access to the Internet, list third-party solutions for configuring multiple remote computers after they have been imaged.
- Given a Mac OS X v10.5 computer, a Macintosh computer that meets the system requirements for Mac OS X Server v10.5, Server Assistant, and a directory domain, create in the directory domain a configuration record that will be applied to the Macintosh computer after Mac OS X Server has been installed.
- Given Server Assistant, an external storage volume such as a hard drive or a keychain drive, create a configuration file on the storage volume so that the file will be applied to a computer after Mac OS X Server has been installed.
- Given Apple Remote Desktop and a remote Macintosh computer, configure the system settings on the remote computer.
- Given a collection of application serial numbers and a remote computer, configure the applications on the remote computer with the given serial numbers.
- Given one or more remote computers, apply system settings such as static network values to the computers after a system has been installed.
- Given one or more remote computers, create scripts to apply system configuration settings and set machine variables after the remote computers have been imaged.
- Without references, list in order of priority the valid naming conventions for a Mac OS X Server v10.5 configuration file so that a computer that has just had Mac OS X Server installed will recognize the file and use it to automatically configure the server.

System Maintenance

This topic has 8 items, drawn from the following objectives:

- Given access to the Internet, list available license and software tracking systems.
- Without references, define the following terms: Apple Remote Desktop, task server.
- Given Apple Remote Desktop and a number of Macintosh computers, configure ARD to track hardware and software.
- Without references, state the port number that should be blocked on a firewall to prevent access to Apple's public Software Update servers.
- Without references, state the location where updates downloaded from Apple's public Software Update servers are stored on a Mac OS X Server v10.5 computer configured to act as a Software Update server.
- Given a Mac OS X Server v10.5 computer, list all the currently available software updates provided by Apple.
- Given a list of software updates provided by Apple, identify software updates that are applicable to a given set of hardware and software.
- Given a Mac OS X Server v10.5 computer configured to act as a Software Update server, configure the Software Update service to automatically copy to the server all software updates provided by Apple.
- Given a Mac OS X Server v10.5 computer configured to act as a Software Update server and a list of software updates provided by Apple, configure the Software Update service to download from Apple only the listed updates.

- Given a Mac OS X Server v10.5 computer configured to act as a Software Update server, configure the Software Update service to automatically enable all updates copied down from Apple.
- Given a Mac OS X Server v10.5 computer configured to act as a Software Update server and a list of software updates stored on the server, configure the Software Update service to share only the specified updates to other computers.
- Set up a test Software Update server to test distribution of updates provided by Apple before enabling the updates on an organization's primary Software Update server.
- Given a Mac OS X Server v10.5 computer configured to act as a Software Update server, configure the server to limit the network bandwidth used by the Software Update service.
- Given a Mac OS X v10.5 computer, and a Mac OS X Server computer configured to act as a Software Update server, configure the preferences on the client computer to use the specified Software Update service to access available updates.
- Given a Mac OS X Server v10.5 computer that is managing the preferences of one or more Mac OS X computers and a Mac OS X Server computer configured to act as a Software Update server, configure the client computers to use the Software Update service to access available updates.
- Given a Mac OS X Server v10.5 computer, configure the Software Update service to identify and download software updates provided by the Software Update service running on another Mac OS X Server v10.5 computer.
- Given a Mac OS X Server v10.5 computer whose Software Update service is not working correctly, troubleshoot the server so that the client computers are able to access and download updates.
- Without references, identify the Mac OS X preference where you enter the URL of the Software Update server that will be accessed for software updates.
- Without references, identify the process on a Mac OS X Server v10.5 computer that is used to synchronize updates between the server and Apple's public Software Update servers.
- Without references, identify which process is used to provide the Software Update service on a Mac OS X Server v10.5 computer.
- Without references, state which file should be modified to reconfigure the Software Update service on one Mac OS X Server computer to retrieve updates from a second Mac OS X Server computer.
- Given a description of an organization's computers, network infrastructure, and organizational needs, create a document that describes the policies and processes of a context-appropriate change management plan for OS and Security updates and upgrades.
- Given a list of computers and software to deploy, identify during the planning state the appropriate methods for deploying software.
- Given a deployment plan, modify the plan to incorporate steps to roll back an update or software release if issues are encountered.
- Given a target audience, create a policy permitting image modification.

Complete Deployment Solutions

This topic has 0 items, drawn from the following objectives:

- Given a list of installed hardware and software, and a list of software to be deployed, create a testing matrix that covers the full range of the installed hardware and software.
- Given one or more servers connected to a network, select a testing method for optimizing the deployment server stream.
- Without references, define the following term: click matrix.
- Given access to the Internet, list third-party solutions that can assist in testing images and packages before deployment.

For More Information

Please visit training.apple.com for more information about all Apple training courses and certification programs.