

Solaris 11.4 Performance Management

3-day course

FA-0412 · 3-day

DevOps, Cloud & Infrastructure

Introduction

This is a Solaris 11.4 Performance Management course. This specialized training is designed for system administrators, technical support personnel, and performance analysts to learn about performance monitoring, analysis, and tuning on Solaris 11.4 systems. Throughout this course, you will gain in-depth knowledge of the tools and techniques required to ensure your Solaris systems are running at optimal performance levels.

Learning outcomes

By the end of this course, participants will be able to:

- Utilize Solaris monitoring tools to observe system performance in real-time and via logs.
- Analyze system behavior to identify performance bottlenecks.
- Apply performance tuning principles to optimize system resources.
- Configure and manage resource controls to achieve desired performance levels.
- Employ best practices for Solaris performance management.
- Understand and apply advanced tuning for networking, file systems, and virtualization technologies in Solaris.

Prerequisites

Participants should have:

- Experience with system administration of Solaris 11 or equivalent knowledge.

- Familiarity with Solaris command-line tools and utilities.
- Basic understanding of system resources such as CPU, memory, disk I/O, and networking.

Training outline

1. Introduction to Performance Management

Performance Management Concepts

1. Understanding of Performance Metrics
2. Baselines and Benchmarking

Overview of Solaris 11.4 Performance Features

1. Observability Tools in Solaris
2. Enhancements in Solaris 11.4 for Performance

2. Monitoring Tools and Techniques

Real-Time Monitoring Tools

1. prstat, vmstat, iostat, mpstat, netstat
2. dtrace: Dynamic Tracing in Solaris

Log-Based Monitoring

1. System Logs and Audit Trails
2. Using sar for Historical Performance Data

Visualization Tools

1. Performance Data Visualizers and Analyzers
2. Custom Performance Monitoring Dashboards

3. Analyzing System Resources

CPU Performance Analysis

1. Understanding Load Averages
2. Multi-threading and Processor Sets
3. CPU Scheduling and Prioritization

Memory Usage and Analysis

1. Virtual Memory Statistics
2. Page-in/Page-out Activities
3. Swap Management and Optimization

Disk I/O Performance

1. Analyzing Disk Utilization and Throughput
2. Filesystem Performance and Caching
3. ZFS Specific Tuning and Monitoring

Network Performance

1. Network Throughput and Latency Measurement
2. Advanced Network Tuning Parameters

4. Resource Management and Scheduling

Overview of Resource Management

1. Projects, Tasks, and Resource Pools
2. Fair Share Scheduler (FSS)
3. Resource Capping Daemon (rcapd)

Configuring and Using Resource Controls

1. CPU and Memory Controls
2. I/O Throttling

Prioritization and Scheduling

1. The `dispadm` and `priocntl` Commands
2. Real-time Scheduling and Interactivity Tuning

5. Performance Tuning Methodologies

Tuning Methodologies and Best Practices

1. System Tuning Approach and Strategies
2. Kernel Tuning and Parameters

File System Tuning

1. ZFS Tuning Considerations
2. UFS and Other File Systems Optimizations

Application-Level Tuning

1. Database Performance
2. Web Server Optimization Strategies

6. Networking and Virtualization Performance

Network Tuning

1. Tuning TCP/IP Parameters

2. Network Buffers and Flow Control

Solaris Zones Performance

1. Non-global Zones Resource Allocation
2. Networking and Storage Configurations in Zones

Oracle VM Server for SPARC (LDomS)

1. Logical Domain Resource Allocation
2. Managing Domain Performance

7. Advanced Performance Tools and Techniques

DTrace for Advanced Performance Analysis

1. DTrace Scripting for Custom Analysis
2. Probing System Activity with DTrace

Advanced Observability with MDB

1. The Modular Debugger (MDB)
2. Advanced Kernel Analysis

Performance Toolkit and Third-party Tools

1. Oracle Solaris Studio Performance Analyzer
2. Open Source and Community Tools

8. Case Studies and Practical Exercises

Interactive Labs and Scenarios

1. Real-World Performance Problem Solving
2. Interpreting and Responding to Performance Data

Group Discussion of Case Studies

1. Sharing Experiences and Solutions
2. Strategies for Complex Environments

9. Troubleshooting Performance Issues

1. Systematic Approach to Performance Troubleshooting
2. Common Performance Pitfalls and Their Resolutions
3. Creating a Performance Troubleshooting Guide

This course is hands-on and includes lab exercises and case studies to ensure practical learning and the ability to apply performance management skills directly to the Solaris environment.

