



# HPE NonStop SQL/MP Database Management U4180S

<b>HPE course number</b>	U4180S
<b>Course length</b>	5 days
<b>Delivery mode</b>	ILT
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This course introduces the tasks and tools used by a database administrator or system manager who is responsible for the daily management and protection of NonStop SQL/MP database, programs that access the database, and other associated database elements. Hands-on labs give you practical experience in performing management tasks against a database with applications.

## Why HPE Education Services?

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## Audience

- Database administrators
- System managers
- People responsible for availability of NonStop SQL/MP databases and applications

## Benefits to you

- Review of the NonStop SQL/MP environment
- SQL/MP installation and version management
- Creating SQL/MP database base objects
- Loading, copying, appending, and reorganizing data
- DataLoader/MP
- Updating SQL/MP statistics
- Managing SQL/MP embedded programs
- Altering SQL/MP database objects
- Moving SQL/MP database objects
- Removing SQL/MP database objects

- Managing database protection and recovery using NonStop Transaction Manager/MP (TM/MP)
- Backing up and restoring SQL/MP database objects
- Database security management
- Tools for monitoring performance
- Enhancing DP2 performance
- Managing sorts
- Controlling SQL/MP processes

## Prerequisites

- Concepts and Facilities course
- NonStop SQL/MP Essentials course
- Solid understanding of systems, application areas, and daily operations for both systems and applications
- Understanding of the database environment at your business

\*Realize Technology Value with Training, IDC Infographic 2037, Sponsored by HPE, January 2016

## Detailed course outline

### Module 1: NonStop SQL/MP Environment

- Processes, structure, and objects of the NonStop SQL/MP environment
- Locating the SQL/MP system catalog
- Determining the number and location of SQL/MP catalogs on a system
- Identifying and locating the objects registered in an SQL/MP database
- Related products and additional tables they can create in the SQL/MP system catalog
- Locate the system catalog
- Locate all user catalogs on a system
- Identify the objects in the PERSNL database and their dependent objects
- Identify what SQL/MP processes you have running for your session
- Create a user catalog

Lab Exercise (30 minutes)  
NonStop SQL/MP Environment

### Module 2: installation and Version Management

- Identifying the system requirements for NonStop SQL/MP
- Installation and initialization process of SQL/MP software
- Version management for SQL/MP objects
- Managing the migration of SQL/MP from one NonStop Kernel operating system release to another
- Compatibility of SQL/MP software versions within a network
- Identify the versions of NonStop SQL/MP, the catalog, and several objects on your system

Lab Exercise (30 minutes)

Installation and Version Management

### Module 3: Creating NonStop SQL/MP Database Objects

- Planning and creating NonStop SQL/MP database objects
- Performance considerations and guidelines for creating SQL/MP database objects
- Query metadata for the SQL/MP objects that have been created

Lab Exercise (1.5 hours)

Creating SQL/MP Database Objects

### Module 4: Copying, Loading, Appending, Reorganizing, and Converting Data

- Converting an Enscribe database to a NonStop SQL/MP database
- Use the COPY utility to load, extract, or display data
- Using the LOAD or APPEND utilities to load data
- Re-organizing data in key-sequenced tables and indexes
- Archiving data from the database
- Checking the referential integrity of the database

Lab Exercise (1 hour)

Using Copy, Load and Append Utilities

Lab Exercise (40 minutes)

Reorganizing Data

Lab Exercise (40 minutes)

Converting an Enscribe Database to an SQL/MP Database

### Module 5: DataLoader/MP

- How DataLoader/MP can be used to load and maintain database data
- Components of DataLoader/MP (main logic, library routines, and user exits)
- Building customized DataLoader/MP processes
- Running DataLoader/MP processes

### Module 6: Updating NonStop SQL/MP Statistics

- Creating DataLoader/MP processes to load the data given a data loading scenario
- NonStop SQL/MP statistics
- Statistics for partitioned tables
- How the optimizer uses statistics to calculate selectivity for predicates
- How to update statistics
- When to update statistics
- Testing the impact of updating statistics in a test environment or the production environment
- Querying the catalog for statistical information
- Copying the production system statistics to the development system
- Statistics performance degradation

Lab Exercise (30 minutes)

Updating SQL/MP Statistics

### Module 7: Managing NonStop SQL/MP Embedded Programs

- Explicit compilation and automatic recompilation of NonStop SQL/MP programs
- SQL/MP program run-time environment
- Compiling COBOL and C embedded SQL programs in the Guardian and Open System Services (OSS) environments using native and non-native compilers
- SQL/MP compiler options
- Creating, implementing, and testing a compilation strategy for an SQL/MP program
- Determining what actions make an SQL/MP program invalid
- Detecting invalid SQL/MP programs
- Detecting auto-recompiling SQL/MP programs
- Plan and implement different compiler options using two scenarios

Lab Exercise (45 minutes)

Managing SQL/MP Embedded Programs

<b>Module 8: Altering NonStop SQL/MP Database Objects</b>	<ul style="list-style-type: none"> <li>Altering NonStop SQL/MP objects and the impact to the database environment</li> <li>Methods for partitioning tables and indexes</li> </ul>	<ul style="list-style-type: none"> <li>SQL/MP Format 2 Enabled objects and Format 1 and Format 2 partitions</li> </ul> Lab Exercise (45 minutes) Altering SQL/MP Database Objects
<b>Module 9: Moving NonStop SQL/MP Database Objects</b>	<ul style="list-style-type: none"> <li>Process for moving NonStop SQL/MP objects</li> <li>Methods to move SQL/MP objects (Re-create and Load, ALTER MOVE, DUP, Backup and Restore)</li> </ul>	Lab Exercise 9.1 (30 minutes) Moving SQL/MP Database Objects Lab Exercise 9.2 (30 minutes) Moving SQL/MP Embedded Programs
<b>Module 10: Removing NonStop SQL/MP Database Objects</b>	<ul style="list-style-type: none"> <li>Removing NonStop SQL/MP objects</li> <li>Removing objects using the DROP command and PURGE and CLEANUP utilities</li> <li>Removing data from a table or a partition of a table using PURGEDATA utility</li> <li>Dropping a partition of a table using ALTER TABLE ... DROP PARTITION</li> </ul>	<ul style="list-style-type: none"> <li>Dropping a partition of an index using ALTER INDEX ... DROP PARTITION</li> <li>TACL GOAWAY command</li> </ul> Lab Exercise (1 hour, 15 minutes) Removing SQL/MP Database Objects
<b>Module 11: Managing Database Protection and Recovery</b>	<ul style="list-style-type: none"> <li>NonStop Transaction Manager/MP (TM/MP) methods of protection and recovery</li> <li>TM/MP considerations for NonStop SQL/MP objects</li> <li>Protecting SQL/MP database with TM/MP</li> <li>Online dump strategy</li> <li>Recovery strategy</li> </ul>	<ul style="list-style-type: none"> <li>TM/MP recovery of SQL/MP objects and their catalog</li> <li>TM/MP recovery of SQL/MP objects without recovering their catalog</li> <li>Using licensed copy of SQLCI2 to insert, update, or delete metadata</li> </ul>
<b>Module 12: Backing up and Restoring NonStop SQL/MP Database Objects</b>	<ul style="list-style-type: none"> <li>File-mode BACKUP and RESTORE options that can be used with NonStop SQL/MP objects</li> <li>Developing protection strategies with the BACKUP and RESTORE utilities for SQL/MP objects</li> <li>Volume-mode options of the BACKUP and RESTORE utilities</li> <li>Using the tape simulator program to implement BACKUP and RESTORE options</li> <li>Possible causes for objects becoming unusable</li> </ul>	<ul style="list-style-type: none"> <li>Locating unusable objects</li> <li>Removing unusable objects</li> <li>Identifying the appropriate tools to make objects usable</li> <li>Using the simulator program to implement Backup and Restore options</li> </ul> Lab Exercise (Optional, 45 minutes) Backing Up and Restoring SQL/MP Database Objects
<b>Module 13: Managing NonStop SQL/MP Database Security</b>	<ul style="list-style-type: none"> <li>Process for securing the Nonstop SQL/MP environment</li> <li>Authorization requirements for SQL/MP operations</li> <li>SQL/MP security commands and utilities</li> <li>SQL/MP protection views</li> </ul>	<ul style="list-style-type: none"> <li>NonStop Kernel security and the Safeguard product security characteristics</li> <li>Security for the production and development environment</li> </ul> Lab Exercise (1 hour) Managing SQL/MP Database Security
<b>Module 14: Tools for Monitoring Performance</b>	<ul style="list-style-type: none"> <li>Performance tools: SQLCI, Measure product, Tandem Performance Data Collector (TPDC), and basic guidelines for monitoring performance</li> </ul>	
<b>Module 15: Disk process (DP2) Performance Enhancements</b>	<ul style="list-style-type: none"> <li>Methods to enhance the performance of the disk process</li> </ul>	
<b>Module 16: Managing Sorts</b>	<ul style="list-style-type: none"> <li>Sorts available to NonStop SQL/MP</li> <li>Managing sort processes to control system resources</li> </ul>	<ul style="list-style-type: none"> <li>Configuring serial and parallel sort operations</li> </ul>
<b>Module 17: Controlling NonStop SQL/MP Processes</b>	<ul style="list-style-type: none"> <li>Controlling the impact of NonStop SQL/MP processes on performance</li> </ul>	

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