

Oracle Solaris 11 Advanced System Administration

Course Summary

Description

This course teaches advanced topics in Solaris 11 system administration. The operating system will be Oracle Solaris 11.4. The course is taught on both SPARC and Intel-based servers utilizing LDoms and zones. This course prepares the student for the Oracle Certified Professional, Oracle Solaris 11 Advanced System Administration Exam (1Z0-822), including the Upgrade to Oracle Solaris 11 System Administrator Exam (1Z0-820)

Objectives

After taking this course, students will be able to:

- Configure an Automated Install (AI) Server for Installation on Multiple Hosts, LDoms and Zones
- Use Unified Archives to backup and restore the root pool
- Utilize AI with Unified Archives for Disaster Recovery
- Create a Custom OS Distribution Image using the distribution constructor
- Configure Virtual Networking
- Configure Network Redundancy (Link Aggregations) and Traffic Fail-over (IP Multi-Pathing)
- Utilize Virtual Networking in Zones
- Configure Privileges, Roles and Profiles with Role Based Access Control (RBAC)
- Create custom roles and profiles to delegate administrative tasks
- Delegate Administration for ZFS and Zones using Roles and Profiles
- Create and Manage Kernel-Zones
- Configure Security Auditing - Collect and Analyze Audit Records
- Configure BART (Basic Audit and Reporting Tool) to monitor file level changes
- Monitor Processes, Faults and System Stats (StatsStore) using CLI Utilities (**sstore** and **sstoreadm**) and the Web Dashboard
- Understand and Manage Logical Domains (Oracle VM for SPARC); Create, manage, install, backup and recover LDoms
- Understand and administer Projects, Tasks and the Fair Share Scheduler (FSS)
- Manage Core Dumps and Crash Dumps
- Configure and manage NFS
- Monitor Performance on Global Zones, Virtual Systems (LDoms) and Zones.
- Manage System and Network Resources using the Solaris Resource Manager
- Learn advanced Zone administration commands and techniques

Topics

- Advanced Solaris 11 Installation using the Automated Installer (AI)
- Unified Archives
- Distribution Constructor
- Configure Virtual Networking
- Role Based Access Control (RBAC)
- Kernel Zones
- Solaris Auditing
- Solaris Analytics
- Manage Core Files and Crash Dumps
- Monitor System Performance
- Configure and Manage the NFS Environment
- Oracle VM Server for SPARC (LDoms)

Oracle Solaris 11 Advanced System Administration

Course Summary (cont.)

- Configure and Manage System Messages using rsyslog
- Solaris Resource Management
- Advanced Zone Administration

Prerequisites

To succeed fully in this course, students should have completed an intermediate Solaris 11 System Administration course or already know how to: Manage files and directories · Control the user work environment · Archive files · Use remote commands · Manage ZFS file systems · Administer Zones · Install the OS and software · Manage software packages and repositories using IPS tools · Understand user and security administration · Manage system processes · Perform system backups and recovery · Configure Network Connectivity · Understand ILOM, system startup procedures and the Service Management Facility.

Duration

Five Days

Oracle Solaris 11 Advanced System Administration

Course Outline

I. *Advanced Solaris 11 Installation using the Automated Installer (AI)*

- A. AI installation overview for provisioning servers
- B. Describe the AI provisioning process
- C. Configure an AI server and Clients
- D. Understand the AI manifest and how to customize the manifest
- E. Create AI manifests using the Interactive Automated Installer wizard
- F. Configure AI to install Physical servers, LDoms and Zones
- G. Configure AI to service multiple hosts and architectures
- H. Create a configuration profile for AI clients
- I. Monitor an AI installation remotely
- J. Create bootable media to automate standalone installations when an AI server is not available

II. *Unified Archives*

- A. How to use unified archives in your disaster recovery plan
- B. Use the archiveadm utility to create a backup of the root pool and zones
- C. Automate the deployment of unified archives to build or clone new systems, LDoms and zones
- D. Recover servers, LDoms and zones using a unified archive with an AI server

III. *Distribution Constructor*

- A. Understand the Distribution Constructor
- B. Build an Oracle Solaris image using the distribution constructor
- C. Create a Distribution Constructor manifest file

IV. *Configure Virtual Networking*

- A. Create Virtual NICs, and a virtual network
- B. Assign Virtual Network Components to Zones

- C. Configure virtual networking between Zones
- D. Tools to monitor datalinks and IP interfaces
- E. Configure Network Link Aggregation to improve bandwidth
- F. Configure Network Link fail-over using IPMP
- G. Manage and monitor an IPMP group
- H. Manage and monitor traffic bandwidth with Flows
- I. Monitor Network Traffic Statistics

V. *Role Based Access Control (RBAC)*

- A. Describe RBAC principals to delegate administrative tasks and reduce access to the root account
- B. Describe Roles, Authorizations and Rights profiles
- C. Understand the function of profile shells
- D. Understand process rights management through privileges
- E. Restrict root by setting up root as a role
- F. Manage RBAC from the command line
- G. Describe RBAC components and their interaction within RBAC
- H. Setup RBAC profiles and roles to assign elevated system access to user accounts
- I. Delegate zone management tasks
- J. Delegate ZFS management tasks
- K. Delegate system administration tasks using profile shells and privileges
- L. Implement Location Based and Time Based Access

VI. *Kernel Zones*

- A. Introduction to Solaris Kernel Zones and understand how a kernel zone is different from the other virtualization technologies available in Solaris 11.
- B. Learn how to create and manage kernel zones.

Oracle Solaris 11 Advanced System Administration

Course Outline (cont.)

VII. Solaris Auditing

- A. Configure Security Auditing on Solaris 11.4 to monitor and deter a security breach.
- B. Understand Auditing concepts
- C. Understand audit events, audit classes and audit policies
- D. Configure and manage audit events, audit classes and audit policies
- E. Manage audit logs and create audit reports
- F. Configure BART (Basic Audit Reporting Tool) to monitor file level changes

VIII. Solaris Analytics

- A. Introduction to Solaris Analytics and StatsStore.
- B. Learn StatsStore Data Collection Concepts
- C. Configure StatsStore data collection
- D. Understand StatsStore SMF services and properties that control StatsStore's behavior
- E. Learn how to use the `sstore` and `sstoreadm` commands
- F. Learn how to use and customize the Web Based Dashboard for custom charts
- G. Display system faults and StatsStore statistics.
- H. Monitor Processes, Faults and System Statistics using CLI Utilities and the Web Dashboard

IX. Manage Core Files and Crash Dumps

- A. Understand how core files and crash dumps are created,
- B. Configure core files and crash dumps using the `coreadm` and `dumpadm` utilities
- C. Manage core files and crash dumps on your systems

X. Monitor System Performance

- A. Use monitoring utilities and interpret the output (`ps`, `pgrep`, `prstat`, `mpstat`, `top`, and `proctools`)
- B. Understand Core and Crash dumps

- C. Core dump configuration
- D. Manage core file behavior
- E. Crash dump configuration
- F. Manage crash dump behavior
- G. Manage processes and understand how to utilize process priorities
- H. Configure and Manage the scheduling class of a zone
- I. Configure and Monitor the Fair Share Scheduler
- J. Understand Resource Management (projects, tasks, resource pools and resource capping)
- K. Implement a plan to evaluate resource allocation and system performance
- L. Understand a Solaris Container and Configure Containers using System Resource Management

XI. Configure and Manage the NFS Environment

- A. Share and Unshare ZFS File Systems
- B. Understand ZFS storage pool and file system properties related to NFS
- C. Setup the NFS service and configure NFS SMF service properties
- D. Secure Shared Filesystems
- E. Automatic Filesystem Sharing
- F. Mounting NFS Filesystems
- G. Configure NFS Failover
- H. Configure NFS mirroring
- I. NFS stats
- J. Configure NFS between global and non-global zones

XII. Oracle VM Server for SPARC (LDoms)

- A. An Overview of Oracle VM for SPARC and Virtualization Options in Oracle Solaris
- B. Understand Oracle VM
- C. Introduction to Oracle VM Terms
- D. Understand the Types of Logical Domains and the Role of Each Domain
- E. Understand How to Allocate CPU, Memory and I/O Devices to LDoms

Oracle Solaris 11 Advanced System Administration

Course Outline (Cont.)

- F. Understand how to Configure Virtual Devices and Services
- G. Install the Logical Domains Manager Software Package
- H. Configure the Control (Primary) Domain
- I. Create a Guest Ldom
- J. Saving the VM Configuration to the Service Processor
- K. Configure a Guest LDom
- L. Install the OS on the Guest LDom using a Solaris Installer ISO
- M. Install the OS on the Guest LDom using an AI Server
- N. Review the Guest LDom Installation
- O. Configure Storage for a Guest LDom
- P. Dynamic Reconfiguration of Resources
- Q. Reconfigure a Guest LDom
- R. Remove a Guest LDom
- S. Restore a Server to its Factory Default State
- T. Backup and Recover an LDom (Primary or Guest)
- U. Setup an AI server to Install the OS onto an Ldom
- V. Create an AI manifest and Configuration Profile to install the OS on the Ldom
- W. Install an LDom from a Unified Archive using an AI Server
- X. Recover an LDom from a recovery archive stored on an AI server

XIII. *Configure and Manage System Messages using rsyslog*

- A. Understand the rsyslog facility
- B. Configure rsyslog messaging
- C. Configure SMF and Fault Management Messages with SMTP Notifications

XIV. *Solaris Resource Management*

- A. Understand the Oracle Solaris Resource Manager and when to use it
- B. Understand a task, project, workload and resource control

- C. Configure memory resource management
- D. Configure resource pools (Solaris containers)
- E. Understand the resource pool framework (pooladm, poolbind, poolcfg, pool, poolstat, libpool and pooladm.conf)
- F. Understand Solaris Resource Management in a zone and how to allocate Physical Resources to a Zone
- G. Dynamic resource controls
- H. Understand processor sets; create and monitor processor sets
- I. Understand and configure network datalink resources

XV. *Advanced Zone Administration*

- A. Clone Zones
- B. Export Zone Configurations
- C. Move and Migrate Zones
- D. Monitor Zones
- E. Backup and Restore Zones
- F. Utilize Resource Controls to Contain Zones
- G. Configure Immutable Zones to Secure a Zone's Root Filesystem
- H. Understand Solaris Resource Management in a zone and how to allocate physical resources to a Zone
- I. Allocate ZFS Datasets to Zones
- J. Delegate ZFS Administration to a Zone
- K. Configure a solaris10 Brand Zone
- L. Live Zone Reconfiguration
- M. Understand Zone Templates and Template Properties
- N. Understand and Configure an Immutable Global Zone