

Solaris System Performance Management

(SA-400-S10, 5 days)

Course Description

The Solaris System Performance Management course introduces students to performance tuning principles, monitoring utilities and tuning tools for the Solaris Operating System (Solaris OS).

The presentation includes a review of Solaris subsystems and the utilities provided to monitor system efficiency including sar, vmstat, iostat, netstat, mpstat, nfsstat. This revision also presents tools new to Solaris 10, including dtrace, alongside these well known utilities.

The course format isolates each major system component that affects to system performance data. Each subsystem is presented through a case study that shows how performance bottlenecks can be isolated, confirmed through analysis, and resolved through making adjustments to the system configuration.

The Central Processing Units (CPUs), memory, and input/output (I/O) systems are reviewed to clarify standard techniques for monitoring each one. Monitoring and tuning virtual memory operations, logical volume systems, file systems, and network efficiency are discussed as well, using the case study introduction described above.

The course concludes with a more general case study to examine the full cycle of identifying and resolving performance impediments. The Solaris System Performance Management course includes lab exercises to reinforce skills development.

Who Can Benefit

Senior system administrators and others concerned with monitoring effective performance of Solaris systems can benefit from this course. Students who want to learn the performance tools provided with Solaris 10 can also benefit from this course.

Required Prerequisites

To succeed fully in this course, students should be able to:

- Install and configure the Solaris OS
- Employ advanced systems administration skills in a networked Solaris OS server environment
- Manage pseudo and distributed file systems
- Create and manage logical volumes
- Network Administration for the Solaris 10 Operating System (SA-300-S10)
- System Administration for the Solaris 10 OS Part 2 (SA-202-S10)

Suggested Prerequisites:

- Describe fundamentals of TCP operations
- Sun Systems Fault Analysis Workshop (ST-350)

Skills Gained

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

- Describe performance management fundamentals
- Use the Solaris OS and third-party tools to analyze performance
- View and set kernel-based tuning parameters
- Monitor and report on process and thread activity
- Modify CPU scheduling and virtual memory operations
- Describe system caches and system buses
- Tune I/O, UNIX(R) File System (UFS), and network subsystems

Suggested Next Courses:

- Introduction to Core Dump Analysis (ST-375)

REGISTRATION AND INFORMATION

education@ecs.com.sg
www.ecs.com.sg/training

Solaris System Performance Management

(SA-400-S10, 5 days)

Course Outline

Introducing Performance Management

- Describe the principles of performance tuning
- Describe the performance tuning process
- Understand the terms used to describe performance aspects
- List the kstat based utilities
- List the procfs based utilities
- List DTrace based utilities
- Use the kstat command

DTrace

- List the Advantages of DTrace
- Describe the DTrace Architecture
- List the Four Parts of a Probe Description
- Define a Probe Clause
- Write and Execute DTrace Commands
- Write some Simple Dtrace Scripts
- Download and Use Scripts from the DTrace Toolkit

Using the Solaris OS Monitoring Tools

- Describe and use monitoring tools provided with the Solaris OS
- Describe and use kstat based utilities
- Describe and use procfs based utilities
- Describe online resources for third-party utilities
- Enable system accounting

Viewing and Setting Tuning Parameters

- View tuning parameters
- Set tuning parameters

Monitoring Processes and Threads

- Describe a process
- Describe threads
- Compare the performance of single-threaded and multithreaded processes
- Monitor processes
- Describe and use lockstat(1M)

Managing CPU Scheduling

- Control and Monitor CPUs
- Describe scheduling
- Display and change scheduler parameters
- Change the scheduling behavior of a process
- Describe and use Solaris Resource Manager projects and the Fair Share Scheduler (FSS)

Monitoring System Caches

- Describe a cache
- Describe the characteristics of a cache
- Identify cache problems associated with multiple CPUs
- Identify cache problems associated with cache design

Performing Memory Tuning

- Monitor memory utilization
- Describe virtual memory
- Cache disk-based files
- Identify paging statistics
- Describe swapping
- Identify the memory requirements of an application
- Identify memory shortage in a system

Managing Systems Buses

- Describe a bus
- Describe the prtdiag utility
- Diagnose the problems associated with buses

Performing I/O Tuning

- Describe the characteristics of a SCSI bus
- Describe the time components of disk I/O
- Describe driver and bus features that enhance performance
- View disk and bus device properties
- Describe I/O performance planning
- Describe VERITAS Volume Manager and Solaris Volume Manager
- Tune the I/O subsystem

Tuning UFS

- Monitor file system performance statistics
- Describe OS services that affect UFS performance
- Describe application behavior that affects UFS performance
- Tune UFS parameters to improve system efficiency
- Tune UFS parameters to match application workloads
- Describe alternative file systems to UFS

Solaris ZFS Filesystem

- Describe the basic concepts of ZFS
- Identify the layers of the ZFS architecture
- Create a ZFS storage pool
- Create a ZFS filesystem hierarchy
- Describe and create a ZFS snapshot
- Describe and create a ZFS clone
- List storage pool Performance Considerations
- Describe ZFS Tunable parameters

Monitoring Network Performance

- Describe TCP
- Describe the performance of network hardware
- Monitor network performance with Solaris utilities

Maintaining System Performance

- Describe steps for maintaining system performance
- Set up system accounting
- Describe common utilities for measuring system performance and identifying problem applications
- Describe specific types of bottlenecks and methods for reducing them
- Describe a basic method for maintaining system performance

Performance Testing

- Plan to conduct performance testing
- Understand common pitfalls.

REGISTRATION AND INFORMATION

education@ecs.com.sg
www.ecs.com.sg/training