Red Hat Enterprise Linux Performance Tuning (RH442) Training

Duration: **5 Day**

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Overview

Build advanced skills in Red Hat Enterprise Linux performance tuning, analysis, and capacity planning.

Red Hat Enterprise Linux Performance Tuning (RH442) is an advanced training course designed to provide experienced Linux system administrators with a systematic methodology for measuring, analyzing, and optimizing system performance.

The course explores system architecture with particular attention to its impact on performance. Participants work with performance metrics, open-source benchmarking utilities, networking optimization, and tuning configurations for different server workloads and use cases. The training focuses not only on identifying performance issues but also on interpreting collected data and applying appropriate optimizations according to workload requirements.

This course is based on **Red Hat Enterprise Linux 10**.

Benefits for Organizations

RH442 helps organizations improve infrastructure performance by equipping system administrators with the skills required to identify and address system performance issues effectively.

Applying structured performance analysis and tuning practices can help organizations:

- Improve overall infrastructure performance.
- Increase utilization of existing system resources.
- Reduce system downtime.
- Respond more effectively to performance problems and system failures.

These capabilities are particularly valuable when optimizing resource utilization across physical, virtualized, and cloud-based infrastructure.

Benefits for Participants

After completing the course, participants should be able to collect, analyze, and interpret system performance metrics and use the resulting information to make informed optimization decisions.

Participants will develop skills that can help them:

- Evaluate system resource utilization.
- Identify performance bottlenecks.
- Apply tuning techniques to improve application performance.
- Maximize the effective use of available system resources.
- Support better decisions regarding hardware and cloud resource investments.
- Improve cost efficiency through more effective infrastructure utilization.

Recommended Next Certification Exam

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After completing RH442, participants may continue with:

Red Hat Certified Specialist in Performance Tuning Exam (EX442)

Prerequisites

Participants are recommended to have:

- Red Hat Certified System Administrator (EX200) certification or equivalent Red Hat Enterprise Linux knowledge and hands-on experience,
- Completion of Red Hat's free skills assessment to determine whether the course matches their current level of expertise.

Who Should Attend

RH442 is particularly suitable for professionals responsible for maximizing infrastructure resource utilization and optimizing system performance across different deployment environments, including:

- Platform engineers,
- Cloud administrators,
- Linux system administrators.

What You Will Learn

During the training, participants will:

- Collect system performance metrics and benchmarking data.
- Analyze and tune system performance for specific resource and workload scenarios.
- Apply appropriate tuning profiles using TuneD.
- Optimize RHEL guests running in virtualized environments.
- Profile and analyze system events and activities.
- Manage resource limits and utilization through systemd-integrated control groups.

Outline

Introduction to Performance Tuning

Explore essential performance tuning concepts and methodologies. Learn how to interpret different units of measurement and compare performance metrics accurately.

Gathering Metrics with Performance Monitoring Tools

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Use monitoring tools included with Red Hat Enterprise Linux to investigate system behavior and collect relevant performance metrics.

Identifying Hardware Resources

Identify server hardware resources and interpret the output produced by system utilities to better understand available system capacity.

Configuring Kernel Tunables and System Tuning Profiles

Adjust tunable kernel parameters according to different workload requirements and configure system tuning daemon profiles to optimize Red Hat Enterprise Linux.

Managing Resource Limits and Control Groups

Manage resource contention with POSIX limits and control groups. Define resource usage limits for services, applications, and user processes.

Performance Analysis with Performance Counters and System Call Tracing

Analyze system and application behavior by monitoring hardware performance counters and tracing system calls and library function execution.

Performance Analysis with SystemTap and eBPF

Use SystemTap and eBPF to trace performance counters and examine software events occurring within the kernel and user processes. Apply these capabilities to diagnose system and application performance behavior.

Tuning CPU Usage

Control CPU utilization by managing processor resource sharing and scheduling behavior for different workloads.

Tuning Memory Usage

Explore how the Linux kernel manages memory and learn how to tune memory utilization for different workload requirements.

Tuning Storage I/O Performance

Measure storage I/O performance and use the collected information to optimize different storage devices, file systems, and workload scenarios.

Tuning Network Performance

Improve network throughput, reduce latency, and optimize overall network efficiency.

Tuning Red Hat Enterprise Linux Virtual Machines

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Optimize Red Hat Enterprise Linux virtual machines by applying appropriate tuning profiles and system settings designed to reduce virtualization overhead.

Comprehensive Review

Reinforce the performance tuning techniques and skills covered throughout the course through practical review activities. Evaluate the knowledge acquired during RH442 and prepare for the **Red Hat Certified Specialist in Linux Performance Tuning (EX442)** exam.