System Administration of Mac OS X Clients v10.3 Exam

Skills Assessment Guide

The System Administration of Mac OS X Clients (v10.3) Exam (Prometric exam no. 9L0-606) is a computer-based test offered at Authorized Prometric Testing Centers. The exam is one of two required exams in the Apple Certified System Administrator (ACSA) 10.3 track. You must pass this exam and the System Administration Using Mac OS X Server (v10.3) Exam to become an ACSA 10.3.

The exam lasts two hours and consists of 81 multiple-choice questions that are based on the knowledge-area objectives listed in this guide.

The score required to pass is 65 percent (53 items out of 81). 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. You will not have access to any resources or references during the exam. Please note that the exam is based on Mac OS X version 10.3.

The number of test questions drawn from each knowledge area is indicated for each topic below. Please note that although this guide divides the objectives into 19 knowledge areas, questions are presented randomly during the exam. Also note that UNIX commands and processes are shown in `monotype` in the exam and below.

Unmanaged Networking

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

- Describe:
  - The purpose and advantages of address assignment, naming, and browsing (service discovery) on a network.
  - How AppleTalk functions as a service discovery protocol.
  - How Rendezvous functions as a service discovery protocol.
  - The advantages and disadvantages of AppleTalk and Rendezvous in a mixed-platform environment.
  - How to use Rendezvous to locate services.

IP Networks and Services

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

- Identify how to:
  - Configure Mac OS X to use IPv6.
  - Configure Mac OS X to use IP over FireWire.

- Configure DHCP and DNS in Mac OS X.
- Use `ipconfig` to find rogue DHCP servers.

- Describe how:
  - `xinetd` works in Mac OS X.
  - Mac OS X implements single-link and multilink multihoming.

Understanding Mac OS X Network Architecture

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

- Identify:
  - The content of the files: hostconfig, NetworkInterfaces.plist, and preferences.plist.
  - The architecture of `configd`, its associated plug-ins, and their functions.
  - The computer's network interfaces and their attributes, using `ifconfig`.
  - The importance of `lookupd`, and how it impacts networking.

Monitoring and Troubleshooting

This topic has 7 items, drawn randomly from the following objectives:

- Identify:
  - Aspects of system function that can be monitored on a regular basis.
  - How to use various Mac OS X applications and command-line applications to monitor and troubleshoot the system.
  - How to use `cron` to automate log monitoring.
  - How startup scripts can be used to monitor systems.
  - How to build a startup script.
  - How to customize system behavior by leveraging login panel hooks.

Maintaining Local Volumes and Files

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

- Describe:
  - The advantages and disadvantages of HFS Plus and UFS formatted volumes.
  - How to use `df` and `du` to determine and monitor disk space usage.
  - Why standard UNIX command-line interface utilities should not be used when copying forked files.
  - How to copy forked files between UFS and HFS Plus volumes using `CpMac` and `ditto -rsrcFork`.
  - How a resource fork is stored in each volume type.
  - How Mac OS X handles aliases and symbolic links.
  - How to monitor and troubleshoot file system issues from the command-line interface, using tools such as `df`, `du`, `diskutil`, and `disktool`.
  - Various factors that influence disk space needs.

File Permissions and Flags

This topic has 6 items, drawn randomly from the following objectives:

- Identify how file modes other than read and write can be used to implement file usage policies.
- Identify how to:
  - Set and remove execute permissions on a script or program, and how to show that the program cannot be run without the execute bit set.
  - Set and remove execute (search) permission on a folder, and how to show the effect on a user's ability to list the contents of that folder.
  - Use `chmod` to set the sticky bit on a folder, and how to show that a user cannot delete or rename files owned by others in that folder.
  - Use `chflags` to set flags.
  - Use `umask` to set permissions policy for new files.

Network File Services

This topic has 4 items, drawn randomly from the following objectives:

- Describe:
  - The file-sharing services available in Mac OS X.
  - The contents and organization of the smb.conf file.
  - How browsing for SMB services on Mac OS X differs from browsing on Windows.
- Identify:
  - Configuration choices for personal file sharing.
  - Services using SMB.
- Describe how to:
  - Access SMB service on Mac OS X from Windows.
  - Connect to a shared FTP volume on a Mac OS X computer from Windows and from UNIX, and transfer files.
  - Access FTP services via a web browser and via the command-line interface.
  - Use the `testparm` command to test and view the contents of the smb.conf file.

Mounting Remote File Systems

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

- Identify how to:
  - Access shared folders containing forked or shadow files over NFS and SMB.
  - Configure Mac OS X to automatically mount a volume on startup or on login.
  - Use command-line tools such as `mount`, `showmount`, and `nfsstat` to mount, monitor, and troubleshoot NFS, AFP, and SMB mounts.
- Describe:
  - Issues with mounting when fast user switching is enabled.
  - How disk arbitration manages the mounting and unmounting of remote file systems.
- Identify limitations in the NFS security model.

Printing

This topic has 3 items, drawn randomly from the following objectives:

- Describe:
  - The Mac OS X printing architecture.
  - How CUPS prepares files for printing.
- Describe how to:
  - Install third-party drivers and PPD files.
  - Use standard CUPS print commands in a Terminal window to retrieve detailed print queue status, send print jobs to a particular queue, and cancel pending print jobs.
  - Troubleshoot printing issues on Mac OS X v10.3.

Understanding Directory Services

This topic has 1 item, drawn randomly from the following objectives:

- Describe:
  - What directory services do.
  - How directory services are implemented to meet user needs.

Accessing Local Directory Services

This topic has 4 items, drawn randomly from the following objectives:

- Identify:
  - Basic directory information needed by users in Mac OS X.
  - Directory service components.
  - The role of `lookupd` and how it works with DirectoryService to provide directory services functionality.
  - How to configure Mac OS X to use BSD flat files for authentication.
  - How Mac OS X stores passwords, using either shadow hash or crypt.
  - How to use `dscl` to inspect user information located in the local NetInfo database.

Accessing Mac OS X Server Directory Services

This topic has 1 item, drawn randomly from the following objectives:

- Describe:
  - The LDAP record structure, and common LDAP mappings.
  - How the search base, scope, and filter are used to find data in an LDAP directory.
  - How to configure Mac OS X to use an LDAP directory on Mac OS X Server.
  - Mac OS X support for managed clients and mobile user accounts.

Accessing Third-Party Directory Services

This topic has 6 items, drawn randomly from the following objectives:

- Identify:
  - The various directory services that Mac OS X can use as directory service domains.
  - Functional limitations when accessing third-party directory services.

- How to configure Mac OS X to connect to third-party directory services, including remapping existing attributes and adding new static mappings.
- Basic directory information needed by users authenticating to third-party directory services.
- Reasons for adding new attributes, versus repurposing attributes for schema mapping.
- Reasons to use a Mac OS X Server computer to supplement a third-party directory services environment.

Integrating with Kerberos

This topic has 3 items, drawn randomly from the following objectives:

- Describe:
  - The Kerberos authentication process.
  - How to manually set up a Kerberos configuration file.
  - How to authenticate a network user account with Kerberos.

Accessing Active Directory

This topic has 4 items, drawn randomly from the following objectives:

- Identify:
  - How to configure a Mac OS X computer to correctly access directory service information from an Active Directory server via the LDAPv3 or Active Directory plug-in.
  - Basic information needed by users authenticating to Active Directory.
  - How to configure Mac OS X to use an SMB home folder when authenticating to Active Directory.
  - Reasons to use Mac OS X Server to supplement an Active Directory environment.
  - How to use command-line tools or a third party graphical user interface application to search, browse, and troubleshoot Active Directory lookups on a Windows server.
- Contrast benefits and drawbacks of creating new attributes by modifying the Active Directory schema.

Understanding Security

This topic has 1 item, drawn randomly from the following objectives:

- Identify:
  - How Mac OS X implements the Common Data Security Architecture.
  - A process to establish a secure Mac OS X computing environment.
  - Where one can find additional information about Mac OS X security.

Local Security

This topic has 6 items, drawn randomly from the following objectives:

- Describe how to:
  - Use Open Firmware Password to block access to your computer.
  - Create an encrypted disk image using Disk Utility.

- Securely empty the Trash.
- Configure and manage the Keychain Access application.
- Install the latest security updates using Software Update.
- Protect your system against viruses.
- Monitor logs and file checksums to detect security breaches.
- Detect rogue processes and files.
- Set a Master Password.
- Use FileVault.

Network Security

This topic has 4 items, drawn randomly from the following objectives:

- Describe how:
  - Mac OS X implements network services.
  - Firewalls are implemented on Mac OS X, and why Mac OS X does not need one on a client computer.
- Describe how to:
  - Protect insecure protocols by using tunnels.
  - Set up Mail to use secure email signing certificates.
- Describe various possible network attacks.
- Identify secure and insecure protocols.
- Examine logs and packet dumps to monitor network security.

Data Management

This topic has 2 items, drawn randomly from the following objectives:

- Identify how to:
  - Efficiently deploy multiple Mac OS X computers.
  - Manage, monitor, and update multiple Mac OS X computers.
  - Transfer a user account from one computer to another.
  - Choose and execute procedures for backing up and archiving data.
  - Select products and technologies for cloning, backing up, and archiving.

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