

# ONTAP Performance Analysis Training

## Course Outline

**Duration : 3 days**

### **Module 1: Performance Analysis Fundamentals**

- Basic Concepts of Performance
- Performance Monitoring Methodology

### **Module 2: Performance Analysis Tools**

- Performance terminology
- Using Active IQ Unified Manager

### **Module 3: Storage System Architecture and Data Flow**

- FAS and AFF Architecture
- Data Flow
- NVRAM Functionality

### **Module 4: WAFL**

- WAFL Functions
- WAFL Readahead
- Resolving WAFL issues

### **Module 5: CPU and Memory**

- Identifying CPU Performance Bottlenecks
- Resolving CPU Performance Bottlenecks
- Identifying Memory Performance Bottlenecks
- Resolving Memory Performance Bottlenecks

### **Module 6: Disk Subsystem**

- Disk Subsystem Hardware
- Analyzing and Isolating Disk Subsystem Bottlenecks
- Analyzing Disk Subsystem Bottlenecks with Statit
- Resolving Disk Subsystem Bottlenecks

## **Module 7: Cache Subsystem**

- Cache Subsystem Overview
- Flash Cache Feature
- Flash Pool Feature
- Flash Cache Policies and Flash Pool Policies
- Storage Pool
- Cache Sizing

## **Module 8: Storage Quality of Service**

- Managing System Performance with QoS

## **Module 9: NAS Subsystem**

- NAS functions
- Identifying NAS Bottlenecks
- Resolving NAS Bottlenecks

## **Module 10: SAN Subsystem**

- SAN Overview
- SAN Multipathing
- SAN load balancing
- SAN I/O Misalignment
- Queue depth

### **Labs:**

- Identifying cluster components
- Analyzing performance statistics
- OnCommand performance manager thresholds, events and alerts
- Identifying and resolving storage controller performance issues
- WAFL performance monitoring and analysis
- Identifying and resolving disk I/O bottlenecks
- Exploring cache performance

- Cluster interconnect performance
- Workload management with storage QoS
- NAS performance
- SAN protocol performance