SAP Note

# 1611715 - SYB: How to restore an SAP ASE database server (Windows)

**Version** 16 **Validity:** 15.12.2014 - active **Language** English (Master)

## Header Data

| | |
|---|---|
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| **Component** | BC-DB-SYB Sybase ASE Database Platform |
| **Other Components** | BW-SYS-DB-SYB BW on Sybase ASE Database Platform |
| **Priority** | Recommendations / Additional Info |
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## Symptom

You need to restore an SAP Adaptive Server Enterprise (ASE) database instance on Windows.

## Other Terms

'DUMP DATABASE', 'LOAD DATABASE',

## Reason and Prerequisites

You are operating SAP with an ASE database server. ASE runs on Microsoft Windows. You need to restore database server.

## Solution

The instructions below provide an outline of what needs to be done to restore the ASE server on a Wind operating system.

**Assumptions:**

- The ASE server version is 15.7 ESD#2 or higher (additional information for ASE versions lower than ESD#2 is provided at the end of this note)
- The *Dump History* feature has been enabled (default in SAP systems) and an up-to-date copy of the d file is available
- The Microsoft Windows system is online or has been restored from a Windows image (including Window Registry entries, users, and environment settings)
- The file system <DRIVE>:\sybase\<SID> is available; all the database devices and databases are dam have to be recreated (including the master device)
- Current dumps of the *master, sybsystemprocs, sybmgmtdb,* and *saptools* databases are available
- A current dump of the <DBSID> database is available, along with all the required dumps from the transaction log
- A current copy of the ASE server configuration file is available

If the file system of the SAP ASE software installation, <DRIVE:>\sybase\<SID>, is not available, rest from a file system backup. If you do not have a file system backup, you have to reinstall ASE with the installer. It is not possible to reinstall the ASE software standalone using the ASE installer from th installation medium provided by SAP, since the necessary SAP license can only be installed using the S installer. You have to install an empty SAP NetWeaver system, for example, and then load your database into the SAP ASE server.

Recreate the file systems and directories for the database device files, as required. In a typical SAP these are:

- <DRIVE>:\sybase\<SID>\sapdata_[1-n]
- <DRIVE>:\sybase\<SID>\saplog_[1-n]
- <DRIVE>:\sybase\<SID>\sybsystem
- <DRIVE>:\sybase\<SID>\sapdiag
- <DRIVE>:\sybase\<SID>\sybtemp

Remark: If the file system(s) <DRIVE>:\sybase\<SID>\saplog_[1-n] have not been corrupted, the device f will probably hold transactional data which have not yet been dumped to a transaction log dump. In thi perform an emergency dump of the transaction log in this case (see below). Make sure you retain a good copy of the device files before you recreate the file systems /sybase/<SID>/saplog_[1-n].

**Rebuild the ASE server**

If the file system of the SAP software installation (<DRIVE>:\sybase\<DBSID>, for example) is availabl can use the original response files that were created by the SAP ASE installer to recreate the ASE ser following files are relevant for the restoration of the server:

- sqlsrv.res - main response file to recreate the ASE server
- bsrv.res - response file for the backup server

If the original response files used during installation are no longer available, download the sample r files attached to this note.
Review the contents of the files and ensure that the parameter values are correct.

Pay particular attention to the following parameters in file sqlsrv_sample.res:

| Parameter: | Value: | Comment: |
|---|---|---|
| sybinit.boot_directory | <DRIVE>:\sybase\<DBSID> | |
| sybinit.release_directory | <DRIVE>:\sybase\<DBSID> | |
| sqlsrv.network_hostname_list | <HOSTNAME> | Replace with database hos |
| sqlsrv.network_port_list | <port> | ASE port default: 490 SAP environm must match v environment 'dbs_syb_por user <sid>ad |
| sqlsrv.server_name | <DBSID> | |
| sqlsrv.sa_password | <sa_password> | |
| sqlsrv.master_device_physical_name | <DRIVE>:\sybase\<DBSID>\sybsystem\master.dat | Location of master devic is the stand value in an installation Change as ap in case you installed AS custom mode. |
| sqlsrv.master_device_size | 400* | 400 MB is th default size master devic SAP installa will be corr unless you i the master d after instal |
| sqlsrv.master_db_size | 250* | 250 MB is th default size master datab an SAP insta will be corr unless you i the master d after instal |
| sqlsrv.sybsystemprocs_device_physical_name | <DRIVE>:\sybase\<DBSID>\sybsystem\sysprocs.dat | Location of the device f the 'sybsyst database. Th the standard in an SAP installation Change as ap in case you installed AS custom mode. |
| sqlsrv.sybsystemdb_db_device_physical_name | <DRIVE>:\sybase\<DBSID>\sybsystem\sybsysdb.dat | Location of the device f the 'sybsyst database. Th the standard in an SAP installation Change as ap in case you installed AS custom mode. |
| sqlsrv.tempdb_device_physical_name | <DRIVE>:\sybase\<DBSID>\sybtemp\tempdbdev.dat | Location of the device f the system temporary da This is the value in an installation Change as ap in case you installed AS custom mode. |
| sqlsrv.errorlog | <DRIVE>:\sybase\<DBSID>\ASE-15_0 \install\<DBSID>.log | Standard val get changed the installt any time if |
| sqlsrv.ase_service_account_name | <HOSTNAME>\syb<dbsid> | |
| sqlsrv.ase_service_account_password | <password_for_syb<dbsid>> | |
| sqlsrv.default_backup_server | <DBSID>_BS | |

| | |
|---|---|
| sqlsrv.xpserver_network_hostname_list | <HOSTNAME> |
| sqlsrv.xpserver_network_port_list | <port_for_xp_default_4904> |
| sqlsrv.xp_service_account_name | <HOSTNAME>\syb<DBSID> |
| sqlsrv.xp_service_account_password | <password_for_syb<dbsid>> |

* As it is almost never necessary to increase the size of the master device and the master database, t
default value 400 MB for the device size and 250 MB for the master database size should be correct in
cases.

Review as well the contents of file bsrv.res:

| **Parameter:** | **Value:** | **Comment** |
|---|---|---|
| sybinit.boot_directory | <DRIVE>:\sybase\<DBSID> | |
| sybinit.release_directory | <DRIVE>:\sybase\<DBSID> | |
| sqlsrv.server_name | <DBSID> | |
| sqlsrv.sa_password | <sa_password> | must not be empty , must be the<br>as specified in sqlsrv_sample. |
| bsrv.server_name | <DBSID>_BS | |
| bsrv.errorlog | <DRIVE>:\sybase\<DBSID>\ASE-15_0<br>\install\<DBSID>_BS.log | |
| bsrv.network_port_list | <bssrv_port> | Backup Server port<br>Default port is 4902 in an SAP<br>environment |
| bsrv.network_hostname_list | <HOSTNAME> | |
| bsrv.bs_service_account_name | <HOSTNAME>\syb<dbsid> | |
| bsrv.bs_service_account_password | <password_for_syb<dbsid>> | |

After you have verified the parameter values, proceed as follows:

1. Call the command sybatch.exe as ASE software owner <syb>sid to recreate the server.
   Example:

   %>ASE-15_0\bin\sybatch. exe -r %SYBASE%\ASE-15_0\sqlsrv.res

   This command will rebuild a new ASE server. It will create a new master device and a new master da
   load the utf-8 character set and set the binary sort order in ASE.
   A log file of the sybatch. exe command is written to %SYBASE%\ASE-15_0\init\logs\log <mmdd>.<nnn>,
   <mmdd> is the month and day and <nnn> is a three-digit number, for example, 001.
2. Review the contents of that log file. Ensure that the rebuild of the ASE server has worked as expe
   Ensure that utf-8 has been installed as the default character set and that the binary sort order i
   The ASE error log file should contain an entry indicating that the default sort order is 'binary'
   25) on top of default character set 'utf8' (ID = 190).
   **Note:** Since you are rebuilding the master database from scratch, the default administrative login
   now active with the password provided. The SAP administrative login 'sapsa' does not yet exist on
   server.

**Recreate the backup server**

If required, you can recreate the backup server.
Proceed as follows:

1. Call the file 'bsrv.res' with the *sybatch.exe* command. Review the contents and then recreate the b
   server.
   Example:
   *sybatch.exe -r bsrv.res*
2. Review the contents of the corresponding log file %SYBASE%\ASE-15_0\init\logs\log<mmdd>.<nnn>

**Restart the server in single user mode**

1. Switch to the directory %SYBASE%\ASE-15_0\install.
2. Copy the file 'RUN_<SID>.bat' to file 'RUN_<SID>_SINGLE_USER_MODE.bat'.
3. Edit the new file and add the startup option '-m' at the end of the file.

   Example:
   "<DRIVE>:\sybase\<DBSID> \ASE-15_0\bin\sqlsrvr.exe" -d"<DRIVE>:\sybase\<DBSID>\sybsystem\master.da
   s<DBSID> -e"<DRIVE>:\sybase\<DBSID>\ASE-15_0\install\<DBSID>.log" -i"<DRIVE>:\sybase\<DBSID>\ini"
   M"<Drive>:\sybase\<DBSID>\ASE-15_0" -m

   **Note:** The content of the file consists of one line. Replace <DRIVE> with the drive letter where yo
   installed the ASE software. Replace <DBSID> with the ASE server name.
4. Start the ASE server by calling this batch file from a DOS command prompt.

   **Important:** The ASE server is now running as a user process, not as a service. Do not close the DO
   command shell where you started the server as long as the ASE server is running!

**Load the master database**

1. Start the backup server.
2. Log in to the ASE server with isql (or another SQL editor). The ASE server must be running in sing
   mode in order to load a master database. Use the login 'sa' to log on to the ASE server.
3. Load the original master database with the *LOAD DATABASE* command.

   Example:
   *1> load database master from <DUMPFILE>*
   *2> go*
   Replace <DUMPFILE> as appropriate.

If your ASE version is ASE 15. 7 ESD#2 or higher and the ASE configuration parameter 'enable dump has been set (default for SAP environments), you will get the correct load command by executing th command:

```
1> load database master with listonly = 'LOAD_SQL'
2> go
```

ASE shuts down automatically after completing the master database load.

**Recreate the temporary database(s)**

Recreating temporary database devices is an optional step. You can perform this step now or at a conve point in time later.
Before you restart ASE, recreate the devices for any additional temporary database(s) you may have cre is sufficient if you create the device(s) as an empty file in the correct location with correct permis the file system.
The device of the system temporary device should already exist (it was recreated during ASE initializa As a minimum, the device of the system temporary database must exist.
If you do not know the device files of the temporay device files, start ASE normally and get the devic names either from master catalog sysdevices or from the messages in the ASE error.log.

**Reconfigure ASE to your standard configuration and restart ASE as a Windows service**

During the initialization of the ASE server, a new configuration file <DBSID>.cfg was created in direc SYBASE%\%SYBASE_ASE% with an initial default configuration. Replace it with the saved copy of the file <DBSID>.cfg.
Restart ASE using the Windows service (do not use the RUN_<DBSID>.bat file).

**Perform an emergency dump of the transaction log**

This step applies if a database is offline, but the device files containing the log segment are still available. In a productive SAP system this will be the case for the database '<DBSID>'.
Log in to ASE with isql as user 'sapsa' and execute the command:

```
1> dump transaction <DB_NAME> to '<DUMPFILE_LOCATION>' with no_truncate
2> go
```

Replace <DUMPFILE_LOCATION> as appropriate. Replace <DB_NAME> with the name of the database.

**Note:** With ASE version 15.7 SP100 and higher, there is also a tool 'sybdumptran.exe' available that ca used to perform an emergency backup of unsaved parts of the transaction log. The advantage of this too that it can also be used while the database server itself is offline. For the syntax of the tool 'sybdumptran', refer to the online documentation.

**Load system database sybsystemprocs**

This step is only necessary if you have a current dump of the *sysbsystemprocs* database and if you are automatic database expansion or otherwise added user-specfic content to database *sybsytemprocs*.
If you do not use automatic database expansion or did not add content to database *sybsystemprocs*, skip step and proceed with section 'Load user databases'.
Ensure that you only load a dump of *sybsystemprocs* that was taken on exactly the same ASE version.

1. Log in to SAP ASE with isql as user 'sapsa' and execute the command:

   ```
   1> load database sybsystemprocs with listonly = 'LOAD_SQL'
   2> go
   ```
2. Execute the LOAD database command that is obtained by the previous step.
3. Set the database online.
   After the database *sybmgmtdb* has been loaded, you need to bring the database online using the comm *online database*:

   ```
   1> online database sybsystemprocs
   2> go
   ```

**Load user databases**

Proceed as follows:

- Drop and recreate the databases and devices for load
- Load the database and the transaction logs (if applicable)
- Set the databases online

You have to perform these steps for the database *saptools, <DBSID>,* and *sybmgmtdb.*

1. Drop and recreate the databases and devices for load.
   The assumption is that you lost the ASE disk devices in the file systems; hence you need to recrea disk devices. To be able to recreate devices, you have to drop the non-existing devices from the c and the databases on these devices first.

   Proceed as follows:
   a. Log in to ASE with isql as user 'sapsa' and run the command:

      ```
      1> load database <DB_NAME> with listonly = 'CREATE_SQL'
      2> go
      ```

      Replace <DB_NAME> with the name of the database you want to recreate. The above 'LOAD' command searches for the location of the latest database dump using the 'dumphist' file and extracts t command for its devices, the database itself, and the set databases options from the header information in the dump.
   b. Save the output to a file.
   c. Drop the database and all its devices from the master catalog.

```
1> drop database '<DB_NAME>'
2> go
1> exec master sp_dropdevice '<DB_DEVICE>'
2> go
```

Replace <DB_NAME> with the name of the database. Replace <DB_DEVICE> with the device name. If database has been created on several devices, drop all the devices of the database.

d. Recreate the devices and the database using the previously saved output. To speed up creation large database, it is recommended that you edit the *CREATE DATABASE* command and add the *FOR LO* clause.

Example:

```
1> create database <DB_NAME> on data<DB_NAME>_1 = '40G'
2> log on log<DB_NAME>_1 = '10G'
3> with lob_compression = 100, compression = page
4> for load
```

2. Load the database and transaction logs.
   a. Log in to ASE with isql as user 'sapsa' and execute the command:

```
1> load database <DB_NAME> with listonly = 'LOAD_SQL'
2> go
```

   b. Save the output to an SQL command file and execute it in isql.
3. Set the database online.
   After the database dump and all transaction logs have been loaded, you need to bring the database using the command *online database*:

```
1> online database <DB_NAME>
2> go
```

4. Restart the job scheduler.
   After you have loaded all databases including 'sybmgmtdb' , restart the job scheduler. Log in to A isql as user 'sapsa' and execute the command:

```
1> exec sybmgmtdb.. sp_sjobcontrol '','start_js'
2> go
```

**Additional information:**

Before you start the SAP system, ensure that the correct database options have been set.
Mandatory database options for SAP are:

- ddl in tran
- allow nulls by default
- allow wide dol rows
- page compression

The following database options are mandatory for a production system:

- enforce dump tran sequence
- full logging for all (compare SAP Note 1585981)

The options listed below are set per default for the SAP database; they are recommended, but not manda

- deferred table allocation (ASE version 15.7.0.040 and higher)
- deallocate first text page (ASE version 15.7.0.043)
- allow incremental dumps (ASE version 15.7.0.100 and higher)

**Caution:** Set the database options immediately after the database has been brought online and before a connects to the database. If any changes to the database contents are made before you set enforce dump sequence, you have to get a full database dump before you can set the option.

**Additional information: SAP ASE version lower than 15.7 ESD#2**

- The initial password for the user 'sa' must be NULL during initialization of the ASE server. Leave password entries in all the resource files empty before building the server.
- The LOAD DATABASE command cannot be used to retrieve the device and database DDL statements from t database dump itself (see above). You have to retrieve the information from the system catalog in master database (hence the master database needs to have been loaded and be available).

  If you need to retrieve the DDL statement for the database devices execute the command *ddlgen.bat* is located in directory %SYBASE%\ASEP\bin) as user 'syb<sid>':

  ```
  ddlgen -S<DBSID> -Usapsa -P<Password> -TBDD -N%
  ```

  Replace <DBSID> with the name of your ASE server; replace <Password> with the correct password for 'sapsa'. Save the output to a file. Open the file with an editor and remove the DDL statements for system devices master, sysprocsdev, systemdbdev, tempdbdev, and any other existing devices that yo need to recreate.

  If you need to create the DDL statement for a database, log in to ASE with isql as user 'sapsa' an execute the SQL command:

  ```
  exec master..sp_ddlegen 'database', '<DBNAME> '
  go
  ```

  Replace <DBNAME> with the name of the database.

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## Validity

This document is not restricted to a software component or software component version

## References

### This document is referenced by:

**SAP Notes (1)**

1585981 SYB: Ensuring Recoverability for SAP ASE

## Attachments

| File Name | File Size (KB) | Mime Type |
|---|---|---|
| ase_sample_resfiles.SAR | 1 | application/octet-stream |