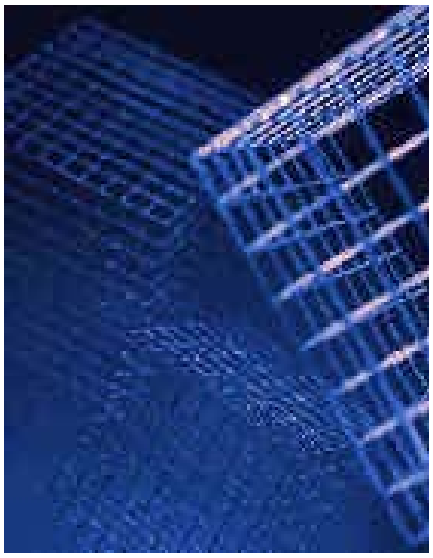
# External Backup Tools: SAP DB



**Version 7.4**

# Copyright

## Icons

| Icon | Meaning |
| --- | --- |
|  | Caution |
|  | Example |
|  | Note |
|  | Recommendation |
|  | Syntax |

## Typographic Conventions

| Type Style | Description |
| --- | --- |
| *Example text* | Words or characters that appear on the screen. These include field names, screen titles, pushbuttons as well as menu names, paths and options.<br>Cross-references to other documentation |
| **Example text** | Emphasized words or phrases in body text, titles of graphics and tables |
| EXAMPLE TEXT | Names of elements in the system. These include report names, program names, transaction codes, table names, and individual key words of a programming language, when surrounded by body text, for example, SELECT and INCLUDE. |
| `Example text` | Screen output. This includes file and directory names and their paths, messages, names of variables and parameters, source code as well as names of installation, upgrade and database tools. |
| **Example text** | Exact user entry. These are words or characters that you enter in the system exactly as they appear in the documentation. |
| **<Example text>** | Variable user entry. Pointed brackets indicate that you replace these words and characters with appropriate entries. |
| `EXAMPLE TEXT` | Keys on the keyboard, for example, function keys (such as `F2`) or the `ENTER` key |

# External Backup Tools: SAP DB 7.4

You can perform backups and restores of SAP DB databases uses external backup tools.

For general information on the SAP DB database system, see User Manual: SAP DB [Extern].

This description of how to use the external backup tools applies for the SAP DB versions specified in the relevant sections. It does not matter what kind of database instance SAP DB OLTP [Extern], liveCache [Extern], SAP DB Document Server [Extern], SAP DB OLAP [Extern], SAP DB E-Catalog [Extern]) you use. For more information about which database instance types are supported by which versions of SAP DB, see SAP DB Versions and Database Instance Types [Extern].

There may be differences between UNIX and Windows-based operating system platforms [Extern]. For simplicity, the abbreviations UNIX and Windows are used.

### Using External Backup Tools

- Backup with External Backup Tools [Page 6]
- Restore with External Backup Tools [Page 7]

### Configuring External Backup Tools

- Configuration of the ADSM/TSM Connection [Page 12]
- Configuration of Backint for Oracle Connections [Page 14]
- Configuration of Backint for SAP DB Connections [Page 20]
- Configuration of the NetWorker Connection [Page 24]

### Additional Information

- Terms and Procedures [Page 32]

# Backup with External Backup Tools

You can use external backup tools to save to tapes and succeeding tapes. The Database Manager [Extern] currently supports the following backup tools:

- ADSM/TSM
- Backint for Oracle
- Backint for SAP DB
- NetWorker

## Use of Backup Tools

You start the backup process directly from the Database Manager. Due to the naming conventions for backup media (media name [Page 32]), the program recognizes the external backup tool and starts it. The pipes for transferring the backup data are implicitly created by the DBM Server [Extern] or the database instance during the backup process. They must therefore not already exist.

## Prerequisites

The database instance must be in operational mode ADMIN or ONLINE. You have created the media in accordance with the naming conventions for external backup media. You have configured the desired backup tool.

| Backup Tool | |
|---|---|
| ADSM/TSM | Configuration of the ADSM/TSM Connection [Page 12] |
| Backint for Oracle | Configuration of Backint for Oracle Connections [Page 14] |
| Backint for SAP DB | Configuration of Backint for SAP DB Connections [Page 20] |
| NetWorker | Configuration of the NetWorker Connection [Page 24] |

You have inserted the required media.

## Procedure

Follow the procedure described in the documentation for the Database Manager for backups with external backup tools.

*Database Manager GUI: SAP DB 7.4* → *Backup* → Backup Processes [Extern]

*Database Manager CLI: SAP DB 7.4* → *Calling the Database Manager CLI* → *DBM Server Commands* → *Backing Up and Recovering Databases* → Commands for Backups [Extern]

Backing up with ADSM:

```
dbmcli -u dbm,dbm -uUTL -d mydb backup_start ADSMData
recovery data
```

The information relevant to the backup appears after the keyword `backup_start`:

Name of the backup medium: `ADSMData`
Backup to be performed with no checkpoint: `recovery`
Type of backup: `data` (complete data backup)

# Restore with External Backup Tools

You can perform backups using external backup tools (Backup with External Backup Tools [Page 6]). Restoring with external backup tools is supported by the Database Manager [Extern] for the following backup tools:

- ADSM/TSM
- Backint for Oracle
- Backint for SAP DB
- NetWorker

## Use of Backup Tools

You start the restore process directly from the Database Manager. Due to the naming conventions for backup media (media name [Page 32]), the program recognizes the external backup tool and starts it.

## Procedure

- If you use the Database Manager CLI for the restore, you must determine and display the external backup ID (DBMCLI) [Page 8].
- The Database Manager GUI automatically determines all of the required information for the restore.

The Database Manger identifies the backup to be restored using the external backup ID [Page 32].

The number of media in a group of parallel media must be the same as the number that was used for the creation of the backup.

Start the restore of the database instance.

- If you are using the Database Manager CLI, follow the procedure in Restore with External Backup Tools (DBMCLI) [Page 9].
- If you are using the Database Manager GUI, follow the procedure in Restore with External Backup Tools (DBMGUI) [Page 11].

# Determine and Display External Backup ID (DBMCLI)

When you restore with external backup tools [Page 7], the Database Manager [Extern] identifies the backup to be restored using the external Backup IDs [Page 32].

## Prerequisites

You have configured the desired backup tool.

## Procedure

You can determine and display the information about the backups known to the backup tool, and in particular about the external backup IDs, using the following commands in an interactive Database Manager CLI session:

1. **Querying the External Backup IDs**
   DBMCLI Command: **`backup_ext_ids_get <medium> [<database_name> [<node>]]`**
   `<medium>`: Name of the backup medium
   `<database_name>`: Name of the database instance from which the backup is to be created
   `<node>`: Name of the server on which the backups were created
2. **Reading External Backup IDs**
   DBMCLI Command: **`backup_ext_ids_get`**
   The external backup IDs, the type of backup and the date and time of the backup are displayed for every backup still known to the backup tool.
   If a backup is still known to the backup tool but can no longer be used for a restore, the word UNAVAILABLE appears instead of AVAILABLE in the appropriate line.
   If the first response packet from the DBM Server [Extern] does not contain all of the relevant information, the keyword CONTINUE appears in the response. If this is the case, continue with **step 3**.
   If the first response packet from the DBM Server does contain all of the relevant information, the keyword END appears in the response instead of CONTINUE. If this is the case, continue with **step 4**.

3. **Scrolling in the External Backup IDs**
   Display all further parts of the response until all of the information from the DBM server has been transferred or you have been able to determine the external backup IDs of the desired backups.
   DBMCLI Command: `backup_ext_ids_listnext`
   If the first response packet from the DBM Server contains all of the available information, the keyword END appears in the response. Continue with **step 4**.
4. **Release of the Working Memory**, that was used by the external backup IDs
   DBMCLI commando: `backup_ext_ids_forget`
   If you run this command, the Database Manager will no longer have any information about the external backup IDs. If you want to determine the external backup IDs after you have released the working memory, you must query the external backup IDs again and then read them.
   Or **End the DBMCLI**:
   DBMCLI command: `exit`

**See also:**

*Database Manager CLI: SAP DB 7.4* → *Calling Database Manager CLI* → *DBM Server Commands* → *Backing Up and Restoring Databases* → Commands for External Backup IDs [Extern]

# Determine and Display External Backup ID (DBMGUI)

When you restore with external backup tools [Page 7], the Database Manager [Extern] identifies the backup to be restored using the external Backup IDs [Page 32].

## Prerequisites

You have configured the desired backup tool.

## Procedure

- You can determine and display the information about the backups known to the backup tool, and in particular about the external backup IDs, using the Database Manager GUI:
  *Database Manager GUI: SAP DB 7.4* → *Displaying Information* → Displaying the Backup History [Extern]
- The information about the backups known to the backup tool, and in particular the external backup IDs, are displayed by the DBMGUI during a restore.
  *Database Manager GUI: SAP DB 7.4* → *Recovery* → Restoring the Last Full Data Backup [Extern]/Restoring a Backup from the Backup History [Extern]/Restoring Without a Backup History [Extern]

# Restore with External Backup Tools (DBMCLI)

For restores with external backup tools [Page 7], you must specify the external backup IDs [Page 32] of the desired backups.

## Prerequisites

The database instance must be in operational mode ADMIN. You have configured the desired backup tool.

| Backup Tool | |
|---|---|
| ADSM/TSM | Configuration of the ADSM/TSM Connection [Page 12] |
| Backint for Oracle | Configuration of Backint for Oracle Connections [Page 14] |
| Backint for SAP DB | Configuration of Backint for SAP DB Connections [Page 20] |
| NetWorker | Configuration of the NetWorker Connection [Page 24] |

You have determined the required external backup IDs (Determine and Display External Backup ID (DBMCLI) [Page 8] or Determine and Display External Backup ID (DBMGUI) [Page 9]).

You have inserted the required backup medium [Extern].

## Procedure

You can perform restores with an interactive or a non-interactive Database Manager CLI [Extern] session.

### Restore Commands for an Interactive DBMCLI Session

You can restore a data backup [Extern] (complete or incremental) and the first log backup [Extern] with the corresponding DBMCLI command, as shown below:

```
recover_start <medium> <type> ExternalBackupID <external_backup_ID>
```

- `<medium>`: Backup medium (Media name [Page 32]) from which the backup is to be imported (if necessary, specify a media group here)
- `<type>`: Type of the backup to be imported
  `data`: Complete data backup
  `pages`: Incremental data backup
  `log`: Log backup
- `<external_backup_ID>`: External backup ID with which the backup is known to the external backup tool.
  If the external backup ID contains any blank characters, the external backup ID must be placed in double quotation marks:
  `"<external_backup_ID>"`
  In the case of parallel backups, you must enter all of the external backup IDs for the individual parts of the backup separated by commas in a list contained within double quotation marks:
  `"<external_backup_ID1>, <external_backup_ID2>, ..., <external_backup_IDn>"`

If you want to import more than one **log backup**, you can import the second and all subsequent log backups interactively using the following DBMCLI command:

```
recover_replace <medium> ExternalBackupID <external_backup_ID>
```

If the external backup ID contains any blank characters, you must place the external backup ID in double quotation marks:
`"<external_backup_ID>"`

You will need to import more than one log backup in most cases. You should therefore always perform log backups using interactive DBMCLI sessions so that you can react to the requirements of the database kernel (additional log backups required). To import all log backups, you use the **`recover_start`** command followed by the **`recover_replace`** command.

### Example of a Restore Command for a Non-Interactive DBMCLI Session

Restore with NetWorker (non-interactive):

```
dbmcli -u dbm,dbm -uUTL -d mydb recover_start NSRPages pages
ExternalBackupID "NST 994245367 P47579"
```

The information relevant to the restore appear after the keyword `recover_start`:

Name of the backup medium: `NSRPages`
Type of backup to be imported: `pages` (incremental backup)
External backup ID: `NST 994245367 P47579`

In the case of non-interactive DBMCLI sessions, follow the rules for the corresponding shell concerning the use of quotation marks. It is important that the quotation marks are sent to the DBM Server [Extern].

**See also:**

*Database Manager CLI: SAP DB 7.4 → Calling the Database Manager CLI → DBM Server Commands → Backing Up and Recovering Databases →* Commands for Restoring [Extern]

## Result

The external backup ID of the desired backup is sent to the DBM server and the restore begins.

# Restore with External Backup Tools (DBMGUI)

When restoring with external backup tools [Page 7], the external backup IDs [Page 32] of the desired backups are automatically determined by the Database Manager GUI [Extern], displayed for the user to check, and then used by the Database Manager GUI during the restore. The user does not need to explicitly determine or specify the external backup IDs, as the DBMGUI automatically determines the required information.

If you want the system to display the external backup IDs for information purposes, you can follow the procedure described under:

- Determine and Display External Backup ID (DBMCLI) [Page 8]
- Determine and Display External Backup ID (DBMGUI) [Page 9]

## Prerequisites

The database instance must be in operational mode ADMIN. You have configured the desired backup tool.

| **Backup Tool** | |
|---|---|
| ADSM/TSM | Configuration of the ADSM/TSM Connection [Page 12] |
| Backint for Oracle | Configuration of Backint for Oracle Connections [Page 14] |
| Backint for SAP DB | Configuration of Backint for SAP DB Connections [Page 20] |
| NetWorker | Configuration of the NetWorker Connection [Page 24] |

You have inserted the required backup medium [Extern].

## Procedure

Start the restore. Follow the procedure described in the Database Manager GUI documentation:

*Database Manager GUI: SAP DB 7.4* → *Recovery* → Restoring the Last Full Data Backup [Extern]/Restoring a Backup from the Backup History [Extern]/Restoring Without a Backup History [Extern]

## Result

The desired backups are restored with the help of the external backup tool.

# Configuration of the ADSM/TSM Connection

## Prerequisites

Availability of the ADSM/TSM Connection [Page 12]

TSM can be addressed using the ADSM client `adint2, among other methods`. Check with IBM if the adint2 client can be used with your TSM version (**`http:\\www.de.ibm.com\entwicklung\esd`**).

All statements about ADSM also apply to your TSM version.

## Procedure

You can perform the configuration for the SAP DB database system as follows:

1. Create an appropriate backup medium [Page 13] with the Database Manager.
2. Set the environment variables ADINT and ADA_OPT (Setting Environment Variables ADINT and ADA_OPT [Page 13]).
3. If you want to perform parallel backups, note the information in the parallel backups [Page 14] section.
4. Test the following procedures:
   Back Up with External Backup Tools [Page 6]
   Restore with External Backup Tools [Page 7]

# Availability of the ADSM/TSM Connection

The connection to the backup tool ADSM/TSM from the IBM/Tivoli is available as of the following SAP DB versions for the specified SAP DB tools:

| SAP DB Version | Build | SAP DB Tools for ADSM Backups | SAP DB Tools for ADSM Restores |
|---|---|---|---|
| 7.2.03 | 007 | DBMCLI, DBMGUI | DBMCLI |
| 7.2.04 | 000 | DBMCLI, DBMGUI | DBMCLI |
| 7.2.05 | 000 | DBMCLI, DBMGUI | DBMCLI |
| 7.3.00 | 000 | DBMCLI, DBMGUI | DBMCLI |
| | 009 | DBMCLI, DBMGUI, Web DBM | DBMCLI, Web DBM |
| | 015 | DBMCLI, DBMGUI, Web DBM | DBMCLI, DBMGUI, Web DBM |
| 7.3.32 | 000 | DBMCLI, DBMGUI, Web DBM | DBMCLI, DBMGUI, Web DBM |
| 7.4.02 | 000 | DBMCLI, DBMGUI, Web DBM | DBMCLI, DBMGUI, Web DBM |

**See also:**

Configuration of the ADSM Connection [Page 12]

*User Manual: SAP DB* → *Architecture: SAP DB* → Operating System Platform [Extern]/*Database Instance Type* → SAP DB Versions and Database Instance Types [Extern]

# Backup Medium (ADSM/TSM)

If you want to perform backups or restores with the external backup tool ADSM/TSM, you must define the appropriate backup media [Extern] with the Database Manager [Extern].

## Procedure

To create the backup medium, follow the procedure described in the Database Manger documentation.

- *Database Manager GUI: SAP DB 7.4* → *Backup* → Managing the Backup Media [Extern]
- *Database Manager CLI: SAP DB 7.4* → *Calling Database Manager CLI* → *DBM Server Commands* → *Backing Up and Restoring Databases* → Commands for Backup Media [Extern]

The media name [Page 32] must begin with the character string **`ADSM`**.

Definition of a pipe as a medium for an incremental data backup with a DBMCLI command (Windows):

```
dbmcli -d <database_name> -u <userid>,<password> medium_put
ADSM123 \\.\pipe\EXAMPLE pipe pages
```

The backup medium must be a pipe and must not have any capacity limits.

The pipes used must not exist. Specify the absolute name of a pipe.

- Windows: Pipe names must be in the following form: **`\\.\pipe\<pipe_name>`**
- UNIX: There are no particular naming conventions to follow for pipe names.

You can perform parallel backups [Page 14] using multiple pipes.

**See also:**

Configuration of the ADSM/TSM Connection [Page 12]

# Setting Environment Variables ADINT and ADA_OPT

One step in the configuration of the ADSM connection [Page 12] is that you must set the environment variables **ADINT** and **ADA_OPT**.

| **Environment Variable** | |
|---|---|
| **`ADINT`** | Specifies the directory in which the program **`adint2`** (UNIX) or **`adint2.exe`** (Windows) is stored. This directory must be specified as an absolute path, that is, without a closing / or \. |

| | |
|---|---|
| `ADA_OPT` | Absolute name of the adint2 configuration file. You will find an example configuration file `initSID.utl` in the directory of the adint2 program. |

## Procedure

Follow the procedure described in Setting environment variables [Page 33].

# Parallel Backups (ADSM/TSM)

## Prerequisites

You have configured ADSM/TSM in accordance with the specifications in Configuration of the ADSM/TSM Connection [Page 12].

The following table shows from which SAP DB versions parallel backups and restores are possible with ADSM/TSM.

| SAP DB Version | Build | SAP DB Tools for Parallel ADSM Backups | SAP DB Tools for Parallel ADSM Restores |
|---|---|---|---|
| 7.2.05 | 017 | DBMCLI, DBMGUI, Web DBM | DBMCLI, DBMGUI, Web DBM |
| 7.3.00 | 021 | DBMCLI, DBMGUI, Web DBM | DBMCLI, DBMGUI, Web DBM |
| 7.4.02 | 003 | DBMCLI, DBMGUI, Web DBM | DBMCLI, DBMGUI, Web DBM |
| 7.4.03 | 000 | DBMCLI, DBMGUI, Web DBM | DBMCLI, DBMGUI, Web DBM |

**See also:**

*Benutzerhandbuch: SAP DB → Architecture: SAP DB →* Operating System Platform [Extern]*/Database Instance Type →* SAP DB Versions and Database Instance Types [Extern]

You must configure a media group with the Database Manager [Extern], the members of which conform to the conventions described in backup medium [Page 13]. In particular, every media group name [Page 32] must begin with `ADSM`.

Parallel backups are only possible for data backups (complete and incremental).

## Procedure

If you want to perform a parallel backup or restore, follow the procedure described in the following documentation:

- *Database Manager GUI: SAP DB 7.4 → Backup → Backup Processes →* Saving to a Group of Parallel Backup Media [Extern]/Restore [Extern]
- *Database Manager CLI: SAP DB 7.4 → Calling the Database Manager CLI → DBM Server Commands → Backing Up and Recovering Databases →* Commands for Backups [Extern]/Restore [Extern]

# Configuration of Backint for Oracle Connection

To enable you to connect Backint for Oracle to SAP DB, an adapter program is delivered with the SAP DB software, which meets the Backint for SAP DB specification. This program uses Backint for Oracle to backup the data with the chosen backup tool.

The interface program Backint for Oracle can backup any files in the file system, regardless of whether the Oracle database system is installed on the server or not. This attribute must be assured by the vendor of the relevant Backint for Oracle program.

## Prerequisites

Find out about the way in which the Backint for SAP DB adapter program [Page 15] and the interface program Backint for Oracle work.
Availability of Backint for Oracle Connections [Page 16]

## Procedure

You can perform the configuration for the SAP DB database system as follows:

1. Set up a Backint for SAP DB connection (Configuration of Backint for SAP DB Connections [Page 20]). During the setup of the Backint for SAP DB connection, an appropriate backup medium [Page 16] is created with the Database Manager.
   This step is necessary for the Database Manager to recognize where it can find the Backint for SAP DB adapter program and how the Database Manager should run this adapter program.
2. Create a configuration file (adapter program) [Page 17] for the Backint for SAP DB adapter program (see also: Example Configuration File (Adapter Program) [Page 18]).
   You must enter the name of this configuration file in the configuration file (Backint for SAP DB) [Page 22] for the Backint for SAP DB connection.
3. Install and configure the interface program Backint for Oracle delivered by the backup tool vendor in accordance with the vendor's instructions. If Backint for Oracle must be configured using a parameter file, you must specify the name of the parameter file in the configuration file for the Backint for SAP DB adapter program (see step 2).
4. If you want to perform parallel backups, note the information in the parallel backups [Page 19] section.
5. Test the following procedures:
   Back Up with External Backup Tools [Page 6]
   Restore with External Backup Tools [Page 7]

# Adapter Program

To enable you to connect Backint for Oracle to SAP DB, an adapter program is delivered with the SAP DB software, which meets the Backint for SAP DB specification.

The adapter program works as follows during a **backup**:

1. The backup data of the database system is received using one or more pipes.
2. This data is saved in temporary files of configurable size.
3. The temporary files are saved by the adapter program using Backint for Oracle.
4. The temporary files are deleted.
5. If necessary, this procedure is repeated from the second step as long as is necessary to process all of the backup data.

If you are performing a backup or a restore using multiple pipes, you can configure the adapter program so that new temporary files are created at the same time as temporary files that have already been created are saved using Backint for Oracle.

Administration information is recorded in a history file that is also saved using Backint for Oracle after the backup.

The adapter program works as follows during a **restore**:

1. The information in the history file is evaluated. If this history file no longer exists, the last version of the history file must be manually restored using Backint for Oracle.
2. The required temporary files are restored in the correct order using Backint for Oracle.
3. The data is transferred to the database system using one or more pipes.

**See also:**

Configuration of Backint for SAP DB Connections [Page 14]

# Availability of Backint for Oracle Connections

The connection to the backup tool Backint for Oracle Connections is available as of the following SAP DB versions for the specified SAP DB tools:

| SAP DB Version | Build | SAP DB Tools for Backint Backups | SAP DB Tools for Backint Restores |
|---|---|---|---|
| 7.2.05 | 008 | DBMCLI, DBMGUI | DBMCLI |
| 7.3.00 | 015 | DBMCLI, DBMGUI, Web DBM | DBMCLI, DBMGUI, Web DBM |
| 7.3.32 | 000 | DBMCLI, DBMGUI, Web DBM | DBMCLI, DBMGUI, Web DBM |
| 7.4.02 | 000 | DBMCLI, DBMGUI, Web DBM | DBMCLI, DBMGUI, Web DBM |

**See also:**

Configuration of Backint for Oracle Connections [Page 14]

*User Manual: SAP DB → Architecture: SAP DB →* Operating System Platform [Extern]*/Database Instance Type →* SAP DB Versions and Database Instance Types [Extern]

# Backup Medium (Backint for Oracle)

If you want to perform backups or restores with the external backup tool Backint for Oracle, you must define the appropriate backup media [Extern] with the Database Manager [Extern].

## Procedure

To create the backup medium, follow the procedure described in the Database Manger documentation.

- *Database Manager GUI: SAP DB 7.4 → Backup →* Managing the Backup Media [Extern]
- *Database Manager CLI: SAP DB 7.4 → Calling Database Manager CLI → DBM Server Commands → Backing Up and Restoring Databases →* Commands for Backup Media [Extern]

The media name [Page 32] must begin with the character string **BACK**.

Definition of a pipe as a medium for an incremental data backup with a DBMCLI command (Windows):

```
dbmcli -d <database_name> -u <user_id>,<password> medium_put
BACK123 \\.\pipe\EXAMPLE pipe pages
```

The backup medium must be a pipe and must not have any capacity limits.

The name of the pipe must be specified as an absolute path. The pipes used must not exist.

- Windows: Pipe names must be in the following form: `\\.\pipe\<pipe_name>`
- UNIX: There are no particular naming conventions to follow for pipe names.

You can perform parallel backups [Page 19] using multiple pipes.

**See also:**

Configuration of Backint for Oracle Connections [Page 14]

# Configuration File (Adapter Program)

To be able to use the backup tool Backint for Oracle, you must, as a step of the Configuration of the Backint for Oracle Connection [Page 14], create a configuration file for the Backint for SAP DB adapter program [Page 15]. This configuration file tells the adapter program, among other things, where it should create the necessary temporary files and where it can find the interface program Backint for Oracle. The name of this configuration file must be stored in the configuration file [Page 22] for the Backint for SAP DB connection (Parameter `PARAMETERFILE <value>`).

## Procedure

You can define a parameter in the format `<key_string> <value_string>` in each line of the configuration file.

- `<key_string>`: A keyword or keywords must be specified at the beginning of each line. Lines without one of the permissible keywords are ignored.
- `<value_string>`: Value(s) of the parameter.

If you want to avoid a certain parameter being set by the configuration file, you must completely remove the corresponding line with the format `<key_string> <value_string>` from the configuration file.

You can use the following keywords to define parameters:

| Keyword(s) | Value(s) |
|---|---|
| `STAGING AREA:` | Absolute path and size of a temporary file<br>`STAGING AREA: <absolute_path> <size> [KB\|MB\|GB]`<br>`If you do not specify a size unit, the size is configured in bytes.` Up to 256 temporary files of this type can be defined. Exactly one temporary file is used for each pipe used. |
| `FILES PER BACKINT CALL:` | Maximum number of temporary files that are to be processed by Backint for Oracle concurrently.<br>In this way, temporary files can be created at the same time as other temporary files are backed up. |
| `BACKINT:` | Absolute name of the interface program Backint for Oracle |
| `PARAMETERFILE OF BACKINT:` | Absolute name of a parameter file for the interface program Backint for Oracle<br>The line `PARAMETERFILE OF BACKINT: <value_string>` should **not** appear in the configuration file, if no parameter file is required for Backint for Oracle.<br>The name of the parameter file is transferred to Backint for Oracle as a parameter. It is therefore possible to configure the Backint for Oracle program in accordance with the specifications in this parameter file.<br>The description of a parameter file of this type is provided by the backup tool vendor. |

| | |
|---|---|
| HISTORY FILE: | Absolute name of the history file<br>The adapter program stores the information required for restores in the history file.<br>If more than one SAP DB version is backed up on one server, a different history file must be used for each database system. If the history file is damaged, this file must be restored manually with the help of the Backint for Oracle program. You should ensure that you are familiar with Backint for Oracle and handling of your backup tool in case this is necessary. |
| INPUTFILE FOR BACKINT:<br>OUTPUT FILE FOR BACKINT<br>ERRORFILE FOR BACKINT: | Specifies which files are used for standard input, standard output and error output for the Backint for Oracle processes to be started<br>These files must be different from the files configured for the Backint for SAP DB connections (see INPUT, OUTPUT, ERROROUTPUT in Configuration File (Backint for SAP DB) [Page 22]) |
| MAXIMAL DELAY OF BACKINT CALL: | Maximum time in seconds that Backint for Oracle should wait after the creation of a temporary file through a call of Backint for Oracle, until the complete number of temporary files has been created, as specified in the line FILES PER BACKINT CALL: <value_string>.<br>This specification helps to avoid deadlocks that can occur in exceptional situations. The length of time must be large enough so that during normal backup operation, the configured number of temporary files can be saved at the same time using Backint for Oracle. On the other hand, the time must not be too large, so that the end of the backup is not extended too far due to unfavorable configurations. |
| OMIT LAST DIRECTORY DELIMITER ON RESTORE: | Specifies whether or not the adapter program should ignore the closing slash (/ or \) of an absolute directory name for Backint for Oracle.<br>NO (Default): The slash is not ignored.<br>YES: The slash is ignored.<br>Use this option to avoid problems with Backint for Oracle implementations that do not expect a closing slash (/ or \) at the end of a directory name.<br>This specification is supported as of the following SAP DB versions: 7.2.05.016, 7.3.00.021, 7.4.02.002, 7.4.03.000 |

**See also:**

Example configuration file [Page 18]

# Example Configuration File (Adapter Program)

The configuration file [Page 17] for the adapter program [Page 15] that is required for a Backint for Oracle connection can be explained using the following example.

## Example

```
STAGING AREA:                  D:\TEMP\STAGE1 1 GB
STAGING AREA:                  E:\TEMP\STAGE2 1024 MG
STAGING AREA:                  F:\TEMP\STAGE3 1048576 KB
STAGING AREA:                  G:\TEMP\STAGE4 1073741824

FILES PER BACKINT CALL:        2

BACKINT:                       C:\BackupTool\BIN\backint.exe
PARAMETERFILE OF BACKINT:      C:\BackupTool\CONF\backintparam.utl

HISTORY FILE:                  C:\SAPDB\BackintHistory
```

```
INPUTFILE FOR BACKINT:          C:\TEMP\backint4Oracle.in
OUTPUTFILE FOR BACKINT:         C:\TEMP\backint4Oracle.out
ERRORFILE FOR BACKINT:          C:\TEMP\backint4Oracle.err

MAXIMAL DELAY OF BACKINT CALL: 30
```

## Explanation

| Keyword(s) | Value(s) | Explanation |
|---|---|---|
| STAGING AREA: | D:\TEMP\STAGE1<br>1 GB<br>E:\TEMP\STAGE2<br>1024 MG<br>F:\TEMP\STAGE3<br>1048576 KB<br>G:\TEMP\STAGE4<br>1073741824 | The adapter program can backup or restore a maximum of four pipes at the same time. The temporary files created in doing this can reach a size of a Gigabyte, as long as the end of the pipe is not reached. |
| FILES PER BACKINT CALL: | 2 | If two of the four temporary files are completely created, these are backed up with the help of a call of the interface program Backint for Oracle. |
| BACKINT: | C:\Backuptool\BIN\backint.exe | The name of the interface program Backint for Oracle is:<br>C:\Backuptool\BIN\backint.exe |
| PARAMETERFILE OF BACKINT: | C:\BackupTool\CONF\backintparam.utl | The Backint for Oracle program uses the parameter file<br>C:\BackupTool\CONF\backintparam.utl. |
| HISTORY FILE: | C:\SAPDB\BackintHistory | The adapter program stores its information in the history file C:\SAPDB\BackintHistory at the end of every backup and stores this files with an additional call of Backint for Oracle. |
| INPUTFILE FOR BACKINT:<br>OUTPUTFILE FOR BACKINT:<br>ERRORFILE FOR BACKINT: | C:\TEMP\backint4Oracle.in<br>C:\TEMP\backint4Oracle.out<br>C:\TEMP\backint4Oracle.err | Standard input for Backint for Oracle:<br>C:\TEMP\backint4Oracle.in<br>Standard output for Backint for Oracle:<br>C:\TEMP\backint4Oracle.out<br>Standard error output for Backint for Oracle:<br>C:\TEMP\backint4Oracle.err |
| MAXIMAL DELAY OF BACKINT CALL: | 30 | If the temporary files are created at different speeds and one temporary file is already complete, the adapter program waits a maximum of 30 seconds for another of the temporary files to be completely created. If none of the other files is created within 30 seconds, the temporary file that already exists is backed up using Backint for Oracle. |

# Parallel Backups (Backint for Oracle)

## Prerequisites

You have configured the Backint for Oracle connection in accordance with the specifications in Configuring the Backint for Oracle Connection [Page 14].

You must configure a media group with the Database Manager [Extern], the individual members of which conform to the conventions described in backup medium [Page 16]. In particular, every media group name [Page 32] must begin with **BACK**.

Parallel backups are only possible for data backups (complete and incremental).

## Procedure

If you want to perform a parallel backup or restore, follow the procedure described in the following documentation:

- *Database Manager GUI: SAP DB 7.4* → *Backup* → *Backup Processes* → Saving to a Group of Parallel Backup Media [Extern]/Restore [Extern]
- *Database Manager CLI: SAP DB 7.4* → *Calling the Database Manager CLI* → *DBM Server Commands* → *Backing Up and Recovering Databases* → Commands for Backups [Extern]/Restore [Extern]

# Configuration of Backint for SAP DB Connections

## Prerequisite

Availability of Backint for SAP DB Connections [Page 20]

## Procedure

You can configure BACKINT for the SAP DB database system as follows:

1. Create an appropriate backup medium [Page 21] with the Database Manager.
2. Set the environment variable BSI_ENV (Setting the Environment Variable BSI_ENV [Page 21]).
3. Create a configuration file [Page 22] (see also: Example Configuration File [Page 23]).
4. If you want to perform parallel backups, note the information in the parallel backups [Page 23] section.
5. Test the following procedures:
   Back Up with External Backup Tools [Page 6]
   Restore with External Backup Tools [Page 7]

# Availability of Backint for SAP DB Connections

The connection to the backup tool Backint for SAP DB is available as of the following SAP DB versions forthe specified SAP DB tools:

| SAP DB Version | Build | SAP DB Tools for Backint Backups | SAP DB Tools for Backint Restores |
|---|---|---|---|
| 7.2.05 | 008 | DBMCLI, DBMGUI | DBMCLI |
| 7.3.00 | 015 | DBMCLI, DBMGUI, Web DBM | DBMCLI, DBMGUI, Web DBM |
| 7.3.32 | 000 | DBMCLI, DBMGUI, Web DBM | DBMCLI, DBMGUI, Web DBM |
| 7.4.02 | 000 | DBMCLI, DBMGUI, Web DBM | DBMCLI, DBMGUI, Web DBM |

**See also:**

Configuration of Backint for SAP DB Connections [Page 20]

*User Manual: SAP DB* → *Architecture: SAP DB* → Operating System Platform [Extern]/*Database Instance Type* → SAP DB Versions and Database Instance Types [Extern]

# Backup Medium (Backint for SAP DB)

If you want to perform backups or restores with the external backup tool Backint for SAP DB, you must define the appropriate backup media [Extern] with the Database Manager [Extern].

## Procedure

To create the backup medium, follow the procedure described in the Database Manger documentation.

- *Database Manager GUI: SAP DB 7.4* → *Backup* → Managing the Backup Media [Extern]
- *Database Manager CLI: SAP DB 7.4* → *Calling Database Manager CLI* → *DBM Server Commands* → *Backing Up and Restoring Databases* → Commands for Backup Media [Extern]

The media name [Page 32] must begin with the character string **`BACK`**.

Definition of a pipe as a medium for an incremental data backup with a DBMCLI command (Windows):

```
dbmcli -d <database_name> -u <user_id>,<password> medium_put
BACK123 \\.\pipe\Example pipe pages
```

The backup medium must be a pipe and must not have any capacity limits.

The name of the pipe must be specified as an absolute path. The pipes used must not exist.

- Windows: Pipe names must be in the following form: **`\\.\pipe\<pipe_name>`**
- UNIX: There are no particular naming conventions to follow for pipe names.

You can perform parallel backups [Page 23] using multiple pipes.

**See also:**

Configuration of Backint for SAP DB Connections [Page 20]

# Setting Environment Variable BSI_ENV

One step in the configuration of Backint for SAP DB Connections [Page 20] is that you must set the environment variable **`BSI_ENV`** so that it contains the absolute path of the configuration file [Page 22].

If the environment variable **BSI_ENV** is not set, the system will attempt to use the file specified in the table as the configuration file:

| Operating System | File |
|---|---|
| UNIX | <Work directory [Extern]>/bsi.env |
| Windows | <Work directory>\bsi.env |

## Procedure

Follow the procedure described in Setting environment variables [Page 33].

# Configuration File (Backint for SAP DB)

To be able to use the backup tool Backint for SAP DB, you must create a configuration file as a step of the Configuration of the Backint for SAP DB Connection [Page 20].

## Procedure

You can define a parameter in the format <key_word> <value> in each line of the configuration file.

- <key_word>: A key word must be specified at the beginning of each line. Lines without one of the permissible keywords are ignored.
- <value>: Value of the parameter. If this value contains a blank character or another space character, place the value in quotation marks.

If you want to avoid a certain parameter being set by the configuration file, you must completely remove the corresponding line with the format <key_word> <value> from the configuration file.

You can use the following keywords to define parameters:

| Keyword | Value |
|---|---|
| BACKINT | Absolute name of the Backint for SAP DB program |
| INPUT\|OUTPUT\| ERROROUTPUT | Absolute paths of files<br>The Database Manager [Extern] creates these files temporarily and uses them for standard input, output, and error output for Backint for SAP DB. |
| PARAMETERFILE | Absolute path of a parameter file<br>If PARAMETERFILE <value> is specified, the path specified in <value> is sent to Backint for SAP DB every time the parameter is called. In this way, you can configure the Backint for SAP DB program. The format of this parameter file depends on which version of Backint for SAP DB you are using, and will be described by its vendor. |
| TIMEOUT_SUCCESS\| TIMEOUT_FAILURE | Specifies how many seconds after starting the Database Manager waits for Backint for SAP DB to terminate in the case of success and of failure.<br>Default values: TIMEOUT_SUCCESS 300, TIMEOUT_FAILURE 300 |
| ORIGINAL_RUNDIRECTORY | Absolute path of the working directory [Extern] of the source database<br>You should only specify the parameter ORIGINAL_RUNDIRECTORY <value> in the case of a database migration (Restore of a database in a new working directory).<br>The prerequisite for the migration from one server to another is that the version of Backint for SAP DB that you are using can make backups from the source server available on the target server.<br>This value is case sensitive. |

**See also:**

Example configuration file [Page 23]

# Example Configuration File (Backint for SAP DB)

The configuration file [Page 22] for a Backint for SAP DB connection can be explained using the following example.

## Example

```
BACKINT                 C:\Backuptool\backint.exe

INPUT                   C:\TEMP\backint4SAPDB.in
OUTPUT                  C:\TEMP\backint4SAPDB.out
ERROROUTPUT             C:\TEMP\backint4SAPDB.err

PARAMETERFILE           C:\SAPDB\WRK\TST\backint.par

TIMEOUT_SUCCESS         600
TIMEOUT_FAILURE         300

ORIGINAL_RUNDIRECTORY C:\SAPDB\wrk\P1
```

## Explanation

| Keyword | Value | Explanation |
|---|---|---|
| BACKINT | C:\Backuptool\backint.exe | The Database Manager runs the program C:\Backuptool\backint.exe for backups and restores with the Backup for SAP DB. |
| INPUT<br>OUTPUT<br>ERROROUTPUT | C:\TEMP\backint4SAPDB.in<br>C:\TEMP\backint4SAPDB.out<br>C:\TEMP\backint4SAPDB.err | Standard input:<br>C:\TEMP\backint4SAPDB.in<br>Standard output:<br>C:\TEMP\backint4SAPDB.out<br>Standard error output:<br>C:\TEMP\backint4SAPDB.err |
| PARAMETERFILE | C:\SAPDB\WRK\TST\backint.par | Backint for SAP DB uses the parameter file C:\SAPDB\WRK\TST\backint.par. |
| TIMEOUT_SUCCESS<br>TIMEOUT_FAILURE | 600<br>300 | In the case of success, the Database Manager waits a maximum of ten minutes for Backint for SAP DB to terminate. In the case of error, the Database Manager waits five minutes. |
| OROGONAL_RUNDIRECTORY | C:\SAPDB\wrk\P1 | If a database different from the current database is to be restored, the run directory of the database to be restored must have been: C:\SAPDB\wrk\P1. |

# Parallel Backups (Backint for SAP DB)

## Prerequisites

You have configured Backint for SAP DB in accordance with the specifications in Configuration of Backint for SAP DB Connection [Page 20].

You must configure a media group with the Database Manager [Extern], the individual members of which conform to the conventions described in backup medium [Page 21]. In particular, every media group name [Page 32] must begin with **BACK**.

Parallel backups are only possible for data backups (complete and incremental).

## Procedure

If you want to perform a parallel backup or restore, follow the procedure described in the following documentation:

- *Database Manager GUI: SAP DB 7.4* → *Backup* → *Backup Processes* → Saving to a Group of Parallel Backup Media [Extern]/Restore [Extern]
- *Database Manager CLI: SAP DB 7.4* → *Calling the Database Manager CLI* → *DBM Server Commands* → *Backing Up and Recovering Databases* → Commands for Backups [Extern]/Restore [Extern]

# Configuration of the NetWorker Connection

## Prerequisite

Availability of the NetWorker Connection [Page 24]

## Procedure

You can configure NetWorker for the SAP DB database system as follows:

1. Create an appropriate backup medium [Page 25] with the Database Manager.
2. Set the environment variable NSR_ENV (Setting the Environment Variable BSI_ENV [Page 26]).
3. Create a configuration file [Page 26] (see also: Example Configuration File [Page 29]).
4. If you want to perform parallel backups, note the information in the parallel backups [Page 31] section.
5. Test the following procedures:
   Back Up with External Backup Tools [Page 6]
   Restore with External Backup Tools [Page 7]

# Availability of the NetWorker Connection

The connection to the backup tool NetWorker from the company Legato is available as of the following SAP DB versions for the specified SAP DB tools:

| SAP DB Version | Build | SAP DB Tools for NetWorker Backups | SAP DB Tools for NetWorker Restores |
|---|---|---|---|

| | | | |
|---|---|---|---|
| 7.2.04 | 015 | DBMCLI, DBMGUI | DBMCLI |
| 7.2.05 | 001 | DBMCLI, DBMGUI | DBMCLI |
| 7.3.00 | 005 | DBMCLI, DBMGUI | DBMCLI |
| | 009 | DBMCLI, DBMGUI, Web DBM | DBMCLI, Web DBM |
| | 015 | DBMCLI, DBMGUI, Web DBM | DBMCLI, DBMGUI, Web DBM |
| 7.3.32 | 000 | DBMCLI, DBMGUI, Web DBM | DBMCLI, DBMGUI, Web DBM |
| 7.4.02 | 000 | DBMCLI, DBMGUI, Web DBM | DBMCLI, DBMGUI, Web DBM |

The following NetWorker versions are the minimum required:

| Operating System | NetWorker Version |
|---|---|
| UNIX | 5.5 |
| Windows | 5.7 |

**See also:**

Configuration of the NetWorker Connection [Page 24]

*User Manual: SAP DB* → *Architecture: SAP DB* → Operating System Platform [Extern]/*Database Instance Type* → SAP DB Versions and Database Instance Types [Extern]

# Backup Medium (NetWorker)

If you want to perform backups or restores with the external backup tool NetWorker, you must define the appropriate backup media [Extern] with the Database Manager [Extern].

## Procedure

To create the backup medium, follow the procedure described in the Database Manger documentation.

- *Database Manager GUI: SAP DB 7.4* → *Backup* → Managing the Backup Media [Extern]
- *Database Manager CLI: SAP DB 7.4* → *Calling Database Manager CLI* → *DBM Server Commands* → *Backing Up and Restoring Databases* → Commands for Backup Media [Extern]

The media name [Page 32] must begin with the character string **NSR**.

Definition of a pipe as a medium for an incremental data backup with a DBMCLI command (Windows):

```
dbmcli -d <database_name> -u <userid>,<password> medium_put
NSR123 \\.\pipe\Example pipe pages
```

The backup medium must be a pipe and must not have any capacity limits.

The name of the pipe must be specified as an absolute path. The pipes used must not exist.

- Windows: Pipe names must be in the following form: **\\.\pipe\<pipe_name>**
- UNIX: There are no particular naming conventions to follow for pipe names.

The absolute name of the pipe must be identical at backups and restores. Note that file or directory paths that are specified as links are resolved by the backup tool NetWorker.

On Server A, a backup is performed using `/tmp/nsr_pipe`. The directory `/tmp` is a link to the directory `/var/tmp`. When restoring to Server B, you must use the pipe `var/tmp/nsr_pipe`.

You can perform parallel backups [Page 31] using multiple pipes.

**See also:**

Configuration of the NetWorker Connection [Page 24]

# Setting Environment Variable NSR_ENV

One step in the Configuration of the NetWorker Connection [Page 24] is that you must set the environment variable **NSR_ENV** so that it contains the absolute path of the configuration file [Page 26].

If the environment variable **NSR_ENV** is not set, the system will attempt to use the file specified in the table as the configuration file:

| Operating System | File |
|---|---|
| UNIX | `/nsr/sapdb/env` |
| Windows | `C:\Program Files\nsr\sapdb\env` |

## Procedure

Follow the procedure described in Setting environment variables [Page 33].

# Configuration File (NetWorker)

To be able to use the external backup tool NetWorker, you must create a configuration file as a step of the Configuration of the NetWorker Connection [Page 24].

## Procedure

You can define a parameter in the format `<key_word> <value>` in each line of the configuration file.

- `<key_word>`: A key word must be specified at the beginning of each line. Lines without one of the permissible keywords are ignored.
- `<value>`: Value of the parameter. If this value contains a blank character or another space character, place the value in quotation marks.

If you want to avoid a certain parameter being set by the configuration file, you must completely remove the corresponding line with the format `<key_word> <value>` from the configuration file.

You can use the following keywords to define parameters:

| Keyword | Value |
|---|---|
| `NSR_HOME` | Absolute path of the directory in which NetWorker is installed. The NetWorker programs SAVE; MMINFO and RECOVER are stored in this directory. |
| `NSR_HOST` | Name of the NetWorker server to be used. |

| | |
|---|---|
| NSR_POOL | Name of the NetWorker tape pool to be used<br>This parameter is optional.<br>If you use the environment variable NSR_POOL Setting Environment Variables [Page 33]), the tape pool specified in this environment variable is used and the parameter specified in the configuration file is ignored. |
| NSR_EXPIRE | Expiry date or expiry period for the backup<br>This value is transferred to the NetWorker SAVE program. The permissible <value> entries are described in the NetWorker documentation.<br>The parameter NSR_EXPIRE <value> is optional.<br>If you use the environment variable NSR_EXPIRE Setting Environment Variables [Page 33]), the date or period specified in this environment variable is used and the parameter specified in the configuration file is ignored. |
| NSR_FULL | Specifies the assignment of NetWorker levels to complete backups with/without checkpoint [Extern].<br>Note the information in the section Parameter NSR_FULL <value> [Page 29] about the use of this parameter.<br>The following <value> specifications are permissible:<br>"DATA MIGRATION": **Default setting**. Complete backups **with** checkpoints have the level full. Complete backups **without** checkpoints have the level 3<br>"DATA RECOVERY": Complete backups **without** checkpoints have the level full. Complete backups **with** checkpoints have the level 3<br>"DATA RECOVERY": All complete backups (with and without checkpoints) have the level full. |
| NSR_NOTVERBOSE | Specifies whether the NetWorker programs SAVE and RECOVER are started with the -v option.<br>The following <value> specifications are permissible:<br>NONE: **Default setting**. The NetWorker programs SAVE and RECOVER are started **with** the -v option.<br>SAVE: The NetWorker SAVE program is started **without** the -v option, the NetWorker RECOVER program is started **with** the -v option.<br>RECOVER: The NetWorker SAVE program is started **with** the -v option, the NetWorker RECOVER program is started **without** the -v option.<br>"SAVE AND RECOVER": The Networker SAVE and RECOVER programs are started **without** the -v option. |
| NSR_USEOUTPUT | Specifies if the output of the NetWorker SAVE program should be analyzed during backups.<br>The following <value> specifications are permissible:<br>SAVE: **Default setting**. The output of the NetWorker SAVE program is checked for error messages.<br>NONE: The output of the NetWorker SAVE program is not checked for error messages. Only the return code of SAVE is used. As the SAVE program can return the return code 0 even if an error has occurred, you should not use the parameter NSR_USEOUTPUT NONE. |
| NSR_IGNOREERROR | Character string <error_text><br>All error messages of the NetWorker SAVE program with the format <pipe_name>:<error_text> are ignored.<br>You must make an NSR_IGNOREERROR entry for every error message that is to be ignored. |

| | |
|---|---|
| NSR_EBIDTYPE | Specifies whether restores should be performed with the Database Manager [Extern] using the backup times as numbers or through the NetWorker Save Set Identifier<br>The following <value> specifications are permissible:<br>NSAVETIME: **Default setting**. Backups are identified using their backup time. This procedure has the advantage that the Networker RECOVER program does not require any operating system user rights. You should use this procedure.<br>SSID: Backups are identified using the NetWorker Save Set Identifier. You should not use this procedure. If necessary, contact SAP for more information. |
| NSR_SAVEINTERVAL | Specifies how many seconds the system should wait between SAVE calls during parallel backups.<br>**Default setting**: 60 seconds |
| NSR_BACKUPNAME | Name under which the backup is to be stored in NetWorker<br>You can specify a character string of your choice in which the placeholders <database_name> and/or <server_node> can be used. When backing up/restoring with NetWorker, the placeholders are automatically replaced with the name of the database instance and/or the database host.<br>**Default setting**: Database instance name |
| NSR_AVOIDPSSIDBUG | NO/YES<br>A software error in the MMINFO program when using the option -q pssid=0 (PSSIDBUG) is known as of NetWorker 6.0. This error can be avoided if the parameter NSR_AVOIDPSSIDBUG is set appropriately.<br>NO: **Default setting**. Calls the NetWorker MMINFO program with the option -q pssid=0<br>YES: Avoids the software error in the MMINFO program (only NetWorker versions as of 6.0) |
| NSR_SAVETIMEFORMAT | Specifies a date format that is used for the analysis of the output of the NetWorker MMINFO program.<br>**Default setting:** mm/dd/yy HH:MM:SS AM (for NetWorker date output that is 8 characters long)<br>and<br>**Default setting**: mm/dd/yyyy HH:MM:SS AM (for NetWorker date output that is 10 characters long)<br>yy/yyyy years, mm months, dd days, HH hours, MM minutes, SS seconds, AM AM or PM<br>You can only configure one date format. |
| NSR_SIZEROUNDUP | Specifies how the size specification for backups transferred with the NetWorker SAVE program is to be used.<br>NOROUNDUP: **Default setting**. The size specification transferred by SAVE is used unchanged.<br>FIRSTDECIMAL: The size specification transferred by SAVE is to be increased by 0.1 (For example: Backup size 14 GB is used with 14.1 GB).<br>NORMAL: The size specification transferred by SAVE is increased by 0.5.<br>LASTINTEGER: The size specification transferred by SAVE is increased by 1.<br>This specification can be used as of the following SAP DB versions: 7.2.05.017, 7.3.00.021, 7.4.03.000 |

| | |
|---|---|
| NSR_AVOIDTIMEDEBUG | Specifies a character string that is used as the value for the MMINFO option –t. In this way, you can use MMINFO versions that cannot be used without the –t version.<br>The character string must match the format expected by MMINFO. If the character string consists of multiple values, place these in quotation marks.<br>Note that backups that are not within the time span specified by the character string are regarded by SAP DB as no longer available for a restore.<br>This specification can be used from the following SAP DB versions: 7.2.05.018, 7.3.00.022, 7.4.02.004, 7.4.03.000 |

**See also:**

Example configuration file [Page 29]

# Parameter NSR_FULL <value>

## Availability

The NetWorker parameter **NSR_FULL <value>** for the configuration file [Page 26] is available as of the following SAP DB versions:

| SAP DB Version | Build |
|---|---|
| 7.2.05 | 006 |
| 7.3.00 | 010 |
| 7.4.00 | 000 |

## Use

You can enter the assignment of NetWorker levels to the complete backups with and without checkpoints [Extern] after the keyword NSR_FULL.

If you change the NSR_FULL settings, the change only affects the backups that are created after you make the change. During a restore, the information about backup type is determined only by the NetWorker level and the current NSR_FULL. Backups that were not made using the current settings are therefore displayed under an incorrect type by the Database Manager [Extern]. This does not, however, have any effect on the actual type of the backup.

A backup with checkpoint was created without a corresponding NSR_FULL entry. The parameter NSR_FULL "DATA RECOVERY" is then added to the configuration file and a backup without a checkpoint is created.
The Database Manager displays both backups as DATA RECOVERY.

# Example Configuration File (NetWorker)

The configuration file [Page 26] for a NetWorker connection can be explained using the following example.

## Example

```
NSR_HOST            p47579
NSR_HOME            "C:\Program Files\nsr\bin"
```

```
NSR_POOL            SAPDBPOOL
NSR_EXPIRE          year
NSR_FULL            "DATA RECOVERY"

NSR_NOTVERBOSE      RECOVER
NSR_EBIDTYPE        NSAVETIME

NSR_USEOUTPUT       SAVE
NSR_IGNOREERROR     " unknown error 109 (0x6d)"
NSR_IGNOREERROR     " using unlocked access"

NSR_SAVEINTERVAL    60
NSR_BACKUPNAME      SAPDB:<database_name>_on_<node>

NSR_AVOIDPSSIDBUG   YES
NSR_SAVETIMEFORMAT "yyyy/mm/dd HH:MM:SS AM"
```

## Explanation

| Keyword | Value | Explanation |
|---|---|---|
| NSR_HOST | p47579 | The NetWorker server is running on server p47579. |
| NSR_HOME | "C:\Program Files\nsr\bin" | The NetWorker client is installed on the database server in the directory C:\Program Files\nsr\bin |
| NSR_POOL | SAPDBPOOL | Backups are stored in the NetWorker pool SAPDBPOOL. |
| NSR_EXPIRE | year | The backups have an expiration time of one year. |
| NSR_FULL | "DATA RECOVERY" | The backups without checkpoints have the NetWorker level full. The backups with checkpoints have the NetWorker level 3. |
| NSR_NOTVERBOSE | RECOVERY | The NetWorker RECOVER program is run without the -v option. |
| NSR_EDITTYPE | NSAVETIME | The backup time is used to identify backups. |
| NSR_USEOUTPUT | SAVE | The output of the NetWorker SAVE program is searched for errors during every backup. |
| NSR_IGNOREERROR | " unknown error 109 (0x6d)" " using unlocked access" | The messages <pipe_name>: unknown error 109 (0x6d) and <pipe_name>: using unlocked access are ignored for the corresponding pipes. |
| NSR_SAVEINTERVAL | 60 | The system waits 60 seconds between two SAVE calls during parallel backups. |
| NSR_BACKUPNAME | SAPDB:<database_name>_on_<node> | If the database name is, for example, DB72, the backups are created with the name APDB:DB72_on_p47579 in NetWorker. |
| NSR_AVOIDPSSIDBUG | YES | The PSSIDBUG of the NetWorker MMINFO program is avoided (only for NetWorker as of Version 6.0) |

| | | |
|---|---|---|
| NSR_SAVETIMEFORMAT | "yyy/mm/dd HH:MM:SS AM" | The NetWorker MMINFO program delivers date specifications in the specified format. Example: 2001/12/31 11:59:58 AM |

# Parallel Backups (NetWorker)

## Prerequisites

You have configured the NetWorker connection in accordance with the specifications in Configuring the NetWorker Connection [Page 24]

The following table shows from which SAP DB versions parallel backups and restores are possible with NetWorker.

| SAP DB Version | Build | SAP DB Tools for Parallel NetWorker Backups | SAP DB Tools for Parallel NetWorker Restores |
|---|---|---|---|
| 7.2.05 | 004 | DBMCLI | DBMCLI |
| 7.3.00 | 009 | DBMCLI, DBMGUI, Web DBM | DBMCLI, Web DBM |
| | 015 | DBMCLI, DBMGUI, Web DBM | DBMCLI, DBMGUI, Web DBM |
| 7.3.32 | 000 | DBMCLI, DBMGUI, Web DBM | DBMCLI, DBMGUI, Web DBM |
| 7.4.02 | 000 | DBMCLI, DBMGUI, Web DBM | DBMCLI, DBMGUI, Web DBM |

**See also:**

*User Manual: SAP DB → Architecture: SAP DB →* Operating System Platform [Extern]*/Database Instance Type →* SAP DB Versions and Database Instance Types [Extern]

You must configure a media group with the Database Manager [Extern], the individual members of which conform to the conventions described in backup medium [Page 25]. In particular, every media group name [Page 32] must begin with **NSR**.

Parallel backups are only possible for data backups (complete and incremental).

## Requirements

The NetWorker command SAVE or RECOVER is started for each pipe. NetWorker requires the exact name of each backup pipe for a restore. The media group must therefore be configured in exactly the same way during the restore as during the backup. This includes the order of the media in the media group.

The number of tape drives should be the same as the number of pipes used for the backup.

Set the NetWorker parameter `Target Sessions` for each tape drive to 1.

## Procedure

If you want to perform a parallel backup or restore, follow the procedure described in the following documentation:

- *Database Manager GUI: SAP DB 7.4 → Backup → Backup Processes →* Saving to a Group of Parallel Backup Media [Extern]/Restore [Extern]
- *Database Manager CLI: SAP DB 7.4 → Calling the Database Manager CLI → DBM Server Commands → Backing Up and Recovering Databases →* Commands for Backups [Extern]/Restore [Extern]

If a deadlock occurs during a parallel restore, you must import the backup sequentially (that is, from the individual media in the media group) using the Database Manager. Test this procedure.

# Terms and Procedures

Media Name [Page 32]

External Backup ID [Page 32]

Setting Environment Variables [Page 33]

**See also:**

*User Manual: SAP DB* → Definition of Terms [Extern]

# Media Name

Backups and restores with external backup tools are performed using the Database Manager [Extern]. The backup tool to be used is determined by the Database Manager using the media name or, in the case of parallel backups, using the media group name.

## Definition

A specified backup medium or a specified group of backup media is required for a backup action with external backup tools. The following character strings at the beginning of a medium name/media group name specify that external backup tools are used for backups to this medium or group of media, or for restores from this medium or group of media:

| Character String | Backup Tool to Be Used (Configuration Information) |
|---|---|
| `ADSM` | ADSM/TSM (Configuration of the ADSM/TSM Connection [Page 12]) |
| `BACK` | Backint for SAP DB (Configuration of Backint for SAP DB Connection [Page 20])<br>Backint for Oracle (Configuration of Backint for Oracle Connection [Page 14]) |
| `NSR` | NetWorker (Configuration of the NetWorker Connection [Page 24]) |

**See also:**

*User Manual: SAP DB* → *Terms* → Backup Medium [Extern]

# External Backup ID

Every backup that was created with an external backup tool using a medium (media name [Page 32]) has its own unique identifier, the external backup ID.

**See also:**

*User Manual: SAP DB* → *Terms* → External Backup ID [Extern]

Backup with External Backup Tools [Page 6]

Restore with External Backup Tools [Page 7]

# Setting Environment Variables

So that the Database Manager [Extern] can access the environment variables that it requires on the database server, you must create these explicitly using a DBMCLI command.

Setting actual environment variables using operating system commands is therefore not applicable.

If only local accesses are made to a Database Manager in a purely Windows-NT environment, you can use normal Windows NT environment variables.

## Procedure

You can declare an environment variable or export it directly to the environment.

- You can declare an environment variable <variable> on the database host by entering the following DBMCLI command :
  **dbmcli -d <database_name> -n <server_node> -u <userid>,<password>**
  **dbm_configset -raw <variable> <value>**
- You can export an environment variable <variable> to the environment with the DBM Server [Extern] before calling an external backup tool. To do this, specify the following DBMCLI command:
  **dbmcli -d <database_name> -n <server_node> -u <userid>,<password>**
  **dbm_configset -raw set_variable_<number> <variable>=<value>**
  (0<= number <=100)
  The DBM Server exports the environment variable <variable> with the value <value> before an external backup tool is called.
  Exporting an environment variable is supported as of the following SAP DB versions: 7.2.05.016, 7.3.00.021, 7.4.02.002, 7.4.03.000

  Even if you have stored multiple values for an environment variable <variable>, only one value is exported for this environment variable.
  Example:
  You have entered the following DBMCLI commands:
  dbmcli ... dbm_configset -raw set_variable_<number1> <variable>=<value1>
  dbmcli ... dbm_configset -raw set_variable_<number2> <variable>=<value2>
  If number1 < number2, the DBM Server exports only value <value1> for the environment variable <variable>, otherwise only value <value2>.

If one of the environment variables TEMP, TMP, ADINT, ADA_OPT, NSR_ENV, NSR_POOL, NSR_EXPIRE, or BSI_ENV has been stored both with
**dbmcli ... dbm_configset -raw <variable> <value>**
and
**dbmcli ... dbm_configset -raw set_variable_<number> <variable>=<value2>**
the environment variable <variable> is exported with the value <value>, before an external backup tool is called.

**See also:**

*Database Manager CLI: SAP DB 7.4 → Calling the Database Manager CLI → DBM Server Command → Configuration of the DBM-Server →* Setting a DBM Server Parameter [Extern]