

Course length	5 days
Delivery mode	ILT
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# HPE NonStop SQL/MP Database Management U4180S

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 HPE 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.

### Audience

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

#### **Benefits to you**

- Review of the HPE 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

## **Detailed course outline**

Module 1: NonStop SQL/MP Environment	<ul> <li>Processes, structure, and objects of the NonStop SQL/MP environment</li> <li>Locating the SQL/MP system catalog</li> <li>Determining the number and location of SQL/MP catalogs on a system</li> <li>Identifying and locating the objects registered in an SQL/MP database</li> <li>Related products and additional tables they can create in the SQL/MP system catalog</li> <li>Lab Exercise (30 minutes)</li> <li>HPE NonStop SQL/MP Environment</li> <li>Identifying the system requirements for NonStop SQL /MP</li> </ul>	<ul> <li>Locate the system catalog</li> <li>Locate all user catalogs on a system</li> <li>Identify the objects in the PERSNL database and their dependent objects</li> <li>Identify what SOL/MP processes you have running for your session</li> <li>Create a user catalog</li> </ul>
	<ul> <li>Installation and initialization process of SQL/MP software</li> <li>Version management for SQL/MP objects</li> <li>Managing the migration of SQL/MP from one NonStop Kernel operating system release to another</li> </ul>	<ul> <li>Companying of SQL/MF software versions within a network</li> <li>Lab Exercise (30 minutes)</li> <li>Installation and Version Management</li> <li>Identify the versions of NonStop SQL/MP, the catalog, and several objects on your system</li> </ul>
Module 3: Creating NonStop SQL/MP Database Objects	<ul> <li>Planning and creating NonStop SQL/MP database objects</li> <li>Performance considerations and guidelines for creating SQL/MP database objects</li> </ul>	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	<ul> <li>Converting an Enscribe database to a NonStop SQL/MP database</li> <li>Use the COPY utility to load, extract, or display data</li> <li>Using the LOAD or APPEND utilities to load data</li> <li>Re-organizing data in key-sequenced tables and indexes</li> <li>Archiving data from the database</li> </ul>	<ul> <li>Checking the referential integrity of the database</li> <li>Lab Exercise (1 hour)</li> <li>Using Copy, Load and Append Utilities</li> <li>Lab Exercise (40 minutes)</li> <li>Reorganizing Data</li> <li>Lab Exercise (40 minutes)</li> <li>Converting an Enscribe Database to an SQL/MP Database</li> </ul>
Module 5: DataLoader/MP	<ul> <li>How DataLoader/MP can be used to load and maintain database data</li> <li>Components of DataLoader/MP (main logic, library routines, and user exits)</li> </ul>	<ul> <li>Building customized DataLoader/MP processes</li> <li>Running DataLoader/MP processes</li> </ul>
Module 6: Updating NonStop SQL/MP Statistics	<ul> <li>Creating DataLoader/MP processes to load the data given a data loading scenario</li> <li>HPE NonStop SQL/MP statistics</li> <li>Statistics for partitioned tables</li> <li>How the optimizer uses statistics to calculate selectivity for predicates</li> <li>How to update statistics</li> <li>When to update statistics</li> </ul>	<ul> <li>Testing the impact of updating statistics in a test environment or the production environment</li> <li>Querying the catalog for statistical information</li> <li>Copying the production system statistics to the development system</li> <li>Statistics performance degradation</li> <li>Lab Exercise (30 minutes)</li> <li>Updating SOL/MP Statistics</li> </ul>
Module 7: Managing NonStop SQL/MP Embedded Programs	<ul> <li>Explicit compilation and automatic recompilation of HPE NonStop SQL/MP programs</li> <li>SQL/MP program run-time environment</li> <li>Compiling COBOL and C embedded SQL programs in the Guardian and Open System Services (OSS) environments using native and non-native compilers</li> <li>SQL/MP compiler options</li> <li>Creating, implementing, and testing a compilation strategy for an SQL/MP program</li> </ul>	<ul> <li>Determining what actions make an SQL/MP program invalid</li> <li>Detecting invalid SQL/MP programs</li> <li>Detecting auto-recompiling SQL/MP programs</li> <li>Lab Exercise (45 minutes)</li> <li>Managing SQL/MP Embedded Programs</li> <li>Plan and implement different compiler options using two scenarios</li> </ul>

Module 8: Altering NonStop SQL/MP Database Objects	<ul> <li>Altering NonStop SQL/MP objects and the impact to the database environment</li> </ul>	SQL/MP Format 2 Enabled objects and Format 1 and Format 2 partitions
	<ul> <li>Methods for partitioning tables and indexes</li> </ul>	Lab Exercise (45 minutes) Altering SQL/MP Database Objects
Module 9: Moving NonStop SQL/MP Database Objects	<ul> <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
Module 10: Removing NonStop SQL/MP Database Objects	<ul> <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> <li>Dropping a partition of an index using ALTER INDEX DROP PARTITION</li> <li>TACL GOAWAY command Lab Exercise (1 hour, 15 minutes) Removing SQL/MP Database Objects</li> </ul>
Module 11: Managing Database Protection and Recovery	<ul> <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> <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>
Module 12: Backing up and Restoring NonStop SQL/MP Database Objects	<ul> <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> <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> <li>Lab Exercise (Optional, 45 minutes)</li> <li>Backing Up and Restoring SQL/MP Database Objects</li> </ul>
Module 13: Managing NonStop SQL/MP Database Security	<ul> <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> <li>NonStop Kernel security and the Safeguard product security characteristics</li> <li>Security for the production and development environment</li> <li>Lab Exercise (1 hour)</li> <li>Managing SQL/MP Database Security</li> </ul>
Module 14: Tools for Monitoring Performance	<ul> <li>Performance tools: SQLCI, Measure product, Tandem Performance Data Collector (TPDC), and basic guidelines for monitoring performance</li> </ul>	
Module 15: Disk process (DP2) Performance Enhancements	<ul> <li>Methods to enhance the performance of the disk process</li> </ul>	
Module 16: Managing Sorts	<ul><li>Sorts available to NonStop SQL/MP</li><li>Managing sort processes to control system resources</li></ul>	Configuring serial and parallel sort operations
Module 17: Controlling NonStop SQL/MP Processes	Controlling the impact of NonStop SQL/MP processes     on performance	

**Course data sheet** 

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