

## Oracle Solaris 11 Advanced System Administration

### Course Summary

**Length:** 5 Days

**Prerequisite:** Oracle Solaris 11 System Administration 1

#### **Course 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)

#### **Recommendation Statement:**

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.

#### **Upon completion of this course, you should 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

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

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

### **Unified Archives**

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

### **Distribution Constructor**

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

### **Configure Virtual Networking**

- Create Virtual NICs, and a virtual network
- Assign Virtual Network Components to Zones
- Configure virtual networking between Zones
- Tools to monitor datalinks and IP interfaces
- Configure Network Link Aggregation to improve bandwidth
- Configure Network Link fail-over using IPMP
- Manage and monitor an IPMP group
- Manage and monitor traffic bandwidth with Flows
- Monitor Network Traffic Statistics

### **Role Based Access Control (RBAC)**

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

### **Kernel Zones**

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

## **Solaris Auditing**

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

## **Solaris Analytics**

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

## **Manage Core Files and Crash Dumps**

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

## **Monitor System Performance**

- Use monitoring utilities and interpret the output (ps, pgrep, prstat, mpstat, top, and proctools )
- Understand Core and Crash dumps
- Core dump configuration
- Manage core file behavior
- Crash dump configuration
- Manage crash dump behavior
- Manage processes and understand how to utilize process priorities
- Configure and Manage the scheduling class of a zone
- Configure and Monitor the Fair Share Scheduler
- Understand Resource Management (projects, tasks, resource pools and resource capping)
- Implement a plan to evaluate resource allocation and system performance
- Understand a Solaris Container and Configure Containers using System Resource Management

## **Configure and Manage the NFS Environment**

- Share and Unshare ZFS File Systems
- Understand ZFS storage pool and file system properties related to NFS
- Setup the NFS service and configure NFS SMF service properties
- Secure Shared Filesystems
- Automatic Filesystem Sharing
- Mounting NFS Filesystems
- Configure NFS Failover
- Configure NFS mirroring
- NFS stats
- Configure NFS between global and non-global zones

## **Oracle VM Server for SPARC (LDomS)**

- An Overview of Oracle VM for SPARC and Virtualization Options in Oracle Solaris
- Understand Oracle VM
- Introduction to Oracle VM Terms
- Understand the Types of Logical Domains and the Role of Each Domain
- Understand How to Allocate CPU, Memory and I/O Devices to LDomS
- Understand how to Configure Virtual Devices and Services
- Install the Logical Domains Manager Software Package
- Configure the Control (Primary) Domain
- Create a Guest Ldom

- Saving the VM Configuration to the Service Processor
- Configure a Guest LDom
- Install the OS on the Guest LDom using a Solaris Installer ISO
- Install the OS on the Guest LDom using an AI Server
- Review the Guest LDom Installation
- Configure Storage for a Guest LDom
- Dynamic Reconfiguration of Resources
- Reconfigure a Guest LDom
- Remove a Guest LDom
- Restore a Server to its Factory Default State
- Backup and Recover an LDom (Primary or Guest)
- Setup an AI server to Install the OS onto an Ldom
- Create an AI manifest and Configuration Profile to install the OS on the Ldom
- Install an LDom from a Unified Archive using an AI Server
- Recover an LDom from a recovery archive stored on an AI server

### **Configure and Manage System Messages using rsyslog**

- Understand the rsyslog facility
- Configure rsyslog messaging
- Configure SMF and Fault Management Messages with SMTP Notifications

### **Solaris Resource Management**

- Understand the Oracle Solaris Resource Manager and when to use it
- Understand a task, project, workload and resource control
- Configure memory resource management
- Configure resource pools (Solaris containers)
- Understand the resource pool framework (pooladm, poolbind, poolcfg, poold, poolstat, libpool and pooladm.conf)
- Understand Solaris Resource Management in a zone and how to allocate Physical Resources to a Zone
- Dynamic resource controls
- Understand processor sets; create and monitor processor sets
- Understand and configure network datalink resources

### **Advanced Zone Administration**

- Clone Zones
- Export Zone Configurations
- Move and Migrate Zones
- Monitor Zones
- Backup and Restore Zones
- Utilize Resource Controls to Contain Zones
- Configure Immutable Zones to Secure a Zone's Root Filesystem
- Understand Solaris Resource Management in a zone and how to allocate physical resources to a Zone
- Allocate ZFS Datasets to Zones
- Delegate ZFS Administration to a Zone
- Configure a `solaris10` Brand Zone
- Live Zone Reconfiguration
- Understand Zone Templates and Template Properties
- Understand and Configure an Immutable Global Zone