

Oracle Solaris 10 System Administrator Bootcamp

Course Summary

Length: 5 Days

Recommendation Statement:

The student should have a minimum of six months UNIX system administration experience, completed a UNIX fundamentals course, and a strong desire to learn Solaris OS administration in an accelerated, intense environment. This course is also recommended for system administrators with prior Solaris experience or migrating from HP's HP-UX, IBM's AIX or Linux.

Course Description:

This is a fast paced course which teaches intermediate and advanced topics in Solaris system administration by combining both the Solaris 10 System Administration Part 1 and Part 2 courses. The operating system will be Solaris 10 (SunOS 5.10 version 1/11). The course is taught on Sun SPARC servers and x86-based systems.

This course prepares the student for the Oracle Certified Professional, Oracle Solaris 10 System Administrator Certification Exams (CX-310-200, CX-310-202 & CX-310-203)

Upon completion of this course, you should be able to:

- Perform system boot and shutdown procedures on SPARC and x86-based systems
- Administer the Service Management Facility (SMF)
- Manage Solaris file systems
- Install the Solaris 10 Operating environment on SPARC and x86-based systems
- Create and administer user accounts
- Understand security issues and perform security administration
- Manage system processes
- Perform system backups and restorations
- Describe network basics
- Configure the network interface and network services
- Understand and administer ZFS file systems
- Describe remote administration with the Solaris Management Console software
- Manage virtual file systems and core dumps
- Manage storage volumes (SVM)
- Control access and configure system messaging
- Configure role-based access control (RBAC)
- Set up name services
- Introduction to LDAP
- Perform advanced installation procedures (Flash archive, JumpStart and WAN boot)
- Install the OS on a mirrored ZFS root pool
- Perform a Solaris Live Upgrade
- Perform a Solaris Flash installation
- Understand differences between SPARC and x86-based Solaris Operating environments.
- Understand and administer Zones and Containers.
- Use the Solaris Resource Manager with Zones
- Migrate a UFS root file system to a ZFS root pool

Oracle Solaris 10 System Administrator Bootcamp

Detailed Course Outline

Overview of the Solaris 10 Operating Environment

- System concepts
- The main parts of the Solaris OS
- The Client/Server environment
- Describe the Solaris 10 Directory Hierarchy
 - Understand Solaris 10 file types
 - Understand hard links and soft links

System Startup and Shutdown Procedures – SPARC-Based Systems

- Understand phases of the boot process – SPARC
- Booting the system
- The Advanced Lights Out Manager (ALOM)
- Understanding OpenBoot and programmable read-only memory (PROM)
 - OpenBoot Firmware tasks
 - PROM fundamentals
 - PROM commands and syntax
 - Understand how to view and set PROM parameters from (OpenBoot and the shell)
 - Understand how to view and set device aliases
 - OpenBoot security
 - OpenBoot diagnostics
- Boot PROM and program phases
- Stopping the system for recovery purposes (Interrupting an unresponsive system)
- Understand the pros and cons of the various shutdown procedures

System Startup and Shutdown Procedures – x86/x64-Based Systems

- Understand phases of the boot process – x86-based systems
- The BIOS, Boot archive, and GRUB
- Configuring the video display
- Understand the pros and cons of the various shutdown procedures

GRUB – Grand Unified Bootloader (x86/x64 platform)

- Introduction to GRUB
 - How GRUB based booting works
- Modifying boot behavior with GRUB
- Use the eeprom and kernel commands
- GRUB device naming conventions
- Booting the x86-based system with GRUB
- GRUB boot archives
 - Boot the failsafe archive for recovery
- Interrupting and unresponsive system

Service Management Facility (SMF)

- Describe features of the SMF and the phases of the boot process
 - The init process and the /etc/inittab file
 - svc.startd daemon (master starter/restarter)
 - Understand services and service instances
 - Understand the SMF manifest
 - Creating the manifest
 - Understand the SMF repository database
 - Modify the service configuration repository
 - Understand the Fault Management Resource Identifier (FMRI)
 - Understand service dependencies
 - Identify run level fundamentals
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- Describe SMF Milestones
- Changing milestones
- Compare run levels and SMF milestones
 - Understand when to use a SMF service vs. a legacy service
 - Identify phases of the boot process
- SMF command line administration utilities
 - Display information about services
- Starting and stopping services using SMF
- Starting services during boot
- Troubleshooting SMF problems
- Control boot processes and services
- SMF message logging
- Creating new service scripts
 - Convert a legacy service to a SMF managed service
- Legacy services
 - Administering the SMF
 - Troubleshooting SMF
- Using run control scripts to stop / start legacy services
 - Adding scripts to the run control directories

The Solaris Network Environment

- The Solaris Client/Server model
- Network interfaces Network Hardware
 - Configuring and Monitoring network interfaces
 - Configuring static information
 - Configuring dhcp
- Configuring the Network Interface
 - /etc/hostname.interface
 - /etc/nodename
 - /etc/defaultdomain
 - /etc/inet/hosts
- Configuring Network Services
 - Enable and disable server processes using the Service Management Service (SMF)
 - Understanding inetd and the inetd.conf file in the SMF environment
 - Starting services on well-known ports
 - Using inetadm
- Understand and monitor RPC services
- Network Security Files
- Understand how to configure the secure shell (ssh)
- Network Maintenance and Troubleshooting

System Security

- Physical security
- Controlling system access
- User account information
- Restricted shells
- Controlling file access
 - umask
 - Sticky bit
 - Setting the correct PATH
 - setuid / setgid programs
- Auditing users
 - Monitoring users and system usage
 - Checking who's logged in
 - The whodo command
 - The last command
- Network security

- Securing superuser access
- Automated security enhancement tool (ASET)
- Common sense security techniques
- Securing services

Administering User Accounts

- Describe user administration fundamentals
- Adding, modifying, and deleting a user account from the command line and SMC
 - Adding a group from the command line and SMC
 - Setting up and customizing the user's shell
- Managing initialization files
 - The /home directory
 - Name services

Software Package Administration

- Describe fundamentals of package administration
- Tools for managing software from the command line and from the system GUI tools
 - Adding and removing software packages
 - Listing and verifying installed packages

Managing Software Patches on the Solaris 10 OS

- The fundamentals of patch administration
- Installing / verifying / removing a patch and patch clusters
- Introducing Sun Connection services
 - Using Sun connection services to automate patching
 - Using the update manager from the GUI and from the command line

Controlling System Processes

- Viewing system processes
 - Commands used to monitor system resources and processes
 - PROC tools
- Process types
- Using signals
 - The kill command
- Scheduling processes
 - The fair share scheduler (FSS)
 - Scheduling and changing process priorities
 - The nice and priocntl commands
- Clear frozen and "zombie" processes
- Using the Solaris batch-processing facility to schedule execution of commands
 - Configuring crontab for executing recurring processes
 - Using the at command for automatic one-time execution of a command

Backup and Recovery

- Backup and recovery fundamentals
- Solaris backup and restoration utilities
 - Using the tar, dd, cpio, and pax utilities
 - Using ufsdump and ufsrestore
- Recovering the root (/) and /usr file system
- Backing up a mounted file system
- Creating a UFS snapshot
- Backing up the snapshot file
- Creating a Flash Archive

Advanced Solaris 10 Installation Procedures

- Perform a Flash Installation
 - Describe a flash install
 - Create a flash archive
 - Create a differential flash archive
 - Manipulate a flash archive
 - Using a flash archive for cloning a server
 - Using a flash archive for cloning a server disaster recovery
- Perform a JumpStart and PXE Installation
 - Overview
 - Preparing a Custom Jumpstart Installation
 - Setting up the Server
 - Setting up the Install Server
 - Setting up the Boot Server
 - The rules File
 - Creating Profiles
 - Using a Flash Archive for a JumpStart Installation
 - Example Jumpstart Installation
 - Setup JumpStart to create a ZFS mirrored root pool
- Pre-Execution Boot Environment (PXE)
 - Prepare a PXE boot client
 - Setup a DHCP server to support x86 JumpStart clients
 - Network booting the x86-based system
- Install the OS Using a Flash Archive
 - Create a Flash Archive
 - Create a differential Flash Archive
- WAN Boot
 - The WAN boot process
 - Configure the WAN boot environment and the WAN boot server
 - Booting the WAN boot client
 - Using a Flash Archive for a WANboot Installation
- Install the OS using ZFS on the root file system
 - Creating a mirrored root pool
 - Migrating a UFS root disk to ZFS
 - Booting a ZFS root file system
 - ZFS related OpenBoot commands
 - Multiple ZFS boot environments
 - Booting a ZFS file system in FailSafe mode
 - Replacing a disk in a ZFS root pool
 - Boot From a Alternate Disk in a Mirrored ZFS Root Pool
 - Root pool snapshots
 - Recreate a ZFS Root Pool and Restore Root Pool Snapshots
 - Roll Back Root Pool Snapshots

Solaris Live Upgrade

- Understand the Solaris Live Upgrade Process (when and where to use it)
- Understand the Live Upgrade requirements
- Understand the Live Upgrade commands
- Create an alternate boot environment cloned from a running system
- Create a new boot environment on the SPARC and x86 platforms
- Upgrade a boot environment
- Patch a boot environment
- Modify a boot environment
- Activate a new boot environment on the SPARC and x86 platforms
- Maintain the Solaris Live Upgrade boot environment
- Manage multiple boot environments
- Advantages of using Live Upgrade on a ZFS root environment
- OpenBoot commands and options when using multiple boot environments

Managing SWAP Space

- Describe swap and virtual memory concepts
 - Swap space and TMPFS
- Configure, size and monitor swap space
- Setup swap space
- Expand swap space

Managing Crash Dumps and Core Files

- Understand Core dumps
 - Core dump configuration
 - Manage core file behavior
- Understand Crash Dumps
 - Crash dump configuration
 - Manage crash dump behavior

Introduction to Zones

- Consolidation and Resource Management
 - Describe the advantages of Zones
 - Understand Zones and COntainers
 - Branded Zones for Solaris 8,9, and Linux environments
 - Solaris Zones
 - Types of Zones
 - Zone States
 - Zone Features
 - Non-global Zone Root File System Models
 - Whole Root Zones
 - Sparse Root Zones
 - Networking in a Zone Environment
 - Zone Daemons
 - Configuring a Zone
 - The “zonecfg” command and subcommands
 - Zonecfg resource types
 - Creating a whole root Zone
 - Creating a sparse root zone
 - Using a sysidcfg file when configuring a zone
 - Viewing the Zone Configuration File
 - Installing a Zone
 - Booting a Zone
 - Halting a Zone
 - Rebooting a Zone
 - Uninstalling a Zone
 - Deleting a Zone
 - Making modifications to an existing zone
 - Moving a Zone
 - Cloning a zone
 - Migrating a zone
 - Backing up a zone
 - Zone Login
 - Initial Zone Login
 - Logging in to the Zone Console
 - Logging in to a Zone
 - Running a Command in a Zone
 - Security Considerations when Using Solaris Containers
 - Introduction to Solaris Resource Manager
 - Resource controls
 - Using resource controls to contain zones
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- Upgrade the Solaris 10 OS with installed Zones
- Patch the Solaris 10 OS with installed Zones
 - Patch the global zone
 - Patching nonglobal zones

Role Based Access Control (RBAC)

- Describe RBAC fundamentals
- Overview of Roles
 - Authorizations
 - Rights profiles
- Using RBAC
 - Manage RBAC by using the Solaris Management Console
 - Manage RBAC by using the command line
- Describe RBAC components and their interaction within RBAC

Solaris Management Console

- Starting the Solaris Management Console
- Understand Crash Dumps
 - Crash dump configuration
 - Customizing the Solaris Management Console

Using the Solaris Volume Manager Software

- Describe redundant array of independent disks (RAID) as related to SVM
- Describe Solaris Volume Manager software concepts
 - Understand RAID 0,1, 5, 0+1, 1+0
- SVM volumes
 - Soft partitions
 - Stripes/Concatenated Stripes
 - Mirrors
 - RAID5 volumes
- Planning your SVM Configuration
- Understand SVM Commands
- Understand the state database
 - Creating the State Database
 - Monitoring the state database
 - Recovering the state database
- Create a RAID 0 Concatenated Volume
- Create a RAID 0 Stripe Volume
 - Monitor a volume
- Create a Soft Partition
- Expand an SVM Volume
- Create a Mirror
- Unmirroring a Non-critical File System
- Placing a Submirror Offline
- Mirroring the Root File System on SPARC based systems
- Mirroring the Root File System on x86/x64 based systems
- Unmirroring the Root File System
- Troubleshooting SVM

Configure The NFS/AutoFS Environment

- Servers and Clients
 - NFSv4
- The benefits of NFS on Solaris
- NFS Daemons
- Setting up NFS
- NFS Security
 - NFS logging
- Mounting a Remote File System
- Troubleshooting NFS errors
- Describe the fundamentals of the AutoFS file system
- AutoFS Maps
 - Master Map
 - Direct Map
 - Indirect Map
- When to use Automount

Introduction to LDAP

- Understand the use of LDAP as a naming service
- Describe basic LDAP concepts and terminology
- Identify the Directory Server Enterprise Edition requirements
- Identify Solaris LDAP Client requirements
- Setting up the LDAP client
- Modifying the LDAP client
- Listing the LDAP client properties
- Uninitializing the LDAP client

Solaris 10 Name Services

- Describe the Name Service concept and why it is used
 - Structure of the NIS Network
 - Server, slaves, and clients
 - Planning your NIS Domain
 - Information to be Managed by NIS
 - Planning your NIS master server and slaves
 - Configuring an NIS Master Server
 - Creating the source files
 - Preparing the Makefile
 - Creating custom NIS maps
 - Setting Up the Master Server With ypinit
 - Starting and Stopping NIS on the Master Server services
 - Setting up NIS slave servers
 - Setting up NIS clients
 - The Name Service Switch
 - Templates
 - Name service sources
 - Name service status codes
 - Local /etc files
 - Troubleshooting NIS
 - Binding problems
 - Server problems
 - DNS
 - Configuring the DNS client
 - LDAP
 - Configure the LDAP client
 - Name Service Cache Daemon (nscd)
 - Understanding the nscd daemon
 - The nscd.config file and attributes
 - The “nscd” command and options
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- Using the “getent” command

Configuring System Messaging

- Describe the fundamentals of the syslog function
- Using “logger”
- Important system log files
- Configure syslog messaging
 - Using the Solaris Management Console log viewer
- Monitoring Users and System Usage
- Monitoring logins