Oracle Solaris 11 Diagnostics and Repair Workshop
Course Summary

Length: 3 Days   **Prerequisite**: Oracle Solaris 11 System Administration 1

Recommendation Statement:
Solaris Administrators who have completed a Solaris 11 System Administration course

Course Description:
This course is for Solaris Administrators who have completed a Solaris 11 System Administration course. This course will cover break / fix technique in Solaris on SPARC hardware and will provide the knowledge to diagnose and fix problems caused by hardware and software failures. Students will perform lab exercises and will diagnose and repair scenario based hardware and software problems that have been encountered over the instructor's 25+ years as a Sr Level Solaris Systems Engineer.

Upon completion of this course, the student will learn to diagnose and repair:
- Network problems
- NFS problems
- ZFS and Storage Device problems
- IPS problems
- LDom failures
- Zone Problems
- System bootup and shutdown problems
- ILOM and OpenBoot problems
- Diagnose issues reported by the fault management architecture (FMA)
- System Installation problems
- Diagnose performance issues

1. **Network Troubleshooting**
   1.1. Commands for troubleshooting network connections
   1.2. Configure IP failover
   1.3. Monitor IPMP groups
   1.4. Network diagnostics
   1.5. Resolve routing problems
   1.6. Resolve ARP table problems
   1.7. Resolve DNS issues

2. **Troubleshoot NFS**
   2.1. Commands for troubleshooting NFS
   2.2. NFS Troubleshooting Procedures
   2.3. Troubleshoot AutoFS problems
   2.4. Troubleshoot security and access issues on remote resources
   2.5. Setup NFs failover

3. **Troubleshoot/Fix ZFS Failures**
   3.1. Backup strategies to minimize the impact of a ZFS storage pool failure
   3.2. Set ZFS monitoring / messaging
   3.3. Identify a failed or failing disk drive
   3.4. Trace a failed drive to the hardware component
   3.5. Repair a failed drive
   3.6. Resolve a missing device
   3.7. Identify a failed or failing filesystem
   3.8. Fix a failed file system
   3.9. Fix a damaged storage pool
   3.10. Replace a failed root drive (with mirroring)
   3.11. Replace a failed root drive (without mirroring)
   3.12. Add space to a Storage pool
   3.13. Migrate a storage pool to large drives
   3.14. Configure hot spares
   3.15. Recover destroyed storage pools and filesystems
   3.16. Fix a misaligned RaidZ pool
   3.17. Cap ZFS memory usage
   3.18. Diagnose filesystem mount problems
   3.19. Check ZFS filesystem integrity
   3.20. Repair an unbootable system

4. **Diagnose and Fix IPS Problems**
   4.1. Recover a package repository from a failed update
   4.2. Fix a corrupted or damaged software package
   4.3. Install a Software Package Update or Fix
   4.4. Diagnose and fix an IPS client that cannot access the configured software repository
   4.5. Zone installation failures
   4.6. Update a package or software group that is restrained by an incorporation
   4.7. Resume a failed repository update

5. **Troubleshoot/Fix LDom Failures**
   5.1. Troubleshoot and LDOM that will not boot
   5.2. Backup/Recover a guest LDom
   5.3. Migrate an LDom to another server

6. **Troubleshoot Non-global Zone Problems**
   6.1. Troubleshoot a zone that will not boot
   6.2. Backup / recover a zone from backup
   6.3. Migrate a non-global zone to a new global zone

6.4. Troubleshoot a zone that will not shutdown
6.5. Reallocate resources to zones to alleviate performance problems

7. Troubleshoot System Shutdown Issues
7.1. Zones hanging at shutdown
7.2. Verify zone shutdown before the global zone shuts down
7.3. Force a crash recovery and reboot

8. Configure System Monitoring and Messaging
8.1. Customize OS monitoring and messaging
8.2. Customize ILOM monitoring/messaging
8.3. Setup rsyslog
8.4. Customize error templates
8.5. Setup SMF monitoring and notification
8.6. Setup the Fault Management Architecture (FMA) monitoring and reporting

9. Troubleshoot the Service Management Facility and services
9.1. Diagnose a failed service and failed service dependencies
9.2. Services that won't start at boot time
9.3. Implement SMF notifications
9.4. Use Milestones to troubleshoot services
9.5. Enable messaging

10. Update ILOM and Openboot firmware

11. Increase dump area
11.1.   Add swap during a swap shortage Swap shortage

12. Diagnose and Fix boot failures
12.1.   Repair a corrupt boot archive
12.2.   Fix Corrupt SMF repository
12.3.   Troubleshoot a full root disk
12.4.   Identify and fix Openboot problems
12.5.   Control messages levels at bootup
12.6.   Isolate hardware or software problems
12.7.   When and why to Boot to a recovery shell
12.8.   Boot to recovery media
12.9.   Recover forgotten root password
12.10.   Recover a damaged root file system
12.11.   Rollback the rpool to a known good state
12.12.   Proper rpool backup techniques for disaster recovery
12.13.   Recover the rpool from a remote backup or DR image
12.14.   Troubleshoot the service management facility
12.15.   Diagnose OpenBoot issues that could cause a boot failure
12.16.   Verify a mirrored rpool before a failure
12.17.   Boot a system with the kernel debugger (kdb)

13. Setup AI for disaster recovery
13.1.   Make a recovery image
13.2.   Recover a server and non-global zones using an AI server and image
13.3.   Recover an LDom
13.4.   Create a golden image
13.5.   Create a bootable DVD or USB
13.6.   Configure an AI server to boot to a recovery shell when the server will not boot

14. Fault Management Architecture
14.1.   Use fmd to identify failed system components
14.2.   How to replace failed system components and reset fmd
14.3.   Monitor hardware through the service processor