

HP NonStop Transaction Management Facility software

Data sheet



NonStop TMF software is the foundation for building fault- and disaster-tolerant applications without specialized programming knowledge. It provides unparalleled database consistency, transaction integrity, and the ability to perform online database archiving and maintenance.



Features at a glance

- Robust two-phase commit protocol for transaction protection and database integrity
- Parallel, high-performance transaction management
- Recovery from accidental or intentional database modification or deletion
- Support for database reorganization, partition split/merge/move, and backup to disk or tape with zero application downtime
- Automated tape catalog for minimizing operator error
- Tape autoloader and silo support

HP NonStop Transaction Management Facility (NonStop TMF) software provides transaction protection and database consistency in demanding real-time enterprise, online analytical processing (OLAP), and operational data store (ODS) environments.

Using the efficient messaging system of the HP NonStop Kernel operating system, NonStop TMF software is the fastest, most scalable transaction manager in the industry. Its fault-tolerant process-pair software architecture means that no hardware or software reconfiguration is required, memory data structures do not need to be rebuilt, and pending transactions are not lost because of any single point of hardware or software failure. And its online reconfigurability and high-speed recovery features maximize application availability.

NonStop TMF software makes transaction management easy for programmers, because they can define transaction boundaries with just two commands.

Comprehensive transaction protection

Transaction atomicity

In the NonStop TMF environment, programmers delineate transaction boundaries using only two commands: BEGINTRANSACTION and ENDTRANSACTION. NonStop TMF then treats as a unit all of the operations defined between those transaction boundaries.

NonStop TMF software ensures that all of the operations of a transaction are completed successfully before any of them permanently affect the database. In other words, either *all* of the changes are committed to the database or *none* of them are. The database always shows a consistent view of your business.

Support for distributed transactions

NonStop TMF software maintains the consistency of the database at every disk and node in the network. A single NonStop TMF transaction can access data partitioned among all disks on a network of NonStop systems or, using middleware such as BEA WebLogic server or Tuxedo, distributed across heterogeneous networks (see figure). Distributed transactions are afforded the same thorough protection as local transactions.

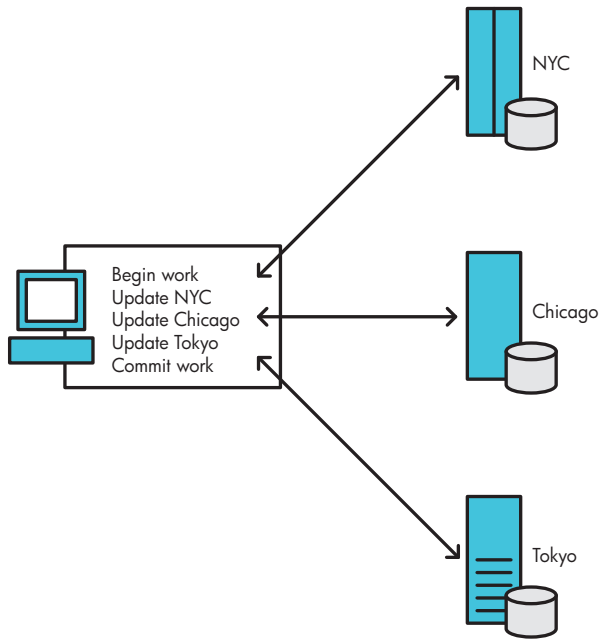
Automatic audit logging

Before a transaction alters the state of a database, an “image” of the affected rows in the database is written to an audit log. NonStop TMF software refers to the audit log when backing out transactions or rebuilding lost files or tables.

Transaction backout

If any part of a transaction fails to update the database properly, is aborted programmatically, or if there is an application failure, NonStop TMF software automatically backs out the transaction in its entirety, returning the database to its state just prior to the start of that transaction.

A single NonStop TMF transaction can protect data distributed anywhere on a network.



Recovery from failures

When a server is restarted—after a power outage, for example—NonStop TMF software searches the log for incomplete transactions that were left pending as a result of the failure. After locating incomplete transactions, NonStop TMF automatically backs out these transactions. This function is sometimes called *rollback*.

Recovery from database damage

NonStop TMF software can help protect your database from intentional or accidental damage. For example, if a file or table is purged or a column is altered, system operators can use the information archived by NonStop TMF to restore the database to its state either at a specific time or just prior to the incident.

Minimizes operator error

NonStop TMF software archives audit logs and backup copies of the database to local or remote tape or disk. It maintains an online catalog of information about the archived data, including its location on external media.

This catalog allows system operators to react quickly and confidently during unplanned outages, assisting them in recovering any lost data. When a portion of a database has been lost, NonStop TMF software refers to its catalog and notifies system operators of the tape or other archive media that must be loaded.

Support for tape automation

NonStop TMF software supports the HP 9710 Automated Cartridge System, the CTL700 and CTL700M tape libraries from Tributary Systems, and the StorageTek 4400, 9170, and L700 tape silos, and tape drives with automatic cartridge loaders in addition to virtual tape units. This means that tape handling for archiving and recovery can be automated.

Parallel, high-performance transaction management

NonStop TMF software is the highest-performance distributed transaction manager in the industry. It leverages the efficient, message-based NonStop Kernel operating system to support distributed transaction processing environments that can scale to thousands of NonStop server processors and disks. Architectural changes made to NonStop TMF software in Release Version Update G06.20 of the NonStop Kernel operating system can substantially increase performance for the largest NonStop TMF environments.

Efficiency in business intelligence environments

NonStop TMF software is also useful as a cost-effective means of backing up large decision support system (DSS) databases, which characteristically receive minor updates at regular intervals. Because NonStop TMF software can restore a DSS database from the audit log that it maintains, operators do not need to run static backups of the entire database each time it is updated.

High-capacity, parallel audit log

NonStop TMF software's consolidated audit log consists of a single integrated audit trail that may be partitioned across multiple disk volumes for performance. While audit data is being written to one set of disk volumes, earlier audit data can be read from another set of disk volumes for recovery or archival purposes.

Continuous data availability

Online backups

Backups are completely transparent to applications running on the server and are performed online and in parallel for maximum efficiency. Whereas other backup solutions may need to be specialized for the application, NonStop TMF can perform online backups of any protected database file and ensure transactional consistency when recovered.

NonStop TMF software can also ensure transaction integrity of transitory information such as queue files without requiring that they or the associated audit logs be archived.

Online reconfigurability

System operators can dynamically alter nearly all aspects of the NonStop TMF software configuration while servers and applications remain online. For example, system operators can add disks, rebalance HP NonStop SQL data across disks, distribute the audit log over additional volumes, or alter the configured value of other NonStop TMF software parameters—without application downtime.

High-speed recovery

In the event of an unplanned outage, such as an extended power failure, failure of an unmirrored disk drive, or catastrophic system outage, NonStop TMF software employs high-performance, parallel operations to back out incomplete transactions and recover lost files or tables.

Ordering information

As the foundation for database consistency and hot-site backup, NonStop TMF software is included with the NonStop Kernel operating system and does not need to be ordered separately.

Specifications

System requirements

Hardware	Any NonStop S-series server
Software	NonStop Kernel operating system, Release Version G06 or later.

Because NonStop TMF runs operations in parallel, it can recover a disk or data volume quickly. For example, NonStop TMF can use all tape drives available to the system—concurrently and in parallel—to restore the system's database.

Used as part of a data center's disaster recovery plan, NonStop TMF software can restore a server's entire database to another node, typically within hours.

For continuous application availability, HP NonStop Remote Database Facility (NonStop RDF) software can be used to maintain an online copy of the database at a secondary site. This allows application takeover by the backup site within seconds of the primary site's failure. However, even with NonStop RDF protection, NonStop TMF software's online backups should still be used to protect your database from accidental or intentional modification or deletion.

Interoperability and open standards support

Consolidated audit log

NonStop TMF software maintains a single, consolidated audit log for all transaction monitors, rather than a separate log for each. This log includes transactions from NonStop TMF software and supports transactions generated by HP Pathway/iTS, NonStop Server for Java, NonStop Tuxedo, NonStop CORBA, NonStop Servlets for JavaServer Pages, NonStop Java Message Service, BEA WebLogic Server, and HP NonStop SQL and Enscribe databases.

NonStop TMF software gives developers the flexibility to enhance existing applications using their choice of transaction monitors, with the assurance that transactions spanning multiple monitors and resource managers are uniformly supported by the NonStop TMF audit log.

This single log also allows easy near-real-time replication of all database changes to heterogeneous systems without any programming using third-party software.

Support for open transactions

NonStop TMF software conforms to the X/Open DTP XA standard, designed by The Open Group (a vendor consortium), allowing selected partners to implement heterogeneous middleware environments using the standard XA interface. This interface enables resource managers to join transactions, to perform two-phase commits, and to recover in-doubt transactions following a failure anywhere in the network.

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