

System Backup and Restore

DESCRIPTION

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Contents

| | | |
|----------|--|----------|
| 1 | Understanding Backup and Restore Management | 1 |
| 1.1 | Key Backup and Restore Management Concepts | 1 |
| 2 | Basic System Backup and Restore Procedures | 2 |
| 3 | Backup and Restore-Related Alarms | 5 |
| 4 | Security Management | 5 |





1 Understanding Backup and Restore Management

1.1 Key Backup and Restore Management Concepts

Backup and Restore Management (BRM) provides a management interface for backup and restore of the Managed Element (ME).

The Backup and Restore managed area, *BrM*, can be found in the Managed Object Model (MOM). For general information about the MOM, Managed Object Classes (MOCs), cardinality, and related concepts, refer to *Managed Object Model User Guide*.

BRM supports one predefined backup type, named System Data.

A System Data backup contains the entire software and configuration of the ME.

These backups are to be performed at least weekly. They are recommended after initial installation, before upgrade, and after successful upgrade. In these three situations, the backup files are to be manually exported to an external data repository to avoid unintentional deletion during preventive maintenance.

BRM does not support partial backups that can back up and restore only parts of the ME.

Backups can be created manually, automatically scheduled, and triggered by software management upgrades.

Manual and scheduled backups are subject to different and separately configured preventive maintenance policies. Manual backups and upgrade triggered backups are subject to the same preventive maintenance policies. The default value for the maximum number of scheduled backups is 5. The default value for the maximum number of manual backups is 100.

Backups can be exported to and imported from an external storage system.

The following backups are automatically labeled by the ME so they can easily be found by the user:

- Last created backup
- Last imported backup
- Last exported backup
- Last restored backup
- Last backup restored or created on the ME



2 Basic System Backup and Restore Procedures

BRM supports the following operations for System Data backups:

- Create a backup

This operation creates a backup with the specified name on the local persistent storage media. BRM provides an option for automated preventive maintenance of such manual backups by setting a quota on the maximum number of manual backups to be stored on the persistent storage media of the ME. The procedure in *Create Backup* provides further details on how to perform this operation.

- Restore a backup

This operation restores the ME using a backup stored on the local persistent media of the ME. Restoring the ME using a System Data backup is automatically followed by an ME reboot. After reboot, the operation progress information is lost. Restoring the ME using a User Data backup does not always require an ME reboot but always preserves the operation progress information. The procedure in *Restore Backup* provides further details on how to perform this operation.

- Delete a backup

This operation deletes the backup specified by its name from the persistent storage media. The procedure in *Delete Backup* provides further details on how to perform this operation.

- Schedule backups

Schedules can be configured to trigger creation of backups automatically. Such schedules can be single (one-shot) events or periodic, either defined according to fixed time intervals or calendar-defined intervals. There is also support for automated preventive maintenance of scheduled backups based on a configurable quota on the maximum number of scheduled backups to store. The scheduler can be locked to disable periodic backups during maintenance windows. A scheduled event can be deleted when no longer needed. The procedures in *Schedule Single Backup*, *Schedule Backups Based on Calendar Event*, and *Schedule Backups Based on Periodic Event* provide further details on how to perform these operations. The ME raises the alarm *BRM, Auto Export Backup Failed* or *BRM, Scheduled Backup Failed* when a scheduled backup is failed.

- Export a backup

This operation exports a backup file specified by its name to an external storage system or local file system.



Export is used to store the important ME backups in a safe place. It therefore limits the impact of unintentional local deletion of backup files on the ME. Export can indirectly be used to free up space on the ME since all exported backups are not always needed to be present locally on the ME. The ME raises the alarm *BRM, Auto Export Manual Backup Failed* when a manually created backup that is automatically exported fails. The procedure in *Export Backup* provides further details on how to perform this operation.

- Import a backup

This operation imports a backup file specified by its name from an external storage system or local file system.

Import is used to make a backup locally available on the ME after the backup has previously been exported and deleted from the ME. Import can be done before a coming backup restore operation or as preventive maintenance to ensure that important backups are locally available. The procedure in *Import Backup* provides further details on how to perform this operation.

- Cancel backup and restore operation

Since the following operations are typically long-lasting, this operation can be used to cancel an ongoing operation:

- Create a backup
- Restore a backup
- Delete a backup
- Export a backup
- Import a backup

The procedure in *Cancel Backup and Restore Operation* provides further details on how to perform this operation.

- Change prefix for exported backup names

This operation is used to specify a prefix for the label that is generated for all backup export packages. This can be used to identify the ME from which the exported backup originated. The procedure in *Change Prefix for Exported Backup Names* provides further details on how to perform this operation.

- View available backups

Backups available on the local storage media of the ME, including the labeled backups, can be viewed through BRM. Each backup contains basic information such as the time the backup was created and its status (complete, incomplete, or corrupt). The procedure in *List Backups* provides further details on how to perform this operation.



- Upgrade triggered backups and backup restores

Upgrades automatically trigger a backup for a software management activation operation and a backup restore for an upgrade failure.

One long-running operation at a time is supported among create backup, scheduled backup, upgrade triggered backup and restore, delete backup, and restore backup. If a long-running backup operation is in progress, any scheduled backup event that is triggered is suppressed.

- Automated deletion of manual backups

The automated deletion of manual backups is triggered in either of the following situations:

- When setting attribute `autoDelete=ENABLED` if the number of existing manual backups is already above the value of attribute `maxStoredManualBackups`.
- When changing `maxStoredManualBackups` to a value below the number of existing manual backups while `autoDelete=ENABLED`.
- A backup creation operation is started while the maximum allowed number of manual backups defined by `maxStoredManualBackups` is already reached and `autoDelete=ENABLED`.

The procedures in *Enable Automatic Deletion of Manual Backups* and *Change Maximum Number of Manual Backups* provide further details on how to perform these operations.

- Automated deletion of scheduled backups

The automated deletion of scheduled backups is triggered in either of the following situations:

- A scheduled backup creation operation is started while the maximum allowed number of scheduled backups defined by `maxStoredScheduledBackups` is already reached.
- When changing `maxStoredScheduledBackups` to a value below the number of existing scheduled backups.

Automated deletion of backups always deletes the oldest backups. The procedure in *Set Maximum Number of Scheduled Backups* provides further details on how to perform this operation.



3 Backup and Restore-Related Alarms

Table 1 Backup and Restore-Related Alarms

| Alarm | Description |
|--|---|
| <i>BRM, Auto Export Backup Failed</i> | Issued when an auto-export backup fails. |
| <i>BRM, Auto Export Manual Backup Failed</i> | Issued when a manually created backup that is automatically exported fails. |
| <i>BRM, Scheduled Backup Failed</i> | Issued when a scheduled backup fails. |

4 Security Management

BRM access is managed by an authentication and authorization mechanism. For the BRM role, specific rules are applied to determine the scope of what is accessible.

One BRM role is defined: `SystemAdministrator`.

Once authenticated as a System Administrator, full access is granted to MO *BrM* and its attributes.

For more information on authentication and authorization, refer to *User Management*.