

HP Education Services

Performance Analysis and Tuning for HP NonStop Systems (U4195S)



Become familiar with the system load balance approach and performance tuning concepts for your HP NonStop system. Learn how to capture and analyze performance data, then adapt the adjustments to maximize performance and increase system utilization. Topics include Measure, Measure Subsystem Entities, queuing theory, TPM, RPM, ViewSys, Web ViewPoint practical approaches to system tuning, and using performance tools. The five-day course is 60 percent lecture and 40 percent hands-on labs using NonStop servers.

Audience

- System managers, technical support, and performance analysis personnel
- Systems and application designers and developers

Prerequisites

- Concepts and Facilities for NonStop Systems (U4147S) or
- NonStop S-series Server Administration I (U5448S) and NonStop S-series Server Administration II (U5449S) or
- NonStop NS-series Server Administration I (U8528S) and NonStop NS-series Server Administration II (U8638S) or
- NonStop NB-series Server Administration I (HG776S) and NonStop NB-series Server Administration II (HG777S) or
- Two years equivalent NonStop system management experience

Course Title: Performance Analysis and Tuning for HP NonStop Systems

HP Product Number: U4195S

Category/Subcategory: NonStop / Operations and Management

Course Length: 5 days

Level: Advanced

Delivery Language: English

To Order: To review course schedules and to register for a course, visit www.hp.com/learn/nonstop and select your country from the drop down menu, or, contact your HP sales representative or HP authorized channel partner.

Course Objective

At the conclusion of this course you should be able to:

- Apply a basic tuning principle
- Analyze Measure's CPU entity
- Describe the processor's memory subsystem
- Apply several basic queuing theory formulas
- Analyze disk cache-hit ratios and fragmentation
- Calculate a volume's true write cache-hit ratio
- Use Reload Analyzer
- Analyze process priorities
- Analyze process memory consumption
- Identify processes with long \$RECEIVE queues
- Evaluate TCP process and server class parameters for best performance
- Be familiar with the functionality of NonStop system utilities: ViewSys, Web ViewPoint, Peek, Enform, GPA, TPDC, TPM, ASAP, APB, Diskpro, RPM, and TCM
- Use Measure and SQLCI to analyze NonStop SQL/MP performance
- Identify positive and negative factors in application performance
- Use Measure entities for application analysis: DISCOPEN, FILE, PROCSH, USERDEF, and TMF

Benefits to You

- Learn how to regularly monitor your Integrity systems and quickly recognize problems so users experience smooth functioning IT operations
- Effectively utilize the range of available performance tools
- Learn practical performance tuning procedures reinforced through extensive hands-on lab sessions
- Optimize your Integrity systems by identifying and removing performance bottlenecks

Why education services from HP?

- Focus on job-specific skills
- Hands-on practice
- Experienced and best-in-the-field HP instructors
- Comprehensive student materials
- More than 80 training locations worldwide
- Customized on-site delivery

Next Steps

- Consider attending the other optional and advanced learning courses in the HP NonStop Operations Management curriculum

Detailed Course Outline

Module 1 - Performance Analysis Introduction

- OLTP versus batch processing
- Service-Level Agreement (SLA)
- General tuning procedure
- Two aspects of response times
- System and application diagrams
- Measure subsystem
- Performance manuals
- Lab: meascom

Module 2 - CPU Subsystem

- HP NonStop system platforms and architectures
- NonStop Advanced Architecture (NSAA)
- NonStop Multi-core Architecture (NSMA)
- NonStop Value Architecture (NSVA)
- NonStop system processor types
- Meascom output for CPU entity
- Processor's memory and disk subsystem
- CISC versus EPIC
- CPU's processes and counters
- New ID and CPU counter fields
- Lab: CPU matrix

Module 3 - Queuing Theory

- Queues in NonStop components
- Queuing theory factors and basic model
- Queue length and response times versus utilization
- Key lessons from queuing theory
- Non-random and processor arrivals patterns

Module 4 - Disk Subsystem

- NonStop S-series and NS-series disk architecture
- Meascom output for DISC entity
- Disk subsystem
- Analyzing cache performance and settings
- SCF INFO/ALTER DISK - NonStop H/J-series system
- Meascom output for SERVERNET entity
- NonStop S/H-series system disk paths
- Balancing disk load
- Storage and IP Cluster I/O Module (CLIM)
- Storage management foundation
- Disk fragmentation
- Lab: DISK matrix

Module 5 - Disk Files

- Obtaining file information
- FUP INFO, DETAIL
- Enscribe structured files
- Key-sequenced file structure
- File buffering
- Sync-depth
- Data integrity risk for buffered, unaudited files
- Measure's file-oriented entities
- Write cache-hit ratio for a volume
- Finding unbuffered and heavily-read files
- Other DISKFILE counters
- Enscribe alternate-key files
- File partitioning
- File block structure (FUP INFO, STAT)
- Other Enscribe file attributes
- File fragmentation and disorganization
- Reload Analyzer (TRA) and FUP RELOAD
- Labs: disk and diskfile; Tandem Reload Analyzer (TRA)

Module 6 - Processes

- RUN command
- Process priorities
- Mixed Workload Enhancement (MWE)
- Meascom output for the PROCESS entity
- Process CPU, memory, and message activities

- Process execution modes
- Process matrix
- Lab: processes

Module 7 - Pathway Tuning

- Pathway overview
- TCP memory structure
- TCP process and server class attributes
- CONTROL TCP command
- TCP and terminal statistics
- Server statistics and linking
- Pathway/XM
- Lab: system tuning

Module 8 - Other NonStop System Performance Tools

- ViewSys
- Web ViewPoint
- Peek
- Enform
- Guardian Performance Analyzer (GPA)
- Tandem Performance Data Collector (TPDC)
- Tandem Performance Management (TPM)
- Availability Stats and Performance (ASAP)
- Automatic Process Balancer (APB)
- Disk prospector (Diskpro)
- Real-time Process Monitor (RPM)
- Tandem Capacity Model (TCM)
- Lab: Real-time Process Monitor (RPM)

Module 9 - NonStop SQL/MP Tuning

- NonStop SQL/MP overview
- Fundamental issues
- Creating base tables
- Indexes
- SQLCI FILEINFO
- Measure entities for NonStop SQL/MP
- Meascom outputs
- Statement selectivity
- SQLCI update and display statistics
- FUP RELOAD of SQL tables
- SQLCI EXPLAIN
- Sequential block buffering - RSBB and VSBB
- SQLCOMP compiler options

- CONTROL TABLE, EXECUTOR, and QUERY options
- Access options
- Sequential prefetch
- SQL/MX

Module 10 – Application Tuning

- Flow map
- Process performance factors
- Application structure problems
- Meascom outputs
- Remote Database Facility (RDF)
- Lab: Tandem Performance Data Collector (TPDC)

Onsite Delivery Equipment Requirements

- NonStop server with four processors and six disk volumes G06.28, H06.15, J06.04 or later with Measure, TPDC, and RPM installed
- Private class requests:
- Might require up to two days set-up time on a customer system prior to the class
- Access to a super.group logon for the instructor

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