

# **BC R/3 Database Guide: DB2 Universal Database for UNIX & Window**



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## Icons

Icon	Meaning
	Caution
	Example
	Note
	Recommendation
	Syntax
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# BC R/3 Database Guide: DB2 Universal Database for UNIX & Windows

## Purpose

This component enables you to administer your DB2 Universal Database for UNIX & Windows with the R/3 System.

## Implementation Considerations

For information about installing the DB2 Universal Database for UNIX & Windows with the R/3 System, see:

- *R/3 Installation on UNIX: DB2 Universal Database*
- *R/3 Installation on Windows NT: DB2 Universal Database*

## Integration

SAP simplifies DB2 UDB database administration for you by providing various DBA functions in the Computing Center Management System (CCMS) of the R/3 System. Refer to [SAP/DB2 Universal Database DBA in CCMS \[Ext.\]](#).

If you are using a different database, read the appropriate documentation to find out about available functions:

- [BC R/3 Database Guide: ADABAS for R/3 \[Ext.\]](#)
- [BC R/3 Database Guide: DB2/400 \[Ext.\]](#)
- [BC R/3 Database Guide: Informix \[Ext.\]](#)
- [BC R/3 Database Guide: MS SQL Server \[Ext.\]](#)
- [BC R/3 Database Guide: Oracle \[Ext.\]](#)

## Features

The functions offered by the Computing Center Management System and SAP-DB2admin support you in performing all the essential tasks involved in managing a database. They enable you to:

- [Schedule and check backups \[Ext.\]](#)
- [Manage log files \[Page 33\]](#)
- [Reorganize tables \[Ext.\]](#)
- [Update table statistics \[Ext.\]](#)
- [Analyze database performance \[Ext.\]](#)
- [Monitor the space in your database \[Ext.\]](#)

## The SAP-DB2admin Tool

### Use

You can use the SAP-DB2admin tool to perform a number of R/3-specific database administration tasks, such as password and log file management.

### Prerequisites

- DB2 UDB Administration Client is installed.
- The SAP-DB2admin GUI is installed. For information about installing the SAP-DB2admin GUI, see [Installing SAP-DB2admin GUI Utilities \[Page 112\]](#).

### Integration

SAP-DB2admin is an enhancement to the IBM DB2 Control Center.

### Features

- [User management \[Page 74\]](#)
- [Tape management \[Page 51\]](#)
- [Log file management \[Page 33\]](#)
- [R/3 database detection \[Ext.\]](#)

### See Also

[SAP-DB2admin Architecture \[Page 8\]](#)

[The Admin Database \[Page 10\]](#)

[Rebuilding the Admin Database \[Page 11\]](#)

[Checking Admin Database Replication \[Page 13\]](#)

[Calling SAP-DB2admin Functions \[Page 14\]](#)

[R/3 Database Detection \[Ext.\]](#)

[SAP-DB2admin Options \[Page 15\]](#)

## SAP-DB2admin Architecture

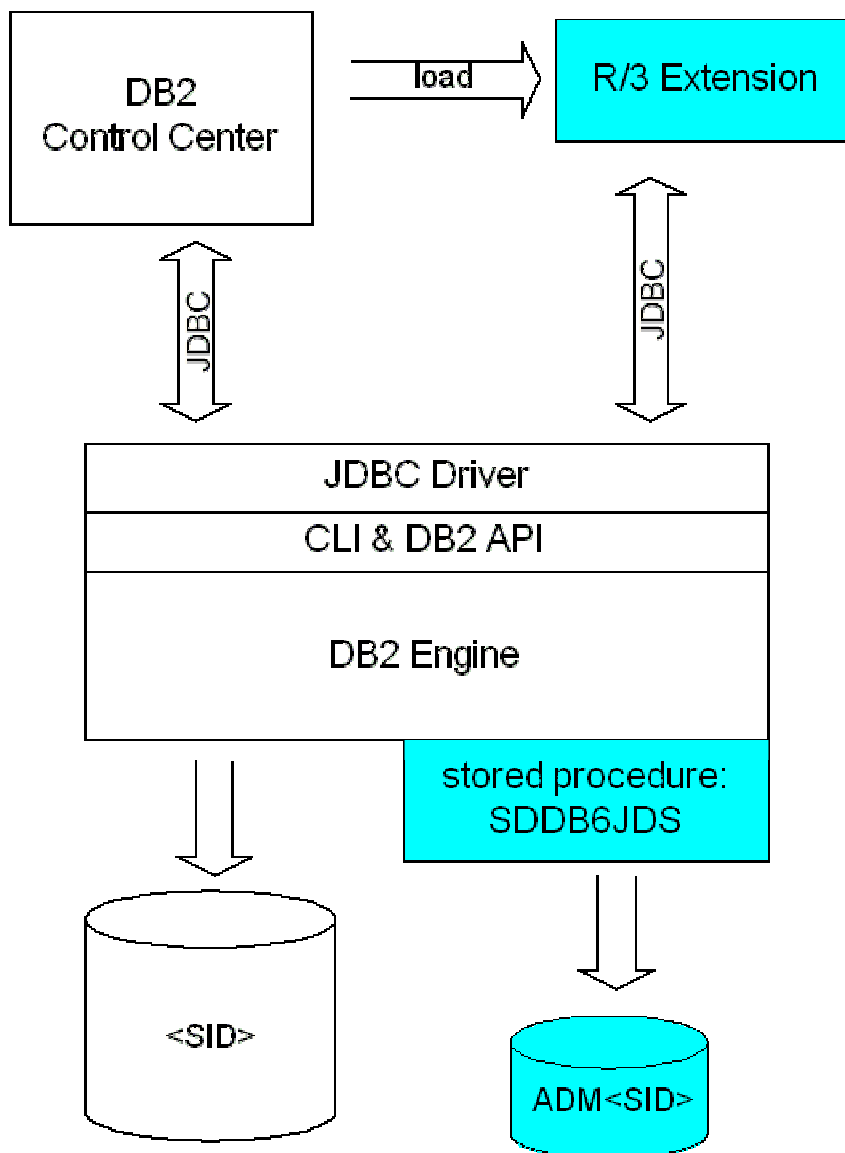
We strongly recommend that you use the DB2 Control Center (DB2CC) tool for administration tasks. To avoid inconsistencies, we recommend that you do **not** use the DB2 command line interface for administration commands unless you are explicitly requested to do so.

We make these recommendations for the following reasons:

- The DB2 Control Center has been extended to include some specific R/3 functions (log file management, tape management, and password management).
- The DB2 Control Center disables some administration functions to prevent the administrator from damaging the R/3 environment.
- The command line processor is not integrated into the DB2 administration infrastructure. Since it uses different DB2 interfaces, it does not meet R/3 database administration requirements.

The following graphic gives a general overview of the architecture of the enhancements for R/3 administration.





### Architecture of the DB2 Control Center Enhancements for R/3

The DB2 Control Center looks in directory `sqlllib/cc` for a file called `db2plug.zip`. If this file exists, it is loaded. It comprises the R/3 Extension for the Control Center. If the user selects any R/3 DB2 instance or database with the right mouse button, supplementary menu items are offered. If any of these items is selected, the corresponding R/3 Extension window is opened. From these windows the user can perform several R/3 DB2-specific administrative operations. Since all these operations are done on the server, stored procedure `sddb6jds` is called via JDBC. `sddb6jds` invokes the R/3 DB2 administration tools and manages the administration database `adm<sid>`.

---

## The Admin Database

# The Admin Database

## Definition

The admin database (or `ADM<SID>` database) is the core component of SAP-DB2admin. It contains administration management data, configuration parameters, and administration action protocols.

## Use

The contents of the admin database are mirrored on a regular basis to the R/3 database `<SID>` by a scheduled job. For more information, see the Computing Center Management System (CCMS) documentation on background processing. The database requires very little administrative attention. The database administrator can decide whether or not to back up the database. However, this is not strictly necessary on account of the above-mentioned mirroring from which it can be rebuilt. Transaction logging is circular (that is, `LOGRETAIN` is set to **OFF** and `USEREXIT` is set to **OFF**) for the admin database. This has the advantage that the admin database should continue to function even when the main R/3 database is blocked by a file system containing log files that are becoming full.

## Rebuilding the Admin Database

In case of a serious database or system failure, it may be necessary to rebuild the admin database. There are two different methods of rebuilding the [admin database \[Page 10\]](#). Which you choose is dependent on what has been destroyed in your R/3 database server environment. If your admin database has been destroyed, but your R/3 database remains intact, use program `sddb6mir` to rebuild your admin database.

### Rebuilding the Admin Database Using Program `sddb6mir`

#### Use

The program exports saved administration data from the <SID> database and imports it to ADM<SID>. Program `sddb6mir` rebuilds the complete database if necessary.

#### Prerequisites

- The administration data has been replicated to the <SID> database on a regular basis. This makes sure that the retrieved data is as current as possible. For information about scheduling the "mirroring" process for the administration database, see [CCMS Enablement \[Page 73\]](#).
- The requesting user must be <sapsid>adm. Program `sddb6mir` calls the DB2 export and import APIs (Application Programming Interfaces).
- PC/IXF is the format of choice for transferring the data between the two databases.
- `sddb6mir` is located in the `/usr/sap/<SID>/SYS/exe/run` directory.
- You have write authority for the directory where the temporary files are created or searched for.

#### Procedure

The syntax of `sddb6mir` is:

```
sddb6mir -r ADM<SID> -p <path>
```

`path` is the directory where the temporary files are created (as part of an export) or searched for (as part of an import). These temporary files are deleted after successful data transfer.



Examples of how to call `sddb6mir`:

- `sddb6mir -r ADMD4X -p /tmp`
- `sddb6mir -r admd4x -p C:\TEMP`

The second example applies to Intel-based platforms only.

#### Result

If any errors occur during rebuilding, you can find the following output files in the specified path:

**Rebuilding the Admin Database**

Output File	Contents
EXPMSG.TXT	The export message file of the exported table if export was not successful.
IMPMSG.TXT	The import message file of the imported table action if import was not successful.
EXPDATA.IXF	The result of the EXPORT action.

**Rebuilding the Admin Database from Log File Archive**

If the R/3 database is no longer usable, rebuild the admin database from log file archive. For instructions on how to do this, see [Restoring the Admin Database from Log File Archive \[Page 47\]](#).

## Checking Admin Database Replication

### Use

Several transactions in your R/3 System access data that is stored in the [admin database \[Page 10\]](#). The system does not access the admin database, but the R/3 database, which contains the same tables. To keep these tables up to date, a job is run to copy the contents of the admin database to the tables in the R/3 database. You should schedule this job to run hourly in the background.

Use the following procedure to check whether jobs ran correctly.

### Procedure

1. Choose *System* → *Services* → *Jobs* → *Job overview* or call transaction SM37.
2. For both *Job name* and *User name*, enter \*.
3. Choose *Execute*.
4. The system displays all the jobs scheduled for the current date.
5. To display the log for a job that has already run, double-click one of the ADMIN\_MIRROR job names. (This job name might be different on your system, depending on the scheduling action involved.)
6. Check the job log for any error information.

---

Calling SAP-DB2admin Functions

## Calling SAP-DB2admin Functions

### Prerequisites

The DB2 Control Center (DB2CC) is installed on your local machine. The SAP-DB2admin functions are accessed using the DB2CC, which is supplied with DB2.

### Procedure

1. To access any of the following actions, click the right mouse button on the following:

- DB2 instance object
  - R/3 Option Management*
  - R/3 Password Management*
- DB2 database object
  - R/3 Log file Management*
  - R/3 Tape Management*

DB2CC prompts you to enter the password of the database administration user  
db2<sid> or the R/3 system administration user <sid>adm.

2. Enter the password defined on the DB2 database host (where the <SID> database resides.)

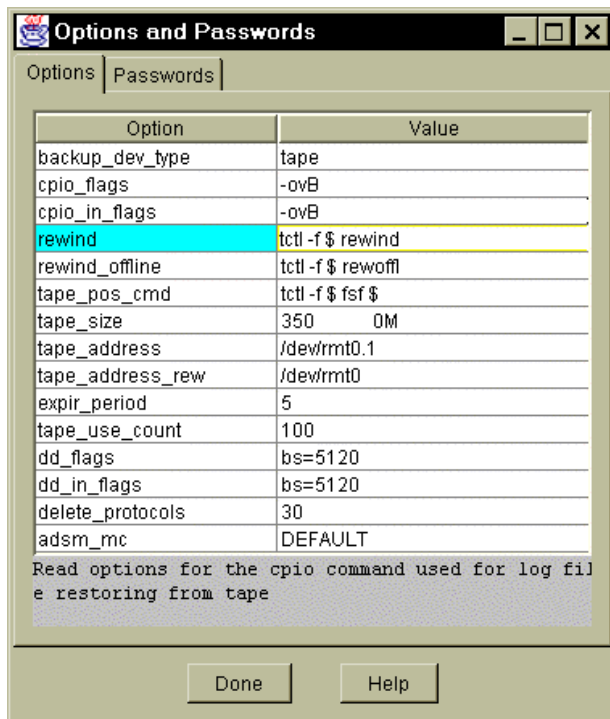
## SAP-DB2admin Options

### Use

The SAP-DB2admin tool is shipped with a set of default options, which you can change if required.

### Procedure

1. To change the options, choose *R/3 Option Management* in the Control Center. A list of options and their current values are displayed in table form.
2. Select the row of the relevant table entry. A description of this option is displayed in the text field below.
3. To change the option, select the field in the right column in the selected row.



4. Make your changes.
5. Choose Enter. The changes take effect immediately.
6. To cancel the change, choose Escape.

## Redirected Restore Tool

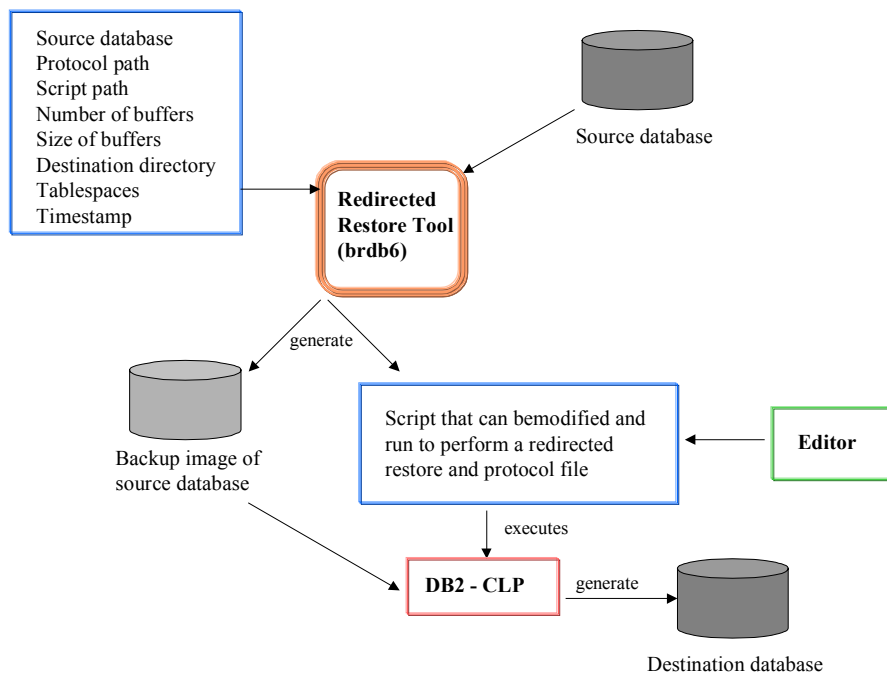
# Redirected Restore Tool

## Use

You perform a restore (generally a redirected restore) using the redirected restore tool (brdb6 tool). You can use the tool to create a backup of a database or separate tablespaces, and then write the changed data back to the database.

The redirected restore tool takes current data from the database and writes this information to a file. You can edit the file using any editor.

The following graphic gives an overview of the use of the tool:



## Activities

The redirected restore tool is called by the user `db2<sid>` on UNIX (the instance owner) or by `<sid>adm` on Windows NT at the operating system level (shell or terminal under UNIX or DOS prompt under Windows NT.)

The brdb6 tool (brdb6brt) can be used in three different modes, which cannot be combined. These modes are:

- `brdb6brt` with the option `-s` and the parameter `<source database>`

This mode contains the main functions of the tool. You use this mode to create a backup and to create a script to restore the database.

In addition, you can optionally specify a number of other options and parameters. .



## Redirected Restore Tool

The following table lists the possible options and parameters:

Option	Parameter
-bm	<BackupMode>
-pp	<ProtocolPath>
-ip	<ScriptPath>
-es	
-nb	<NumberBuffers>
-bs	<SizeBuffers>
-user	<UserName> -using <Password>
-ol	
-bpt	{<device>/<directory>" " }   `ADSM' [<NumberSessions>]
-tbs	{<TablespaceName>" " }
-ts	<timestamp>

- `brdb6brt` with the option `-r` and the parameter <OutputFile>

This mode is only used to restart a restore if an error occurs during a database restore.

- `brdb6brt` with the option `-v`

This mode is only used for displaying the program version, and has no significance for normal operations

The parameters are described in the following table:

Parameter	Description	Default Value
SourceDatabase	Name of the database from where the backup will be taken (<SID>)	No default. The name must be specified.
BackupMode	BACKUP or 1: Only a backup is created RETRIEVE or 2: Only a script is created BOTH or 3: Backup and script are created	BOTH: Backup and script are created
ProtocolPath	Path where a protocol file is written to	Current path
ScriptPath	Path where the script file is created	Current path
NumberBuffers	Number of buffers reserved for the execution of backup	2
SizeBuffers	Size of reserved buffers	1024
UserName	db2<sid> system user on UNIX (only required if the current user is not db2<sid>) or <sid>adm on Windows NT	Current user
Password	User's password	Current password

**Redirected Restore Tool**

Device	Machine to which the backup is written	Current path
NumberSessions	Number of ADSM sessions	1
TablespaceName	A list separated with spaces with the names of the tablespaces for backup	Whole database
Timestamp	Timestamp for a backup image in the form <code>YYMMDDhhmmss</code>	Current date and time

Make sure that you list your entries in a line and separate them with a space when you specify several tablespaces, devices or directories.

If you specify an option, such as `-ta` , `-pp` , `-nb` , `-bs` , ..., it must be followed by a parameter separated by a space. Exceptions to this rule are the options `-o1` and `-es`:

- When you specify `-o1`, the backup and tablespace level restore are performed in online mode. Users can still access the database.
- When you specify `-es`, comment lines are not included in the script and this makes it easier to read. You should only choose this option if you have in-depth knowledge of the DB2-CLP statements `RESTORE DATABASE` and `SET TABLESPACE CONTAINERS`.

**Tool Usage****Example 1**

You want to make a backup of the entire database on ADSM with two sessions. The source database is called `SAMPLE`. The backup should be made online and users should still be able to access the database.

Enter:

```
brdb6brt -s SAMPLE -bm BACKUP -bpt ADSM 2 -o1
```

or

```
brdb6brt -s sample -bm 1-bpt ADSM 2 -o1
```

**Example 2**

You want to create a backup and script for the database `TEST`. The backup image should be created in `Y:\BACKUPS1\` and `Z:\BACKUPS2\`. The script file should be saved under `Z:\SCRIPTS\` and the protocol file under `Z:\PROTS\`.

Enter:

```
brdb6brt -s TEST -pp Z:\PROTS -ip Z:\SCRIPTS -bpt Y:\BACKUPS1
Z:\BACKUPS2
```

or

```
brdb6brt -s TEST -bm BOTH -bpt Y:\BACKUPS1 Z:\BACKUPS2 -ip
Z:\SCRIPTS -pp Z:\PROTS
```

**Example 3**

You want to create a script for the database `WORK` only because a backup was already made. To do this, the instance owner `db2n46adm` must first of all log on and has the password `PASS123`.

Enter:

```
brdb6brt -s WORK -bm RETRIEVE -user db2n46adm -using PASS123
```

#### Example 4

You want to make a backup of one or more tablespaces rather than of the entire database. The tablespaces for backup should have the names `USERSPACE1`, `TBSPACE` and `TESTSP2`. The backup should be done on ADSM (three sessions). The database is called `TESTDB`. You should also create a script.

Enter:

```
brdb6brt -s TESTDB -bpt ADSM 3 -tbs USERSPACE1 TBSPACE TESTSP2
```

The following is an example of a script created by `brdb6brt`:

```
-- ** ATTENTION: DO NOT DELETE THE FOLLOWING 2 LINES !
UPDATE COMMAND OPTIONS USING S ON Z ON SAMPLE.out V ON;
ECHO @./SAMPLE.scr@;

-- *****
-- ** DB2-CLP script
-- ** created for database SAMPLE
-- **
-- ** Usage notes:
-- **
-- ** > In general all lines beginning with '--' are only comment lines
-- ** and will be ignored by the DB2 Command Line Processor
-- ** > Lines beginning with '-- **' are just comments and only for
-- ** your information
-- ** > Lines beginning with '-- S#' mark the beginning of a section
-- ** that can be edited
-- ** > Lines beginning with '-- E#' mark the end of a section that
-- ** can be edited
-- **
-- ** The script is subdivided into three major parts:
-- ** 1. The general redirect restore procedure
-- ** (for further information about this part see the
-- ** 'RESTORE DATABASE' command in the Command
-- ** Reference of DB2)
-- ** 2. One redefining part for each tablespace
-- ** (for further information about this part see the
-- ** 'SET TABLESPACE CONTAINERS' command in the Command
-- ** Reference of DB2)
```

**Redirected Restore Tool**

```
-- ** 3. The closing part
-- **      (this part completes the restore procedure.
-- **      See also the 'ROLLFORWARD DATABASE' command in
-- **      Command Reference of DB2)
-- **
-- *****
-- *****
-- ** Part 1 : General redirected restore procedure
-- *****
```

RESTORE DATABASE SAMPLE

FROM

-- \*\* Path or device where the backup image is stored

-- S#####

.

-- E#####

TAKEN AT

-- \*\* Timestamp (when was the backup image taken? )

-- \*\* use the given format: YYYYMMDDhhmmss

-- S#####

19990802154252

-- E#####

-- \*\* If you want to restore into a new database,

-- \*\* you can uncomment the following lines and specify

-- \*\* the drive where the new database files should be written

-- \*\* Replace the <new\_DB\_Target> into a full qualified drive name

-- \*\* This command will be ignored if you restore into

-- \*\* a database that already exists

-- S#####

-- TO

-- <new\_DB\_Target>

-- E#####

INTO

-- \*\* New Database name

-- S#####

SAMPLE

-- E#####

-- \*\* If you want the log files to be written to a new

-- \*\* directory, uncomment the following line and specify

-- \*\* the path name where the new primary logfiles should be written

Redirected Restore Tool

```
-- ** Replace the <new_Log_Path> into a full qualified path name
-- S#####
-- NEWLOGPATH
-- K:\DB2\NODE0000\SQL00001\SQLLOGDIR\
-- E#####
WITH
-- ** Specify the number of buffers to be used for the restore procedure
-- S#####
2
-- E#####
BUFFERS BUFFER
-- ** Specify the size of the buffers used for the restore
-- S#####
1024
-- E#####
REDIRECT
-- ** If the database should not be set to the 'rollforward pending' state
-- ** after the restore action, the following line has has to be uncommented.
-- S#####
-- WITHOUT ROLLING FORWARD
-- E#####
;
-- *****
-- ** Part 2 : Redefining of the tablespace containers for
-- **          each tablespace
-- *****

SET TABLESPACE CONTAINERS FOR 0 USING (
-- *****
-- ** Container information for SMS tablespace [0] SYSCATSPACE
-- *****
-- ** current total pages          : 1685
-- ** currently used pages         : 1685
-- ** current high water mark      : 0
-- *****
-- ** Container information
-- ** Don't change the type of the container(s).
-- ** If you want to add a container separate the new
-- ** container line by a comma.
```

**Redirected Restore Tool**

```
-- **
-- **      type      | name
-- S#####
      PATH      K:\DB2\NODE0000\SQL00001\SQLT0000.0
-- ,      PATH      <new container name>
-- E#####
) ;

SET TABLESPACE CONTAINERS FOR 1 USING (
-- *****
-- ** Container information for SMS tablespace [1] TEMPSPACE1
-- *****
-- ** current total pages          : 1
-- ** currently used pages         : 1
-- ** current high water mark      : 0
-- *****
-- ** Container information
-- ** Don't change the type of the container(s).
-- ** If you want to add a container separate the new
-- ** container line by a comma.
-- **
-- **      type      | name
-- S#####
      PATH      K:\DB2\NODE0000\SQL00001\SQLT0001.0
-- ,      PATH      <new container name>
-- E#####
) ;

SET TABLESPACE CONTAINERS FOR 2 USING (
-- *****
-- ** Container information for SMS tablespace [2] USERSPACE1
-- *****
-- ** current total pages          : 1
-- ** currently used pages         : 1
-- ** current high water mark      : 0
-- *****
-- ** Container information
-- ** Don't change the type of the container(s).
-- ** If you want to add a container separate the new
-- ** container line by a comma.
```

Redirected Restore Tool

```
-- **
-- **      type      | name
-- S#####
--      PATH      K:\DB2\NODE0000\SQL00001\SQLT0002.0
-- ,      PATH      <new container name>
-- E#####
-- ) ;

SET TABLESPACE CONTAINERS FOR 3 USING (
-- *****
-- ** Container information for DMS tablespace [3] USERDATA1
-- *****
-- ** current total pages          : 1000
-- ** currently used pages         : 224
-- ** current high water mark     : 224
-- *****
-- ** Container information
-- ** Type of containers can be changed. Valid modifications
-- ** are the both types FILE and DEVICE
-- ** If you want to add a container separate the new
-- ** container line by a comma.
-- **
-- **      type      | name                      | size
-- S#####
--      FILE      K:\DB2\NODE0000\SQL00001\sapdata1\userdata1.001    1000
-- ,      FILE      <new container name>          <new container size>
-- E#####
-- ) ;

-- *****
-- ** Part 3 : Complete the restore (and rollforward the database)
-- *****

RESTORE DATABASE SAMPLE CONTINUE ;

-- *****
-- ** If you want to rollforward the database you have to
-- ** uncomment the 'ROLLFORWARD DATABASE ...' line(s) below.
-- ** For more information about the rollforward process see
-- ** the documentation for BRDB6BRT-Tool or the
```

**Redirected Restore Tool**

```
-- ** 'ROLLFORWARD DATABASE' command in the Command Reference of DB2
-- *****
-- S#####
-- ROLLFORWARD DATABASE SAMPLE TO END OF LOGS;
-- E#####
```

```
ECHO *****;
ECHO ** THE RESTORE PROCEDURE HAS NOW FINISHED SUCCESSFULLY **;
ECHO *****;
```

Note the following points:

- An SMS container as in Tablespace [2] can only be a PATH. You are only allowed to change the name of the container.
- You can choose between FILE or DEVICE in a DMS container, as in Tablespace [3] and [4].
- You can specify any size of the containers for DMS tablespaces and you can increase or reduce the size of any container. Make sure that the total size of the tablespace is not lower than the High Water Mark.
- If the database is recreated using INTO <TargetDatabase> into a new database that has not yet been created, this database is automatically created. The backup that is used as the source must be a complete backup of a database and not just a backup of tablespaces.
- If the script is run without changes, the database is restored into its original structure.

**Execution of the Script**

After the script has been edited by the user it has to be run from the command line to get it executed. The DB2 Command Line Processor (DB2 CLP) provides an option allowing for DB2 statements to be read from a file. This is called background mode.

Enter:

```
db2 -tvf <script file>
```

The parameters have the following meaning:

Option Flag	Meaning
-t	Forces the CLP to use a semicolon (;) as terminating character for an SQL statement. The use of this option is mandatory for the execution of the script.
-v	Forces the CLP to print each statement on the screen.
-f <batchFile>	Forces the CLP to read the statements from the named file. The brdb6 tool creates by default a script file of the name <DBName>.scr where <DBName> is the name of the source database.

If a backup of the database TEST4DB, for example, was created and the script should now be executed, enter:



```
db2 -tvf TEST4DB.scr
```

### Restart of the Script

As already mentioned, runtime errors can occur during execution of the script. The script is terminated immediately.

All actions and error messages will be displayed on the screen and reported in a file named **<sid>.out**. The file will reside in the current working directory, in most cases the directory where **<sid>.scr** can be found. As a general recommendation you should make sure that all files that are generated, from start of the backup until recreation of the database, are placed in the same directory.

To restart the script you must execute **brdb6brt** with option flag **-r** and parameter **<sid>.out**. Together with its log files the tool can determine which commands have been executed without errors and which need to be put into a new script. The newly created script will be named **<sid>.<nnn>**, **<nnn>** being a number string between 000 and 999 starting with 000. The first time you restart a script named **<sid>.000** will be created. This script can be edited and be investigated with regard to the errors reported by the DB2 CLP.

The new script has to be executed by:

```
db2 -tvf <sid>.000
```

If another error occurs during execution of the new script, a restart is still possible using:

```
brdb6brt -r <sid>.out
```

However, this will create a script with the name **<sid>.001**.

The log file **<sid>.out** must not be changed or deleted until the database has been restored completely and the screen displays:

```
*****
**  THE RESTORE PROCEDURE HAS NOW FINISHED SUCCESSFULLY  **
*****
```

## The DB6CLP Command

## The DB6CLP Command

### Use

This command enables you to call the DB2 Command Line Processor (CLP) with more than one command. On Windows it also has the advantage that the DB2 CLP Environment is not needed. Internally, however, the CLP is used.

### Structure

The syntax of the command is as follows:

```
db6clp -V |
[-a S|A [-db <dbname>]]
| -c S|A [-db <dbname>]]
| -i <instance>
| -db <dbname>]]
[-p <partition>]]
<command>
```

The switches have the following meaning:

Switch	Meaning
-a	Explicitly attach to the database instance before the command execution. The instance is the one to which the database given with the <code>-db</code> switch belongs. If <code>-db</code> switch is omitted <code>&lt;SID&gt;</code> is assumed as the database name. If S is specified, the attachment is made using the user <code>sapr3</code> . If A is specified, user <code>&lt;sid&gt;adm</code> will be used. The password is retrieved using the password services of R/3 for DB2 UDB. Thus the correct environment must exist for a successful run ( <code>DB2DB6EKEY</code> must be set). This switch can only be used if the caller is one of the <code>db2&lt;sid&gt;</code> , <code>&lt;sid&gt;adm</code> or <code>sapse&lt;sid&gt;</code> (on NT) users.
-c	Explicitly connect to the database given with the <code>-db</code> switch. If <code>-db</code> switch is omitted <code>&lt;SID&gt;</code> is assumed as the database name. For specification of S or A the same comments as for the <code>-a</code> switch apply. This switch can only be used if the caller is one of the <code>db2&lt;sid&gt;</code> , <code>&lt;sid&gt;adm</code> or <code>sapse&lt;sid&gt;</code> (on NT) users.
-l	Set the environment <code>DB2INSTANCE</code> to this value before execution of the CLP command.
-db	If this switch is specified without one of the <code>-a</code> and <code>-c</code> switches an explicit connection to the database is only made if it is cataloged remote.
-p	Set the partition of the database to which the command applies. This is applicable in EEE environments. The environment <code>DB2NODE</code> is set to the given value before the command execution.

The variable `<command>` is the command to be executed by the CLP. Several commands are possible if semicolons separate them.

---

**The DB6CLP Command**

Within R/3 there is a predefined external command for the db6clp program. It is named DB6CLP and can be used on all platforms.

For more information on external commands, see *BC-CCMS → Background Processing → Concepts and functions → external commands and external programs*.

---

## Host Directory Structures

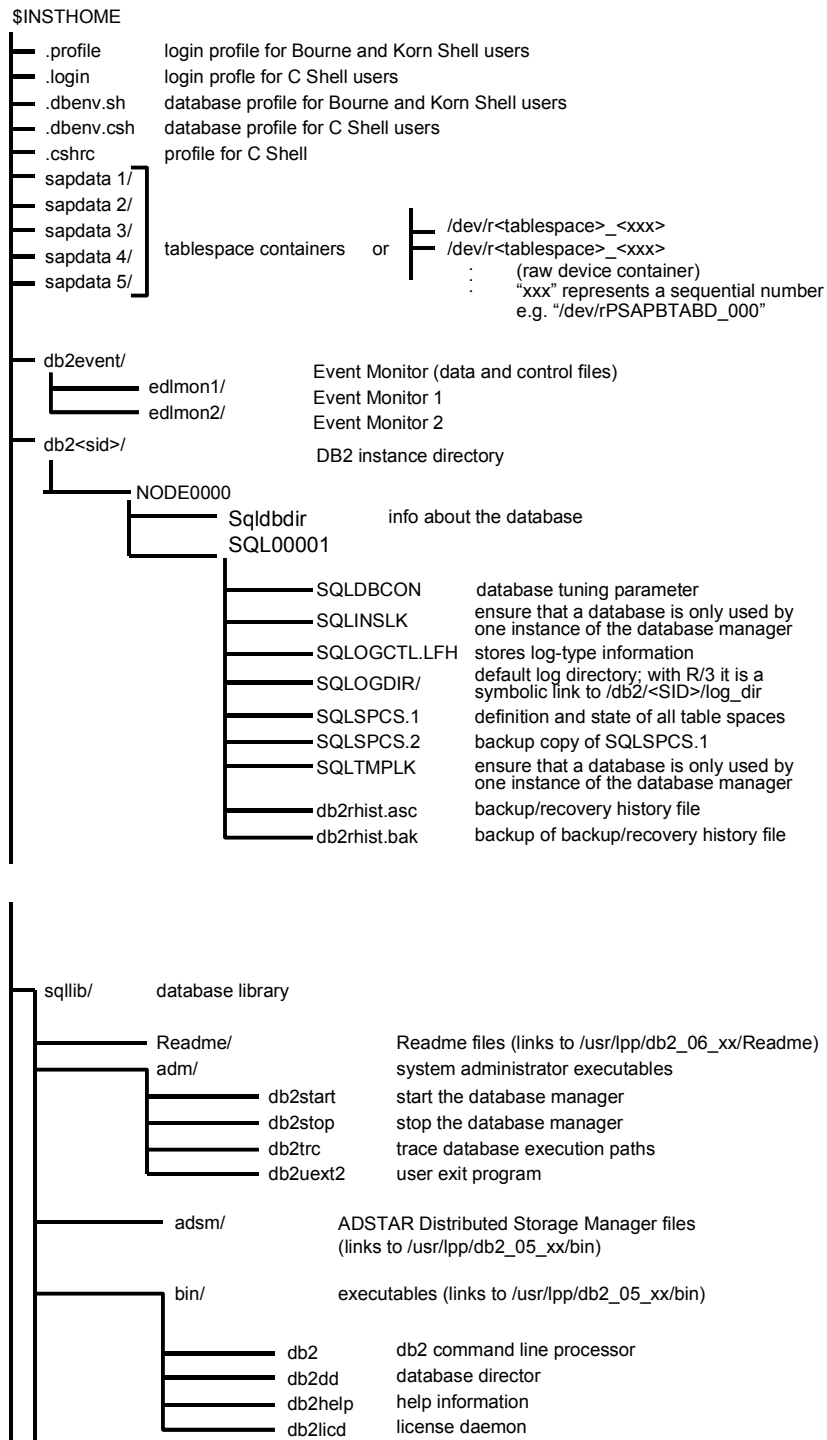
# Host Directory Structures

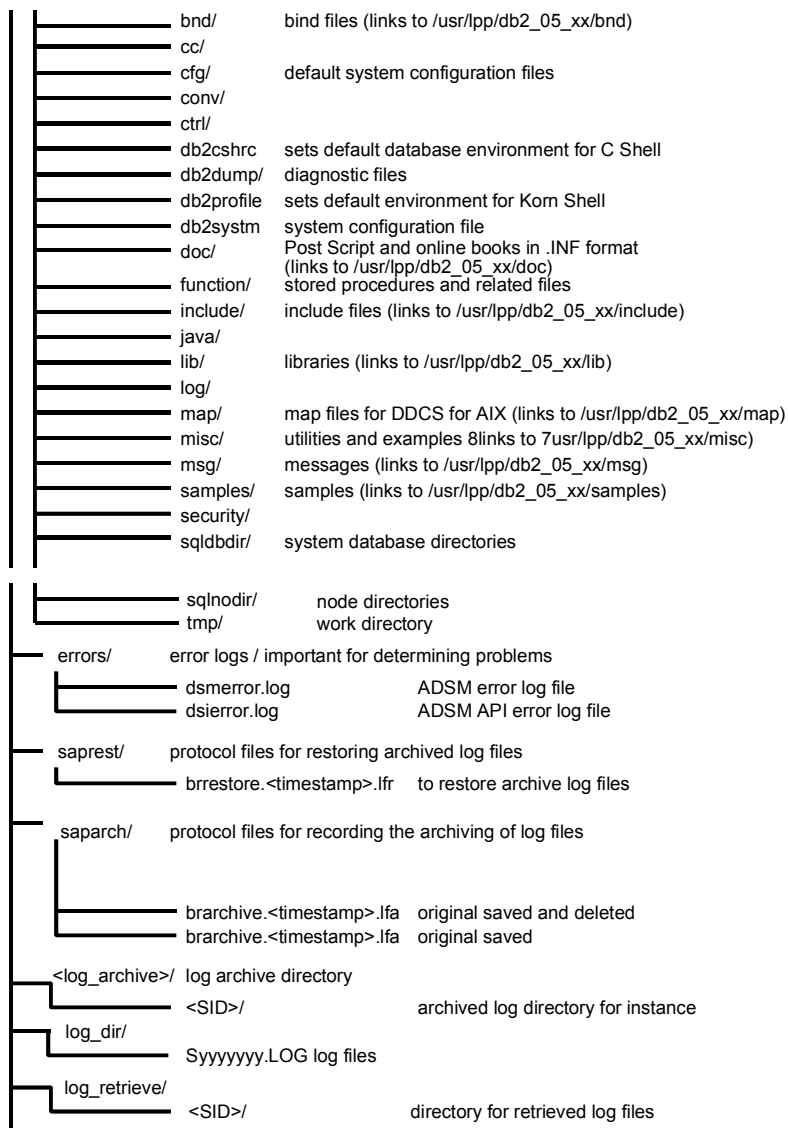
For directory structures on UNIX or Windows NT, see the following:

[R/3 Directory Structure: DB2 UDB on UNIX Platforms \[Page 29\]](#)

[R/3 Directory Structure: DB2 UDB V6 on the Windows NT Platform \[Page 31\]](#)

## R/3 Directory Structure: DB2 UDB on UNIX Platforms



**R/3 Directory Structure: DB2 UDB on UNIX Platforms**

## R/3 Directory Structure: DB2 UDB on the Windows NT Platform

You can locate the following directories on different drives:

Directory	Description
<drive0>:\<sqllib>	Installation and upgrade directory for the database software; specified and created during installation of DB2 Universal Database for UNIX, Windows software
<drive0>:\<sqllib>\db2<SAPSID>	DB2 instance directory
<drive1>:\db2<SAPSID>	Database configuration data
<drive2>:\db2\<SAPSID>\log_archive	Log archive files
<drive2>:\db2\<SAPSID>\log_retrieve	Log retrieve files
<drive3>:\db2\<SAPSID>\sapreorg	Used during installation to copy the first export CD
<drive5>:\db2\<SAPSID>\log_dir	Database log file
<drive6>:\db2\<SAPSID>\sapdata1	R/3 data
<drive7>:\db2\<SAPSID>\sapdata2	R/3 data
....	
<drivex>:\db2\<SAPSID>\sapdata6	R/3 data

The following subdirectories are created in directory \db2<SAPSID> during installation:

Subdirectory	Description
db2dump	Diagnostic information from the database
db2event	Event monitor data and control files
db2UserExits	Temporarily used for log archiving
errors	Error logs of the DB2 admin tools
saparch	Protocol files recording the archiving of log files
saprest	Protocol files for restoring archived log files
SQLxxxxx	Database information
sqlbdir	Database directory





## Log File Management

### Use

For an explanation of the importance of log files and background information on the use of log files in database transaction processing and database recovery, see the [IBM DB2 Universal Database documentation \[Page 110\]](#).

**See also:**

[Log File Management: Concepts \[Page 34\]](#)

### Activities

The following sections describe the log file management activities that can be accessed from the DB2 Control Center (DB2CC):

- [Archiving Log Files \[Page 41\]](#)
- [Restoring Log Files \[Page 43\]](#)
- [Cleanup \[Page 49\]](#)
- [Managing Tapes \[Page 51\]](#)
- [Managing Device Classes \[Page 55\]](#)
- [Log File Management: Troubleshooting \[Page 53\]](#)
- [Using the Log File Management Journal \[Ext.\]](#)

---

**Log File Management: Concepts**

## Log File Management: Concepts

Within an R/3 environment, a log file can have several different states during its life cycle:

- **Online active**

The log file is currently being used to log transactions. The location of the log file is the `LOGPATH` of the database. This can be either a file system path or a raw device.
- **Online retained**

The log file is no longer being written to by the database, but may contain transactions with data pages that have not yet been written from the buffer pool to disk. The location of the log file is the `LOGPATH` of the database and the `DB2DB6_ARCHIVE_PATH` (that is, the log file was archived by the DB2 user exit).
- **Offline retained**

The log file is no longer being used and does not contain transactions with unwritten data pages. The location of the log file is only `DB2DB6_ARCHIVE_PATH`.
- **Archived retained**

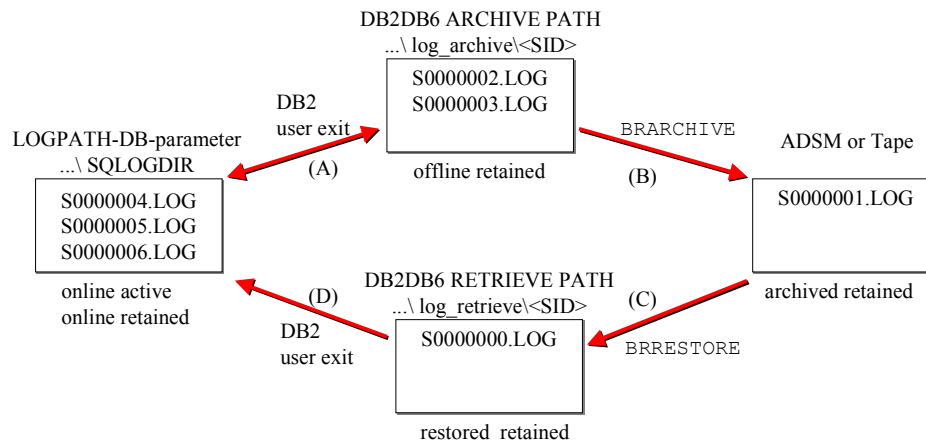
The log file has been archived using `BRARCHIVE`. The location of the archived log file is on the backend, in other words, either TSM (Tivoli Storage Manager), formerly ADSTM (ADSTAR Distributed Storage Manager) or tape. If not explicitly deleted, the original log file is also still in the `DB2DB6_ARCHIVE_PATH`. No restore is possible (or necessary) as long as this original log file has not been deleted.
- **Restored retained**

The log file has been restored using `BRRESTORE`. The location of the restored log file is the `DB2DB6_RETRIEVE_PATH`. If not explicitly deleted, the archived log file is also still available.
- **Invalid**

The SAP-DB2admin tools can only administer the latest version of a log file with a given number per node. If the database generates a second log file with an already used number, the user exit marks all previous versions as `INVALID`. This can occur after a database restore or by turning the `USEREXIT` database configuration parameter off and on. If archived, the log files can still be manually retrieved from the backend using system/ADSTM tools but the SAP-DB2admin tools only support the archival and retrieval of the newest version.

The SAP-DB2admin enhancements to the DB2CC support this life cycle.

### The Life Cycle of a Log File



1. When the `USEREXIT` database configuration parameter is set, the DB2 user exit program automatically stores log files that go offline into the `DB2DB6_ARCHIVE_PATH` (see (A) in the diagram). When requested by a `ROLLFORWARD` in connection with a database restore action, it retrieves offline retained logs from the `DB2DB6_ARCHIVE_PATH` or the `DB2DB6_RETRIEVE_PATH` (see (A) and (D)).
2. `BRARCHIVE` is used to back up offline log files into an archive (see (B)). ADSM is the preferred solution. It provides more robust processing and is much more flexible. The `BRRESTORE` program retrieves archived log files from the archive repository, if they are no longer in the `DB2DB6_ARCHIVE_PATH`, and places them in the `DB2DB6_RETRIEVE_PATH` (see (C)) where the user exit can access them. Both `BRARCHIVE` and `BRRESTORE` are called from within the DB2 Control Center or can be started on the command line.

For a description of the parameters that affect log file management, see [Log File Management Parameters \[Page 88\]](#).

For a description of the available log file management protocols, containing information on actions performed using the SAP-DB2admin tools, see [Log File Management Protocols \[Page 90\]](#).

### The SAP-DB2admin-specific Log File Management Paradigm

Whenever a log file becomes "offline retained", SAP-DB2admin associates it with a backup image timestamp (that is, the date and time of the most recent R/3 database backup or R/3 database restore). SAP-DB2admin is then able to tell the database administrator which log files are needed to roll forward a database after a specific backup image has been restored. (See also [Restoring Log Files \[Page 43\]](#).) In combination with the log file "close-timestamp" (another log file attribute), the backup timestamp allows SAP-DB2admin to keep track of the restorable backup/log file combinations. This is supported by the SAP-DB2admin GUI.

## Log File Management: Concepts



Only SAP\_DB2admin tools should be used to manage log files. They should not be moved or deleted manually as this can lead to database management data inconsistencies.

## Raw Device Log Files

To achieve maximum performance, it may be advisable to put log files into "raw devices". This has the effect of bypassing possible file system management overhead and allows DB2 to manage the log data with optimum efficiency.

SAP-DB2admin fully supports raw logs. The differences between filesystem-based logging and raw device logging are hidden by the DB2 log file management user exit.

If you decide to use raw device logging, the following is necessary to enable roll forward during database recovery. To allow DB2's user exit for log file management to put missing logs into the overflow log directory, the ROLLFORWARD utility must specify the overflow log path parameter. If the logging information cannot be obtained from the log extents available on the raw device, DB2 expects the logs to be in this overflow log directory.

## DB2 User Exit

### Use

We strongly recommend that you activate the user exit mechanism by setting the database configuration parameters *USEREXIT* and *LOGRETAIN*. When the user exit program is to be invoked, the database manager passes control to the executable `db2uext2`, which can store and retrieve log files and manage the location of archived log files. Using a user exit program to archive and retrieve files enables a database to perform rollforward recovery.

### Features

#### Calling Format

The database manager will call the user exit program `db2uext2` as required and passes a predefined set of parameters to it. The following is the database manager format for calling a UNIX-based or Windows NT operating system user exit program to archive or retrieve data.

```
db2uext2 -OS<os> -RL<db2rel> -RQ<request> -DB<dbname> -NN<nodenum> -  
LP<logpath> -LN<logname> -AP<adsmpasswd> -SP<startpage> -LS<logsize>
```

#### User Exit Program Parameters

Parameter	Description
os	Platform on which the instance is running, for example, AIX, Windows NT, Solaris, HP, Windows 95, Windows 98.
db2rel	DB2 release level
request	Request type. This can be ARCHIVE or RETRIEVE.
dbname	Database name
nodenum	Local node number
logname	Fully qualified path to the log files. The path must contain the trailing path separator.
adsmpasswd	ADSM password. It will be passed to the user exit if it is provided in the database configuration.
startpage	Log extent starts at this number of offset 4k pages of the device.
logsize	The size of the log extent in 4k pages.



The -LS and -SP parameters are only used if a raw device is used for logging.

#### Archive and Retrieve Considerations

The database configuration parameter *USEREXIT* specifies whether the database manager invokes a user exit program to archive files or, alternatively, to retrieve log files during roll-forward recovery of the database. A request to retrieve a log file is made when the roll-forward database recovery utility needs a log file that is not found in the log path directory.

## DB2 User Exit

### Archive Considerations

When archiving, a log file is passed to the user exit program when it is full, even if the log file is still active and may be needed for normal processing. The log file is retained in the log path directory until it is no longer needed for normal processing. At this point, the disk space is reused.

The SAP-DB2admin user exit program allows the disk archival of different log files with the same number as it appends the closing timestamp (file system time when the log file was closed) to the log file's name. However, only the most recent such log file can be restored. Information about older versions initially archived to disk are stored by SAP-DB2admin but can only be restored manually.

Log files archived to disk by the SAP-DB2admin user exit (where the destination is specified by the environment variable `DB2DB6_ARCHIVE_PATH`) will have the following naming convention:

`Szzzzzzz.LOG.<timestamp>.NODEyyyy`

Variable	Meaning
zzzzzzzz	Log file number
<timestamp>	Time when the log file was closed
yyyy	Node number

The SAP-DB2admin user exit program can also be configured to archive directly to ADSM.

The environment variable `DB2DB6_UEXIT_DIRECT=ADSM` has to be set for the DB2 server instance owner.

### Retrieve Considerations

If the user exit passes a zero (successful) return code back to the database manager and the requested log file has not been retrieved, the database manager assumes the roll-forward operation is complete to the end of logs, and the roll-forward operation stops. However, roll-forward processing may not have gone to the end of the logs.

If a non-zero return code is returned, the database will be in a roll-forward pending state, and you must either resume or stop roll-forward processing.

### Configuring SAP-DB2admin user exit

The environment variables listed below can be used to influence the archiving behavior of the SAP-DB2admin user exit.



Most environment variables apply both to UNIX and Windows NT. On all these systems the `DB2DBDFT` environment variable **must** be set to the SAP system ID (SID).

### DB2DB6\_ARCHIVE\_PATH

This is the path where log files are archived by the user exit when the environment variable `DB2DB6_UEXIT_DIRECT` is not set (the default). This path will be concatenated with the database name (in uppercase) to form the physical archive path. The `DB2DB6_ARCHIVE_PATH`

directory must exist, the user exit will create further subdirectories if needed. The user `db2<sid>` must have write access to `DB2DB6_ARCHIVE_PATH`.

### DB2DB6\_RETRIEVE\_PATH

This is the path where the user exit retrieves log files if they are no longer in the `DB2DB6_ARCHIVE_PATH` directory. The `DB2DB6_RETRIEVE_PATH` is concatenated with the database name (in uppercase) to form the physical retrieve path. The `DB2DB6_RETRIEVE_PATH` directory must exist, the user exit will create further subdirectories if needed. The user `db2<sid>` must have write access to `DB2DB6_RETRIEVE_PATH`. This variable can be set to the same value as that in `DB2DB6_ARCHIVE_PATH`.

### DB2DB6\_STANDBY\_DIR

This is the path where log files will additionally be copied to if support for standby databases is required. The variable `DB2DB6_STANDBY_DIR` is supported from R/3 release 4.6B onwards. The user `db2<sid>` must have write access to `DB2DB6_STANDBY_DIR`.

### DB2DB6\_UEXIT\_DIRECT

If this environment variable is set to ADSM or TSM the user exit program will archive log files directly to the specified TSM server. The log files will be saved to TSM in backup mode. Make sure that a backup copy group exists for your management class.

The following naming conventions are used:



On Windows NT platforms a backslash \ will be used instead of a slash /.

- For the TSM register file space:
  - File space name = “/xxx” where “xxx” is the database name
  - File space type = “DB2”
- For the TSM object:
  - Object name filespace = “/xxx” where “xxx” is the database name
  - Object high level name = “/NODEyyyy” where “yyyy” is the node number
  - Object low level name = “/Szzzzzzz.LOG” where “zzzzzzz” is the log file number

If direct archiving to TSM is chosen, no log file information is stored to the admin database `ADM<SID>`. In this case the log files are stored without timestamp information in TSM.

In addition, we recommend that you specify the TSM management class the log files will be archived to. If no management class is specified, the default management class is used. The TSM management class can be specified as follows:

`DB2DB6_UEXIT_DIRECT=ADSM,<MGMTCLASS>`

Remember to set the environment variables `DSMI_CONFIG` and `DSMI_DIR` for the database instance owner if you use `DB2DB6_UEXIT_Direct` to TSM.

---

**DB2 User Exit****DB2INSTANCE**

The default instance is defined by the `DB2INSTANCE` environment variable.

**Managing Log Files on your TSM Server**

The `db2adutl` utility allows you to query, extract and delete log files saved to TSM using the SAP-DB2admin user exit program. The utility is installed in the `INSTHOME/sqlllib/misc` directory on UNIX platforms and in the `\sqlllib\misc` directory on Intel platforms.

For more information on the `db2adutl` utility, see the 'IBM DB2 Universal Database on UNIX, Windows Administration Guide, Version 6', section 'ADSTAR Distributed Storage Manager'.



## Archiving Log Files using BRARCHIVE

### Use

You archive log files to stop the database running out of work space. This can be divided into two steps:

1. Archiving a non-database disk.
2. Further archiving from this disk to long-term storage.

The default behavior of the user exit performs the first step, archiving log files to the disk. Specifically, they are moved from the directory indicated by the `LOGPATH` database configuration parameter to the directory in the `DB2DB6_ARCHIVE_PATH` variable. The names of the log files are also appended with their close timestamp and node name. See the section [DB2 user exit → Archive Considerations \[Page 37\]](#).

Log files should be moved to long-term storage to reduce disk storage capacity and protect against disk failure. This is done using the SAP-DB2admin tool `BRARCHIVE`, either most comfortably using the DB2CC extensions, or alternatively directly from the command line and/or using scripts. You can either archive them to tape or to TSM (Tivoli Storage Manager) – formerly ADSM (ADSTAR Distributed Storage Manager).

### Procedure

#### DB2CC

1. To archive log files, choose *R/3 Log File Management* in the DB2 Control Center.
2. Choose *Archive*.
3. Select the node from which you want to archive log files.
4. Select the log file up to which you want to archive. (All the log files up to and including the one you have selected are archived.)
5. If you do not want the log files to be deleted from `DB2DB6_ARCHIVE_PATH` after archiving, check the *don't delete log files in file system* check box.
6. Select ADSM (left) or Tape (right radio box):

- ADSM:

Select a management class in the ADSM management class box.

The possible entries for management class are maintained via the *R/3 Option Management* dialog box. The corresponding keyword is `adsm_mc`. Under *Value*, a list of management classes is specified, separated by commas.

- TAPE:

Select *name of first tape*. The list of devices beside this box is then recalculated to only contain the matching devices for that tape. Select a device.

(Alternatively, you can start by choosing a device name and afterwards choose an appropriate tape.)

## Archiving Log Files using BRARCHIVE

If you want to save to two tapes simultaneously, follow the same procedure *for the name of the second tape* and its device. If these fields do not contain any entries, log files are saved to a single tape.

Once you have selected an entry in one of the four boxes, the entries in the remaining boxes are limited to those entries that match your selection. To display the full list of possible entries, start selection again by choosing *Reset Selection*.

If the tape is not initialized or the device is not defined, go to the *R/3 Tape Management* by choosing *Tapes...*

To start the archive process, choose *Archive*. A dialog box appears telling you that the archiving process was just started. After the archiving has finished, another dialog box appears telling you if it was successful. All archive actions and their results can be seen in the *Journal* page.



Once you have archived log files to a tape, the same tape cannot be used to archive additional log files in a later operation.

## Command Line

Refer to [Examples of BRARCHIVE and BRRESTORE operations and Command Syntax \[Page 61\]](#).

## Restoring Log Files using BRRESTORE

### Use

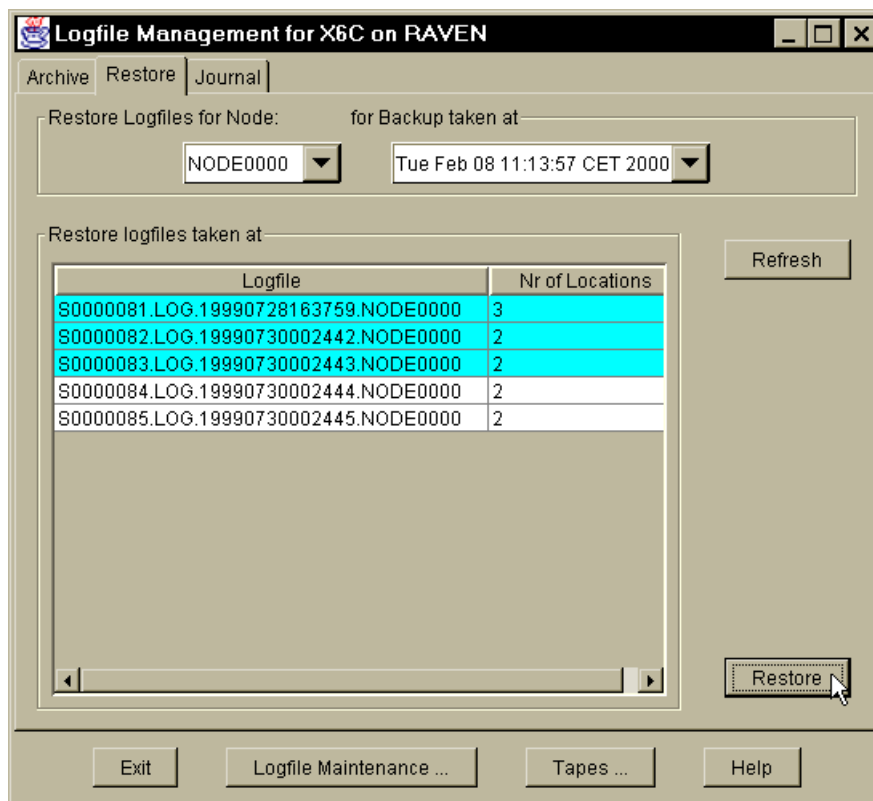
If you need to restore (roll forward) the database, you can use `BRRESTORE` to restore the archived log files from storage (ADSM or tape.)

### Procedure

#### DB2CC

To restore the log files:

1. Choose *R/3 Log File Management* in the DB2 Control Center.
2. Choose *Restore*.
3. Select the node under which you want to restore log files.
4. To determine which log files are to be restored, select a backup date. All available log files for the selected backup are displayed (together with the number of locations on which they are stored).
5. Select a log file range to be restored.

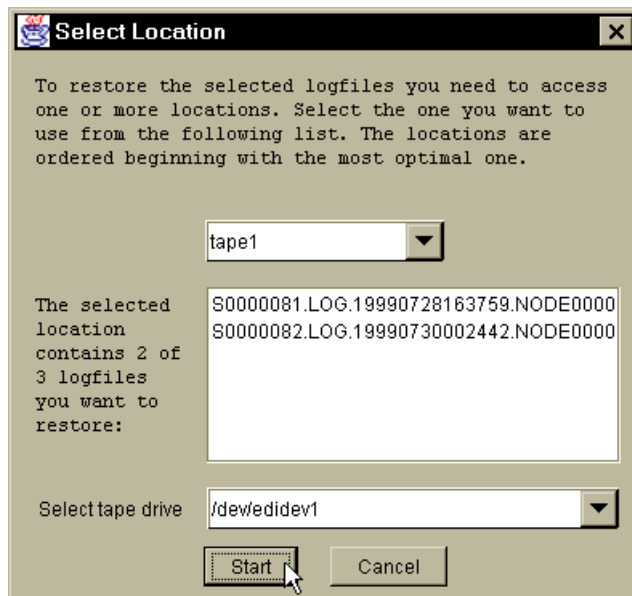


6. To start the restore procedure, choose *Restore*.

## Restoring Log Files using BRRESTORE

A dialog appears. There you should select the location to be used for the restore process. The best location is preselected. All log files that can be restored from the selected location out of those you have selected in the restore dialog box are displayed. If you select a tape location all matching devices are retrieved and you have to select one from the lower box. To start restoring from the selected location, choose *Start*.

A dialog box appears telling you that the restore process has been started. After the restoring has finished, a check is made whether all selected log files were restored. If yes, another dialog box appears telling you it was successful. If there are still log files left to be restored the dialog box appears again and you have to repeat the process for all different locations where necessary. All restore actions and their results can be seen in the *Journal* page.



### Command Line

Refer to [Examples of BRARCHIVE and BRRESTORE operations and Command Syntax \[Page 61\]](#).

## Emergency Restore of Log Files using brrestore-ex

### Use

Use this procedure in a worst case scenario. That is, either when both the administration database and the R/3 database have been destroyed, or normal log file retrieval methods fail. Emergency restore should not be used for normal management purposes as the admin database is not updated.

### Prerequisites

- The R/3 database has been restored from a backup and left in ROLLFORWARD\_PENDING state.
- You have started the database ROLLFORWARD and determined that DB2 requests log files that cannot be retrieved directly from the active log path or by the user exit from the log archive or log retrieve path.

### Procedure

#### Method 1

1. Locate the most recent backup of the admin database ADM<SID> on TSM (Tivoli Storage Manager), formerly ADSM (ADSTAR Distributed Storage Manager) or tape and recreate it as described in [Restoring the Admin Database from Log File Archive \[Page 47\]](#).
2. Start the SAP-DB2admin log file management GUI and restore the log files from TSM (ADSM) or tape as described in [Restoring Log Files \[Page 43\]](#).

#### Method 2

If you do not currently have access to the SAP-DB2admin tool, you can restore the log files completely independently of the SAP-DB2admin GUI tool and of the admin database. This procedure allows you to retrieve log files and admin database backups directly from tape or ADSM.

1. After restoring the R/3 database and starting the rollforward, check which log files are not available to the recovery process.
2. Find out where these files are located. You can use:

```
brrestore -q <filepattern> { -d adsm | -t <tape address> }
```

For more information, see [Useful Command Line Options \[Page 58\]](#).

3. Restore the log files from the archive with:

```
brrestore -ex <filepattern> [<fromtime>[<totime>]] { -t  
<non_rewind_addr> | -d adsm }
```



<non\_rewind\_addr> is the non-rewind address of the tape for restoring from tape.

4. Put the files where DB2 expects to find them and continue the rollforward.

---

**Emergency Restore of Log Files using brrestore-ex**

To get all files from a tape on NT, enter:

```
brrestore -ex "*" -t /dev/nmt0.1
```

To get all log files in the number range 100 to 199 that were archived to ADSM between November 1997 and the current day, enter:

```
brrestore -ex "S00001*" 199711 -d adsm
```

## Restoring the Admin Database from Log File Archive

### Use

To make sure that the admin database `ADM<SID>` can be recovered, an export of essential information about that database is archived to TSM (formerly ADSM) either to file or to tape. The log file archiving tool does this automatically. The backup image is a compressed archived file (CAR file named `adminDB<timestamp>.CAR`) made up of individual table exports. This image does not contain action or action detail information such as that shown on SAP-DB2admin's "journal" pages. This data is lost when `ADM<SID>` is recreated using this image.

The recovery process consists of the following steps:

1. Get the administration database backup image from archive.
2. Unpack the image.
3. Recreate the database.

### Procedure

#### Obtaining the Admin Database Backup Image

- Locate the most recent backup image of the admin database (that is, find out where the log files have been archived recently).
- If the database was archived to **tape**, extract the whole tape with the procedure described as Alternative 2 in [Emergency Restore \[Page 45\]](#).
- If the database was archived to **TSM**, identify the most recent admin database backup image and extract it as described in Alternative 2 in [Emergency Restore \[Page 45\]](#).

#### Unpacking the Image

Use the SAP CAR utility to unpack the image.

#### Recreating the Database



In the following program calls, substitute the name of your admin database for `ADM<SID>`. This name is made up of "ADM" followed by your SAP system ID or `<SID>`.

1. Log on as user `<sid>adm`.
2. Create the admin database using the `sddb6mir` tool:  

```
sddb6mir -c ADM<SID>
```
3. To import the original data, call `db2move` from the directory where the image was unpacked. (`db2move` is located in the DB2 directory `misc`.)  

```
db2move ADM<SID> load
```

---

**Restoring the Admin Database from Log File Archive**

4. To finalize recovery, issue the following SQL statement from the DB2 command line processor:

```
set constraints for sapr3.db6logfile, sapr3.db6config,  
sapr3.db6backup, sapr3.sb6location, sapr3.db6lfstate,  
sapr3.db6tape, sapr3.db6tapetoc, sapr3.db6device  
immediate checked
```

5. Check if the SAP-DB2admin GUI is available for use.



## Log File Maintenance

### Use

It is possible to delete log files from the file system that are already archived or restored. In addition, the DB2CC can be used to delete log file entries from the administration database that are not needed any more. On the command line, `brrestore` can be used to delete old log files in TSM (ADSM). Log files on tape are automatically removed from the database when the tape is reused.

### Procedure

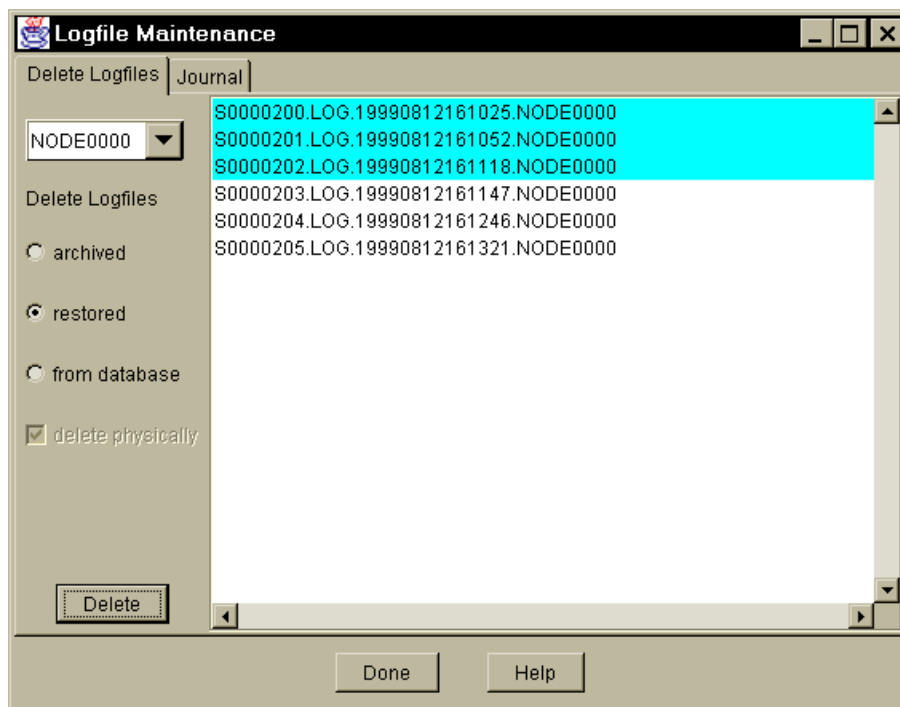
#### SAPCC

To maintain log files:

1. Choose *R/3 Log File Management* in the DB2 Control Center.
2. Choose *Log File Maintenance...*
3. Select the node under which you want to maintain log files.
4. Select the one of the three radio boxes: *archived*, *restored* or *from database*.

A list of log files of the selected criteria is displayed.

5. Select a range of log files you want to delete.
6. Choose *Delete*.



---

**Log File Maintenance**

**Command line**

Refer to [Examples of BRARCHIVE and BRRESTORE operations and Command Syntax \[Page 61\]](#).

## Managing Tapes

### Use

The tape management relies on a hierarchy that has to be defined by the administrator.

For each kind of tape device in the system, a **device class** has to be defined. It has a number of attributes specific to a certain class of tape devices (such as capacity and tape handling commands).

For each physical device, a **tape device** has to be defined. The name of that device should be the device name, for example, `/dev/rmt0`.

Each tape that will be used for log file archiving has to be defined. This means it must be given a name and initialized.

### Procedure

1. Choose *R/3 Tape Management* in the DB2 Control Center.
2. Choose *Tapes*.
3. Select the Device Class to which the tape to be initialized belongs.
4. Select *Tapes*.



5. Choose the right mouse button and select Initialize Tape... .  
The Initialize Tape dialog box appears
6. Type the name of the new tape.
7. Select the device where the tape is located.

## Managing Tapes

8. If the tape was initialized less than *expir\_period* weeks ago the initialization is not permitted unless the *Force initialization* box is checked. This value can be changed in the *R/3 Option Management* dialog box. If the tape is initialized for the first time, the *force initialization* option has to be set, too.
9. To initialize the tape, choose *Init*. All tape actions and their results can be seen in the *Journal* page.



10. To initialize a tape again, select the tape icon in the tree, choose the right mouse button and select *Reinitialize ...*.
11. To remove a tape, select the tape in the tree, choose the right mouse button and select *Delete*.

## Log File Management: Troubleshooting

### Use

This section describes the procedure for solving two different types of log file management error:

- Error in the DB2 user exit
- Error in log archiving or log file restoring

### Procedure: Error in the DB2 User Exit

#### Symptoms:

- The log file directory (database parameter `LOGPATH`) becomes full.
- No new log files appear in the log file archiving directory (`DB2DB6_ARCHIVE_PATH` environment variable).
- Entries in the diagnostic file `db2diag.log` and `db2alert.log` or `db2uext2.err.NODEXXXX` (located in `DIAGPATH` database parameter) about the failure of the `ARCHIVE/RETRIEVE` user exit.

The procedure for finding out the cause of the trouble is basically the same for both the `ARCHIVE` and `RETRIEVE` action of the DB2 user exit program.

1. Check the diagnostic file `db2diag.log`.

The entry in this file will provide information about the return code received from the user exit program. (For more information, see [Messages \[Page 93\]](#)).

2. Look at the `db2uext2` protocol, error and trace files. These files are located in the `DIAGPATH` (database parameter). The file names are as follows:

- `db2uext2.log.NODEXXXX`: Protocol file
- `db2uext2.err.NODEXXXX`: Entries for errors that occurred
- `db2uext2.<timestamp>.trc`: Trace file for the DB2 user exit processing. (For information about tracing, see [Tracing \[Page 108\]](#).)

3. Look at the journal page for user exit entries (see below).

### Procedure: Error in Log File Archiving or Log File Restoring

1. Look at the journal.

One page of the log file management notebook is called the “journal”. The log file management actions are listed there. To display a detailed protocol for a particular action, double-click the relevant action entry.

2. Look at the protocol files.

The protocol files are located in the `/db2/<SID>/saparch` (archiving) and `db2/<SID>/saprest` (restoring) directories. Their file names have the following format:

For archiving: `brarchive.<timestamp>.lfa`

For restoring: `brrestore.<timestamp>.lfr`

## Log File Management: Troubleshooting

where <timestamp> is the timestamp of the execution time.



The contents of these files are the same as you get when you access the *SAP-DB2admin: Log File Management* function *Journal* from the DB2 Control Center.



If the program terminates abnormally, the protocol and trace files may still be located in the temporary directory (DB2DB6\_TEMP\_DIR). These files may be lost after booting if this is located in a volatile file system (for example, /tmp on Solaris.)

3. Procedure for TSM problems.
  - Watch for diagnostic messages in the log file management protocols.
  - Check with your TSM server administrator to see if any problems have been logged in the TSM server log.
  - Ensure that the settings for the environment variables are DSM\_xyz and DSMI\_xyz. The DSMI\_xyz variables are very important for the log management tools.
  - Take a close look at the TSM profiles.
  - Try to establish an TSM client/server session from the TSM command line (on UNIX as user db2<sid>). For example, TSM file space query: **dsmc q fi**.

## Managing Device Classes

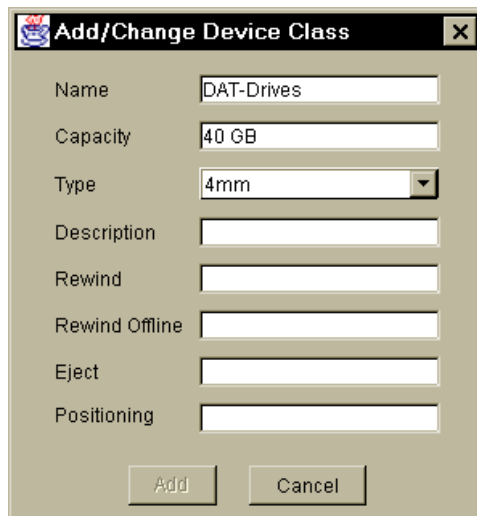
### Use

Use this function to define device classes.

### Procedure

1. Choose *R/3 Tape Management* in the DB2 Control Center.
2. Choose *Tapes*.
3. Select the system icon in the tree.
4. Choose right mouse button and select *Add Device Class...*

The *Add/Change Device Class* dialog box appears.

The image shows a dialog box titled "Add/Change Device Class" with a close button (X) in the top right corner. The dialog box contains several input fields: "Name" with the text "DAT-Drives", "Capacity" with "40 GB", "Type" with a dropdown menu showing "4mm", "Description", "Rewind", "Rewind Offline", "Eject", and "Positioning", all of which are currently empty. At the bottom of the dialog box, there are two buttons: "Add" and "Cancel".

5. Enter all requested data (*Description* is optional).
6. Choose *Add*.

To change an existing device class definition, select the device class icon in the tree, choose the right mouse button and select *Edit*.

To remove a device class definition, select the device class icon in the tree, choose the right mouse button and choose *Delete*.



All of the devices and tapes of that class will be removed as well.

## Managing Devices

# Managing Devices

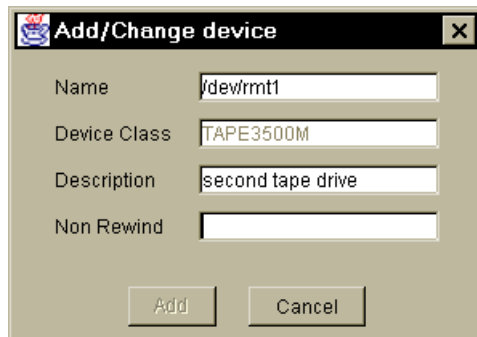
## Use

Use this function to define devices.

## Procedure

1. Choose *R/3 Tape Management* in the DB2 Control Center.
2. Choose *Tapes*.
3. Select the device class to which the tape to be initialized belongs.
4. Select *Devices*.
5. Choose the right mouse button and select *Add Device...*

The *Add/Change Device* dialog box appears.



6. Enter all requested data (*Description* is optional).
7. Choose *Add*.

To change an existing Device definition, select the device icon in the tree, choose the right mouse button and select *Edit*.

To remove a device definition, select the device icon in the tree, choose the right mouse button and select *Delete*.

To retrieve the label of a tape currently located in a tape drive, select the device in the tree, choose the right mouse button and select *Retrieve Tape Label*.



## Using the Journal

### Use

The journal enables you to browse through all administrative actions taken with the SAP-DB2 Admin Tools. It is available for *log file management*, *log file maintenance* and *tape management*.

### Procedure

1. Choose *Journal* in the *Log File Management*, *Tape Management* or *Log File Maintenance* dialog box.
2. Select the radio box with the category of actions you want to browse. A list of actions is displayed with start and end time, return code (RC), category and return message.
3. If you want to see an action that took place more than seven days ago, you can go back with the *Back* button in steps of seven days.
4. Select an action from the list. The detailed output of that action is displayed in the text field below.

**Logfile Management**

Archive | Restore | **Journal**

Actions

☐ Archive ☐ Restore ☒ Userexit

Begin	End	RC	
Tue, Sep 21, 1999 11:47:55	Tue, Sep 21, 1999 11:47:56	0	S000
Tue, Sep 21, 1999 11:47:50	Tue, Sep 21, 1999 11:47:51	0	S000
Tue, Sep 21, 1999 11:47:39	Tue, Sep 21, 1999 11:47:41	0	S000
Tue, Sep 21, 1999 11:47:35	Tue, Sep 21, 1999 11:47:36	0	S000
Tue, Sep 21, 1999 11:47:13	Tue, Sep 21, 1999 11:47:15	0	S000
Tue, Sep 21, 1999 11:46:32	Tue, Sep 21, 1999 11:46:33	0	S000
Tue, Sep 21, 1999 11:40:11	Tue, Sep 21, 1999 11:40:12	0	S000
Tue, Sep 21, 1999 11:39:24	Tue, Sep 21, 1999 11:39:26	0	S000

Period of time:

Back

9/14/99 3:58 PM to now

Forward

Refresh

Description

```

Process log in /db2/S6B/sql/lib/db2dump/db2uext2.log
Time Started: Tue Sep 21 11:47:56 1999
Parameters Passed: db2uext2 -OSSolaris -RLSQL06010 -RQARCHIVE -DBS6B
Created new object - ID = 1678
RC : 0
Time Completed: Tue Sep 21 11:47:56 1999
  
```

Done | Logfile Maintenance ... | Tapes ... | Help

## Command Line Options for Log File Management Tools

## Command Line Options for Log File Management Tools

The following tables list the command line options for the log file management tools BRARCHIVE and BRESTORE.



Under *Option*, the symbols [ ] signify optional text or arguments, the symbol | signifies a choice and the symbols { } signify a group.

### 1a. BRARCHIVE <ACTION> [<MODIFIERS>] where <ACTION> is exactly one of the following:

Option	Description	Comments
-h[elp] [version]	<b>Request help or version information</b>	-help is the default action if none is specified.
-i[nitialize] [show set force]	Show or set tape volume name	-i without argument and without -v option => show -i without argument but with -v option => set
-s	Store (archive) log file(s)	Requires "-d adsm" or "-t" and "-v" with single arguments
-sd	Store and delete log file(s)	Requires "-d adsm" or "-t" and "-v" with single arguments
-ss	Double-save and delete log file(s)	Requires "-t" and "-v" each with two arguments
-ssd	Double-save (archive) log file(s)	Requires "-t" and "-v" each with two arguments
-ds	Delete previously stored log files	Refers to local files archived with "-s" but not yet deleted
-q[query] [check]	<b>Request information about tapes</b>	-q without argument => display tapes available for store operations (initialized or out-of-date) -q check => Check tape
-V[ersion]	Request version information (= -h version)	

### 1b. BRARCHIVE <ACTION> [<MODIFIERS>] where <MODIFIERS> is a combination of:

Option	Description	Comment
-d[evice] {tape   adsm [MC]}	<b>Specify where to store or retrieve</b>	Default: tape, unless other command line parameters imply adsm.

Command Line Options for Log File Management Tools

-node { <NodeName>   ALL }	<b>Specify DB node name</b>	'ALL' currently only permitted with EEE for store operations. Default = NODE0000.
-n[umber] <Number>	<b>Specify number of files to act on</b>	Ignored for all but store operations. Default = 99999.
-one	<b>Do not eject tape after archive</b>	Only needed for store operations Default: Eject for store operations No eject otherwise
-out	<b>Display protocol on stdout</b>	Default: Do not display protocol except for -h and -V
-sid<SAPSID>	Specify SAP system ID	Required unless information available in the DB2DBDFT environment variable
-t[ape device] <Device1> [<Device2>]	Specify which device(s) to use	Two devices only permitted for store operations.
-v[olume] <volume1> [<Volume2>]	<b>Specify which volume(s) to use</b>	Two labels only permitted for store operations.
-vndlib <Vendor lib filename>	<b>Specify fully qualified lib file</b>	Not normally required.

2a. BRRESTORE <ACTION> [<MODIFIERS>]

where <ACTION> is exactly one of the following:

Option	Description	Comment
-h[elp][version]	<b>Request help or version information</b>	-help is the default action if none is specified.
-a[rchive] [<LogNum> <Range>]	Restore one or more files	
-ex<File Pattern> [ <FromTime> [<ToTime>]]	Emergency restore files when not otherwise possible	File pattern now required but currently ignored by tape. Also requires either "-d adsm" or "-t"
-dr	Delete restored log files	Refers to local files
-delete <Backup timestamp>	Delete archived files older than backup	The timestamp must be a valid backup timestamp.

**Command Line Options for Log File Management Tools**

-q[query] adsmMC   {<Pattern> [ <From Time> [ <To Time> ] ] }	Request information about management classes or log files	-q adsmMC => Get list of known adsm management classes -q <pattern> => Get list of archived files matching pattern; optionally within given time span
-V[ersion]	Request version information (= -h version)	

**2b. BRRESTORE <ACTION> [<MODIFIERS>]**

where &lt;MODIFIERS&gt; is a combination of:

Option	Description	Comment
-d[evice] {tape   adsm [MC]}	Specify where to store or retrieve	Default: tape, unless other command line parameters imply adsm.
-node {<NodeName>   ALL }	Specify DB node name	'ALL' currently only permitted with EEE for store operations. Default = NODE0000.
-n[umber] <Number>	Specify number of files to act on	Ignored for all but store operations. Default = 99999.
-out	Display protocol on stdout	Ignored for all but store operations. Default = 99999.
-sid<SAPSID>	Specify SAP system ID	Required unless information available in the DB2DBDFT environment variable
-t[ape device] <Device1>	Specify which device to use	
-v[olume] <volume1>	Specify which volume to use	
-vndlib <Vendor lib filename>	Specify fully qualified lib file	Not normally required.

**See also:**[Examples of BRARCHIVE and BRRESTORE command syntax \[Page 61\]](#)

## Examples of BRARCHIVE and BRRESTORE Operations and Command Syntax



1. Calls to `BRARCHIVE` and `BRRESTORE` that contain no action default to displaying the command line syntax for that program (the same result as `-help`).
2. All tape device parameters here use Solaris conventions. These values must be modified for other operating systems.

### Command line syntax

<b>Command syntax</b>	<code>brarchive -help</code>
<b>Description</b>	This command displays the command line options for <code>brarchive</code> (The <code>-out</code> parameter is not needed).

### Version information

<b>Command syntax</b>	<code>brrestore -help version</code> <code>brrestore -v</code>
<b>Description</b>	These commands display version and patch information about <code>BRRESTORE</code> (The <code>-out</code> parameter is not needed).

### Initializing a tape

<b>Command syntax</b>	<code>brarchive -i force -v D4XA01 -t/dev/rmt/0 -sid SID</code>
<b>Description</b>	This command initializes a tape with the name <code>D4XA01</code> without first checking whether the tape has already been used or initialized.  Messages are only written to a protocol file.

### Archiving log files to single tape

<b>Command syntax</b>	<code>brarchive -sd -d tape -v D4XA01 -t/dev/rmt/0 -out -n 25 -sid SID</code>
<b>Description</b>	This command archives 25 log files to the tapes <code>D4XA01</code> and deletes them from the file system if processing completes successfully. Messages are written to the standard output and a protocol file.

### Archiving log files to two tapes (double save)

<b>Command syntax</b>	<code>brarchive -ssd -d tape -v D4XA01 D4XA02 -t/dev/rmt/0/dev/rmt/1 -out -n 10 -sid SID</code>
-----------------------	---

**Examples of BRARCHIVE and BRRESTORE Operations and Command Syntax**

<b>Description</b>	This command archives the same 10 log files to both the tapes D4XA01 and D4XA02 and deletes them from the file system if processing completes successfully. Messages are written to the standard output and a protocol file.
--------------------	--

**Archiving log files to ADSM**

<b>Command syntax</b>	<code>brarchive -s -d adsm -out -sid SID</code>
<b>Description</b>	This command archives all log files available to the default management class in ADSM without deleting them from the file system. Messages are written to the standard output and a protocol file.

**Removing previously archived log files**

<b>Command syntax</b>	<code>brarchive -ds -sid SID</code>
<b>Description</b>	This command can be used to remove the previously archived log files. Messages are only written to a protocol file.

**Restoring log files from a tape**

<b>Command syntax</b>	<code>brrestore -a 110-120 -d tape -v D4XA99 -out -sid SID</code>
<b>Description</b>	This command tries to retrieve the log files with the numbers 110 to 120 from tape D4XA99. Messages are written to the standard output and a protocol file.

**Removing archived log files from storage (ADSM only)**

<b>Command syntax</b>	<code>brarchive -delete 1999101611231234 -out sid SID</code>
<b>Description</b>	Used to remove log files from the backend storage, archived before the given backup timestamp. Messages are written to standard output and a protocol file.

**Emergency log file restore from ADSM**

<b>Command syntax</b>	<code>brrestore -ex "*" S000112* 19980612 -d adsm</code>
<b>Description</b>	Stores log files available from ADSM to the current directory, provided they match the given file name pattern and were stored to ADSM on 12 June 1998 or later. Messages are only written to a protocol file.

**Emergency log file restore from tape**

<b>Command syntax</b>	<code>brrestore -ex "*" -t /dev/rmt0.1</code>
-----------------------	---

**Examples of BRARCHIVE and BRRESTORE Operations and Command Syntax**

<b>Description</b>	Stores ALL files available on the tape in device <code>/dev/rmt0</code> to the current directory. Messages are only written to a protocol file.
--------------------	---

**Query functions**

<b>Command syntax</b>	<code>brrestore -q '*NODE0002' -d adsm -out -sid SID</code>
<b>Description</b>	Displays the names of all log files archived to the AD SM from node NODE0002. Messages are written to the standard output and a protocol file.

**Query functions**

<b>Command syntax</b>	<code>brrestore -q adsmMC -out -sid SID</code>
<b>Description</b>	Displays the names of all adsm management classes that have been used to store log files for the given SID. Messages are written to the standard output and a protocol file.

## Changes to BRARCHIVE and BRRESTORE

## Changes to BRARCHIVE and BRRESTORE

## Release 4.6B

## Command Syntax

System administrators who use the DB2 Control Centre extensions for administering log files can ignore this section, as they do not need to be aware of `BRARCHIVE` and `BRRESTORE` syntax. Anyone still wishing to use the command line or write scripts containing these programs, needs to read this section carefully.

To make the command line syntax clearer, and to remove syntax conflicts with other databases, several changes have been made to `BRARCHIVE` and `BRRESTORE` parameters in 4.6B. With the exception of `brrestore -ex` (emergency restore), all old syntax is still supported, although no longer documented. Some old parameter arguments produce a warning informing the user that a different syntax is now preferred; the options `-c` (confirm) and `-l` (language) are accepted, but ignored with a warning.

**Important:** The old syntax will no longer be supported in a future release. It is strongly advisable to examine program output for such warnings and update user scripts if needed.

The optional `<SAPSID>` parameter previously allowed with `brarchive -i /-s /-sd` and `brrestore -a` has been moved to a new separate option `-sid`. This parameter is optional as long as the `SAPSID` is available in the `DB2DBDFT` environment variable.

`k` should be replaced with the already existing `-node` option.

The existing help parameter ( `-h / -help` ) can now take an optional argument '`version`' requesting version and patch information for the executable. The new `-V` parameter has the same effect.

The `-t` (tape device) parameter can now be supplied with the rewind or non-rewind address if the device is correctly configured in the DB2 Control Centre extension. However, the **non-rewind** address **must** be provided with the emergency restore (`-ex`) action from tape, as the Control Centre configuration data is normally not available in this case.

Parallel to now requiring the `-t` option for tape, emergency restore (`-ex`) has moved the **adsm** flag to the standard `-d` (device) option, for consistency with all other actions. `-d` remains optional for tape as it is implied by `-t`. The optional `[s]` parameter has been removed as the tape library now determines whether the tape uses double-marking without user intervention.

Old syntax: `-ex { <non-rewind address> [s] } | { adsm [pattern [fromTime [toTime]]] }`

New syntax: `-ex pattern [fromTime [toTime]] { -t <non-rewind address> } | { -d adsm }`

Although the file pattern and times are still ignored in the case of tape, the syntax has been modified to make it more general, in preparation for later support of this option. The `<pattern>` argument is always required and can be given as `'*'` to restore all files.

`-i` (initialize) used without `-v` (volume name) now defaults to the 'show volume name' action.

`-i` with `-v` keeps the previous 'set volume name' meaning. To make this more explicit, in addition to the existing '**show**' and '**force**' arguments, the `-i` action option can also take a new argument '**set**'.

The new `BRRESTORE` option **-delete** can be used to explicitly delete all old log files from `adsm` which are older than a given backup (timestamp). This is the recommended method of removing old log files as it ensures that files are only removed when the administrator is sure they will no



## Changes to BRARCHIVE and BRRESTORE

longer be needed, rather than allowing adsm to automatically delete files in a less controlled way. The internal (admin tool) database is also updated and kept synchronized using this option.

The parameters **-GAL** and **-DMP** options are not to be used unless explicitly requested by support personnel. They were erroneously documented in previously releases but caused confusion as their meaning has changed since releases earlier than 4.0B.

In the same way, the new **-DEB** (debug) option syntax is only intended for use together with support personnel. This is now the only trace switch as the environment variables **DB2DB6\_ADMTRC** and **DB2DB6\_TRCLEVEL** are no longer used for debugging **BRARCHIVE** and **BRRESTORE**.

## Changes to the Log File Management Executables and Libraries

In 4.6B, the executables `sddb6qry` (adsm query) and `sddb6dsd` (adsm delete) have been replaced by the **BRRESTORE** options `"-q <pattern>"` and `"-delete <backup timestamp>"` respectively. The later has the advantage that the internal database is now updated after the delete operation. The `libdb6ds.<lib>` file is still used as the interface to adsm. The new file `libdb6tp.<lib>` has been added to remove (separate) the tape handling logic from the executables.

## Release 4.6C

The main change in 4.6C is the addition of support for saving log files to more than one tape. This is done with the action options `-ss` and `-ssd` which require `-t` followed by two tape devices and `-v` followed by two volume names.

Almost all other changes involve modifications to protocol and trace output.

## Tablespace Management

# Tablespace Management

See the following sections for the information on:

- [Reorganizing a Tablespace \[Page 67\]](#)
- [Rebalancing a Tablespace \[Page 69\]](#)
- [Reducing the Size of a Tablespace \[Page 68\]](#)

## Increasing the Size of a Tablespace

For information on increasing the size of a tablespace, see the information on altering tablespace partition characteristics in the Control Center online help. If you want to make the changes from the command line, see the information on ALTER TABLESPACE command syntax in *SQL Reference* in the DB2 for Windows NT Information Center.

## See Also

For more information on tablespaces, see the following IBM documentation:

Title	Doc. No.
<i>DB2 Universal Database for UNIX Quick Beginnings V6</i>	GC09-2836-00
<i>DB2 Universal Database for Windows NT Quick Beginnings V6</i>	GC09-2835-00
<i>DB2 Universal Database Enterprise – Extended Edition for UNIX Quick Beginnings V6</i>	GC09-2832-00
<i>DB2 Universal Database Enterprise – Extended Edition for Windows NT Quick Beginnings V6</i>	GC09-2833-00
<i>DB2 Universal Database Administration Guide: Design and Implementation V6</i>	SC09-2839-00
<i>DB2 Universal Database Command Reference V6</i>	SC09-2844-00

## Reorganizing a Tablespace

### Purpose

Unlimited fragmentation is allowable for tables within DB2 UDB. The only reason for reorganizing tables is to improve I/O performance.

A table can become fragmented as a result of large numbers of updates, deletes or inserts, causing performance to deteriorate. Generally, newly inserted rows cannot be placed in the physical sequence corresponding to the logical sequence defined by an index. This means that the database manager has to perform additional read operations to access the data, because logically sequential data may be on different physical pages that are not sequential.

Therefore, you should use the reorganization utility to rearrange the data in the tables and indexes and to remove the free space that is inherent in fragmented data. The result will be faster accessing of data and, consequently, improvements in performance.

Sometimes, you may want to reorganize all the tables of a particular tablespace to remove fragmented data, thus increasing the free space. The DBA Planning Calendar (transaction DB13) provides a utility allowing you to do this. For more information on the DBA Planning Calendar, see [Using the DBA Planning Calendar \[Ext.\]](#).

### Prerequisites

In the „Reorg Tables in Tables space(s)“ job you can specify the temporary tablespace where the database manager can temporarily store the table being reconstructed. If no temporary table space is entered, the database manager stores a working copy of the table in the tablespace(s) in which the table being reorganized resides. This temporary table will be at least as large as the original table, so you must ensure that the tablespace used for reorganization has at least sufficient free space to hold the original table. For an 8KB tablespace, the page size of any temporary tablespace explicitly specified by the user must match the page size of the tablespace(s) in which the table data resides.

### Process Flow

The “Reorg Tables in Tablespace(s)” job rearranges data into a physical sequence that corresponds to the primary index of each table (if available). If the reorganization job does not complete successfully, do not delete any temporary files, tables or tablespaces. The files and tables are used by the database manager to roll back the changes or to complete the reorganization.

---

## Reducing the Size of a Tablespace

# Reducing the Size of a Tablespace

## Process Flow

The size of a tablespace is reduced by reorganizing all the tables in the tablespace and then backing up the tablespace and restoring it while redefining the physical layout.

To reorganize the tables, you use the DBA Planning Calendar, scheduling the “Reorg. Tables in Tablespace(s)” job (see [Reorganizing a Tablespace \[Page 67\]](#)).

You back up the tablespace using the DB2 Control Center.

When you restore the tablespace, you redefine the container layout. You can either remove containers, change the size of containers, or do both simultaneously.

For a detailed description of the database and tablespace restore process, refer to the DB2 Control Center online help.

## Rebalancing a Tablespace

### Process Flow

The process of rebalancing is started automatically by the database. It happens when a container is added to a tablespace to increase its size and when the newly allocated space is needed for data storage. Rebalancing stripes the tablespace data across all available tablespace containers. DB2 does this while an application (such as R/3) is online. There is some performance impact, but no downtime.

---

**Table Management**

## Table Management

See the following sections for information on:

- [Check for Reorganization \[Page 71\]](#)
- [Reorganizing Tables \[Page 72\]](#)
- [CCMS Enablement \[Page 73\]](#)

## Check for Reorganization

### Use

You can use the jobs *Update Statistics + Reorgcheck all tables* and *Update Statistics + Reorgcheck (DBSTATC)* to check whether tables need to be reorganized. The jobs begin by updating the database statistics and then check whether tables need to be reorganized. For more information, see [Scheduling Update Statistics + Reorgcheck \(DBSTATC\)\(DB2/CS\) \[Ext.\]](#) and [Scheduling Upd. Statistics + Reorgcheck All Tables \(DB2/CS\) \[Ext.\]](#) in the *BC Computing Center Management System* documentation.

## Reorganizing Tables

# Reorganizing Tables

## Purpose

When a table is reorganized, its data is rearranged into a physical sequence corresponding to the table's primary index. As a result, SQL statements requiring rows in the indexed order can be processed more efficiently. In addition, since unused, empty space is removed, tables are stored more compactly.

## Prerequisites

You can choose which temporary table space to use for reorganization. If no temporary table space is entered, the database manager stores a working copy of the table in the tablespace in which the table being reorganized resides. This temporary table will be at least as large as the original table, so you must ensure that the table space used for reorganization has at least sufficient free space to hold the original table.

## Process Flow

When the "Update Statistics" job runs, the DB2 REORGCHK utility is applied to all the tables involved. (For more information, see [Update Statistics \[Ext.\]](#).) The utility returns information about the physical characteristics of a table and gives information about whether or not it would be beneficial to reorganize it.

The DBA Planning Calendar (transaction DB13) provides a DBA job "Reorganize flagged tables & update statistics". This job can be used to reorganize tables, particularly those tables for which reorganization is recommended. For more information about the DBA Planning Calendar, see [Using the DBA Planning Calendar \(DB2 UDB\) \[Ext.\]](#). The job displays a maximum of 100 tables recommended for reorganization along with additional data such as delta table size and the duration of the last reorganization. You then choose which of the proposed tables to reorganize.

## Result

The selected tables are reorganized and the table statistics are subsequently updated.



## CCMS Enablement

### Purpose

From Release 4.0A a DBA interface is provided that links external administration products to the Computing Center Management System (CCMS). This interface lets you monitor all external and internal database manipulation from within R/3. Transaction DB24 in CCMS provides overviews of database activities and their status.

### Prerequisites

To provide a complete overview of database activities, the activities logged in the [admin database \[Page 10\]](#) (ADM<SID>) have to be transferred to the <SID> database. In addition, all relevant administration data from the admin database is stored in the R/3 database, meaning that a backup is available if required.

### Process Flow

The process of transferring data relevant for administration to the R/3 database is called “mirroring”. SAP recommends that you mirror the admin database on a regular basis. Using transaction SM36, you are recommended to schedule the job ADMIN\_MIRROR to run once an hour, specifying job class C and entering the name of the database host for *Target host*. This job calls an external program `sddb6mir` with the following parameters:

```
-m <SAPSID>
```

You should check the results of mirroring regularly by calling transaction SM37. If any errors occurred when the job ran, you should refer to the supplied job logs for information.

---

User Management

## User Management

### Use

R/3 work processes connect to the database server first as user `<sapsid>adm` and then as user `saprr3`. The connection information, that is the password, is provided as an encrypted string by a password service. The DB2 Control Center *Managing Passwords* function must be used to manage this password service.



Do not change the passwords of the users `<sapsid>adm` and `saprr3` using operating system commands. The only way to ensure user and password consistency within the R/3 environment is to use the *Managing Passwords* function.

### Prerequisites

The environment variable `DB2DB6EKEY` is very important for password management and must be kept synchronized on both application and database servers.

### Features

- [Managing Passwords \[Page 75\]](#)

## Managing Passwords

### Procedure

1. To change the password of the user `saprr3` or `<sapsid>adm`, choose *R/3 Password Management* in the DB2 Control Center.
2. Select the user whose password you wish to change under *Set password for user*.
3. Enter the new password twice.
4. To change the password, choose *Set*.

### Problems Updating Passwords

For information about the valid return codes, see [Messages \[Page 93\]](#). When investigating the cause of the error, start by checking the `DB2DB6EKEY` environment variable on the database server. In the case of Windows NT, also check the `DSCDB6HOME` environment variable.

---

Configuration Parameters

## Configuration Parameters

### Use

The SAP-DB2admin tool is dependent on many configuration parameters. There are also several configuration “databases” that have grown historically. A future goal is to reduce the number of these as far as possible. The SAP-DB2admin configuration parameters are listed in the following sections. Many parameters are important not only for SAP-DB2admin, but also for other modules within an R/3 environment.

The configuration database can be managed using the DB2 Control Center. At present, only changes are permitted. Parameters cannot be removed or defined.

To change values, select the *R/3 Option Management* for the `db2<sid>` R/3 database and change the values as required.

### Features

- [Profiles \[Page 79\]](#)
- [Environment \[Page 80\]](#)
- [Log File Management Parameters \[Page 88\]](#)
- [Database Configuration Parameters \[Page 86\]](#)
- [DBM Configuration Parameters \[Page 87\]](#)

## Configuration Database

### Use

The configuration database is used to save settings of the SAP-DB2admin tool permanently. In R/3 versions prior to 4.0x, some of these tool parameters were defined in the file `$INSTHOME/dbs/init<SID>.sap`. If you upgrade to 4.0x, you might want to use this file as a template for the settings in the configuration database.

The configuration database can be managed using the DB2 Control Center. Currently only changes are allowed; parameters cannot be removed. To change values, select the *SAP-DB2admin: Options* function of the `db2<sid>` R/3 database and change the values as required.

<b>Parameter:</b>	<b>backup_dev_type</b>
Default:	tape
Options:	tape adsm
Purpose:	Archiving target
Recommendation:	Not applicable

<b>Parameter:</b>	<b>cpio_in_flags</b>
Default:	-iduvB
Options:	Valid cpio options
Purpose:	Copy files on tape
Recommendation:	Do not change

<b>Parameter:</b>	<b>cpio_flags</b>
Default:	-ovB
Options:	Valid cpio options
Purpose:	Copy files from tape
Recommendation:	Do not change

<b>Parameter:</b>	<b>tape_address</b>
Default:	AIX: /dev/rmt0.1 Solaris: /dev/rmt/0n Linux: /dev/nst0 NT: /dev/mt0

**Configuration Database**

Options:	You can specify two tape devices for log file archiving. That is, this parameter can have two entries. The tape device names must be separated by commas. Limitations: The tape size must be the same for all tape devices. The order of entries must be the same as in the tape address rew field.
Purpose:	Non-rewind address of default tape device.
Recommendation:	Have one tape drive exclusively reserved for log file archiving.

<b>Parameter:</b>	<b>tape_address_rew</b>
Default:	AIX: /dev/rmt0 Solaris: /dev/rmt/0 Linux: /dev/st0 NT: /dev/mt0
Options:	You can specify two tape devices for log file archiving. That is, this parameter can have two entries. The tape device names must be separated by commas. Limitations: The tape size must be the same for all tape devices. The order of entries must be the same as in the tape address field.
Purpose:	Default for device address of automatically rewinding tape
Recommendation:	Have one tape drive exclusively reserved for log file archiving.

<b>Parameter:</b>	<b>expir_period</b>
Default:	6
Options:	Any other number of weeks
Purpose:	Number of weeks a tape must not be overwritten
Recommendation:	Very much dependent on a customer's recovery procedure and recovery requirements

<b>Parameter:</b>	<b>tape_use_count</b>
Default:	100
Options:	Any value of your choice
Purpose:	Allowed number of reuses of a tape
Recommendation:	The fewer times used, the safer the medium

## Profiles

`.db2env_<hostname>.csh/.dbenv_<hostname>.sh` (C shell/Korn shell) (UNIX only)

## Environment

## Environment

Most environment variables apply both to UNIX and Windows NT. Under both UNIX and Windows NT, the **DB2DB6FT** environment variable **must** be set to the SAP system ID (SID).

To have one central point for configuring environment variables (without the need to restart the database manager) the new environment file `init<SID>.db6` was installed. It is located in the `/usr/sap/<SID>/SYS/global` directory (NT: `\\DSCDB6HOME\sapmnt\<SID>\SYS\global`). Variables set in the environment file `init<SID>.db6` have priority over those set in the user environment or the NT registry.

The following environment variables are to set there.

### General Environment

Environment variable	DB2DB6_ARCHIVE_PATH
Default	UNIX: \$INSTHOME/log_archive NT: <drive>:\db2\<SAPSID>\log_archive
Options	Any path for which db2<sid> has write access. Log files are stored in the <SID> subdirectory (previously <SID>/NODE0000 directory)
Purpose	Directory where DB2 user exit archives log files and where the log file archiving tool (BRARCHIVE) looks for log files to save.
Recommendation	Ensure that you have enough space in a dedicated file system. Wherever possible, do not change.

Environment variable	DB2DB6_RETRIEVE_PATH
Default	UNIX: \$INSTHOME/log_retrieve NT: <drive>:\db2\<SAPSID>\log_retrieve
Options	Any path for which db2<sid> has write access. Log files are restored into the <SID> subdirectory (previously <SID>/NODE0000 directory).
Purpose	Directory for storing restored log files.
Recommendation	Ensure that you have enough space. Do not change.

Parameter	DB2DB6_UEXIT_DIRECT
Default	ADSM:DEFAULT
Options	ADSM TSM
Purpose	Storage destination the DB2 user exit directly archives log files to and retrieves from. If you decide to archive directly, no log file information is recorded to the admin database. <code>brarchive</code> and <code>brrestore</code> cannot be used at all.



Recommendation	
----------------	--

Environment variable	DB2DB6_TEMP_DIR
Default	UNIX: /tmp NT: C:\TEMP
Options	Any path for which db2<sid> has write access.
Purpose	Temporary directory for archiving of log files to ADSM
Recommendation	

Environment variable	DB2DB6_TRC_DB2UEXT2_LEVEL
Default	2
Options	1 to 5
Purpose	To set the trace level for user exit.
Recommendation	See <a href="#">Tracing [Page 108]</a> .

Environment variable	DB2DB6_TRC_DB2UEXT2
Default	OFF
Options	ON OFF
Purpose	To enable/disable tracing for the user exit program
Recommendation	Change if problems arise.

Environment variable	DB2DB6_TRC_DB2UEXT2_PATH
Default	UNIX: /tmp/TraceFiles/<SID> NT: \\<DSCDB6HOME>\SAPLOC\TraceFiles\<SID>
Options	Any path where db2<sid> has write access. This variable is not used for the DB2 user exit (C). (The default always applies!)
Purpose	Tracing directory for the user exit
Recommendation	Set to DIAGPATH database parameter

Environment variable	DB2DB6_TRC_BRARCHIVE_LEVEL DB2DB6_TRC_BRRESTORE_LEVEL
Default	2
Options	1 to 9
Purpose	To set the trace level for brarchive/brrestore

**Environment**

Recommendation	See <a href="#">Tracing [Page 108]</a> .
----------------	--

Environment variable	DB2DB6_TRC_BRARCHIVE DB2DB6_TRC_BRRESTORE
Default	OFF
Options	ONN OFF
Purpose	Enable/disable tracing for brarchive/brrestore
Recommendation	Change if problems arise.

Environment variable	DB2DB6_TRC_BRARCHIVE_PATH DB2DB6_TRC_BRRESTORE_PATH
Default (when not set)	UNIX: /tmp/TraceFiles/<SID> NT: \\<DSCDB6HOME>\SAPLOC\TraceFiles\<SID>
Options	Any path where db2<sid> has write access , "stdout" to indicate command line output.
Purpose	Tracing target(s) for brarchive/brrestore. Normally a directory and „stdout“ separated by a semicolon
Recommendation	DIAGPATH database parameter; stdout

Parameter	INSTHOME
Default	UNIX: home directory of db2<sid>user NT: <drive>:\DB2<SID>
Options	In place of a drive, a share can be specified.
Purpose	Contains db2admin and diagnostic files and paths (for example, errors and saparch).
Recommendation	Do not change.

**Additional Environment Variables for Windows NT**

Parameter	DSCDB6HOME
Default	<hostname>
Options	Set during installation.
Purpose	Host where the password file is located.
Recommendation	Do not change.

Parameter	SAPMNT
-----------	--------

Default	<drive>:\usr\sap\<SID>
Options	In place of a drive, a share can be specified.
Purpose	Directory where SAP executables, profiles, and so on are located.
Recommendation	Do not change.

Parameter	SAPEXE
Default	<drive>:\usr\sap\<SID>\SYS\exe\run
Options	In place of a drive, a share can be specified.
Purpose	Directory where SAP executables are located.
Recommendation	Do not change.

The following is a sample default `init<SAPSID>.db6` file for UNIX platforms:

```
# @(#) $Id: initSID.db6#1 $ SAP
#####
#
# SAP DB2 Universal DB for Unix/Windows Environment File
#
# Enclose parameter values which consist of more than one symbol in
# double quotes.
# After any symbol, parameter definition can be continued on the next
# line.
# A parameter value list should be enclosed in parentheses, the list
# items should be delimited by commas.
# There can be any number of white spaces (blanks, tabs and new lines)
# between symbols for parameter definition.
#
#####
# db2@SID@ home directory / DB2 base directory
# default: @INSTHOME@
INSTHOME = /db2/SID

# Log file archive directory
# default: @INSTHOME@/log_archive
DB2DB6_ARCHIVE_PATH = /db2/SID/log_archive

# Log file retrieve directory
# default: @INSTHOME@/log_retrieve
DB2DB6_RETRIEVE_PATH = /db2/SID/log_retrieve
```

**Environment**

```

# Temporary work directory
# default: @TEMP_DIR@
DB2DB6_TEMP_DIR = /tmp

#####
#
# User exit environment
#
#####
# User exit trace switch
# default: no default
# DB2DB6_TRC_DB2UEXT2 = ON

# Trace level for user exit trace
# [1-5]
# default: no default
# DB2DB6_TRC_DB2UEXT2_LEVEL = 5

# Directory for stand by database
# default: no default
# DB2DB6_STANDBY_DIR = /db2/standby_dir

# User exit direct archive destination
# [ADSM:<Management Class>]
# default: ADSM:DEFAULT
# DB2DB6_UEXIT_DIRECT = ADSM:DEFAULT

#####
#
# Tracing environment
#
#####
# DB6CLP Trace
# [OFF|ON]
# default: OFF
DB2DB6_TRC_DB6CLP = OFF

# DB6CLP Trace level
# [1,2,3,4,...]

```

```
# default: 2 (if variable is not set or "")
DB2DB6_TRC_DB6CLP_LEVEL = 2

# DB6CLP Trace path
#
# default: /tmp (if Variable not set or "")
DB2DB6_TRC_DB6CLP_PATH = /tmp
```

## Database Configuration Parameters

## Database Configuration Parameters

## Use

The following configuration parameters are set during installation of your R/3 System:

Parameter	Value
LOGFILSIZ	4095
LOGPRIMARY	30
LOGSECOND	1
DBHEAP	12000
LOGBUFSZ	512
BUFFPAGE	10000
SORTHEAP	512
APPLHEAPSZ	10000
MAXLOCKS	100
LOCKTIMEOUT	3600
LOGBUFSZ	512
CATALOGCACHE_SZ	1000
UTIL_HEAP_SZ	10000
LOCKLIST	3200
STMTHEAP	4096
PCKCACHESZ	1000
DLCHKTIME	300000
MAXAPPLS	60
MAXFILOP	1950
NUM_IOCLEANERS	6
NUM_IOSERVERS	6
CHNGPGS_THRESH	40
SOFTMAX	40 * LOGPRIMARY
APP_CTL_HEAP_SZ	1024

## DBM Configuration Parameters

### Use

The following Database Manager (DBM) configuration parameters are set during installation of your R/3 System:

Parameter	Value
DFT_CLIENT_COMM	TCPIP
DFT_MON_BUFPOOL	ON
DFT_MON_LOCK	ON
DFT_MON_SORT	ON
DFT_MON_STMT	ON
DFT_MON_TABLE	ON
DFT_MON_UOW	ON
SYSCTRL_GROUP	db<sapsid>ctl
MON_HEAP_SZ	128
UDF_MEM_SZ	128
RQRIOBLK	65000
MAXAGENTS	60
ASLHEAPSZ	15
NUM_POOLAGENTS	10
NUM_INITAGENTS	5
KEEPDARI	YES
SYSADM_GROUP	db<sapsid>adm
SVCENAME	sapdb2<SAPSID>

---

**Log File Management Parameters**

## Log File Management Parameters

- [Environment \[Page 80\]](#)

Some parameters are not only important for log file management, but for other processing as well.

- [Configuration database \[Page 77\]](#)

There are differences between UNIX and Windows NT. Defaults are specified too.

- backup\_dev\_type
- cpio\_flags
- tape\_size
- tape\_address
- tape\_address\_rew
- expir\_period
- tape\_use\_count



## Protocols

See the following sections for information on:

- [Log File Management Protocols \[Page 90\]](#)
- [Backup/Recovery History \[Page 91\]](#)
- [Database Diagnostics \[Page 92\]](#)
- [Messages \[Page 93\]](#)
- [Tracing \[Page 108\]](#)

## Log File Management Protocols

# Log File Management Protocols

## Use

For a description of the protocol messages, see [Messages \[Page 93\]](#).

## Structure

### DB2 user exit

Error messages are generated under certain conditions. They are protocolled in the SAP-DB2admin database and in a protocol file `db2uext2.err.NODEXXXX`.

The location of this file is indicated by the `DIAGPATH` database manager configuration parameter.

If tracing is enabled (configuration parameter `DB2DB6_TRC_DB2UEXT2`), then the trace file `db2uext2.<timestamp>.trc` can also be found here.

## BRARCHIVE/BRRESTORE

Some protocol entries in the SAP-DB2admin database can be viewed using the journal page of the log file management notebook. In addition, there are protocol files on the database server. These protocol files are as follows:

- `/db2/<SID>/saparch/brarchive.<timestamp>.lfa` for archiving
- `/db2/<SID>/saprest/brrestore.<timestamp>.lfr` for restoring

From 4.6B and higher, brarchive and brrestore tracing is no longer controlled by the environment variables `DB2DB6_ADMTRC` and `DB2DB6_TRCLEVEL`. On the command line, it may now be started by using the `-DEB` command line option, followed by an optional trace level and trace directory. The trace level can have the value 0-9. To enable tracing of brarchive and brrestore operations started by the DB2CC please request help from SAP DB2 support.

As before, brarchive and brrestore trace files are normally placed in the DB2 `sql1lib/db2` dump directory specified by the DB manager parameter `DIAGPATH`.



If the program terminates abnormally, the protocol and trace files may still be located in the temporary directory (`DB2DB6_TEMP_DIR`). These files may be lost after booting if this is located in a volatile file system (for example, `/tmp` on Solaris.)

## Backup/Recovery History

### Use

The backup/recovery history is a standard part of DB2 and is accessed using the DB2 Control Center. For assistance with this function, refer to the online help facility.

The overview backup status transaction DB12 also shows the contents of the DB2 recovery history file.

---

**Database Diagnostics****Database Diagnostics****Process Flow**

Database diagnostics may involve many different activities. For a full description, refer to the *IBM DB2 Troubleshooting Guide*.

## Messages

See the following sections for information on:

- [SAP-DB2admin Messages \[Page 94\]](#)
- [DB2 User Exit Messages \[Page 97\]](#)
- [BRARCHIVE and BRRESTORE Messages \[Page 99\]](#)

**See also:**

For information on messages from the database, see the *IBM DB2 Message Reference* documentation.

## SAP-DB2admin Messages

## SAP-DB2admin Messages

The SAP-DB2admin administration enhancements may receive one of the following return codes or messages generated by the DB2admin server on the DB2 host. Each message can have additional information associated. You can find this information on the DB2 server (either in the protocol files or the SAP-DB2admin database).

Message ID	Message/Meldung	Remark
DAS0000	'<string>' completed successfully '<string>' erfolgreich durchgefuehrt	Success message
DAS0001	Unknown return code <number> Unbekannter Rueckgabewert <number>	Check previous messages.
DAS0002	External command/program could not be started through pipe. Externes Kommando/Programm konnte nicht ausgefuehrt werden (Pipe-Aufruf).	This is an internal error. Try again. If the problem persists, contact SAP.
DAS0003	External command/program <string> could not be started Externes Kommando/Programm <string> konnte nicht ausgefuehrt werden.	On the database server, check whether the SAP-DB2admin tool <string> was installed correctly.
DAS0004	Failed to close pipe to external command/program. Pipe zu externem Kommando konnte nicht geschlossen werden.	This is an internal error. Try again. If the problem persists, contact SAP.
DAS0005	Could not flush pipe to external command/program. Pipe zu externem Kommando/Programm konnte nicht geleert werden.	This is an internal error. Try again. If the problem persists, contact SAP.
DAS0006	Error reading from pipe to external command/program. Fehler beim Lesen von Pipe zu externem Kommando/Programm.	This is an internal error. Try again. If the problem persists, contact SAP.
DAS0007	Invalid file pointer Ungueltige Datei (NULL-Zeiger)	This is an internal error. Try again. If the problem persists, contact SAP.
DAS0009	No valid return code available for the task. Kein gueltiger Rueckgabewert fuer diesen Arbeitsschritt vorhanden.	This message is returned whenever a SAP-DB2admin utility does not return a meaningful return code. Check previous messages. However, processing may have been successful.
DAS0010	Environment variable DB2DBDFT not set. Umgebungsvariable DB2DBDFT nicht gesetzt	Check the environment on the database server (DB2 instance db2<sid>).
DAS0011	Variable DB2DB6EKEY not set. Variable DB2DB6EKEY nicht gesetzt.	Check the environment on the database server (DB2 instance db2<sid>).

SAP-DB2admin Messages

DAS0012	Password file <code>dscdb6.conf</code> cannot be opened. Passwort-Datei <code>dscdb6.conf</code> kann nicht geoeffnet werden.	Check if the <code>dscdb6up</code> tool ( <code>/usr/sap/&lt;SID&gt;/SYS/exe/run</code> in UNIX) has correct permissions. Check if <code>dscdb6.conf</code> is available.
DAS0013	Invalid number of arguments: <code>dscdb6up &lt;user&gt; &lt;new_password&gt;</code> Falsche Anzahl Aufrufparameter: <code>dscdb6up &lt;user&gt; &lt;new_password&gt;</code>	Internal error. Report to SAP.
DAS0014	Error reading from password file <code>dscdb6.conf</code> . Fehler beim Lesen der Passwort-Datei <code>dscdb6.conf</code> .	Check the access permissions for the <code>dscdb6.conf</code> file and the <code>dscdb6up</code> tool access permissions.
DAS0015	Error writing to password file <code>dscdb6.conf</code> . Fehler beim Schreiben in die Passwort-Datei <code>dscdb6.conf</code> .	Check the access permissions for the <code>dscdb6.conf</code> file and the <code>dscdb6up</code> tool access permissions.
DAS0016	Invalid user <code>&lt;string&gt;</code> specified! Expecting 'sapr3' or ' <code>&lt;string&gt;</code> adm'. Ungueltiger Benutzername <code>&lt;string&gt;</code> ! Zulaessig sind 'sapr3' oder ' <code>&lt;string&gt;</code> adm'.	Internal error. Report to SAP.
DAS0017	User <code>&lt;string&gt;</code> does not have an account on the system. Der Benutzer <code>&lt;string&gt;</code> ist auf dem System nicht eingerichtet.	User <code>&lt;string&gt;</code> should have an account on the database server. Check using operating system commands. Your R/3 installation may be faulty.
DAS0018	' <code>&lt;string&gt;</code> ' failed. ' <code>&lt;string&gt;</code> ' fehlgeschlagen.	<code>&lt;string&gt;</code> failed during processing. Check other messages.
DAS0020	The two passwords for user <code>&lt;string&gt;</code> supplied do not match. Die beiden fuer Benutzer <code>&lt;string&gt;</code> spezifizierten Passwoerter sind nicht identisch.	Retry the password change.
DAS0021	No valid return code from set-password program for user <code>&lt;string&gt;</code> . Kein Rueckgabewert beim Setzen des Passwortes fuer Benutzer <code>&lt;string&gt;</code> .	Unexpected condition. Report to SAP.
DAS0022	TCP/IP initialization failure. TCP/IP kann nicht initialisiert werden.	Currently not applicable. You can ignore this error.
DAS0023	Cannot get host's name. Maschinename kann nicht ermittelt werden.	Windows NT only: Environment variable <code>DSCDB6HOME</code> is not set on the database server.
DAS0024	String to contain filepath is too small. Zeichenkette hat zu wenig Platz fuer Dateinamen.	Internal error during <i>Change Password</i> . Please report this error to SAP.

**SAP-DB2admin Messages**

DAS0026	External command/program <string> ended with warnings. Externes Kommando/Programm <string> wurde mit Fehlern beendet.	Dependent on the administration task that returned this message. Check trace and protocol information
DAS0030	Signal handler registration failed. Routine zur Ausnahmebehandlung konnte nicht registriert werden.	Signals will not be intercepted. Processing will continue. Signals will be handled by operating system.
DAS0050	Could not allocate memory Es konnte kein freier Speicherplatz angefordert werden.	Try again. If the problem persists: - Check the paging space on the database server - Try ending some programs - Contact your system administrator and/or SAP.



## DB2 User Exit Messages

For the error user exit message, the return codes have the following meaning:

Message ID	Message
0	Successful
4	Temporary error encountered. Retry. If the problem persists, contact SAP.
5	ADSM shared lib could not be loaded. Check if the specified shared lib is in the path of the DB2 instance owner.
6	Function module could not be loaded. Check previous error messages.
8	Operator invention required. Retry.
12	Hardware error.
16	Error with the user exit program or software function used by the program. Retry. If the problem persists, contact SAP.
20	Error with one or more of the parameters passed to the user exit program. Check whether you are using the correct version of db2uext2.
21	Invalid database parameter. This is a program error. Please contact SAP.
22	Invalid database management (DBM) parameters. This is a program error. Please contact SAP.
24	The user exit program was not found.
28	Error caused by an I/O failure or the operating system.
35	If the source is the log file to be archived by the DB2 user exit, this is just a warning. It means that the log file has probably been moved out of the online log directory. Make sure that the log file is still available somewhere. If not, you could have problems if a database recovery becomes necessary. If the DB2 user exit program was not used for archiving, then the log file can no longer be managed by the SAP-DB2admin tool.
36	Open file failed. File does not exist. Check the messages and access permissions.
37	Open file failed. Check the messages and access permissions.
38	Read from file failed. Wait to see if db2uext2 succeeds at a future attempt. If not, check at the file system level.
39	Write to file failed. Could be a free space problem.
41	Create directory failed. Check the file system access permissions. You could also redefine DB2DB6 ARCHIVE PATH and DB2DB6 RETRIEVE PATH.
44	File touch error. Check the file system access permissions.
48	SQL error occurred. Check the previous messages.
49	SQL warning occurred. Check the previous messages.
50	Registering of file space on ADSM server failed. Check db2uext2.err.NODExxxx for more detailed information.
51	Binding of management class failed. Check db2uext2.err.NODExxxx for more detailed information.
52	Beginning of ADSM transaction failed. Check db2uext2.err.NODExxxx for more detailed information.
53	Ending of ADSM transaction failed. Check db2uext2.err.NODExxxx for more detailed information.
54	Initialization of request to send object to ADMS server failed. Check db2uext2.err.NODExxxx for more detailed information.
55	Sending data stream to ADSM failed. Check db2uext2.err.NODExxxx for more detailed information.

**DB2 User Exit Messages**

56	Signifying the end of the data being sent to ADSM server failed. Check <code>db2uext2.err.NODExxxx</code> for more detailed information.
57	Initiation query request to ADSM failed. Check <code>db2uext2.err.NODExxxx</code> for more detailed information.
58	Signifying end of ADSM query failed. Check <code>db2uext2.err.NODExxxx</code> for more detailed information.
59	Getting next query response from ADSM failed. Check <code>db2uext2.err.NODExxxx</code> for more detailed information.
60	Starting of restore/retrieve operation in ADSM storage failed. Check <code>db2uext2.err.NODExxxx</code> for more detailed information.
62	Getting data stream from ADSM failed. Check <code>db2uext2.err.NODExxxx</code> for more detailed information.
63	Obtaining requested object data from ADSM failed. Check <code>db2uext2.err.NODExxxx</code> for more detailed information.
64	Signifying end if getting object cycle failed. Check <code>db2uext2.err.NODExxxx</code> for more detailed information.
67	Log file could not be found on ADSM server
68	Initialization of ADSM API session failed. Check <code>db2uext2.err.NODExxxx</code> for more detailed information.
90	NT error messages: Environment/Registry variable <code>DSCDB6HOME</code> not set. Please check your environment.
91	Environment/registry variable <code>DB2DB6EKEY</code> not set. Please check your environment.
92	Password could not be retrieved. Check previous error messages.
93	Environment/registry variable <code>DB2DBDFT</code> not set. Please check your environment.
101	Database management (DBM) parameter <code>DFTDBPATH</code> not set. The database management parameter could not be retrieved. Check for possible errors with DB2 instance <code>db2&lt;sid&gt;</code> .
102	Database management (DBM) parameter <code>DIAGPATH</code> not set. The database management parameter could not be retrieved. Check for possible errors with DB2 instance <code>db2&lt;sid&gt;</code> .
104	Log file ID cannot be obtained. Any log file to be archived by the DB2 user exit is assigned a unique ID. It is generated in the SAP-DB2admin database. If this error occurs, check the <code>ADM&lt;SID&gt;</code> database of your managed instance. In case of doubt, contact SAP support.
110	Record Info failed: An action step cannot be protocolled in the SAP-DB2admin database. Processing will continue.
111	Protocol database connect error: check from DB2 command line (CLP) whether a connection to <code>ADM&lt;SID&gt;</code> can be established. If not, check your database instance. In case of further problems, contact SAP.
112	<code>ADM&lt;SID&gt;</code> object creation failed: no log file entry can be made in the SAP-DB2admin database. Processing cannot continue. Check for additional messages.
113	<code>ADM&lt;SID&gt;</code> put CF failed: check for additional messages. Processing stops because important configuration data cannot be written to the SAP-DB2admin database.
115	Last backup timestamp could not be retrieved from the database recovery history file and inserted in the admin database. Check for additional messages.

## BRARCHIVE and BRRESTORE Messages

The following table lists BRARCHIVE and BRRESTORE messages and their message IDs.



LFA000 to LFA099 are BRARCHIVE and BRRESTORE **warning** messages.

LFA100 to LFA999 are BRARCHIVE and BRRESTORE **error** messages.

VND000 to VND999 are BRARCHIVE / BRRESTORE **library error** messages.

The message ID numbers for 4.6B have been changed to differentiate them from messages from previous versions of BRARCHIVE and BRRESTORE.

### BRARCHIVE and BRRESTORE Warning Messages

Msg. ID	Message	Comment
LFA000	Action ended with warnings.	Action may not have been completely successful or may not have been performed correctly. See other messages for more information.
LFA001	<OLD> syntax supported but archaic. Use new syntax (see -help <sup>*1</sup> ).	Use new syntax. Old syntax will no longer be supported in a later release.
LFA002	<OLD> syntax archaic and ignored. Use new syntax (see -help <sup>*1</sup> ).	Use new syntax. Old syntax will no longer be supported in a later release.
LFA003	<FUTURE> syntax not yet supported and ignored.	Undocumented syntax. Inform SAP if you are sure the syntax is documented.
LFA004	Repeated or conflicting arguments for parameter <OPTION>. Will use <VALUE>.	Using repeated/conflicting arguments. Check your call syntax.
LFA010	-d/-device not specified but tape implied.	Use -d option to explicitly specify device type (e.g. -d tape).
LFA011	-d/-device not specified but ADSM implied.	Use -d option to explicitly specify device type (e.g. -d adsm).
LFA020	-d/-device not specified or implied. Using tape.	Use -d option to explicitly specify device type (e.g. -d tape).
LFA021	No action specified on command line. Assuming '-help'.	Specify an action option (See syntax diagram which is shown).
LFA022	No node specified on command line. Assuming 'NODE0000'.	Use -node option to specify a node. Especially for UDB EEE.

**BRARCHIVE and BRRESTORE Messages**

LFA023	Using <DIRECTORY> for temporary files.	Ensure that the DB2DB6_TEMP_DIR environment variable is set for the user db2<sapsid>.
LFA030	No files to process. Nothing to do!	No files need processing. No action needed.
LFA031	File <FILE> could not be found for deletion.	A file intended for deletion was not found. No action is necessary.
LFA032	Tape is initialized but volume unknown to system.	This is a valid log file archiving tape but appears to be owned by a different system. Use -i force to force tape re-initialization for this system.
LFA033	Query resulted in no results.	No data matched the given query.
LFA034	Unable to change real user. May result in errors.	Check installation and program permissions.
LFA035	Unable to determine sid. Trace file will remain in temp dir.	SAPSID could not be determined before clean up. Do not know where to move trace file.
LFA036	Unable to determine INSTHOME or db2<sid> home dir. Protocol file will remain in temp dir.	Neither INSTHOME nor the home directory of the user db2<sid> could be determined. Do not know where to move protocol file.
LFA037	Signal handling looping. Clean up may not be successful.	Multiple signals received. May not have been able to move protocol and trace files from temp dir.
LFA050	Unable to process thread.	Thread interrupt/resume not possible. May result in further errors.

**brarchive and brrestore Error Messages**

Msg. ID	Message	Comment
LFA101	Parameter <OPTION> unknown.	Check syntax (see -help <sup>*1</sup> ).
LFA102	Action not allowed for <PROGRAM>.	Check syntax (see -help <sup>*1</sup> ).
LFA103	Action only allowed for <PROGRAM>.	Check syntax (see -help <sup>*1</sup> ).
LFA104	<OPTION> argument "<VALUE>" too long.	Use a shorter argument value.
LFA105	<OPTION> argument missing.	Required argument is missing. Check syntax (see -help <sup>*1</sup> ).
LFA106	<OPTION> argument "<VALUE>" not OK.	Check and replace bad (string) argument value.

**BRARCHIVE and BRRESTORE Messages**

LFA107	<OPTION> argument "<VALUE>" not OK.	Check and replace bad (numeric) argument value.
LFA108	Too many actions on the command line.	Only one action option is permitted. Check syntax (see -help <sup>1</sup> ).
LFA109	<OPTION> results in repeated or conflicting parameters.	Check for repeating or conflicting options. Check syntax (see -help <sup>1</sup> ).
LFA110	The parameter <OPTION> requires the parameter <OPTION>.	The first option requires the second option. Add required option to call.
LFA120	Unable to determine value of <ENVIRONMENT VARIABLE>.	Check db2<sapsid> user environment. See <<< ADD LINK TO "Environment" SECTION ABOVE >>>.
LFA121	Value of environment variable <ENV. VARIABLE> too long.	Check db2<sapsid> user environment. See <<< ADD LINK TO "Environment" SECTION ABOVE >>>.
LFA130	Application logic error.	Application error. If problem persists please contact SAP.
LFA131	Administration-tool database error.	Internal database call failed. If problem persists please contact SAP.
LFA132	Log-file delete failed.	Unable to delete file. Only a warning in the case of -sd.
LFA133	Error initializing tape.	Unable to initialize tape. Refer to other error messages.
LFA134	Unable to get list of files to archive.	Error creating file list for processing. If problem persists please contact SAP.
LFA140	Unable to connect to admin db. Is db started? (rc = <VALUE>)	Check that the database instance is started.
LFA141	<CONFIGURATION PARAMETER> parameter error. Check value in control centre. (ADG rc = <VALUE>)	Check the default, tape device and tape device class values using the DB2 Control Centre extensions.
LFA142	Unable to open backend session.	Brarchive/brrestore library session failed. If problem persists please contact SAP.
LFA143	Emergency restore failed.	Emergency restore operation failed. Refer to other error messages.
LFA144	Transfer operation failed.	Archive or Restore operation failed. Refer to other error messages.
LFA145	Query operation failed.	Query operation failed. Refer to other error messages.

**BRARCHIVE and BRRESTORE Messages**

LFA146	Unable to create file list.	Error creating file list for processing. If problem persists please contact SAP.
LFA147	Unable to determine value for <ENVIRONMENT VARIABLE>.	Check the user environment.
LFA148	Delete on backend failed.	Delete operation for archived log file failed. Refer to other error messages.
LFA149	Unable to load backend library.	Unable to find/load brarchive/brrestore library. Check the administration tool installation. Check the library path.
LFA150	Unable to initialize session info.	Unable to open session in library. Refer to other error messages.
LFA151	Action failed.	Operation failed. Refer to other error messages.
LFA160	'-i set' not ok if tape already labeled. Use -i force.	The action '-i set' can only be used to initialize tapes that are 'out-of-date'. Use -l force to force re-initialization of a current tape.
LFA161	Tape <DEVICE> must be initialized first. Use -l set or -i force.	The tape is not initialized. Use -l force to force initialization of a new, invalid or current tape.
LFA162	Tape <NUMBER> volume <LABEL> does not match command line value <LABEL>.	The label found on the referenced tape does not match the value specified with -v on the command line.
LFA163	Default tape rewind and non-rewind addresses identical (<DEVICE>)	Check the default, tape device and tape device class values using the DB2 Control Centre extensions.
LFA164	Tape is not known to system. Initialize with -i force.	The tape is not known. Use -l force to force initialization of a new, invalid or current tape.
LFA165	Tape is initialized but volume is unreadable. Use -i force.	The tape label is not a valid format. Use -l force to force initialization. Note: The tape may be damaged.
LFA166	User is <USER> but should be <USER> or <USER>.	Only db2<sid> or <sid>adm users should run the brarchive and brrestore programs.
LFA167	Program is already running. If not, delete <LOCK FILE>.	A lock file is already present. Either brarchive/brrestore is running elsewhere at the same time (=>wait for program end) or a previous program call terminated unexpectedly (=>delete file).

**BRARCHIVE and BRRESTORE Messages**

LFA180	Unable to allocate memory. Check system resources.	System memory error. Check system memory resources and retry operation.
LFA181	Unable to load library <LIBRARY NAME>.	Unable to find/load brarchive/brrestore library. Check the administration tool installation. Check the library path.
LFA182	Delete failed for file <FILENAME>. errno = <VALUE>.	Delete operation for log file failed. Refer to other error messages. Check file permissions.
LFA183	Unable to protocol for DB13 transaction (rc = <VALUE>)	Unable to add protocol entry to SDBAH table. If problem persists please contact SAP.
LFA184	Unable to determine home directory of <USER>.	If the INSTHOME environment variable is not set, the application attempts to determine the home directory of the user db2<sapsid>. Set the variable INSTHOME. If problem persists please contact SAP.
LFA185	Unable to create file.	Check access permissions of directory. Check file permissions of executable.
LFA186	Unable to close file.	Check access permissions of directory. Check file permissions of executable.
LFA187	Unable to delete file.	Check access permissions of directory. Check file permissions of executable.
LFA188	Unable to set signal handler.	System error. May result in incorrect program execution. Contact SAP if problem persists.



See `-help` indicates that `brarchive` or `brrestore` should be called with the `-h` or `-help` option on its own.

**brarchive and brrestore Library Error Messages**

Msg. ID	Message	Comment
VND000	Environment variable <ENVIRONMENT VARIABLE> is not set.	Check db2<sapsid> user environment. See <<< ADD LINK TO "Environment" SECTION ABOVE >>>.

**BRARCHIVE and BRRESTORE Messages**

VND001	Not enough disk space in <DIRECTORY>. Available: <VALUE> MB; needed: <VALUE> MB.	Delete files or increase size of file system. Note: Compressed file systems may calculate the amount of space available wrongly.
VND002	File size mismatch for <FILE>. <VALUE> on disk and <VALUE> kB on tape	The original file size does not match the size of the file restored. If the problem persists the file may be damaged and can only be restored using the emergency restore option.
VND004	Failed to save <FILE> (rc = <VALUE>)! Cannot continue...	Store operation failed. If the problem persists the media may be damaged.
VND005	Failed to retrieve <FILE> (rc = <VALUE>)! Cannot continue...	Restore operation failed. If the problem persists the media may be damaged.
VND006	Failed to delete <FILE> (rc = <VALUE>)! Cannot continue...	Delete operation failed. If the problem persists the media may be damaged.
VND007	Error copying file <FILE> to <LOCATION> (rc = <VALUE>).	Check file and directory permissions.
VND008	Error writing data to file <FILE> (rc = <VALUE>).	Check file and directory permissions.
VND009	Error reading data from file <FILE> (rc = <VALUE>).	Check file and directory permissions.
VND010	Error closing file <VALUE> just sent to/retrieved.	System error. If problem persists please contact SAP.
VND011	Error opening file <FILE> to be sent to/retrieved.	Check file and directory permissions.
VND020	Volume size limit reached - no more log files will be processed.	According to the Tape Device Class tape-size entry in the Control Centre, the tape must now be full. Check that this entry matches the real tape size. Complete (restart) operation with a new tape.
VND021	If the log file management tool was terminated, delete file <FILE>.	A temporary lock file is still present. Verify that brarchive is not already running for the same node or using the same device(s).
VND022	Volume in device <DEVICE> has no label.	Tape needs initializing.
VND023	Check the volume or device.	Check the tape or tape drive.
VND024	Label on volume in device <DEVICE> has the wrong format.	Tape needs initializing. Note: The tape may be damaged.



**BRARCHIVE and BRRESTORE Messages**

VND025	Wrong volume <LABEL> in device <DEVICE>, should be: <LABEL>	Put the correct tape in the drive or specify the correct label on the command line.
VND026	Volume in device <DEVICE> is write protected!	Remove the write protection if the tape should be written to.
VND027	Volume label could not be written to <DEVICE>.	Check tape and device.
VND028	Tape has to be initialized prior to usage.	Initialize tape.
VND029	Character 'K','M','G' or 'T' should directly follow volume size.	The Tape Device Class tape-size entry in the Control Centre is incorrect.
VND040	Error initializing ADISM session.	Check ADISM installation and configuration
VND041	Error terminating ADISM.	Check ADISM installation and configuration
VND042	Error registering ADISM filespace '<FILE>' of Type '<String>'.	Check ADISM installation and configuration
VND043	ADISM mgmt class bind (<STRING>) failed! (FS-name: <STRING> - HL-name: <STRING> - LL-name: <FILE>)	Check ADISM installation and configuration
VND044	Error starting ADISM transaction.	Check ADISM installation and configuration
VND045	Error sending object to ADISM.	Check ADISM installation and configuration
VND046	Error sending data to ADISM.	Check ADISM installation and configuration
VND047	Error ending process for sending object to ADISM.	Check ADISM installation and configuration
VND048	Error ending ADISM transaction.	Check ADISM installation and configuration
VND049	Error starting ADISM <STRING> query.	Check ADISM installation and configuration
VND050	Error ending ADISM <STRING> query.	Check ADISM installation and configuration
VND051	ADISM objects query found no match.	No entries match queries. See further messages.
VND052	Error starting data transfer from ADISM 'STRING' repository.	Check ADISM installation and configuration
VND053	Error getting object from ADISM <STRING> repository.	Check ADISM installation and configuration
VND054	Error during data transfer from ADISM.	Check ADISM installation and configuration

**BRARCHIVE and BRRESTORE Messages**

VND055	Error concluding object transfer from ADSM <STRING> repository.	Check ADSM installation and configuration
VND056	Error concluding data transfer from ADSM <STRING> repository.	Check ADSM installation and configuration
VND057	Error querying ADSM session information.	Check ADSM installation and configuration
VND058	Error deleting object in ADSM.	Check ADSM installation and configuration
VND059	ADSM reason <No>: <String>	ADSM reason for an error
VND060	ADSM error <No>: <String>	ADSM error number and description
VND061	Unable to load ADSM API DLL.	Check that ADSM has been correctly installed.
VND062	Client's API version is higher than the ADSM version	Brarchive executables and library do not match. Check the administration tool installation.
VND063	Client's ADSM API structures are incompatible/have changed	Brarchive executables and library do not match. Check the administration tool installation.
VND064	File <FILE> not found in ADSM.	No matching files in ADSM. Use ADSM admin tool to verify files exist.
VND101	... failed	Operation failed. Refer to other error messages.
VND102	Internal library error.	Internal error. Refer to other error messages.
VND111	Tape <DEVICE> should be a non-rewind address.	Check the command line device name and DB2 Control Centre configuration values. If problem persists please contact SAP.
VND149	Rewind of volume in device <DEVICE> failed.	Check tape and device
VND150	Copying <FILE> to/from <LOCATION> failed due to previous errors.	See other error messages
VND170	File <FILE> already exists.	File already exists and will be overwritten.
VND181	Restore of <FILE> failed.	See other error messages
VND182	Space information on device <DEVICE>. Available: <VALUE> MB; Needed: <VALUE> MB	Delete files or increase size of file system. Note: Compressed file systems may calculate the amount of space available wrongly.
VND183	File <FILE> will be overwritten.	File already exists and will be overwritten.

**BRARCHIVE and BRRESTORE Messages**

VND184	File <FILE> not found.	Check for existence of file and permissions.
VND185	File <FILE> is not a regular file.	Check file.
VND186	<DIRECTORY> is not a directory.	Check directory and permissions.
VND190	File <FILE> does not exist.	Check file.

## Tracing

## Tracing

## Use

You should use tracing only in exceptional circumstances (that is, when you are advised to do so by SAP support personnel).

You can enable tracing for the following SAP-DB2admin components:

- DB2admin server (sddb6jds stored procedure)
- DB2 user exit
- Log file management

## Integration

All tracing is dependent on variable settings in the `init<SAPSID>.db6` environment file (located in the `/usr/sap/<SID>/SYS/global` directory) or on the environment settings for the DB2 server instance (on NT, also Registry settings). Each component on the SAP-DB2admin tools can be traced separately.

Environment Variable	Values
DB2DB6_TRC_<TOOL>	ON OFF Defaults: OFF  For example: DB2DB6_TRC_DB2UEXT2=ON
DB2DB6_TRC_<TOOL>_PATH	Any path where db2<sid> has write access. The defaults are as follows:  UNIX: /tmp/TraceFiles/<SID> NT: \\<DSCDB6HOME>\SAPLOC\TraceFiles\<SID>  For example: DB2DB6_TRC_DB2UEXT2_PATH=/db2/<SID>/db2dump
DB2DB6_TRC_<TOOL>_LEVEL	Defaults:  1 (Errors): Error tracing 2 (Footprint): Function internal info 3 or more (DEV): Development trace



From 4.6C and higher, brarchive and brrestore tracing can be controlled by environment variables or by the command line option `-DEB`, followed by an optional trace level and trace directory. The trace level can have the value 0-7 as before, but is made up of a sum of values:

## Optional Trace Level Values:

Value	Description
0	Default trace level. Only traces program flow and errors.

Tracing

1	Traces function parameters, command line parsing, etc.
2	Low-level internal tracing: Variable values, etc.
4	Low-level system function tracing

As before, brarchive and brrestore trace files are normally placed in the DB2  
sql1lib/db2 dump directory

Default Trace File Names

SAP-DB2admin Component	File Names
DB2admin server	sddb6jds.<timestamp>.trc
DB2 user exit	db2uext2.<timestamp>.trc
Log file management	brarchive.<timestamp>.trc brrestore.<timestamp>.trc

## IBM DB2 UDB for UNIX & Windows Documentation

Document No.	Title
SC09-2851-00	DB2 UDB What's New
SC09-2839-00	DB2 UDB Administration Guide: Design and Implementation V6
SC09-2840-00	DB2 UDB Administration Guide: Performance V6
SC09-2841-00	DB2 UDB Administrative API Reference V6
SC09-2842-00	DB2 UDB Application Building Guide V6
SC09-2845-00	DB2 UDB Development Guide V6
SC09-2843-00	DB2 UDB Call Level Interface Guide and Reference V6
SC09-2844-00	DB2 UDB Command Reference V6
SC09-2858-00	DB2 UDB Data Movement Utilities Guide and Reference V6
GC09-2832-00	DB2 UDB Enterprise Extended Edition for UNIX Quick Beginnings V6
GC09-2833-00	DB2 UDB Enterprise Extended Edition for Windows NT Quick Beginnings V6
GC09-2886-00	DB2 UDB Personal Edition for Linux Quick Beginnings V6
GC09-2836-00	DB2 UDB for UNIX Quick Beginnings V6
GC09-2835-00	DB2 UDB for Windows NT Quick Beginnings V6
GC09-2846-00	DB2 UDB Message Reference V6
SC09-2856-00	DB2 UDB SQL Getting Started V6
SC09-2847-00	DB2 UDB SQL Reference V6
SC09-2848-00	DB2 UDB SQL Reference V6
SC09-2829-00	DB2 UDB System Monitor Guide V6
GC09-2837-00	DB2 UDB QUICK BEGINNING DATALINKS
SC09-2838-00	DB2 CONNECT USER'S GUIDE V6
S10J-8169-00	DB2 UDB TROUBLESHOOTING GUIDE V6
SC09-2849-00	DB2 UDB System Monitor Guide V6



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**Installing SAP-DB2admin GUI Utilities**

## **Installing SAP-DB2admin GUI Utilities**

### **Purpose**

The SAP-DB2admin utilities are an extension of the DB2 database software that let you perform some R/3-specific administrative tasks.

### **Prerequisites**

Since the SAP-DB2admin utilities are called from the DB2 Control Center, you have to install the DB2 UDB Administration Client Version 6.1 first.

### **Process Flow**

The installation can take place on any machine in the network dedicated to administer the R/3 database. If you have any questions, contact your network or system administrator. You must perform the following tasks on the same machine in the order specified.

1. Installation of the DB2 UDB Administration Client
2. Installation of the R/3 Control Center Extension
3. Cataloging of the databases to be administered



## Installing DB2 UDB Administration Client

The SAP-DB2 admin utilities are an extension of the DB2 Control Center. You have to install it first. You can either install the full DB2 product or the DB2 UDB Administration Client if you do not want a local database. In both cases you have to make sure that you install the Control Center. This option is not checked by default. If you are installing on Windows check *Install components required to administer remote servers*. On Unix, you should check the option *Control Center*.

For detailed information about installing DB2, see the DB2 documentation.

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Installation of the R/3 Control Center Extension

## Installation of the R/3 Control Center Extension

### Procedure on Windows 95/98/NT:

1. Log on to the machine on which you want to install the administration tools. You must log on as a user with local administration privileges.
2. Insert the R/3 kernel CD.
3. Enter directory `NT\I386\DBTOOLS`.
4. Inflate the file `DB6CCEXT.CAR` to a temporary directory
5. Enter the temporary directory.
6. Invoke *setup.exe* and follow the instructions.

### Procedure on AIX

1. Log on as user `root` to the machine on which you want to install the administration tools.
2. Insert the R/3 kernel CD.
3. Mount the CD.
4. Enter the directory `UNIX/AIX_32/DBTOOLS` on the CD.
5. Inflate the file `DB6CCEXT.CAR` to a temporary directory.
6. Enter the temporary directory.
7. Invoke *install*.

### Procedure on Solaris

1. Log on as user `root` to the machine on which you want to install the administration tools.
2. Insert the R/3 kernel CD.
3. Mount the CD.
4. Enter directory `UNIX/SUNOS_32/DBTOOLS` on the CD.
5. Inflate the file `DB6CDEXT.CAR` to a temporary directory.
6. Enter the temporary directory.
7. Invoke *install*.

### Procedure on Linux

1. Log on as user `root` to the machine on which you want to install the administration tools.
2. Insert the R/3 kernel CD.
3. Mount the CD.
4. Enter directory `UNIX/LINUX_32/DBTOOLS` on the CD.
5. Inflate the `DB6CCEXT.CAR` to a temporary directory.
6. Enter the temporary directory.
7. Invoke *install*

## Cataloging the Databases to be Administered

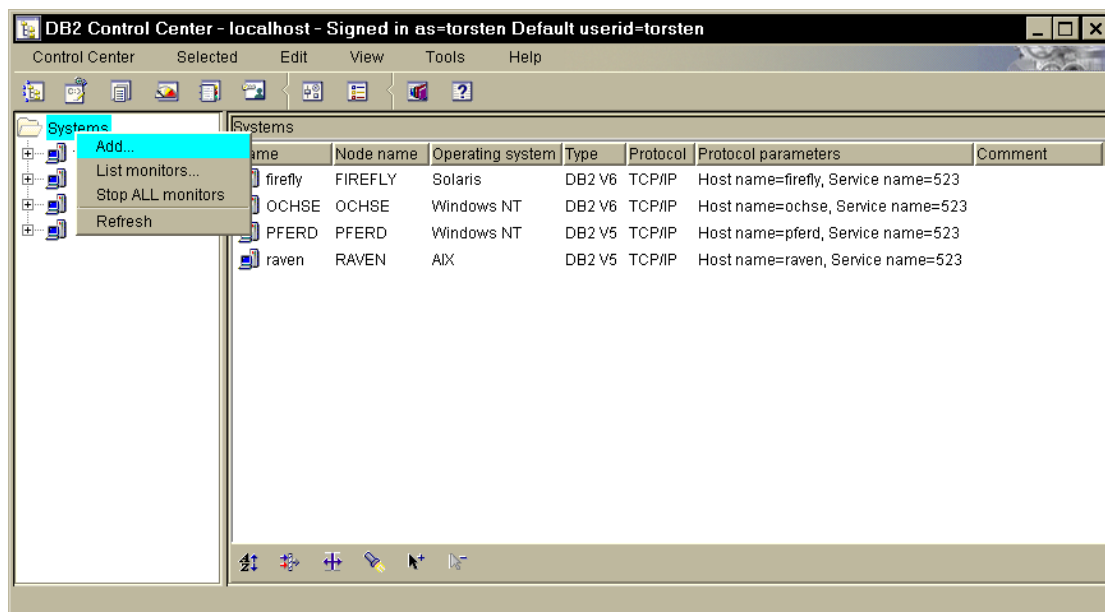
### Prerequisites

Before you can start using the SAP-DB2admin utilities, you have to catalog the databases to be administered. To do so, carry out the following steps on the machine to be used for administration.

### Procedure

Start the DB2 Control Center as described in the DB2 documentation.

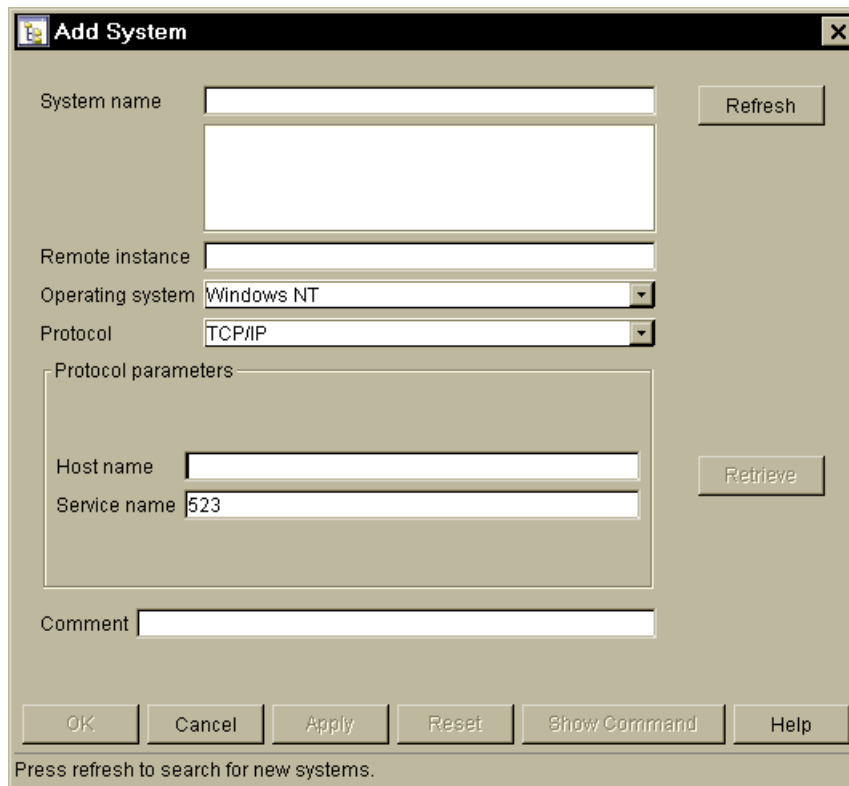
The following screen is displayed:



### Cataloging Systems

1. Select **Systems** on the left half of the screen with the right mouse button.
2. Choose **Add**.

The following dialog box is displayed:

**Cataloging the Databases to be Administered**

The 'Add System' dialog box is used for cataloging databases. It contains the following fields and controls:

- System name:** A text input field with a 'Refresh' button to its right.
- Remote instance:** A text input field.
- Operating system:** A dropdown menu currently showing 'Windows NT'.
- Protocol:** A dropdown menu currently showing 'TCP/IP'.
- Protocol parameters:** A container box containing:
  - Host name:** A text input field.
  - Service name:** A text input field containing the value '523'.
  - Retrieve:** A button to the right of the service name field.
- Comment:** A text input field.
- Buttons:** A row of buttons at the bottom: OK, Cancel, Apply, Reset, Show Command, and Help.
- Footer:** A message that reads 'Press refresh to search for new systems.'

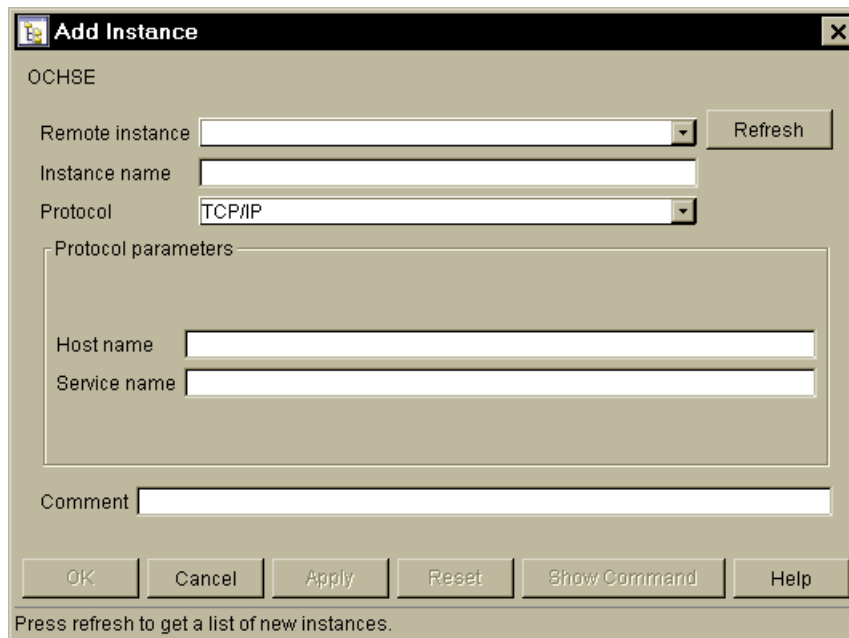
3. Choose *Refresh* and select the computer on which the R/3 database server is located. (Alternatively you can type the computer's name into the Field *Host name* and choose *Retrieve*.) If you get a communication error message, it is possible that the DB2 Administration Instance is not running on the system you are cataloging. In that case refer to the DB2 documentation for setting up and starting the DB2 Administration Instance.
4. Choose *OK* (or *Apply* if you want to catalog further systems).

**Cataloging Instances**

1. Choose the right mouse button on the subnode *Instances* of the system where the DB2 Server is located.
2. Choose *Add*.

The following dialog box appears:

## Cataloging the Databases to be Administered



The **Add Instance** dialog box is used to configure a new instance. It features a title bar with a close button. The main area contains the following fields and controls:

- Remote instance:** A dropdown menu with a **Refresh** button to its right.
- Instance name:** A text input field.
- Protocol:** A dropdown menu currently set to **TCP/IP**.
- Protocol parameters:** A container for two sub-fields:
  - Host name:** A text input field.
  - Service name:** A text input field.
- Comment:** A text input field.
- Buttons:** A row of six buttons: **OK**, **Cancel**, **Apply**, **Reset**, **Show Command**, and **Help**.

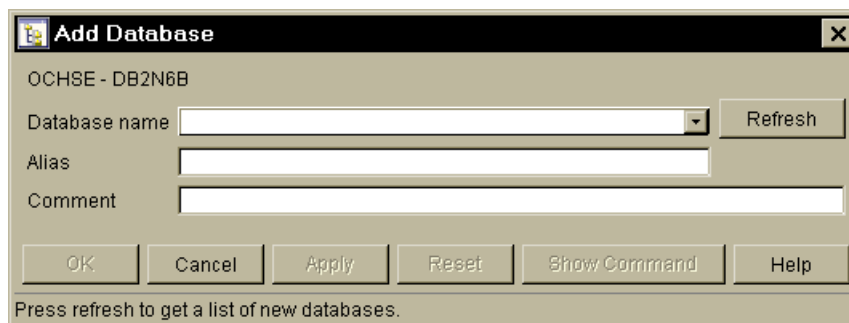
At the bottom, a status bar reads: "Press refresh to get a list of new instances."

3. Choose *Refresh* and select the DB2 instance in the dialog box *Remote Instance*. If you get a communication error message, it is possible that the DB2 Administration Instance is not running on the system you are cataloging. In that case refer to the DB2 documentation for setting up and starting the DB2 Administration Instance.
4. Choose *OK* (or *Apply* if you want to catalog further instances).

### Cataloging Databases

1. Choose the right mouse button on the subnode *Databases* of the DB2 instance with the R/3 database.
2. Choose *Add*.

The following dialog box appears:



The **Add Database** dialog box is used to configure a new database. It features a title bar with a close button. The main area contains the following fields and controls:

- Database name:** A dropdown menu with a **Refresh** button to its right.
- Alias:** A text input field.
- Comment:** A text input field.
- Buttons:** A row of six buttons: **OK**, **Cancel**, **Apply**, **Reset**, **Show Command**, and **Help**.

At the bottom, a status bar reads: "Press refresh to get a list of new databases."

3. Choose *Refresh* and select the R/3 database in the *Database name* dialog box. If no databases are found automatically, you can type the database name into the *Database name* dialog box.
4. Choose *Apply*
5. Select (or type) the Administration database *ADM<SID>* in the *Database name* dialog box.

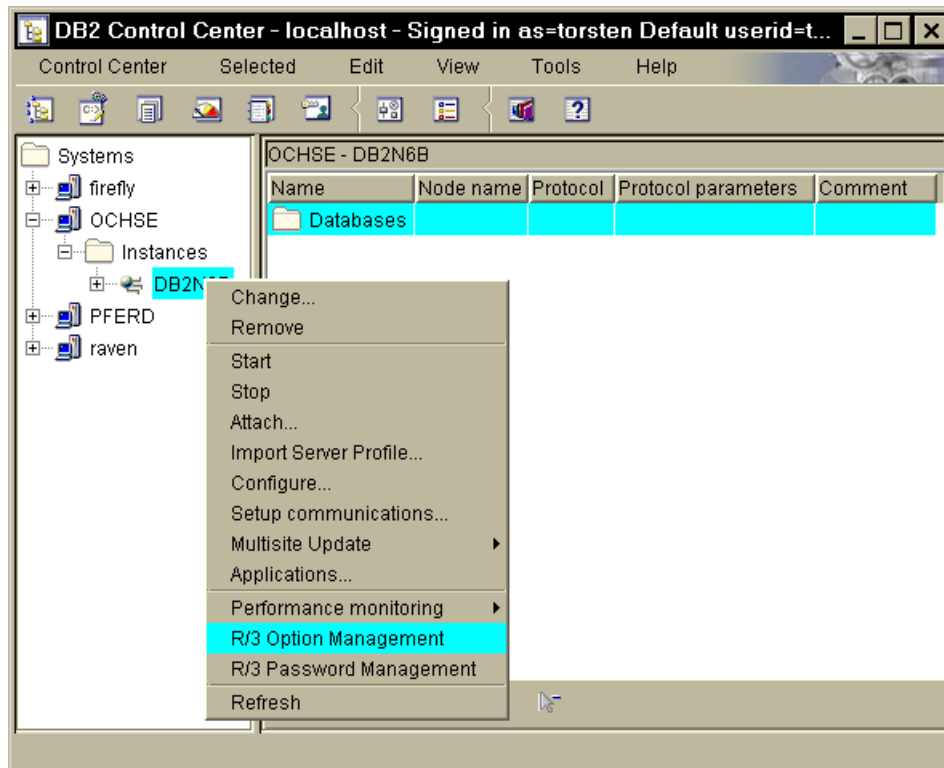
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**Cataloging the Databases to be Administered**

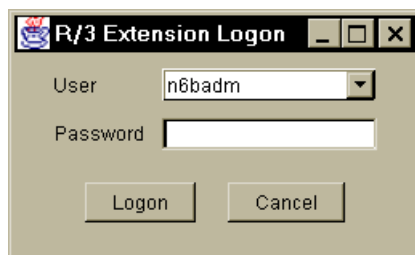
6. Choose *OK*.

## Checking the Installation of the SAP-DB2admin Utilities

1. Select the instance *DB2<SAPSID>* under your system *<database\_server\_name>*.
2. Create a context-sensitive menu by choosing the right mouse button. The menu options *R/3 Option Management* and *R/3 Password Management* should now appear at the bottom of the menu as shown in the graphic.



3. Choose *R/3 Option Management*. A logon dialog box should be displayed, which you can cancel. If the menu options does not appear or no logon dialog box is displayed, repeat the step *Installation of the R/3 Control Center Extension* and refer to the error messages and solutions.



## Configuring the SAP-DB2admin Utilities

## Configuring the SAP-DB2admin Utilities

### Use

Before you use the SAP-DB2admin utilities, you have to configure them.

### Procedure

To do so, you have to enter some initialization values that were contained in the file

```
$INSTHOME/dbs/init<SAPSID>.sap
```

in SAP Release 3.x.

All values that are not default values must be adjusted using the *DB2admin: Options* dialog box in the DB2 Control Center based on the entries formerly in the file `init<SAPSID>.sap`. This file is no longer used.

