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Contents

About This Manual

- Supported Release Version Updates (RVUs)
- Intended Audience
- New and Changed Information
  - Changes to the 866492-003 manual
  - Changes to the 866492-002 manual
  - Changes to the 866492-001 manual
  - Changes to the 522696-022R manual
  - Changes to the 522696-022 manual
- Publishing History

Backup and Restore 2 Overview

- Backup and Restore 2 Components
  - Backup and Restore Command Interface (BRCOM)
  - Data Service
  - Data Management Application (DMA)
  - Tape Service
- Backup and Restore 2 Files
  - Backup and Restore Jobs (BRJOBS) File
  - Backup and Restore Command (BRCMD) File
  - Backup and Restore Configuration (BRCOMF) File
  - Backup and Restore Intermediate Catalog (BRIC) File
- Supported Objects
  - Open System Services (OSS)
  - SQL/MX
- Relationship between Backup Restore and Backup Restore 2
- Difference between BR and BR2
- Related Products
  - Distributed Systems Management/Tape Catalog (DSM/TC)
  - HPE NonStop Transaction Management Facility (TMF)

Installing Backup and Restore 2

- Hardware Required
- Software Required
- Installing Software
  - Installing Backup and Restore 2 to Support SQL/MX
  - Compatibility Matrix for BR2 and SQL/MX
  - Installing the Heap Manager
  - Post-Installation Tasks

Configuring Backup and Restore 2

- Managing Configuration Information
- Displaying Configuration Information
  - Displaying the Configuration Information in the BRCOMF File
  - Displaying Configuration Information for a Job
- Changing the Volumes for All Jobs
Contents

BRCOM Commands ...................................................................................36
Using the BRCOM Command Interface................................................... 29
Before Starting BRCOM........................................................................... 29
Starting BRCOM...................................................................................... 29
Stopping BRCOM..................................................................................... 30
Entering BRCOM Commands..................................................................... 30
Terminating a Command........................................................................... 30
Including Multiple Commands on the Same Line.................................. 30
Continuing a Command Line.................................................................... 30
Quoted Strings for OSS Path Names....................................................... 30
Octal ASCII Character Code..................................................................... 30
Specifying Special Characters................................................................. 30
Managing Jobs.......................................................................................... 32
Creating Jobs............................................................................................ 32
Handling Operations That Use the BRCOM Terminal.............................. 32
Using the Break Key................................................................................ 32
Using DEFINEs With Backup and Restore 2............................................ 33
Creating and Using a Command File....................................................... 33
Using an IN File........................................................................................ 33
Using the BRCMD File............................................................................. 34
Reusing a JOB ID After a BRCOM Error................................................ 35

BRCOM Commands..................................................................................36
Command................................................................................................. 36
Guideline................................................................................................. 36
Examples................................................................................................. 36
? Command.............................................................................................. 37
Guideline................................................................................................. 37
Examples................................................................................................. 37
ABORT JOB Command............................................................................ 37
Guidelines............................................................................................... 38
Example................................................................................................. 38
ALTER CONFIG Command (Super Group Only)..................................... 38
Guidelines............................................................................................... 39
Example................................................................................................. 39
BACKCOPY Command............................................................................. 39
Guidelines............................................................................................... 40
Example................................................................................................. 41
BACKUP Command.................................................................................. 41
CLEANUP JOB Command....................................................................... 41
Guidelines............................................................................................... 42
Example................................................................................................. 42
DELETE JOB Command........................................................................... 42
Guidelines............................................................................................... 44
Example................................................................................................. 44
EXIT Command....................................................................................... 44
Example................................................................................................. 44

Changing the BRJOBS Volume................................................................. 26
Changing the Work Volume..................................................................... 26
Changing the Configuration Options for One Job.................................... 27
Setting the License of BR2DS and BR2ODS.......................................... 28
Setting the File Privilege on Backup and Restore 2 Executables Required in the Restricted-Access Fileset. ................................................................. 28
BRCOM BACKUP Command................................................................................................................................. 55

Managing Backup Jobs........................................................................................................................................... 55
  Summary of Backing Up OSS or SQL/MX Files........................................................................................................ 55
  BACKUP Command Processing................................................................................................................................ 58

BRCOM BACKUP Command Syntax........................................................................................................................ 59
  BRCOM BACKUP Syntax When Using an IN File....................................................................................................... 62
  Backup Object......................................................................................................................................................... 63

Backup Job Options................................................................................................................................................. 71
  ALLOWMYID Job Option.......................................................................................................................................... 72
  BLOCKSIZE Job Option.......................................................................................................................................... 73
  BRICONFRESHTAPE Job Option............................................................................................................................... 73
  BRICONDISK Job Option.......................................................................................................................................... 73
  CONSTRAINTS Job Option...................................................................................................................................... 74
  FOLLOWMOUNTPTS Job Option............................................................................................................................... 75
  IGNORE Job Option................................................................................................................................................ 75
  INDEXES Job Option............................................................................................................................................. 76
  JOB Job Option.................................................................................................................................................... 76
  LISTALL Job Option............................................................................................................................................... 76
  NEEDBOTH Job Option.......................................................................................................................................... 77
  OPEN Job Option.................................................................................................................................................. 77
  OSSAACL Job Option........................................................................................................................................... 78
  OUT Job Option.................................................................................................................................................... 79
  PAGELENGTH Job Option..................................................................................................................................... 79
About This Manual

This manual provides an overview and describes the installation, and configuration of Backup and Restore 2. It describes the various Backup and Restore Command Interface (BRCOM) commands, and error messages. It explains the usage of the BRCOM command interface in addition to monitoring the Backup and Restore 2 jobs.

Supported Release Version Updates (RVUs)

This publication supports L15.02 and all subsequent L-series RVUs and J06.03 and all subsequent J-series RVUs, until otherwise indicated by its replacement publications. Additionally, all considerations for J-series throughout this manual will hold true for L-series also, unless mentioned otherwise.

Intended Audience

The manual is intended for all those who use Backup and Restore 2 products to back up OSS and SQL/MX objects to tape for archiving or recovery, list the contents of a tape without restoring data, restore objects from magnetic tape to disk, or move objects from one system to another.

New and Changed Information

Changes to the 866492-003 manual

Added J06.21 RVU applicability in the manual.

Changes to the 866492-002 manual

- Added information about owned ACLs in Open System Services (OSS) section.
- Added a new restore job option of OSS Category in the table under RESTORE Job Options section.
- Added ACLLOCKOVERRIDE Job Option under RESTORE JOB Options section.
- Updated guidelines of OSSACL Job Option under RESTORE Job Options section.
- Updated the OSSACL Job Option option to include the owned ACL information.
- Removed references to H-series and G-series throughout the document.
- Added OSS Backup Object, SQL/MX Backup Object, and Backing Up OSS Objects With Filtering sections.

Changes to the 866492-001 manual

- Updated Schemas on page 16, Tables on page 16, IDENTITY column on page 18, SG_TABLE on page 18, and Sequence Generators on page 18 under Supported SQL/MX Objects on page 14 section.
- Added new section Compatibility Between Different SQL/MX Versions on page 19 to explain forward and backward compatibility between SQL/MX and BR2.
- Updated SQL/MX objects point in Software Required on page 22 section.
- Added a new section Compatibility Matrix for BR2 and SQL/MX on page 23.
- Updated backing up a directory or file point under Backing Up OSS Objects on page 57 section.
- Updated examples under Backing Up Both OSS and SQL/MX Objects on page 93 section.
- Updated restoring a file or directory point under Restoring OSS Objects on page 99 section.
- Updated LOCATION Job Option on page 127 section.
- Added a new example Restoring OSS object with target and where clause on page 138 section under OSS Restore Examples on page 134 section.
• Added a new example **Restoring MX object with target and where clause** on page 152 section under **SQL/MX Restore Examples** on page 139 section.
• Updated examples under **Restore Examples With Both OSS and SQL/MX Objects** on page 151 section.
• Updated Cause description for **2014** error.
• Added a new section **MXAgent Messages** on page 171.

**Changes to the 522696-022R manual**
Updated Hewlett Packard Enterprise references.

**Changes to the 522696-022 manual**
• Removed Note from **Restoring an SQL/MX Object to a Different Target** on page 149.

**Publishing History**

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Backup and Restore 2 Overview

This section describes the major Backup and Restore 2 components and files.

Backup and Restore 2 Components

Backup and Restore 2 lets you back up and restore OSS and SQL/MX files. It contains these components:

- **Backup and Restore Command Interface (BRCOM)** on page 10
- **Data Service** on page 10
- **Data Management Application (DMA)** on page 10
- **Tape Service** on page 11

Backup and Restore Command Interface (BRCOM)

BRCOM is a command-line interface to Backup and Restore 2 that:

- Creates the BRCONFIG file in $SYSTEM.ZBR2. BRCONFIG
- Creates the BRCMD file for each job in $workvolume.jobid.BRCMD
- Creates the BRJOBS file in $brjobsvolume.ZBR2.BRJOBS
- Creates a job record in the BRJOBS file for each backup, restore job, parallel backup, and manual restart job.
- Creates the job session
- Issues error messages
- Lets you submit and manage backup, parallel backup, restore, and manual restart jobs, display information about jobs, delete job records for old jobs, and delete leftover files from failed jobs.
- Lets you perform a backup of the same data to two identical tapes simultaneously using a single command.
- Lets you manually restart a failed backup or restore job.

The BRCOM object file is located in $SYSTEM.SYSnn.BRCOM.

Data Service

The Data Service is a service process that is controlled by the data management application (DMA). It provides the interface to the NonStop file system for backing up or restoring files. The Data Service:

- Interfaces to the disk subsystem
- Communicates with the DMA for backup jobs
- Communicates information to the DMA about the files backed up or restored
- Receives data from the Tape Service for restore jobs
- Passes file image date to the Tape Service during backup
- Enumerates objects during backup
- Issues error messages

The Data Service object files BR2ODS, which supports only the OSS file system and BR2Ds, which supports both OSS and SQL/MX file systems are located at $SYSTEM.SYSnn.

Data Management Application (DMA)

The DMA has several functions:

- Controls each job session
- Creates the service processes and starts the Tape Service and the Data Service
- Creates the BRIC file in $workvolume.jobid.BRIC during backup
• Issues error messages
• Updates job records
• Maintains information about each job in the BRJOBS file to keep track of the progress of the job
• Reads the BRIC file during a restore job
• Controls the writing and reading of object data to and from disks and tapes through the Data Service and Tape Service
• Enables parallel backup of OSS and/or SQL/MX objects on two tape devices simultaneously
• Enables manual restart of a failed backup or restore operation

The Data Management Application object files BR2ODMA, which supports only the OSS file system and BR2DMA, which supports both OSS and SQL/MX file systems are located at $SYSTEM.SYSnn.

Tape Service

The Tape Service is a service process that is controlled by the DMA. It provides the interface between Backup and Restore 2 components and the tape subsystem. The Tape Service:

• Communicates with the DMA
• Receives data from the Data Service for backup jobs
• Passes data to the Data Service for restore jobs
• Interfaces to the labeled tape subsystem
• Reads, writes, and positions tapes
• Issues error messages
• Verifies tapes

The Tape Service object file is located in $SYSTEM.SYSnn.BR2TS.

Backup and Restore 2 Files

• Backup and Restore Configuration (BRCOM) File on page 12
• Backup and Restore Command (BRCMD) File on page 11
• Backup and Restore Jobs (BRJOBS) File on page 11
• Backup and Restore Intermediate Catalog (BRIC) File on page 12

Backup and Restore Jobs (BRJOBS) File

BRJOBS is an Enscribe key-sequenced file that stores information about each backup or restore job. The BRJOBS file contains records of all BRCOM jobs that are running, completed, or stopped without completing. Each job has one job record that remains in the BRJOBS file until you manually delete the record using the BRCOM DELETE JOB command.

Unless a large number of backup and restore jobs are running simultaneously, activity on the BRJOBS file should be light.

When Backup and Restore 2 is first installed, the BRJOBS file is located at $SYSTEM.ZBR2.BRJOBS. You cannot use the BRCOM BACKUP or RESTORE commands to override the location of BRJOBSVOLUME. You can use the ALTER CONFIG command to create a new file named $brjovolume.ZBR2.BRJOBS to be used for all new jobs. After the new file is created and all the jobs using the $SYSTEM.ZBR2.BRJOBS file has finished, you can delete the original BRJOBS file.

Backup and Restore Command (BRCMD) File

BRCMD is a text file that contains the BACKUP or RESTORE command for a specific job. You can use this file to check what objects and options were specified for the backup or restore job.

The BRCMD file is located at $workvolume.jobid.BRCMD. The DMA normally purges the BRCMD file after the backup or restore job finishes.
Backup and Restore Configuration (BRCONFIG) File

BRCONFIG is a text file that contains the configuration information for the DMA, the Data Service, and the Tape Service. You can use the ALTER CONFIG command to change the values in the BRCONFIG file. BRCOM uses the configuration information in the BRCONFIG file for all jobs unless you override any of the values using the configuration options when you specify the command. The configuration file is located at $SYSTEM.ZBR2.BRCONFIG.

Backup and Restore Intermediate Catalog (BRIC) File

The BRIC file contains information for a single backup job. It contains disk file catalog information, including the list of files backed up on tape and their location. The BRIC is a temporary disk file and a permanent tape file until the tape file expires. The DMA normally purges the BRIC disk file at the end of the backup job.

The BRIC file is written to tape as a job directory at the end of the backup job. The BRIC file can span the last two tapes but is usually located on the last tape of the job. For a parallel backup operation, the same BRIC file is written on both the tapes. You can restore the BRIC file from tape to disk during the restore of objects.

The number of files being processed and their size determines the amount of disk activity on the BRIC file. Large files result in relatively low disk activity. A large number of small files results in relatively high disk activity. The DMA creates the BRIC file for each job in the $workvolume.jobid subvolume.

Supported Objects

Backup and Restore 2 interacts with OSS and SQL/MX to backup or restore OSS or SQL/MX objects. For OSS, you can use either the pax utility and Backup and Restore (T9074) or Backup and Restore 2. To back up or restore SQL/MX objects, Backup and Restore 2 is required.

Open System Services (OSS)

The OSS environment provides a user and programming interface similar to that of the UNIX operating system. The OSS environment combines the benefits of the UNIX operating system with the features of the NonStop operating system. OSS differs from the UNIX operating system in that almost all management and operation activities are performed through Guardian commands.

The OSS file system consists of one or more OSS filesets. Each OSS fileset is a hierarchy of files: a set of directories, subdirectories, and files themselves. An OSS fileset can have other OSS filesets mounted on directories in it. In fact, the collection of directories and files under the root directory is part of one OSS fileset. Every file belongs to an OSS fileset.

Starting from L17.02 and J06.21 RVUs, the BR2 utility supports backing up and restoring the owned ACLs in the OSS file system. The owned ACLs are supported in OSS Version 4 filesets.

For more information about OSS, see the Open System Services Management and Operations Guide.

Backup and Restore 2 lets you back up and restore all OSS files (regular OSS files, that are smaller than 2 GB and larger OSS files that are greater than or equal to 2 GB) without any loss of functionality. The only exceptions are restore jobs where the destination filesets do not support files greater than 2 GB. For example, if you have a tapefile with a mix of OSS files less than and greater than 2 GB that you need to restore to a fileset that does not support files greater than 2 GB, Backup and Restore 2 restores the files less than 2 GB but skips the files greater than 2 GB.

OSS Objects

BRCOM supports these OSS objects:

- Directories
- Links: hard links and symbolic links
- Named pipes
- Ordinary files
• Restricted-Access filesets
• Unrestricted filesets

You can directly specify directories, subdirectories, and ordinary file objects in BACKUP or RESTORE commands. For each of these objects, all its subordinate objects are automatically backed up or restored. However, you can exclude some subordinate objects using the job options or a WHERE expression.

Directories

The OSS file system allows a high degree of nesting; you can have a hierarchy of several levels of subdirectories. A subdirectory is any directory that belongs to another directory. However, that subdirectory is also a directory to its subdirectories.

• Backing up a directory includes backing up all the subdirectories and files subordinate to the directory. Device special files or sockets are not backed up.
• Restoring a directory includes restoring all its subordinate subdirectories and files.

If you restore a directory that already exists, the directory is left as it is, and the objects in the directory are restored. After the restore operation, the directory contains both the objects that were restored and any other objects that were present before restoring the data.

Links: Hard Links and Symbolic Links

Specifying a symbolic link causes the link to be backed up as a link. Only the link is backed up; no additional data is backed up.

Specifying a hard link causes the link and the data in the linked file to be backed up. However, no data is backed up more than once. For example, if a file and a hard link to that file are both backed up, the data in the file is backed up only once. For example, suppose mylink is a hard link to myfile. Specifying either mylink, myfile, or both causes the data in the file to be backed up exactly once.

A hard-linked file has multiple file names associated with a single inode number. The inode number is the internal storage pointer to the disk file. Ordinary files and named pipes can be hard-linked files. To back up or restore hard-linked files, you must back up and restore the complete set of files.

Named Pipes

A named pipe is an OSS file used for unidirectional, FIFO, interprocess communication. One process writes to the named pipe and another reads from it. Specifying a named pipe causes the named pipe to be backed up as a named pipe.

Ordinary Files

Specifying an ordinary file causes that file to be backed up.

Restricted-Access Filesets

Unless explicitly denied, the super ID has unconditional access to all resources on the system. The super ID can login to the system as any user without a password for administrative maintenance or other activities.

The Restricted-Access filesets provide for securing highly sensitive customer data by preventing the super ID (255, 255 in the Guardian environment, 65535 in the OSS environment) from accessing files it does not own. When accessing a file in a restricted-access fileset, the super ID is restricted by the same file permissions and owner privileges as any other user ID; It has no special privileges.

The members of the Safeguard SECURITY- OSS- ADMINISTRATOR security group can access restricted filesets. Additionally, the members can back up and restore files from and to the restricted-access filesets when the PRIVSOARFOPEN file privilege for the BR2DS, BR2DMA, BR2ODS, and BR2ODMA executables are set.

For information on Restricted-Access filesets and the PRIVSOARFOPEN file privilege, see the Security Management Guide and the Open System Services Management and Operations Guide.
**NOTE:**

Restricted-access filesets are supported only on OSS file systems and on systems running L15.02 and later L-series RVUs and J06.11 and later J-series RVUs.

---

**Unrestricted Filesets**

The super ID has unconditional access and privileges on unrestricted filesets. The members of the SECURITY-OSS-ADMINISTRATOR security group can access unrestricted filesets only if they have appropriate privileges and the filesets have the required permissions set.

**Unsupported OSS Objects**

You cannot back up or restore device special files (character special files and block special files) and socket files. These objects are skipped if you attempt to back them up, either implicitly (by specifying a directory that contains the file) or explicitly (by specifying the file).

**SQL/MX**

NonStop SQL/MX is the NonStop relational database management system based on ANSI SQL-92. An SQL/MX database is a collection of tables containing all data, all objects associated with the tables, all associated file labels, and metadata. Although only one SQL/MX database can exist on a node, an SQL/MX database and SQL/MP database can exist on the same node. SQL/MX includes:

- User metadata
- The SQL language for retrieval, manipulation, and control of data
- A programmatic interface
- An SQL conversational interface (MXCI)
- A set of utilities

For Backup and Restore 2:

- SQL/MX does not support the HPE NonStop Storage Management Foundation (SMF) or virtual disk volumes. Therefore, an attempt to back up or restore a virtual disk volume is rejected with an error.
- To back up or restore SQL/MX objects, you must either be the object owner or the super ID (255,255). You can back up or restore a catalog using any user ID but should use a user ID that allows you access to the objects subordinate to the catalog.
- To back up or restore SQL/MX objects, you must either be the object owner or the super ID (255,255). The one exception is the catalog object.
- For more information about SQL/MX recovery and backup strategies, see the *SQL/MX Management Manual*.

**Supported SQL/MX Objects**

BRCOM supports the SQL/MX objects listed in Figure 1: Object Hierarchy of the Supported SQL/MX Objects on page 15. You can directly specify catalog, schema, table, and table partition objects in BACKUP or RESTORE commands. You cannot specify constraints explicitly.
Figure 1: Object Hierarchy of the Supported SQL/MX Objects

For each of the objects that you specify directly, all its subordinate objects are automatically backed up or restored unless you exclude them using the job options or a WHERE expression. For example, constraints, indexes, and index partitions are included by default. However, you can use the CONSTRAINTS EXCLUDED or INDEXES EXCLUDED job options to exclude them.

- CATALOG
  - SCHEMA (subordinate object of catalog)
    - SEQUENCE GENERATOR (subordinate object of the schema)

  **NOTE:**
  Sequence generators are supported only in SQL/MX 3.2.1 version and later.

  - TABLE (subordinate object of schema)
    - TABLE PARTITION (subordinate object of table)
    - CONSTRAINT (subordinate object of table)
    - INDEX (subordinate object of table)
    - INDEX PARTITION (subordinate object of the index)
    - SG_TABLE (subordinate object of the table, if the table contains an IDENTITY column)

  **NOTE:**
  IDENTITY column feature is supported only in SQL/MX 3.1 versions and later.

Catalogs

A catalog is a logical object that consists of a collection of schemas.
• Backing up a catalog includes backing up all the subordinate objects in its object hierarchy.
• Restoring a catalog includes restoring all the subordinate objects in its object hierarchy.

You can back up or restore a catalog using any user ID. However, the user ID you use to backup or restore a catalog should be either the super ID (255,255) or the owner of all the schemas subordinate to the catalog. Otherwise, you will not be able to back up or restore the objects subordinate to the catalog.

Schemas

A schema is a logical object that consists of a collection of tables and views.
• Backing up a schema includes backing all the subordinate objects in its object hierarchy.
• Restoring a schema includes restoring all the subordinate objects in its object hierarchy.

The subordinate objects of a schema are:
• Tables
• Table partitions
• Indexes
• Index partitions
• SG_TABLEs associated with those base table that contains an IDENTITY column
• Sequence generators

NOTE:
IDENTITY column feature is supported only in SQL/MX 3.1 versions and above. Starting with SQL/MX Release 3.2.1, sequence generators are supported.

You can backup or restore a schema using either the super ID(255,255) or the user ID who is the owner of the schema. The super ID can backup or restore the schema and the entire set of subordinate objects in that schema.

The owner of the schema can backup or restore the schema itself, and those subordinate objects in the schema that are owned by the schema owner. Errors are issued for those objects in the schema that are owned by different user IDs; such objects cannot be backed up or restored by the schema owner.

During restore, if the user ID that owned the schema and its subordinate objects during backup does not exist on the system, only the super ID can restore that schema and its subordinate objects. After the restore completes successfully, the restored schema and its subordinate objects will be owned by the super ID.

Tables

A table is a logical object that consists of a collection of partitions and indexes. The schema’s creator owns the table object, including the table’s subordinate objects:
• Table partitions
• Indexes
• Index partitions
• SG_TABLE (subordinate object of the table, if the table contains an IDENTITY column)

NOTE:
IDENTITY column feature is supported only in SQL/MX 3.1 versions and above.

Backing up a table includes:
• Nondroppable constraints
• Droppable constraints unless you specify the CONSTRAINTS EXCLUDED job option
• All table data unless you specify the SQLDATA OFF job option
• Indexes unless you specify the INDEXES EXCLUDED job option
• All index partitions unless you specify the INDEXES EXCLUDED job option
• SG_TABLE, if the table contains an IDENTITY column

NOTE:
IDENTITY column feature is supported only in SQL/MX 3.1 versions and above.

Restoring a table includes:
• Nondroppable constraints
• Droppable constraints unless you specify the CONSTRAINTS EXCLUDED job option
• All table data unless you specify the SQLDATA OFF job option
• Indexes and index partitions unless you specify the INDEXES EXCLUDED job option
• SG_TABLE, if the table contains an IDENTITY column

NOTE:
IDENTITY column feature is supported only in SQL/MX 3.1 versions and above.

When you restore a SQL/MX table that already exists, the object is first dropped and then restored, unless the table has referential integrity constraints, views, stored procedures, or triggers. You can use the MXCI SHOWDDL command to check if the table has subordinate objects. For more information, see the SQL/MX Reference Manual.

The only subordinate objects present after the restore operation are the objects that were backed up. Any subordinate objects added after the back up are lost after the restore operation. For example, SQL/MX table C contains table partitions S1 and S2 when you back it up. Later, you create another table partition in this table, S3. If you restore table C, table C is dropped and then restored. Table partitions S1 and S2 are restored, but table partition S3 is lost. This behavior differs from that of OSS. For more information about OSS, see OSS Objects on page 12.

Only the table owner or super ID (255,255) can backup or restore a table.

Table Partitions
A table partition is a subordinate object of the table object. A table partition is a physical object:
• Backing up an individual table partition includes the partition data only when you specify the PARTONLY job option.
• Restoring an individual table partition includes the partition data and is only permitted when you specify the PARTONLY ON job option.

Indexes
An index is a subordinate object of the table object. It is a logical object. Index consists of index partition. The creator of the schema owns the index object, including the subordinate objects of the index.

Index Partitions
An index partition is a subordinate object of the Index object. An index partition is a physical object:
• Backing up an individual index partition includes the partition data only when you specify the PARTONLY job option.
• Restoring an individual index partition includes the partition data and is only permitted when you specify the PARTONLY ON job option.

Constraints
A constraint is a logical object. You cannot directly specify a constraint in BACKUP or RESTORE commands. To back up or restore a constraint, you must back up or restore the table that contains the constraint. The
constraints that are backed up or restored depends on whether you specify CONSTRAINTS INCLUDED or CONSTRAINTS EXCLUDED:

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</tr>
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</table>

IDENTITY column

An IDENTITY column is a numeric column in a table for which the system generates unique values using the internal sequence generator. For usage details, see SQL/MX Reference Manual.

SG_TABLE

An SG_TABLE is a Sequence Generator table. SG_TABLE is an associated table which is automatically created when you define an IDENTITY column in a base table. For usage details, see SQL/MX Reference Manual.

Sequence Generators

A sequence generator object is a schema level object that is used to create a sequence of numeric values. The sequence values can be used to create unique values across a set of tables.

BR2 does not support individual backup and restore of sequence generator objects. However, these objects can be backed up and restored as part of a full schema or catalog level backup-restore operation.

NOTE:

Starting with SQL/MX Release 3.2.1, sequence generators are supported.

For more information, see SQL/MX Reference Manual.

Restore of Views, Stored Procedures, Triggers, and Referential Integrity Constraints

With SQL/MX release 3.2, Hewlett Packard Enterprise introduces the OBEYDDL option to restore the objects in Restore of Views, Stored Procedures, Triggers, and Referential Integrity Constraints. For more information, see the OBEYDDL Job Option.

In the earlier versions, after the restore operation was complete, you had to create the objects manually, using the DDL information, which was captured during the backup operation.
Table 1: Restore of Views, Stored Procedures, Triggers, and Referential Integrity Constraints

<table>
<thead>
<tr>
<th>SQL/MX Object</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Referential integrity constraints</td>
<td>Constraints that specify that a column or set of columns in the table can only contain values matching those in a column or set of columns in the referenced table.</td>
</tr>
<tr>
<td>Stored procedures</td>
<td>A type of user-defined routine (UDR) in Java (SPJ) that operates within a database server. A stored procedure does not return a value to the caller.</td>
</tr>
<tr>
<td>Triggers</td>
<td>A mechanism that resides in the database and specifies that when a particular action—an insert, delete, or update—occurs on a particular table, SQL/MX should automatically perform one or more additional actions.</td>
</tr>
<tr>
<td>Views</td>
<td>A table that has a logical definition and a file label but contains no data.</td>
</tr>
</tbody>
</table>

**Manually Creating SQL/MX Objects**

To manually create triggers, views, referential integrity constraints, and stored procedures from the DDL information:

**Procedure**

1. Use the RESTORE SHOWDDL ON option to generate one or more OSS edit files containing data definition language (DDL) information for each of these objects. For more information, see the SHOWDDL Job Option on page 131
2. Use the DDL information in the OSS edit files as MXCI command files to regenerate these SQL/MX objects that cannot be restored.

**Automatically Creating SQL/MX Objects During Restore**

You can use the OBEYDDL option introduced in SQL/MX release 3.2 to automatically restore the objects in Restore of Views, Stored Procedures, Triggers, and Referential Integrity Constraints.

**Compatibility Between Different SQL/MX Versions**

BR2 supports backward compatibility for restore of SQL/MX objects. It supports backup of SQL/MX objects using SQL/MX R2.3.4 or later and restore those SQL/MX objects using SQL/MX R2.3.4 or later. But, currently BR2 does not support forward compatibility for restore of SQL/MX objects. It does not support to take backup of SQL/MX objects using R3.3 or later and restore those objects using SQL/MX R3.2.1 or prior.

**Relationship between Backup Restore and Backup Restore 2**

Backup Restore (T9074) and Backup Restore 2 (T0744) are both backup and restore utilities running on Non-Stop platform and they co-exist. The BRCOM interface serves as a common interface for Backup Restore 2 (BR2) and Backup Restore (BR) commands. However, the syntax of Backup and Restore commands for Backup Restore (T9074) and Backup Restore 2 (T0744) must be entered in the BRCOM prompt exactly as updated in the respective Backup Restore Utility Manuals. BRCOM supports only basic Backup and Restore commands of Backup Restore (T9074) and does not support any run options and features.

**Difference between BR and BR2**
File Types Supported

BR utility is used to back up and restore Enscribe and SQL/MP files. It is used to perform volume mode backup and restore. Whereas, BR2 is used to back up SQL/MX and OSS file objects.

File Types not Supported

BR does not support SQL/MX files and OSS file objects while, BR2 does not support Enscribe and SQL/MP files. Hence, BR and BR2 cannot be used interchangeably. You will need both BR and BR2, based on the file type you want to back up and restore.

Tape Formats

BR and BR2 use different tape formats. Therefore, you cannot combine Enscribe and SQL/MP files with the OSS and SQL/MX files on the same tape.

Syntax

The syntax for BR2 is different from the syntax for BR. If you enter incorrect syntax for file types supported by BR or BR2 at the BRCOM prompt, the command is not directed to the appropriate Backup and Restore utility.

Explicit Wild Cards

BR2 does not support explicit wild cards for objects except for Catalogs *.

BR2 supports implicit wild cards for objects. If you specify a SQL/MX schema, all objects under that schema are backed up or restored unless you exclude them. For example:

- If you specify the OSS directory /usr/home, all objects in the directory and all its subdirectories are backed up or restored unless you exclude them.
- If you specify the OSS directory /, the entire OSS file system is backed up or restored.

Tape Attributes

BR processes all tape attributes. Whereas, BR2 ignores the following tape attributes:

- BLOCKLEN
- DENSITY
- LOGICAL
- PHYSICAL
- RECFORM
- RECLEN
- EBCDIC
- TAPEMODE

The RECLEN, record length used internally is always user-specified or default value of the BLOCKSIZE job option. EBCDIC is not supported by BR2. TAPEMODE is valid but ignored by BR2. The value of TAPEMODE used internally is always STREAM.

List of file-set Qualifiers Exclude option

BR2 does not support the following file-set list qualifiers:

- FROM CATALOG[S] catalog-list
- START filename

OSS file can be excluded based on its creation time, last open time, or modification time. Also, SQL/MX object can be excluded based on its creation time, last open time, modification time, or redefinition time.

Specifying user IDs, you can limit backup and restore objects depending on the ownerships.
Job Options

BR2 does not support options that apply only to SQL/MP or Enscribe files. BRCOM does not support options that apply only to SQL/MP or Enscribe files.

Related Products

Optionally, you can use DSM/TC to manage the tapes used for backup or to restore objects from tape. TMF is required for both DSM/TC and SQL/MX.

Distributed Systems Management/Tape Catalog (DSM/TC)

DSM/TC manages tape files and labeled magnetic tapes in a NonStop environment. MEDIACOM is an operator interface for labeled-tape operations and to DSM/TC. For more information, see the DSM/Tape Catalog User’s Guide.

For Backup and Restore 2:

- If you use CLASS TAPECATALOG DEFINEs with CATALOG ON, the DSM/TC catalog manager (MEDIADBM) keeps track of the tapes used as part of a back up job. During a restore job, the correct set of tapes can be retrieved from DSM/TC. However, DSM/TC does not maintain information about the objects and files backed up on each tape. To list each object backed up on tape, see Managing Jobs on page 32.
- You can use the MEDIACOM RECOVER DISKFILE command to restore objects from tape to disk instead of the RESTORE command. The MEDIACOM RECOVER DISKFILE command invokes:
  - A BRCOM RESTORE command for OSS or SQL/MX objects
  - The RESTORE utility (T9074) for Enscribe and SQL/MP objects

HPE NonStop Transaction Management Facility (TMF)

TMF furnishes transaction protection, database consistency, and database recovery critical in high-volume transaction processing. It sustains high performance for online transaction processing (OLTP) applications, in addition to online query processing (OLQP) activities, batch processing applications, and decision-support systems.

For more information about TMF, see:

- TMF Reference Manual
- DSM/Tape Catalog User’s Guide

For Backup and Restore 2:

Because all SQL/MX files are audited, use TMF online dumps as the primary method for preserving SQL/MX objects. Preserving files by using the BACKUP command is not effective for recovery if any files are open during the backup operation. Even if you use the OPEN option, the image saved during the dump of the database might not be consistent. For more information about using TMF online dumps with SQL/MX, see the SQL/MX Installation and Management Guide.
Installing Backup and Restore 2

This section lists the hardware and software required to use Backup and Restore 2.

Hardware Required

Backup and Restore 2 supports all HPE NonStop S-series servers and all tape drives supported for NonStop S-series servers except the 517x open-reel tape drives. Backup and Restore 2 works with tape devices that support logical block addresses (LBAs). Therefore, Backup and Restore 2 does not support virtual tape drives created by TAPE SIMULATOR (TAPESIM) because TAPESIM does not support LBA. Any attempt to get the LBA on a tape drive created by TAPESIM results in file-system error 2.

Software Required

L15.02 is the earlier supported L-series RVU and J06.03 is the earliest supported J-series RVU for Backup and Restore 2.

Additional software is required, depending on the type of objects you are backing up or restoring, the types of tapes you are using, and the number of objects you plan to back up or restore in a single job:

Procedure

1. For SQL/MX objects, install OSS and all corequisite SPRs. For information on SQL/MX compatibility, see Compatibility Matrix for BR2 and SQL/MX on page 23.
2. If you plan to use DSM/TC, install all corequisite DSM/TC SPRs listed in the Backup and Restore 2 softdocs.
3. Check that the transaction management facility (TMF) subsystem is started and active. TMF is required for both SQL/MX and DSM/TC.
4. If you plan to back up or restore large numbers of objects, see Installing the Heap Manager on page 23.

Installing Software

Installing Backup and Restore 2 to Support Open System Services (OSS)

To back up or restore OSS objects:

Procedure

1. Install OSS
2. Install all corequisite SPRs

Installing Backup and Restore 2 to Support SQL/MX

To back up or restore SQL/MX objects:

Procedure

1. Install OSS.
2. Install SQL/MX.
3. Install all corequisite SPRs.
## Compatibility Matrix for BR2 and SQL/MX

<table>
<thead>
<tr>
<th>BR2 product version</th>
<th>SQL/MX 3.2.1</th>
<th>SQL/MX 3.3</th>
<th>SQL/MX 3.4</th>
</tr>
</thead>
<tbody>
<tr>
<td>H02</td>
<td>Yes</td>
<td>Yes</td>
<td>NA</td>
</tr>
<tr>
<td>H03</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>L01</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>L02</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

## Installing the Heap Manager

If you plan to back up more than a few thousand objects in a job, Hewlett Packard Enterprise recommends that you install the NSK CRE/RTL (T1269) heap manager or run multiple jobs with fewer objects. Both the Native CRE/RTL (T8431) heap manager and NSK CRE/RTL (T1269) heap manager are available on J-series and L-series SUTs. By default the Native CRE/RTL (T8431) heap manager is installed. To install NSK CRE/RTL (T1269), see Support Note S02001 for migration considerations and S03104 for installation instructions. A system load is required.

## Post-Installation Tasks

**Procedure**

1. If you plan to back up or restore to labeled tapes, check that labeled tape processing is enabled on the system and that the $ZSVR labeled tape server (T6958) is installed, up, and running.
2. Before you use a TAPECATALOG DEFINE for backup or restore jobs on labeled tape, you must upgrade the DSM/TC database using the ALTER MEDIADB command and longname attribute.
Configuring Backup and Restore 2

This section describes managing Backup and Restore 2.

Managing Configuration Information

BRCONFIG contains the configuration information for the DMA, the Data Service, and the Tape Service. BRCOM uses the BRJOBS volume configured in the BRCONFIG file for all jobs. You can override any of the other values when you specify a BACKUP or RESTORE command. To view the currently configured values in the BRCONFIG file or for a specific job, see Displaying Configuration Information.

When Backup and Restore 2 is first installed, the configuration options in the BRCONFIG file are as listed in Values for Configuration Options. BRCONFIG is a text file, but you must not edit it directly. To change the values in the BRCONFIG file, you must be a super-group user and use the ALTER CONFIG command. For more information:

- Changing the Volumes for All Jobs on page 25
- Changing the Work Volume on page 26
- ALTER CONFIG Command (Super Group Only) on page 38

Table 2: Values for Configuration Options

<table>
<thead>
<tr>
<th>Configuration Option</th>
<th>Valid Values</th>
<th>Default Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>BRJOBSVOLUME</td>
<td>valid disk name</td>
<td>$SYSTEM</td>
</tr>
<tr>
<td>EMS COLLECTOR</td>
<td>valid process</td>
<td>$0</td>
</tr>
<tr>
<td>SERVICECPULIST</td>
<td>0 through 15</td>
<td>no value (DMA processor)</td>
</tr>
<tr>
<td>SERVICEPRI</td>
<td>-1 and 1 through 199</td>
<td>-1 (DMA priority)</td>
</tr>
<tr>
<td>WORKVOLUME</td>
<td>valid disk name</td>
<td>$SYSTEM</td>
</tr>
</tbody>
</table>

Displaying Configuration Information

Use the INFO command to display the configuration information in the BRCONFIG file and for each job.

Displaying the Configuration Information in the BRCONFIG File

Use the INFO CONFIG command to display the default configuration information. For example:

BR> INFO CONFIG ;

INFO CONFIG Command Display

<table>
<thead>
<tr>
<th>BRJOBS Volume</th>
<th>$data00</th>
</tr>
</thead>
<tbody>
<tr>
<td>EMS Collector</td>
<td>$0</td>
</tr>
<tr>
<td>Service CPU List</td>
<td>Unspecified</td>
</tr>
<tr>
<td>Service Priority</td>
<td>-1</td>
</tr>
<tr>
<td>Work Volume</td>
<td>$data00</td>
</tr>
</tbody>
</table>
### Field Description

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BRJOBS Volume</td>
<td>The disk volume on which the BRJOBS file is on.</td>
</tr>
<tr>
<td>Collector</td>
<td>The collector for EMS messages.</td>
</tr>
<tr>
<td>Service CPU List</td>
<td>The list of the processors in which the DMA starts the Data Service and Tape Service. If the value is unspecified, the Data Service and Tape Service are started in the DMA's processor.</td>
</tr>
<tr>
<td>Service Priority</td>
<td>The priority at which the DMA starts the Data Service and Tape Service. If the value is -1, the Data Service and Tape Service are started at the same priority as the DMA.</td>
</tr>
<tr>
<td>Work Volume</td>
<td>The disk volume on which job-related files are created.</td>
</tr>
</tbody>
</table>

### Displaying Configuration Information for a Job

Use the `INFO JOB` command to display configuration information for a job. For example:

```
BR> INFO JOB zbr005be;
```

#### INFO JOB Command Display

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>JOB</td>
<td>ZBR005BE</td>
</tr>
<tr>
<td>DMA Program File</td>
<td>$SYSTEM.SYSTEM.BR2DMA</td>
</tr>
<tr>
<td>Data Service Program File</td>
<td>$SYSTEM.SYSTEM.BR2DS</td>
</tr>
<tr>
<td>Service CPU List</td>
<td>Unspecified</td>
</tr>
<tr>
<td>Service Priority</td>
<td>-1</td>
</tr>
<tr>
<td>Tape Service Program File</td>
<td>$SYSTEM.SYSTEM.BR2TS</td>
</tr>
<tr>
<td>Work Volume</td>
<td>$data00</td>
</tr>
</tbody>
</table>

### Changing the Volumes for All Jobs

Displaying Configuration Information for a Job
Changing the BRJOBS Volume

If space is limited on $SYSTEM, you can use the ALTER CONFIG, BRJOBSVOLUME command to create a new BRJOBS file on another volume. You cannot override the BRJOBS volume for a particular job. Any job that is started uses the BRJOBS volume configured in the BRCONFIG file when the job is started. To avoid losing all job history, use FUP to retain it before you change the BRJOBS volume.

To change the BRJOBS volume:

**Procedure**

1. Use the STATUS JOB command to check that there are no active jobs. Jobs with the INIT, RUN, WAIT, CAT, or TERM job states are active.

   BR> STATUS JOB * ;

2. If any jobs are active, you must wait for them to finish. Alternatively, you can use the STOP or ABORT JOB commands to stop or abort the active jobs.

3. Copy the BRJOBS file from the current BRJOBSVOLUME to a new BRJOBS volume. For example:

   > FUP DUP $SYSTEM.ZBR2.BRJOBS, $newbrjobsvolume.ZBR2.BRJOBS

4. Secure the BRJOBS file. For example:

   > FUP SECURE $newbrjobsvolume.ZBR2.BRJOBS, "aaoo"

5. Give the BRJOBS file to the proper owner. For example:

   > FUP GIVE $newbrjobsvolume.ZBR2.BRJOBS, 255,255

6. Change the BRJOBS volume. For example:

   BR> ALTER CONFIG, BRJOBSVOLUME
   BR>+ $brjobsvolume.ZBR2.BRJOBS ;

7. Delete the original BRJOBS volume. For example:

   > PURGE $SYSTEM.ZBR2.BRJOBS

Changing the Work Volume

To distribute activity over multiple disk volumes, you can specify different work volumes for different backup or restore jobs. To create a new work volume for a job, use the WORKVOLUME configuration option when starting the job. For more information, see Changing the Configuration Options for One Job on page 27

To change the default work volume to be used for future jobs, use the ALTER CONFIG command:
Procedure

1. Use the STATUS JOB command to check that there are no active jobs. Jobs with the INIT, RUN, WAIT, CAT, or TERM job states are active.

   `BR> STATUS JOB * ;`

2. If any jobs are active, you must wait for them to finish. Alternatively, you can use the STOP or ABORT JOB commands to stop the active jobs.

3. Change the work volume:

   `BR> ALTER CONFIG, WORKVOLUME $newworkvolume`

Changing the Configuration Options for One Job

By default, each backup or restore job uses the configuration option values shown in the INFO CONFIG display. For more information, see Displaying the Configuration Information in the BRCONFIG File on page 24. To override the configuration in the BRCONFIG file for one job, you can specify any configuration option except the BRJOBS volume in the BACKUP or RESTORE command.

Overriding the Configured Values for SERVICECPULIST and SERVICEPRI

For this example, the configured values in the BRCONFIG file are:

<table>
<thead>
<tr>
<th>Configuration Option</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>BRJOBS Volume</td>
<td>$SYSTEM</td>
</tr>
<tr>
<td>EMS Collector</td>
<td>$0</td>
</tr>
<tr>
<td>Service CPU List</td>
<td>Unspecified</td>
</tr>
<tr>
<td>Service Priority</td>
<td>-1</td>
</tr>
<tr>
<td>Work Volume</td>
<td>$SYSTEM</td>
</tr>
</tbody>
</table>

To override the configured values for SERVICECPULIST and SERVICEPRI:

`BR> BACKUP $A8, OSS / , SERVICECPULIST 2,3, SERVICE PRI 120 ;`

The backup job uses the currently configured values for the BRJOBS volume, EMS collector, and work volume. Both the Data Service and Tape Service are started at service priority 120. DMA attempts to first start the Tape Service and Data Service in processor 2. If processor 2 is not available, DMA attempts to start the service processes in processor 3. If neither processor is available, the DMA starts the service processes in the processor in which the DMA is running.

Overriding the Configured Value for SERVICECPULIST

In this example, the configured values in the BRCONFIG file are:

<table>
<thead>
<tr>
<th>Configuration Option</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>BRJOBS Volume</td>
<td>$SYSTEM</td>
</tr>
<tr>
<td>EMS Collector</td>
<td>$0</td>
</tr>
<tr>
<td>Service CPU List</td>
<td>2, 3</td>
</tr>
<tr>
<td>Service Priority</td>
<td>-1</td>
</tr>
<tr>
<td>Work Volume</td>
<td>$SYSTEM</td>
</tr>
</tbody>
</table>

Specify SERVICECPULIST with no value:

`BR> BACKUP $A8, OSS / , SERVICECPULIST ;`

The DMA starts the Tape Service and Data Service in the processor in which it is running. The backup job uses the values configured in the BRCONFIG file for the BRJOBS volume, EMS collector, service priority, and work volume.
Setting the License of BR2DS and BR2ODS

You must set the license bit of the BR2DS and the BR2ODS files to run the following backup and restore commands:

TACL> FUP LICENSE BR2DS
TACL> FUP LICENSE BR2ODS

To verify that the license of the files is set, change the volume to the sysnn location, and then use the FILEINFO command. For example:

TACL> volume <sysnn>
TACL> fileinfo BR2*

The following output appears:

<table>
<thead>
<tr>
<th>File Code</th>
<th>File Name</th>
<th>Date</th>
<th>Time</th>
<th>Size (bytes)</th>
<th>Permissions</th>
<th>Fileset</th>
</tr>
</thead>
<tbody>
<tr>
<td>800L</td>
<td>BR2DS</td>
<td>27OCT2010</td>
<td>6:58</td>
<td>255,255</td>
<td>NUNU</td>
<td>504</td>
</tr>
<tr>
<td>800L</td>
<td>BR2ODS</td>
<td>27OCT2010</td>
<td>6:59</td>
<td>255,255</td>
<td>NUNU</td>
<td>504</td>
</tr>
</tbody>
</table>

where,

- File code 800 is the attribute name.
- File code suffixed with L denotes that license is set on the BR2DS executable.

Setting the File Privilege on Backup and Restore 2 Executables Required in the Restricted-Access Fileset

The members of the SECURITY- OSS- ADMINISTRATOR Safeguard security group and the file owner can back up and restore files and directories from a restricted-access fileset.

**NOTE:**
The members of the SECURITY-OSS-ADMINISTRATOR Safeguard security group can back up and restore files and directories from a restricted-access fileset only when the file privilege is set on the Backup and Restore 2 executables, BR2DMA, BR2ODMA, BR2DS, and BR2ODS.

Use the following command on the OSH prompt to set the file privilege on the Backup and Restore 2 executables:

```
setfileprivilege -s PRIVSOARFOPEN /G/SYSTEM/sysnn/br2ds
```

Use the following command to remove the file privilege on the Backup and Restore 2 executables:

```
setfileprivilege -s PRIVNONE /G/SYSTEM/sysnn/br2ds
```

Use the following command to get the file privilege on the Backup and Restore 2 executables:

```
getfileprivilege -s PRIVSOARFOPEN /G/SYSTEM/sysnn/br2ds
```
Using the BRCOM Command Interface

This section describes the BRCOM command interface.

Security

BRCOM uses the NonStop security, based on the logon user ID. The data management application (DMA) process and other Backup and Restore 2 components adopt the user ID that you used to log on. BRCOM runs in a Guardian environment. You can use Safeguard user ID aliases. You cannot log on using the scalar view of the user ID.

Before Starting BRCOM

Before you start BRCOM:

Procedure

1. Log on to a NonStop S-series server
2. Check that all required products and processes are installed and started. For more information, see Installing Backup and Restore 2 on page 22

Starting BRCOM

To start BRCOM from the TACL prompt:

```
BRCOM [/run-option[,run-option...]/] [ command ;[command ;...]]
```

`run-option`

is an option of the TACL RUN command. For a complete list of run options, see the RUN command in the TACL Reference Manual.

A command file can be passed via the IN `run-option`. The IN run option is supported but must be a text file only. If you specify the OUT `run-option`, you must specify either a disk file or a spooler location.

`command`

is one of these commands:

- !
- ?
- ABORT
- ALTER
- BACKCOPY
- BACKUP
- DELETE
- EXIT
- FC
- HELP
- HISTORY
- INFO
- OBEY
- PAUSE
Stopping BRCOM

BRCOM exits automatically after executing the commands specified on the command line.

If BRCOM enters interactive mode, use the EXIT command to stop BRCOM. For more information, see the EXIT Command on page 44

Entering BRCOM Commands

When entering BRCOM commands, follow these conventions:

- Terminating a Command on page 30
- Including Multiple Commands on the Same Line on page 30
- Continuing a Command Line on page 31

Terminating a Command

You must terminate each BRCOM command except the !, ?, or FC commands with a semicolon. For example, these two commands are equivalent:

```
BR> INFO JOB jobid;

BR> INFO
BR+>JOB
BR+>jobid;
```

A semicolon is optional after the !, ?, and FC commands.

Including Multiple Commands on the Same Line

If you terminate each command with a semicolon, you can include multiple commands on the same line. For example:

```
BR> INFO JOB jobid; STATUS JOB jobid;
```

However, you cannot include !, ?, or FC commands on the same line with other commands. For example:

```
BR> FC; STATUS JOB jobid;
```

The !, ?, and FC commands and any subsequent commands on that line result in syntax errors.

In this example, the DELETE JOB command is executed because it is terminated with a semicolon. The FC command results in a syntax error.

```
BR> DELETE JOB jobid; FC
```
Continuing a Command Line

You can split any command into multiple lines. Either press return at the BRCOM prompt or continue on the next line of a command file or IN file. Breaking a command into multiple lines inserts a space character at the point where the line break occurs.

You can split long OSS path names across multiple lines by breaking them into adjacent quoted strings. The line break is replaced with a space, which is then ignored when the adjacent strings are concatenated.

Quoted Strings for OSS Path Names

You can specify an OSS path name as a quoted string, such as "/dirname with spaces". Adjacent quoted strings are automatically concatenated. For example, "/usr" "/bin", with any white space (such as spaces, tabs, or line breaks) between the two adjacent quoted strings is equivalent to "/usr/bin".

In this example, a long OSS pathname is split across multiple lines:

```
BR> BACKUP $TAPE, OSS "/longDirName/longerDirName/"
BR+>"EvenLongerDirName/LongestDirName/filename"
```

The strings "/longDirName/longerDirName" and "EvenLongerDirName/LongestDirName/ filename" are automatically concatenated into:

"/longDirName/longerDirName/EvenLongerDirName/LongestDirName/filename"

In this example, the lines are split and indented for readability in an IN file or command file:

```
BR> BACKUP $TAPE, OSS
BR+> "/longDirName/longerDirName/EvenLongerDirName/Longest"
BR+> "DirName/filename"
```

Octal ASCII Character Code

You can specify any character as an octal ASCII character code such as \0nnn.

`nnn`

is a three-digit octal number from 000 through 377. For example, you could specify the tab character, octal 11, as \011.

Specifying Special Characters

You can specify special characters using the escape sequences listed in Escape Sequences.

Table 3: Escape Sequences

<table>
<thead>
<tr>
<th>Character Name</th>
<th>\Escape Sequence</th>
<th>Equivalent Octal Escape Sequence</th>
</tr>
</thead>
<tbody>
<tr>
<td>bell</td>
<td>\a</td>
<td>\0007</td>
</tr>
<tr>
<td>backspace</td>
<td>\b</td>
<td>\0010</td>
</tr>
<tr>
<td>horizontal tab</td>
<td>\t</td>
<td>\0011</td>
</tr>
<tr>
<td>newline</td>
<td>\n</td>
<td>\0012</td>
</tr>
<tr>
<td>Character Name</td>
<td>Escape Sequence</td>
<td>Equivalent Octal Escape</td>
</tr>
<tr>
<td>----------------------</td>
<td>-----------------</td>
<td>-------------------------</td>
</tr>
<tr>
<td>vertical tab</td>
<td>\v</td>
<td>\0013</td>
</tr>
<tr>
<td>formfeed</td>
<td>\f</td>
<td>\0014</td>
</tr>
<tr>
<td>carriage return</td>
<td>\r</td>
<td>\0015</td>
</tr>
</tbody>
</table>

**Specifying a Backslash Character**

A backslash followed by any other character than \0, \a, \b, \t, \n, \v, \f, \r is interpreted as the second character. Use `\\` or `\0134` to specify backslash as part of a path name.

**Specifying a Space Character**

A backslash followed by a space is interpreted as a space character. Space is the octal character code 40. These examples are equivalent:

```
"/x/space delimited dirname"
/x/space\ delimited\ dirname
"/x/space\ delimited\ dirname"
/x/space\040delimited\040dirname
"/x/space\040delimited\040dirname"
```

The escape sequences are treated identically when the path name is enclosed in double quotes, although it is not necessary to escape the spaces.

**Managing Jobs**

Use BRCOM to manage Backup and Restore 2 jobs:

- **Creating Jobs** on page 32
- **Using the Break Key** on page 33
- **Handling Operations That Use the BRCOM Terminal** on page 32
- **Using an IN File** on page 33
- **Using the BRCMD File** on page 34

**Creating Jobs**

To create a job, use the BRCOM BACKUP or BRCOM RESTORE command.

**Handling Operations That Use the BRCOM Terminal**

These operations use the BRCOM terminal:

- Backup or restore jobs for Enscribe or SQL/MP files that are forwarded to the BACKUP and RESTORE utilities (T9074)
- Backup or restore jobs for OSS or SQL/MX files that specify the LISTALL, LISTONLY, or WAIT job options

If you use the OUT job option to specify an output destination other than the current terminal, the BRCOM prompt is returned immediately. If you do not use the OUT job option, the BRCOM prompt is not returned until the operation using the terminal is finished. This is regardless of whether you specified the WAIT job option.

If you specify the WAIT job option with the ON option, the BRCOM prompt is not returned until the operation using the terminal is finished.
Using the Break Key

From the BRCOM prompt, the Break key returns you to the HPE Tandem Advanced Command Language (TACL) prompt. To interrupt an operation that is using the BRCOM terminal:

Procedure

1. Press the Break key to return to the BRCOM prompt.
2. Enter BRCOM commands to start any operation that does not require use of the terminal.
3. To return control of the terminal to the original operation, use the PAUSE command.

Using DEFINEs With Backup and Restore

Before you issue a BACKUP command or RESTORE command for a labeled tape, you must enter a DEFINE from TACL. **DEFINEs** lists the different types of DEFINEs.

Table 4: DEFINEs

<table>
<thead>
<tr>
<th>DEFINE</th>
<th>Manual</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLASS TAPE DEFINE</td>
<td>Guardian Disk and Tape Utilities</td>
<td>No information is recorded in the DSM/TC volume catalog.</td>
</tr>
<tr>
<td></td>
<td>Reference Manual</td>
<td></td>
</tr>
<tr>
<td>CLASS TAPECATALOG DEFINE</td>
<td>DSM/Tape Catalog User's Guide</td>
<td>If you specify CATALOG ON, the tape information is recorded in the</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DSM/TC volume catalog. However, no information is recorded in the DSM/TC</td>
</tr>
<tr>
<td></td>
<td></td>
<td>volume catalog if you specify CATALOG OFF.</td>
</tr>
</tbody>
</table>

For more information, see the manuals listed in **DEFINEs**

Creating and Using a Command File

You can use a command file and the OBEY command to execute one or more BRCOM commands. For example:

```
FUP COPY OBRCOM
STATUS JOB ZBRD001DE;
INFO JOB ZBRD001DE;
INFO CONFIG;
```

You must terminate each command in a command file with a semicolon.

BRCOM generally continues processing the command file even if an error occurs while processing the commands. However, when BRCOM processes concatenated commands, subsequent commands are ignored if an error occurs.

Using an IN File

You can use an IN file to start BRCOM or for a BACKUP or RESTORE command.

Using an IN File for a BACKUP or RESTORE Command

To use an IN file for a BACKUP or RESTORE command:
• At the command line, use the IN run option to specify the IN file. You cannot include anything on the command line after the IN run option. You cannot specify object specifications, job options, or configuration options on the command line. For example:

```
BR> backup $a4, in bckin;
```

An example of an IN file (bckin) is:

```
backup $tape, oss /, listall on;
```

• The IN file must contain only one BACKUP command or one RESTORE command. It cannot contain other commands.

• The IN file cannot include the IN run option.

• If any duplicate run options are in both the IN file and command line, the command line overrides the values in the IN file. In the above example of an IN file, $a4 overrides $tape.

• The IN file must contain a complete, valid BACKUP or RESTORE command, terminated with a semicolon, including:
  ◦ A tape device name. Although the command you specify in the IN file must contain a tape device name, the tape device name that you specify on the command line always overrides it. Backup and Restore 2 does not support virtual tape drives created by TAPESIM because TAPESIM does not support LBA. Any attempt to get the LBA on a tape drive created by TAPESIM results in file-system error 2.
  ◦ For a parallel backup job, two tape device names are enclosed in parentheses.
  ◦ One or more object specifications are required unless you are restoring only the BRIC file or BRCMD file. In that case, you are not required to specify an object. However, the LISTONLY job option requires one or more object specifications. To restore the BRIC or BRCMD files, see RESTOREBKUPSPEC Job Option on page 130 and JOB Job Option on page 76.
  ◦ Job options, if being used, must be in the IN file.
  ◦ Configuration options, if being used, must be in the IN file.

Using an IN File for a Standard (T9074) BACKUP or RESTORE Command

You can use an IN file from the BRCOM prompt to start a standard (T9074) BACKUP or RESTORE job. For example:

```
BR> backup/in grdnin/;
```

where,

grdnin is the IN file.

The following is the sample of the IN file called grdnin:

```
$tape, $system.system.zzsa*, listall, nounload
```

Using the BRCMD File

You can restore the BRCMD file using the RESTOREBKUPSPEC job option. For more information, see RESTOREBKUPSPEC Job Option on page 130. You can use the BRCMD file to check what specifications and options were used during a backup job. You can use the BRCMD file as an IN file, but some modifications might be required. For example:

• If the original command specified a job ID, you cannot use the same job ID again if it still exists in the BRJOBS file. You must edit the BRCMD file to use a different job ID or to omit the job ID.

• If the original BACKUP command specified the LISTALL ON job option but not the OUT job option, the home terminal being used at the time is listed as the OUT file in the BRCMD file. If this home terminal does not currently exist or is not available, an error occurs.
Reusing a JOB ID After a BRCOM Error

If an error occurs while BRCOM is starting a job, it cleans up all job-related information under normal circumstances:

- If a BRCMD file has been created for the job, BRCOM purges it.
- If the job record has been added to the BRJOBS file, BRCOM deletes it.

If all job-related information has been cleaned up, you can correct the problem and start the job again using the same job ID. However, DMA might abend before BRCOM can send the message telling it to start the job. In that case, you must use the CLEANUP JOB Command on page 41 and then the DELETE JOB Command on page 42 before you can use the same job ID.
BRCOM Commands

This section describes the BRCOM commands.

Command

Use the `!` command to execute a command you entered previously during the current session. You can request the command by line number, relative line number, or text string. Terminating this command with a semicolon is optional.

```plaintext
! [ linenum ]
[ -linenum ]
[ string ]
[ "string" ] [ ; ]
```

`!` entered with no line number or text string, displays and executes the last command line in the command history buffer.

`linenum`

is a positive integer that specifies the number of the command line in the history buffer that you want to retrieve and execute. Use the HISTORY command to show the line numbers.

`-linenum`

is a negative integer that specifies the number of the command line to be retrieved and executed relative to the current line number.

`string`

is a text string. The `!` command displays and executes the most recent command in the history buffer that begins with the specified text string. Searching for previous commands is case-sensitive.

"string"

is a text string enclosed in quotation marks. The `!` command displays and executes the most recent command in the history buffer that contains the specified text string. The command does not need to begin with the specified string. Searching for previous commands is case-sensitive.

Guideline

Do not use the `!` command in a command file or IN file.

Examples

```plaintext
BR> ! ;
BR> ! 2
BR> ! INFO
BR> ! "CONFIG" ;
```
? Command

Use the ? command to retrieve a command you entered previously during the current session. You can request the command by line number, relative line number, or text string. Terminating this command with a semicolon is optional.

```
? [ linenum   ]
[  -linenum   ]
[     string   ]
[ "string"    ] [;]
```

? entered with no line number or text string, displays the last command line in the command history buffer.

`linenum`

is a positive integer that specifies the number of the command line in the history buffer that you want to retrieve.

`-linenum`

is a negative integer that specifies the number of the command line to be retrieved relative to the current line number.

`string`

is a text string. The ? command displays the most recent command in the history buffer that begins with the specified text string. Searching for previous commands is case-sensitive.

"string"

is a text string enclosed in quotation marks. The ? command displays the most recent command in the history buffer that contains the specified text string. The command does not need to begin with the specified string. Searching for previous commands is case-sensitive.

Guideline

Do not use the ? command in a command file or IN file.

Examples

```
BR> ? ;
BR> ? 2
BR> ? INFO
BR> ? "CONFIG" ;
```

ABORT JOB Command

The ABORT JOB command terminates the backup, restore, parallel backup or restart job as quickly as possible. The BRCMD file and BRIC file are not deleted. However, the DMA updates the STATUS record in the BRJOBS file and changes the job state to ABORTED.

```
ABORT JOB jobid ;
```
A job identifier (jobid) is a valid unique job identifier with a maximum of eight characters. The characters can be alphabetic, numeric, or a combination. The first character cannot be numeric. Wild cards (* or ?) are not permitted. Job IDs are not case-sensitive. The job ID must exist in the BRJOBS file.

For example:

A1234567
aaaaaaa
abcdEFG
D1
I607

Guidelines

- A super-group user (255,n) can abort any job. The owner of a job can also abort it.
- You can use the ABORT JOB command only on active jobs. The status must be INIT, RUN, WAIT, CAT, or TERM.
- The ABORT JOB command provides no output unless an error occurs.

Example

BR> ABORT JOB zbr005be ;

ALTER CONFIG Command (Super Group Only)

The ALTER CONFIG command sets the configuration options in the BRCONFIG file for all backup and restore jobs.

```
ALTER CONFIG , config-option [ , config-option ] [ , config-option ... ] ;
```

`config-option`

is one or more of:

- **BRJOBSVOLUME valid disk name**
- **EMSCOLLECTOR[\node.]$process-name**
- **SERVICECPULIST [ processor [, processor ] ... ]**
- **SERVICEPRI number**
- **WORKVOLUME valid disk name**
- **BRJOBSVOLUME valid disk name**

is the name of the disk volume where the BRJOBS file is located.

**EMSCOLLECTOR [\node.]$process-name**

is the collector for EMS messages. `valid process` can be either $0 or a process name. Specifying the node is optional.

**SERVICECPULIST [ processor [, processor ] ... ]**

is either no value or a value from 0 through 15 that specifies a list of the processors in which the DMA is permitted to start the Data Service and Tape Service. You must separate each processor in the list with a comma.
The DMA selects the first up processor in the list that is not the processor in which the DMA is running. If none of the processors in the list are up, the service processes are started in the processor in which the DMA is running. If you specify SERVICECPULIST configuration option but do not specify any processors, the service processes are started in the DMA’s processor.

**SERVICEPRI number**

is a value of -1 or a value of 1 through 199 that specifies the priority at which the DMA starts the Data Service and Tape Service. If you specify -1, the service processes are started at the same priority as the DMA.

**WORKVOLUME valid disk name**

is the name of the disk volume on which jobs create their files.

**Guidelines**

- You must be a super-group user to use the ALTER CONFIG.
- You can override these configuration options, except BRJOBSVOLUME, when you specify a BACKUP or RESTORE command.
- Be careful while altering the SERVICEPRI number parameter. Setting the value of the SERVICEPRI number parameter higher than DMA priority may result in unpredictable behavior.
- For more information about setting the configuration options, see *Managing Configuration Information* on page 24.

**Example**

```
BR> ALTER CONFIG, WORKVOLUME $RIO, BRJOBSVOLUME $CARNIVAL ;
BR> ALTER CONFIG, SERVICECPULIST ;
BR> ALTER CONFIG, SERVICECPULIST, EMSCOLLECTOR $MYLOG ;
```

**BACKCOPY Command**

The BACKCOPY command copies backup image data from one tape set to another. This command copies only one tape file from a tape volume. The tape devices used need not be of the same type. For example, the source tape can be specified as a device name and the destination tape can be specified as a DEFINE name. Similarly, if two DEFINE names are specified, they need not have the same CLASS, GEN, VERSION, and FILECAT. The tapedrive types or media types need not be identical.

```
BACKCOPY
{ source-tape, dest-tape  }
[ , run-option1 [, run-option2 ]... ]
, backup-object-spec
[ , backcopy-job-option1 [, backcopy-job-option2 ] ... ]
[ , config-option1 [, config-option2 ] ... ]
```

**source-tape**

is the tape device from which the image data is copied. You can specify the name of a tapedrive, the logical device number of a tape drive, or a define name:

- [\node,]$device
- [\node,]$ldev
- define-name

**dest-tape**

is the tape device on which the backup image is copied from the source tape. You can specify the name of a tapedrive, the logical device number of a tape drive, or a define name.
run-option

specifies how BRCOM starts DMA. The options are the same as those of the BACKUP command. For more information, see Run Option Exceptions for the BACKUP Command.

backup-object-spec

specifies the object to be backed up. The entire backup image data in the source tape is copied to the destination tape. You cannot specify a selection of the data. Therefore, this option can only be *. If a **.* is specified, it is interpreted as a command for BR (T9074) and not for BR2 (T0744).

backcopy-job-option

is one of these Backup and Restore job options or a combination of them:

- **JOB Job Option** on page 76
- **LISTALL Job Option** on page 76
- **OUT Job Option** on page 79
- **PAGELENGTH Job Option** on page 79
- These additional options are applicable exclusively to BACKCOPY:
  - TAPEDISPOSITIONIN - the disposition of the source tape
  - TAPEDISPOSITIONOUT - the disposition of the destination tape

The definition and description of the TAPEDISPOSITION Job Option on page 81 applies to both TAPEDISPOSITIONIN and TAPEDISPOSITIONOUT.

- **VERIFYTAPE Job Option** on page 81

  This job option applies only to the destination tape.

config-option

is the same as that of backup and restore jobs. For more information, see ALTER CONFIG Command (Super Group Only) on page 38

A backcopy operation has less than a 10% performance degradation from the backup job that created the source tape.

Guidelines

- The tape set from which the image data is being copied must be created using Backup and Restore or Backup and Restore 2. You can specify a backup job (tape file) or a tape to copy.
- If a fatal error is received from either the source tape device or the destination tape device, BACKCOPY returns event message 5006 (file-system error) and aborts.
- The job status output for BACKCOPY is the same as the output for a backup job, except:
  - When the DETAIL setting is used, the total number of all tapes written is displayed in the ‘tapes used’ field.
  - For STATUS DETAIL, two tapedrive fields, ‘source service’ and ‘destination service’, are displayed instead of the ‘tapedrive’ field.

For the brief job status of a backcopy job, see Brief Job Status—Backcopy Job on page 154. For the detailed job status of a backcopy job, see Detail Job Status—Backcopy Job on page 155

- The output of a BACKCOPY command with the LISTALL option is the same as that of a BACKUP command with the LISTALL option, except for these differences:
  - In place of the tape information printed at the beginning of a backcopy (the job header record), the following is printed:

    *Source tape* Tape #n, [Volume id: <tape-name>,] Drive:
    <name>
*Destination tape* Tape #m, [Volume id: <tape-name>,] Drive: <name>

- When a source tape is changed, the following is printed where tape change information would have been printed for a backcopy job:

  *Source tape change* Tape #n, [Volume id: <tape-name>,] Drive: <name>

- When a destination tape is changed, the following is printed where tape change information would have been printed for a backcopy job:

  *Destination tape change* Tape #m [Volume id: <tape-name>,] Drive: <name>

- The summary information for BACKCOPY looks like this:

  Job completed
  Last error or warning occurred on page 1
  Process elapsed time = 0:00:58.496
  Objects processed = 6
  Objects backcopied = 6 Objects not backcopied = 0
  Objects not found = 0 Objects skipped = 0
  Total tapes used = 1
  Total Mbytes moved = 0

Example

```
BR> BACKCOPY ($a8,$a9),*,tapedispositionin bot,
tapedispositionout bot,listall on ;
```

For the brief job status and the detailed job status, see Brief Job Status—Backcopy Job on page 154 and Brief Job Status—Backcopy Job on page 154, respectively.

**BACKUP Command**

Use the BACKUP command to copy OSS and SQL/MX files from disk to magnetic tape. For a description of the BACKUP command and examples, see BRCOM BACKUP Command on page 55

For information about backing up Enscribe or SQL/MP files, see Comparison With the BACKUP and RESTORE Utilities on page 173

**CLEANUP JOB Command**

Use the CLEANUP JOB command after a job has been stopped without the deletion of its temporary files such as the BRCMD file and the BRIC file.

```
CLEANUP JOB jobid ;
```

`jobid`

is a valid unique job identifier with a maximum of eight characters. The characters can be alphabetic, numeric, or a combination. The first character cannot be numeric. Wild cards (* or ?) are not permitted. Job IDs are not case-sensitive. The job ID must exist in the BRJOBS file.
For example:

A1234567
aaaaaaa
abcdEFG
D1
I607

Guidelines

- Each job normally deletes its BRCMD file and BRIC file automatically. However, these files might be left on disk if the job is terminated abnormally.
- The job must be in a correct state for a cleanup process. The proper states for a cleanup operation to be performed are: DONE, STOP, ABRT, ABND.
- You cannot use the CLEANUP JOB command to delete BRJOBS records.
- The job must be present in the BRJOBS file. You cannot issue a CLEANUP JOB command if the job has been deleted using the DELETE JOB command. Issue the CLEANUP JOB command, and then use the DELETE JOB command.

Example

BR> CLEANUP JOB zbr005be ;

DELETE JOB Command

Use the DELETE JOB command to delete a job from the BRJOBS file.

```
DELETE JOB jobid [, OWNER user-id] [, conditional time-value];
```

`jobid`

is a valid unique job identifier with a maximum of eight characters. The characters can be alphabetic, numeric, or a combination. The first character cannot be numeric. Wild cards (* or ?) are permitted. Job IDs are not case-sensitive. The job ID must exist in the BRJOBS file.

For example:

A1234567
aaaaaaa
abcdEFG
D1
I607
I*07
I*
I???

`user-id`

is a user ID. It is one of these:

```
{group-name.user-name}
{group-name.*}
```
‘(group-number, user-number)’
‘(group-number,* )’

group-name

is the group name of the user. Each name can contain from one through eight letters or digits, and the first character must be a letter.

user-name

is the name of the user. Each name can contain from one through eight letters or digits, and the first character must be a letter.

group-number

is an integer in the range from 0 through 255 that uniquely identifies a group. 255 is reserved as the super-group ID.

user-number

is an integer in the range from 0 through 255 that uniquely identifies a user within a group. 255 is reserved for group managers (group,255) and the super ID (255,255).

conditional

is any of:

‘<’
‘BEFORE’
‘>’
‘AFTER’

time-value

is:

‘{ {day month year | month day year }[hour:minute[:second]] }’
‘{ [{day month year | month day year }]hour:minute[:second] }’

For example:

1 JAN 1997 06:30
JAN 1 1997 06:30
02 JUL 1997 08:25:30

Today’s date is the default. The default time is 00:00:00 (midnight) of today’s date.

day

is a 2-digit integer in the range 1 through 31 that specifies the day.

month

is one of these:

JAN, FEB, MAR, APR, MAY, JUN, JULY, AUG, SEP, OCT, NOV, DEC

year

is a 4-digit integer in the range 1900 through 2999.

hour

is a 2-digit integer in the range 0 through 23.
minute
is a 2-digit integer in the range 0 through 59.

second
is a 2-digit integer in the range 0 through 59.

Guidelines

- If the job’s temporary files such as the BRCMD file and the BRIC file have not been deleted, issue the CLEANUP JOB command before the DELETE JOB command.
- You cannot specify a time range by including both the BEFORE and AFTER conditional in the same command.
- If a job ends abnormally, its end time might not be recorded. That job cannot be deleted using the conditional parameter if its end time is not known.
- If you specify a date without a time and the AFTER conditional, all jobs on that date are deleted because the default time is 00:00:00 (midnight).

Examples

BR> DELETE JOB zbr005be ;
BR> DELETE JOB *, AFTER 1 JAN 1997 06:30 ;
BR> DELETE JOB *, AFTER 1 JAN 2004 ;
BR> DELETE JOB *, BEFORE 9:00 ;
BR> DELETE JOB *, OWNER 255,255 ;

EXIT Command

Use the EXIT command to end the BRCOM session and return to the TACL prompt.

```
EXIT
```

NOTE:
A separate EXIT command is not required when BRCOM commands are specified on the command line.

Example

BR> EXIT ;

FC Command

Use the FC command to retrieve, edit, and execute a command you have previously entered during the current session. You can request the command by line number, relative line number, or text string.

```
FC [ linenum ]
[ -linenum ]
[ string ]
[ "string " ]
```
**FC**
entered with no line number or text string, specifies that the last command line in the command history buffer is to be displayed.

linenum
is a positive integer that specifies the number of the command line in the history buffer that you want to retrieve.

-linenum
is a negative integer that specifies the number of the command line to be retrieved relative to the current line number.

string
is a text string. The FC command finds and displays the most recent command in the history buffer that begins with the specified text string. Searching for previous commands is case-sensitive.

"string"
is a text string enclosed in quotation marks. The FC command finds and displays the most recent command in the history buffer that contains the specified text string. The command need not begin with the specified string. Searching for previous commands is case-sensitive.

**Guidelines**

**Procedure**

1. Do not use the FC command in a command file or IN file.
2. FC displays the specified command line and prompts you to make your changes on the next blank line. You can enter FC subcommands (such as R, I, or D) on the new blank line to replace, insert, or delete characters. After you enter the FC subcommands, pressing Return instructs FC to:
   a. Make the changes you specified.
   b. Display the command line as modified.
   c. Prompt for more changes.

**Example**

```
BR> FC ;
BR> FC 2
BR> FC INFO
BR> FC "CONFIG" ;
```

**HELP Command**

Use the HELP command to display information about BRCOM command names and their syntax.

```
HELP [ command-name ]
[ <syntax> ]
[ * ]
```

HELP
entered with no command name or syntax name, lists all the BRCOM command names. Syntax is not displayed. This command is the same as entering HELP *.
command-name

is the entire command name or the first word of the command's name. When you provide the entire name, such as INFO CONFIG, the command and its syntax are displayed. If you provide only one word in the command, such as INFO, all commands containing that word are displayed but without syntax.

<syntax>

is a variable item in the command syntax that you want help with. The < and > characters are required around the variable name.

*

lists all the BRCOM command names. Syntax is not displayed.

Examples

```
BR> HELP INFO CONFIG;
BR> HELP INFO ;
BR> HELP <jobid> ;
BR> HELP * ;
```

HISTORY Command

Use the HISTORY command to display lines from the history buffer. BRCOM maintains a history buffer of the command lines you enter during the current session.

The HISTORY command adds line numbers to the commands it displays.

```
HISTORY [lines ]
```

HISTORY

entered by itself, displays the ten most recent lines in the history buffer.

lines

specifies how many of the most recently entered commands to display.

Guideline

The HISTORY command displays the absolute line number for each command in the history buffer. You can use these line numbers for the FC command, ! command, or ? command.

Examples

```
BR> HISTORY;
BR> HISTORY 5 ;
```

INFO CONFIG Command

Use the INFO CONFIG command to display the configuration information in the BRCONFIG file.

```
INFO CONFIG [ , OUT out-file ] ;
```
**INFO JOB Command**

Use the INFO JOB command to display information about a job. For more information, see Displaying Configuration Information for a Job on page 25.

```
INFO JOB jobid [ , OUT out-file ];
```

**JOB**

displays the configuration information for one or more jobs. If you are not a super-group user, you can see only your own jobs.

*jobid*

is a valid unique job identifier with a maximum of eight characters. The characters can be alphabetic, numeric, wild-card (*) or (?), or a combination. The first character cannot be numeric. Job IDs are not case-sensitive.

You can use asterisks (*) or question marks (?) as wild-card characters in a job ID. The asterisk can represent from zero through eight unspecified characters in the position you place it. The question mark represents only one character in the position you place it.

For example:

```
A1234567
aaaaaaa
abcdEFG
D1
I607
I*07
I*
I???
```

**out-file**

specifies where the report is displayed or written. You can name a disk file or a device such as a printer or terminal. If not specified, the information is sent to your current default output file (usually your home terminal).
Example

BR> INFO JOB Feb0402, OUT $system.sys00.jobinfo ;

OBEY Command

Use the OBEY command to execute one or more BRCOM commands in a command file. BRCOM displays each command as it is performed. After executing the commands in the file, BRCOM prompts for the next command.

```
OBEY [ [ [ \node. ] $volume. ] subvolume. ] command-file ;
```

\node.$volume.subvolume.command-file

is the name of a file containing BRCOM commands.

Guidelines

- You must terminate each command in a command file with a semicolon.
- BRCOM generally continues processing the file even if an error occurs while processing the commands. However, when BRCOM processes a concatenated command, subsequent commands are ignored if an error occurs.
- For more information, see Creating and Using a Command File on page 33

Example

BR> OBEY \ski.$aspen.snow.season ;

PAUSE Command

Use the PAUSE command to stop BRCOM from prompting for commands.

```
PAUSE ;
```

Guideline

This command allows another process to take control of the terminal. Press the Break key to return control to BRCOM. For more information, see Handling Operations That Use the BRCOM Terminal on page 32

Example

BR> PAUSE ;

RESTART Command

Use the RESTART command to restart a failed backup or restore job. Before performing a restart, do not delete the BRJOBS record of the job to be restarted and do not delete or change the BRIC and BRCMD files of the failed job in that job’s work subvolume.
RESTART <jobid>  
[, <run option> [, <run option>]] ...  
[, <restart-job-option> [, <restart-job-option>]] ...

**jobid**

is the job identifier of a failed BACKUP/RESTORE operation. BRCOM initiates the restart of the job if the restart information of the specified job is stored by DMA in the BRJOBS file. In addition, for a backup restart, the <WORKVOLUME>.<jobid> subvolume must contain the files created by backup.

**run option**

specifies how BRCOM starts DMA. The options are the same as those of backup and restore jobs. For more information, see Run Option Exceptions for the BACKUP Command.

**restart-job-option**

is a valid RESTORE job option:

- **JOB Job Option** on page 76
- **LISTALL Job Option** on page 76
- **OUT Job Option** on page 79

**LISTALL Job Option and OUT Job Option** describes the use of the LISTALL and OUT job options in manual restart:

**Table 5: LISTALL Job Option and OUT Job Option**

<table>
<thead>
<tr>
<th>Parent job LISTALL</th>
<th>Restart job LISTALL</th>
<th>Parent job OUT</th>
<th>Restart job OUT</th>
<th>Behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td>ON</td>
<td>ON</td>
<td>Specified</td>
<td>Not specified</td>
<td>List information will be appended to parent job OUT destination.</td>
</tr>
<tr>
<td>ON</td>
<td>ON</td>
<td>Specified</td>
<td>Specified</td>
<td>Restart job OUT file will take precedence and no information will be appended to parent job’s list file. If same OUT file is specified in restart job then list information will be appended to the file.</td>
</tr>
</tbody>
</table>

*Table Continued*
<table>
<thead>
<tr>
<th>Parent job LISTALL</th>
<th>Restart job LISTALL</th>
<th>Parent job OUT</th>
<th>Restart job OUT</th>
<th>Behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td>ON</td>
<td>ON</td>
<td>Not Specified</td>
<td>Not Specified</td>
<td>List information will be logged to current BRCOM home term. (BRCOM will no longer write the OUT option to BRCMD when not specified. Instead, LIST logic will determine the home term by using PROCESS_GETINFO()).</td>
</tr>
<tr>
<td>ON</td>
<td>ON</td>
<td>Not Specified</td>
<td>Not Specified</td>
<td>Restart job OUT file will take precedence and no information will be appended to parent job's list file.</td>
</tr>
<tr>
<td>OFF</td>
<td>ON</td>
<td>Not Applicable</td>
<td>Specified</td>
<td>Restart job OUT file will take precedence and no information will be appended to parent job's list file.</td>
</tr>
<tr>
<td>OFF</td>
<td>ON</td>
<td>Not Applicable</td>
<td>Not Specified</td>
<td>List information will be logged to current BRCOM home term.</td>
</tr>
<tr>
<td>Not Specified, ON, or OFF</td>
<td>OFF</td>
<td>Not Applicable</td>
<td>Not Applicable</td>
<td>List information will be turned off for restarted job.</td>
</tr>
<tr>
<td>Not Specified, ON, or OFF</td>
<td>Not Specified</td>
<td>Not Applicable</td>
<td>Not Applicable</td>
<td>List information will be turned off for restarted job.</td>
</tr>
</tbody>
</table>

**Guidelines**

- The RESTART command lets you specify run options for the job being restarted that might differ from the parent job. Config options and the job option (except JOB and LISTALL) remain the same for the job being restarted as it was for the parent jobid.
- The restart of a job require the BRIC and BRCMD files to be written to the jobid subvolume of the parent job be unchanged from the point at which a failure occurred or an ABORT or STOP command was issued by the user.
Example

BR> RESTART JOB Feb0402 ;

RESTORE Command

Use the RESTORE command to restore OSS and SQL/MX files from magnetic tape to disk. For a description and examples of the RESTORE command, see BRCOM RESTORE Command on page 95

A backup and restore command completes with a Summary Information. For example,

Summary Information
Job completed.
Last error or warning occurred on page 2
Process elapsed time = 0:00:10.092
Objects processed = 10
Objects restored = 3
Objects not restored = 7
Objects not found = 0
Objects skipped = 7
Total tapes used = 1
Total Mbytes moved = 0

The description of the object processed related fields are as follows:

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Objects Processed</td>
<td>The number of objects processed.</td>
<td></td>
</tr>
<tr>
<td>Objects restored</td>
<td>The number of objects restored.</td>
<td>This is the actual number of Objects restored from the tape.</td>
</tr>
<tr>
<td>Objects not restored</td>
<td>The number of objects not restored.</td>
<td>This is the sum of Objects Skipped and the Objects Not Found.</td>
</tr>
<tr>
<td>Objects Not Found</td>
<td>The number of objects not found.</td>
<td>This is specific to backup operation.</td>
</tr>
</tbody>
</table>

Table Continued
<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Objects Skipped</td>
<td>The number of objects skipped.</td>
<td>If a media error occurs and you specified the IGNORE OFF job option, the object is included in the number of objects skipped.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>If you specified the IGNORE ON job option, the file is not included in the number of objects skipped.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Also, this includes all the objects which are not restored as they already exist.</td>
</tr>
<tr>
<td>Data errors</td>
<td>If the IGNORE ON option is specified then media or parity errors are ignored.</td>
<td>The count of data errors ignored is displayed here.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[This field is displayed only when IGNORE ON Job option is used.]</td>
</tr>
</tbody>
</table>

In case of a BR2 Restore, the restore is successful, if the objects processed match the sum of Objects restored and Objects skipped.

For information about backing up Enscribe or SQL/MP files, see *Comparison With the BACKUP and RESTORE Utilities* on page 173

**STATUS JOB Command**

Use the STATUS JOB command to display current status information about a job ID.

```
STATUS JOB jobid [ , OUT out-file ] [ , BRIEF | DETAIL ]
```

*jobid*

is a valid unique job identifier with a maximum of eight characters. The characters can be alphabetic, numeric, wild-card (‘*’ or ‘?’), or a combination. The first character cannot be numeric. Job IDs are not case-sensitive.

You can use asterisks (*) or question marks (?) as wild-card characters in a job ID. The asterisk can represent from zero through eight unspecified characters in the position you place it. The question mark represents only one character in the position you place it.

For example:

A1234567  
aaaaaaaa  
abcdEFG  
D1  
I607  
I*07  
I*  
I???

*out-file*

specifies where the report is displayed or written. You can name a disk file or a device such as a printer or terminal. If not specified, the information is sent to your current default output file (usually your home terminal).
specifies what information you want returned. BRIEF, the default, displays one line of status for each job. For more details about each job, use the DETAIL option. For more information, see Using BRCOM to Display Current Status for a Job on page 153.

Guideline

The DMA updates the status information for all states. However, the DMA does not update status information if the DMA stops before the end of the job or if a processor fails.

Examples

BR> STATUS JOB Feb0402 ;
BR> STATUS JOB Feb0402, OUT $system.sys00.jobinfo ;
BR> STATUS JOB Feb0402, OUT $system.sys00.jobinfo, BRIEF ;
BR> STATUS JOB Feb0402, OUT $system.sys00.jobinfo, DETAIL ;

STOP JOB Command

Use the STOP JOB command to stop a job.

```
STOP JOB jobid ;
```

`jobid`

is a valid, unique job identifier with a maximum of eight characters. The characters can be alphabetic, numeric, wild-card (* or ?), or a combination. The first character cannot be numeric. Job IDs are not case-sensitive.

You can use asterisks (*) or question marks (?) as wild-card characters in a job ID. The asterisk can represent from zero through eight unspecified characters in the position you place it. The question mark represents only one character in the position you place it.

For example:

```
A1234567
aaaaaaa
abcdEFG
D1
I607
I*07
I*
I???
```

Guidelines

- The STOP command terminates the job at the next update of the job record.
- The job must be in the RUN state before the STOP JOB command takes effect. If the job is in any other state, use the ABORT JOB Command to stop the job. For more information, see the ABORT JOB Command on page 37
- The STOP JOB command updates the BRJOBS file but does not delete the BRCMD file or BRIC file. No cleanup is performed.
- A super-group user (255, n) can stop any job. The owner of a job can also stop it.
Example

BR> STOP JOB Feb0402 ;

WAIT JOB Command

Use the WAIT JOB command to determine if the BRCOM prompt needs to be returned or not until the job using it completes.

WAIT {ON | OFF}

ON

waits for the current job to complete and then returns to the BRCOM prompt.

OFF

does not wait for the current job to complete and returns to the BRCOM prompt once the job starts.

Guidelines

This feature does not work properly if LISTALL/LISTONLY job option is used.
The BACKUP command copies files from disk to magnetic tape. You can use BACKUP to:

- Store files on tape for recovery in case they are ever lost or damaged on the disk
- Free disk space by archiving files that are used infrequently
- Move files from one system to another

**NOTE:**
The other system must have both Backup and Restore 2 and any other required software installed. For more information, see *Installing Backup and Restore 2* on page 22

### Managing Backup Jobs

#### Summary of Backing Up OSS or SQL/MX Files

To start a backup job:

**Procedure**

1. Log on to the host system where the objects to be backed up reside.
2. If you are using labeled tapes, add a CLASS TAPECATALOG DEFINE or CLASS TAPE DEFINE. For more information, see *Using DEFINEs With Backup and Restore 2* on page 33
3. From a TACL prompt, start BRCOM. For information about the BRCOM run command, see *Starting BRCOM* on page 29
4. From BRCOM, issue a BACKUP command to:
   - For a parallel backup operation two tape devices should be specified where these are either both Tape defines, both TAPECATALOG defines, or both tape devices. Specify a tape device for unlabeled tapes or a DEFINE for labeled tapes.
   - Optionally, specify run options
   - Specify the OSS objects, SQL/MX objects, or a combination of both to be backed up. If the specification is neither an OSS nor an SQL/MX object but a Guardian name, for example, *..*, BRCOM will forward the backup request to BR (T9074) instead of BR2 (T0744).
   - Optionally, specify job options
   - Optionally, specify configuration options to override the configuration options in the BRCONFIG file
5. You can run multiple backup jobs simultaneously. Each job functions independently because only read operations are performed.

**NOTE:**
Multiple backup jobs is not the same as parallel BACKUP where two identical tapes are written.

The summary information after the backup displays the status of the backup, which includes processed, backed up and skipped objects. The count of backed up objects includes an extra file, BRIC.

The following example displays the summary of backed up objects:

```
BR>backup \HPIDMR5.$Z3XT, MX ( sch sqlcat.sqlsch), listall on, wait on;
* WARNING-2030 ** Enscribe and SQL/MP objects will not be backed up.

Started job
```
backup \HPIDMR5.$Z3XT, MX ( sch sqlcat.sqlsch), listall on, wait on;
Unlabeled Tape.

System: \HPIDMR5     Operating System: H06     Tape Version: 1
Backup options: LISTALL ON

*First tape* Tape #1, Drive: \HPIDMR5.$Z3XT

*WARNING-5035*  14:44 10JAN13 254,00,235 Job ID: ZBR0013A,
Process Name: $Z3XW,
Component: BR2DMA. This tape can only be restored with
Backup/Restore 2.0.

*WARNING-5023*  14:44 10JAN13 254,00,235 Job ID: ZBR0013A,
Process Name: $Z3XW,
Component: BR2DMA. Enscribe and SQL/MP objects will not be
backed up.

Job id: ZBR0013A    Backup time: 10 Jan 2013, 14:44
Page: 1

*** Meta object BRCMD backed up ***

File System: SQLMX
Tape: 1

<table>
<thead>
<tr>
<th>Name</th>
<th>RWEP</th>
<th>Owner</th>
<th>Code</th>
<th>EOF</th>
<th>Last modif Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACa</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SQLCAT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SQLCAT</td>
<td>255,255</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SQLCAT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SQLSCH</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>QLCAT.SQLSCH</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>*SQL</td>
<td>255,255</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SQLTAB</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SQLSCH.SQLTAB</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>*SQL</td>
<td>255,255</td>
<td>550</td>
<td>A+</td>
<td>0</td>
<td>10Jan2013 14:43 ATP</td>
</tr>
<tr>
<td>HPIDMR5_SYSTEM_ZSD</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PJB33_Q452KH00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*** Meta object BRIC backed up ***

Summary Information

Job completed.
Last error or warning occurred on page 1
Process elapsed time = 0:00:16.752
Objects processed = 6
Objects backed up = 6  Objects not backed up = 0
Objects not found = 0  Objects skipped = 0
Total tapes used = 1
Total Mbytes moved = 0
Total bytes: 173442
Compressed bytes: 1982

Back up OSS Objects

- Backing up a directory includes all its subdirectories and files.
- Backing up a directory/file from "/G" or "/E" path is not supported.

Back up SQL/MX Objects

A catalog is a logical object. The catalog is a collection of schemas.

- Backing up a catalog includes backing up all its subordinate schemas.
  - To back up objects on a remote node, you must register the catalog. The REGISTER CATALOG command registers an SQL/MX catalog on a remote node. A catalog is not visible to a remote node until you register it. For more information, see the SQL/MX Reference Manual.
- Backing up a schema includes backing up all its subordinate tables.
- Backing up a table includes:
  - Nondroppable constraints.
  - Droppable constraints unless you specify the CONSTRAINTS EXCLUDED job option.
  - All the table partitions including data.
  - Indexes unless you specify the INDEXES EXCLUDED job option.
  - All index partitions unless you specify the INDEXES EXCLUDED job option.
  - Backing up individual table partitions includes the partition data only when you specify the PARTONLY job option.
  - SG_TABLE, if the table contains an IDENTITY column.

NOTE:
IDENTITY column feature is supported only in SQL/MX 3.1 versions and above.

- Backing up an index includes:
  - All index partitions.
  - Backing up individual index partitions includes the partition data only when you specify the PARTONLY job option.
- You cannot directly specify a constraint in a BACKUP command. To back up a constraint, you must back up the table that contains the constraint. The constraints that are backed up varies depending on whether you specify CONSTRAINTS INCLUDED or CONSTRAINTS EXCLUDED.

Back up the Restricted-Access Fileset

To back up a restricted-access fileset, ensure that:

- The user is the file owner or a member of the SECURITY-OSS-ADMINISTRATOR security group.
NOTE:
The super ID cannot back up files or directories from the restricted-access fileset if the super ID:
◦ Is not the owner of the file, or
◦ Does not have sufficient file permissions on the file or the group to which the file belongs

• The PRIVSOARFOPEN file privilege is set on the BR2DS, BR2ODS, BR2DMA, and BR2ODMA executable files. For information on how to set the file privileges on executable files, see Configuring Backup and Restore 2 on page 24.

NOTE:
◦ Only members of the SECURITY-PRV-ADMINISTRATOR security group can set or remove restrictions on the restricted-access fileset. For more information, see the Security Management Guide.
◦ The restricted-access fileset attribute and the SECURITY-PRV-ADMINISTRATOR security group are supported only on systems running L-series RVUs and J06.11 and later J-series RVUs.

Backing Up the Unrestricted Fileset
An unrestricted fileset can be backed up by the super ID, file owner, or any user who has sufficient permissions on the file.

Members of the SECURITY-OSS-ADMINISTRATOR security group can back up files in an unrestricted fileset only if the files have the required permissions set.

When multiple filesets (restricted-access and unrestricted) are present in a hierarchy, and backup is executed at the highest level directory by a super ID, it is recommended that you use the Exclude filter during backup to filter out the restricted-access filesets. For information on the Exclude filter, see Filters for OSS Files on page 66.

BACKUP Command Processing
When you issue a BRCOM BACKUP command:

Procedure
1. If you specify a job ID, BRCOM checks if that job ID exists in the BRJOBS file or if any files exist in $workvolume.jobid. If the job ID already exists or if there are files in the $workvolume.jobid subvolume, the job aborts with error 2023.
2. If you do not specify a job ID, BRCOM automatically generates a job ID.
3. BRCOM places a copy of the command in the $workvolume.jobid.BRCMD file:
   a. If you specify an IN file, the BRCMD file contains the contents of the IN file and the backup command that you specified.
   b. If you do not specify an IN file, the BRCMD file contains only the BACKUP command you specified.
4. BRCOM:
   a. Starts the DMA using any run options that you specified.
   b. Writes the job record to the BRJOBS file. For more information about the BRJOBS files, see Backup and Restore Jobs (BRJOBS) File on page 11
   c. Sends a request to the DMA to start the backup job.
5. The DMA validates the backup request, including file security validation.
6. The Data Service enumerates the backup request.
7. If you specified a DEFINE, the DEFINE sends a request to $ZSVR (the labeled-tape server process) for labeled-tape processing.
8. After validation, the DMA instructs the Tape Service to write the files to tape. In case of a parallel backup operation, Tape Service writes the files to both the tapes.
9. The individual object information is recorded in the BRIC file. For more information about the BRIC file, see Backup and Restore Intermediate Catalog (BRIC) File on page 12. If you specify an object that does not exist, the object is skipped, and the information for the object is not recorded in the BRIC.

10. If you specified the LISTALL job option, a list of the objects backed up and bypassed is recorded in the listing file.

11. If you specified a TAPECATALOG define with CATALOG ON, the tape information is recorded in the DSM/TC volume catalog.

**BRCOM BACKUP Command Syntax**

The syntax for a BRCOM BACKUP command is:

```
BACKUP
    tape-device-name
    ( tape-device-name1, tape-device-name2 )
    [, run-option [, run-option ]... ]
    , backup-object-spec
    ( backup-object-spec1 ), ( backup-object-spec2 )
    [, backup-job-option, [backup-job-option]...]
    [, config-option, [config-option]...]
```

- **tape-device-name** is the name of a tape drive to be used for an unlabeled-tape backup operation or a DEFINE name for a labeled-tape backup operation. Backup and Restore 2 does not support virtual tape drives created by TAPESIM because TAPESIM does not support LBA. Any attempt to get the LBA on a tape drive created by TAPESIM results in file-system error 2. To back up to an unlabeled tape, specify the tape device directly and do not use a DEFINE. It is one of these:

  `{ [ \node.]$device | [ \node.]$ldev | define-name }`

- **tape-device-name1 and tape-device-name2** such that two tape devices, `tape-device-name1`, `tape-device-name2`, can be specified during backup, where these are either both TAPE defines, both TAPECATALOG defines, or both tape devices. Any BACKUP command invoked with both `tape-device-name1` and `tape-device-name2` specified will be considered a parallel backup job.

- **node** is the name of the node (system) where the tape drive resides.

- **device** is the name of the magnetic tape drive, such as `$TAPE1`.

- **ldev** is the logical device number of the magnetic tape drive, such as `$17`.

- **define-name** is a DEFINE name of CLASS TAPE or TAPECATALOG for a backup to labeled tape. For more information, see Using DEFINEs With Backup and Restore 2 on page 33.

  - If you specify a DEFINE of CLASS TAPECATALOG with CATALOG ON, the tape information is recorded in the DSM/TC volume catalog. When you specify CATALOG OFF, information about the tape is not recorded.
in the DSM/TC volume catalog. For more information about CLASS TAPECATALOG DEFINEs, see the
DSM/Tape Catalog User’s Guide.

- If you specify a DEFINE of CLASS TAPE, information about the tape is not recorded in the DSM/TC
  volume catalog. For more information about CLASS TAPE DEFINEs, see the Guardian Disk and Tape

The DEFINE attributes are used as described in these manuals except as listed in DEFINE Attribute
Exceptions for the Backup Command.

Table 6: DEFINE Attribute Exceptions for the Backup Command

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Meaning</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>BLOCKLEN</td>
<td>Valid but ignored.</td>
<td>The value of BLOCKLEN is always either the default value or the user-specified value of the BLOCKSIZE job option. For more information about the BLOCKSIZE job option, see BLOCKSIZE Job Option on page 73</td>
</tr>
<tr>
<td>DENSITY</td>
<td>Not supported.</td>
<td>Backup and Restore 2 does not support reel-to-reel tapes.</td>
</tr>
<tr>
<td>EBCDIC</td>
<td>Not supported.</td>
<td>Backup and Restore 2 does not support IBM labeled tapes.</td>
</tr>
<tr>
<td>LABELS</td>
<td>Valid values are BACKUP or OMITTED.</td>
<td></td>
</tr>
<tr>
<td>LOGICAL</td>
<td>Valid but ignored.</td>
<td>Backup and Restore 2 does not support parallel BACKUP or BACKCOPY.</td>
</tr>
<tr>
<td>PHYSICAL</td>
<td>Valid but ignored.</td>
<td>Backup and Restore 2 does not support BACKCOPY.</td>
</tr>
<tr>
<td>RECFORM</td>
<td>Valid but ignored.</td>
<td>The record format is always FIXED.</td>
</tr>
<tr>
<td>RECLEN</td>
<td>Valid but ignored.</td>
<td>The record length is always either the user-specified value or default value of the BLOCKSIZE job option.</td>
</tr>
<tr>
<td>TAPEMODE</td>
<td>Valid but ignored.</td>
<td>The value of TAPEMODE is always STREAM.</td>
</tr>
<tr>
<td>USE</td>
<td>Valid values are IN, OUT, and OPENFLAG.</td>
<td></td>
</tr>
</tbody>
</table>

run-option specifies how BRCOM starts the DMA. The run options are supported as described in the TACL Reference Manual, except as listed in Run Option Exceptions for the BACKUP Command. Any run option specified on the command line overrides a corresponding run option in the IN file.
<table>
<thead>
<tr>
<th>Run Option</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU</td>
<td>This option specifies the number of the processor where the DMA is to run. To specify the list of processors in which the Data Service and Tape Service should run, use the SERVICECPULIST config-option.</td>
</tr>
<tr>
<td>DEFMODE</td>
<td>This run option is not supported.</td>
</tr>
<tr>
<td>GUARANTEEDSWAPSPACE</td>
<td>This run option is not supported.</td>
</tr>
<tr>
<td>IN</td>
<td>The IN file must be a text file. For more information about all the restrictions, see Using an IN File on page 33</td>
</tr>
<tr>
<td>INLINE</td>
<td>This run option is not supported.</td>
</tr>
<tr>
<td>INV</td>
<td>This run option is not supported.</td>
</tr>
<tr>
<td>NOWAIT</td>
<td>This run option is ignored because the Backup and Restore 2 processes always run nowaited.</td>
</tr>
<tr>
<td>MAXMAINSTACKSIZE</td>
<td>This run option is not supported.</td>
</tr>
<tr>
<td>MAXNATIVEHEAPSIZE</td>
<td>This run option is not supported.</td>
</tr>
<tr>
<td>OUT</td>
<td>This run option is not supported. Use the OUT job option instead. For more information, see OUT Job Option on page 79</td>
</tr>
<tr>
<td>OUTV</td>
<td>This run option is not supported.</td>
</tr>
<tr>
<td>PFS</td>
<td>This run option is not supported.</td>
</tr>
<tr>
<td>STATUS</td>
<td>This run option is not supported.</td>
</tr>
<tr>
<td>WINDOW</td>
<td>This run option is not supported.</td>
</tr>
</tbody>
</table>

backup-object-spec

is either OSS objects, SQL/MX objects, or both. To backup either OSS or SQL/MX objects, specify either oss-backup-object-spec or sqlmx-backup-object-spec. To back up both OSS objects and SQL/MX objects, specify an oss-backup-object-spec and sqlmx-backup-object-spec in either order. You cannot specify more than one oss-backup-object or more than one sqlmx-backup-object-spec in the same command. You must group all OSS objects to be backed up together and group all SQL/MX objects together separate from the OSS objects.

The backup-object-spec is one of these:

```plaintext
{oss-backup-object-spec }
{sqlmx-backup-object-spec }
{(oss-backup-object-spec ), (sqlmx-backup-object-spec ) }
{(sqlmx-backup-object-spec ), (oss-backup-object-spec ) }
```

oss-backup-object-spec
backup-job-option

specifies one or more conditions for the BACKUP command. There are several types of backup job options:

- Standard job options that apply to both OSS and SQL/MX objects
- OSS job options for backing up OSS objects
- SQL/MX job options for backing up SQL/MX objects

For a list of supported backup job options, see Backup Job Options on page 71

config-option

specifies how the DMA starts the Tape Service and Data Service, where EMS events are written, and the location of the work volume. If you do not specify these options, the job uses the value in the BRCONFIG file. For more information about the default configuration options, see Managing Configuration Information on page 24. These configuration options supersede the configuration options in the BRCONFIG file. It is any of:

EMSCOLLECTOR[\node.]$process-name
SERVICECPULIST [processor [, processor ]... ]
SERVICEPRI number
WORKVOLUME devicename

EMSCOLLECTOR [\node.]$process-name

is the collector for EMS messages. EMS events for this job are written to the specified collector. Specifying the node is optional.

SERVICECPULIST [processor [, processor ] ... ]

is a value from 0 through 15 that specifies a list of the processors in which the DMA starts the Data Service and Tape Service. You must separate each processor in the list with a comma.

The DMA selects the first up processor in the list that is not the processor in which the DMA is running. If none of the processors in the list are up, the service processes are started in the processor in which the DMA is running. If you specify SERVICECPULIST configuration option but do not specify any processors, the service processes are started in the DMA's processor.

SERVICEPRI priority

is either no value, a value of -1, or a value from 1 through 199 that specifies the priority at which the DMA starts the Data Service and Tape Service. A value of 0 is not permitted. If you specify -1, the service processes are started at the same priority as the DMA.

WORKVOLUME valid disk name

is the name of the disk volume on which jobs create their files.

**BRCOM BACKUP Syntax When Using an IN File**

You must not specify the IN run option for a BACKUP command in an IN file. For more information, see Using an IN File on page 33. When you are using an IN file, the syntax is:
Backup Object

Backup and Restore 2 supports these objects:

- **OSS Backup Object** on page 63
- **SQL/MX Backup Object** on page 64

**OSS Backup Object**

`oss-backup-object-spec`

specifies the objects to be backed up. It is one of these:
oss-source-directory

is one or more sets of directories and subdirectories to be backed up from the OSS file system. It must be a valid fully qualified OSS object name with an absolute path. All files in the specified directory and all its subdirectories are backed up unless excluded by a WHERE expression. If the oss-source-directory is in double quotes, it can contain spaces and commas.

Wild cards are permitted in oss-source-directory. The supported wild-card characters are ‘*’ and ‘?’. Each ‘*’ character matches zero or more valid OSS object name characters. Each ‘?’ character matches to exactly one valid SQL/MX object identifier character. Specifying only ‘*’ is equivalent to specifying ‘/’.

For example:

backup $tape1, oss (/usr/b*/c*, /usr/local/b?),
tapedisposition bot;

WHERE expression

allows further exclusions from oss-source-directory. It specifies qualifying criteria for including objects from the source directory for backup. The order of precedence in expression evaluation is parentheses, NOT, AND, and OR. Parentheses within a WHERE expression are optional. Before the WHERE expression, specify oss-backup-object-spec in the enclosed parenthesis. For OSS, filtering applies only to files, not directories. For OSS, it is any of these:

{ oss-qualifier }  
{ NOT oss-qualifier }  
{ (oss-qualifier AND oss-qualifier ... ) }  
{ (oss-qualifier OR oss-qualifier ... ) }  

oss-qualifier

is one or more of these filters:

OWNER = user-id
oss-timestamp time-conditional time-value
EOF eof-conditional eof-number

For more information, see Filters for OSS Files on page 66

SQL/MX Backup Object

sqlmx-backup-object-spec
specifies the objects to be backed up. It is one of these:

\[
\text{MX} \{ \text{sqlmx-object} \quad \}
\]

\[
\{ (\text{sqlmx-object} \ [, \text{sqlmx-object} \ ]\ldots) \quad \}
\]

\[
\{ (\text{sqlmx-object} \ [, \text{sqlmx-object} \ ]\ldots) \ \text{WHERE expression} \quad \}
\]

\[
\{ (\text{sqlmx-object} \ [, \text{sqlmx-object} \ ]\ldots) \ \text{WHERE expression} \quad [, (\text{sqlmx-object} \ [, \text{sqlmx-object} \ ]\ldots) \ \text{WHERE expression} \quad ] \ldots \quad \}
\]

\text{sqlmx-object}

is the set of SQL/MX objects to be backed up, which can be regular or delimited.

\textbf{NOTE:}

SQL/MX indexes containing delimiters are supported only on systems running L-series RVUs and J06.08 or later J-series RVUs.

The \text{sqlmx-object} is:

\[
\{ \text{sqlmx-object-type} \quad \text{sqlmx-source-object} \quad \}
\]

\[
\{ \text{TPART} \quad \text{sqlmx-table} \quad \text{PARTITION(} \text{sqlmx-part} \ [,\text{sqlmx-part} \ ]\ldots) \quad \}
\}
\]

\[
\{ \text{IPART} \quad \text{sqlmx-index} \quad \text{PARTITION} \ (\text{sqlmx-ipart} \ [,\text{sqlmx-ipart} \ ]\ldots) \quad \}
\}
\]

\text{sqlmx-object-type}

is one of these object types:

\[
\{ \text{CAT} \ \ast | \text{CATALOG} \ \ast \}
\]

\[
\{ \text{CAT} \ | \text{CATALOG} \}
\]

\[
\{ \text{SCH} \ | \text{SCHEMA} \}
\]

\[
\{ \text{TBL} \ | \text{TABLE} \}
\]

\[
\{ \text{IND} \ | \text{INDEX} \}
\]

\text{CAT} \ \ast \ | \text{CATALOG} \ \ast

is the object type for the set of all catalogs and their subordinate objects. If you specify \ast, you must not specify \text{sqlmx-source-object}. The \ast is required.

\text{CAT} \ | \text{CATALOG}

is the object type for a catalog.

\text{SCH} \ | \text{SCHEMA}

is the object type for a schema.

\text{TBL} \ | \text{TABLE}

is the object type for a table.

\text{IND} \ | \text{INDEX}

is the object type for an index.

\text{sqlmx-source-object}
is the set of SQL/MX objects to be backed up. It is a valid SQL/MX object such as the name of a catalog, schema, table, or index. The specified object and all subordinate objects are backed up. Wild cards are not permitted in `sqlmx-source-object`.

**TPART**

is the object type for a table partition. Table partitions are physical objects.

`sqlmx-table`

is a valid SQL/MX table name.

**IPART**

is the object type for an index partition. Index partitions are physical objects.

`sqlmx-index`

is a valid SQL/MX index name.

**PARTITION**

is one or more existing SQL/MX table or index partition names of the table or index specified in the `sqlmx-table` or `sqlmx-index`. If you specify TPART or IPART object type, you must specify at least one table partition name and the PARTONLY job option. You must enclose the names of the table partitions in parentheses.

**WHERE**

allows further exclusions from an `sqlmx-source-directory`. It specifies qualifying criteria for including objects from the source directory for backup. The order of precedence in expression evaluation is parentheses, NOT, AND, OR. Parentheses within a WHERE expression are optional. `sqlmx-backup-object-spec` before the WHERE expression has to be enclosed in parenthesis.

For SQL/MX, it is any of:

- `{ sqlmx-qualifier }`
- `{ NOT sqlmx-qualifier }`
- `{ ( sqlmx-qualifier AND sqlmx-qualifier ... ) }`
- `{ ( sqlmx-qualifier OR sqlmx-qualifier ... ) }`

**sqlmx-qualifier**

is one or more of these filters:

- `OWNER = user-id`
- `sqlmx-timestamp time-conditional time-value`
- `EOF eof-conditional eof-number`

**TABLE**

For more information, see Filters for SQL/MX Objects on page 69

### Filters for OSS Files

For OSS objects, filters other than the EXCLUDE filter are applied only to files and not to the OSS directories. You can filter the OSS directories using the EXCLUDE filter.

**OWNER = user-id**

selects a file based on a NonStop user ID in one of these forms:

- `{ group-name.user-name }`
- `{ group-name.* }`
group-name

is the group name of the user. Each name can contain from one to eight letters or digits, and the first character must be a letter.

user-name

is the name of the user. Each name can contain from one to eight letters or digits, and the first character must be a letter.

group-number

is an integer in the range from 0 through 255 that uniquely identifies a group. 255 is reserved as the supergroup ID.

user-number

is an integer in the range from 0 through 255 that uniquely identifies a user within a group. 255 is reserved for group managers \((group,255)\) and the super ID \((255,255)\).

oss-timestamp time-conditional time-value

selects a file based on when it was created, last opened, or last modified.

oss-timestamp

is any of:

- CREATIONTIME
- LASTOPENTIME
- MODTIME

CREATIONTIME

selects a file based on the time that the file was created.

LASTOPENTIME

selects a file based on the time that the file was last opened.

MODTIME

selects a file based on the time that the file was last modified.

time-conditional

is any of:

- <
- >

AFTER

time-value

is one of these:

- \{{day month|month day}year[hour:minute[:second]]\}
- \{{[day month|month day}year]hour:minute[:second]\}
For example:

1 JAN 2003 06:30  
JAN 1 2003 06:30  
02 JUL 2003 08:25:30

The default time-value is 00:00:00 (midnight) of today's date. The default for \( \{ \text{day month} \mid \text{month day} \} \) year is today's date.

- **day** is an integer in the range 1 through 31 that specifies the day.
- **month** is one of these:
  - JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DEC
- **year** is a 4-digit integer in the range 1900 through 2999.
- **hour** is a 2-digit integer in the range 0 through 23.
- **minute** is a 2-digit integer in the range 00 through 59.
- **second** is a 2-digit integer in the range 00 through 59.

EOF \( \text{eof-conditional} \) \( \text{eof-number} \)

selects a file based on its number of bytes.

- **eof-conditional** is any of:
  - <
  - >
  - <=
  - =
  - >=
  - <> (not equal to)

- **eof-number** is the size of a file in bytes.

EXCLUDE \( \text{exclude-conditional} \) \( \text{exclude-object spec} \)

excludes the files or directories based on the name you provide in the OSS object.

- **exclude-conditional** is always =.
- **exclude-object spec** is the list of OSS files or directories separated by a comma ','. 
NOTE:

- Wild cards allowed in the exclude-object spec are *,!?. EXCLUDE filter is an exclusion criterion and not an inclusion criterion. Exclusion criterion, if applied and satisfied, prevents the particular OSS object from being backed up. Any inclusion criterion, if applied and satisfied, allows an OSS object to be backed up.
- The EXCLUDE filter is supported only on systems running L-series RVUs and J06.10 and later J-series RVUs.

Filters for SQL/MX Objects

For SQL/MX objects, the filters are applied only to certain types of objects as shown in SQL/MX Filters. You cannot filter SQL/MX constraints. For SQL/MX, various filters apply only to certain object types. Parent objects are backed up if the filter does not apply to them. For example, WHERE EOF applies only to table partitions. If you specify BACKUP of a schema WHERE EOF>n, all tables in the schema are backed up, and only table partitions greater than the indicated size are backed up.

Table 8: SQL/MX Filters

<table>
<thead>
<tr>
<th></th>
<th>CATALOG</th>
<th>SCHEMA</th>
<th>TABLE</th>
<th>INDEX</th>
<th>PARTITIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>OWNER</td>
<td>Ignored</td>
<td>Valid</td>
<td>Ignored</td>
<td>Ignored</td>
<td>Ignored</td>
</tr>
<tr>
<td>CREATIONTIME</td>
<td>Ignored</td>
<td>Ignored</td>
<td>Valid</td>
<td>Ignored</td>
<td>Ignored</td>
</tr>
<tr>
<td>LASTOPENTIME</td>
<td>Ignored</td>
<td>Ignored</td>
<td>Ignored</td>
<td>Ignored</td>
<td>Valid</td>
</tr>
<tr>
<td>MODTIME</td>
<td>Ignored</td>
<td>Ignored</td>
<td>Ignored</td>
<td>Ignored</td>
<td>Valid</td>
</tr>
<tr>
<td>REDEFINITION TIME</td>
<td>Ignored</td>
<td>Ignored</td>
<td>Valid</td>
<td>Valid</td>
<td>Ignored</td>
</tr>
<tr>
<td>EOF</td>
<td>Ignored</td>
<td>Ignored</td>
<td>Ignored</td>
<td>Ignored</td>
<td>Valid</td>
</tr>
<tr>
<td>TABLE</td>
<td>Valid</td>
<td>Valid</td>
<td>Valid</td>
<td>Valid</td>
<td>Valid</td>
</tr>
</tbody>
</table>

OWNER = user-id

selects a schema based on the user ID. It is a NonStop user ID in one of these forms:

```
{group-name.user-name}
{group-name.*}
{group-number, user-number}
{group-number,*}
```

`group-name`

is the group name of the user. Each name can contain from one to eight letters or digits, and the first character must be a letter.

`user-name`

is the name of the user. Each name can contain from one to eight letters or digits, and the first character must be a letter.
**group-number**

is an integer in the range from 0 through 255 that uniquely identifies a group. 255 is reserved as the super-group ID.

**user-number**

is an integer in the range from 0 through 255 that uniquely identifies a user within a group. 255 is reserved for group managers (group,255) and the super ID (255,255).

**sqlmx-timestamp time-conditional time-value**

selects an object based on when it was created, redefined, last opened, or last modified.

**sqlmx-timestamp**

is one of these:

- CREATIONTIME
- LASTOPENTIME
- MODTIME
- REDEFINITIONTIME
- CREATIONTIME

selects a table based on the time that the table was created.

**LASTOPENTIME**

selects a table partition based on the time that the table partition was last opened.

**MODTIME**

selects a table partition based on the time that the table partition was last modified.

**REDEFINITIONTIME**

selects a table based on the time that the table was last redefined.

**time-conditional**

is any of:

- `<`
- BEFORE
- `>`
- AFTER

**time-value**

is one of these:

- `{{day month | month day }year   [hour:minute[:second]}}`
- `{{[day month|month day }year]  hour:minute[:second]}}`

For example:

1 JAN 2003 06:30
JAN 1 2003 06:3002
JUL 2003 08:25:30

The default **time-value** is 00:00:00 (midnight) of today's date. The default for **{day month | month day }year** is today's date.

**day**

is an integer in the range 1 through 31.
**month**
is one of these:

JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DEC

**year**
is a 4-digit integer in the range 1900 through 2999.

**hour**
is a 2-digit integer in the range 00 through 23.

**minute**
is a 2-digit integer in the range 00 through 59.

**second**
is a 2-digit integer in the range 00 through 59.

EOF  *eof-conditional*  *eof-number*
selects a table partition based on its number of bytes.

*eof-conditional*
is any of:

<  
>  
<=  
=  
>=  
<> (not equal to)

*eof-number*
is the size of the table partition in bytes.

**TABLE**
specifies to back up only SQL/MX tables.

### Backup Job Options

Backup and Restore 2 provides support for SQL/MX databases and OSS files. There are several categories of backup job options.

**Table 9: Backup Job Options**

<table>
<thead>
<tr>
<th>Option</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ALLOWMYID Job Option</strong> on page 72</td>
<td>OSS</td>
</tr>
<tr>
<td><strong>BLOCKSIZE Job Option</strong> on page 73</td>
<td>Standard</td>
</tr>
<tr>
<td><strong>BRICONFRESHTAPE Job Option</strong> on page 73</td>
<td>OSS and SQL/MX</td>
</tr>
</tbody>
</table>

*Table Continued*
ALLOWMYID Job Option

This job option specifies whether the MYID option is allowed during a RESTORE command. ON is the default.

ALLOWMYID{ OFF | ON }

ON

allows the MYID option during a RESTORE command.

OFF

does not allow the MYID option during a RESTORE command.

Guidelines

- The ALLOWMYID job option supports only OSS objects. If you specify this option but do not specify an OSS object, an error occurs. This option is not supported for SQL/MX objects.
- The RESTORE job option MYID lets you restore files that originally belonged to another user to your own user ID. This is applicable for super users.
BLOCKSIZE Job Option

This job option specifies the size of each tape record (block) written to the backup tape. The default block size is 56.

```
BLOCKSIZE tape-record-size
```

tape-record-size

is the number of 1024-byte increments (blocks) in each record. Specify tape-record-size as 8, 12, 16, 20, 24, 28, 32, 36, 40, 44, 48, 52, or 56.

BRICONFRESHTAPE Job Option

This job option is used for backup only. This option provides two values: ON and OFF. The default value is OFF. If the job option is set to ON, Backup and Restore 2 writes the Backup Restore Intermediate Catalog (BRIC) file onto a new tape, regardless of the space remaining on the existing tape.

```
BRICONFRESHTAPE { ON | OFF }
```

ON
BRIC is written to a fresh tape.

OFF
BRIC is written to the last tape of the Backup.

**NOTE:**
The BRICONFRESHTAPE job option is supported only on systems running L-series RVUs and J06.08 and later J-series RVUs.

Guidelines

- The BRICONFRESHTAPE job option is intended primarily for setups involving Virtual Tape Server (VTS). Since BRIC will now be present on a fresh tape, staging of tape with BRIC file from physical tape media to VTS cache during restore will be faster. With this feature OFF, VTS will have to stage the last tape which will contain the BRIC. The tape will also contain additional data from the last part of the Backup image. Hence staging of the tape containing the BRIC will be slower due to the additional data present in the virtual tape image.

BRICONDISK Job Option

This job option is applicable for backup, backcopy, and parallel backup only. This option provides two values: ON and OFF. The default value is OFF. If the job option is set to ON, Backup and Restore 2 retains the Backup Restore Intermediate Catalog (BRIC) and BRCMD files on the disk.

```
BRICONDISK { ON | OFF }
```

ON
BRIC and BRCMD files are not purged from the disk.

OFF
BRIC and BRCMD files are purged from the disk.

NOTE:
The BRICONDISK job option is supported only on systems running L-series RVUs and J06.10 and later J-series RVUs.

Guidelines

NOTE:
This section does not provide guidelines about how the cleanup or delete job options affect the BRIC and BRCMD files.

- The BRIC and BRCMD files are retained in the workvolume.jobid location. This location information is displayed in the listing output of the backup job (only if the LISTALL ON option is used).
- Use the DIRECTORY job option to restore the data. To list the content, use the LISTONLY job option.
- BRIC is an unstructured binary code 0 file and contains the metadata of the backup operation.
- BRCMD is a code 101 file and contains the command that was used for the backup operation.
- You must manage the BRIC and BRCMD files because BR2 does not catalog these files or the information inside them.
- If the CLEANUP command is used from BRCOM for a JOB ID, the files are removed from the location. If the job is aborted or abended, the files might not be present or might contain incomplete information.
- The BRIC and BRCMD files are saved with the security privileges of the user running the BR2 job.
- For a backcopy, the saved BRIC file corresponds to the target tape which is written in to.

CONSTRATINS Job Option

Constraints are rules that protect the integrity of data in a table by restricting the values in a particular column or set of columns to those that meet the conditions of the constraints. This job option specifies which constraints are backed up from the source table. INCLUDED is the default.

| CONSTRAINTS { EXCLUDED | INCLUDED } |

INCLUDED
backs up the primary key, unique, not null, and check constraints from the source table.

EXCLUDED
backs up the NOT NULL constraint from the source table. The PRIMARY KEY constraint from the source table is backed up only if it is NOT DROPPABLE.

Guidelines

- The CONSTRAINTS job option supports only SQL/MX objects. If you specify this option but do not specify any SQL/MX object, an error occurs. This option is not supported for OSS.
- If you specify PARTONLY ON, you must specify CONTRAINTS EXCLUDED.
- If you specify CONSTRAINTS INCLUDED, you cannot specify INDEXES EXCLUDED or PARTONLY ON.
- If you specify CONSTRAINTS INCLUDED during the RESTORE command, it is meaningful only if CONSTRAINTS INCLUDED was specified or defaulted to during the BACKUP command.
- If you specify CONSTRAINTS EXCLUDED, you must specify the INDEXES EXCLUDED.
- The constraints that are backed up varies depending on whether you specify CONSTRAINTS INCLUDED or CONSTRAINTS EXCLUDED.
<table>
<thead>
<tr>
<th>CONSTRAINTS</th>
<th>INCLUDED</th>
<th>EXCLUDED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Not Null</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Unique</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Primary key droppable</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Primary key not droppable</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Referential integrity</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

- You cannot directly back up referential integrity constraints. For more information, see Restore of Views, Stored Procedures, Triggers, and Referential Integrity Constraints on page 18. However, the data definition language (DDL) for these constraints is automatically backed up. You can use the RESTORE SHOWDDL ON option to generate one or more OSS edit files containing DDL information. Use the DDL to recreate the referential integrity constraints. Also, you can use the OBEYDDL job option to automatically create the referential integrity constraints using the OSS edit files containing the DDL information.

**NOTE:**
The OBEYDDL job option is supported only on SQL/MX 3.2 version and above.

**FOLLOWMOUNTPTS Job Option**

This job option specifies whether other OSS filesets are included. ON is the default.

```
FOLLOWMOUNTPTS { OFF | ON }
```

- **OFF**
  does not back up files in other OSS filesets that are mounted on the directories being backed up. For more information, see Backing Up OSS Objects Excluding Mount Points on page 85

- **ON**
  backs up files in other OSS filesets that are mounted on the directories being backed up. For more information, see Backing Up OSS Objects Following Mount Points on page 84

**Guideline**
The FOLLOWMOUNTPTS job option is supported only for OSS objects. If you specify this job option but do not specify any OSS objects, an error occurs. This option is not supported for SQL/MX.

**IGNORE Job Option**

This job option specifies whether certain data errors are ignored or not. OFF is the default.

```
IGNORE { ON | OFF }
```

- **ON**
  ignores certain data errors. The backup job writes the invalid data to tape (if possible). Otherwise, zeros are written in place of invalid data.
skips the file if a data error occurs and starts processing the next file.

**INDEXES Job Option**

This job option specifies whether or not table indexes are backed up. INCLUDED is the default.

```
INDEXES { EXCLUDED | INCLUDED }
```

EXCLUDED

does not back up the table indexes and index partitions for each of the tables selected for backup.

INCLUDED

backs up the table indexes and index partitions for each of the tables selected for backup.

**Guidelines**

- The INDEXES job option is supported only for SQL/MX objects. If you specify this job option but do not specify any SQL/MX objects, an error occurs. This option is not supported for OSS objects.
- If you specify INDEXES INCLUDED, you cannot specify PARTONLY ON.
- If you specify PARTONLY ON, you must specify INDEXES EXCLUDED.
- If you specify INDEXES EXCLUDED, you must specify CONSTRAINTS EXCLUDED.

**JOB Job Option**

This job option specifies a job identifier.

```
JOB jobid
```

`jobid`

is a valid unique job identifier with a maximum of eight characters. The characters can be alphabetic, numeric, or a combination of both. The first character cannot be numeric. Wild cards ("*" or "?") are not permitted. Job IDs are not case-sensitive. For example:

A1234567  
aaaaaaaa  
abcdEFG  
D1  
I607

**Guidelines**

- If you do not specify this job option, BRCOM automatically assigns a job identifier and displays it after the job has been started.
- You cannot use a job ID if any files exist in `$workvolume.jobid`.
- The job ID cannot be present in the BRJOBS file.

**LISTALL Job Option**

This job option lists the names of the backed-up objects and objects that cause errors to an OUT file or a current terminal. OFF is the default.
LISTALL { ON | OFF }

ON
lists the names of all backed-up objects and the names of the objects that cause errors.

OFF
lists only the file names associated with error messages to the EMS log.

Guidelines

- If you specify LISTALL ON and the OUT job parameter, the list is directed to the OUT file. If you specify LISTALL ON but omit the OUT job parameter, the list is directed to your current terminal.
- If you do not specify the LISTALL ON job option, the file names associated with error messages are recorded only in the EMS event log.
- Monitor EMS messages. Some messages are only sent as EMS messages, not as LISTALL output.
- If you specify the LISTALL ON job option but omit the OUT job option, the LISTALL output is directed to your current terminal. The BRCOM prompt does not return until the job completes unless you press the Break key.

NEEDBOTH Job Option

This job option defines how the backup and restore operation should treat errors during parallel backup. This job option is valid only for a parallel backup operation (that is, when two tape devices are specified). The Default is OFF.

The syntax for the NEEDBOTH job option is:

NEEDBOTH { ON | OFF }

ON
indicates that the occurrence of the first error in either tape is considered a parallel backup error, and the operation performs the same steps as the backup operation for this error. A warning message is displayed in the LIST output.

OFF
indicates that the first tape error encountered will cause parallel backup to perform the same steps as a backup operation from that point forward using the error free tape. On being set to OFF, the earliest point at which both tape devices have encountered an error will be considered a parallel backup error, and the operation will perform the same steps as a backup operation would for this error.

Guidelines

- If NEEDBOTH is ON, the backup and restore operation will treat both tapes as a single "meta" tape entity, if either has an error the "meta" tape is in error.
- If NEEDBOTH is OFF, the first tape with an error is ignored from that point forward, and the backup and restore operation will proceed as with a single tape backup operation. Failure of the verify tape operation is considered a tape error.
- If the NEEDBOTH job option is specified as part of a backup job with a single tape, the backup and restore operation returns a syntax error.

OPEN Job Option

Use this job option to specify whether to include or skip files that are open. OFF is the default.
OPEN { ON | OFF }

ON
backs up files even if they are currently open with write or read/write access unless the files are also open with exclusive access.

OFF
skips the files that are currently open with write or read/write access.

Guidelines

⚠️ CAUTION:
If you restore a file that was modified or open for write access while being backed up, file-system error 59 (file is bad) can occur, and data can be lost. Whenever possible, close all files before running the BACKUP command. If audited files are backed up in the WRITE OPEN state, they could be corrupt. Restoring such files and using them in audited mode can cause TMF to leave the whole volume in an inconsistent state. If audited files are restored, they should be used in nonaudited mode. Use TMF to dump audited files to tape.

- The OPEN job option is not supported for OSS. This OPEN job option has no effect if you do not specify an SQL/MX object.
- Because all SQL/MX files are audited, you should use TMF online dumps as the primary method for preserving SQL/MX objects. Using the BACKUP command to preserve files is not an effective recovery if any files are open during the backup operation. Even if you use the OPEN option, the image saved during the dump of the database might not be consistent. For more information, see the SQL/MX Installation and Management Guide.
- Backup and Restore 2 normally tries to open files with protected read access. Other processes can read the files but cannot write to them. If the OPEN option is in use and the BACKUP command fails to open a file with protected access, Backup and Restore 2 then attempts to open the file with shared read access.
- Before backing up files with the OPEN option, issue an SCF CONTROL DISK, REFRESH command to update file labels on disk. You must be certain that the files being backed up are not modified while the BACKUP operation is running.
- The OPEN job option is supported only for SQL/MX objects. If you specify this job option but do not specify any SQL/MX objects, an error occurs. This option is not supported for OSS objects.

OSSACL Job Option
This job option specifies whether to back up the access control lists (ACLs) in OSS files. ON is the default.

OSSACL { ON | OFF }

ON
backs up standard ACL or owned ACL in OSS files. If an OSS fileset does not support ACLs, this option is ignored.

OFF
does not back up ACLs in OSS files.
Guideline

When backing up an OSS object containing an ACL, if the system call to retrieve ACL data fails, Backup and Restore 2 displays an EMS message: ZBRU-EVT-OSSACL-BACKUP-WRN

OUT Job Option

This job option specifies the location of the output for LISTALL ON. The default output location is your current terminal.

```
OUT list-file
```

`list-file`

is a valid Guardian disk file, terminal, or spooler location that specifies the output location for the LISTALL ON option.

Guidelines

• This option has no effect unless you also specify the LISTALL ON option.
• If you specify the LISTALL ON job option and OUT job option, the output is directed to the OUT file.
• If you specify the LISTALL ON job option but omit the OUT job option, the output is directed to your current terminal. The BRCOM prompt does not return until the job completes, unless you press the Break key. For more information, see LISTALL Job Option on page 76.

PAGELENGTH Job Option

This job option specifies the number of lines generated per page of output.

```
PAGELENGTH number-of-lines
```

`number-of-lines`

is an integer in the range 20 through 100 that specifies the number of lines generated per page of output from BACKUP.

Guidelines

• If you do not specify the PAGELENGTH job option, the output from the backup job defaults to 60 lines per page.
• If you specify the PAGELENGTH job option, you must specify the OUT job option. This job option is valid only if you specify the OUT job option.

PARTONLY Job Option

This job option backs up individual tables or index partitions. OFF is the default.

```
PARTONLY { OFF | ON }
```

OFF
disallows the back up of individual table or index partitions.

ON
backs up the table or index partitions that are explicitly specified for each of the tables or indices selected for backup. Table or index partitions that are not explicitly specified are not backed up.

Guidelines

△ CAUTION:
Under normal conditions, to ensure that the BACKUP and RESTORE commands handle all related objects together and avoid inconsistencies, use BACKUP with the default options PARTONLY OFF and INDEXES INCLUDED.

When necessary, use PARTONLY and INDEXES EXCLUDED to back up or restore individual SQL components of a set of related objects (files), such as the individual table partitions. Use these job options carefully:

- The consistency checking that the BACKUP or RESTORE commands perform to validate the data during these procedures does not ensure the data consistency of SQL objects.
- If you use job options from BACKUP and RESTORE commands incorrectly, you can cause the primary data to be inconsistent with the alternate indexes. For example, if you specify PARTONLY ON or INDEXES INCLUDED, a base table can become inconsistent with its indexes and left invalid after a RESTORE process. Use these job options with extreme care.

Considerations for IDENTITY column table:
Use the following steps when PARTONLY job option is explicitly used to restore partition data:

- If the target table has an IDENTITY column defined as GENERATED ALWAYS AS IDENTITY, ensure that backed up source table has the same IDENTITY column attributes as that of the target table. This is required to provide data consistency.
- If the target table has an IDENTITY column that is defined as GENERATED BY DEFAULT AS IDENTITY, one can use the ALTER TABLE ALTER COLUMN...RECALIBRATE functionality to influence the next value for the IDENTITY column. For more information, see SQL/MX Reference Manual.

- You must be extremely cautious if restoring only some partitions as it can cause an inconsistent database.
- If you explicitly specify any index partitions or table partitions, you must specify PARTONLY ON.
- If you do not specify any index partitions or table partitions, you must not specify PARTONLY ON.
- If you specified the PARTONLY ON job option during a backup operation, you must also specify PARTONLY ON for the RESTORE command.
- The PARTONLY ON job option supports only SQL/MX objects. If you specify this job option but do not specify any SQL/MX objects, an error occurs. This option is not supported for OSS.
- If you specify PARTONLY ON for backing up table partitions, you must specify INDEXES EXCLUDED and CONSTRAINTS EXCLUDED.
- You cannot specify SQLDATA OFF with the PARTONLY ON job option. PARTONLY is not supported for hash-partitioned (as opposed to range-partitioned) tables.

SQLDATA Job Option
This job option specifies whether to back up the SQL/MX data in index partitions and table partitions or to back up only the DDL information for these objects. ON is the default.

| SQLDATA { OFF | ON } |
|----------------------|
| OFF                  |
records the DDL, which lets you issue a create table or create index on the RESTORE. The resulting backup tape contains the DDL information necessary to re-create an empty version of the SQL object, without any of the SQL data.

**Guidelines**

- The SQLDATA job option supports only SQL/MX objects. If you specify this job option but do not specify any SQL/MX objects, an error occurs. This option is not supported for OSS objects.
- The SQLDATA OFF job option has no effect on catalogs, schemas, tables, and indexes. However, if you specify a catalog, schema, or table and SQLDATA OFF, any table partitions and index partitions subordinate to the specified object are not backed up.
- You cannot specify SQLDATA OFF with the PARTONLY ON job option.

**TAPEDISPOSITION Job Option**

This job option specifies the position and location of the tape at the end of the backup job. UNLOAD is the default.

```
TAPEDISPOSITION { BOT | NOREWIND | UNLOAD }
```

**BOT**

rewinds the tape to the beginning and leaves it online when the backup job completes.

**NOREWIND**

leaves the tape positioned at its current location and online at the end of the backup job.

**UNLOAD**

dismounts the tape at the end of the backup job.

**Guidelines**

Specify the NOREWIND option only when using CLASS TAPECATALOG defines and tape volumes in an APPEND ON pool. This option leaves the tape positioned at the end of the backup job and ready for a subsequent appended job on the same tape.

**VERIFYTAPE Job Option**

This job option specifies whether to check the data on tape for data integrity. OFF is the default.

```
VERIFYTAPE { ON | OFF }
```

**ON**

examines all the data on each tape for the current job for data integrity after the tape is written.

**OFF**

does not examine the data on each tape for the current job for data integrity.
Examples

- **OSS Backup Examples** on page 82
- **SQL/MX Backup Examples** on page 87
- **Backing Up Both OSS and SQL/MX Objects** on page 93

**OSS Backup Examples**

The OSS examples assume a basic knowledge of these topics:

- The UNIX directory structure and the OSS implementation of the directory structure
- OSS filesets, including the special nature of the root fileset
- Restricted-Access Fileset
- File privileges set on executables
- Mount points

For more information about OSS, see the *Open System Services Management and Operations Guide*.

For more information about Restricted-Access Fileset, see the *Security Management Guide*.

**Backing Up OSS Directories**

- To back up the entire OSS file system of the local node, use the BACKUP command and specify the `/` root directory. For example:
  
  BR> BACKUP =mytape, OSS / ;

- To back up only the objects in the `/usr` directory, specify `/usr`
  
  For example:

  BR> BACKUP =mytape, OSS /usr ;

- To back up several different OSS objects, enclose the list of objects in parentheses. For example:

  BR> BACKUP =mytape, OSS (/usr/bin, "/x/space delimited BR+> dirname", /home/sv/myfile, /usr/local/bin);

  These OSS objects are backed up:
  - All the objects under the directory `/usr/bin` inclusive
  - All the objects under the directory `/x/space delimited dirname` inclusive
  - The file `/home/sv/myfile`
  - The symbolic link `/usr/local/bin`

**Backing Up OSS Objects With Filtering**

- To exclude OSS files from the back up, you can use a WHERE expression to filter by qualifying criteria such as the modification time or owner. Filtering does not apply to directories.

  BR> BACKUP =mytape, OSS (/usr) WHERE MODTIME AFTER
  BR+>APR 1 2004 ;

  Assume this directory structure:

  / Root directory

  `usr` Subdirectory of the root directory

  `usr1` File in the `/usr` directory (last modified on 07 JAN 2003)
usr2 File in the /usr directory (last modified on 02 APR 2004)
usr3 File in the /usr directory (last modified on 07 JAN 2003)

The /usr directory is backed up even if it does not meet the filter criteria. Filtering does not apply to directories. The /usr/usr1 and /usr/usr3 files have not been active since January 7th 2004 and are not backed up. These objects are backed up:

usr Subdirectory of the root directory
usr2 File in the /usr directory (last modified on 02 APR 2004)

• If the object specification to be excluded has to be specified in multiple lines, the syntax allowed is as below, where each OSS object to be excluded should be prefixed with AND EXCLUDE:

backup $tape, oss (/) WHERE EXCLUDE = (/bin/unsupported)
AND EXCLUDE = (/bin/ccs)
AND EXCLUDE = (/bin/cp),listall on;

• To filter OSS files by the creation time, use a WHERE expression and the CREATIONTIME timestamp. For example:

BR> BACKUP =mytape, OSS (/etc/rc, /var/x) WHERE (CREATIONTIME
BR+> BEFORE JAN 17 2004 and OWNER software.sitaramv);

Assume this directory structure:

etc Directory
rc File in the /etc directory (created on 07 JAN 2004)
var Directory
x File in the /x directory (created on 12 DEC 2004)
The /etc and /var directory are both backed up. The x file is not backed up.

etc Directory
rc File in the /etc directory (created on 07 JAN 2004)
var Directory

• In this example, files are filtered by the number of bytes and the owner:

BR> BACKUP =mytape, OSS(/usr/bin, /home/sv/myfile,
BR+>/usr/local/bin) WHERE (EOF > 200000 AND OWNER =
BR+> software.sitaramv)

• To filter OSS files by directory or filename, use a WHERE expression and the EXCLUDE filter. For example:

BR> BACKUP =mytape, OSS (/usr) WHERE EXCLUDE =(/usr/temp);

Assume the following directory structure:

/ Root directory
usr Subdirectory of the root directory
usr1 File in the /usr directory (last modified on 07 JAN 2003)
usr2 File in the /usr directory (last modified on 02 APR 2004)
usr3 File in the /usr directory (last modified on 07 JAN 2003)
temp Directory in the /usr directory
The /usr/temp directory is excluded but the files in the /usr directory are backed up.

usr Subdirectory of the root directory
usr1 File in the /usr directory
usr2 File in the /usr directory
usr3 File in the /usr directory

Backing Up OSS Objects Following Mount Points

- To include the files from another fileset in the backup, specify the FOLLOWMOUNTPTS ON job option. For example:

```
BR> BACKUP =mytape, OSS /usr, FOLLOWMOUNTPTS ON;
```

<table>
<thead>
<tr>
<th>/</th>
<th>Root directory</th>
</tr>
</thead>
<tbody>
<tr>
<td>usr</td>
<td>Subdirectory of the root directory</td>
</tr>
<tr>
<td>bin</td>
<td>Subdirectory of the /usr directory</td>
</tr>
<tr>
<td>local</td>
<td>Subdirectory of the /usr directory</td>
</tr>
<tr>
<td>home</td>
<td>Subdirectory of the /local directory</td>
</tr>
<tr>
<td>sv</td>
<td>Subdirectory of the /home directory</td>
</tr>
<tr>
<td>myfile</td>
<td>File in the /usr/dir1 directory</td>
</tr>
<tr>
<td>etc</td>
<td>Directory</td>
</tr>
<tr>
<td>rc</td>
<td>File in the /etc directory</td>
</tr>
<tr>
<td>var</td>
<td>Directory</td>
</tr>
<tr>
<td>x</td>
<td>File in the /var directory</td>
</tr>
</tbody>
</table>

- To include the files from another fileset in the backup, specify the FOLLOWMOUNTPTS ON job option. For example:

```
BR> BACKUP =mytape, OSS /usr, FOLLOWMOUNTPTS ON;
```

In this example, the /local directory is a mount point for a separate fileset in the /usr directory. The fred and bill files are in another OSS fileset.

<table>
<thead>
<tr>
<th>/</th>
<th>Root directory</th>
</tr>
</thead>
<tbody>
<tr>
<td>usr</td>
<td>Subdirectory of the root directory</td>
</tr>
<tr>
<td>bin</td>
<td>Subdirectory of the /usr directory</td>
</tr>
<tr>
<td>local</td>
<td>Subdirectory of the /usr directory</td>
</tr>
<tr>
<td>home</td>
<td>Subdirectory of the /local directory</td>
</tr>
<tr>
<td>fred</td>
<td>File in the /home subdirectory</td>
</tr>
<tr>
<td>bill</td>
<td>File in the /home subdirectory</td>
</tr>
</tbody>
</table>

This directory structure is backed up:

/usr/bin
/usr/local/home
/usr/local/home/fred
/usr/local/home/bill
If the directory structure on disk is the same, but /local is not a mount point for a separate fileset, /local is backed up as a directory on the /usr fileset.

**Backing Up OSS Objects Excluding Mount Points**

- To restrict a backup to a single OSS fileset and exclude all other OSS filesets from the backup, specify the OSS object and FOLLOWMOUNTPTS OFF. For example:

  BR> BACKUP =mytape, OSS /usr, FOLLOWMOUNTPTS OFF;

Assume this directory structure. The /local directory is a mount point for a separate OSS fileset in the /usr directory. The /local directory contains the subdirectory /home, which contains the fred and bill files.

```
/                      Root directory
usr                   Subdirectory of the root directory
   bin                 Subdirectory of the /usr directory
   local               Subdirectory of the /usr directory
   home                Subdirectory of the /local directory
      fred             File in the /home subdirectory
      bill             File in the /home subdirectory
```

This directory structure is backed up:

/usr/bin

Because these objects reside in another OSS fileset, they are not backed up:

/usr/local/home
/usr/local/home/fred
/usr/local/home/bill

The mount point /local directory is itself not backed up.

- This command also excludes files in other OSS fileset from the back up:

  BR> BACKUP =mytape, OSS /, FOLLOWMOUNTPTS OFF;

The /mp directory is a mount point for the fs2 fileset. The files fs2d1, file1, and file2 are located in the other OSS fileset. Assume this directory structure.

```
/          Root directory
usr        Subdirectory of the root directory and mount point for the fs2 fileset
   mpl     Subdirectory of the /usr directory
      fs2d1 File in the /mpl subdirectory
      file1 File in the /mpl subdirectory
      file2 File in the /mpl subdirectory
```

These objects are in another OSS fileset and not backed up:

/mp1/fs2d1
/mp1/fs2d1/file1
/mp1/f2sd1/file2

The mount point directory itself /mpl is not backed up.
Backing Up OSS Hard Links

A hard-linked file has multiple file names associated with a single inode number. The inode number is the internal storage pointer to the disk file. Backup records the file data including the contents, the directory entries, the filenames, and the inode number for the files. In this example, /usr/project/file1, /usr/project/file2, and /usr/project/file3 are hard links to the same file.

To back up hard-linked files, you must back up the complete set of files. For example:

BR> BACKUP =mytape, OSS (/usr/project);

Backing Up OSS Objects Using Special Characters

To back up an OSS directory with spaces, a tab character, a backslash character, and an ACK character (octal 6), you can use any of these examples:

> backup $tape, oss "/very \strange\tdirname\006"
> backup $tape, oss /very\ \strange\tdirname\006
> backup $tape, oss "/very\0040\0134strange\0011tdirname\006"

For more information, see Specifying Special Characters on page 31

Backing Up OSS Objects Containing ACLs

To backup ACLs contained in OSS objects specify the OSSACL job option. For example:

BR> backup $m1,oss /acls/file1,ossacl on,listall on,tapedisposition bot;

Backing Up Using BRICONDISK Job Option

To retain the BRIC and BRCMD files at the workvolume.jobid location, set the BRICONDISK job option to ON. For example:

BR> backup $vtape06,oss /bin/ls,bricondisk on,listall on;

Summary Information
Job completed.
Last error or warning occurred on page 1
Process elapsed time = 0:00:02.497
Objects processed = 5
Objects backed up = 5
Objects not backed up = 0
Objects not found = 0
SQL/MX Backup Examples

When you specify an SQL/MX object, that object and all its subordinate objects are backed up unless excluded:

- **Backing Up All SQL/MX Catalogs** on page 88
- **Backing Up an SQL/MX Catalog** on page 89
- **Backing Up a Delimited SQL/MX Catalog** on page 90
- **Backing Up an SQL/MX Schema** on page 90
- **Backing Up a Delimited SQL/MX Schema** on page 90
- **Backing Up an SQL/MX Table** on page 90
- **Backing Up a Delimited SQL/MX Table** on page 91
- **Backing Up SQL/MX Table Partitions** on page 91
- **Backing Up a Delimited SQL/MX Table Partition** on page 92
- **Backing Up SQL/MX Objects Using Filtering** on page 93
- **Backing Up SQL/MX Indexes** on page 92
- **Backing Up SQL/MX Indexes Separately** on page 93
- **Backing Up SQL/MX Index Partitions** on page 93
- **Excluding SQL/MX Indexes** on page 93
- **Backing Up SQL/MX Objects Using Filtering** on page 93

For these examples, assume this database structure:

Table 10: Database Structure on Disk

<table>
<thead>
<tr>
<th>Catalog</th>
<th>Schema</th>
<th>Table</th>
<th>Table Partition or Index</th>
<th>Index Partition</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>cat1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Catalog</td>
</tr>
<tr>
<td></td>
<td>-sch1</td>
<td></td>
<td></td>
<td></td>
<td>Subordinate schema of cat1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-tab1</td>
<td></td>
<td></td>
<td>Subordinate table of sch1 (created on 30 SEP 2002)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>-tpart1</td>
<td></td>
<td>Subordinate table partition of tab1 (last modified on 31 JUL 2002)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>-ind1</td>
<td></td>
<td>Subordinate index of tab1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>-ipart1</td>
<td></td>
<td>Subordinate index partition of the index for tab1</td>
</tr>
<tr>
<td></td>
<td>-sch2</td>
<td></td>
<td></td>
<td></td>
<td>Subordinate schema of cat1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-tab2</td>
<td></td>
<td></td>
<td>Subordinate table of sch2 (created on 31 JAN 2003)</td>
</tr>
<tr>
<td>Catalog</td>
<td>Schema</td>
<td>Table</td>
<td>Table Partition or Index</td>
<td>Index Partition</td>
<td>Description</td>
</tr>
<tr>
<td>---------</td>
<td>--------</td>
<td>-------</td>
<td>--------------------------</td>
<td>----------------</td>
<td>-------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-tpart1</td>
<td>Subordinate table partition of tab2</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>-tpart2</td>
<td>Subordinate table partition of tab2 (last modified on 31 AUG 2002)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>-tpart5</td>
<td>Subordinate table partition of tab2 (created 1 JUN 2003)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>-sch3</td>
<td>-tpart3</td>
<td>Subordinate table partition of tab3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>cat2</td>
<td></td>
<td>-tpart1</td>
<td>Subordinate table partition of tab1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>-sch1</td>
<td>-tab1</td>
<td>Subordinate table of sch1 (created on 05 AUG 2003)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>cat3</td>
<td></td>
<td>-tpart2</td>
<td>Subordinate table partition of tab1 (last modified on 30 NOV 2003)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>cat4</td>
<td></td>
<td>-sch</td>
<td>Subordinate schema of cat4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Backing Up All SQL/MX Catalogs**

To back up all catalogs:

```
BR> BACKUP =mytape, MX CATALOG *;
```

All the catalogs and their subordinate objects as listed in **Database Structure on Disk** are backed up to tape.
Backing Up an SQL/MX Catalog

Backing up a catalog also backs up all the subordinate schemas, tables, indexes, and partitions. To back up all objects in cat1:

```
BR> BACKUP =mytape, MX CATALOG cat1;
```

Catalog cat1 and all its subordinate objects as shown in Catalog and Subordinate Objects are backed up.

**Table 11: Catalog and Subordinate Objects**

<table>
<thead>
<tr>
<th>Catalog</th>
<th>Schema</th>
<th>Table</th>
<th>Table Partition or Index</th>
<th>Index Partition</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>cat1</td>
<td>-sch1</td>
<td>-tab1</td>
<td></td>
<td></td>
<td>Catalog</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Subordinate schema of cat1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>-tpart1</td>
<td></td>
<td>Subordinate table partition of cat1.sch1.tab1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>-ind1</td>
<td>-ipart1</td>
<td>Subordinate index partition of the index for cat1.sch1.tab1</td>
</tr>
<tr>
<td></td>
<td>-sch2</td>
<td>-tab2</td>
<td></td>
<td></td>
<td>Subordinate schema of cat1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Subordinate table of cat1.sch2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-tpart1</td>
<td>Subordinate table partition of cat1.sch2.tab2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-tpart2</td>
<td>Subordinate table partition of cat1.sch2.tab2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-tpart5</td>
<td>Subordinate table partition of cat1.sch2.tab2</td>
</tr>
<tr>
<td></td>
<td>-sch3</td>
<td>-tab3</td>
<td></td>
<td></td>
<td>Subordinate schema of cat1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Subordinate table of cat1.sch3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>-tpart3</td>
<td></td>
<td>Subordinate table partition of cat1.sch3.tab3</td>
</tr>
</tbody>
</table>
Back: **Backing Up a Delimited SQL/MX Catalog**

Back: **Backing Up a Delimited SQL/MX Catalog**

Backing up a delimited catalog also backs up all the subordinate schemas, tables, indexes, and partitions. To back up all objects in "CATalog1":

```
BR> BACKUP =mytape, MX CATALOG "CATalog1";
```

### Backing Up an SQL/MX Schema

Back: **Backing Up an SQL/MX Schema**

Backing up a schema also backs up all the subordinate tables, indexes, and partitions. To back up all objects in sch2 of cat1:

```
BR> BACKUP =mytape, MX SCHEMA cat1.sch2;
```

Schema cat1.sch2 and all its subordinate objects as shown in **Schema and Subordinate Objects Backed Up** are backed up.

### Table 12: Schema and Subordinate Objects Backed Up

<table>
<thead>
<tr>
<th>Catalog</th>
<th>Schema</th>
<th>Table</th>
<th>Table Partition or Index</th>
<th>Index Partition</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>cat1.sch2</td>
<td>-tab2</td>
<td>-tpart1</td>
<td></td>
<td>Subordinate schema of cat1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Subordinate table of cat1.sch2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>-tpart2</td>
<td></td>
<td>Subordinate table partition of cat1.sch2.tab2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>-tpart5</td>
<td></td>
<td>Subordinate table partition of cat1.sch2.tab2</td>
</tr>
</tbody>
</table>

### Backing Up a Delimited SQL/MX Schema

Back: **Backing Up a Delimited SQL/MX Schema**

Backing up a delimited schema also backs up all the subordinate tables, indexes, and partitions. To back up all objects in "SCHema1" of "CATalog1":

```
BR> BACKUP =mytape, MX SCHEMA "CATalog1"."SCHema1";
```

### Backing Up an SQL/MX Table

Back: **Backing Up an SQL/MX Table**

Backing up a table also backs up all the subordinate indexes and partitions. For example, to back up all objects in tab3:

```
BR> BACKUP =mytape, MX TABLE cat1.sch3.tab3;
```
As shown in Table and Subordinate Objects Backed Up, table cat1.sch3.tab3 and all its subordinate objects are backed up.

### Table 13: Table and Subordinate Objects Backed Up

<table>
<thead>
<tr>
<th>Catalog</th>
<th>Schema</th>
<th>Table</th>
<th>Table Partition or Index</th>
<th>Index Partition</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>cat1.sch3. tab3</td>
<td></td>
<td></td>
<td>Subordinate table of cat1.sch3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-tpart3</td>
<td></td>
<td></td>
<td>Subordinate table partition of cat1.sch3.tab3</td>
</tr>
</tbody>
</table>

To back up only the DDL for tables, specify the SQLDATA OFF option. User data is not backed up. For example:

```
BR> BACKUP =mytape, MX TABLE cat1.sch2.tab2, SQLDATA OFF ;
```

### Backing Up a Delimited SQL/MX Table

Backing up a delimited table also backs up all the subordinate indexes and partitions. For example, to back up all objects in "TAble1":

```
BR> BACKUP =mytape, MX TBL "CATalog1"."SCHema1"."TAble1";
```

### Backing Up SQL/MX Table Partitions

To back up all the table partitions in a table, specify the table. For example:

```
BR> BACKUP =mytape, MX TABLE cat1.sch1.tab1;
```

As shown in Table Backed Up Including All Table Partitions and Indexes, all the subordinate objects, including the table partitions are backed up.

### Table 14: Table Backed Up Including All Table Partitions and Indexes

<table>
<thead>
<tr>
<th>Catalog</th>
<th>Schema</th>
<th>Table</th>
<th>Table Partition or Index</th>
<th>Index Partition</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>cat1.sch1. tab1</td>
<td></td>
<td></td>
<td>Subordinate table of cat1.sch1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-tpart1</td>
<td></td>
<td></td>
<td>Subordinate table partition of cat1.sch1.tab1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-ind1</td>
<td></td>
<td></td>
<td>Subordinate index of cat1.sch1.tab1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-ipart1</td>
<td>Subordinate index partition of the index for cat1.sch1.tab1</td>
</tr>
</tbody>
</table>
To back up individual table partitions, specify TPART, the table that contains the partitions, the partitions to be backed up, and these job options. For example:

```
BR> BACKUP =mytape, MX (TPART cat1.sch2.tab2 PARTITION
BR+> (TPART5, TPART1)), PARTONLY ON, CONSTRAINTS EXCLUDED,
BR+> INDEXES EXCLUDED;
```

Both the data and DDL of the objects shown in Individual Table Partitions Backed Up are backed up. The table tab2 and the table partition tpart2 are not backed up.

**Table 15: Individual Table Partitions Backed Up**

<table>
<thead>
<tr>
<th>Catalog</th>
<th>Schema</th>
<th>Table</th>
<th>Table Partition or Index</th>
<th>Index Partition</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>-tpart1</td>
<td></td>
<td>Subordinate table partition of cat1.sch2.tab2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>-tpart5</td>
<td></td>
<td>Subordinate table partition of cat1.sch2.tab2</td>
</tr>
</tbody>
</table>

**Backing Up a Delimited SQL/MX Table Partition**

To back up individual table partitions, specify TPART, the table that contains the partitions, the partitions to be backed up, and the job options. For example:

```
BR> BACKUP =mytape, MX (TPART "CATalog1"."SCHema1"."TAble1"
BR+>PARTITION ("PARt1", "PARt2")), PARTONLY ON, CONSTRAINTS
BR+> EXCLUDED, INDEXES EXCLUDED;
```

**Backing Up SQL/MX Indexes**

When you back up a table, all its indexes and its index partitions are backed up unless you specify INDEXES EXCLUDED. However, you cannot directly back up indexes or index partitions by name.

To back up a table’s indexes and its index partitions, specify the table that contains the indexes. For example:

```
BR> BACKUP = mytape, MX TABLE cat1.sch1.tab1, INDEXES
BR+> INCLUDED;
```

In this example, INDEXES INCLUDED is not specified but is assumed:

```
BR> BACKUP = mytape, MX TABLE cat1.sch1.tab1;
```

For both these commands, the table and all subordinate objects including the index partitions are backed up as shown in Table Backed Up Including All Table Partitions and Indexes.

To back up only the DDL for indexes, specify the SQLDATA OFF option and do not specify INDEXES EXCLUDED. The DDL is backed up, but the user data is not backed up. For example:

```
BR> BACKUP =mytape, MX CATALOG cat1, SQLDATA OFF;
```
Backing Up SQL/MX Indexes Separately

To back up indexes individually, specify the INDEX option. For example:

```
BR> BACKUP $tape01, MX (IND cat.sch.ind1, INDEX cat.sch.ind2),
tapedisposition bot;
```

Backing Up SQL/MX Index Partitions

To back up index and index partitions, specify the IPART option. For example:

```
BR> BACKUP $tape01, MX (IPART cat.sch.ind1 PARTITION (ipart5),
  IPART cat.sch.ind1 PARTITION (ipart1)), PARTONLY ON,
tapedisposition bot;
```

Excluding SQL/MX Indexes

To exclude the indexes and index partitions, specify the INDEXES EXCLUDED job option. For example:

```
BR> BACKUP =mytape, MX TABLE cat1.sch1.tab1, INDEXES EXCLUDED, CONSTRAINTS
  EXCLUDED;
```

As shown in the following table, the indexes and index partitions are not backed up.

**Table 16: Indexes Excluded From Backup**

<table>
<thead>
<tr>
<th>Catalog</th>
<th>Schema</th>
<th>Table</th>
<th>Table Partition or Index</th>
<th>Index Partition</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>cat1.sch1</td>
<td>tab1</td>
<td></td>
<td>-tpart1</td>
<td>Subordinate table of cat1.sch1</td>
</tr>
<tr>
<td></td>
<td>-tpart1</td>
<td></td>
<td></td>
<td></td>
<td>Subordinate table partition of cat1.sch1.tab1</td>
</tr>
</tbody>
</table>

Backing Up SQL/MX Objects Using Filtering

To select certain objects to back up while excluding other objects, use a WHERE expression. For example:

```
BR> BACKUP =mytape, MX (CATALOG cat2, TABLE cat1.sch1.tab1,
  TPART cat1.sch2.tab2 PARTITION (TPART5)) WHERE
  (CREATIONTIME BEFORE 1 APR 2003), PARTONLY ON, INDEXES
  EXCLUDED, CONSTRAINTS EXCLUDED;
```

Backing Up Both OSS and SQL/MX Objects

You can back up both OSS and SQL/MX objects in the same command. For example:

```
BR> BACKUP $vtape3, (OSS ((/usr/bin, /home/sv/myfile, 
/usr/local/bin) WHERE (EOF > 200000 AND OWNER =
  super.super), (/etc/rc, /var/x) WHERE MODTIME AFTER JAN 17 1999)), 
  (MX (CATALOG cat1, TABLE cat2.sch.tab1,
  TPART cat2.sch.tab2 PARTITION (TPART5, TPART1)) WHERE
```
(CREATIONTIME BEFORE 12 DEC 2000)), CONSTRAINTS EXCLUDED, FOLLOWMOUNTPTS ON, TAPEDISPOSITION NOREWIND, VERIFYTAPE ON, INDEXES EXCLUDED, PARTONLY ON;

The example filters both OSS and SQL/MX objects and excludes indexes and constraints. The same example is formatted to show the different parts of the same command:

BACKUP =$vtape3,

(OSS

( (/usr/bin, /home/sv/myfile, /usr/local/bin)
 WHERE (EOF > 200000 AND OWNER super.super),

 (/etc/rc, /var/x)
 WHERE MODTIME AFTER JAN 17 1999)
),

(MX

 (CATALOG cat1,
  TABLE cat2.sch.tab1,
  TPART cat2.sch.tab2 PARTITION (TPART5, TPART1))
 WHERE (CREATIONTIME BEFORE 12 DEC 2000)
 ),

 CONSTRAINTS EXCLUDED,
 INDEXES EXCLUDED,
 PARTONLY ON,
 FOLLOWMOUNTPTS ON,
 TAPEDISPOSITION NOREWIND,
 VERIFYTAPE ON ;
You can use the BRCOM RESTORE command to:

- Copy files from magnetic tape to disk.
- List the contents of a tape without restoring data. For more information, see **Listing the Contents on Tape Without Restoring Data** on page 101
- Move files from one system to another.

**NOTE:**
The other system must have both Backup and Restore 2 and any other required software installed. For more information, see **Installing Backup and Restore 2** on page 22

### Managing Restore Jobs

**NOTE:**
Review these considerations:

- Do not run RESTORE under a user ID with Safeguard default protection on because all the files that are restored to disk will have Safeguard protection.
- You cannot use a previous product version update (PVU) of Backup and Restore 2 to restore a backup created using a later PVU. For example, you cannot use the AAB PVU to restore files that were backed up with the AAC PVU. However, you can use a later PVU to restore files backed up on any previous PVU of Backup and Restore 2.
- To use the BRCOM RESTORE command, you must have created the tape using the syntax for the BRCOM BACKUP command as documented in **BRCOM BACKUP Command** on page 55
- You cannot use the BRCOM RESTORE command syntax documented in this section to restore tapes containing Enscribe and SQL/MP files. Both the tape format and command syntax are different. However, you can use the BRCOM prompt to forward the command for Enscribe and SQL/MP files to the BACKUP and RESTORE utilities (T9074). For more information, see **Comparison With the BACKUP and RESTORE Utilities** on page 173

### Summary of Restoring SQL/MX or OSS Objects

You can also use the MEDIACOM RECOVER DISKFILE command to invoke the BRCOM RESTORE command.

**NOTE:**
For information about restoring Enscribe or SQL/MP objects, see **Comparison With the BACKUP and RESTORE Utilities** on page 173

### Procedure

1. Log on to a NonStop S-series server.
2. Check that all required products are installed and all required processes are started before you issue the RESTORE command. For more information, see **Installing Backup and Restore 2** on page 22
3. Create a DEFINE if you plan to specify one in the RESTORE command. For labeled tapes, create either a CLASS TAPECATALOG DEFINE with CATALOG ON or a CLASS TAPE DEFINE. For more information, see **Using DEFINES With Backup and Restore 2** on page 33
4. To locate the set of tapes associated with a specific backup job, you can query the DSM/TC. However, DSM/TC does not contain file information. You must know which tape contains the files you need. To
obtain a list of objects on a tape, see **Listing the Contents on Tape Without Restoring Data** on page 101

5. If you plan to specify a different target destination for OSS objects or SQL/MX objects, create the target if it does not already exist.

6. Check that you have security access to the objects to be restored and to any objects to be overwritten.

7. Issue a RESTORE command from BRCOM. Specify OSS objects, SQL/MX objects, or a combination of both. Optionally, you can also:
   
a. Specify a target destination on the current system to restore the objects that is different from where the objects were at the time of the backup job.

   b. Specify job options

   c. Specify configuration options to override the defaults

8. Check the EMS event log for operator instructions and messages

You can have more than one restore job at the same time. However, simultaneous restore jobs that share common destinations might have unpredictable results.

The summary information displayed after restore displays the status of the restore, which includes processed, restored, and skipped objects. The objects restored count does not include the BRIC file.

**OSS Total Objects Restored Count**

The count of the total objects restored does not match the total objects backed up for the following reasons:

- You can backup an entire directory tree and choose to restore a sub-directory or a single file.
- Restoring to the same location does not restore existing directories. As a result, they are not included in the restored objects count.
- Restoring objects with filters does not restore all the objects in the backup image, it restores only those objects satisfying the criteria.
- Restoring with KEEP ON job option does not restore existing file objects. Hence, they are not included in the restored objects count.

**SQL/MX Total Objects Restored Count**

The count of the total objects restored does not match the total objects backed up for the following reasons:

- You can backup a catalog with all the schemas and tables, but choose to restore only a schema, table, index, table partition, or index partition.
- Restore does not include the BRIC in the restored object count. As a result restoring the backup image to the same location reduces the restored objects count by 1.
- You can choose to restore the backup image to a different location. To restore a schema to a target catalog, BR2 restores only the schema in the new catalog and does not include the catalog under the restored objects count. In this scenario the total restored objects count is reduced by 2.
- Restoring a table to a target schema does not restore the new schema and catalog. In this scenario the restored objects count is reduced by 3 (including the BRIC). This is applicable for other SQL/MX objects as well.
- Restoring the objects by applying filters restores only the objects meeting the criteria.
- Restore with OPEN OFF job option does not restore all the objects that are backed up. Specifying this option skips all the objects that are OPEN.

The following example shows an object count mismatch during schema backup (6) and restore (5), as BRIC file is not counted during restore:

BR> backup \HPIDMR5.$Z3XT, MX ( sch sqlcat.sqlsch), listall on, wait on;
** WARNING-2030 ** Enscribe and SQL/MP objects will not be backed up.
Started job
ZBR0013A

File Mode BACKUP Program - T0744H02 - (21JAN2013)
(C)2000 Compaq (C)2003, 2004 Hewlett Packard Development
Company, L.P.
backup \HPIDMR5.$Z3XT, MX ( sch sqlcat.sqlsch), listall on, wait on;
Unlabeled Tape.

System: \HPIDMR5 Operating System: H06 Tape Version: 1

Backup options: LISTALL ON

*First tape* Tape #1, Drive: \HPIDMR5.$Z3XT
*WARNING-5035* 14:44 10JAN13 254,00,235 Job ID: ZBR0013A,
Process Name: $Z3XW,
Component: BR2DMA. This tape can only be restored with Backup/Restore 2.0.

*WARNING-5023* 14:44 10JAN13 254,00,235 Job ID: ZBR0013A,
Process Name: $Z3XW,
Component: BR2DMA. Enscribe and SQL/MP objects will not be backed up.

Job id: ZBR0013A Backup time: 10 Jan 2013, 14:44
Page: 1

*** Meta object BRCMD backed up ***
File System: SQLMX
Tape: 1

<table>
<thead>
<tr>
<th>Name</th>
<th>Owner</th>
<th>Code</th>
<th>EOF</th>
<th>Last modif</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>SQLCAT</td>
<td></td>
<td>ACa</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SQLCAT</td>
<td></td>
<td></td>
<td>255,255</td>
<td></td>
<td>ASc</td>
</tr>
<tr>
<td>SQLSCH</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SQLCAT.SQLSCH</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>*SQL</td>
<td>255,255</td>
<td></td>
<td>550 A+</td>
<td>0</td>
<td>10Jan2013 14:43 ATP</td>
</tr>
<tr>
<td>PJB33_Q452KH00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*** Meta object BRIC backed up ***

Summary Information
Job completed.
Last error or warning occurred on page 1
Process elapsed time = 0:00:16.752
Objects processed = 6
Objects backed up = 6 Objects not backed up = 0
Objects not found = 0 Objects skipped = 0
Total tapes used = 1
Total Mbytes moved = 0
Total bytes: 173442
Compressed bytes: 1982

=======TABLE RESTORE COMMAND OUTPUT:=======

BR>restore \HPIDMR5.$Z3XZ, MX ( table sqlcat.sqlsch.sqltab),listall on,wait on;

Started job
ZBR0013B

File Mode RESTORE Program - T0744H02 - (21JAN2013)
(C)2000 Compaq (C)2003, 2004 Hewlett Packard Development Company, L.P.
restore \HPIDMR5.$Z3XZ, MX ( table sqlcat.sqlsch.sqltab),listall on,wait on;

Unlabeled Tape.

System: \HPIDMR5 Operating System: H06 Tape Version: 1
Backup options: LISTALL ON

*First tape* Tape #1, Drive: \HPIDMR5.$Z3XZ

*WARNING-5035* 14:45 10JAN13 254,00,234 Job ID: ZBR0013B,
Process Name: $Z3Y1,
Component: BR2DMA. This tape can only be restored with
Backup/Restore 2.0.

Job id: ZBR0013B Restore time: 10 Jan 2013, 14:45
Page: 1

Backup time: 10 Jan 2013, 14:44

*** Meta object \HPIDMR5.$SYSTEM.ZBR0013B.BRIC restored ***

File System: SQLMX
Tape: 1

<table>
<thead>
<tr>
<th>RWEP</th>
<th>Owner</th>
<th>Code</th>
<th>EOF</th>
<th>Last modif</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ACa</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SQLCAT

SQLCAT
Summary Information

Job completed.
Last error or warning occurred on page 1
Process elapsed time = 0:00:20.755
Objects processed = 5
Objects restored = 5 Objects not restored = 0
Objects not found = 0 Objects skipped = 0

Total tapes used = 1
Total Mbytes moved = 0

Restoring OSS Objects

- Restoring a directory includes all its subdirectories and files.
- While restoring a file/directory, target cannot be directory under “/G” or “/E” path.

Restoring SQL/MX Objects

- Restoring a catalog includes restoring all its subordinate objects in its object hierarchy such as schemas, tables, and the subordinate objects of the tables.
- Restoring a schema includes restoring all the subordinate tables.
- Restoring a table includes:
  - Nondroppable constraints.
  - Droppable constraints unless you specify the CONSTRAINTS EXCLUDED job option.
  - All the table data unless you specify the SQLDATA OFF job option.
  - Indexes and index partitions unless you specify the INDEXES EXCLUDED job option.
  - SG_TABLE, if the table contains an IDENTITY column.

NOTE:

IDENTITY column feature is supported only in SQL/MX 3.1 versions and above.

- All partitions of an index are backed up with their parent index unless you specify the INDEXES EXCLUDED job option. You cannot restore individual index partitions by directly specifying an index partition in the RESTORE command. To restore index partitions, you must restore the table that contains the index.
• You cannot directly specify a constraint in a RESTORE command. To restore a constraint, you must restore the table that contains the constraint. The constraints that are restored vary depending on whether you specify CONSTRAINTS INCLUDED or CONSTRAINTS EXCLUDED.
• Restoring an index includes:
  ◦ Restoring all the subordinate index partitions.
  ◦ Target table needs to be explicitly defined with the help of “TARGET” keyword.

**Restoring to the Restricted-Access Fileset**

To restore to a restricted-access fileset, ensure that:

• The user is a member of the SECURITY-OSS-ADMINISTRATOR security group.

**NOTE:**
The super ID’s access to the restricted-access fileset is limited to the file permissions set on the restricted fileset. A super ID can restore only the files it owns in a restricted-access fileset.

• The PRIVSOARFOOPEN file privilege is set on the BR2DS, BR2ODS, BR2DMA, and BR2ODMA executable files. For information on how to set the file privileges on executable files, see Configuring Backup and Restore 2 on page 24.

The backed up files can be restored to a restricted-access or unrestricted target fileset.

**NOTE:**
• Only the members of the SECURITY-PRV-ADMINISTRATOR security group can set or remove the fileset restrictions.
• The restricted-access fileset attribute and the SECURITY-PRV-ADMINISTRATOR security group are supported only on systems running L-series RVUs and J06.11 and later J-series RVUs.

**Restoring to the Unrestricted Fileset**

A super ID can restore to an unrestricted fileset irrespective of the file permissions set on the unrestricted fileset.

Members of the SECURITY-OSS-ADMINISTRATOR security group are treated as normal users.

**NOTE:**
If members of the SECURITY-OSS-ADMINISTRATOR group restore a backup image to an unrestricted fileset, the restoration might fail because the SECURITY-OSS-ADMINISTRATOR group members are treated as normal users in an unrestricted fileset and the restoration is subject to file permissions set on the unrestricted access fileset.

**BRCOM RESTORE Command Processing**

When you issue a BRCOM RESTORE command:

**Procedure**

1. The DMA process validates the RESTORE request and the tape utilization parameters. If you backed up the files using a TAPECATALOG define, this includes validating file security within DSM/TC.
2. Backup and Restore 2 uses the BRIC file during the restore process to determine which tapes need to be mounted into the tape drive. If you do not specify the DIRECTORY job option, DMA restores the BRIC file from tape when the restore job begins. If you are restoring objects from a backup job that spans multiple tapes, the BRIC file determines which tape contains each object being restored:
   a. If you specify to restore all the objects in a backup job that spans tapes, Backup and Restore 2 starts with the first tape and then restores all objects from succeeding tapes.
b. If you specify multiple restore specifications but not all objects are being restored, the DMA might request and use tapes out of sequential order.

c. If you do not mount the last tape of a backup job on unlabeled tapes, Backup and Restore 2 requests tapes until the last tape or tapes containing the BRIC file are found.

d. For labeled tapes, Backup and Restore 2 requests tapes in the order in which the volumes are specified in the DEFINE until it finds the last tape. If the BRIC file is on the last tape, Backup and Restore 2 restores it from that tape. If the BRIC file is on the last two tapes, Backup and Restore 2 requests the second to last tape and then the last tape again to restore the file.

e. If you are restoring from a set of unlabeled tapes and using a tape drive with an automated cartridge loader or a tape drive in a tape library, Backup and Restore 2 opens each tape in sequence until it finds the last tape.

3. If the needed tape is not already mounted, a mount request message is sent to the EMS event log.

4. The restore job maintains a job log to keep track of the job status. Job information is maintained to keep track of the progress of the restore job.

5. If you specified the LISTALL option, a list of the objects restored and bypassed is sent to the OUT file.

Using the BRIC File

The BRIC file contains a directory about the objects backed up to tape. For more information, see Backup and Restore Intermediate Catalog (BRIC) File on page 12. The BRIC file is located on tape but can be copied to a disk file.

Using the BRIC Disk File

Procedure

1. Use the RESTORE command with the RESTOREDIR job option to copy the BRIC file from tape to disk.
2. Check the EMS event log for mount messages.
3. Use the RESTORE command with the DIRECTORY job option and specify the objects to be restored.

Using the BRIC Tape File

If a backup job spans tapes, the BRIC file is usually located on the last tape of the backup, but it can be on the last two tapes.

Procedure

1. If you are not using a BRIC file located on disk, mount the tape containing the BRIC:
   a. If the backup job is located on only one tape, mount that tape.
   b. If the backup job spans tapes, mount one of the tapes. The BRIC is usually located on the last tape.
2. Check the EMS event log for mount messages.

Listing the Contents on Tape Without Restoring Data

A list of objects on each tape is located in the BRIC file for each backup job. To obtain the list of the objects without restoring any data, use the RESTORE command with either the LISTONLY ON or LISTONLY DETAIL job options. For more information, see LISTONLY Job Option on page 126.

Listing the Contents and Restoring the BRIC File to Disk

You can restore the BRIC file to disk if you plan to issue multiple RESTORE commands for the same backup job. You can then avoid restoring the BRIC from tape each time you issue a RESTORE command for that backup job. Use the RESTOREDIR job option to restore the BRIC file from tape to disk. For more information, see JOB Job Option on page 76. When you specify the RESTOREDIR job option, you do not need to specify an object to be restored. However, the LISTONLY job option requires one or more object specifications.
• Use the RESTORE command with the LISTONLY ON and RESTOREDIR job options. For example:

```
BR> RESTORE $TAPE, OSS /, LISTONLY ON, OUT $SYSTEM.MY.LIST,
BR+> RESTOREDIR $SYSTEM.JAVA.JOE ;
```

For the display from this command, see **LISTONLY ON Display for OSS Objects** on page 103 and **LISTONLY ON Display with RESTOREDIR for OSS Objects** on page 106.

• Use the RESTORE command with the LISTONLY, DETAIL option. For example:

```
BR> RESTORE $TAPE, OSS /, LISTONLY DETAIL, OUT
BR+> $SYSTEM.MY.LIST, RESTOREDIR $SYSTEM.JAVA.JOE ;
```

For the display from this command, see **LISTONLY DETAIL Display for OSS Objects** on page 104.

### Listing the Contents Using the BRIC Disk File

If you restored the BRIC file from tape to disk using the RESTOREDIR job option, you can list any of the objects backed up in a particular backup job without having to mount any tapes. Use the RESTORE command with the DIRECTORY option and either the LISTONLY ON job option or LISTONLY DETAIL job option.

• Use the RESTORE command with the DIRECTORY option and LISTONLY ON option. For example:

```
BR> RESTORE $TAPE, OSS /, LISTONLY ON, DIRECTORY
BR+> $SYSTEM.JAVA.JOE ;
```

For more information, see **LISTONLY Job Option** on page 126. For the display from this command, see **LISTONLY ON Display for OSS Objects** on page 103 and **LISTONLY ON Display with RESTOREDIR for OSS Objects** on page 106.

• Use the RESTORE command with the DIRECTORY option and the LISTONLY, DETAIL option. For example:

```
BR> RESTORE $TAPE, OSS /, LISTONLY DETAIL, DIRECTORY
BR+> $SYSTEM.JAVA.JOE ;
```

For the display from this command, see **LISTONLY DETAIL Display for OSS Objects** on page 104.

### Listing the Contents Using the BRIC Tape File

To list the contents on tape without restoring any data:

**Procedure**

1. Mount the tape containing the BRIC file. If there is only one tape, mount that tape. If the backup job spans multiple tapes, mount the last tape.
2. Check for mount requests in the EMS event log.
3. Use the RESTORE command with either the LISTONLY ON or LISTONLY DETAIL job option. Specify OSS / or MX CAT * to list all the OSS or SQL/MX objects on tape. If you specify a subset of the object, only those objects are included on the list. The objects are not restored.
   a. Use the RESTORE command with the LISTONLY ON option. For example:

   ```
   BR> RESTORE $TAPE, OSS /, LISTONLY ON ;
   ```

   For more information, see **LISTONLY Job Option** on page 126. For the display from this command, see **LISTONLY ON Display for OSS Objects** on page 103.
To specify a list of all the objects on tape, you can specify (mx cat *) and oss /:

BR> RESTORE $a3, mx cat *, oss /, LISTONLY ON,
BR+> TAPEDISPOSITION BOT;

b. Use the RESTORE command with the LISTONLY DETAIL option. For example:

BR> RESTORE $TAPE, OSS /, LISTONLY DETAIL ;

For the display from this command, see LISTONLY DETAIL Display for OSS Objects on page 104.

LISTONLY ON Display for OSS Objects

BR> RESTORE $TAPE, OSS /, LISTONLY ON ;

*First tape*  Tape #1

*WARNING-5035*  10:36 14MAY04 071,02,210 Job ID: ZBR00623, Process Name: $28SJ, Component: BR2DMA. This tape can only be restored with Backup/Restore 2.0.

Job id: ZBR00623    Restore(ListOnly) time: 14 May 2004, 10:36    Page: 1
Backup time: 14 May 2004, 10:31

File System: OSS    Tape: 1

<table>
<thead>
<tr>
<th>Mode</th>
<th>Lnks</th>
<th>Uid</th>
<th>Gid</th>
<th>Size</th>
<th>Last modif</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>drwxr-xr-x</td>
<td>1</td>
<td>65535</td>
<td>255</td>
<td>14May2004</td>
<td>00:14</td>
<td>/</td>
</tr>
<tr>
<td>drwxrwxrwx</td>
<td>1</td>
<td>65535</td>
<td>255</td>
<td>14Apr2004</td>
<td>10:00</td>
<td>bin</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>/bin</td>
</tr>
<tr>
<td></td>
<td>-rwx-</td>
<td>65535</td>
<td>255</td>
<td>8881</td>
<td>03Mar2004 23:40</td>
<td>Pcleanup</td>
</tr>
<tr>
<td></td>
<td>-r-xr-xr-x</td>
<td>16</td>
<td>65535</td>
<td>255</td>
<td>1342</td>
<td>24Apr2003 03:39</td>
</tr>
<tr>
<td></td>
<td>-r-xr-xr-x</td>
<td>3</td>
<td>65535</td>
<td>255</td>
<td>53688</td>
<td>03Mar2004 23:21</td>
</tr>
<tr>
<td></td>
<td>-r-xr-xr-x</td>
<td>1</td>
<td>65535</td>
<td>255</td>
<td>141616</td>
<td>03Mar2004 23:06</td>
</tr>
<tr>
<td></td>
<td>-r-xr-xr-x</td>
<td>1</td>
<td>65535</td>
<td>255</td>
<td>74088</td>
<td>03Mar2004 23:06</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fields</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Job ID</td>
<td>The job identifier</td>
</tr>
<tr>
<td>File System</td>
<td>OSS or SQL/MX</td>
</tr>
<tr>
<td>Tape</td>
<td>The number of the tape volume</td>
</tr>
</tbody>
</table>

Table Continued
<table>
<thead>
<tr>
<th>Fields</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mode</td>
<td>The first character indicates the mode or type of file. For example:</td>
</tr>
<tr>
<td></td>
<td>• d Directory</td>
</tr>
<tr>
<td></td>
<td>• l Symbolic link</td>
</tr>
<tr>
<td></td>
<td>• - Ordinary file</td>
</tr>
<tr>
<td></td>
<td>The second through tenth characters indicate the permissions code. The code is divided into three sets of three characters each.</td>
</tr>
<tr>
<td></td>
<td>• The first set of three characters shows the owner's permission.</td>
</tr>
<tr>
<td></td>
<td>• The next set of three characters shows the permission of the other users in the group.</td>
</tr>
<tr>
<td></td>
<td>• The last set of three characters shows the permission of everyone else.</td>
</tr>
<tr>
<td></td>
<td>The three characters in each set show read, write and execute permission of the file:</td>
</tr>
<tr>
<td></td>
<td>• r Read</td>
</tr>
<tr>
<td></td>
<td>• w Write</td>
</tr>
<tr>
<td></td>
<td>• x Execute or search (directories)</td>
</tr>
<tr>
<td></td>
<td>• - No access</td>
</tr>
<tr>
<td></td>
<td>Links The number of links. The number is normally 1. For each hard link, the number is increased by 1.</td>
</tr>
<tr>
<td></td>
<td>UID The scalar-view owner of the file.</td>
</tr>
<tr>
<td></td>
<td>GID The group owner of the file</td>
</tr>
<tr>
<td></td>
<td>Size The size of the file.</td>
</tr>
<tr>
<td></td>
<td>Last modif The time and date the file was last modified</td>
</tr>
<tr>
<td></td>
<td>Name The name of the file.</td>
</tr>
</tbody>
</table>

**LISTONLY DETAIL Display for OSS Objects**

Job id: ZBR000FC  Restore(ListOnly) time: 01 Apr 2004, 09:28  
Backup time: 01 Apr 2004, 08:22

File System: OSS  
Tape: 1

/  

    OSS DIRECTORY  
    INODE NUMBER 2  
    DEVICE ID 1082331758592  
    NUMBER OF LINKS 1  
    OWNER 255,65535  
    SECURITY: rwxr-xr-x  
    DATA MODIF: 31 Mar 2004, 09:02  
    CREATION DATE: 31 Mar 2004, 09:02  
    LAST OPEN: 01 Apr 2004, 08:22  

Summary Information
Job completed.  
Process elapsed time = 0:00:00.232  
Objects processed = 1  
Objects not found = 0  
Total tapes used = 1

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>The type of object. For example, OSS DIRECTORY or OSS FILE.</td>
</tr>
<tr>
<td>INODE NUMBER</td>
<td>The internal storage pointer to the disk file.</td>
</tr>
<tr>
<td>DEVICE ID</td>
<td>The device ID for OSS directories.</td>
</tr>
<tr>
<td>NUMBER OF LINKS</td>
<td>The number of links. The number is normally 1. For each hard link, the number is increased by 1.</td>
</tr>
<tr>
<td>OWNER</td>
<td>The OSS owner of the file.</td>
</tr>
<tr>
<td>SECURITY</td>
<td>The OSS permissions code is divided into three sets of three characters each:</td>
</tr>
<tr>
<td></td>
<td>• The first set of three characters shows the owner's permission.</td>
</tr>
<tr>
<td></td>
<td>• The next set of three characters shows the permission of the other users in the group.</td>
</tr>
<tr>
<td></td>
<td>• The last set of three characters shows the permission of everyone else.</td>
</tr>
<tr>
<td></td>
<td>The three characters in each set show read, write and execute permission of the file. Permissions are:</td>
</tr>
<tr>
<td></td>
<td>• r Read</td>
</tr>
<tr>
<td></td>
<td>• w Write</td>
</tr>
<tr>
<td></td>
<td>• x Execute or search (directories)</td>
</tr>
<tr>
<td></td>
<td>• - No access</td>
</tr>
<tr>
<td>DATA MODIF</td>
<td>The date the file was last modified</td>
</tr>
<tr>
<td>CREATION DATE</td>
<td>The date the file was created</td>
</tr>
<tr>
<td>LAST OPEN</td>
<td>The date the file was last opened</td>
</tr>
</tbody>
</table>

**LISTONLY Display for SQL/MX Objects**

*First tape* Tape #1  
Job id: ZBR003E1  Restore(ListOnly) time: 03 Aug 2004, 17:45  Page: 1  
Backup time: 03 Aug 2004, 14:34

File System: SQLMX  
Tape: 1

<table>
<thead>
<tr>
<th>RWEP</th>
<th>Owner Code</th>
<th>EOF</th>
<th>Last modif</th>
<th>Type</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAT1</td>
<td>ACa</td>
<td></td>
<td></td>
<td>CATALOG1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>255,255</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CATALOG1.SCHEM1</td>
<td>ASc</td>
<td>SCHEMA1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>*SQL</td>
<td>255,255</td>
<td></td>
<td></td>
<td>ATa</td>
<td>EMPLOYEE1</td>
</tr>
<tr>
<td>CATALOG1.SCHEM1.EMPLOYEE1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>*SQL</td>
<td>255,255</td>
<td>16384</td>
<td>23Jul2004 16:38</td>
<td>ATP</td>
<td>PART1</td>
</tr>
</tbody>
</table>
Job completed.
Last error or warning occurred on page 1
Process elapsed time = 0:00:27.146
Objects processed = 1
Objects not found = 0
Total tapes used = 1

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Job ID</td>
<td>The job identifier</td>
</tr>
<tr>
<td>Backup Time</td>
<td>The time the objects were backed up</td>
</tr>
<tr>
<td>File System: SQL/MX</td>
<td>The type of objects backed up</td>
</tr>
<tr>
<td>Tape</td>
<td>The number of the tape volume</td>
</tr>
<tr>
<td>RWEP *SQL</td>
<td>For a description of SQL/MX security, see <strong>SQL/MX</strong> on page 14.</td>
</tr>
<tr>
<td>Owner</td>
<td>The owner of the file</td>
</tr>
<tr>
<td>Code</td>
<td>The file code</td>
</tr>
<tr>
<td>EOF</td>
<td>The size of the file</td>
</tr>
<tr>
<td>Last modified</td>
<td>The time and date the file was last modified</td>
</tr>
<tr>
<td>Type</td>
<td>The type of SQL/MX object backed up:</td>
</tr>
<tr>
<td></td>
<td>• ACa (catalog)</td>
</tr>
<tr>
<td></td>
<td>• ASC (schema)</td>
</tr>
<tr>
<td></td>
<td>• ATa (table)</td>
</tr>
<tr>
<td></td>
<td>• ATP (table partition)</td>
</tr>
<tr>
<td></td>
<td>• AIx (index)</td>
</tr>
<tr>
<td></td>
<td>• AIP (index partition)</td>
</tr>
<tr>
<td>Name</td>
<td>The name of the file</td>
</tr>
</tbody>
</table>

**LISTONLY ON** Display with RESTOREDIR for OSS Objects

`BR> RESTORE $TAPE2, OSS /, RESTOREDIR $FC23.SOL0952.RESBRIC, LISTONLY BR+> ON;`
First tape* Tape #1

*WARNING-5035*  15:42 12JUN08 050,03,055 Job ID: ZBR0020F, Process Name: $Y1J9,
Component: BR2DMA. This tape can only be restored with Backup/Restore 2.0.

Job id: ZBR0020F    Restore(ListOnly) time: 12 Jun 2008, 15:41   Page: 1
Backup time: 12 Jun 2008, 15:41

File System: OSS

<table>
<thead>
<tr>
<th>Mode</th>
<th>Lnks</th>
<th>Uid</th>
<th>Gid</th>
<th>Size</th>
<th>Last modif</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>drwxr-xr-x</td>
<td>1</td>
<td>65535</td>
<td>255</td>
<td>29May2008</td>
<td>15:58</td>
<td>/</td>
</tr>
<tr>
<td>/</td>
<td>drwxr-xr-x</td>
<td>1</td>
<td>65535</td>
<td>255</td>
<td>29Apr2008</td>
<td>17:49 bin</td>
</tr>
<tr>
<td>/bin</td>
<td>-r-xr-xr-x</td>
<td>1</td>
<td>65535</td>
<td>255</td>
<td>192968</td>
<td>14Mar2008</td>
</tr>
</tbody>
</table>

Summary Information

Job completed.
Last error or warning occurred on page 1
Process elapsed time = 0:00:09.003
Objects processed = 1
Objects not found = 0
Total tapes used = 1

For information about the fields listed in the above example, see LISTONLY ON Display for OSS Objects on page 103.

Specifying a Different Target for an Object

When restoring an SQL/MX object to a different parent object, you can specify a target that is at the same level (check table 7.1) or is one level higher in the hierarchy as shown in the following table.

Table 17: Restoring to a Different Target

<table>
<thead>
<tr>
<th>Object</th>
<th>Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Catalog</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Catalog</td>
<td>Catalog</td>
</tr>
<tr>
<td>Schema</td>
<td>Catalog</td>
</tr>
<tr>
<td>Schema</td>
<td>Schema</td>
</tr>
<tr>
<td>Table</td>
<td>Schema</td>
</tr>
<tr>
<td>Table</td>
<td>Table</td>
</tr>
<tr>
<td>Table partition</td>
<td>Table</td>
</tr>
</tbody>
</table>

Table Continued
<table>
<thead>
<tr>
<th>Object</th>
<th>Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Index</td>
<td>Table</td>
</tr>
<tr>
<td>Index Partition</td>
<td>Index</td>
</tr>
</tbody>
</table>

**NOTE:**
Same level restoration is only in SQL/MX 3.3 version and later.

**BRCOM RESTORE Command Syntax**

The syntax for the RESTORE command is:

```plaintext
RESTORE

tape-device-name

[ , run-option [, run-option ] ... ]

[ { , restore-object-spec }]

[ , restore-job-option, restore-job-option ...]

[ , config-option, config-option ...]
```

tape-device-name

is the name of a tape drive that contains the unlabeled tape for the restore operation or a DEFINE name for a labeled-tape restore operation. Backup and Restore 2 does not support virtual tape drives created by TAPESIM because TAPESIM does not support LBA. Any attempt to get the LBA on a tape drive created by TAPESIM results in file-system error 2. To restore from an unlabeled tape, specify the tape device directly and do not use a DEFINE. It is one of these:

```plaintext
{ [ \node.$device | [ \node.$ldev | define-name  ] }
```

node

is the name of the node (system) where the tape drive resides.

device

is the name of the magnetic tape drive, such as $TAPE1.

ldev

the device number of the magnetic tape drive, such as $17.

define-name

specifies a DEFINE name of CLASS TAPE or TAPECATALOG for a restore from labeled tape. The DEFINE sends a request to $ZSVR (the labeled-tape server process) for labeled-tape processing.

The DEFINE attributes are supported as described in the *Guardian Disk and Tape Utilities Reference Manual* and the *DSM/Tape Catalog User's Guide*. The exceptions are listed in *DEFINE Attribute Exceptions for the RESTORE Command*. 
Table 18: DEFINE Attribute Exceptions for the RESTORE Command

<table>
<thead>
<tr>
<th>Option</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>BLOCKLEN</td>
<td>Valid but ignored. The value of BLOCKLEN is always the default value or the value you specified for the BLOCKSIZE job option when you backed up the file.</td>
</tr>
<tr>
<td>DENSITY</td>
<td>Not supported.</td>
</tr>
<tr>
<td>EBCDIC</td>
<td>Not supported.</td>
</tr>
<tr>
<td>LABELS</td>
<td>Valid values are BACKUP or OMITTED.</td>
</tr>
<tr>
<td>LOGICAL</td>
<td>Valid but ignored.</td>
</tr>
<tr>
<td>PHYSICAL</td>
<td>Valid but ignored.</td>
</tr>
<tr>
<td>RECFORM</td>
<td>Valid but ignored. The record format is always FIXED.</td>
</tr>
<tr>
<td>RECLEN</td>
<td>Valid but ignored. The record length is always the user-specified value or the default value of the BLOCKSIZE job option.</td>
</tr>
<tr>
<td>TAPEMODE</td>
<td>Valid but ignored. The value of TAPEMODE is always STREAM.</td>
</tr>
<tr>
<td>USE</td>
<td>Valid values are IN, OUT and OPENFLAG.</td>
</tr>
</tbody>
</table>

If multiple tape devices are specified as part of a RESTORE command, the backup and restore operation returns this error:

```
** ERROR-2015 ** Syntax error: Multiple tape specifications cannot be used for a restore command.
```

If the NEEDBOTH job option is specified as part of a restore job, the backup and restore operation returns this error:

```
** ERROR-2015 ** Syntax error: The KEYWORD is not valid for the RESTORE command.
```

** run-option **

is supported as described in the TACL Reference Manual, except as listed in Run Option Exceptions for the RESTORE Command.

Any run option specified on the command line overrides a corresponding run option in the IN file. The RESTORE command in the IN file must not itself specify the IN run option. For more information, see Using an IN File.
Table 19: Run Option Exceptions for the RESTORE Command

<table>
<thead>
<tr>
<th>Run Option</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU</td>
<td>This run option is not supported. This option specifies the number of the processor where the Data Management Application (DMA) is to run. You specify the list of processors in which the Data Service and Tape Service using the SERVICECPULIST config-option.</td>
</tr>
<tr>
<td>DEFMODE</td>
<td>This run option is not supported.</td>
</tr>
<tr>
<td>GUARANTEEDSWAPSPACE</td>
<td>This run option is not supported.</td>
</tr>
<tr>
<td>IN</td>
<td>This run option must be a text file.</td>
</tr>
<tr>
<td>INLINE</td>
<td>This run option is not supported.</td>
</tr>
<tr>
<td>INV</td>
<td>This run option is not supported.</td>
</tr>
<tr>
<td>NOWAIT</td>
<td>This run option is ignored because the Backup and Restore 2 processes always run nowaited.</td>
</tr>
<tr>
<td>MAXMAINSTACKSIZE</td>
<td>This run option is not supported.</td>
</tr>
<tr>
<td>MAXNATIVEHEAPSIZE</td>
<td>This run option is not supported.</td>
</tr>
<tr>
<td>OUT</td>
<td>This run option is not supported. Use the OUT job option instead. For more information, see the OUT Job Option on page 129.</td>
</tr>
<tr>
<td>OUTV</td>
<td>This run option is not supported.</td>
</tr>
<tr>
<td>PFS</td>
<td>This run option is not supported.</td>
</tr>
<tr>
<td>STATUS</td>
<td>This run option is not supported.</td>
</tr>
<tr>
<td>WINDOW</td>
<td>This run option is not supported.</td>
</tr>
</tbody>
</table>

restore-object-spec

Is one of these:

\[
\{\text{oss-restore-object-spec} \}
\{\text{sqlmx-restore-object-spec} \}
\{ (\text{oss-restore-object-spec} ) (\text{sqlmx-restore-object-spec} ) \}
\{ (\text{sqlmx-restore-object-spec} ) (\text{oss-restore-object-spec} ) \}
\]

oss-restore-object-spec

For more information, see OSS RESTORE Object on page 112

sqlmx-restore-object-spec

For more information, see SQL/MX RESTORE Object on page 113

restore-job-option
specifies one or more conditions for the RESTORE command. For more information, see RESTORE Job Options on page 119. For a comparison to the RESTORE job options for the BACKUP and RESTORE utilities (T9074), see Changed or Unsupported Restore Job Options on page 177.

config-option

specifies the RESTORE configuration options that you can use to supersede the configuration option settings in the BRCONFIG file. It is any of:

- EMSCOLLECTOR[$node.$process-name
- SERVICECPULIST [processor [, processor ] ]...
- SERVICEPRI number
- WORKVOLUME devicename

For more information about the default configuration options, see RESTORE Job Options on page 119.

EMSCOLLECTOR [$node.$process-name

is the collector for EMS messages. If you do not specify an EMS collector, the messages are sent to the EMS collector as configured in the BRCONFIG file.

SERVICECPULIST [ processor, [processor] ... ]

is a value from 0 through 15 that specifies a list of the processors in which the DMA starts the Data Service and Tape Service. You must separate each processor in the list with a comma. If you do not specify any processors, the services are started as configured in the BRCONFIG file.

SERVICEPRI number

is no value, a value of -1, or a value of 1 through 199 that specifies the priority at which the DMA starts the Data Service and Tape Service. If you specify -1 or do not specify a SERVICEPRI, the Data Service and Tape Service are started at the priority configured in the BRCONFIG file.

WORKVOLUME $valid disk name

is the name of the disk volume on which jobs create their files. If you do not specify a work volume, the files for each job are created in the work volume configured in the BRCONFIG file.

**BRCOM RESTORE Syntax When Using an IN File**

The RESTORE command in the IN file must not itself specify the IN run option. If you specify an IN file, the tape-device-name specified on the command line overrides the tape-device-name specified in the IN file. For more information, see Using an IN File on page 33. When you are using an IN file, the syntax is:

```plaintext
RESTORE

tape-device-name
[ , run-option [ , run-option ] ... ] IN in-file
```

**tape-device-name**

is the name of a tape drive. You must specify a tape drive. The tape-device-name specified on the command line overrides the tape-device-name specified in the IN file. Backup and Restore 2 does not support virtual tape drives created by TAPESIM because TAPESIM does not support LBA. Any attempt to get the LBA on a tape drive created by TAPESIM results in file-system error 2.

**run-option**

is supported as described in the TACL Reference Manual, except as listed in Run Option Exceptions for the RESTORE Command. Any run option that you specify on the command line overrides a corresponding run option in the IN file.

**in-file**
is the name of a IN file. You cannot specify any options after the IN run option. Therefore, you cannot specify job options or configuration options on the command line.

## Restore Objects

Backup and Restore 2 supports these objects:

- **OSS RESTORE Object** on page 112
- **SQL/MX RESTORE Object** on page 113

### OSS RESTORE Object

*oss-restore-object-spec*

specifies the objects to be restored. It is one of these:

```
OSS { oss-restore-object 
   \{ (oss-restore-object [ , oss-restore-object ] ... ) \} 
   { (oss-restore-object [ , oss-restore-object ] ... ) 
         WHERE expression \} 
   \{ (oss-restore-object [ , oss-restore-object ] ... ) 
         WHERE expression [,(oss-restore-object 
         [ ,oss-restore-object ] ... ) WHERE expression ]... \}
```

*oss-restore-object*

specifies the OSS objects to be restored. OSS object specifications for the RESTORE command can be enclosed in quotes and can include escape sequences. It is one of these:

```
{oss-restore-base 
   
   \{(oss-restore-base ,[ \{TARGET|TGT\}oss-target-base ])
```

*oss-restore-base*

is a valid OSS object name that specifies the set of OSS directories to be restored. The files in the specified directory and its subdirectories are backed up. Wild cards are NOT permitted. However, specifying only '*' is equivalent to specifying '/'. For example,

```
restore $tape2, oss *, listall on;
```

*oss-target-base*

is the parent directory for a restore job. If you do not specify a target directory, the *oss-restore-base* is restored to its parent directory at the time of the backup. Wild cards are not permitted on *oss-target-base*.

*WHERE expression*

allows exclusions from an *oss-restore-object*. You can exclude some objects from the restore by specifying qualifying criteria such as user ID, time, or the number of bytes in the file. The order of precedence in expression evaluation is parentheses, NOT, AND, OR. Parentheses within a *WHERE expression* are optional. For OSS, it is any of:

```
{ oss-qualifier 
   \{ NOT oss-qualifier \} 
   \{ (oss-qualifier \ AND oss-qualifier \ ... \) \} 
   \{ (oss-qualifier \ OR oss-qualifier \ ... \) \}
```

*oss-qualifier*
is any of:

OWNER = user-id

oss-timestamp time-conditional time-value

EOF eof-conditional eof-number

For more information, see Filters for SQL/MX Objects on page 69

**SQL/MX RESTORE Object**

`sqlmx-restore-object-spec` specifies the objects to be restored. It is one of these:

```
MX { sqlmx-restore-object }

{(sqlmx-restore-object [,sqlmx-restore-object ].. )}

{sqlmx-restore-object WHERE expression }

{(sqlmx-restore-object [, sqlmx-restore-object ]...)
  WHERE expression [, (sqlmx-restore-object
  [, sqlmx-restore-object ] ...)
  WHERE expression ]... }
```

`sqlmx-restore-object` specifies the set of SQL/MX objects to be restored, which can either be regular or delimited.

**NOTE:**
SQL/MX indexes containing delimiters are supported on systems running L-series RVUs and J06.08 or later J-series RVUs.

It is one of these:

```
{ sqlmx-source }
{( sqlmx-source [{, TARGET | TGT} sqlmx-object-type
  sqlmx-target ]})
```

`sqlmx-source` is the set of SQL/MX objects to be restored. The object specified and all its subordinate objects are restored unless specifically excluded. It is one of these:

```
{sqlmx-object-type sqlmx-source-base }
{TPART sqlmx-table PARTITION ( sqlmx-part
  [, sqlmx-part ]...)
{sqlmx-index sqlmx-source-base }
{IPART sqlmx-index PARTITION ( sqlmx-ipart
  [, sqlmx-ipart ]...)
```

`sqlmx-object-type`
is the type of object specified in sqlmx-source-base or sqlmx-target. You must specify an sqlmx-object-type for the sqlmx-target that is at the same level, or one level higher in the hierarchy than the sqlmx-object-type you specify for the sqlmx-source. For more information, see Restoring to a Different Target.

It is one of these:

{ CAT | CATALOG }
{ CAT * | CATALOG * }
{ SCH | SCHEMA }
{ TBL | TABLE }
{ IND | INDEX }

NOTE:
Same level restoration is only in SQL/MX 3.3 version and later.

sqlmx-source-base
is a valid SQL/MX object, such as the name of a catalog, schema, or table in the source object of a backup job. The specified object and all its subordinate objects are restored. Wild cards are not permitted in the sqlmx-source-base.

TPART
is the name of a table partition.

sqlmx-table
is a valid SQL/MX table name.

PARTITION(sqlmx-part[,sqlmx-part]...)

is one or more valid SQL/MX table partition names of the table specified in sqlmx-table. If you specify the TPART object type, you must specify at least one table partition name and the PARTONLY job option. You must enclose the names of the table partitions in parentheses.

sqlmx-index
is a valid SQL/MX index name.

IPART
is the name of an index partition.

PARTITION(sqlmx-ipart[,sqlmx-ipart]...)

is one or more valid SQL/MX partition names of the INDEX specified by sqlmx-index. If you specify the IPART object type, you must specify a partition name.

sqlmx-target
is the name of a valid SQL/MX object that designates the parent object for the sqlmx-object being restored. The target object can be at the same level, or the target parent object must already exist and be one level higher in the object hierarchy than the object being restored. For example, if you are restoring an SQL/MX table, the only valid target parent object is either a table or a schema. For more information about the object hierarchy, see Supported SQL/MX Objects on page 14.

The sqlmx-source-object becomes a subordinate object of sqlmx-target. If you do not specify a target, the object is restored to the same parent object as at the time of the backup.

NOTE:
Same level restoration is only in SQL/MX 3.3 version and later.
allows exclusions from an sqlmx-restore-object. You can exclude some objects from the restore by specifying qualifying criteria such as user ID, time, or the number of bytes in the file. The order of precedence in expression evaluation is parentheses, NOT, AND, OR. Parentheses within a WHERE expression are optional. For SQL/MX, it is any of:

\[
\{ \text{sqlmx-qualifier} \}\]
\[
\{ \text{NOT sqlmx-qualifier} \}\]
\[
\{ (\text{sqlmx-qualifier AND sqlmx-qualifier} \ldots ) \}\]
\[
\{ (\text{sqlmx-qualifier OR sqlmx-qualifier} \ldots ) \}\]

\text{sqlmx-qualifier}

is any of:

\text{OWNER = user-id}

\text{sqlmx-timestamp time-conditional time-value}

\text{EOF eof-conditional eof-number}

\text{TABLE}

For more information, see Filters for SQL/MX Objects on page 117

Filters for OSS Files

For OSS, filtering applies only to files, not directories.

\text{OWNER = user-id}

selects a file based on the user ID. It is a NonStop user ID in one of these forms:

\{
\text{group-name.user-name} \}
\{
\text{group-name.*} \}
\{
\text{group-number, user-number} \}
\{
\text{group-number,*.} \}

\text{group-name}

is the group name of the user. Each name can contain from one to eight letters or digits, and the first character must be a letter.

\text{user-name}

is the name of the user. Each name can contain from one to eight letters or digits, and the first character must be a letter.

\text{group-number}

is an integer in the range from 0 through 255 that uniquely identifies a group. 255 is reserved as the supergroup ID.

\text{user-number}

is an integer in the range from 0 through 255 that uniquely identifies a user within a group. 255 is reserved for group managers (\text{group,255}) and the super ID (255,255).

\text{oss-timestamp time-conditional time-value}

selects a file based on when it was created, last opened, or last modified.

\text{oss-timestamp}
is one of these:

CREATIONTIME
LASTOPENTIME
MODTIME
CREATIONTIME

applies only to files.
LASTOPENTIME

applies only to files.
MODTIME

applies only to files.
time-conditional

is one of these:

<
BEFORE
>
AFTER
time-value

is one of these:

{{day month day}year[hour:minute[.second] ] }
{{[day month day}year]hour:minute[.second]  }

For example:

1 JAN 2003 06:30
JAN 1 2003 06:30
02 JUL 2003 08:25:30

The default time-value is 00:00:00 (midnight) of today's date. The default for {{day month | month day}year is today's date.

day

is an integer in the range 1 through 31.

month

is one of these:

JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DEC

year

is a 4-digit integer in the range 1900 through 2999.

hour

is an integer in the range 0 through 23.

minute

is a 2-digit integer in the range 00 through 59.
second
is a 2-digit integer in the range 00 through 59.

EOF eof-conditional eof-number
selects a table partition based on its number of bytes.

eof-conditional
is any of:

<  
>  
<= 
=  
>=
<> (not equal to)

eof-number
is the number of bytes in a table partition.

Filters for SQL/MX Objects

For SQL/MX objects, the filters are applied only to certain types of objects as shown in the following table. You cannot filter SQL/MX constraints. Parent objects are restored if the filter does not apply to them. For example, WHERE EOF applies only to table partitions. If you specify RESTORE of a schema WHERE EOF>n, all tables in the schema are restored, and only table partitions greater than the indicated size are restored.

Table 20: SQL/MX Filters

<table>
<thead>
<tr>
<th>CATALOG</th>
<th>SCHEMA</th>
<th>TABLE</th>
<th>INDEX</th>
<th>PARTITIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>OWNER</td>
<td>Ignored</td>
<td>Valid</td>
<td>Ignored</td>
<td>Ignored</td>
</tr>
<tr>
<td>CREATIONTIME</td>
<td>Ignored</td>
<td>Ignored</td>
<td>Valid</td>
<td>Ignored</td>
</tr>
<tr>
<td>LASTOPENTIME</td>
<td>Ignored</td>
<td>Ignored</td>
<td>Ignored</td>
<td>Ignored</td>
</tr>
<tr>
<td>MODTIME</td>
<td>Ignored</td>
<td>Ignored</td>
<td>Ignored</td>
<td>Valid</td>
</tr>
<tr>
<td>REDEFINITIONTIME</td>
<td>Ignored</td>
<td>Ignored</td>
<td>Valid</td>
<td>Valid</td>
</tr>
<tr>
<td>EOF</td>
<td>Ignored</td>
<td>Ignored</td>
<td>Ignored</td>
<td>Valid</td>
</tr>
<tr>
<td>TABLE</td>
<td>Valid</td>
<td>Valid</td>
<td>Valid</td>
<td>Valid</td>
</tr>
</tbody>
</table>

OWNER = user-id
selects a schema based on the user ID. It is a NonStop user ID in one of these forms:

{group-name.user-name}  
{group-name.*}  
{group-number, user-number}  
{group-number,*}  

Filters for SQL/MX Objects  117
group-name

is the group name of the user. Each name can contain from one to eight letters or digits, and the first character must be a letter.

user-name

is the name of the user. Each name can contain from one to eight letters or digits, and the first character must be a letter.

group-number

is an integer in the range from 0 through 255 that uniquely identifies a group. 255 is reserved as the super-group ID.

user-number

is an integer in the range from 0 through 255 that uniquely identifies a user within a group. 255 is reserved for group managers (group,255) and the super ID (255,255).

sqlmx-timestamp time-conditional time-value

selects an object based on when it was created, last opened, last modified, or redefined.

sqlmx-timestamp

is one of these:

CREATIONTIME
LASTOPENTIME
MODTIME
REDEFINITIONTIME
CREATIONTIME

selects a table based on the time that the table was created.

LASTOPENTIME

selects a table partition based on the time that the table partition was last opened.

MODTIME

selects a table partition based on the time that the table partition was last modified.

REDEFINITIONTIME

selects a table based on the time that the table was last redefined.

time-conditional

is one of these:

<
BEFORE
>
AFTER

time-value

is one of these:

{{day month|month day}year[hour:minute[:second] ] }
[[{day month|month day}year]hour:minute[:second] }
For example:

1 JAN 2003 06:30
JAN 1 2003 06:30
02 JUL 2003 08:25:30

The default time-value is 00:00:00 (midnight) of today's date. The default for \{day month | month day\} year is today's date.

day

is an integer in the range 1 through 31.

month

is one of these:

JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DEC

year

is a 4-digit integer in the range 1900 through 2999.

hour

is an integer in the range 0 through 23.

minute

is a 2-digit integer in the range 00 through 59.

second

is a 2-digit integer in the range 00 through 59.

EOF eof-conditional eof-number

selects a table partition based on its number of bytes.

eof-conditional

is any of:

<
>
<=
=
>=
<> (not equal to)

eof-number

is the number of bytes in a table partition.

TABLE

specifies to restore only SQL/MX tables.

**RESTORE Job Options**

The RESTORE job options fall into these categories:
- Standard options that you can use with any of the other types
- OSS options for restoring OSS objects
- SQL/MX options for restoring SQL/MX objects

Table 21: RESTORE Job Options

<table>
<thead>
<tr>
<th>RESTORE Option</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACLLOCKOVERRIDE Job Option</td>
<td>OSS</td>
</tr>
<tr>
<td>CONSTRAINTS Job Option on page 121</td>
<td>SQL/MX</td>
</tr>
<tr>
<td>DIRECTORY Job Option on page 122</td>
<td>Standard</td>
</tr>
<tr>
<td>FOLLOWMOUNTPTS Job Option on page 123</td>
<td>OSS</td>
</tr>
<tr>
<td>IGNORE Job Option on page 123</td>
<td>Standard</td>
</tr>
<tr>
<td>INDEXES Job Option on page 123</td>
<td>SQL/MX</td>
</tr>
<tr>
<td>JOB Job Option on page 124</td>
<td>Standard</td>
</tr>
<tr>
<td>KEEP Job Option on page 124</td>
<td>Standard</td>
</tr>
<tr>
<td>KEEPGFN Job Option on page 125</td>
<td>SQL/MX</td>
</tr>
<tr>
<td>LISTALL Job Option on page 125</td>
<td>Standard</td>
</tr>
<tr>
<td>LISTONLY Job Option on page 126</td>
<td>Standard</td>
</tr>
<tr>
<td>LOCATION Job Option on page 127</td>
<td>SQL/MX</td>
</tr>
<tr>
<td>MYID Job Option on page 127</td>
<td>OSS</td>
</tr>
<tr>
<td>OSSACL Job Option on page 128</td>
<td>OSS</td>
</tr>
<tr>
<td>OUT Job Option on page 129</td>
<td>SQL/MX</td>
</tr>
<tr>
<td>PAGELENGTH Job Option on page 129</td>
<td>Standard</td>
</tr>
<tr>
<td>PARTONLY Job Option on page 129</td>
<td>SQL/MX</td>
</tr>
<tr>
<td>RESTOREBKUPSPEC Job Option on page 130</td>
<td>Standard</td>
</tr>
<tr>
<td>JOB Job Option on page 76</td>
<td>Standard</td>
</tr>
<tr>
<td>SHOWDDL Job Option on page 131</td>
<td>SQL/MX</td>
</tr>
<tr>
<td>SHOWDMLLOC Job Option on page 132</td>
<td>SQL/MX</td>
</tr>
<tr>
<td>OBEYDDL Job Option on page 132</td>
<td>SQL/MX</td>
</tr>
</tbody>
</table>

Table Continued
ACLLOCKOVERRIDE Job Option

Use this job option to override the ACL attribute locks and restore the file attributes. By default, attribute lock is used for restoring file attributes. OFF is the default. The ACLLOCKOVERRIDE option is applicable only in the following cases:

- when a super user is restoring files or directories in unrestricted files.
- when a Security OSS Administrator (SOA) running BR2 with the PRIV-SOARFOPEN file privilege for restoring files or directories in restricted filesets.

For more information on owned ACLs, see the Open System Services Management and Operations Guide.

ACLLOCKOVERRIDE { ON | OFF }

ON

restores file and ACL attributes to all OSS objects, including the objects protected by the owned ACL attribute locks.

OFF

does not restore file and ACL attributes of OSS objects protected by the owned ACL attribute locks.

NOTE:
The ACLLOCKOVERRIDE job option is supported on systems running L17.02 and later L-series RVUs, and J06.21 and later J-series RVUs.

CONSTRAINTS Job Option

Constraints are rules that protect the integrity of data in a table by restricting the values in a particular column or set of columns to those that meet the conditions of the constraints. Use this job option to specify which constraints to restore from the source table. INCLUDED is the default.

CONSTRAINTS { EXCLUDED | INCLUDED }

INCLUDED

restores the primary key, unique, not null, and check constraints from the source table.

EXCLUDED

restores the NOT NULL constraints from the source table. It also restores the PRIMARY KEY constraint from the source table only if it is NOT DROPPABLE.
Guidelines

- The CONSTRAINTs job option is supported only for SQL/MX objects. If you specify this job option but do not specify SQL/MX objects, an error occurs.
- If you specify CONSTRAINTS INCLUDED during the RESTORE command, it is meaningful only if CONSTRAINTS INCLUDED was specified or defaulted to during the BACKUP command.
- If you specify CONSTRAINTS INCLUDED, you cannot specify INDEXES EXCLUDED or PARTONLY ON.
- If you specify CONSTRAINTS EXCLUDED, you must specify the INDEXES EXCLUDED.
- If you specify a WHERE expression and CONSTRAINTS INCLUDED, a constraint is not restored unless it meets the filter criteria of the WHERE expression.
- The constraints restored vary depending on whether you specify INCLUDED or EXCLUDED. Some types of constraints are not supported.

<table>
<thead>
<tr>
<th>CONSTRAINT</th>
<th>INCLUDED</th>
<th>EXCLUDED</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHECK</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>NOT NULL</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>UNIQUE</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>PRIMARY KEY DROPPABLE</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>PRIMARY KEY NOT DROPPABLE</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>REFERENTIAL INTEGRITY</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

DIRECTORY Job Option

Use this job option to use a BRIC disk file for the RESTORE rather than the BRIC tape file. For more information about the BRIC file, see Backup and Restore Intermediate Catalog (BRIC) File on page 12. The DIRECTORY option has no default.

DIRECTORY directory-file

directory-file

is the name of BRIC disk file to be used as the directory for a restore job.

Guidelines

- If you do not specify this option, RESTORE re-creates the BRIC file from tape before restoring any files.
- Before you can use the DIRECTORY job option, you must restore the BRIC file to disk using the RESTOREDIR job option.
- If you are using the DIRECTORY job option a tape drive is not needed if:
  - You specify the LISTONLY ON or LISTONLY DETAIL job option.
  - You specify the VERIFITYAPE OFF job option.
  - You do not specify the RESTOREDIR job option.
  - You do not specify the RESTOREBKUPSPEC job option.
- You must specify a valid tape device name, but the device does not need to exist because the tape drive is not used.
FOLLOWMOUNTPTS Job Option

Use this job option to specify whether to include OSS filesets or not. ON is the default.

| FOLLOWMOUNTPTS { OFF | ON } |
|-----------------------------|

ON
restores other filesets mounted on a directory.

OFF
does not restore other filesets mounted on a directory.

Guidelines

- The FOLLOWMOUNTPTS job option is supported only for OSS objects. If you specify this job option but do not specify any OSS objects, an error occurs.
- If you have any files located in a directory used as a mount point, those file cannot be accessed or backed up.

IGNORE Job Option

Use this job option to specify how to handle data errors on the tape. OFF is the default.

| IGNORE { ON | OFF } |
|---------------------|

ON
ignores certain data errors on tape. If possible, the restore job copies the invalid data for the object. Otherwise, the restore job writes zeros in place of invalid data.

OFF
does not ignore data errors on tape. If a data error occurs, the restore job purges the corrupt or incomplete object and begins restoring the next object.

INDEXES Job Option

Use this job option to specify whether indexes and index partitions should be included or ignored. INCLUDED is the default.

| INDEXES { EXCLUDED | INCLUDED } |
|---------------------------------|

EXCLUDED
does not restore the table indexes and index partitions for each of the tables being restored.

INCLUDED
restores the table indexes and index partitions for each of the tables being restored.

Guidelines

- The INDEXES job option is supported only for SQL/MX objects. If you specify this job option but do not specify any SQL/MX objects, an error occurs.
- If you specify INDEXES EXCLUDED, you must specify CONSTRAINTS EXCLUDED.

FOLLOWMOUNTPTS Job Option 123
**JOB Job Option**

Use this job option to specify the job identifier to be associated with a job. If you do not specify a job identifier, BRCOM assigns one and displays it after the job is started.

```
JOB jobid
```

`jobid`

is a valid unique job identifier with a maximum of eight characters. The characters can be alphabetic, numeric, or a combination.

For example:

```
A1234567
aaaaaaaa
abcdEFG
D1
I607
```

**Guidelines**

- The identifier cannot be present in the BRJOBS file.
- The `$workvolume.jobid` subvolume cannot exist.
- The first character cannot be numeric.
- Wild cards (" or ?) are not permitted.
- Job IDs are not case-sensitive.
- If you specify this option, no message is displayed if the job starts successfully. A message is displayed only if an error occurs.
- Use this option with caution. Job creation fails if there is already a job in BRJOBS with the same job identifier or if there are any files in `$workvolume.jobid`. If you omit this option and let BRCOM assign the job identifier, job creation will not fail for these reasons.

**KEEP Job Option**

Use this job option to specify whether a tape file is restored if a file with the same name already exists on disk. OFF is the default.

```
KEEP { ON | OFF }
```

**ON**

restores an object on tape only if the object does not already exist at the target.

**OFF**

restores an object on tape even if an OSS directory, SQL/MX table, or its subordinate object already exists at the target. In some circumstances, the disk file cannot be purged.

**Guidelines**

- If you specify the KEEP ON job option, any objects on tape for which there are active objects in the specified target are not restored.
- Catalogs and schemas cannot be dropped even if you specify KEEP OFF. Dropping catalogs and schemas would destroy files that were not previously backed up.
• If you specify the KEEP OFF job option, the disk file is purged when a file of the same name is restored from tape unless the table contains constraints, views, triggers, or stored procedures. In that case, the table cannot be dropped. For information about checking if the table has these subordinate objects and dropping objects, see the MXCI command SHOWDDL in the SQL/MX Reference Manual and SQL/MX Installation and Management Guide.

• When a restore job (for OSS objects) with the KEEP ON job option fails, a temporary file with a unique name will be left in the target directory.

• During a restore, if an OSS directory already exists, it will not be purged even if user specifies KEEP OFF option, as it will purge all the files within it that were not backed-up previously.

**KEEPGFN Job Option**

Use this job option to specify whether the Guardian file names of table and index partitions have to be retained during the restore operation. This job option is supported only for SQL/MX objects. ON is the default.

```
KEEPGFN { ON | OFF }
```

**Guidelines**

- This job option is not supported for OSS file-system objects.
- This job option is supported only for SQL/MX objects. If you specify this job option without specifying any SQL/MX objects, syntax error occurs.
- If PARTONLY is ON and target partitions are created before restoration, the Guardian file name of target partitions on restore is retained rather than the Guardian file name of partitions in backup image irrespective of KEEPGFN is ON or OFF.
- On restore if KEEPGFN is ON and the target schema exists already, all partitions might get restored with same file name and subvolume of that existing target schema. For more information about naming, see the SQL/MX Installation and Management Guide.
- Restore of a target schema will be skipped if KEEPGFN is ON and subvolume of that target schema is used by any other target schema. In that case, a target schema has to be created manually or the other target schema has to be dropped before the restore operation.
- Restore of a table, index, or table partition will be skipped if KEEPGFN is ON and same Guardian file name is used by some other SQL/MX object under that same target schema and volume.
- The LOCATION job option has higher precedence over KEEPGFN job option and so mapping given in LOCATION option will override the KEEPGFN behavior irrespective of KEEPGFN is ON or OFF.
- The KEEP job option has higher precedence over KEEPGFN job option.

**LISTALL Job Option**

Use this job option to generate a list about the objects being restored to the OUT file or your current terminal. OFF is the default.

```
LISTALL { ON | OFF | DETAIL }
```

ON
lists the names of the objects that are restored successfully from tape and the names of objects that are not restored because of errors.

DETAIL
lists the characteristics of each object restored.

OFF
lists only object names that are associated with error messages to the EMS log.

Guidelines

• If you specify LISTALL ON or LISTALL DETAIL, you cannot specify LISTONLY ON or LISTONLY DETAIL.
• If you specify the LISTALL ON or LISTALL DETAIL job option but omit the OUT job option, the LISTALL output is directed to your current terminal. The BRCOM prompt does not return until the job completes unless you press the Break key.
• If you specify the LISTALL ON or LISTALL DETAIL job option and the OUT job option, the LISTALL output is directed to the specified out file.
• Monitor EMS messages. Some messages are only sent as EMS messages, not as LISTALL output.

LISTONLY Job Option

Use this job option to generate a list to the OUT file about the objects backed up. No data is restored. OFF is the default.

```
LISTONLY { ON | OFF | DETAIL }
```

ON
lists the objects matching the specified restore-objects that are backed up on the tape. The specified restore-objects are not restored.

OFF
does not generate a list of objects.

DETAIL
lists the characteristics of each object on tape. The specified restore-objects are not restored.

Guidelines

• If you specify VERIFYTAPE ON, you must specify either LISTONLY ON or LISTONLY DETAIL.
• To specify a list of all the objects on tape, you can specify mx cat * and oss /.
• If you specify LISTONLY ON or LISTONLY DETAIL:
  ◦ The restore job runs without restoring any objects.
  ◦ You cannot specify LISTALL ON or LISTALL DETAIL.
• If you specify both the DIRECTORY job option and LISTONLY ON or LISTONLY DETAIL job options, the restore job does not use the tape drive but uses the BRIC disk file. You must specify a tape device name, but the device does not need to exist as the tape drive is not used.
• If you do not specify the DIRECTORY job option with LISTONLY ON or LISTONLY DETAIL job options, a tape drive is required because the BRIC tape file is used for the restore job.
• If you specify the LISTONLY ON or LISTONLY DETAIL but omit the OUT job option, the output is directed to your current terminal. The BRCOM prompt does not return until the job completes unless you press the Break key.
• If you specify the LISTONLY ON or LISTONLY DETAIL job option and the OUT job option, the LISTONLY output is directed to the specified out file.
• You should monitor EMS messages because some messages are only sent as EMS messages, not as output to the terminal or OUT file.

**LOCATION Job Option**

Use this job option to change the physical location of SQL/MX objects as they are restored. You can use this job option to specify one or more mappings.

LOCATION job option is supported for sequence generators, views, and stored procedures from SQL/MX Release 3.4.

```
LOCATION
{ source-dest }
{ ( source-dest [, source-dest ] ...) }
```

`source-dest`
is any of:

```
{ [
\node.\]$source-vol \ TO \[
\node.\]$dest-vol
}
{ [
\node.\]$source-vol.source-subvol.source-file \ TO
   [
\node.\]$dest-volume.dest-subvol.dest-file
}
```

`[
\node.\]$source-vol`
is the volume on the tape. Specifying the node is optional.

`[
\node.\]$dest-vol`
is the volume on the magnetic disk where the SQL/MX objects are to be restored. Specifying the node is optional.

`[
\node.\]$source-vol.source-subvol.source-file`
is the fully qualified file name on the tape. Specifying the node is optional.

`[
\node.\]$dest-volume.dest-subvol.dest-file`
is the fully qualified file name on the magnetic disk where the SQL/MX objects are to be restored. Specifying the node is optional.

**Guidelines**

• If you specify LOCATION, you cannot specify PARTONLY ON.
• Do not specify an SMF volume. SMF volumes cannot contain SQL/MX objects.
• You should be familiar with the rules for naming SQL/MX subvolumes and files. These rules are always followed when SQL/MX generates file names and are enforced by SQL/MX for user-specified names. These rules are in addition to Guardian naming rules already enforced by the Guardian file system. For more information about naming, see the SQL/MX Installation and Management Guide.

**MYID Job Option**

Use this job option to specify the owner ID and file security for OSS files. OFF is the default.

```
MYID { ON | OFF }
```

ON
sets the owner ID of all OSS files that are being restored to that of the user who issued the RESTORE command. As each file is restored, it is given the default security of the current user.

**OFF**

sets the owner ID of each restored file to the user who owned it when it was backed up. The file security is the same as when the file was backed up.

**Guidelines**

- If you specified the ALLOWMYID OFF job option during the backup job, using the RESTORE MYID ON job option causes the restore job to fail with an error.
- The MYID job option is applicable to OSS objects. If you specify this job option but do not specify any OSS objects, an error occurs.
- MYID job option is applicable only for super users.
- If the requestor performing the restore is a non super.super user, then, only the OSS file system objects that the requestor owns are restored, regardless of the MYID job option being specified.

**NOTE:**

This behavior is different from the B/R 1 (T9074). This behavior is supported only on systems running J06.03 RVU.

**OSSACL Job Option**

Use this job option to restore OSS objects containing ACLs (standard or the owned ACL) to OSS file systems.

```
OSSACL { ON | OFF }
```

**ON**

restores ACLs in OSS files. If the backup image being restored does not contain ACLs, this option is ignored.

**OFF**

does not restore ACLs in OSS files.

**NOTE:**

The owned ACLs are supported from L17.02 and J06.21 RVUs.

**Guidelines**

- When OSS objects containing ACLs are restored to OSS file systems that do not support ACLs, Backup and Restore 2 restores the objects without the ACLs.
- Backup and Restore 2 displays the EMS warning, ZBRU-EVT-OSSACL-RESTORE-WRN, for the first object meeting the above condition when the OSSACL job option is set to ON.
- Backup and Restore 2 displays the EMS message, ZBRU-EVT-SMART-AGENT-ERR, if a system call fails when restoring the OSS ACL data of an object.
- Backup and Restore 2 displays the EMS warning, ZBRU-EVT-OSSACL-DWNGRADE-RESTORE-WRN, for the first object meeting the following conditions when the OSSACL job option is set to ON.
  - When OSS objects containing owned ACLs are restored to OSS file systems that support only the standard ACLs, the owned ACLs will be downgraded to the previous version.
  - When OSS objects containing extended ACLs are restored to OSS file systems that support ACLs but not extended ACLs, the extended ACLs will be downgraded to the previous version.
OUT Job Option

Use this job option to specify a location for listing output. The default output location is your current terminal.

```
OUT list-file
```

*list-file*

is a valid Guardian disk file, terminal, or spooler location.

Guidelines

- If you specify the LISTALL ON, LISTALL DETAIL, LISTONLY ON, or LISTONLY DETAIL job option and the OUT job option, the output is directed to the specified out file. If you do not specify an out file, the output is directed to your current terminal.
- If you do not specify the LISTALL ON, LISTALL DETAIL, LISTONLY ON, or LISTONLY DETAIL job options, the OUT job option has no effect.

PAGELENGTH Job Option

Use this job option to specify the number of lines that are generated per page of output from RESTORE.

```
PAGELENGTH number-of-lines
```

*number-of-lines*

is an integer in the range 20 through 100 that specifies the number of lines per page of output from RESTORE.

Guidelines

- If you do not specify the PAGELENGTH job option, the output from the restore job defaults to 60 lines per page.
- This job option is valid only if you also specify the OUT job option.

PARTONLY Job Option

Use this job option to specify which table partitions are to be restored. This option applies to SQL/MX objects. OFF is the default.

```
PARTONLY { OFF | ON }
```

*ON*

restores only the partitions explicitly specified for each of the tables selected to be restored. Partitions that are not specified explicitly are not restored.

*OFF*

does not allow individual table partitions to be restored.
CAUTION:

Under normal conditions, to ensure that the BACKUP and RESTORE commands handle all related objects together and avoid inconsistencies, use the BACKUP command with the default options PARTONLY OFF and INDEXES INCLUDED.

When necessary, use the PARTONLY and INDEXES EXCLUDED options to back up or restore individual SQL components of a set of related objects (files), such as the individual table partitions. Use these options carefully:

- The consistency checking that the BACKUP or RESTORE commands perform to validate the data during these procedures does not ensure the data consistency of SQL objects.
- If you use options from BACKUP and RESTORE commands incorrectly, you can cause the primary data to be inconsistent with the alternate indexes. For example, if you specify PARTONLY ON or INDEXES INCLUDED, a base table can become inconsistent with its indexes and left invalid after a RESTORE process. Use these options with extreme care.

Considerations for IDENTITY column table:

Use the following steps when PARTONLY job option is explicitly used to restore partition data:

- If the target table has an IDENTITY column defined as GENERATED ALWAYS AS IDENTITY, ensure that backed up source table has the same IDENTITY column attributes as that of the target table. This is required to provide data consistency.
- If the target table has an IDENTITY column that is defined as GENERATED BY DEFAULT AS IDENTITY, one can use the ALTER TABLE ALTER COLUMN...RECALIBRATE functionality to influence the next value for the IDENTITY column. For more information, see SQL/MX Reference Manual.

- You must be extremely cautious when restoring only some partitions as it can cause an inconsistent database.
- If the target tables has indexes defined and restore of only table partitions is performed without the indexes, the indexes and tables will lose synchronization, resulting in an inconsistent table. Accessing the data from the table can lead to unpredictable results.
- If you explicitly specify any table partitions or index partitions, you must specify PARTONLY ON.
- If you do not specify any table partitions or index partitions, you must not specify PARTONLY ON.
- If you specify PARTONLY ON, you cannot specify SQLDATA OFF or LOCATION.
- If you specify the PARTONLY ON job option during a backup operation, you must also specify PARTONLY ON for the RESTORE command.
- The PARTONLY job option is supported only for SQL/MX objects. If you specify this job option but do not specify any SQL/MX objects, an error occurs.

RESTOREBKUPSPEC Job Option

Use this job option to restore the BRCMD file as the file specified by filename. This job option has no default value.

```
RESTOREBKUPSPEC filename
```

filename

is the location to restore the BRCMD file. A fully qualified file name is not required.
Guidelines

- If you specify a file name that already exists, RESTORE attempts to overwrite it.
- For more information, see Using the BRCMD File on page 34.

RESTOREDIR Job Option

Use this job option to restore the BRIC file from tape to disk as the file specified by filename. This job option has no default value.

```
RESTOREDIR filename

filename
```

is the disk file in which to restore the BRIC. A fully qualified file name is not required.

Guideline

If you specify a file name that already exists, RESTORE attempts to overwrite it.

SHOWDDL Job Option

Use this job option to generate OSS files containing DDL information.

```
SHOWDDL { OFF | ON }

ON
generates one or more OSS files containing DDL information. These files are created in addition to the objects normally being restored.

OFF
does not generate OSS files containing DDL information. OFF is the default.

Guidelines

- This job option is not supported for OSS.
- The SHOWDDL job option is supported only for SQL/MX objects. If you specify this job option but do not specify any SQL/MX objects, an error occurs.
- If you specify SHOWDDL ON, you must also specify the SHOWDDLLOC job option.
- You can use the DDL information to manually create triggers, views, referential integrity constraints, and stored procedures after the RESTORE. The generated files are named as shown in DDL Files. $n$ starts at 1 and is incremented. A new file is created every time the current file becomes full.

Table 22: DDL Files

<table>
<thead>
<tr>
<th>File Name</th>
<th>For...</th>
<th>Subordinate object of...</th>
</tr>
</thead>
<tbody>
<tr>
<td>SHOWDDL$n$_RI_Constraints</td>
<td>Referential integrity</td>
<td>Schema</td>
</tr>
<tr>
<td>SHOWDDL$n$_Stored_Procedures</td>
<td>Java stored procedures</td>
<td>Schema</td>
</tr>
</tbody>
</table>

Table Continued
SHOWDDLLOC Job Option

Use this job option to place files containing DDL information in the specified OSS directory.

```
SHOWDDLLOC oss-directory
```

oss-directory

is the name of an OSS directory in which the restore operation should generate the files.

Guidelines

- If you specify this job option, you must also specify the SHOWDDL ON job option.
- The SHOWDDLLOC job option is supported only for SQL/MX objects. If you specify this job option but do not specify any SQL/MX objects, an error occurs.
- If you specify an OSS directory that already contains SHOWDDL files with the same name as the files that are being generated, the original files are overwritten.

OBEYDDL Job Option

The OBEYDDL job option restores views, triggers, referential integrity constraints, and stored procedures. This option is used to obey the DDL information automatically in the OSS files captured during the backup operation.

```
OBEYDDL { OFF | ON }
```

ON

Restores views, triggers, referential integrity constraints, and stored procedures.

OFF

Does not restore views, triggers, referential integrity constraints, and stored procedures.

Guidelines

- If the DDL statement has a dependency on other catalogs, schemas or tables that do not exist or are not yet restored, then errors are returned during the restore operation. The DDL statements and errors are logged in log files named `OBEYLOG_<dep_objects>`, where `dep_objects` can be either VIEWS, TRIGGERS, RI_CONSTRAINTS, or STORED_PROCEDURES.
  These OBEYLOG files are found in the OSS location specified in the SHOWDDLLOC option. You must verify the log files for the failed DDL statements and manually run them after resolving the errors.
- For example, to restore stored procedures, the Java class file must be present in the location specified in the DDL statement else the DDL statement fails.
- OBEYDDL job option is supported for SQL/MX objects.
- OBEYDDL job option requires MXCI to be present in `/usr/tandem/sqlmx/bin/mxci` for its proper functioning.
• To use OBEYDDL job option, you must specify the SHOWDDLLOC option and set SHOWDDL option to ON.
• OBEYDDL job option is used for restoring catalogs, schemas, and tables. Restoring table partitions, indexes, and index partitions is not supported with this option.

SQLDATA Job Option

Use this job option to use the DDL information to re-create an empty version of table partitions and index partitions. ON is the default.

```
SQLDATA { OFF | ON }
```

OFF

uses the DDL information to re-create an empty version of the SQL/MX object. The table partitions or index partitions are not populated.

ON

restores the SQL data.

Guidelines

• This job option is not supported for OSS.
• The SQLDATA job option is supported only for SQL/MX objects. If you specify this job option but do not specify any SQL/MX objects, an error occurs.
• If you specify SQLDATA OFF, you cannot specify the PARTONLY ON job option.
• Table partitions and index partitions are the only supported SQL/MX objects that are physical objects. The SQLDATA OFF job option restores only the object's DDL. The user data in the table partitions and index partitions is not restored.
• Catalogs, schemas, tables, and indexes are logical objects. Therefore, the SQLDATA OFF job option does not affect the restore of these objects. However, the subordinate table partitions and index partitions are affected.

TAPEDATE Job Option

Use this job option to set the lastopen and modification timestamps. ON is the default.

```
TAPEDATE { ON | OFF }
```

ON

sets the lastopen and modification timestamps of the restored objects to the values they had during the backup job.

OFF

changes the lastopen and modification timestamps of the restored objects to the time of the restore job. The creation date for the object is the restore date regardless of the value of TAPEDATE.

TAPEDISPOSITION Job Option

Use this job option to specify the position and location of the tape at the end of the backup job. UNLOAD is the default.

```
TAPEDISPOSITION { BOT | NOREWIND | UNLOAD }
```
rewinds the tape to beginning of tape and leaves it online at the end of the restore job.

leaves the tape positioned at its current location and online at the end of the restore job.

dismounts the tape at the end of the restore job.

**VERIFYDISK Job Option**

Use this job option to specify whether to verify the integrity of the data on disk. OFF is the default.

```
VERIFYDISK { ON | OFF }
```

ON

verifies the integrity of data on disk.

OFF

does not verify the integrity of data on disk.

**VERIFYTAPE Job Option**

Use this job option with the LISTONLY ON or LISTONLY DETAIL job options to specify whether to verify the integrity of the data on tape. OFF is the default.

```
VERIFYTAPE { ON | OFF }
```

ON

verifies the integrity of data on tape.

OFF

does not verify the integrity of data on tape.

**Guideline**

You do not need to use the VERIFYTAPE ON option unless you also specify the LISTONLY ON or LISTONLY DETAIL. When you restore objects, the data is always verified as it is restored.

**Examples**

- **OSS Restore Examples** on page 134
- **SQL/MX Restore Examples** on page 139
- **Restore Examples With Both OSS and SQL/MX Objects** on page 151

**OSS Restore Examples**

To restore any OSS directory, specify the directory on tape to be restored. The directory and all its subordinate objects are restored to disk unless you specifically excluded them using a WHERE expression or job options.
Restoring All OSS Objects

To restore all OSS objects that are backed up on tape, specify `oss-source-directory/`. For example:

```
BR> RESTORE $mytape, OSS /;
```

Restoring an OSS Directory and Subordinate Objects

To restore one OSS directory and all its subdirectories:

```
BR> RESTORE =mytape, OSS /usr ;
```

This example restores the user directory (`/usr, /usr/usr1, /usr/usr2, /usr/usr3`) from `/usr` object on the tape to the same parent directory it was backed up from. The resulting directory is:

```
/  
  usr
  usr1
  usr2
  usr3
```

Restoring an OSS Object to a Different Target

To restore an OSS object to a directory other than the one the tape version originally came from, specify a target directory. The target directory must exist before you specify the RESTORE command.

• To restore `/usr` as a subdirectory of the `/mpl` directory:

```
BR> RESTORE =mytape, OSS (/usr, TARGET /mpl );
```

The resulting directory is:

```
/mpl
  usr
    usr1
    usr2
    usr3
```

• To restore objects to different target directories, specify a TARGET. If you do not specify a target, the objects are restored to the same parent directory they were backed up from:

```
BR> RESTORE =mytape, OSS((/usr/bin, TARGET /newdir ),
BR+> "/x/space delimited dirname", (/home/sv/myfile, TGT
BR+> /home/sv), /usr/local/bin);
```

These OSS objects are restored to disk:

- All the objects under the directory `/usr/bin` are restored to a different target directory `/newdir`. This directory must already exist.
- All the objects under the directory `"/x/space delimited dirname"` are restored to the same parent directory it was backed up from.
- The file `/home/sv/myfile` are restored to a different target directory `/home/sv`. This directory must already exist.
- The symbolic link `/usr/local/bin` is restored to the same parent directory it was backed up from.
The resulting directory structure is:

```
/newdir
  usr/bin

/home/sv
  home/sv/myfile
/
  usr/local/bin
```

**Restoring OSS Objects With Filtering**

To exclude OSS files from the restore operation, you can use a WHERE expression to filter by qualifying criteria such as the modification time or owner. Filtering does not apply to OSS directories.

- To filter OSS objects by modification time, specify a WHERE expression and the MODTIME timestamp:

```
RESTORE =mytape, OSS (/etc/rc, /var/x) WHERE MODTIME AFTER JAN 17 1999;
```

The WHERE expression in this example applies to both the `/etc/rc` and `/var/x` directories. Assume this directory structure:

```
/etc Directory
  rc File in the /etc directory (last modified on 20 JAN 1999)
/var Directory
  x File in the /x directory (last modified on 12 DEC 1998)
```

The `/etc` and `/var` directories are both restored. The `x` file is not restored.

- If you specify a WHERE expression for one set of OSS objects, you must specify a WHERE expression for each other set of OSS objects in the command. For example:

```
RESTORE =mytape, OSS ((/usr/bin, /TGT /newdir),
  /usr/local/bin) WHERE (EOF > 2000000 AND OWNER = software.sitaramv),
  ((/home/sv/myfile, TARGET /home/sv),
  /etc/rc, /var/x ) WHERE MODTIME AFTER JAN 17 2005);
```

In this example:
- The first WHERE expression applies only to `/usr/bin` and `/usr/local/bin`.
- The second WHERE expression applies only to `/home/sv/myfile`, `/etc/rc`, `/var/x`.

Assume this directory structure on tape:

```
/usr Directory
  /bin Subdirectory of the /usr directory
/local Directory
  /bin Subdirectory of the /local directory
    /file1 File in the /bin directory (1000000 bytes and owned by software.sitaramv)
    /file2 File in the /bin directory (2500000 bytes and owned by software.sitaramv)
/home Directory
```

136  Restoring OSS Objects With Filtering
All directories are restored. Filtering does not apply to OSS directories. The /local/bin/file1, /home/sv/myfile, etc/rc, and var/x files are not restored.

Do not specify a WHERE expression for one set of OSS objects but not for the other set of OSS objects. For example:

```
BR> RESTORE =mytape, OSS (((/usr/bin, TGT /newdir),
BR+> /usr/local/bin) WHERE (EOF > 2000000 AND OWNER =
BR+> software.sitaramv), ((/home/sv/myfile, TARGET /home/sv),
BR+> /etc/rc, /var/x );
```

An error would occur.

**Restoring OSS Objects Including Mount Points**

To include the files from another fileset in the restore, specify the FOLLOWMOUNTPTS ON job option. For example:

```
BR> RESTORE =mytape, OSS /usr, FOLLOWMOUNTPTS ON ;
```

In this example, /local is a mount point in this OSS directory structure:

```
/usr/bin
/usr/local/home
/usr/local/home/fred
/usr/local/home/bill
```

- If the local fileset is mounted on the OSS file-system prior to the restore operation, local remains a mounted fileset after the restore.
- However, if /local is not mounted on the OSS file system prior to the restore, /local becomes a directory on the /usr fileset and not a separately mounted fileset.

**Restoring OSS Objects Excluding Mount Points**

To restrict the restore to objects destined for the fileset to which the specified target directory belongs, use the FOLLOWMOUNTPTS OFF job option. For example:

```
BR> RESTORE =mytape, OSS /usr, FOLLOWMOUNTPTS OFF ;
```
The /local directory is a mount point in this OSS directory structure:

```
/usr/bin
/usr/local/home
/usr/local/home/fred
/usr/local/home/bill
```

This directory is produced:

```
/usr/bin
```

Because the /local directory is a mount point, the /home subdirectory and the fred and bill files are not restored.

The mount point exclusion applies to the entire set of directories and files, not to the objects on tape. OSS files set information is not stored for objects on tape.

**Restoring OSS Hard Links**

A hard-linked file has multiple file names associated with a single inode number. The inode number is the internal storage pointer to the disk file. In these examples, the /usr/project/file1, /usr/project/file2, and /usr/project/file3 are hard links to the same file.

- To restore hard link, you must restore the complete set of hard-linked files. For example:

  ```
  BR> RESTORE =mytape, OSS (/usr/project/file1, /usr/project/file2, /usr/project/file3 );
  ```

  If you have backed up and restored all the hard links, the links all point to a single inode. If you backed up an incomplete set of hard links, the hard links are severed after you restore the files. If you backed up only file1 and file2, file3 remains pointing to the original inode and its contents. Files file1 and file2 point to another inode and its contents. Therefore, the hard links are effectively severed from file3 to file1 and file2.

- Do not restore an incomplete set of hard-linked files. For example:

  ```
  BR> RESTORE =mytape, OSS (/usr/project/file1, /usr/project/file2);
  ```

  You have not restored /usr/project/file3. Because you did not restore the complete set, this command might result in these objects not getting restored. Instead error messages are generated indicating that the link could not be created.

**Restoring OSS Objects Containing ACLs**

To restore ACLs contained in OSS objects specify the OSSACL job option. For example:

```
BR> RESTORE $m1,OSS (/acls/file1,tgt /acls/tmp1),ossacl on,listall on,tapedisposition bot;
```

**Restoring OSS object with target and where clause**

To restore OSS object with target and where clause, specify restore command with target directory and where expression. For example,

```
BR> RESTORE $vtape8, OSS ((/bin/ls, tgt /tmp)) WHERE (CREATIONTIME BEFORE JAN 24 2015 AND OWNER = super.super), LISTALL ON,tapedisposition bot;
```
SQL/MX Restore Examples

When you specify an SQL/MX object, that object and all its subordinate objects are restored with these exceptions:

- Any catalogs and schemas that already exist on disk are left unchanged.
- Any tables that exist both on tape and on disk are dropped and then restored from tape unless the table contains constraints, views, triggers, or stored procedures. For information about dropping objects and procedures to check if a table has constraints, views, triggers, or stored procedures, see the MXCI command SHOWDDL in the SQL/MX Installation and Management Guide.

The SQL/MX examples are for:

- **Restoring with KEEPGFN Job Option** on page 141
- **Restoring All SQL/MX Catalogs** on page 142
- **Restoring an SQL/MX Catalog** on page 142
- **Restoring a Delimited SQL/MX Catalog** on page 144
- **Restoring an SQL/MX Schema** on page 144
- **Restoring a Delimited SQL/MX Schema** on page 144
- **Restoring SQL/MX Tables** on page 145
- **Restoring a Delimited SQL/MX Table** on page 146
- **Restoring SQL/MX Table Partitions** on page 146
- **Restoring a Delimited SQL/MX Table Partition** on page 147
- **Restoring SQL/MX Indexes** on page 147
- **Restoring SQL/MX Indexes Separately** on page 148
- **Restoring SQL/MX Index Partitions** on page 149
- **Restoring an SQL/MX Object to a Different Target** on page 149
- **Restoring a Delimited SQL/MX Object to a Different Target** on page 151
- **Restoring SQL/MX Objects With Filtering** on page 151
- **Restoring MX object with target and where clause** on page 152

For these SQL/MX examples, assume the database structure in **Database Structure on Tape**.

### Table 23: Database Structure on Tape

<table>
<thead>
<tr>
<th>Catalog</th>
<th>Schema</th>
<th>Table</th>
<th>Table Partition or Index</th>
<th>Index Partition</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>cat1</td>
<td>-sch1</td>
<td>-tabl</td>
<td></td>
<td></td>
<td>Subordinate schema of cat1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Subordinate table of sch1 (created on 30 SEP 2002)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Subordinate table partition of tab1 (last modified on 31 JUL 2004)</td>
</tr>
</tbody>
</table>

*Table Continued*
<table>
<thead>
<tr>
<th>Catalog</th>
<th>Schema</th>
<th>Table</th>
<th>Table Partition or Index</th>
<th>Index Partition</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-sch2</td>
<td>-tab2</td>
<td>-ind1</td>
<td>-ipart1</td>
<td>Subordinate index of tab1</td>
</tr>
<tr>
<td></td>
<td>-ipart1</td>
<td></td>
<td></td>
<td></td>
<td>Subordinate index partition of the index for tab1</td>
</tr>
<tr>
<td></td>
<td>-tpart1</td>
<td>-tab1</td>
<td>-sch3</td>
<td>-tab2</td>
<td>Subordinate table of sch2 (created on 31 JAN 2003)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Subordinate table partition of tab2</td>
</tr>
<tr>
<td></td>
<td>-tpart2</td>
<td></td>
<td></td>
<td></td>
<td>Subordinate table partition of tab2 (last modified on 31 AUG 2002)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-tpart5</td>
<td>Subordinate table partition of tab2</td>
</tr>
<tr>
<td>cat2</td>
<td>-sch1</td>
<td>-tab1</td>
<td></td>
<td></td>
<td>Subordinate table of sch1</td>
</tr>
</tbody>
</table>

*Table Continued*
<table>
<thead>
<tr>
<th>Catalog</th>
<th>Schema</th>
<th>Table</th>
<th>Table Partition or Index</th>
<th>Index Partition</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>-tpart1</td>
<td></td>
<td>Subordinate table partition of tab1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>-tpart2</td>
<td></td>
<td>Subordinate table partition of tab1 (last modified on 30 Nov 2002)</td>
</tr>
<tr>
<td>cat3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Catalog</td>
</tr>
</tbody>
</table>

Restoring with KEEPGFN Job Option

The KEEPGFN job option is used to specify whether the Guardian file names of table and index partitions have to be retained or not during the restore operation.

To restore the schema cat1.sch1 to the target catalog cat2:

RESTORE $tape, MX (SCHEMA cat.sch, target CATALOG cat), KEEPGFN ON, listall on, tapedisposition bot;

On restoring to a remote or a local node:

- If the target schema cat2.sch1 exists, the physical file names will be retained as that of BACKUP-OBJECTS and the subvolume name of the cat2.sch1 will be used.
- If the target schema cat2.sch1 does not exist:
  - If the subvolume name of BACKUP-OBJECTS is already used by any schema, the restore of schema cat2.sch1 and all its table and indexes are skipped.
  - If the subvolume name of BACKUP-OBJECTS name is not used by any other schema, the schema cat2.sch1 will be restored with the BACKUP-OBJECTS names and subvolume name.

**NOTE:**

BACKUP-OBJECTS are the files that are copied onto the tape.

Assume that the schema cat1.sch1 has ZSDSCH01 as subvolume name and the target schema cat2.sch1 already exists with the subvolume ZSDSCH02.

To restore the table cat1.sch1.tab1 to the target schema cat2.sch1 using LOCATION job option:

RESTORE $tape01, MX (table cat1.sch1.tab1, target schema cat2.sch1), KEEPGFN ON, location ($data01 TO $System1 , $data02.ZSDSCH01.TPARTB00 TO $system2.ZSDSCH02.PARTTB00) , listall on, tapedisposition BOT;

- The partition at $data02.ZSDSCH01.TPARTB00 will be restored to $System02.ZSDSCH02.PARTTB00.
- All partitions on volume $data01 will be restored to volume $system1. Guardian physical file names of all partitions under $data01 will be retained as is in the BACKUP-OBJECTS and subvolume name of the cat2.sch1 will be used.
- The Guardian file names of remaining partitions will be retained as is in the backup image under the subvolume name of the cat2.sch1.
Assume that the schema cat1.sch1 has two tables, table1 and table2 and the target schema cat2.sch1 has one table, table1 and the cat1.sch1 is backed up.

To restore the schema cat1.sch1 to the target catalog cat2 with KEEP ON job option:

```
RESTORE $tape01, MX (schema cat1.sch1, target catalog cat2),
KEEP ON, KEEPFN ON, listall on, tapedisposition bot;
```

The restore of table cat2.sch1.table1 will be skipped since the KEEP is ON and cat2.sch1.table1 already exists. Hence, KEEPFN has no impact on table cat2.sch1.table1. However, cat2.sch1.table2 will be restored by retaining the Guardian physical file names of BACKUP-OBJECTS.

Assume that the table cat1.sch1.tab1 has four table partitions, TPART0, TPART1, TPART2, and TPART3 and the target table cat2.sch1.tab1 has only two partitions TPART0 and TPART1.

To restore all the partitions under the table cat1.sch1.tab1 to the target table cat2.sch1.tab1 using PARTONLY ON job option:

```
RESTORE $sa2, mx ( tpart cat1.sch1.tab1 partition ( TPART0, TPART1, TPART2, TPART3 ), tgt table cat2.sch1.tab1 ),KEEPGFN
ON, PARTONLY ON, INDEXES EXCLUDED, CONSTRAINTS EXCLUDED,listall on, tapedisposition bot;
```

- As PARTONLY is ON, the Guardian file names of partitions cat2.sch1.tab1.TPART0 and cat2.sch1.tab1.TPART1 are retained same as the Guardian file names of partitions cat2.sch1.tab1.TPART0 and cat2.sch1.tab1.TPART1 rather than the Guardian file names of partitions as is in the BACKUP-OBJECTS and the subvolume name of cat2.sch1 will be used.
- On restore, the Guardian file names of partitions cat2.sch1.tab1.TPART2 and cat2.sch1.tab1.TPART3 are retained same as the BACKUP-OBJECTS and the subvolume name of cat2.sch1 will be used.

To restore the schema cat1.sch1:

```
RESTORE $tape01, mx(schema cat1.sch1), listall on,
tapedisposition bot;
```

- If the schema cat1.sch1 already exists with the subvolume name as that of the BACKUP-OBJECTS, the schema will be restored with the subvolume name and physical file names of the partitions as that of the BACKUP-OBJECTS.
- While restoring to the remote node, if the schema cat1.sch1 already exists with the subvolume name different from the BACKUP-OBJECTS, then while restoring table or index partitions under the schema, the subvolume name of the existing schema will be used and the file names will be as that of the BACKUP-OBJECTS.

### Restoring All SQL/MX Catalogs

To restore all objects in all the catalogs:

```
BR> RESTORE =mytape, MX CATALOG *;
```

All the catalogs and their subordinate objects as shown in Database Structure on Disk are restored.

### Restoring an SQL/MX Catalog

To restore all objects in the catalog, cat1:

```
BR> RESTORE =mytape, MX CATALOG cat1;
```

Catalog cat1 and all its subordinate objects as shown in Catalog and Subordinate Objects Restored are restored.
Table 24: Catalog and Subordinate Objects Restored

<table>
<thead>
<tr>
<th>Catalog</th>
<th>Schema</th>
<th>Table</th>
<th>Table Partition or Index</th>
<th>Index Partition</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>cat1</td>
<td>-sch1</td>
<td>-tab1</td>
<td>-tpart1</td>
<td>-ipart1</td>
<td>Subordinate table partition of the index for tab1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Subordinate index of tab1</td>
</tr>
<tr>
<td></td>
<td>-sch2</td>
<td>-tab2</td>
<td>-tpart1</td>
<td>-tpart2</td>
<td>Subordinate table partition of tab2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Subordinate table partition of tab2 (last modified on 31 AUG 2002)</td>
</tr>
<tr>
<td></td>
<td>-sch3</td>
<td></td>
<td></td>
<td>-tpart5</td>
<td>Subordinate table partition of tab2</td>
</tr>
</tbody>
</table>

*Table Continued*
### Table 25: Schema and Subordinate Objects Restored

<table>
<thead>
<tr>
<th>Catalog</th>
<th>Schema</th>
<th>Table</th>
<th>Table Partition or Index</th>
<th>Index Partition</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>cat1.sch2</td>
<td></td>
<td>-tab2</td>
<td></td>
<td></td>
<td>Subordinate schema of cat1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>-tpart1</td>
<td></td>
<td></td>
<td>Subordinate table partition of tab2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>-tpart2</td>
<td></td>
<td></td>
<td>Subordinate table partition of tab2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>-tpart5</td>
<td></td>
<td></td>
<td>Subordinate table partition of tab2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Restoring a Delimited SQL/MX Catalog

To restore all objects in “CATalog1”:

```sql
BR> RESTORE =mytape, MX CATALOG "CATalog1";
```

### Restoring an SQL/MX Schema

To restore all objects in cat1.sch2:

```sql
BR> RESTORE =mytape, MX SCHEMA cat1.sch2;
```

Schema cat1.sch2 and all its subordinate objects as shown in **Schema and Subordinate Objects Restored** are restored.

### Restoring a Delimited SQL/MX Schema

To restore all objects in “CATalog1”.”SCHEMA1”

```sql
BR> RESTORE =mytape, MX SCHEMA “CATalog1” .”SCHEMA1”;
```
Restoring SQL/MX Tables

To restore all objects in table cat1.sch2.tab2:

BR> RESTORE =mytape, MX TABLE cat1.sch2.tab2;

The table cat1.sch2.tab2 and all its subordinate objects as shown in Table and Subordinate Objects Restored are restored.

Table 26: Table and Subordinate Objects Restored

<table>
<thead>
<tr>
<th>Catalog</th>
<th>Schema</th>
<th>Table</th>
<th>Table Partition or Index</th>
<th>Index Partition</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>cat1.sch2.ta b2</td>
<td></td>
<td></td>
<td>Subordinate table of cat1.sch2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-tpart1</td>
<td></td>
<td></td>
<td>Subordinate table partition of tab2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-tpart2</td>
<td></td>
<td></td>
<td>Subordinate table partition of tab2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-tpart5</td>
<td></td>
<td></td>
<td>Subordinate table partition of tab2</td>
</tr>
</tbody>
</table>

To restore all objects in two tables:

BR> RESTORE =mytape, MX (TABLE cat1.sch1.tab1, TABLE
BR+> cat1.sch2.tab2);

Both tables and all their subordinate objects as shown in Two Tables and Subordinate Objects Restored are restored:

Table 27: Two Tables and Subordinate Objects Restored

<table>
<thead>
<tr>
<th>Catalog</th>
<th>Schema</th>
<th>Table</th>
<th>Table Partition or Index</th>
<th>Index Partition</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>cat1.sch1.ta b1</td>
<td></td>
<td></td>
<td>Subordinate table of cat1.sch1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-tpart1</td>
<td></td>
<td></td>
<td>Subordinate table partition of tab1</td>
</tr>
</tbody>
</table>

Table Continued
<table>
<thead>
<tr>
<th>Catalog</th>
<th>Schema</th>
<th>Table</th>
<th>Table Partition or Index</th>
<th>Index Partition</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>-tpart2</td>
<td></td>
<td>Subordinate table partition of tab1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>-ind1</td>
<td></td>
<td>Subordinate index of tab1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-ipart1</td>
<td>Subordinate index partition of the index for tab1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>cat1.sch1.tab2</td>
<td></td>
<td>Subordinate table of cat1.sch2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>-tpart1</td>
<td></td>
<td>Subordinate table partition of tab2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>-tpart2</td>
<td></td>
<td>Subordinate table partition of tab2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>-tpart5</td>
<td></td>
<td>Subordinate table partition of tab2</td>
</tr>
</tbody>
</table>

**Restoring a Delimited SQL/MX Table**

To restore all objects in “Table1”:

```
BR> RESTORE =mytape, MX TBL “CATalog1”.“SCHema1”.“TAble1”;  
```

**Restoring SQL/MX Table Partitions**

When you restore a table, the table’s partitions are also restored. To restore only an individual table partition, you must specify the PARTONLY ON job option. For example:

```
BR> RESTORE =mytape, MX TPART cat1.sch2.tab2 PARTITION
BR+> (TPART5), PARTONLY ON, INDEXES EXCLUDED, CONSTRAINTS
BR+> EXCLUDED ;
```

As shown in **Individual Table Partition Restored**, only TPART5 is restored.
Table 28: Individual Table Partition Restored

<table>
<thead>
<tr>
<th>Catalog</th>
<th>Schema</th>
<th>Table</th>
<th>Table Partition or Index</th>
<th>Index Partition</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>tpart5</td>
<td></td>
<td>Subordinate table partition of cat1.sch2.tab2</td>
</tr>
</tbody>
</table>

If you restore individual table partitions, you must specify INDEXES EXCLUDED and CONSTRAINTS EXCLUDED. For example:

```
BR> RESTORE =mytape, MX (TABLE cat1.sch1.tab1, TPART
BR+> cat1.sch2.tab2 PARTITION (TPART5)), PARTONLY ON, INDEXES
BR+> EXCLUDED, CONSTRAINTS EXCLUDED;
```

The objects shown in **Individual Table Partitions Restored Excluding Indexes, Index Partitions, and Constraints** are restored. The indexes, index partitions, and constraints subordinate to the specified table are not restored.

Table 29: Individual Table Partitions Restored Excluding Indexes, Index Partitions, and Constraints

<table>
<thead>
<tr>
<th>Catalog</th>
<th>Schema</th>
<th>Table</th>
<th>Table Partition or Index</th>
<th>Index Partition</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Subordinate table of sch1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>-tpart1</td>
<td></td>
<td>Subordinate table partition of tab1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>-tpart5</td>
<td></td>
<td>Subordinate table partition of cat1.sch2.tab2</td>
</tr>
</tbody>
</table>

**Restoring a Delimited SQL/MX Table Partition**

To restore individual delimited table partitions, PARt1 and PARt2, you must specify the PARTONLY ON job option. For example:

```
BR> RESTORE =mytape, MX (TPART "CATalog1"."SHEMA1"."TAble1"
BR+>PARTITION ("PARt1", "PARt2")), PARTONLY ON, INDEXES
BR+> EXCLUDED, INDEXES EXCLUDED;
```

**Restoring SQL/MX Indexes**

INDEXES INCLUDED is the default. When you restore a table, the table’s indexes and index partitions are restored unless you specify the INDEXES EXCLUDED job option. In this example, INDEXES INCLUDED is not specified but is assumed:

```
BR> RESTORE =mytape, MX TABLE cat1.sch1.tab1;
```
You can also specify INDEXES INCLUDED. For example:

```
BR> RESTORE =mytape, MX (TABLE cat1.sch1.tab1), INDEXES INCLUDED;
```

For both these commands, the objects shown in Table and Subordinate Objects Restored Including the Index and Index Partition are restored:

**Table 30: Table and Subordinate Objects Restored Including the Index and Index Partition**

<table>
<thead>
<tr>
<th>Catalog</th>
<th>Schema</th>
<th>Table</th>
<th>Table Partition or Index</th>
<th>Index Partition</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>cat1.sch1.tab1</td>
<td>-tpart1</td>
<td>-ind1</td>
<td>Subordinate table of cat1.sch1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>-tpart1</td>
<td>-ind1</td>
<td>Subordinate table partition of tab1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-ipart1</td>
<td>Subordinate index of the index for tab1</td>
</tr>
</tbody>
</table>

To exclude the indexes and index partitions, specify this command:

```
BR> RESTORE =mytape, MX TABLE cat1.sch1.tab1, INDEXES EXCLUDED;
```

These objects as shown in Table Restored Excluding Indexes and Index Partitions are restored but the indexes and index partitions are not restored:

**Table 31: Table Restored Excluding Indexes and Index Partitions**

<table>
<thead>
<tr>
<th>Catalog</th>
<th>Schema</th>
<th>Table</th>
<th>Table Partition or Index</th>
<th>Index Partition</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>cat1.sch1.tab1</td>
<td>-tpart1</td>
<td></td>
<td>Subordinate table of cat1.sch1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>-tpart1</td>
<td></td>
<td>Subordinate table partition of tab1</td>
</tr>
</tbody>
</table>

**Restoring SQL/MX Indexes Separately**

To restore indexes individually, specify the INDEX option. For index restores, mention the target table.
For more information on target keyword, see Restoring an SQL/MX Object to a Different Target on page 149. For example:

BR> RESTORE $tape01, MX (IND cat.sch.ind1, TGT TABLE cat.sch.t1);

Restoring SQL/MX Index Partitions

To restore index partitions individually, specify the IPART option. For example:

Restore $tape01, mx (IPART cat.sch.i1 PARTITION (ipart5)) PARTONLY ON;

Restoring an SQL/MX Object to a Different Target

You can specify a target object to graft SQL/MX objects from tape to a different SQL/MX object hierarchy on disk than the one the tape version originally came from.

To restore an object to a different target:

BR> RESTORE $vtape3, MX(TABLE cat1.sch2.tab2, TGT SCHEMA cat1.schema3),listall on,tapedisposition bot;

As shown in SQL/MX Object Restored to a Different Target, the schema is restored as a subordinate object of sch3 rather than sch2.

Table 32: SQL/MX Object Restored to a Different Target

<table>
<thead>
<tr>
<th>Catalog</th>
<th>Schema</th>
<th>Table</th>
<th>Table Partition or Index</th>
<th>Index Partition</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>cat1.sch3</td>
<td></td>
<td></td>
<td>Subordinate table of schema3</td>
</tr>
</tbody>
</table>

You can also restore object to a different target at the same level. For example:

BR> RESTORE =mytape, MX (CATALOG cat1, TGT catalog cat2);
BR> RESTORE =mytape, MX (SCH cat1.sch1, TGT SCH cat2.sch2);
BR> RESTORE =mytape, MX (TABLE cat1.sch1.tab1, TGT TABLE cat2.sch2.tab2);

You can also restore some objects to a different target and others to the same parent object they were backed up from. For example:

BR> RESTORE $vtape3, MX(TABLE cat1.sch2.tab2, TGT SCHEMA cat1.schema3),listall on,tapedisposition bot;

As shown in Some SQL/MX Objects Restored to a Different Target:

- The table sch1.tab1 and all its partitions backed up from schema cat2.sch1 are restored to schema cat3.sch1.
- The table partition TPART5 backed up from the table cat2.sch1.tab2 is restored to table cat1.sch3.tab3.
- However, all the objects from the backup job under the catalog cat1 are restored to the same parent object they were backed up from.
Table 33: Some SQL/MX Objects Restored to a Different Target

<table>
<thead>
<tr>
<th>Catalog</th>
<th>Schema</th>
<th>Table</th>
<th>Table Partition or Index</th>
<th>Index Partition</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>cat1</td>
<td>-sch1</td>
<td>-tab1</td>
<td>-tpart1</td>
<td></td>
<td>Subordinate schema of cat1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Subordinate table of sch1</td>
</tr>
<tr>
<td></td>
<td>-sch2</td>
<td>-tab2</td>
<td>-tpart1</td>
<td>-tpart2</td>
<td>Subordinate schema of cat1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Subordinate table of sch2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Subordinate table partition of tab2</td>
</tr>
<tr>
<td></td>
<td>-sch3</td>
<td>-tab3</td>
<td>-tpart3</td>
<td>-tpart5</td>
<td>Subordinate schema of cat1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Subordinate table of sch3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Subordinate table partition of tab3</td>
</tr>
<tr>
<td></td>
<td>cat3</td>
<td>-sch1</td>
<td>-tpart5</td>
<td></td>
<td>Subordinate schema of cat1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Catalog</td>
</tr>
</tbody>
</table>

*Table Continued*
Consider the following points while restoring partitions to an alternate target table:

- While restoring a table partition, if the target table has partitions in it, ensure that the partition range matches with the partition range in the backed up image. If the partitions do not exist, they will be created during the restore operation.
- If the ranges of table partitions mismatch with the ones that are in the backup image, BR2 will create new partitions with the same name as in the backup image and restore the data. This will result in an inconsistent table.
- If the names of the target table partitions match with the partition names in the source but their ranges mismatch, BR2 will restore the data to the partitions whose names match. This will result in an inconsistent table.

**NOTE:**
The behavior for index partitions with respect to indexes will be same as mentioned for the target tables.

---

**Restoring a Delimited SQL/MX Object to a Different Target**

To restore a delimited SQL/MX object to a different delimited target:

```
BR> RESTORE =mytape, MX  (SCHEMA "CATalog1"."SCHema1", TGT CATALOG "SAMPle").
```

**Restoring SQL/MX Objects With Filtering**

You can use a WHERE expression to select and exclude the SQL/MX objects to be restored. For example, you can filter SQL/MX table partitions by the modification time.

```
BR> RESTORE =mytape, MX(TPART cat2.sch1.tab1 PARTITION (TPART2)) WHERE (MODTIME BEFORE 12 DEC 2000),
BR+> PARTONLY ON, INDEXES EXCLUDED, CONSTRAINTS EXCLUDED;
```

Because TPART2 was modified after 12 DEC 2000, no objects are restored and an error occurs.

For more information, see [Filters for SQL/MX Objects](#) on page 117.

**Restore Examples With Both OSS and SQL/MX Objects**

This example restores both OSS and SQL/MX objects with filtering and without indexes or constraints:

```
BR> RESTORE $vtape3, OSS (((/usr/bin, TGT /newdir),
/usr/local/bin) WHERE (EOF > 200000 AND OWNER =
```
software.sitaramv), ((/home/sv/myfile, TGT /home/sv),
/etc/rc, /var/x) WHERE MDTIME AFTER JAN 17 1999), MX
((CATALOG cat1, (TABLE cat2.sch2.tab1, TGT SCH cat3.sch3),
(TPART cat2.sch.tab2 PARTITION (tpart5),
TGT Tbl catn1.schn1.tab3)) WHERE (CREATIONTIME BEFORE 12 DEC 2000)), TAPEDEPOSITION NOREWIND, INDEXES EXCLUDED,
CONSTRAINTS EXCLUDED,PARTONLY ON;

The same example is formatted to show different parts of the command. It clearly shows which parts of the source specification apply to each WHERE expression:

RESTORE $vtape3,
OSS
{
{
(/usr/bin, TGT /newdir)/usr/local/bin
)
WHERE (EOF > 200000 AND OWNER = software.sitaramv),
{
(/home/sv/myfile, TGT /home/sv), /etc/rc, /var/x
)
WHERE MDTIME AFTER JAN 17 1999
},
MX
{
{
CATALOG cat1,
(TABLE cat2.sch2.tab1, TGT SCH cat.sch3),
(TPART cat2.sch.tab2 PARTITION (tpart5), TGT TBl
catn1.schn1.tab3)
)
WHERE (CREATIONTIME BEFORE 12 DEC 2000)
},
TAPEDEPOSITION NOREWIND
, CONSTRAINTS EXCLUDED
, INDEXES EXCLUDED
, PARTONLY ON
;

Restoring MX object with target and where clause

To restore MX object with target and where clause, specify restore command with target directory and where expression. For example,

BR> RESTORE $vtape8, MX ((SCH catx1.schemax, TGT SCH catx.SCH1))
WHERE(CREATIONTIME BEFORE DEC 24 2015 AND OWNER = super.super),
LISTALL ON, TAPEDEPOSITION bot;
Monitoring Backup and Restore 2 Jobs

This section describes troubleshooting Backup and Restore 2 jobs.

Monitoring Job Information

You can use BRCOM, MEDIACOM, and EMS event messages to monitor job information:

- **Using DSM/TC (MEDIACOM)** on page 153
- **Using EMS Event Messages** on page 153
- **Using BRCOM to Display Current Status for a Job** on page 153

Using EMS Event Messages

You must monitor the EMS events for job status. Many errors that require operator intervention are reported only through EMS events. For information about the event messages for BRCOM, see the *Operator Messages Manual*.

Using DSM/TC (MEDIACOM)

You can use MEDIACOM to monitor and manage mount requests.

Using BRCOM to Display Current Status for a Job

**NOTE:**

When you issue a BACKUP or RESTORE command, even with the LISTALL or LISTONLY job options, you must use the STATUS JOB command to obtain information about the job state. For an explanation of the job states, see *Monitoring Job States* on page 158.

To display current status information about a job ID, use the BRCOM STATUS JOB command:

- **Brief Job Status—Backup Job** on page 153 shows the brief job status of a backup job.
- **Brief Job Status—Backcopy Job** on page 154 shows the brief job status of a backcopy job.
- **Detail Job Status—Backup Job** on page 154 shows the brief job status of a backup job.
- **Detail Job Status—Backcopy Job** on page 155 shows the brief job status of a backcopy job.

To quickly check the status of a job, use the STATUS JOB, BRIEF command. BRIEF is the default, so it does not have to be specified. For example, these two commands are equivalent:

```
BR> STATUS JOB zbr005be, BRIEF;
BR> STATUS JOB zbr005be;
```

**Brief Job Status—Backup Job**

```
BR> status job ZBR005BE;
DMA   Service Processes
 JOB  Owner  Op  Status  Proc  Source Dest1  Dest2  RSTRT Parent
-------- ------- ----- ------ -----  ------  -----   -----  ------
ZBR005BE 255,255 BACK  DONE  $X87G  $X87H  $X87J    NO
```
Brief Job Status—Backcopy Job

BR> status job ZBR000CC;

<table>
<thead>
<tr>
<th>JOB</th>
<th>Owner</th>
<th>Op</th>
<th>Status</th>
<th>DMA Service Processes</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZBR000CC</td>
<td>255</td>
<td>255</td>
<td>BCOPY</td>
<td>DONE $Z23B $Z23D $Z23D NO</td>
</tr>
</tbody>
</table>

Field Description

**JOB**
The ID of the job for which status information was retrieved.

**Owner**
The owner of the job.

**Op**
The operation being performed:
- BACK
- PBACK
- REST
- BCOPY

**Status**
For more information, see Monitoring Job States on page 158.

**DMA Proc**
The process name of the DMA.

**Service Processes**
The process name of the source service. For a backup job, the source is the Data Service. For a restore job, the source is the Tape Service.

**Dest1**
The process name of the first destination service. For a backup job, the first destination service is the Tape Service. For a restore job, the first destination service is the Data Service.

**Dest2**
The field does not provide any information.

**RSTRT**
Operation is a RESTART or not.

**Parent**
For a RESTART job, job id which was restarted.

Detail Job Status—Backup Job

BR> STATUS JOB zbr005be, DETAIL;
Job                         ZBR005BE
Restarted                   No
Parent Job ID
Owner  255,255
Start Time  2/18/2004 7:32:22
End Time  2/18/2004 7:46:49
Operation  BACKUP
Status  DONE
Objects Processed  6
Objects Skipped  0
Objects Not Found  0
Megabytes Moved  1000
Tapes Used  1
Operation Running Time  0:11:54
Bytes Processed  0
Bytes Remaining  0
Estimated Time Remaining  0:00:00
Message in Progress  N/A

DMA
  Process  \SLOTS.$X87G
  Cpu  3
  Pri  10

Source Service
  Process  \SLOTS.$X87H
  Cpu  3
  Pri  10

Destination Service
  Process  \SLOTS.$X87J
  Cpu  3
  Pri  10

Tapedrive  =mnlout

Detail Job Status—Backcopy Job

BR> status job ZBR000D5,detail;
Job  ZBR000D5
Restarted  NO
Parent Job ID
Owner  255,255
End Time  3/17/2006 3:30:03
Operation  BACKCOPY
Status  DONE
Objects Processed  6
Objects Skipped  0
Objects Not Found  0
Megabytes Moved  0
Tapes Used  1
Operation Running Time  0:00:00
Message in Progress  N/A

DMA
  Process  \DMR01.$Z4BQ
<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Job</td>
<td>The ID of the job for which status information was retrieved.</td>
<td></td>
</tr>
<tr>
<td>Restarted</td>
<td>Operation is a RESTART or not.</td>
<td></td>
</tr>
<tr>
<td>Parent Job ID</td>
<td>If job is a restarted job, then Job ID of the parent job</td>
<td></td>
</tr>
<tr>
<td>Owner</td>
<td>The owner of the job.</td>
<td></td>
</tr>
<tr>
<td>Start Time</td>
<td>The day and time the job was started.</td>
<td></td>
</tr>
<tr>
<td>End Time</td>
<td>The day and time the job ended.</td>
<td></td>
</tr>
<tr>
<td>Operation</td>
<td>The operation being performed:</td>
<td></td>
</tr>
<tr>
<td>BACKUP</td>
<td>Backup</td>
<td></td>
</tr>
<tr>
<td>PARALLEL BACKUP</td>
<td>Parallel Backup</td>
<td></td>
</tr>
<tr>
<td>RESTORE</td>
<td>Restore</td>
<td></td>
</tr>
<tr>
<td>BACKCOPY</td>
<td>Backcopy</td>
<td></td>
</tr>
<tr>
<td>Status</td>
<td>The status of the job.</td>
<td>For more information, see Monitoring Job States on page 158</td>
</tr>
<tr>
<td>Objects Processed</td>
<td>The number of objects processed.</td>
<td></td>
</tr>
<tr>
<td>Field</td>
<td>Description</td>
<td>Comments</td>
</tr>
<tr>
<td>----------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Objects Skipped</td>
<td>The number of objects skipped.</td>
<td>If a media error occurs and you specified the IGNORE OFF job option, the object is included in the number of objects skipped. If you specified the IGNORE ON job option, the file is not included in the number of objects skipped. Also, this includes all the objects which are not restored as they already exist.</td>
</tr>
<tr>
<td>Objects Not Found</td>
<td>The number of objects not found.</td>
<td></td>
</tr>
<tr>
<td>Megabytes Moved</td>
<td>The number of megabytes moved for all objects processed.</td>
<td>This value is updated in the job record periodically.</td>
</tr>
<tr>
<td>Tapes Used</td>
<td>The total number of tapes used.</td>
<td></td>
</tr>
<tr>
<td>Operation Running Time</td>
<td>Elapsed time since operation started.</td>
<td>This value is updated in the job record periodically.</td>
</tr>
<tr>
<td>Bytes Processed</td>
<td>Total number of bytes that have been processed by a verifytape operation.</td>
<td>A value is displayed only if you used the VERIFYTAPE job option. Otherwise, the value is 0.</td>
</tr>
<tr>
<td>Bytes Remaining</td>
<td>Total number of bytes remaining for a verifytape operation.</td>
<td>A value is displayed only if you used the VERIFYTAPE job option. Otherwise, the value is 0.</td>
</tr>
<tr>
<td>Estimated Remaining Time</td>
<td>Estimated time remaining for operation for a verifytape operation.</td>
<td>A value is displayed only if you used the VERIFYTAPE job option. Otherwise, the value is 0.</td>
</tr>
<tr>
<td>DMA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Process</td>
<td>The process name of the DMA.</td>
<td></td>
</tr>
<tr>
<td>CPU</td>
<td>The processor the DMA is running in.</td>
<td></td>
</tr>
<tr>
<td>Pri</td>
<td>The initial priority at which the DMA process was started.</td>
<td>If the priority of the DMA process subsequently changes, this value is not updated.</td>
</tr>
<tr>
<td>Source Service</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Process</td>
<td>The process name of the source service.</td>
<td>For a backup job, the source service is the Data Service. For a restore job, the source service is the Tape Service.</td>
</tr>
</tbody>
</table>

*Table Continued*
<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU</td>
<td>The processor of the source service</td>
<td></td>
</tr>
<tr>
<td>Pri</td>
<td>The priority of the source service.</td>
<td>If the priority of the service processes subsequently changes, the value of PRI is not updated.</td>
</tr>
<tr>
<td>Tapedrive</td>
<td>If present, the tape drive used by the source service.</td>
<td>For a backup job, there is not a tape drive for the source.</td>
</tr>
<tr>
<td>Destination Service</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Process</td>
<td>The process name of the destination service.</td>
<td>For a backup job, the first destination service is the Tape Service. For a restore job, the first destination service is the Data Service.</td>
</tr>
<tr>
<td>CPU</td>
<td>The processor of the destination service</td>
<td></td>
</tr>
<tr>
<td>Pri</td>
<td>The priority of the destination service</td>
<td></td>
</tr>
<tr>
<td>Tapedrive1</td>
<td>If present, first tapedrive used by a Parallel Backup operation.</td>
<td></td>
</tr>
<tr>
<td>Tapedrive2</td>
<td>If present, second tapedrive used by a Parallel Backup operation</td>
<td></td>
</tr>
<tr>
<td>Tapedrive</td>
<td>If present, the first tape drive used by the destination service for a parallel backup job.</td>
<td></td>
</tr>
</tbody>
</table>

**Monitoring Job States**

To monitor job states, use the STATUS JOB command. [Backup and Restore Job States](#) describes the status for backup and restore jobs.
### Table 34: Backup and Restore Job States

<table>
<thead>
<tr>
<th>Status</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABND</td>
<td>The job abended. A job might fail for several reasons. For example, a processor might be down, a file might be full (error 45), a disk might be full (error 43), or an internal error might have occurred.</td>
</tr>
<tr>
<td>ABRT</td>
<td>The job was aborted using the BRCOM ABORT JOB command.</td>
</tr>
<tr>
<td>CAT</td>
<td>The job is in the process of updating the media catalog.</td>
</tr>
<tr>
<td>DONE</td>
<td>The job has finished normally.</td>
</tr>
<tr>
<td>INIT</td>
<td>BRCOM is either starting the DMA or initializing the software to prepare for the job.</td>
</tr>
<tr>
<td>RUN</td>
<td>The job is in progress.</td>
</tr>
<tr>
<td>STOP</td>
<td>The job was stopped by a BRCOM STOP JOB command.</td>
</tr>
<tr>
<td>TERM</td>
<td>The job is in the process of stopping or aborting.</td>
</tr>
<tr>
<td>WAIT</td>
<td>Waiting on tape open</td>
</tr>
</tbody>
</table>
Websites

General websites

Hewlett Packard Enterprise Information Library
www.hpe.com/info/EIL
Hewlett Packard Enterprise Support Center
www.hpe.com/support/hpesc
Contact Hewlett Packard Enterprise Worldwide
www.hpe.com/assistance
Subscription Service/Support Alerts
www.hpe.com/support/e-updates
Software Depot
www.hpe.com/support/softwaredepot
Customer Self Repair
www.hpe.com/support/selfrepair
Manuals for L-series
http://www.hpe.com/info/nonstop-ldocs
Manuals for J-series
http://www.hpe.com/info/nonstop-jdocs
For additional websites, see Support and other resources.
Support and other resources

Accessing Hewlett Packard Enterprise Support

- For live assistance, go to the Contact Hewlett Packard Enterprise Worldwide website:
  http://www.hpe.com assistance
- To access documentation and support services, go to the Hewlett Packard Enterprise Support Center website:
  http://www.hpe.com/support/hpesc

Information to collect

- Technical support registration number (if applicable)
- Product name, model or version, and serial number
- Operating system name and version
- Firmware version
- Error messages
- Product-specific reports and logs
- Add-on products or components
- Third-party products or components

Accessing updates

- Some software products provide a mechanism for accessing software updates through the product interface. Review your product documentation to identify the recommended software update method.
- To download product updates:

  Hewlett Packard Enterprise Support Center
  www.hpe.com/support/hpesc

  Hewlett Packard Enterprise Support Center: Software downloads
  www.hpe.com/support/downloads

  Software Depot
  www.hpe.com/support/softwaredepot

  To subscribe to eNewsletters and alerts:
  www.hpe.com/support/e-updates

  To view and update your entitlements, and to link your contracts and warranties with your profile, go to the Hewlett Packard Enterprise Support Center More Information on Access to Support Materials page:
  www.hpe.com/support/AccessToSupportMaterials

⚠️ IMPORTANT:

Access to some updates might require product entitlement when accessed through the Hewlett Packard Enterprise Support Center. You must have an HPE Passport set up with relevant entitlements.

Customer self repair

Hewlett Packard Enterprise customer self repair (CSR) programs allow you to repair your product. If a CSR part needs to be replaced, it will be shipped directly to you so that you can install it at your convenience.
Some parts do not qualify for CSR. Your Hewlett Packard Enterprise authorized service provider will determine whether a repair can be accomplished by CSR.

For more information about CSR, contact your local service provider or go to the CSR website:

http://www.hpe.com/support/selfrepair

Remote support

Remote support is available with supported devices as part of your warranty or contractual support agreement. It provides intelligent event diagnosis, and automatic, secure submission of hardware event notifications to Hewlett Packard Enterprise, which will initiate a fast and accurate resolution based on your product's service level. Hewlett Packard Enterprise strongly recommends that you register your device for remote support.

If your product includes additional remote support details, use search to locate that information.

Remote support and Proactive Care information

HPE Get Connected
www.hpe.com/services/getconnected
HPE Proactive Care services
www.hpe.com/services/proactivecare
HPE Proactive Care service: Supported products list
www.hpe.com/services/proactivecaresupportedproducts
HPE Proactive Care advanced service: Supported products list
www.hpe.com/services/proactivecareadvancedsupportedproducts

Proactive Care customer information

Proactive Care central
www.hpe.com/services/proactivecarecentral
Proactive Care service activation
www.hpe.com/services/proactivecarecentralgetstarted

Warranty information

To view the warranty for your product, see the Safety and Compliance Information for Server, Storage, Power, Networking, and Rack Products document, available at the Hewlett Packard Enterprise Support Center:

www.hpe.com/support/Safety-Compliance-EnterpriseProducts

Additional warranty information

HPE ProLiant and x86 Servers and Options
www.hpe.com/support/ProLiantServers-Warranties
HPE Enterprise Servers
www.hpe.com/support/EnterpriseServers-Warranties
HPE Storage Products
www.hpe.com/support/Storage-Warranties
HPE Networking Products
www.hpe.com/support/Networking-Warranties
Regulatory information

To view the regulatory information for your product, view the Safety and Compliance Information for Server, Storage, Power, Networking, and Rack Products, available at the Hewlett Packard Enterprise Support Center:

www.hpe.com/support/Safety-Compliance-EnterpriseProducts

Additional regulatory information

Hewlett Packard Enterprise is committed to providing our customers with information about the chemical substances in our products as needed to comply with legal requirements such as REACH (Regulation EC No 1907/2006 of the European Parliament and the Council). A chemical information report for this product can be found at:

www.hpe.com/info/reach

For Hewlett Packard Enterprise product environmental and safety information and compliance data, including RoHS and REACH, see:

www.hpe.com/info/ecodata

For Hewlett Packard Enterprise environmental information, including company programs, product recycling, and energy efficiency, see:

www.hpe.com/info/environment

Documentation feedback

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This appendix describes the BRCOM error messages. When a message is displayed on your terminal, it is preceded by either **ERROR** or **WARNING**. For event messages, see the Operator Messages Manual.

## Error Messages

**2001**

| Unrecognized command. |

**Cause.** The command you specified is not recognizable.  
**Effect.** The command does not execute.  
**Recovery.** Check the syntax and specify the correct command.

**2002**

| You do not own this job and you are not a member of the Super-group. The job is owned by (job user-ID). Your user ID is (your user-ID). |

*job user-ID*  
is the user ID that owns the job.  
*your user-ID*  
is your user ID.  
**Cause.** You issued a command on a job ID you do not own.  
**Effect.** The command does not execute.  
**Recovery.** You must either own the job or be a super-group user to issue a command to this job ID.

**2003**

| Insufficient privilege to execute this command. Your user ID is (your user-ID). |

*your user-ID*  
is your user ID.  
**Cause.** You issued a command that requires a super-group user ID.  
**Effect.** The command does not execute.  
**Recovery.** Log on using a super-group user ID and reissue the command.

**2004**
Specified Job ID jobid does not exist.

jobid is a valid unique job identifier with a maximum of eight characters. The characters can be alphabetic, numeric, or a combination. The first character cannot be numeric.

Cause. You specified a job ID that does not exist.

Effect. The command has no effect.

Recovery. Determine the correct job ID and reissue the command.

2006

?, !, and FC are not allowed in obey or in-files.

Cause. You used an ! command, ? command, or FC command in a command file or an IN file.

Effect. The command does not execute. If the command occurred in an IN file, BRCOM stops processing the file and abends. If the command occurred in a command file, BRCOM stops processing the file.

Recovery. Do not use these commands in a command file or IN file.

2007

Unable to abort/stop the job because the current status must be INIT, RUN, WAIT, or CAT.

Cause. You issued an ABORT JOB or STOP JOB command for a job whose status was not INIT (initializing), RUN (running), WAIT (waiting on tape open), or CAT (cataloging).

Effect. The command does not execute.

Recovery. You normally do not need to abort or stop the job if its status is already TERM (terminating), DONE, STOP (stopped), ABRT (aborted), or ABND (abended). If the job remains in the TERM state:

Procedure

1. Use the STATUS JOB command to identify the job's data management application (DMA) process. For more information, see Using BRCOM to Display Current Status for a Job on page 153
2. Use the TACL STOP command to stop the DMA process.
3. Reissue the BRCOM ABORT JOB or STOP JOB command for the job.
4. If the Tape Service and Data Service for the job do not stop automatically, use the TACL STOP command to stop them.

2008

Unable to delete the job because the current status must be DONE, STOP, ABRT, or ABND.

Cause. You attempted to delete a job, but the job was active and could not be deleted.

Effect. The command does not execute.

Recovery. Let the job complete, or else terminate it using the ABORT JOB or STOP JOB command. You can then delete the job after it terminates or completes.
**2009**

DMA Process does not exist.

**Cause.** You issued a command on an active job, but the job's DMA process had unexpectedly terminated.

**Effect.** The command does not execute. The job's status is updated to ABND (abended). The job's end time is unknown and not updated. If you issue a DELETE JOB command with a BEFORE or AFTER qualification, the job is not deleted. For more information, see the DELETE JOB Command on page 42

**Recovery.** Examine the EMS message log to determine why the job might have failed. Retry the BACKUP or RESTORE command if necessary.

**2010**

Unable to perform CLEANUP operation because the current status is not DONE, STOP, ABRT, or ABND.

**Cause.** The CLEANUP JOB command is valid only for jobs in the DONE, STOP (stopped), ABRT (aborted), or ABND (abended) state. You issued a CLEANUP JOB command for a job that was not in one of these states.

**Effect.** The operation has no effect.

**Recovery.** Use the STATUS JOB command to identify jobs with a state of DONE, STOP, ABRT, or ABND. Issue CLEANUP JOB commands only for jobs in one of these states.

**2012**

Unable to change BRJOBSVOLUME because one or more jobs are active.

**Cause.** You attempted to change the BRJOBS volume through the ALTER CONFIG command, but one or more active jobs were found in the BRJOBS file on the current BRJOBSVOLUME. You can change the BRJOBS volume only if no jobs are active.

**Effect.** The command does not execute.

**Recovery.** To change the BRJOBSVOLUME, see Changing the Volumes for All Jobs on page 25

**2013**

No help for specified text.

**Cause.** You issued a HELP command, but no help was found for the specified topic.

**Effect.** No help is displayed.

**Recovery.** Issue the command HELP * to get a list of valid help topics. Reenter the HELP command for the desired topic.

**2014**

File system error file-system-error occurred when attempting [operation] operation on file filename.
**file-system-error**

is the number of the file-system error.

**filename**

is the name of the file.

**Cause.** A file-system error occurred when you attempted the indicated operation on the file filename.

This error might also occur when MXAGENT object is missing from $SYSTEM.SYSTEM or if the MXAGENT process fails to launch.

**Effect.** The operation does not complete. The operation is displayed if known.

**Recovery.** Determine the cause of the error based on the error number. For file-system errors, see the Guardian Procedure Errors and Messages Manual.

---

**2015**

Syntax error: detailed-error-information.

**detailed-error-information**

is the detailed error information.

**Cause.** A syntax error was found when processing the command.

**Effect.** The command does not execute.

**Recovery.** Examine the detailed error information and reissue the command with the correct syntax.

---

**2016**

Deleting invalid filename file.

**filename**

is the name of the file.

**Cause.** The indicated file, either BRJOBS or BRCONFIG, was found to be invalid.

**Effect.** The invalid file is deleted, and a new file is created. For BRJOBS, a new empty BRJOBS file is created. For BRCONFIG, a new BRCONFIG file with default configuration information is created.

**Recovery.** If necessary, restore a valid version of the file from a backup or, for BRCONFIG, reenter the desired configuration with the ALTER CONFIG command.

---

**2017**

Attempt to execute filename failed with process creation error error[, error-detail].

**filename**

is the name of the file.

**error**

is the process creation error number.
error-detail

is the detail of the error.

**Cause.** BRCOM attempted to start a new process, but a process creation error occurred.

**Effect.** The operation fails.

**Recovery.** For process creation errors, see the *Guardian Procedure Errors and Messages Manual*. Look up the indicated error and, if specified, the error detail. Correct the problem and retry the operation.

### 2018

No matching jobs were found.

**Cause.** No jobs matched the specified job ID or wild card.

**Effect.** The command has no effect.

**Recovery.** If the job ID was specified incorrectly, correct it and reissue the command.

### 2020

Text not found

**Cause.** You issued an exclamation point (!), question mark (?), or FC command, but the specified text or line number was not found in the command history buffer.

**Effect.** The command does not execute.

**Recovery.** Use the HISTORY command to list the contents of the command history buffer. Reissue the exclamation point (!), question mark (?), or FC command with the correct text or line number or enter the desired command manually.

### 2021

*Internal error: detailed error information.*

detailed-error-information

is the detailed error information.

**Cause.** An internal BRCOM error occurred.

**Effect.** Results vary.

**Recovery.** Retry the operation. If the problem persists, contact your service provider.

### 2022

No more automatically generated Job IDs available.

**Cause.** No more automatically generated job IDs are available. Automatically generated job IDs consist of the letters ZBR and a 5-digit hexadecimal number ranging from ZBR00000 through ZBRFFFFF. A job ID is in use if a job with that job ID exists in the BRJOBS file or if any files exist in the subvolume $workvolume.jobid$.

**Effect.** The operation fails. You must manually specify the job ID for backup and restore jobs until automatically generated job IDs are made available.
**Recovery.** Retry the operation, manually specifying a job ID using the JOB job option. Use the CLEANUP JOB command to purge the BRCMD file and BRIC file from old jobs. Use the DELETE JOB command to remove old jobs from the BRJOBS file. Manually purge files for old jobs.

### 2023

**Specified Job ID is in use.**

**Cannot restart, specified Job ID is in use**

**Cause.** You specified a job ID that is already in use and cannot be used for a new job. A job ID is in use if a job with that ID exists in the BRJOBS file or if any files exist in the subvolume $workvolume.jobid.

**Effect.** The operation fails.

**Recovery.** Retry the command. Either specify a job ID that is not in use or omit the JOB job option to have a job ID selected automatically.

### 2024

**Cannot run multiple Backup or Restore operations using the BRCOM home terminal.**

**Cause.** You attempted to perform a BACKUP or RESTORE command that requires the BRCOM home terminal while another backup or restore operation was already running from the same BRCOM session. For more information, see [Handling Operations That Use the BRCOM Terminal](#) on page 32.

**Effect.** The second command fails. The first operation is unaffected.

**Recovery.** Retry the command in one of these ways:

- Run another BRCOM session on another terminal and try the second command from that session.
- Retry the command from the current session, but specify an alternate output location.
  - For commands (Enscribe or SQL/MP) forwarded to the BACKUP and RESTORE utility (T9074), use the /OUT/ run option to specify an output location other than the current terminal.
  - For Backup and Restore 2 commands, use the OUT job option to specify an output location other than the current terminal.
- Retry the BACKUP or RESTORE command (OSS or SQL/MX) from the current session, but omit the LISTALL and LISTONLY job options.

### 2026

**Record record-id in file filename could not be locked. Record cannot be updated.**

**record-id**

is the identifier for the record.

**filename**

is the name of the file.

**Cause.** You attempted to perform an operation that needed to lock the record-id record from the filename file. The record could not be locked because it was already locked by another process.
Effect. The record cannot be updated, so the operation fails.

Recovery. Retry the operation. If the record remains locked, and this error occurred on a job record in the BRJOBS file, a problem might exist with the job's DMA process. If necessary, use the STATUS JOB command to identify that process and then stop it.

2028

The PAUSE command may only be run from an interactive BRCOM session.

Cause. You attempted to issue the PAUSE command from a BRCOM session that was not interactive. A BRCOM session is considered to be interactive if its IN and OUT devices are terminal devices.

Effect. The command does not execute. If the command occurred in an IN file, BRCOM stops processing the file and ABENDs. If the command occurred in a command file, BRCOM stops processing the file.

Recovery. Restart BRCOM without an IN file or an OUT file (the default is the home terminal) or set the IN file and OUT file to terminal devices.

2029

One or more errors occurred when reading BRTXT.

Cause. One or more errors occurred when BRCOM was attempting to read BRTXT, the file that contains readable text used by BRCOM. The specific error or errors are displayed prior to this error.

Effect. BRCOM uses the default English-language values for some or all readable text instead of using the text in BRTXT, which might have been customized for a particular language or location.

Recovery. To use the text in BRTXT, resolve the problems that led to the reported errors. To use BRCOM with the default English-language text, no recovery is needed.

2030

Enscribe and SQL/MP object will not be backed up.

Cause. You used Backup and Restore 2 to back up OSS or SQL/MX objects.

Effect. Enscribe and SQL/MP objects are not backed up. Backup and Restore 2 does not support Enscribe and SQL/MP objects.

Recovery. None. This is an informational message only.

2031

Restart error: <detailed error information>.

Cause. An error was found when processing the Restart command.

Effect. The command does not execute.

Recovery. Examine the detailed error information and reissue the command.

2032
Only OSS objects will be backed up.

**Cause.** You used Backup and Restore 2 to back up OSS on a system where SQL/MX is not installed.

**Effect.** Enscribe, SQL/MP, and SQL/MX objects are not backed up.

**Recovery.** None. This is an informational message only.

2033

Backup image data of BACKUP RESTORE 2 will only be copied.

**Cause.** You used Backup and Restore 2 to copy backup image data on one tape set to another tape set.

**Effect.** Legacy Backup Restore tape is not copied.

**Recovery.** None. This is an informational message only.

2034

OSS files of size greater than 2 GB cannot be restored.

**Cause.** You used Backup and Restore 2 to restore backup image which can contain OSS files greater than 2 GB size.

**Effect.** OSS files of size greater than 2 GB size will not be restored.

**Recovery.** None. This is an informational message only.

2035

OSS objects are restored without ACL data.

**Cause.** You used Backup and Restore 2 to restore backup image which can contain OSS files with ACL data.

**Effect.** OSSACL data of the files will not be restored.

**Recovery.** None. This is an informational message only.

2036

To avoid any data inconsistency issue, use TPART, INDEX, or IPART in the BACKUP or RESTORE command.

**Cause.** TPART, INDEX, or IPART keyword is used in the BACKUP or RESTORE command.

**Effect.** This message has no effect.

**Recovery.** None. This is an informational message only.

**MXAgent Messages**

814
Filter is applied on partitions while backup and/or restore operation and hence only partitions matching the filter will be restored.

**Cause.** This error occurs when the child-count sent for a particular object by BR2 does not match with the child-count that MXAgent maintains for the same object.

**Effect.** This message has no effect.

**Recovery.** None. This is an informational message only.
Comparison With the BACKUP and RESTORE Utilities

This appendix describes the differences between Backup and Restore 2 and the BACKUP and RESTORE utilities (T9074). BRCOM (T2721), the interface to Backup and Restore 2, coexists with the BACKUP and RESTORE utilities (T9074).

NOTE:
The syntax for Backup and Restore 2 is different from the syntax for the BACKUP and RESTORE utilities (T9074). If you enter the syntax incorrectly for each file type at the BRCOM prompt, BRCOM might not be able to determine if the command needs to be forwarded to the BACKUP and RESTORE utilities (T9074).

You must use the syntax documented in this manual for OSS and SQL/MX files. For Enscribe and SQL/MP files, use the syntax documented in the Guardian Disk and Tape Utilities Reference Manual. However, commands for Enscribe and SQL/MP files entered at the BRCOM prompt must terminate with a semicolon.

Unsupported File Types

Backup and Restore 2 does not support Enscribe and SQL/MP files. To back up and restore Enscribe and SQL/MP files, continue to use the BACKUP and RESTORE utilities (T9074). However, you can issue a BACKUP or RESTORE command for Enscribe or SQL/MP files directly from BRCOM. BRCOM forwards the command to the BACKUP and RESTORE utilities (T9074), which takes control of the terminal and processes the command directly.

To back up Enscribe or SQL/MP files, regardless of whether you issue the command from BRCOM or directly from TACL, you must use the syntax documented in the Guardian Disk and Tape Utilities Reference Manual with these exceptions:

• Commands for Enscribe and SQL/MP files entered at the BRCOM prompt must terminate with a semicolon.
• BRCOM does not support these run options:
  ◦ DEFMODE
  ◦ GUARANTEEDSWAPSPACE
  ◦ INLINE
  ◦ INV
  ◦ MAXMAINSTACKSIZE
  ◦ MAXNATIVEHEAPSIZE
  ◦ OUTV
  ◦ PFS
  ◦ STATUS
  ◦ WINDOW

All other run options are supported as described in the TACL Reference Manual.

Unsupported Tape Format

BRCOM and the BACKUP and RESTORE utilities (T9074) support different tape formats. Therefore, you cannot mix Enscribe and SQL/MP files on the same tape with the OSS and SQL/MX files.
Unsupported Restore Operation

You cannot use a previous product version update (PVU) of Backup and Restore 2 to restore a backup created using a later PVU. For example, you cannot use the AAB PVU to restore files that were backed up with the AAC PVU. However, you can use a later PVU to restore files backed up on any previous PVU of Backup and Restore 2.

Changed or Unsupported Commands

BRCOM supports the same commands as the BACKUP and RESTORE utilities (T9074). In some cases, the same function is provided in another way:

- Backup and Restore 2 does not support explicit wild cards for any object except CATALOG *.

However, Backup and Restore 2 does support implicit wild cards for objects. For example, if you specify a SQL/MX schema, all objects subordinate to that schema are backed up or restored unless you exclude them. If you specify the OSS directory

/usr/home, all objects in that directory and all its subdirectories are backed up or restored unless you exclude them. If you specify the OSS directory /, the entire OSS file system is backed up or restored.

**NOTE:**

Wild cards are supported for job IDs.

- Backup and Restore 2 does not support excluding a specific file or directory by name.

- You can exclude an OSS file based on its creation time, last open time, or modification time.
- You can exclude a SQL/MX object based on its creation time, last open time, modification time, or redefinition time. You can also limit a backup or restore to objects owned by a specific user ID.

Unsupported File-Set List Qualifiers

Backup and Restore 2 does not support these file-set list qualifiers:

- EXCLUDE files-list
- FROM CATALOG[S] catalog-list
- START filename

Changed or Unsupported Backup Job Options

Backup and Restore 2 does not support options that apply only to SQL/MP or Enscribe files. In some cases, the option has either been replaced, or the function is provided in another way.

### Table 35: Backup Job Options Not Supported or Changed

<table>
<thead>
<tr>
<th>Option</th>
<th>SQL/MP or Enscribe</th>
<th>SQL/MX or OSS</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALTFILE</td>
<td>Enscribe</td>
<td>This option is not supported.</td>
</tr>
<tr>
<td>ARCHIVEFORMAT</td>
<td>Enscribe</td>
<td>This option is not supported.</td>
</tr>
<tr>
<td>AUDITED</td>
<td>Enscribe SQL/MP</td>
<td>SQL/MX files are always audited. Therefore, this option is not needed.</td>
</tr>
</tbody>
</table>

Table Continued
<table>
<thead>
<tr>
<th>Option</th>
<th>SQL/MP or Enscribe</th>
<th>SQL/MX or OSS</th>
</tr>
</thead>
<tbody>
<tr>
<td>CATALOGFILES</td>
<td>Enscribe SQL/MP</td>
<td>This option is not supported.</td>
</tr>
<tr>
<td>DENSITY</td>
<td>Enscribe SQL/MP</td>
<td>This option applies only to reel-to-reel tapes. Backup and Restore 2 does not support reel-to-reel tapes.</td>
</tr>
<tr>
<td>DP1FORMAT</td>
<td>Enscribe SQL/MP</td>
<td>This option is not supported.</td>
</tr>
<tr>
<td>DP2FORMAT</td>
<td>Enscribe SQL/MP</td>
<td>This option is not supported.</td>
</tr>
<tr>
<td>DSLACK</td>
<td>Enscribe SQL/MP</td>
<td>This option is not supported.</td>
</tr>
<tr>
<td>EXT</td>
<td>Enscribe SQL/MP</td>
<td>This option is not supported.</td>
</tr>
<tr>
<td>INDEXES</td>
<td>SQL/MP</td>
<td>This option is not supported for OSS. For SQL/MX, the supported values are INCLUDED or EXCLUDED rather than IMPLICIT and EXPLICIT.</td>
</tr>
<tr>
<td>ISLACK</td>
<td>Enscribe SQL/MP</td>
<td>This option is not supported.</td>
</tr>
<tr>
<td>MSGONLOCK</td>
<td>Enscribe SQL/MP</td>
<td>This option is not supported.</td>
</tr>
<tr>
<td>MULTIDRIVE</td>
<td>Enscribe SQL/MP</td>
<td>This option is not supported.</td>
</tr>
<tr>
<td>NEEDBOTH</td>
<td>Enscribe SQL/MP</td>
<td>For OSS, this option has been replaced by the ALLOWMYID OFF option. This option is not supported for SQL/MX.</td>
</tr>
<tr>
<td>NOMYID</td>
<td>Enscribe SQL/MP</td>
<td>For OSS, this option has been replaced by the ALLOWMYID OFF option. This option is not supported for SQL/MX.</td>
</tr>
<tr>
<td>NOPROMPT</td>
<td>Enscribe SQL/MP</td>
<td>Backup and Restore 2 always writes to tape without prompting you. Therefore, this option is not needed.</td>
</tr>
</tbody>
</table>

*Table Continued*
<table>
<thead>
<tr>
<th>Option</th>
<th>SQL/MP or Enscribe</th>
<th>SQL/MX or OSS</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOREWIND</td>
<td>Enscribe SQL/MP</td>
<td>This option has been replaced by the TAPEDISPOSITION NOREWIND option.</td>
</tr>
<tr>
<td>NOSAFEGUARD</td>
<td>Enscribe</td>
<td>This option is not supported.</td>
</tr>
<tr>
<td>NOSQLDATA</td>
<td>SQL/MP</td>
<td>This option has been replaced by the SQLDATA OFF option.</td>
</tr>
<tr>
<td>NOT</td>
<td>Enscribe SQL/MP</td>
<td>This option is not supported.</td>
</tr>
<tr>
<td>NOUNLOAD</td>
<td>Enscribe SQL/MP</td>
<td>This option has been replaced by the TAPEDISPOSITION BOT option.</td>
</tr>
<tr>
<td>OPEN</td>
<td>Enscribe SQL/MP</td>
<td>This option is not currently supported for OSS. However, this option is supported for SQL/MX.</td>
</tr>
<tr>
<td>PART</td>
<td>Enscribe</td>
<td>This option is not supported.</td>
</tr>
<tr>
<td>PARTIAL</td>
<td>Enscribe</td>
<td>This option is not supported.</td>
</tr>
<tr>
<td>REBUILD</td>
<td>Enscribe</td>
<td>This option is not supported.</td>
</tr>
<tr>
<td>REGISTERONLY</td>
<td>SQL/MP</td>
<td>SQL/MX does not register programs.</td>
</tr>
<tr>
<td>REMOTEIOSIZE</td>
<td>Standard</td>
<td>This option is not supported. SQL/MX bulk I/O defaults to 56 kilobytes.</td>
</tr>
<tr>
<td>SCRATCHVOL</td>
<td>Enscribe</td>
<td>This option is not supported.</td>
</tr>
<tr>
<td>SHAREOPEN</td>
<td>Enscribe SQL/MP</td>
<td>This option is not currently supported for SQL/MX. It is not applicable to OSS.</td>
</tr>
<tr>
<td>SQLCATALOGS</td>
<td>SQL/MP</td>
<td>This option is not supported.</td>
</tr>
<tr>
<td>START</td>
<td>Enscribe SQL/MP</td>
<td>This option is not supported.</td>
</tr>
<tr>
<td>TAPEMODE</td>
<td>Enscribe SQL/MP</td>
<td>Backup and Restore 2 always supports tape streaming. Therefore, this option is not needed.</td>
</tr>
<tr>
<td>Option</td>
<td>SQL/MP or Enscribe</td>
<td>SQL/MX or OSS</td>
</tr>
<tr>
<td>----------------------</td>
<td>--------------------</td>
<td>---------------</td>
</tr>
<tr>
<td>VERIFYREEL</td>
<td>Enscribe SQL/MP</td>
<td>Backup and Restore 2 does not support open-reel tape drives. Therefore, this option is not needed.</td>
</tr>
<tr>
<td>VOL</td>
<td>Enscribe. For SQL/MP files, you use the MAP NAMES option in RESTORE to restore files with new volume and subvolume names.</td>
<td>This option is not supported. For SQL/MX, the LOCATION option provides a similar function.</td>
</tr>
<tr>
<td>VOLUMEMODE</td>
<td>Enscribe SQL/MP</td>
<td>This option is not supported because Backup and Restore 2 does not support volume mode.</td>
</tr>
<tr>
<td>WHOLEDISC</td>
<td>Enscribe SQL/MP</td>
<td>This option is not supported because Backup and Restore 2 does not support volume mode.</td>
</tr>
</tbody>
</table>

### Changed or Unsupported Restore Job Options

BRCOM does not support any options that apply only to SQL/MP or Enscribe files. In some cases, the option has been replaced, or the function is provided in another way.

#### Table 36: Restore Job Options Not Supported or Changed

<table>
<thead>
<tr>
<th>Restore Options</th>
<th>SQL/MP and Enscribe</th>
<th>SQL/MX and OSS</th>
</tr>
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<tbody>
<tr>
<td>ALTFILE</td>
<td>Enscribe</td>
<td>This option is not supported.</td>
</tr>
<tr>
<td>AUDITED</td>
<td>Enscribe SQL/MP</td>
<td>SQL/MX files are always audited. Therefore, this option is not needed.</td>
</tr>
<tr>
<td>AUTOCREATECATALOG</td>
<td>SQL/MP</td>
<td>For SQL/MX, the catalog is always created if not available. Therefore, this option is not needed.</td>
</tr>
<tr>
<td>CATALOGS</td>
<td>Enscribe SQL/MP</td>
<td>For BRCOM, the TARGET specification replaces the CATALOGS option.</td>
</tr>
<tr>
<td>COLLATIONS</td>
<td>SQL/MP</td>
<td>This option is not supported.</td>
</tr>
<tr>
<td>DENSITY</td>
<td>Enscribe SQL/MP</td>
<td>This option applies only to reel-to-reel tapes. Backup and Restore 2 does not support reel-to-reel tapes.</td>
</tr>
</tbody>
</table>

*Table Continued*
<table>
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<tr>
<th>Restore Options</th>
<th>SQL/MP and Enscribe</th>
<th>SQL/MX and OSS</th>
</tr>
</thead>
<tbody>
<tr>
<td>DETAIL</td>
<td>Enscribe SQL/MP</td>
<td>For BRCOM, the LISTALL, DETAIL option replaces the DETAIL option.</td>
</tr>
<tr>
<td>DSLACK</td>
<td>Enscribe</td>
<td>This option is not supported.</td>
</tr>
<tr>
<td>EXT</td>
<td>Enscribe</td>
<td>This option is not supported.</td>
</tr>
<tr>
<td>INDEXES</td>
<td>SQL/MP</td>
<td>This option is not supported for OSS. For SQL/MX, the supported values are INCLUDED or EXCLUDED rather than IMPLICIT and EXPLICIT.</td>
</tr>
<tr>
<td>ISLACK</td>
<td>Enscribe</td>
<td>This option is not supported.</td>
</tr>
<tr>
<td>MAP NAMES</td>
<td>SQL/MP</td>
<td>This option does not apply to OSS. For SQL/MX, this option is not supported, but the LOCATION option provides a similar function.</td>
</tr>
<tr>
<td>MULTIDRIVE</td>
<td>Enscribe SQL/MP</td>
<td>This option is not supported.</td>
</tr>
<tr>
<td>MYID</td>
<td>Enscribe SQL/MP</td>
<td>For OSS, this option has been replaced by the ALLOWMYID ON option. This restores the files with the creator (ownership) information. Non super.super users can restore only the files that they own regardless of the MYID option specified. This behavior of MYID is applicable only to Super users. This option is not supported for SQL/MX.</td>
</tr>
<tr>
<td>NOPROMPT</td>
<td>Enscribe SQL/MP</td>
<td>This option is not needed.</td>
</tr>
<tr>
<td>NOREWIND</td>
<td>Enscribe SQL/MP</td>
<td>This option has been replaced by the TAPEDISPOSITION NOREWIND option.</td>
</tr>
</tbody>
</table>

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<th>Restore Options</th>
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<th>SQL/MX and OSS</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOSAFEGUARD</td>
<td>Enscribe</td>
<td>This option is not supported.</td>
</tr>
<tr>
<td>NOT</td>
<td>Enscribe</td>
<td>This option is not supported.</td>
</tr>
<tr>
<td></td>
<td>SQL/MP</td>
<td></td>
</tr>
<tr>
<td>NOSQLDATA</td>
<td>SQL/MP</td>
<td>This option has been replaced by the SQLDATA OFF option.</td>
</tr>
<tr>
<td>NOUNLOAD</td>
<td>Enscribe</td>
<td>This option has been replaced by the TAPEDISPOSITION BOT option.</td>
</tr>
<tr>
<td></td>
<td>SQL/MP</td>
<td></td>
</tr>
<tr>
<td>PART</td>
<td>Enscribe</td>
<td>This option is not supported.</td>
</tr>
<tr>
<td>PARTIAL</td>
<td>Enscribe</td>
<td>This option is not supported.</td>
</tr>
<tr>
<td>PARTOF</td>
<td>Enscribe</td>
<td>This option is not supported.</td>
</tr>
<tr>
<td>PHYSVOL</td>
<td>Enscribe</td>
<td>This option is not applicable because BRCOM does not support virtual volumes.</td>
</tr>
<tr>
<td></td>
<td>SQL/MP</td>
<td></td>
</tr>
<tr>
<td>REBUILD</td>
<td>Enscribe</td>
<td>This option is not supported.</td>
</tr>
<tr>
<td>REGISTERONLY</td>
<td>SQL/MP</td>
<td>SQL/MX does not register programs.</td>
</tr>
<tr>
<td>REMOTEIOSIZE</td>
<td>Standard</td>
<td>This option is not supported. SQL/MX bulk I/O defaults to 56 kilobytes.</td>
</tr>
<tr>
<td>RENAME</td>
<td>Enscribe</td>
<td>This option is not applicable because BRCOM does not support volume mode.</td>
</tr>
<tr>
<td></td>
<td>SQL/MP</td>
<td></td>
</tr>
<tr>
<td>SCRATCHVOL</td>
<td>Enscribe</td>
<td>This option is not supported.</td>
</tr>
<tr>
<td>SQLCATALOGS</td>
<td>SQL/MP</td>
<td>This option is not supported.</td>
</tr>
<tr>
<td>SQLCOMPILE</td>
<td>SQL/MP</td>
<td>This option is not supported.</td>
</tr>
<tr>
<td>SQLTAPEPARTARRAY</td>
<td>SQL/MP</td>
<td>This option is not supported.</td>
</tr>
<tr>
<td>START</td>
<td>Enscribe</td>
<td>This option is not supported.</td>
</tr>
<tr>
<td></td>
<td>SQL/MP</td>
<td></td>
</tr>
</tbody>
</table>

Table Continued
<table>
<thead>
<tr>
<th>Restore Options</th>
<th>SQL/MP and Enscribe</th>
<th>SQL/MX and OSS</th>
</tr>
</thead>
<tbody>
<tr>
<td>TAPEDATE</td>
<td>This option determines the date used for the last modification and last open timestamps of the files that are being restored.</td>
<td>This option is not supported.</td>
</tr>
<tr>
<td>TARGET</td>
<td>Enscribe SQL/MP</td>
<td>This option is not applicable because BRCOM does not support volume mode. Use the LOCATION job option to change the physical location of SQL/MX objects as they are restored.</td>
</tr>
<tr>
<td>TURNOFFAUDIT</td>
<td>Enscribe SQL/MP</td>
<td>SQL/MX files are always audited. Therefore, this option is not needed.</td>
</tr>
<tr>
<td>VOL</td>
<td>Enscribe. For SQL/MP files, use the MAP NAMES option in RESTORE to restore files with new volume and subvolume names.</td>
<td>This option is not supported. For SQL/MX, the LOCATION option provides a similar function.</td>
</tr>
<tr>
<td>VOLUMEMODE</td>
<td>Enscribe SQL/MP</td>
<td>Backup and Restore 2 does not support volume mode.</td>
</tr>
</tbody>
</table>