SAP® MaxDB™ Expert Sessions

Session 7:
SAP MaxDB Software Update Basics

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Objective of this session

- Getting general knowledge about upgrading/patching
- Which tools are available for this purpose
- How to check the result
- Session covers SAP MaxDB versions 7.6 and 7.7 but ends with a view to upcoming version 7.8
- Makes it easier to learn the ropes
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   1.1. Structure of a SAP MaxDB software installation
   1.2. Interpreting SAP MaxDB version string
   1.3. Difference of SAP MaxDB upgrade and patch

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   2.2. Installation / Upgrade DVD
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The so-called “independent data directory” (e.g. /sdb/data) contains the configuration data and rundirectories of SAP MaxDB instances.

Furthermore the so-called “independent programs directory” (e.g. /sdb/programs) contains programs and libraries shared by the SAP MaxDB instances and SAP MaxDB applications. These programs are downwards compatible. The location of these directories is specified during the first installation of SAP MaxDB software. They exist only once on the server.

The “installation path” (e.g. /sdb/<db_name>/db) contains the server software that depends on the database version (e.g. kernel). Several dependent directories can exist alongside each other.

The work directory (called “rundirectory” in SAP MaxDB installations, e.g. /sdb/data/wrk/<db_name>) contains the log files of a SAP MaxDB instance and is the most important directory for monitoring and error analysis.
SAP MaxDB version string contains:
• Major release (single-digit)
• Minor release (single-digit)
• Support package (two-digit)
• Patch level (two-digit)

Support Packages will be created approximately once each quarter. The scheduling of Support Packages will be based on the scheduled timeline for SAP applications. Support Packages contain both corrections for errors and functional enhancements.

Patch levels will be created more frequently than Support Packages in accordance with customer requirements and, in particular, in response to known errors. Only high-priority errors will be corrected. Corrections for delivered versions always result in a new Patch level number.

In database log files, for instance KnlMsg, you will find the database kernel version with build number of 12 digits. The first 3 digits represent the Patch level followed by 3 digits indicating the release status, the make status and the usage. The last 6 digits specify the change list number which uniquely identifies the underlying module amount and module instance of the MaxDB version.

Release status: 0 test / development, 1 productive
Make status: 0 DEV, 1 COR, 2 RAMP, 3 HOT, 4 ANA, 5 SEC
Usage: 0 no classification, 1 OLTP only, 2 liveCache only, 3 all, 4 DQE, 5 IMDB

Release status = 1 and make status = 2 should be set in productive systems.
1. Introduction
1.3. Difference of SAP MaxDB upgrade and patch

**Database upgrade**
- change of database version to a newer major or minor release (for example 7.6 to 7.7)
- often in connection with upgrade of the SAP application software
- relevant software CDs or DVDs are provided and have to be used
- upgrade guides for the relevant target releases and operating systems are available in SAP Support Portal

**Database patch**
- change of database version to a newer Support Package or Patch Level (for example 7.7.05 to 7.7.07 or 7.7.06.16 to 7.7.06.17)
- independent from a change to a newer release of the relevant SAP application software (except liveCache patches)
- software packages are available on SAP Support Portal (Software Distribution Center)
- SAP note 498036: Overview note for importing MaxDB/liveCache versions
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Regarding MaxDB upgrade:

Make sure that an official MaxDB release exists for the respective SAP product version before using these MaxDB versions.

Consult the SAP Product Availability Matrix (PAM) for SAP release information. Go to:

http://service.sap.com/pam

and select your SAP product version, for instance ‘SAP NetWeaver 7.0’
For SAP NetWeaver 7.0 MaxDB version 7.6 and 7.7 already released but not MaxDB version 7.8 until now.
The DVDs for SAP MaxDB upgrade are contained in the SAP upgrade DVD packages for SAP upgrades. You can download or order them via the Software Distribution Center (SWDC). Just go to:

http://service.sap.com/swdc

-> Download

-> Installations and Upgrades
Details about performing SAP MaxDB upgrade are contained in the upgrade guide which are available in the SAP Support Portal. For a current version of the upgrade guide go to:

http://service.sap.com/instguides

-> Database Upgrades

-> SAP MaxDB
Regarding MaxDB patches:

SAP MaxDB patches are available via SAP Support Portal in SAP Software Distribution Center. Go to:

http://service.sap.com/swdc

- -> Database Patches

- -> MaxDB and SAP DB

Please note: Within scope of SAP systems (using MaxDB as database for SAP application software) MaxDB patches have to be downloaded from SAP Software Distribution Center.

The MaxDB installation packages which are called Community Editions and are offered via SAP Community Network don’t meet the requirements for an SAP system.
For instance: MaxDB -> MAXDB 7.7 -> Windows Server on IA32 32bit

At this time you can download MaxDB Server Package of version 7.7.07.15.

Additionally you will find MaxDB Application Runtime Package which contains MaxDB client software and MaxDB Web Services Package which contains the Java-based WebDAV servlet.
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It is very important to pay attention to:

In a SAP environment a MaxDB upgrade (change of database version to a newer major or minor release) is only allowed via the following SAP tools:

- SAPinst (new installation, system copy and migration (homogeneous/heterogeneous))
- SAPup (SAP upgrade (upgrade of existing installations) and AddOn installations)
- SAPehpi (installation of SAP enhanced packages)

These SAP tools consider the relevant dependencies between SAP application software versions and MaxDB version. They execute the MaxDB installation and upgrade tools internally and embedded into the entire upgrade process. The mentioned SAP tools are provided with the corresponding SAP DB RDBMS DVD.

Applying MaxDB patches (change of database version to a newer MaxDB support package or patch level) can be done directly with the MaxDB installation and upgrade tools provided with the MaxDB installation software packages (SDBSETUP, SDBUPD, SDBINST). These tools are also able to perform a MaxDB upgrade. But as mentioned before in association with SAP application software it is not allowed to use them directly for a MaxDB upgrade.
The following examples deal with the MaxDB database named EXPERTDB which was installed for the expert sessions. It is used for the present slides and the demonstration parts.

There is no SAP application software attached to database EXPERTDB. The session will focus on MaxDB tools and their usage.

SDBSETUP is the installation / upgrade tool which provides a graphical user interface and is called ‘Installation Manager’.

It is located within the installation software package as an executable file also called SDBSETUP and offers 4 options:

~ Start installation/upgrade: to be used for installation and upgrade of SAP MaxDB software components

~ Show MaxDB components: to be used for displaying global installation settings, software components, databases and installation /upgrade log files

~ Remove MaxDB components: to be used for uninstalling software components, dependencies are taken into account

~ Visit MaxDB website: starts the configured standard internet browser and calls SAP MaxDB’s homepage http://www.sdn.sap.com/irj/sdn/maxdb
Choose ‘Show MaxDB components’ to get an overview what software components of what version in terms of software packages are installed. Selecting a package displays a short description of the corresponding content on the right hand side.

In addition the location of the independent software parts and the used network ports are shown (upper left area). Finally existing databases are listed as well as installation log files can be viewed.
Initial situation for the following example: There is one MaxDB software installation of version 7.7.06.16 on the server and a MaxDB instance called EXPERTDB based on it. Intention is to upgrade this software installation as well as the database instance to version 7.7.06.17. So SDBSETUP of the installation software package 7.7.06.17 has to be used.

Choosing 'Start installation / upgrade' on the first screen of the Installation Manager allows to select software component groups to specify the intended scope. It is possible to install / upgrade MaxDB client software only or both MaxDB client and MaxDB server software together (1).

For options 'Server + Client' and 'Client' button 'Details...' is active. Using this button opens a list of packages which belong to the selected component group.
Choosing ‘Custom’ in section ‘Component Groups’ (1) requires to get forward using the identically named button (2). The next screen appears allowing to select the requested software components to be installed. Components in the list which have the check mark are booked for the upcoming installation / upgrade. Dependencies between the components are considered by the tool. Using the buttons below the list makes it possible to select resp. deselect all list items at once (3).
After the software component selection has been finished it comes to the decision whether in addition to the software installation an existing database instance should be upgraded, too (1).

The given options means:

• ‘Install software and create database instance’ :

Installation Manager will install the software in parallel to the existing one, e.g. upgrade the independent software parts to the new version, install the dependent parts into a new directory tree and create a database instance based on the new software version

• ‘Install software and upgrade existing database instance’ :

Installation Manager will upgrade the existing software to the new version as well as upgrade the existing database instance which will be based on the new software version afterwards

• ‘Install/update software only’ :

Installation Manager will install the new database software. If other MaxDB installations of older versions were found it is possible to select one of those for an upgrade. If no one is chosen the new software will be installed in parallel to the existing ones. Please be aware: Independent software parts are upgraded to the new version in any case.

If the decision has been made choosing button ‘Forward’ is heading towards the next step.
This screen asks for user name and password of the database system administrator. This ensures that the installation / upgrade can be executed only by eligible persons.

On the right hand side of the screen some information about the current state of the process are shown. Choosing button ‘Forward’ concludes this step.
Now the final preparation step has been reached. This screen summarizes the settings for the pending installation / upgrade. If no changes are required it can be started by use of button ‘Install’. This at first starts unpacking the software packages and prepares them for effective applying. A progress bar allows to keep track of this process.
Once the preparation phase has been finished the software installation / upgrade starts. For each component the progress can be monitored by a corresponding bar (1).

If a database instance is upgraded as well the executed steps can be observed by the list which is displayed in an additional screen (2). The database instance will be in state ONLINE after upgrade has been finished.
Finally a completion screen is shown presenting the success message. At the lower right hand side there are buttons to quit as well as to display the installation log file (1).

Using this ‘View Log’ button calls a further screen with the log file opened including an option to search for specific messages/terms (2).

For later reference the upgrade log file can be checked again. All installation and upgrade log files are located in directory ‘<independent data path>/wrk’. If <independent data path> just cannot be remembered it can be figured out easily by dbmcli command ‘dbm_getpath IndepDataPath’. The upgrade log files of SDBSETUP always comply with the following naming convention: ‘MaxDBSoftware_install-<time stamp>.log’. Time stamp represents the point in time when the upgrade finished and is given as dd.mm.yyyy-hh.mm.

In the example above it is ‘MaxDBSoftware_install-03.02.2010-12.24.log’ (2).
SDBUPD is the command line tool to perform an update of a MaxDB software installation including a database instance based on it. It cannot be used to install a MaxDB software installation from scratch or in parallel to already existing versions on a specific server.

SDBUPD is located as an executable file within the MaxDB installation software package (1). A command prompt screen has to be opened in the directory where the installation software package has been copied to. To start the upgrade SDBUPD has to be typed followed up by pressing the enter key (2).

For the following example a switch back is done to the same initial situation: There is one MaxDB software installation of version 7.7.06.16 on the server with database instance EXPERTDB based on it. Intention is to upgrade MaxDB software and instance EXPERTDB to version 7.7.06.17.
When started SDBUPD gives some general information at first like installation date, used operating system and directories. Afterwards the tool looks for existing MaxDB instances. Each of them is listed with a number placed in front. Now the number has to be entered which represents the instance which is scheduled for the upgrade. If 'none' is chosen SDBUPD will quit (1).

The next step is to enter username and password for the database manager operator user. When this has been done successfully the upgrade starts among others with determining the migration strategy et cetera (2). From now on no further interaction is necessary - SDBUPD will process all steps needed successively.
After extracting the compressed software parts they will be installed. This step includes unregistering the corresponding part of the old version (1).

Once they have been installed they are prepared for the forthcoming usage including specific checks (2).
Once the software upgrade was finished a corresponding success message is sent (1).

After that SDBUPD carries on with the upgrade of the selected database instance. The steps can be followed by the respective screen message (2).

Finally the database instance is switched to state ONLINE again and the system tables are loaded. The success message at the end concludes the upgrade.
As a quick check dbmcli commands ‘db_enum’ and ‘inst_enum’ can be executed. ‘db_enum’ shows all existing MaxDB instances and their versions.

‘inst_enum’ lists all existing software installations. So in the example above one database instance exists named EXPERTDB, version is 7.7.06.17.

Command ‘db_enum’ displays two lines for each database instance. The reason is that two database kernels are shipped with an installation. Only the output line containing ‘fast’ is of interest. It represents the kernel which is used for normal database operating.

There is also only one software installation of the same version (output of dbmcli command ‘inst_enum’). Command ‘dbm_version’ shows the version of the dbmserver (1).

For later reference the upgrade log file can be checked again. Like the log file of SDBSETUP it is located in directory ‘<independent data path>/wrk’. If <independent data path> just cannot be remembered it can be figured out easily by dbmcli command ‘dbm_getpath IndepDataPath’. The upgrade log files of SDBUPD always comply with the following naming convention: ‘MaxDBUpdate_install-<time stamp>.log’. Time stamp represents the point in time when the upgrade finished and is given as dd.mm.yyyy-hh.mm.

In the example above it is ‘MaxDBUpdate_install-03.02.2010-12.24.log’ (2).
SDBINST is the command line tool to install MaxDB software without having a MaxDB version already installed. It can be used for a complete MaxDB software installation or particular parts of it.

Normally it is not necessary to use SDBINST to install MaxDB server software. Within the scope of SAP systems SDBINST is part of the global installation tools for SAP systems (SAPinst, SAPup, SAPehpi). Installing MaxDB server software with SDBINST directly on SAP systems is required in very special cases only and should be aligned with MaxDB support.

Reason: Versions of MaxDB and SAP system have to be compatible. Usage of SAP tools SAPinst, SAPup, SAPehpi ensure this.

SDBINST is mostly used for installing MaxDB client software on dedicated SAP application servers whereas this can also be done with SDBSETUP (Installation Manager).

For the following example a switch back is done to the same initial situation: There is one MaxDB software installation of version 7.7.06.16 on the server with database instance EXPERTDB based on it. Intention is to upgrade MaxDB client software only to version 7.7.06.17.

SDBINST is located as an executable file within the MaxDB installation software package (1).

A command prompt screen has to be opened in the directory where the installation software package has been copied to.

To start the installation SDBINST has to be typed followed up by pressing the enter key (2). SDBINST starts in a separate command prompt screen.
To install MaxDB client software component group ‘Client’ has to be chosen (1). If on the used server no MaxDB software is installed SDBINST will start with a new installation of the MaxDB client software components. No database instance can be created afterwards on this server if the client software is installed only. It can be used to connect to remote MaxDB database instances only.

If already a MaxDB software installation exists on this server (only client or client + server software) SDBINST will update the MaxDB client software part to the new version. If the already installed client software part is of the same or a higher version SDBINST will send a corresponding message and cancel the installation.

The installation again starts with preparation and interferences checks (2).
3. Tools to perform a SAP MaxDB upgrade / patch
3.4. SDBINST [3]

Attention has to be paid to the MaxDB communication server (xserver) before starting the client software upgrade. If other MaxDB software installations exist on the server and the communication server is running it has to be stopped before starting SDBINST.

Otherwise SDBINST will cancel and point to the reason for this (1). Command `x_server stop` has to be executed to solve this situation.
While the client software installation is running no interaction is necessary. Once it has been finished a success message is shown (1).

For later reference the installation log file can be checked again. As mentioned before all installation and upgrade log files are located in directory `<independent data path>/wrk`. If `<independent data path>` just cannot be remembered it can be figured out easily by dbmcli command `dbm_getpath IndepDataPath`. The client installation log files always comply with the following naming convention: ‘MaxDBClient_install-<time stamp>.log’. Time stamp represents the point in time when the client installation finished successfully and is given as dd.mm.yyyy-hh.mm. In the example above it is ‘MaxDBClient_install-05.02.2010-14.14.log’ (2).
In contrast to SDBSETUP SDBINST doesn’t provide an overview of installed MaxDB software components and their versions. So using SDBSETUP and choosing option ‘Show MaxDB components’ helps. It allows a detailed view which components were upgraded to version 7.7.06.17 and which one remained on version 7.7.06.16. As expected existing database instance EXPERTDB still is of version 7.7.06.16 (1).

For example the items of software component ‘Base’ are installed in the independent programs path (to be checked via ‘dbmcli dbm_getpath IndepProgPath’). As version is displayed now 7.7.06.17 as component ‘Base’ is upgraded during a MaxDB client installation (2).
SDBINST provides predefined profiles to install particular software parts only (dependencies are considered). If component group ‘Custom’ is chosen these profiles are listed and SDBINST waits for the corresponding selection (1). For example profile ‘Runtime For SAP AS’ represents the MaxDB client software installation.

Just to get an overview which packages are available to be installed it is possible to execute SDBINST with option ‘-l’.

Be careful ! Normally it is not necessary to make use of specific profiles. SDBSETUP (and in SAP system scope SAPinst) provides an easy graphical interface which should be preferred. If any doubts exist regarding installation / upgrade process please don’t hesitate to contact MaxDB support. This is for sure the minor effort compared to a damaged MaxDB installation.
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To uninstall MaxDB software components SDBSETUP can be used. On the first screen option ‘Remove MaxDB components’ has to be chosen.
The next screen shows the MaxDB software component tree. Here the component(s) to be deleted can be selected. Dependencies are considered. Below the tree there are two buttons which allow to select resp. deselect all components at one go (1).
In this example component ‘SAP Utilities’ was selected. The selection is indicated by the check mark (1).

On the right hand side the short description regarding this component is shown (2). This description is only listed when the component is highlighted (selected by mouse click) regardless of the check mark setting.
Choosing button ‘Show Details’ below the short description opens a view with more details regarding the selected component (1). Choosing ‘Forward’ moves up to the next step.
The preparation has finished now and a summary of the components to be uninstalled is shown. Each component is displayed as a node which can be expanded for more details.

Choosing 'Uninstall' starts the uninstalling process (1).
While uninstalling is running a progress bar is shown. Once finished a success screen appears which offers to quit the process or to have a look at the uninstalling log (1).

Within the uninstalling log all steps are listed which were done by SDBSETUP (2).
SDBUNINST is the command line tool to uninstall MaxDB software components. It is located in directory `<independent program path>/bin`, too. SDBUNINST cannot be executed without any option – in this case it will quit. SDBUNINST always opens a second command prompt window. Executed with option `-l` it lists all MaxDB software components which can be uninstalled (1).
SDBUNINST allows to uninstall a specific package. Option '-package' has to be used for this followed by the package name as it is listed via 'sdbuninst -l'. If the package name contains blanks it has to specified in quotation marks (1).

Option '-package' will uninstall exactly the specified package. Dependencies on other packages are not checked by default. To include this check option '-autoresolve' has to be added.

If SDBUNINST finds the specified package it gives a corresponding message including package version followed by the question to really start uninstalling this package or not (2).
If ‘y’ was entered SDBUNINST starts uninstalling the package. Messages regarding directories which cannot be removed can be ignored. These messages indicates that the mentioned directories contain files which belong to other packages and therefore have to be kept. The short message ‘done’ at the end shows that the package was successfully uninstalled (1).

SDBUNINST also allows to uninstall all installed packages. Option ‘-all’ is provided for this. After the confirmation prompt was answered with ‘y’ SDBUNINST uninstalls the complete MaxDB software (2).
If SDBUNINST finds a registered MaxDB instance it announces this fact and will quit. All database instances have to be dropped before SDBUNINST can uninstall the complete MaxDB software (1).

Some files within MaxDB software structure will not be deleted by SDBUNINST, e.g. the written log file from uninstalling. SDBUNINST writes this log file to the directory it was started from. The log file is named ‘MaxDBUninstall_install-<time stamp>.log’. Time stamp represents the point in time when the uninstalling finished and is given as dd.mm.yyyy-hh.mm.

The reason for messages regarding directories which cannot be removed is that there are files which are not deleted by SDBUNINST (2).
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All tools to check a SAP MaxDB installation explained in the following are located in directory ‘<independent program path>/bin’. If currently not remembered the location of ‘<independent program path>’ can be figured out via dbmcli command ‘dbm_getpath IndepProgPath’ (1). All tools except XINSTINFO can be started with option ‘-h’ to display the usage information.

A helpful little tool to get relevant locations of a specific database instance is XINSTINFO. Executed without any option it shows the location of <independent data path> as well as <independent program path>. If this tool is executed the following way: ‘xinstinfo <database name (SID)>’ it shows in addition to the independent locations:

~ directory of the dependent software part of this database instance
~ the software version this database instance is based on
~ work directory (so called ‘rundirectory’) of this database instance

So a brief overview about relevant locations is on hand (2).
As mentioned before SDBSETUP is located in directory `<independent program path>/bin`, too. On Windows systems it can also be started via ‘Start > All Programs > MaxDB > Installation Manager’.

SDBSETUP was started and ‘Show MaxDB components’ was chosen. As already shown before SDBSETUP lists all installed MaxDB software packages and their respective version. Selecting one of them displays details on the right hand side (1).

The details view contains the possibility to check the selected package for correct installation. Choosing the icon at the far right on highlighted line named ‘Check Software’ starts this check (2). This has to be done by a user with administrator permissions. As long as the check is running a progress bar is shown (3).

The package check can also be started by selecting the corresponding package in the list and using the right mouse button. Within the displayed context menu entry ‘Verify’ has to be chosen then.
Once the software component check has finished the result can be viewed. It is subdivided for a review regarding file / permission / package script issues (1).
For each software component a list of the contained files can be displayed. Choosing the icon at the far right on highlighted line named ‘File List (… files)’ opens that list (1).
On the lower left corner of the screen there is a node named 'Installation Logfiles'. After expanding this node all installation and upgrade logfiles are listed, sorted ascending (1).

Selecting one displays the content on the right hand side for further investigation (2).
SDBVERIFY is the command line tool to check installed MaxDB software for correct installation. This tool is started in background when option ‘Check Software’ within Installation Manager is executed (see 4.2 for checking specific software packages). To check specific packages it’s more convenient to use Installation Manager as shown before. To check the entire installation SDBVERIFY has to be executed from command line by a user with administrator permissions (1).

Every installed package is checked successively regarding existing files, dependencies and if applicable runtime registration of the package. A concluding message indicates if the installation of the corresponding package is consistent or not (2).
At the end SDBVERIFY gives a summary of the checks. Invalid packages means packages which were detected as corrupt during installation. Inconsistent packages means packages which were installed correctly but got corrupt later. In addition to missed and modified files SDBVERIFY lists files with modified permissions (1).

It is essential to keep the file permissions as they were set during the installation. Modified permissions will potentially disturb the operation of MaxDB instances based on this installation.

In this case the changed permissions have to be reset to the original value manually. In future MaxDB versions (as of 7.8.02 in this case) SDBVERIFY will include an option to reset all wrong permissions back to the original setting at one go.

SDBVERIFY allows to check a specific file of the MaxDB software. If the tool is called with option `-F` followed by the corresponding file (including full path) only this file is checked. In addition SDBVERIFY indicates which package this file belongs to (2).

Please keep in mind: If SDBVERIFY is executed by a user with restricted permissions error messages appear which don’t represent real errors. SDBVERIFY has to be executed by a user with administrator permissions.
SDBREGVIEW is the command line tool that once started checks the registration of all installed MaxDB software packages (1).

Executed by a user with administrator permissions it lists all registration data for each package (2).

SDBREGVIEW runs in background when SDBSETUP was started and option ‘Show MaxDB components’ has been chosen. SDBSETUP shows a filtered output of SDBREGVIEW.
SDBREGVIEW is able to check and list the registration data just for a specific file. It also mentions the package which this file belongs to. To start the check for a specific file SDBREGVIEW has executed with option `-F` followed by the file name including full path (1).

For a quick overview of registered packages SDBREGVIEW has to be started with option `-l`. The given list also shows the respective version of each package (2).
SDBREGVIEW offers to check if there are installation data left from a pending MaxDB instance update. To start this check SDBREGVIEW has to be executed with option ‘-instancedata’.

If everything is fine the result is message ‘no instance data found’ (1).

If a MaxDB instance update was started and interrupted for some reason the next update to a higher MaxDB version will fail. Such an interrupt for example could be caused by a failing load of the system tables at the end of the update. SDBUPD will display error message ‘can finish instance update only with package Database Kernel X.X.XXX’ . In this message ‘X.X.XXX’ indicates the MaxDB version of the unfinished update.

In this situation a run of ‘sdbregview -instancedata’ will show data of the last unfinished update, among others instance name, start release and target release (which indicates the corresponding MaxDB versions) (2).

To solve this situation SDBUPD has to be executed again whereas SDBUPD from the installation software of the listed target version has to be used.
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- **Manuals / documentation:**
  - [http://service.sap.com/instguides](http://service.sap.com/instguides) (MaxDB Upgrade guides)
  - Following "Database Upgrades" "SAP MaxDB"

- **SAP notes:**
  - 498036 "Overview note: Importing MaxDB/liveCache versions"
  - 1092397 "MaxDB installation and upgrade tool SDBSETUP"
  - 1020175 "FAQ: MaxDB installation, upgrade or applying a patch"
  - 822271 "FAQ: SAP MaxDB client software"

- **SAP Community Network (SCN):**

- **SAP Product Availability Matrix (PAM):**
  - [http://service.sap.com/pam](http://service.sap.com/pam)
Questions and Answers
| April 13, 2010 | Session 8: New Features in SAP MaxDB Version 7.8 |
This presentation reflects current planning.

Contents may be changed without prior notice, and are in no way binding upon SAP.