Red Hat Performance Tuning: Linux in Physical, Virtual, and Cloud

Course Duration: 40 Hours **Course Code : RH442**

1. Course Overview

The **Red Hat Performance Tuning: Linux in Physical, Virtual, and Cloud (RH442)** course teaches system administrators how to **analyze, optimize, and troubleshoot system performance** for Red Hat Enterprise Linux (RHEL) workloads in **physical, virtual, and cloud environments**.

Participants will gain hands-on experience in identifying **bottlenecks, tuning system parameters, and optimizing CPU, memory, storage, and network performance**. The course emphasizes best practices for **real-world performance management**, ensuring RHEL systems operate efficiently under varying workloads.

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2. What You'll Learn

- Analyze **system performance metrics** and identify bottlenecks.
- Tune **CPU, memory, I/O, and network performance** for optimal efficiency.
- Optimize **virtualized and cloud-based RHEL systems**.
- Monitor and troubleshoot **system performance using diagnostic tools**.
- Implement **performance tuning for workloads and applications**.
- Apply **real-time monitoring and automated tuning strategies**.
- Understand **kernel parameters and advanced tuning options**.

- Use best practices to maintain **high performance in enterprise environments**.

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3. Target Audience

This course is intended for:

- Linux system administrators responsible for **performance management**.
- IT operations engineers and DevOps professionals optimizing **enterprise workloads**.
- Cloud and virtualization administrators managing **RHEL performance**.
- Professionals seeking to **troubleshoot and improve system efficiency**.

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4. Pre-Requisites

Participants should have:

- Red Hat Certified System Administrator (**RHCSA**) or equivalent experience.
- Strong understanding of **Linux system administration and networking**.
- Familiarity with **virtualization and cloud environments** is helpful.

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5. Course Content

Module 1: Performance Fundamentals

- Performance concepts and metrics
- Understanding system bottlenecks

Module 2: Monitoring System Performance

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- Using **top, vmstat, iostat, sar, and other tools**
- Real-time vs historical performance data

Module 3: CPU Performance Tuning

- Analyzing CPU usage
- Optimizing CPU scheduling and load balancing

Module 4: Memory Performance Tuning

- Monitoring memory usage and swap
- Optimizing memory allocation and cache management

Module 5: I/O and Storage Performance

- Monitoring disk performance
- Tuning storage parameters and file systems

Module 6: Network Performance Tuning

- Analyzing network throughput and latency
- Optimizing network stack and kernel parameters

Module 7: Virtual and Cloud Performance

- Tuning virtual machines and cloud instances
- Managing performance in hybrid environments

Module 8: Kernel and System Tuning

- Configuring sysctl parameters
- Applying kernel-level optimizations

Module 9: Application and Workload Optimization

- Identifying resource-intensive applications
- Tuning for web, database, and container workloads

Module 10: Troubleshooting Performance Issues

- Diagnosing and resolving common performance problems

- Using logs and profiling tools

Module 11: Hands-On Labs

- Real-world tuning exercises
- Monitoring, troubleshooting, and optimizing physical, virtual, and cloud systems

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