

Oracle Solaris 10 for Experienced System Administrators

Course Summary

Length: 5 Days

Recommendation Statement:

It is assumed that the student has experience managing a prior version of Solaris or another Unix or Linux OS with an advanced level of experience. Topics for this course are taken from the Solaris 10 Intermediate and Advanced System Administration courses. If you do not meet the prerequisites for this course, it is recommended that you take the Solaris 10 Intermediate and Advanced System Administration courses.

Course Description:

This course teaches advanced topics in Solaris 10 system administration. The course is taught on Sun SPARC servers and Solaris x86-based systems running Solaris 10 u11 (Oracle Solaris 10 released 1/13)

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

- Understand how Solaris 10 differs from previous releases
- Perform system boot and shutdown procedures on SPARC and x86-based systems
- Administer the Service Management Facility (SMF)
- Install the Solaris 10 Operating environment on SPARC and x86-based systems
- Install patches and updates in Solaris 10
- Understand security issues and perform security administration in the Solaris 10 OE
- Configure the network interface and network services in Solaris 10
- Understand and administer ZFS file systems
- Manage virtual file systems and core dumps
- Setup LDAP
- Perform a JumpStart nad a WANboot installation
- Install the OS on a mirrored ZFS root pool
- Perform a Solaris Live Upgrade
- Perform a Solaris Flash installation
- Understand and administer Zones and Containers
- Use the Solaris Resource Manager with Zones
- Migrate a UFS root file system to a ZFS root pool
- Understand DTrace

Oracle Solaris 10 for Experienced System Administrators
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

Installing the Solaris 10 Software

- Requirements and preparation for installing the Solaris 10 software
 - Supported architectures
 - Minimum system requirements
- Software Terminology: Packages, Groups (Clusters), and Configuration Groups
 - Software package
 - Software groups and configuration groups
- Upgrade vs. Initial installation
- Disk storage systems
 - Considerations for planning partition sizes
 - Partition arrangements on multiple disks
- Methods of installing the Solaris 10 software
 - Considerations for planning partition sizes
 - Partition arrangements on multiple disks
 - Interactive (CLI)
 - Custom JumpStart
 - Flash Archive
 - WAN boot
 - Live Upgrade
- Secure by Default
- The Solaris interactive installation process
- Installation and Secure by Default

Introduction to the ZFS File System

- Introduction to ZFS
 - ZFS Terms
 - Hardware and Software requirements for ZFS
 - What is Self-Healing?
- ZFS RAID configurations
- Create a ZFS file system
 - Rename a ZFS file system
 - Listing a ZFS file system
- Remove a ZFS file system
- Remove a ZFS Storage Pool
- ZFS Components
 - Disks, Files, Virtual Devices
 - Naming convention
- Using disks in a ZFS storage pool

- Using files in a ZFS storage pool
- Mirrored storage pools
 - Converting a non-redundant pool to a mirrored pool
 - Detach a device from a mirrored pool
 - Split a mirrored storage pool
- RAID-Z storage pools
- Displaying ZFS storage pool information
- Adding devices to a ZFS storage pool
- Attaching and Detaching devices in a storage pool
- Taking storage pool devices offline and online
- ZFS history
- ZFS properties
 - Native and settable properties
 - Setting ZFs properties
- Mounting ZFS file systems
- Legacy mount points
- Sharing ZFS file systems
- ZFS Web-based management GUI
- ZFS snapshots
 - Creating snapshots
 - Listing snapshot information
 - Saving and Restoring a ZFS snapshot
 - Renaming a ZFS snapshot
 - Rolling back a ZFS snapshot
 - Save/Restore to a remote system
- ZFS Clones
 - Creating and destroying ZFS clones
 - Replacing a ZFS file system with a ZFS clone
- Zpool scrubbing
- Replacing Devices in a Storage Pool
- Using ZFS with Solaris Zones
 - Adding a ZFS dataset to a non-global zone
 - Delegating a ZFS dataset to a non-global zone
- Emulated volumes
 - Using ZFS as a swap or dump device
- Designating hot spares in a storage pool

The Solaris Network Environment (describe changes in Solaris 10 only)

- Configuring the Network Interface (changes in Solaris 10)
 - `/etc/hostname.interface`
 - `/etc/nodename`
 - `/etc/defaultdomain`
 - `/etc/inet/hosts`
- Configuring Network Services in Solaris 10
 - 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

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

Advanced Solaris 10 Installation Procedures

- 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 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
- 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

Configure The NFS/AutoFS Environment (Solaris 10 changes only)

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

Configuring System Messaging (Solaris 10 changes only)

Introduction to DTrace

- Describe the features of DTrace
- Describe the DTrace architecture
- Overview of how DTrace works
- Examining performance problems using DTrace
- Use DTrace to obtain information about system calls
- Understand D Scripts
- Overview of the DTrace Toolkit
- Useful DTrace scripts