Course Length: 5 days

Goal:

GL-620 is designed to teach the methodology of performance tuning and capacity planning for Red Hat and SuSE Linux. This class will cover: a discussion of system architecture with an emphasis on understanding the implications of system architecture on system performance, methods for testing the effects of performance adjustments (benchmarking), open source benchmarking utilities, methods for analyzing system performance and networking performance, tuning configurations for specific application loads.

Audience:

GL-620 is aimed at senior Linux system administrators and other IT professionals working in enterprise environments and mission-critical systems.

Prerequisites:

Participants in GL-620 should already be familiar with Red Hat or SuSE Linux.

Duration:

5 days

What you will learn:

1. Basics: Principles and Terminology
    - What is performance tuning?
    - Steps in the tuning process
    - Quantifying performance
2. Tools for Obtaining Information
    - The sysfs and proc filesystems and the sysctl utility
    - System process queues
    - The system activity reporter
    - Passing parameters to kernel modules
    - Generating reports using standard utilties
    - Benchmarking
    - Monitoring systems with SNMP and MRTG
3. Monitoring the Kernel
    - Kernel profiling and OProfile
    - Monitoring the kernel with SystemTap
4. Hardware Performance Considerations
    - Memory: levels, types
    - Cache
    - Disk and I/O
5. The CPU: Processes and Scheduling
    - Controlling processor speed
    - How the Linux kernel schedules processes
    - Process priority
    - Obtaining processor performance information

6. Memory
    - How Processes and the kernel utilize memory
    - System tunables that affect memory performance
    - How page and buffer caches work
    - Monitoring and controlling memory usage
    - The virtual memory subsystem
7. The I/O Subsystem and Filesystems
    - Tuning the disk I/O subsystem
    - I/O scheduling
    - The virtual file system
    - File system tunable parameters
    - Layout of the ext2 and ext3 filesystems
    - Journaling
8. Network Performance
    - Factors affecting performance
    - Viewing device information
    - Ethernet channel bonding
    - Network sockets
    - Layers of the OSI model
    - TCP tuning
9. Application Tuning
    - Causes of performance problems
    - Application tuning
    - Viewing application behaviors using standard tools
    - NFS
    - Apache
    - Samba