

# SAP® MaxDB™ Expert Sessions

## Session 2: Basic Administration with Database Studio



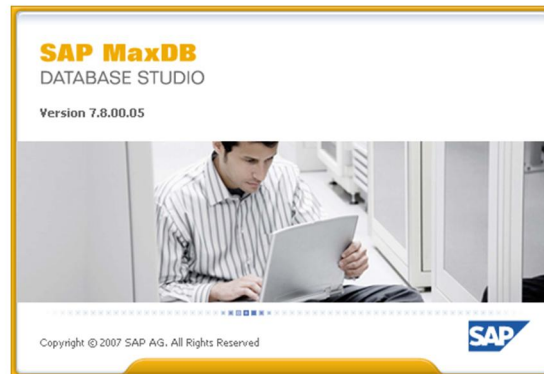
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November 3, 2009

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## Objective of this session



- How to use the new tool Database Studio
- Get a feeling of the range of functions
- Make it easier to learn the ropes

# Agenda



1. Introduction
  - 1.1. Prime advantages of Database Studio
  - 1.2. Preliminary remarks
  - 1.3. Screen areas
  
2. Database administration using Database Studio
  - 2.1. Add existing and create new database instances
  - 2.2. Using the administration editor
  
3. Managing SQL objects in Database Studio
  
4. Running SQL commands via Database Studio
  
5. Useful information resources

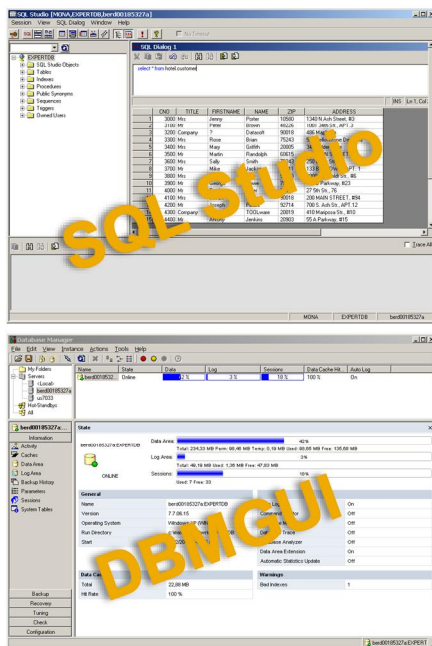
# Agenda



Please read the notes of the slides !

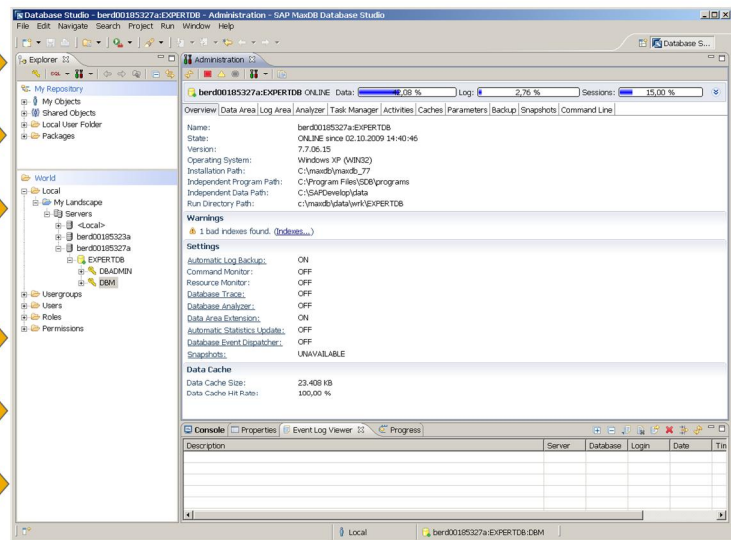
# 1. Introduction

## 1.1 Prime advantages of Database Studio (1)



SQL STUDIO

DBM GUI



Database Studio

Database Studio is the new tool to administrate SAP MaxDB database instances as of version 7.5.

It replaces the previous tools Database Manager GUI and SQL Studio from SAP MaxDB version 7.7 onwards and is a component of the SAP MaxDB software.

Database Studio, Database Manager GUI and SQL Studio can be installed on the same server.

In addition Database Studio integrates a user interface for functionality of SAP MaxDB tool Loader.

Database Studio is not bound to the Windows platform as the previous tools.

At present it is available for Linux and for Windows.

# 1. Introduction

## 1.1 Prime advantages of Database Studio (2)



Summary of most important tasks which can be performed with Database Studio:

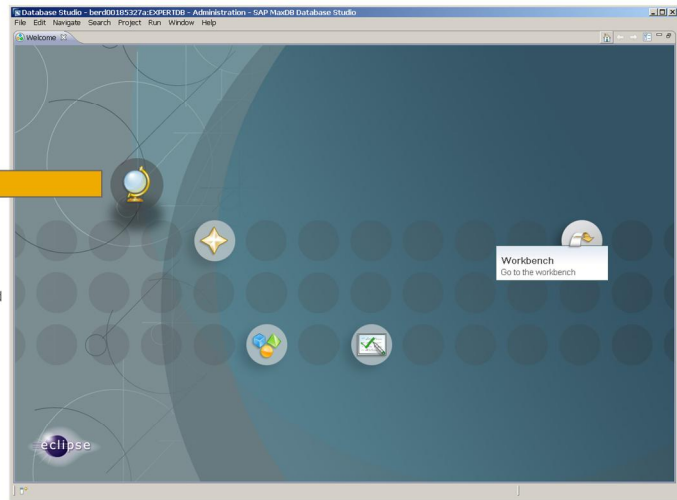
- create, configure, monitor databases
- define, change, delete database objects
- backup and restore databases
- import and export data
- creating users
- performance analysis
- access to log files
- execute arbitrary SQL commands (complying SQL standard)

# 1. Introduction

## 1.2 Preliminary remarks



-  **Database Studio Documentation**  
Go to the Database Studio Documentation
-  **Complete MaxDB Documentation**  
Find out which features, functions, tools and interfaces are included with MaxDB.
-  **MaxDB Website**  
Go to the MaxDB Website on the SAP Developer Network (SDN).
-  **MaxDB Community**  
Visit the MaxDB forum on the SAP Developer Network (SDN).



Database Studio runs on the Eclipse platform.

To use Database Studio Java runtime environment version  $\geq 5$  has to be installed before.

Working with Database Studio requires that the SAP MaxDB X Server (communication server) has been started (if not done already Database Studio automatically starts X Server upon program startup).

Database Studio can be started directly via shortcut or from command line :  
<independent\_program\_path>\DatabaseStudio\dbstudio[.exe].

Different call options are possible (e.g. to preselect a landscape or database within the explorer tree).

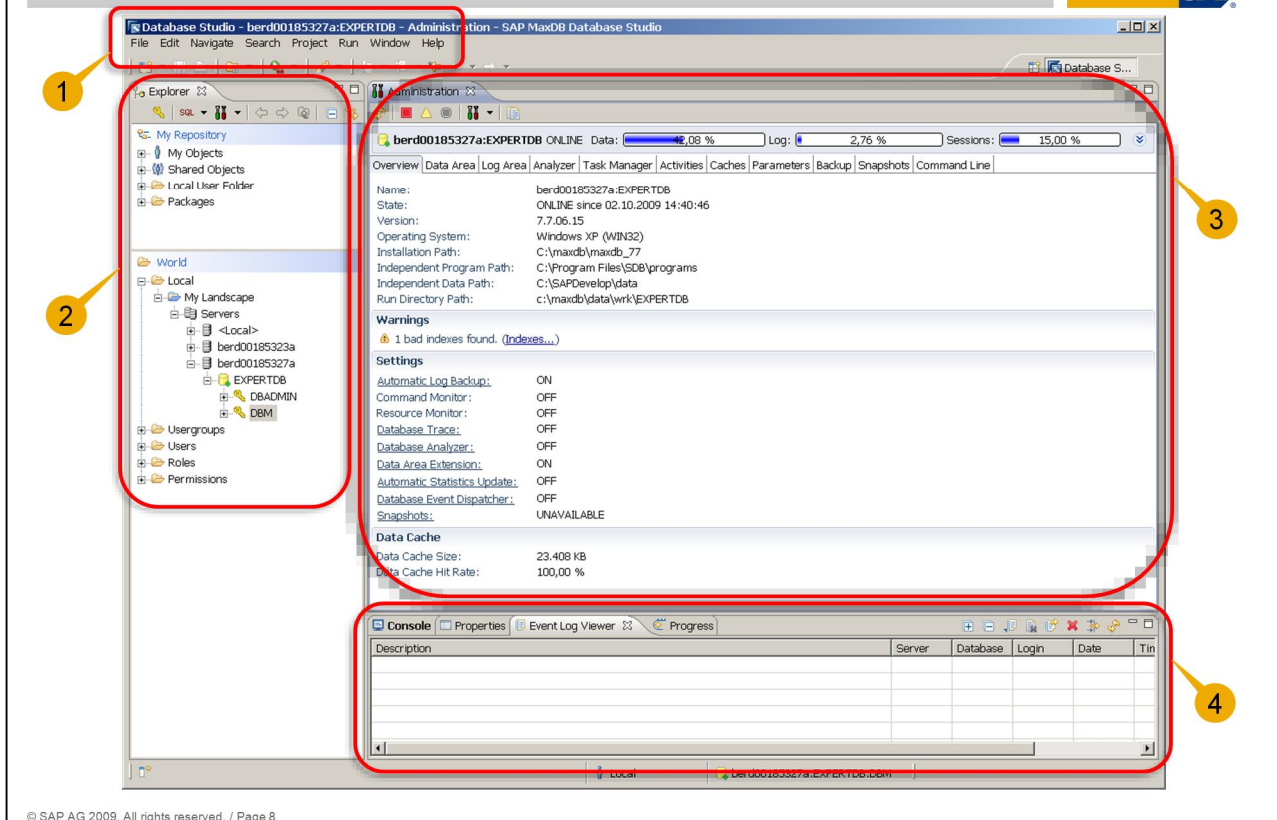
After started for the first time a "Welcome Page" is displayed which allows access to some related resources like documentation, tutorials and websites.

To start working with Database Studio choose "Workbench".

**Please note:** The installation of Database Studio includes the update of parts of the independent MaxDB software to the software version of Database Studio (if no higher version is already installed).

# 1. Introduction

## 1.3 Screen areas (1)



Within Database Studio Perspective there are different screen areas:

- ~ at the top: Menu (1)
- ~ on the left: view for Repository, Explorer tree (2)
- ~ main window: editor (3)
- ~ at the bottom: view for console, event log etc. (4)

Views can be hidden to have more space for the editor .



# 1. Introduction

## 1.3 Screen areas (2)



The screenshot illustrates the SAP Database Studio interface. On the left, the Explorer window shows a tree structure under 'My Repository' and 'World'. A red box highlights the 'Local User Folder' and its sub-items, with a yellow callout '1'. Below it, another red box highlights the 'My Landscape' tree structure, with a yellow callout '3'. In the center, the Preferences dialog is open to the 'Repository' tab, showing the 'Local Folder Path' field set to 'C:\store\Repository', with a yellow callout '2'. A mouse cursor is shown clicking on the Explorer tree, with a red starburst effect and the text 'use right mouse button'. To the right, a context menu is displayed over the Explorer tree, with the 'Administration' option highlighted, and a yellow callout '4'. The bottom left corner of the screenshot contains the text '© SAP AG 2009. All rights reserved. / Page 9'.

My repository: Local User folder is used as tray for saved files (1).

To configure via “Window” – “Preferences” – “Database Studio” – “Repository” (2).

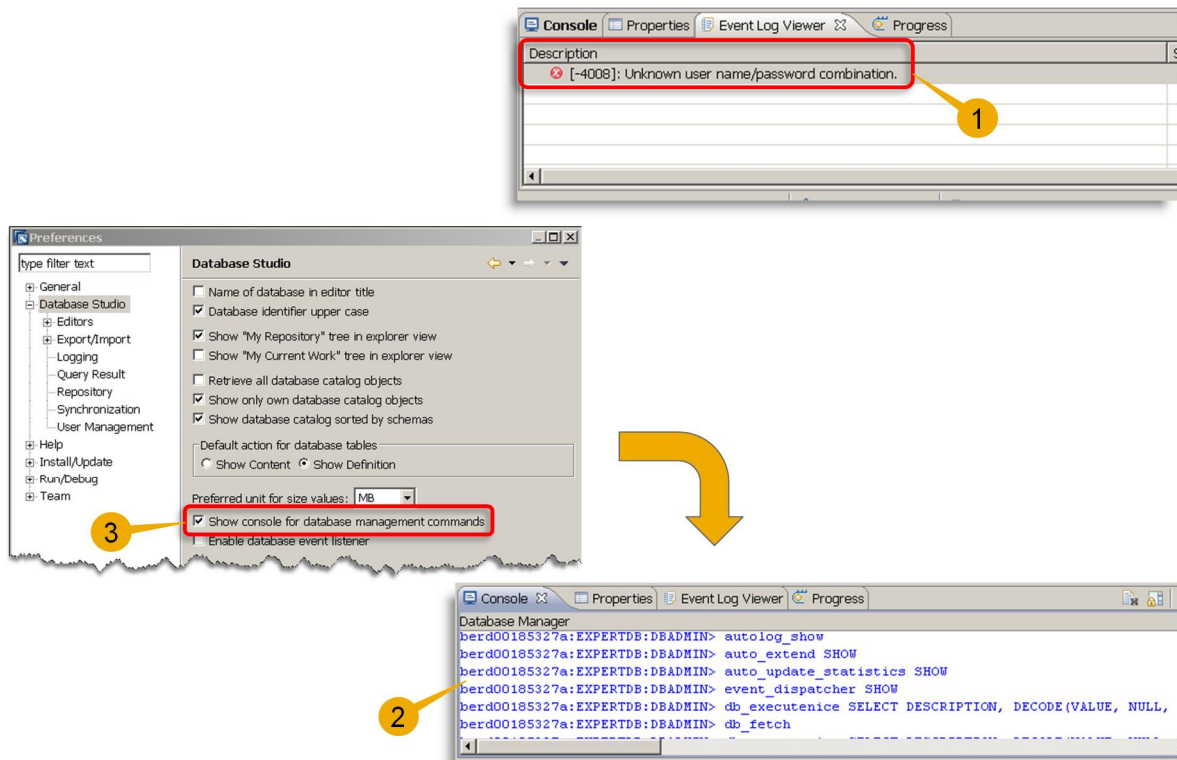
Various settings for Database Studio can be configured via “Preferences” in menu “Window”.

Explorer tree hierarchy: Landscape - Servers - particular server - database name - database users - tree elements depending on user rights (3).

Navigation in Database Studio mainly is done via context menus (activated by right mouse button) (4).

# 1. Introduction

## 1.3 Screen areas (3)



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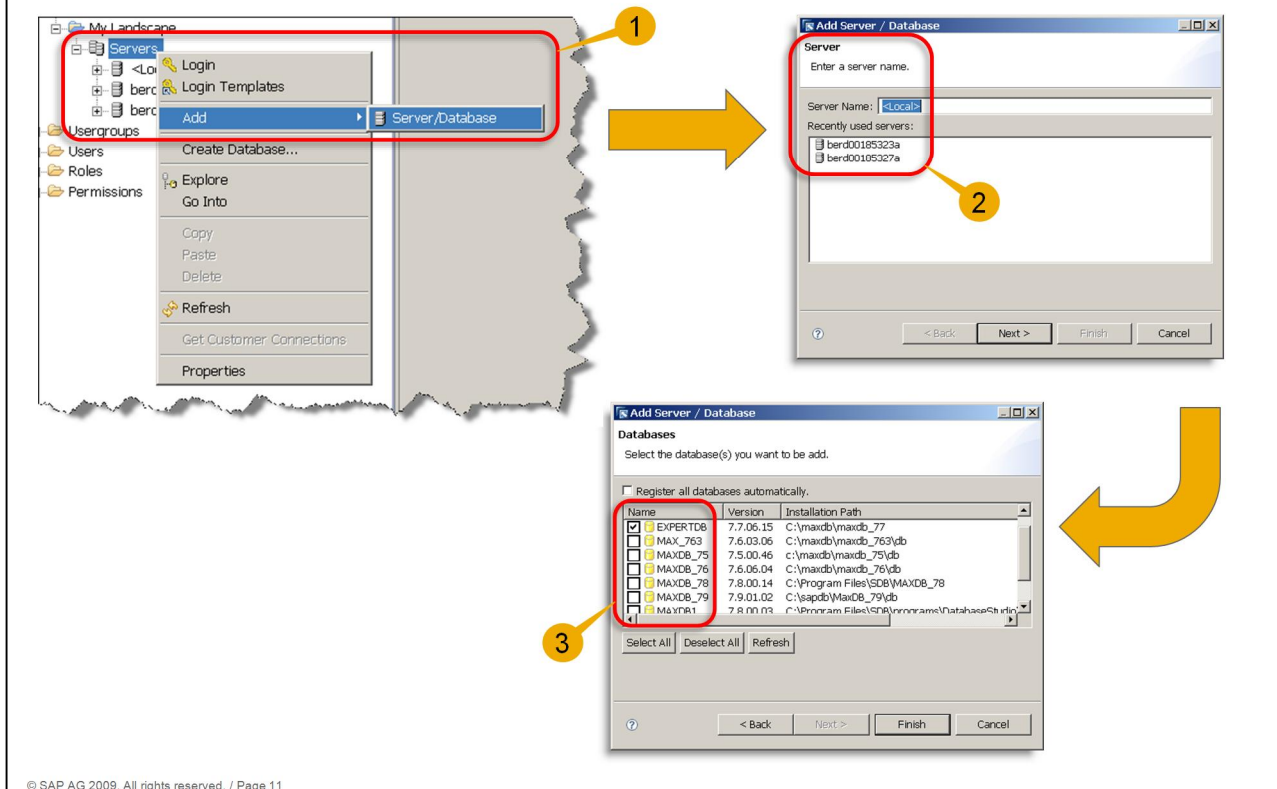
Event log viewer shows error messages e.g. for user management, connection issues etc. (1).

Console for Database Manager shows dbm commands executed by Database Studio (2).

To configure via “Window” – “Preferences” – “Database Studio” – “Show console for database management commands” (3).

## 2. Database administration using Database Studio

### 2.1. Add existing and create new database instances (1)



Entries in context menus correspond to the tree item they are opened from.

Landscapes can be added and named corresponding to the organizational requirements.

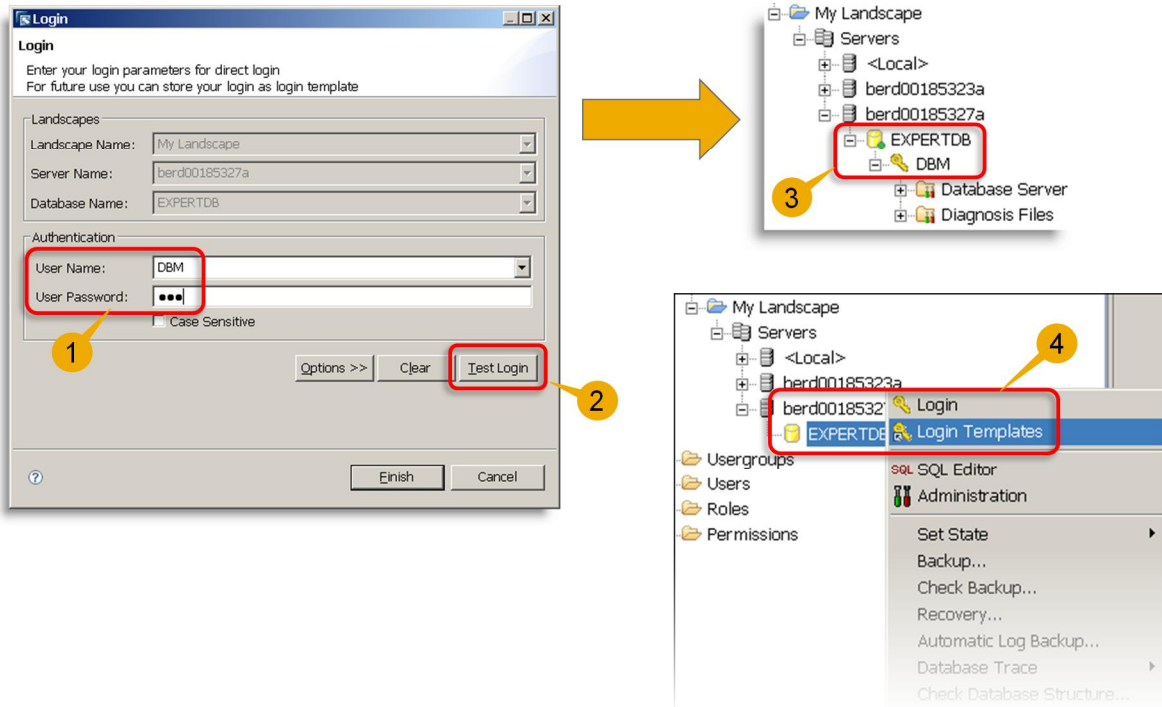
To add an existing database the context menu of explorer tree item "Servers" and afterwards "Add" – "Server/Database" has to be opened (1).

Server name <Local> is the default entry in field "Server Name:" but a remote server within the network can be entered here (2).

The existing databases on the specified server are listed and can be marked (you can add more than one at once) (3).

## 2. Database administration using Database Studio

### 2.1. Add existing and create new database instances (2)



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To work with an added database valid user and password is required (1).

It is possible to test the entered combination before closing the login input mask (2).

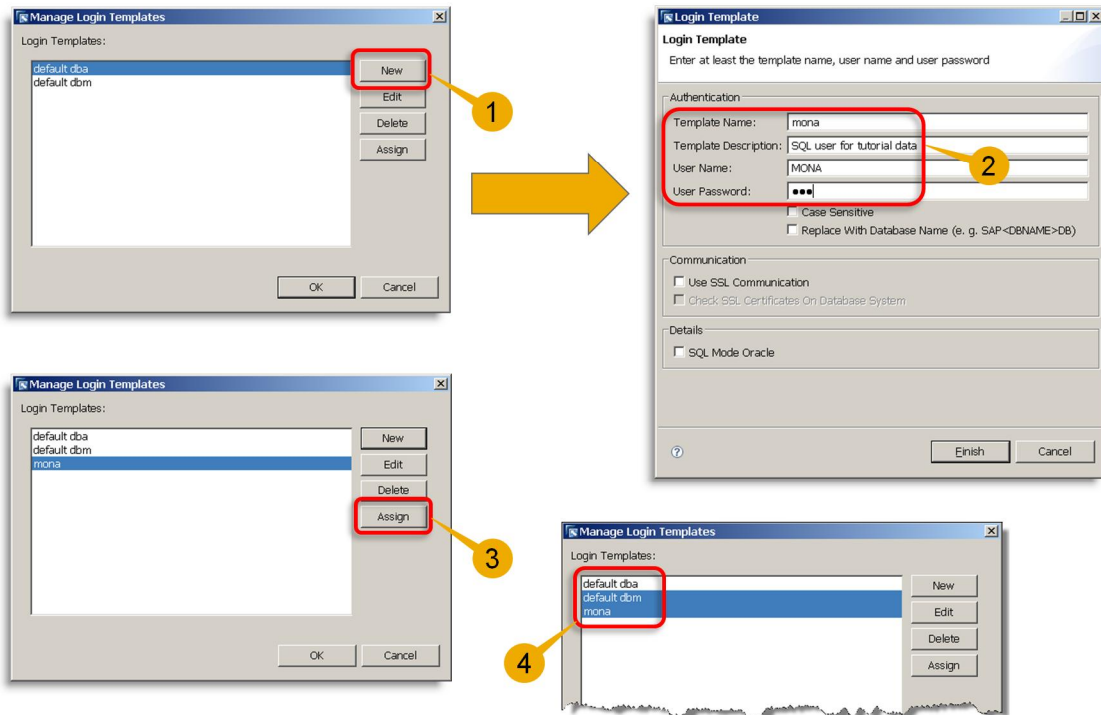
Within the explorer tree valid users are listed below the database (3).

If fixed user password combinations are used for different databases they can be stored in login templates.

Within the context menu of the database the standard login input mask can be called as well as a login template list (4).

## 2. Database administration using Database Studio

### 2.1. Add existing and create new database instances (3)



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A new login template can be created using "New" within "Manage Login Templates" input mask (1).

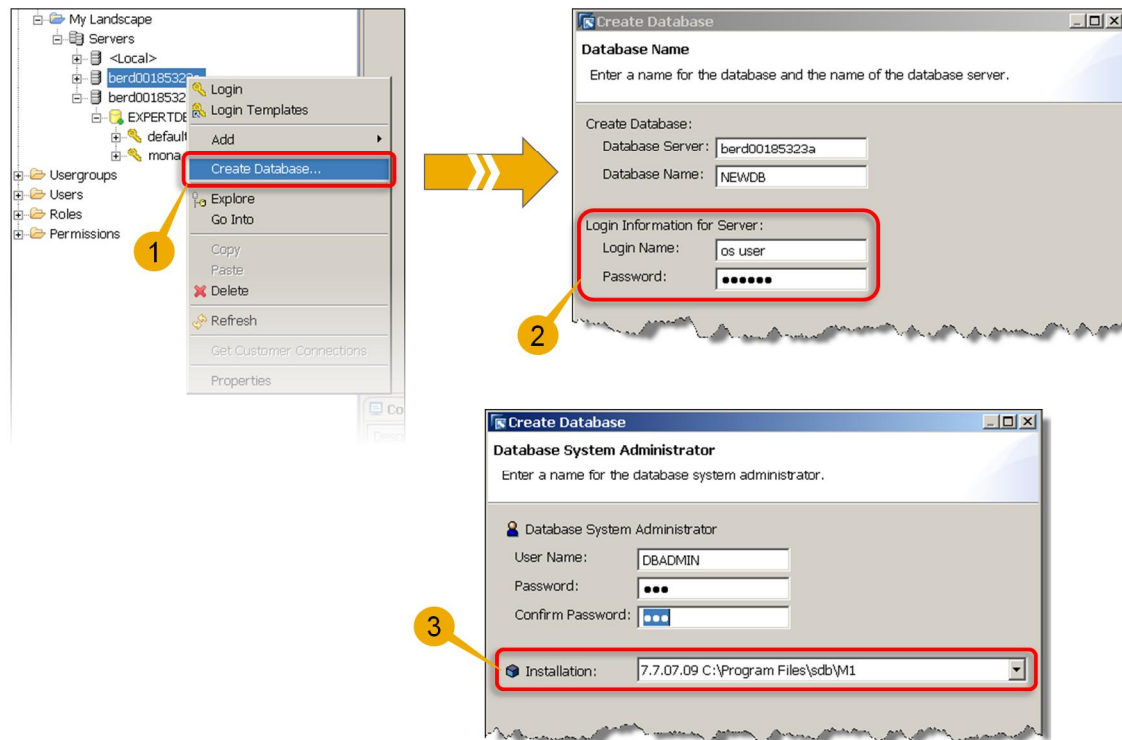
To remember what the template was created for a description can be added (2).

To assign the stored user and password of a template select the appropriate template and choose "Assign" (3).

More than one template can be chosen at once to add the required users at one step (4).

## 2. Database administration using Database Studio

### 2.1. Add existing and create new database instances (4)



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To create a new database instance the “Create database...” entry within context menu of the server tree item has to be chosen (1).

A wizard guides through the required steps.

It is possible to choose from an easy and an advanced installation mode (latter allows more individual settings).

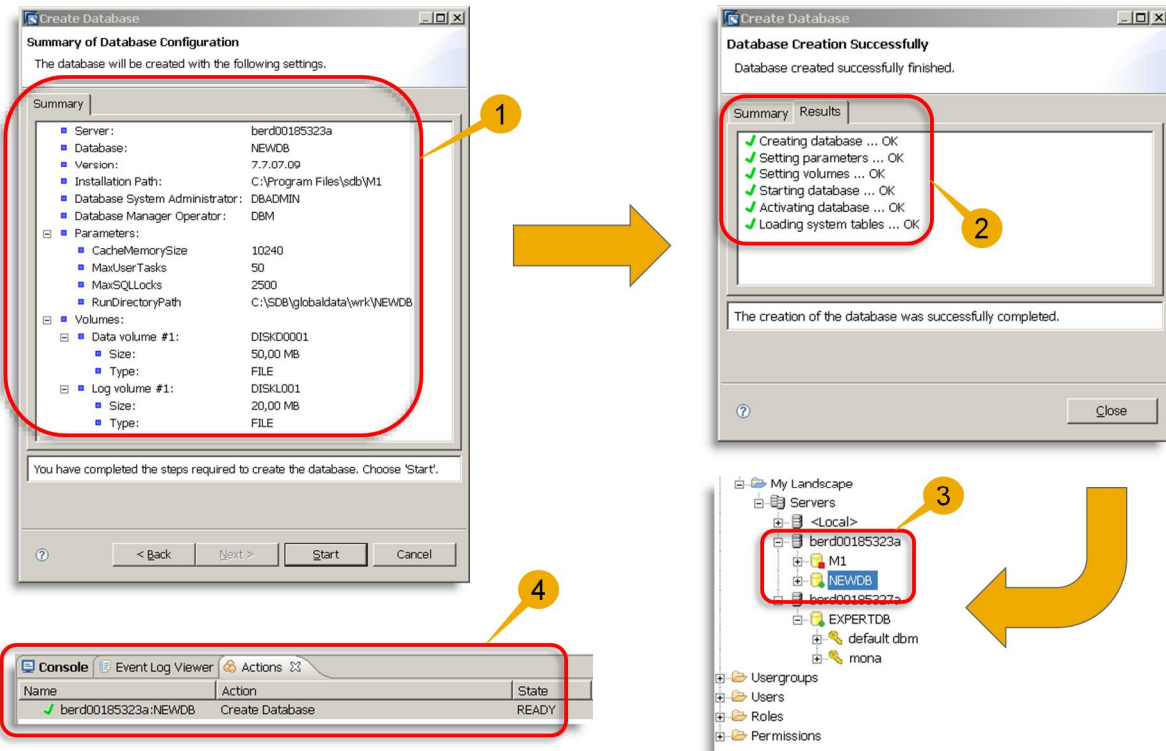
User and password for a remote server has to be entered (permission of login as batch job required for this user) (2).

The MaxDB software installations which could be found on this server are listed and a choice can be made (3).

A couple of input masks for settings e.g. parameters, volumes and log settings will appear.

## 2. Database administration using Database Studio

### 2.1. Add existing and create new database instances (5)



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Before starting with the creation a summary is listed (1).

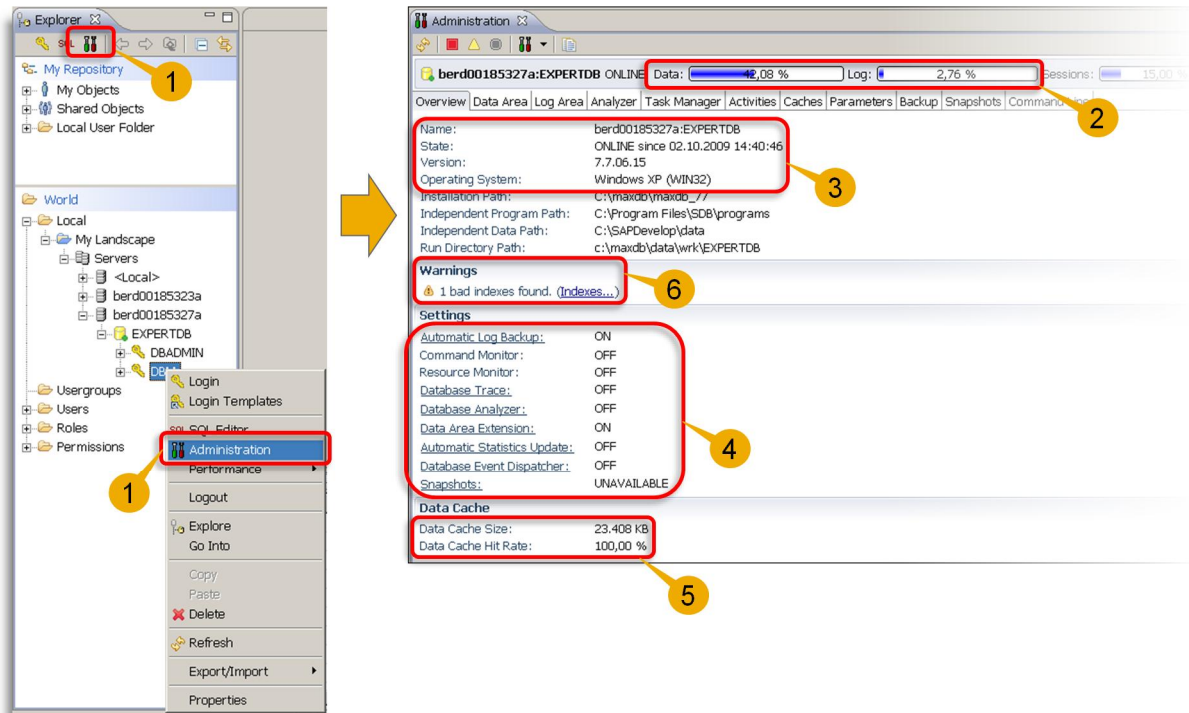
During the creation the running steps are shown as well as the particular success after ending of each step (2).

When finished the new database is listed within the explorer tree (3).

If view "Actions" is active an information is visible about action "Create database" (to activate view "Actions": Menu "Window" – "Show View" – "Actions") (4).

## 2. Database administration using Database Studio

### 2.2. Using the administration editor (1 - Overview [1])



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The administration editor can be opened via context menu of a corresponding user or by selecting the user and choosing the administration icon within the toolbar of the explorer view (1).

Only database manager operator users and the database system administrator user are allowed to open the administration editor (for other users the login input mask is shown).

Per default tab "Overview" is active which shows general information about the database at a glance, e.g. filling level (2), name, state, database version, operating system of database server (3), if monitoring, tracing, Database Analyzer etc. is switched on or off (4), Data Cache size and hit rate (5).

There is also a warning line (only visible if the corresponding situation exists) (6).

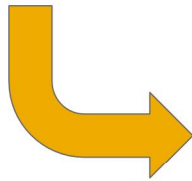


## 2. Database administration using Database Studio

### 2.2. Using the administration editor (2 - Overview [2])



Settings	
<a href="#">Automatic Log Backup:</a>	ON
<a href="#">Command Monitor:</a>	OFF
<a href="#">Resource Monitor:</a>	OFF
<a href="#">Database Trace:</a>	OFF
<a href="#">Database Analyzer:</a>	OFF
<a href="#">Data Area Extension:</a>	ON
<a href="#">Automatic Statistics Update:</a>	OFF
<a href="#">Database Event Dispatcher:</a>	OFF



Database Analyzer for berd00185327a:EXPERTDB

Database Analyzer

berd00185327a:EXPERTDB Data: 42,07 % Log: 1,56 % Sessions: 5,00 %

Database Analyzer is currently deactivated.

Activate Database Analyzer

Start Options

For the start of the Database Analyzer it is possible to specify start options below. If no options are specified, the Database Analyzer will use the default options.

Interval:  Time interval (in seconds) between two evaluations.

Number:  Number of desired evaluations.

Configuration File:

Delete Logs:  Delete today's log files.

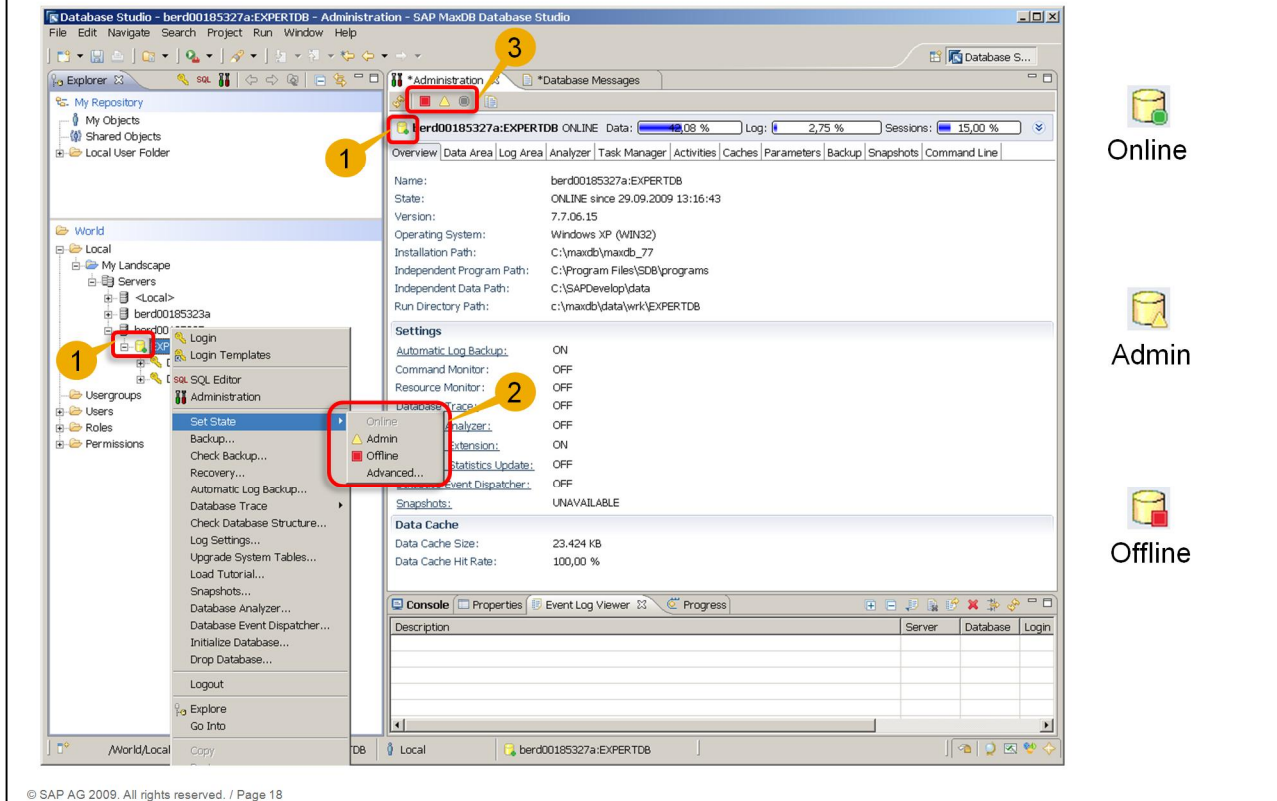
Activate Cancel

Underlined entries are linked to the corresponding configuration mask which allows to switch from OFF to ON or vice versa after specifying details. They are to be used like hypertext links (use left mouse button).

In this example it is shown for Database Analyzer (1).

## 2. Database administration using Database Studio

### 2.2. Using the administration editor (3 - Database state)



Online



Admin



Offline

The state of the database can be spotted when looking at the database icon (looks like a ton) within explorer tree or in the header line of the administration editor (1).

To switch to the corresponding state within context menu of the database: choosing item 'Set State' opens a further menu where the states are listed (the active state cannot be chosen, "Advanced" is only for very special purposes by Development Support) (2).

State can also be changed by choosing the item of the requested state in the header line of the administration editor (3).

State ONLINE means: database can be used for (most) administration tasks and SQL commands can be executed by the users.

State ADMIN means: no SQL commands can be executed, state is used for special administration tasks, e.g. recovery, check database structure with additional functionality.

State OFFLINE means: database cannot be used at all.

## 2. Database administration using Database Studio

### 2.2. Using the administration editor (4 - Volumes)



The screenshot shows the SAP Database Studio Administration editor for the database 'berd00185327a:EXPERTDB ONLINE'. The 'Usage' tab is active, showing summary statistics: No. of Data Volumes: 3, Total Size: 239,952 KB 100,00 %, MaxDataVolumes: 6, Extendable Online to: 6, Used Area: 102,872 KB 42,87 %, Free Area: 137,080 KB 57,13 %. Below this is a table of Data Volumes:

Name	Size	Type	Device/File	Used	Free	Filling	Reads	Pages Reads	Writes	Pages Writes	New...
DATA0001	80.000 KB	FILE	c:\maxdb\volumes\EXPE...	14.272...	65.728...	17,84 %	26.564	28.095	2.669	6.22	Edit...
DATA0002	80.000 KB	FILE	c:\maxdb\volumes\EXPE...	37.840...	42.160...	47,30 %	57.864	57.870	4.175	11.49	Edit...
DATA0003	80.000 KB	FILE	c:\maxdb\volumes\EXPE...	50.744...	29.256...	63,43 %	48.203	48.209	1.623	12.68	Delete...

A configuration dialog for a new 'DATA Volume' is open, showing the following fields:

- Name: DATA0004
- Size: 80000 kB
- Device/File: c:\maxdb\volumes\EXPERTDB\DAT\_0004
- Type: FILE

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Choosing tab "Data Area" lists the number of configured data volumes as well as how many data volumes can be configured currently according to parameter MaxDataVolumes (1).

In addition size information (total, used, free) is given (1).

The list of data volumes below shows detailed information about each volume (2).

To add a data volume (e.g. in case of database full situation) just double click (use left mouse button) on one of the listed but still unused data volumes or choose button "New..." on the right hand side.

In the corresponding configuration mask per default size, type and location of the last used data volume are proposed (but can be changed) (3).

The same applies for the log volumes (giving also log specific information like Log Mode, Automatic Log Backup etc.).

## 2. Database administration using Database Studio

### 2.2. Using the administration editor (5 - Tasks)



Task ID	Thread ID	Task Ty...	Termination Requested	Task Status	Status Description	Wait...	Wait...	Applic...	Applicatic
49	3872	User		Command wait				2708	BERD0018
50	3872	User		Running	Task Manager			3460	BERD0018
51	3872	User		Command wait				9352	pwdf2763
52	3872	User		Command wait				804	10.29.14.
53	3872	User		Command wait				13356	pwdf2763

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Using tab “Task Manager” gives information about the tasks and their status (can be filtered, e.g to show only active tasks or only user tasks) (1).

“Time Measurement” can be enabled for more detailed information regarding runtime environment (used in console and Database Analyzer output) (2).

Application PID is shown to figure out which application is connected to the particular task (3).

It is even possible to cancel the running command of a task or to disconnect a task (use right mouse button) (4).

Details of a task and information/statistics about the threads where the tasks are running in can be looked up by choosing the corresponding item below the task list (use left or right mouse button) (5).

## 2. Database administration using Database Studio

### 2.2. Using the administration editor (6 - Parameter [1])



Name	Value	Description/Comment
AutoLogBackupSize	333	Size of a log segment in pages
CacheMemorySize	3000	Size of the data cache and converter in pages
InstanceType	OLTP	
KernelVersion	KERNEL 7.7.06 BUILD 016-123-219-400	
MaxBackupMedia	2	Maximum number of backup devices used in parallel
MaxCPUs	1	
MaxDataVolumes	6	Maximum number of data volumes (including restorable volumes)
03.08.2009 11:20:21	6	
03.08.2009 11:04:02	11	addvolume
03.08.2009 11:03:35	1	
MaxLogVolumes	2	Maximum number of log volumes, mirrored log volumes
MaxSQLLocks	4080	
MaxUserTasks	40	
MCOIndicator	NO	
RunDirectoryPath	c:\maxdb\data\wrk\EXPERTDB	
UseMirroredLog	NO	

Name	Value	Description/Comment
EnableQualificationOnIndex	YES	
EnableQueryRewrite	YES	Rewrites the given query if possible.

Parameter administration is quite easy with Database Studio. Parameter lists to be displayed can be sorted out by group, class or change date (1).

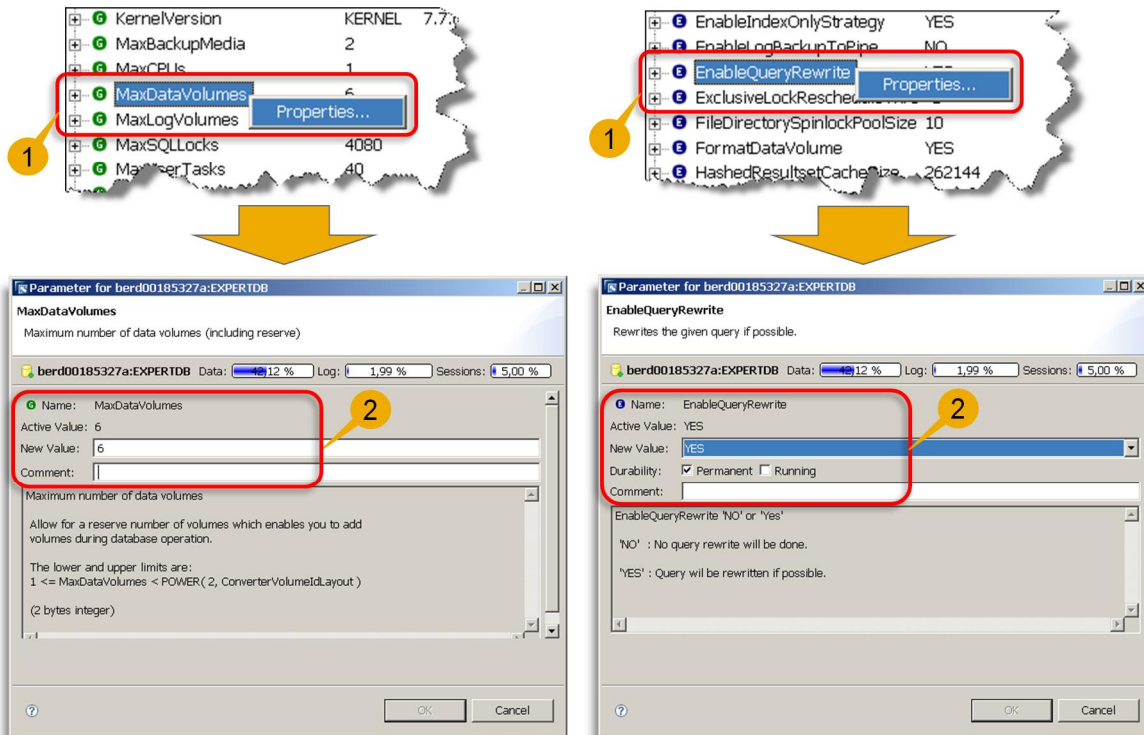
Choosing the plus sign in front of the parameter name shows the change history of this parameter (2).

There is a very comfortable filter function: select "View All" and start typing within input field "Filter" (3):

- ~ matching parameter names are displayed immediately while typing
- ~ it is not necessary to know the beginning of the parameter name
- ~ matches are also displayed when entering a substring of the parameter name

## 2. Database administration using Database Studio

### 2.2. Using the administration editor (7 - Parameter [2])



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Context menu of a parameter name allows to open the properties of this parameter (use right mouse button) (1).

Several parameters can be changed when the database is in mode ONLINE.

Depending on changeable in mode ONLINE or not the property mask offers to set up if the change will take effect immediately or after next restart (2):

- ~ Permanent: change will take effect after next restart and is always valid from then on
- ~ Running: change will take effect immediately and is valid until next restart

## 2. Database administration using Database Studio

### 2.2. Using the administration editor (8 - Backup [1])



Administration

berd00185327a:EXPERTDB ONLINE Data: 42,16 % Log: 1,99 % Sessions: 12,50 %

Overview | Data Area | Log Area | Analyzer | Task Manager | Activities | Caches | Parameters | Backup | Snapshots | Command Line

History: All | Data Backups | Log Backups | Recoveries | Errors

Label	Backup Type	Action	Start	Finish	Result	Medium	Size
LOG_000000013	LOG	SAVE WARM	30.09.2009 02:49:25	30.09.2009 02:49:26	OK	LOG	2,69 MB
LOG_000000012	LOG	SAVE WARM	30.09.2009 02:49:24	30.09.2009 02:49:25	OK	LOG	2,69 MB
LOG_000000011	LOG	SAVE WARM	30.09.2009 02:49:23	30.09.2009 02:49:24	OK	LOG	2,69 MB
LOG_000000010	LOG	SAVE WARM	30.09.2009 02:49:22	30.09.2009 02:49:23	OK	LOG	2,69 MB
LOG_000000009	LOG	SAVE WARM	30.09.2009 02:49:21	30.09.2009 02:49:22	OK	LOG	2,69 MB
LOG_000000008	LOG	SAVE WARM	30.09.2009 02:49:18	30.09.2009 02:49:21	OK	LOG	2,69 MB
LOG_000000007	LOG	SAVE WARM	30.09.2009 02:49:14	30.09.2009 02:49:17	OK	LOG	2,69 MB
LOG_000000006	LOG	SAVE WARM	30.09.2009 02:49:13	30.09.2009 02:49:14	OK	LOG	2,69 MB
LOG_000000005	LOG	SAVE WARM	30.09.2009 02:49:12	30.09.2009 02:49:13	OK	LOG	2,69 MB
LOG_000000004	LOG	SAVE WARM	30.09.2009 02:49:11	30.09.2009 02:49:12	OK	LOG	2,69 MB
LOG_000000003	LOG	SAVE WARM	30.09.2009 02:49:09	30.09.2009 02:49:11	OK	LOG	2,69 MB
LOG_000000002	LOG	SAVE WARM	30.09.2009 02:49:09	30.09.2009 02:49:09	OK	LOG	2,69 MB
LOG_000000001	LOG	SAVE WARM	30.09.2009 02:49:08	30.09.2009 02:49:09	OK	LOG	2,69 MB
DAT_000000005	COMPLETE DATA	SAVE WARM	25.08.2009 10:38:06	25.08.2009 10:38:23	OK	EXPER...	98,44 MB
	HISTLOST			24.08.2009 13:06:42			
DAT_000000004	COMPLETE DATA	SAVE WARM	03.08.2009 11:39:54	03.08.2009 11:39:59	OK	EXPER...	50,56 MB
	HISTLOST			03.08.2009 11:27:07			
DAT_000000003	COMPLETE DATA	RESTORE	03.08.2009 11:26:47	03.08.2009 11:26:50	OK	EXPER...	50,69 MB
	HISTLOST			03.08.2009 11:26:47			

Items: 65 of 65 Backup history read complete.

Details  
Templates

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Using tab "Backup" opens the backup history, per default all backups and recoveries are shown.

Backup history display can be filtered regarding data backups, log backups, recoveries and errors (1).

HISTLOST means a new backup history was started (2).

For every backup/restore details can be shown (use left or right mouse button) (3).

Backup templates can be listed and configured as well (use left or right mouse button) (3).

## 2. Database administration using Database Studio

### 2.2. Using the administration editor (9 - Backup [2])



▼ Details

Label:	LOG_000000001	Log Required:	
Backup Type:	LOG	Next Log Page:	
Action:	SAVE WARM	From Page:	6378
Start:	30.09.2009 02:49:08	To Page:	6711
Finish:	30.09.2009 02:49:09	Last Save Point:	
Result:	OK	First Commit:	24.08.2009 13:06:48
Medium:	LOG	Last Commit:	24.08.2009 13:06:49
Size:	2,69 MB	System Key:	4AC2AB040011
Devices:	0		

Device/File	Device Ty...	Ext...
EXPERTDB_LOG	FILE	

► Templates

▼ Templates

Name	Device/File	Device Type	Backup Type	Backup Tool	Size	Color	New...
EXPERT_COM	c:\maxdb\backup\data\MYDB_COM	FILE	COMPLETE DATA				▼
EXPERT_SAVE_INITIAL	c:\maxdb\backup\EXPERTDB\INITIAL	FILE	COMPLETE DATA				▼
EXPERT_SAVE_incl_view	c:\maxdb\backup\EXPERTDB\INCL_VIEW	FILE	COMPLETE DATA				▼
LOG	EXPERTDB_LOG	FILE					▼

1

2

3

Console | Event Log Viewer | Actions | Databases

Name	Action
berd00185323a:NEWDB	Create Database

- New Backup Template...
- New Parallel Backup Template...
- Edit...
- Copy...
- Backup...
- Check Backup...
- Recovery...
- Delete
- Show Label...

Details view of the selected backup shows information like start and end date, used template (medium) and size.

The templates view lists for all configured templates among others the name, the used file or device and its type and the backup type (1).

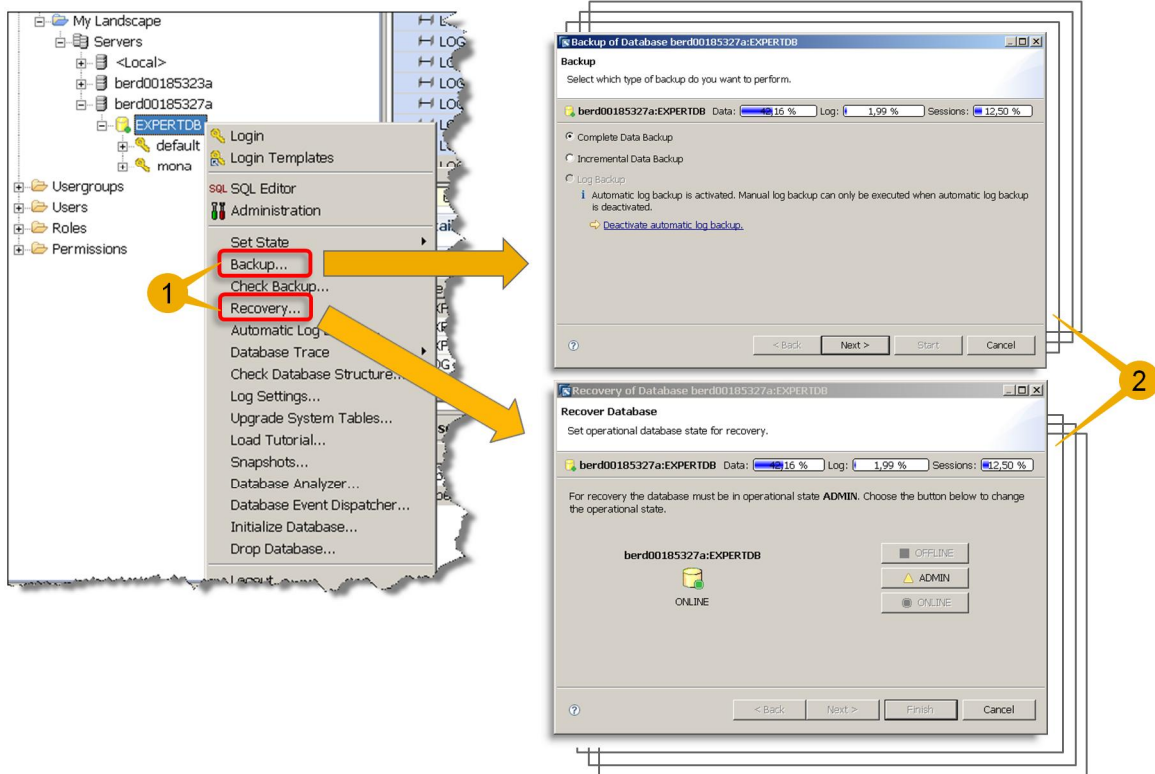
Via opening the context menu for a specific template (use right mouse button) there are a couple of options like template administration, starting a backup and checking the last backup using this template, starting a recovery directly and showing the label of the template (2).

Creating, editing, copying and deleting of templates can also be done via the corresponding buttons on the right hand side (3).



## 2. Database administration using Database Studio

### 2.2. Using the administration editor (10 - Backup [3])



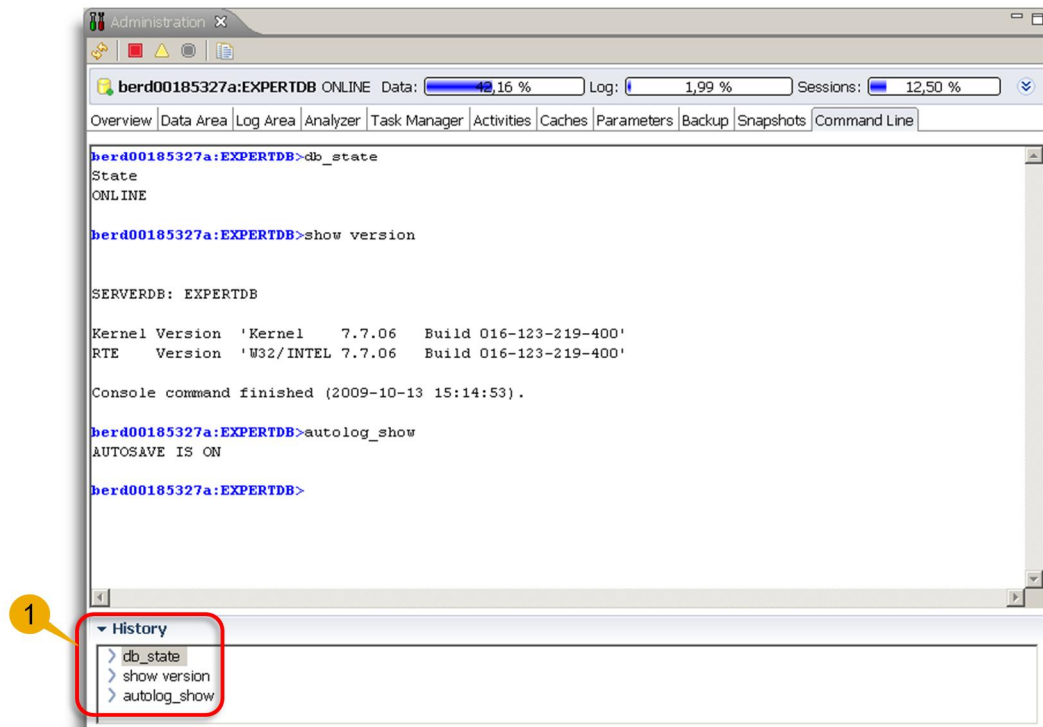
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Backup and recovery can also be started via context menu of the database (use right mouse button) (1).

In each case a wizard guides through the required steps (2).

## 2. Database administration using Database Studio

### 2.2. Using the administration editor (11 - Command line)



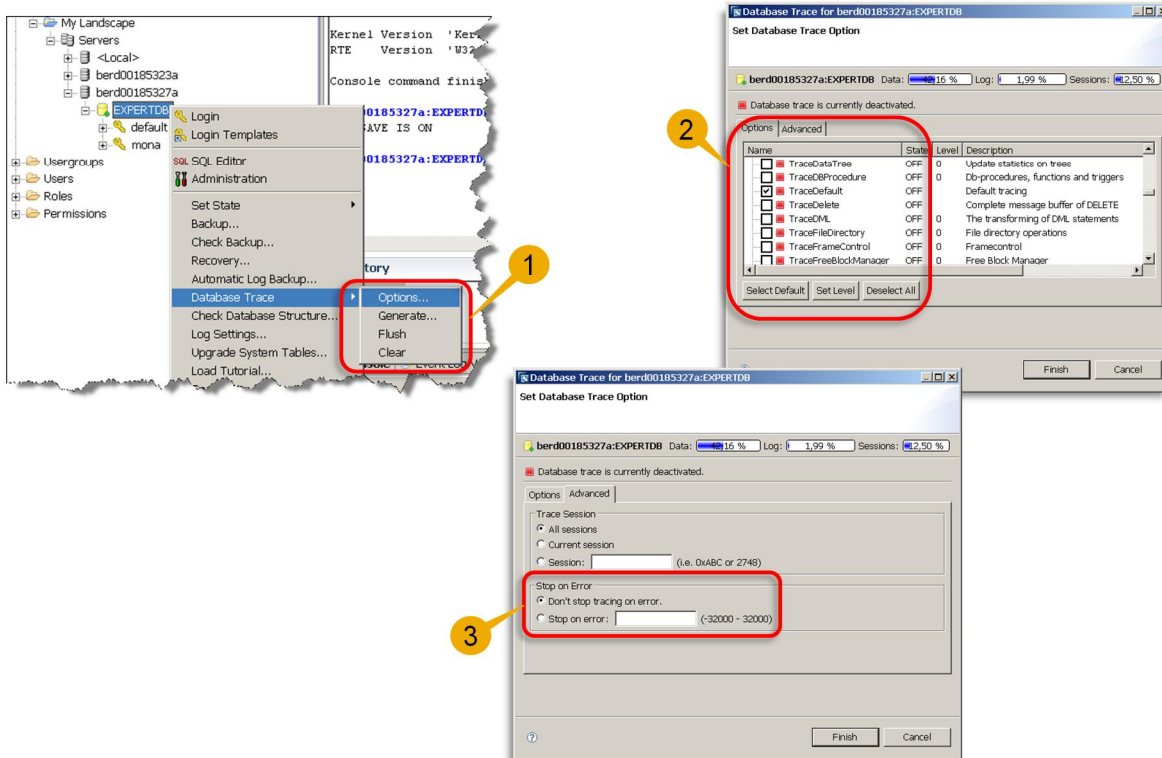
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The command line tab provides an open DBM server session to execute DBM commands.

There is also a command history available for convenient execution of the same commands several times (1).

## 2. Database administration using Database Studio

### 2.2. Using the administration editor (12 - Kernel trace [1])



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The database kernel trace can be activated via context menu of the database (use right mouse button) (1).

At first it is recommended to choose "Clear" to get only the trace output starting from the current trace activation.

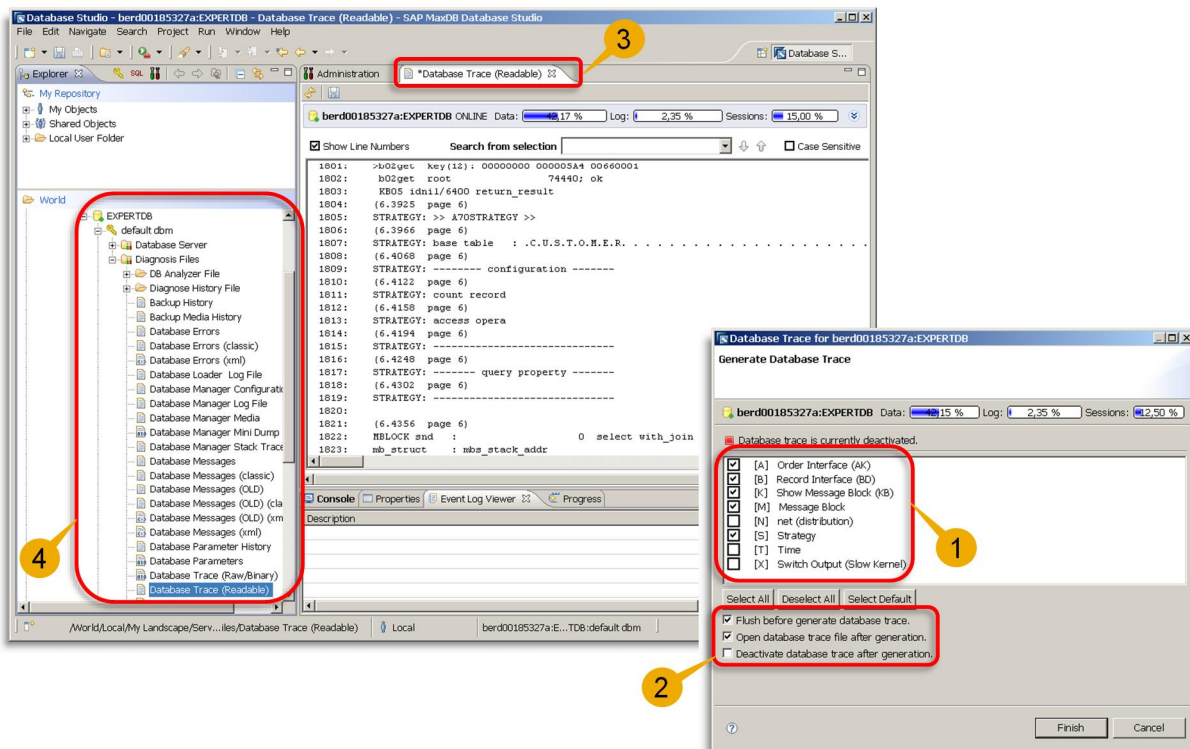
Within the input mask of the trace options the required options can be marked. As often a default trace is sufficient there is a button for this ("Select Default"), so scrolling through the options is not necessary (2).

If tab "Advanced" has been chosen (next to tab "Options") it is possible to enter an error code to get writing of trace output stopped just when this error occurs (3).

Choosing "Finish" will activate the trace with the selected settings.

## 2. Database administration using Database Studio

### 2.2. Using the administration editor (13 - Kernel trace [2])



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Trace writing will be finished when all trace options are deselected again or if the configured error occurred. As the trace output is in binary format it is required to generate the readable trace log file.

Choosing "Generate..." from the sub context menu "Database Trace" opens an input mask where the trace content can be specified (mostly ABKMS is sufficient) (1).

There are three check boxes below (2): The first one "Flush before generate ..." has to be checked if flushing hasn't been done already via sub context menu "Database Trace". The second and third one specifies if the trace should be opened just after generation and if trace writing should be switched off after generation.

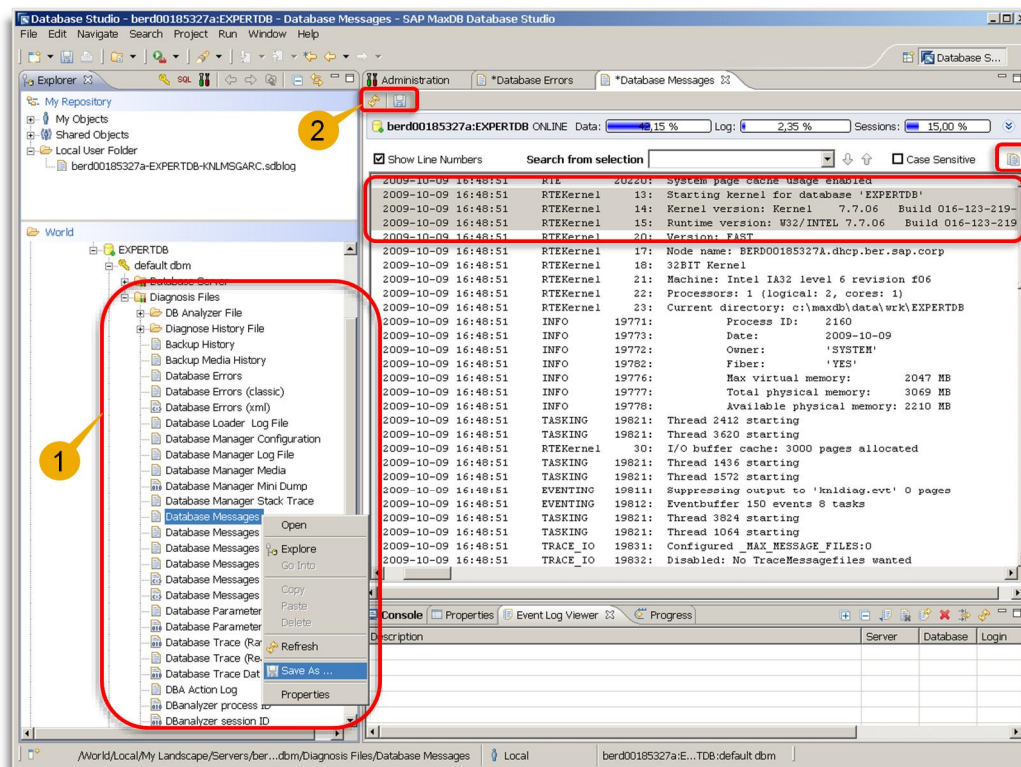
The readable trace log file will be displayed in the editor via a separate tab (3).

It can be opened later on via explorer tree "<database name>" – "<dbm user>" – "Diagnosis Files" – "Database Trace (Readable)" (4).

Trace output is difficult to read and only of interest if requested by MaxDB support.

## 2. Database administration using Database Studio

### 2.2. Using the administration editor (14 - Log files)



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Sub tree “Diagnosis Files” enables access to a folder containing the log files of Database Analyzer (for every day with existing log files a separate folder is created) (1).

There is a second folder containing the log files of Diagnose History (several important log files are saved here (in a separate folder) in case of a database crash to save them for later analysis) (1).

Directly below “Diagnosis Files” current log files like Database Messages (KnIMsg resp. knldiag), Database Errors (KnIMsgArchive resp. knldiag.err) etc. are stored. Files with the same name and the appendix “(classic)” and “(xml)” refer to the file format change from plain text to xml with MaxDB version 7.7. The xml versions contain more information, Database Studio converts them into a readable format automatically. Via context menu of each file (use right mouse button) it is possible for instance to open this file, save it and show file properties (e.g. file size) (1).

To refresh the display in the editor the refresh button can be used, also saving is possible there (to the configured local folder) (2).

To copy an extract of the file to the clipboard the requested range can be marked (for the first line of the range use left mouse button, for the last line right mouse button) (3).

The copy button is on the top right (4).

## 2. Database administration using Database Studio

### 2.2. Using the administration editor (15 - Check data)



The screenshot illustrates the process of checking database structure in SAP Database Studio. It shows the context menu for the database 'EXPERTDB' with 'Check Database Structure...' highlighted (1). The 'Check Database Structure' dialog is shown with three options: 'Check database structure in operational state ONLINE', 'Check database structure and clear converter in operational state ADMIN', and 'Check database structure for a selected table in operational state ONLINE'. The 'ONLINE' option is selected (2). The 'Check Database Structure' dialog is shown with the 'Except Indexes' checkbox checked (3). The 'KnIMsg' log output shows the progress of the check, including 'Start check database without indexes', 'Start LOB checking', and 'Check database progress report' (4).

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To check the structural consistency of the database entry “Check Database Structure” can be chosen in context menu of the database (use right mouse button) (1).

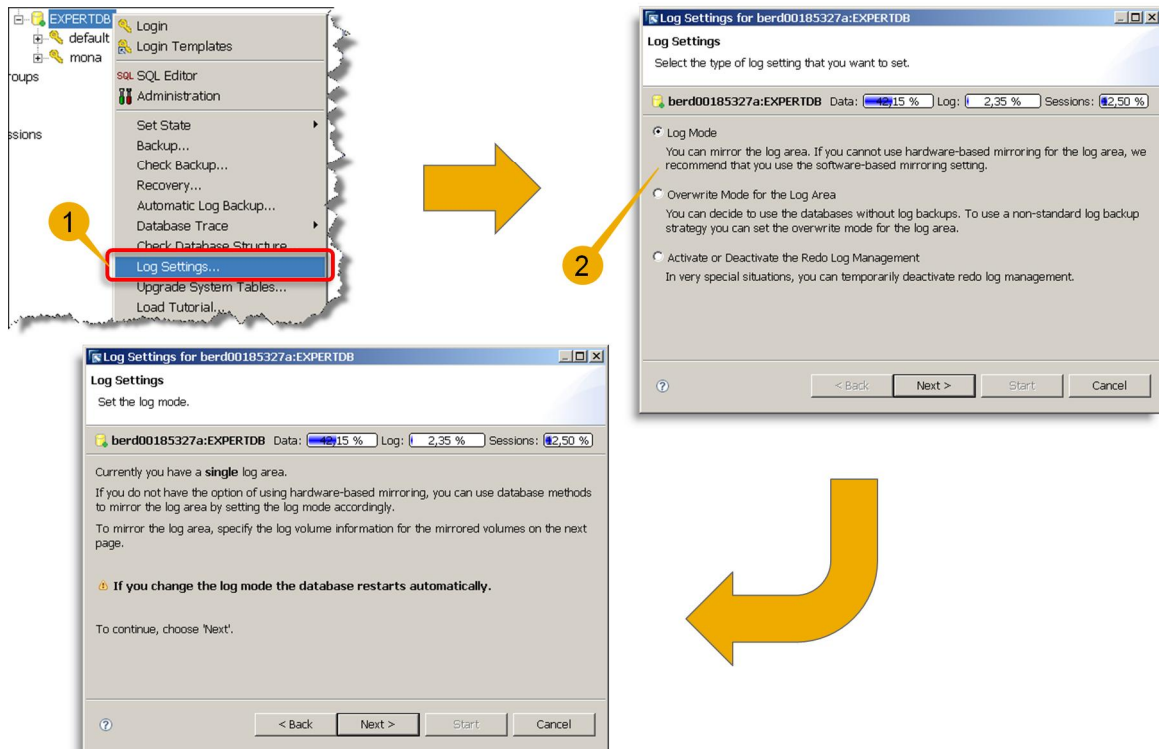
It offers the following options (2): Firstly, to start the check for the entire database in mode ONLINE. Secondly, to start the check for the entire database in mode ADMIN which includes a clean up of unused converter entries. Thirdly, to start the check for a specific table in database mode ONLINE.

The following input mask shows the selected decision and offers to exclude indexes from the check (3).

Log file “Database Messages” shows information and possible errors (errors are also logged in file “Database Errors”) (4).

## 2. Database administration using Database Studio

### 2.2. Using the administration editor (16 - Log settings)



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Via context menu of the database (use right mouse button) it is also possible to change the log settings (1).

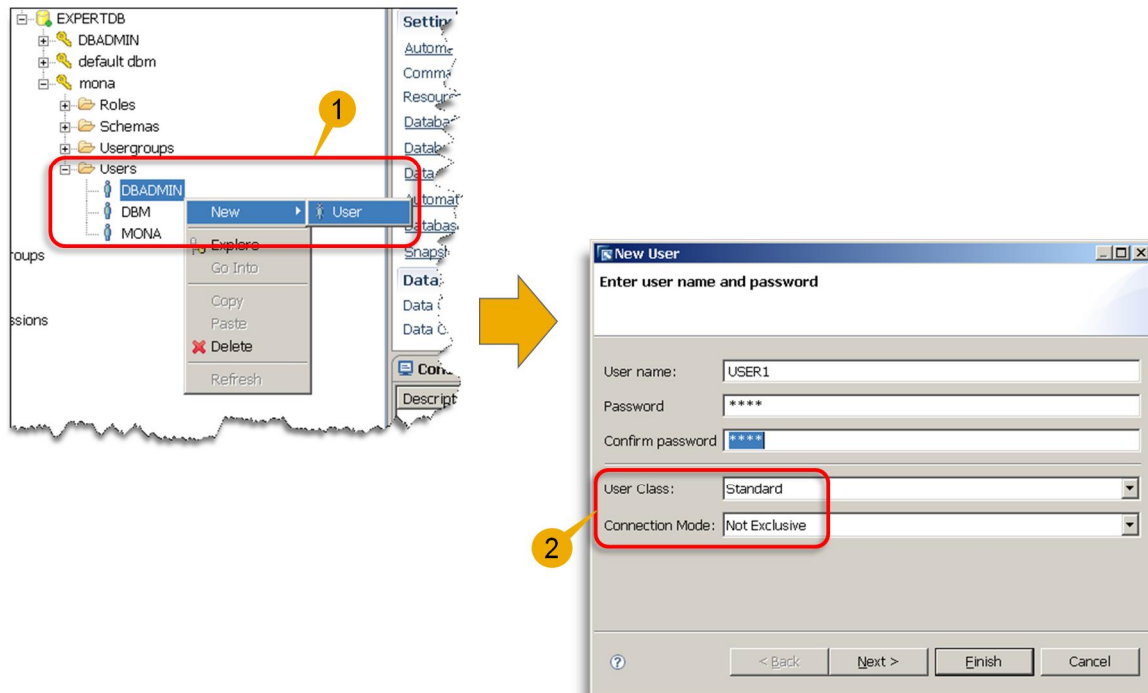
Offered options are (2):

- ~ changing the log mode between “single log” and “mirrored log”
- ~ switching on and off the “Overwrite mode” of the log area
- ~ activate or deactivate redo log management

**Be very careful:** using “Overwrite mode” and deactivating redo log management can lead to data loss.

## 2. Database administration using Database Studio

### 2.2. Using the administration editor (17 - Creating users)



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Current implementation of user management in Database Studio allows only to create new SQL users.

Within sub tree of SQL users there is the tree item "Users". All users with a valid login for this database stored in Database Studio are listed.

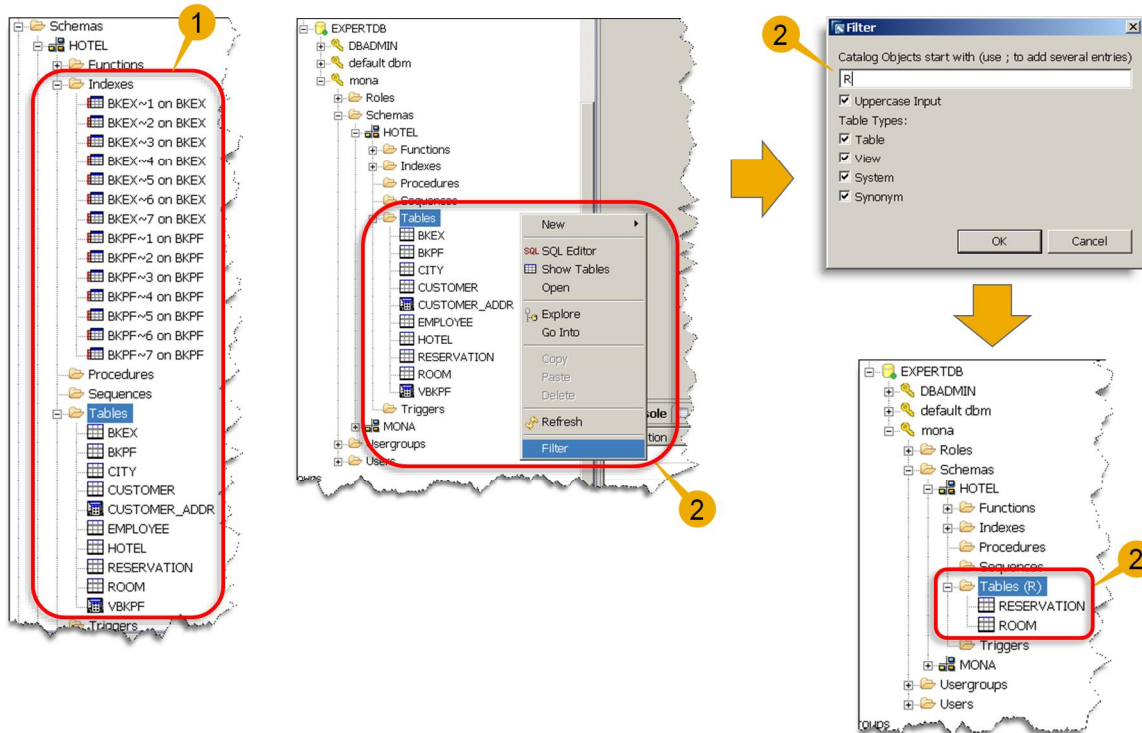
Via opening the context menu (use right mouse button) it is possible to create new SQL users (1).

Input mask also allows to specify 'User class' (DBA, Resource, Standard) and 'Connection Mode' (Exclusive, Not Exclusive, Disabled) (2).

See MaxDB documentation for more information about user management.



### 3. Managing SQL objects in Database Studio (1 - List of tables and indexes, using filter)



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The sub tree of an SQL user contains the “Schemas” and at the next level further nodes e.g. for contained tables and indexes. Different object types can be distinguished by different icons (e.g. tables, views) (1).

Within “Tables” all tables are listed in alphabetic order (if a large number of tables exists only the first ones are listed with a follow-up marker).

If the name (or the first part of it) is known a filter can be used to get the display more convenient (filter is shown in brackets after “Tables”). Context menu of “Tables” has to be opened (use right mouse button) and “Filter” to be chosen for this (2).

### 3. Managing SQL objects in Database Studio (2 - Displaying table content [1])

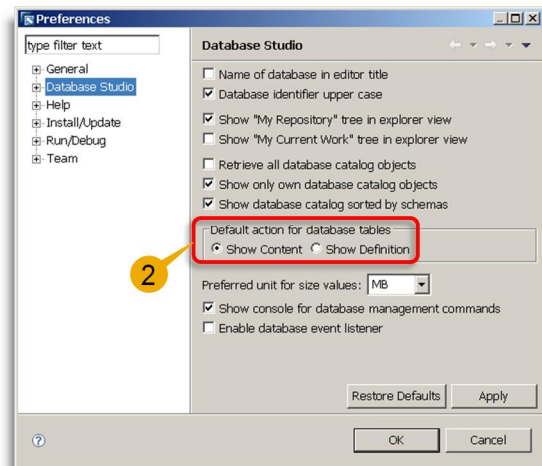
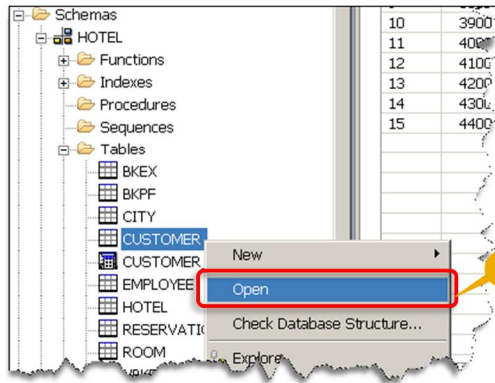


The screenshot shows the SAP Database Studio interface. On the left, the Explorer pane displays a tree view of database objects, including a table named 'CUSTOMER'. A right-click context menu is open over this table, with the 'Content' option selected. The main window displays a SQL query: 'SELECT \* FROM "HOTEL"."CUSTOMER"'. Below the query, a table grid shows 15 rows of data with columns: CNO, TITLE, FIRSTNAME, NAME, ZIP, and ADDRESS.

	CNO	TITLE	FIRSTNAME	NAME	ZIP	ADDRESS
1	3000	Mrs	Jenny	Porter	10580	1340 N.Ash Street, #3
2	3100	Mr	Peter	Brown	48226	1001 34th Str., APT.3
3	3200	Company	?	Datasoft	90018	486 Maple Str.
4	3300	Mrs	Rose	Brian	75243	500 Yellowstone Drive, #2
5	3400	Mrs	Mary	Griffith	20005	3401 Elder Lane
6	3500	Mr	Martin	Randolph	60615	340 MAIN STREET, #7
7	3600	Mrs	Sally	Smith	75243	250 Curts Street
8	3700	Mr	Mike	Jackson	45211	133 BROADWAY APT. 1
9	3800	Mrs	Rita	Doe	97213	2000 Humboldt Str., #6
10	3900	Mr	George	Howe	75243	111 B Parkway, #23
11	4000	Mr	Frank	Miller	95054	27 5th Str., 75
12	4100	Mrs	Susan	Baker	90018	200 MAIN STREET, #94
13	4200	Mr	Joseph	Peters	92714	700 S. Ash Str., APT.12
14	4300	Company	?	TOOLware	20019	410 Marposa Str., #10
15	4400	Mr	Anthony	Jenkins	20903	55 A Parkway, #15

The context menu of a specific table (use right mouse button) offers several options for this table, e.g. showing the content. Only the visible table rows are fetched (makes sense at large tables).

### 3. Managing SQL objects in Database Studio (2 - Displaying table content [2])



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When choosing “Open” within the context menu of the database one of two different actions is done (1) :

- ~ display of the table definition or
- ~ table content will be shown

What happens depends on the corresponding setting within “Preferences” – “Database Studio” (2).

A double-click (left mouse button) done on a table within the explorer tree causes the same action like choosing “Open” within the context menu of the database.

### 3. Managing SQL objects in Database Studio (3 - Displaying table definition)



The screenshot illustrates the steps to view the table definition in SAP Database Studio:

- Right-click on the 'CUSTOMER' table in the 'HOTEL' schema of the 'EXPERTDB' database to open the context menu.
- Select 'Definition' from the context menu to open the table definition editor.
- Right-click on the 'Columns' tab in the table definition editor to open the context menu.
- Select 'Export SQL' from the context menu to view the SQL command for the table definition.

The table definition editor displays the following table structure:

Name	Data Type	Dim	Code	Key	Not Null	Default	Comment
1 CNO	FIXED	4		X(1)	X		
2 TITLE	CHAR	7	ASCII				
3 FIRSTNAME	CHAR	10	ASCII				
4 NAME	CHAR	10	ASCII		X		
5 ZIP	CHAR	5	ASCII		X		
6 ADDRESS	CHAR	25	ASCII		X		

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Choosing "Definition" in the table's context menu (use right mouse button) is showing the defined columns (each line in the list represents a column) (1).

This display is shown in a separate tab within the editor (2).

To see the SQL command for the table definition it is required to open the context menu within the column list (use right mouse button) and to choose "Export SQL" (3).

Table related information, e.g. defined indexes, are available via tabs inside this editor table display (4).

### 3. Managing SQL objects in Database Studio (4 - Update statistics for a table)



The screenshot illustrates the process of updating table statistics in SAP Database Studio. It shows the 'Administration' window for the 'HOTEL.CUSTOMER' table. The 'Optimizer Statistics' tab is selected, showing a table with 15 columns and 1 page. A context menu is opened, and the 'Update' option is chosen. This leads to the 'Sample Values for Update Statistics' dialog box, where the 'Rows' option is selected and set to 20000. Finally, a status message indicates that the update statistics statement for 'HOTEL.CUSTOMER' was successfully executed, estimating a sample of 20000 rows in 0 ms.

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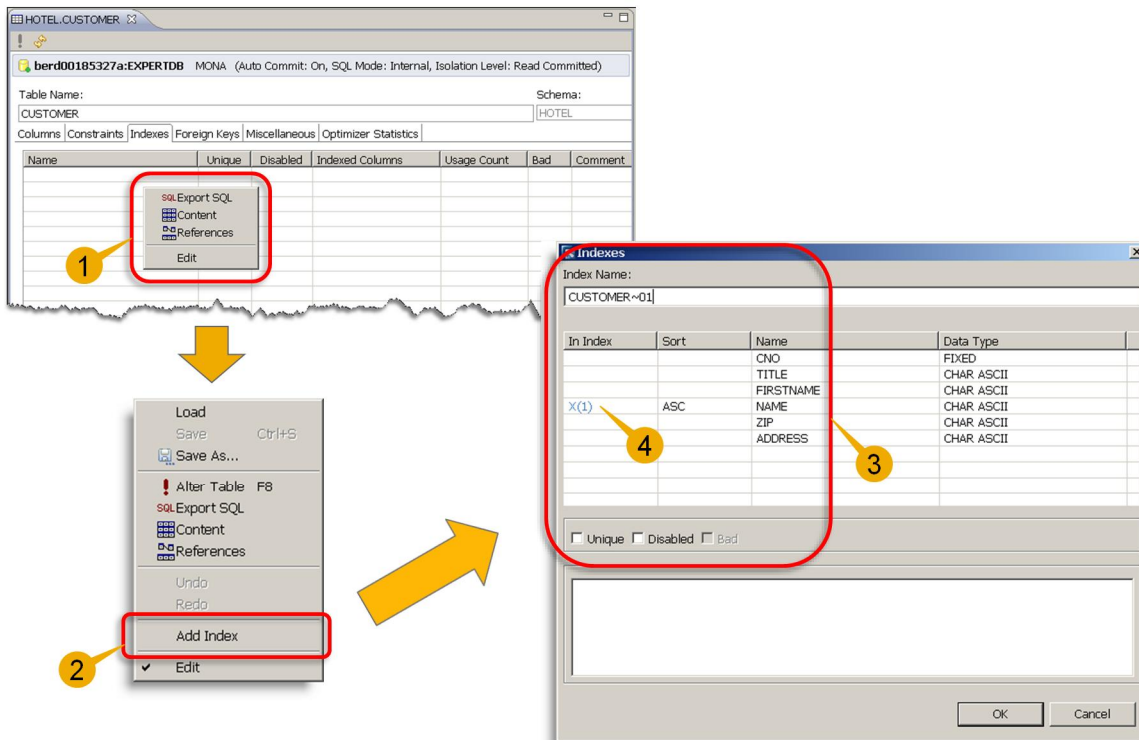
Choosing tab “Optimizer Statistics” inside the editor table display shows the existing table specific statistic values (1).

The context menu opened within this display (use right mouse button) offers to update table and column statistics (2).

The next step allows to set up the number of sample rows or sample percentage for this update or to calculate the statistics exactly using all rows (3).

A status message informs about the success (4).

### 3. Managing SQL objects in Database Studio (5 - Creating an index for a table [1])



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After choosing tab “Indexes” inside the editor table display all existing indexes for this table are listed. Inside this list a context menu can be called (use right mouse button) (1).

Via “Edit” this context menu can be expanded to a longer version with more items, e.g. “Add Index” (2).

“Add Index” opens an input mask which allows to enter the index name, select the required table columns for the new index and index properties (3).

To add a column of the table to the index just select it within column “In Index” of the input mask (use left mouse button). Selecting the same column repeatedly toggles between adding and removing of this table column to/from the index (4).

After finished “OK” has to be chosen.

### 3. Managing SQL objects in Database Studio (5 - Creating an index for a table [2])



The screenshot illustrates the process of creating an index in SAP Database Studio. It is divided into three numbered steps:

- Step 1:** The user selects the table 'CUSTOMER' in the 'HOTEL' schema. An exclamation mark icon is highlighted, indicating the start of the index creation process.
- Step 2:** A status message is displayed: "Statement 'create index 'CUSTOMER~01' on 'HOTEL'. 'CUSTOMER' ('NAME' ASC)' successfully executed in ms. Started: 2009-10-15 11:39:54".
- Step 3:** The new index 'CUSTOMER~01 on CUSTOMER' is visible in the explorer tree under the 'Indexes' folder.

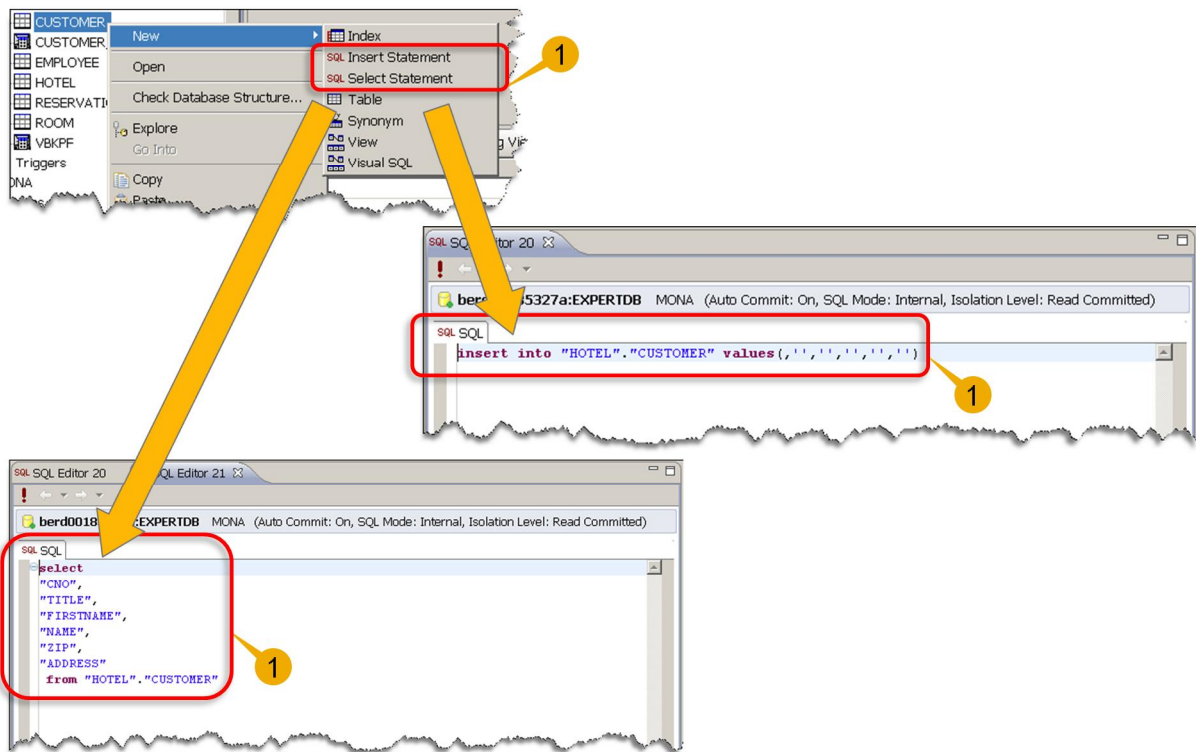
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Afterwards the index appears in the list but has not been created yet. For this it is necessary to choose the exclamation mark (use left mouse button or press F8) (1).

There will be a status message informing about the success (2).

When successfully created the new index is sorted into the index list of the explorer tree (3).

### 3. Managing SQL objects in Database Studio (6 - Context menu item 'New' of a table)



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Creating a new index is also possible via context menu item "New" of a table which opens a submenu.

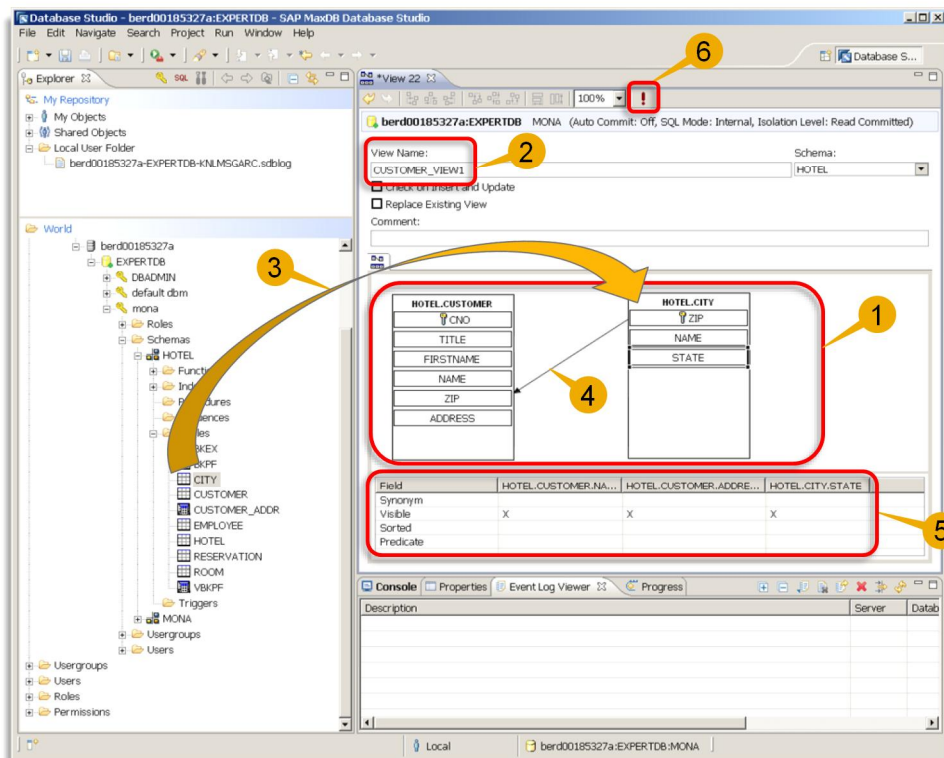
In addition via menu item "New" further helpful things can be done. So it is possible to create preconfigured SQL commands for INSERT and SELECT which have to be customized for the particular needs then (1).

Furthermore a synonym and a table (with the selected one as template) can be created.

Creating a view and 'Visual SQL' is explained next.



### 3. Managing SQL objects in Database Studio (7 - Creating a view without typing SQL)



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Creating a view without to have to type the required SQL is quite comfortable. After opening “New” – “View” in table’s context menu (use right mouse button) a schematic display of the table appears in the editor (1).

At first a name for the new view should be entered (2).

Now the tables which are intended to be involved in the new view can be dragged and dropped next to each other within the schematic display (3).

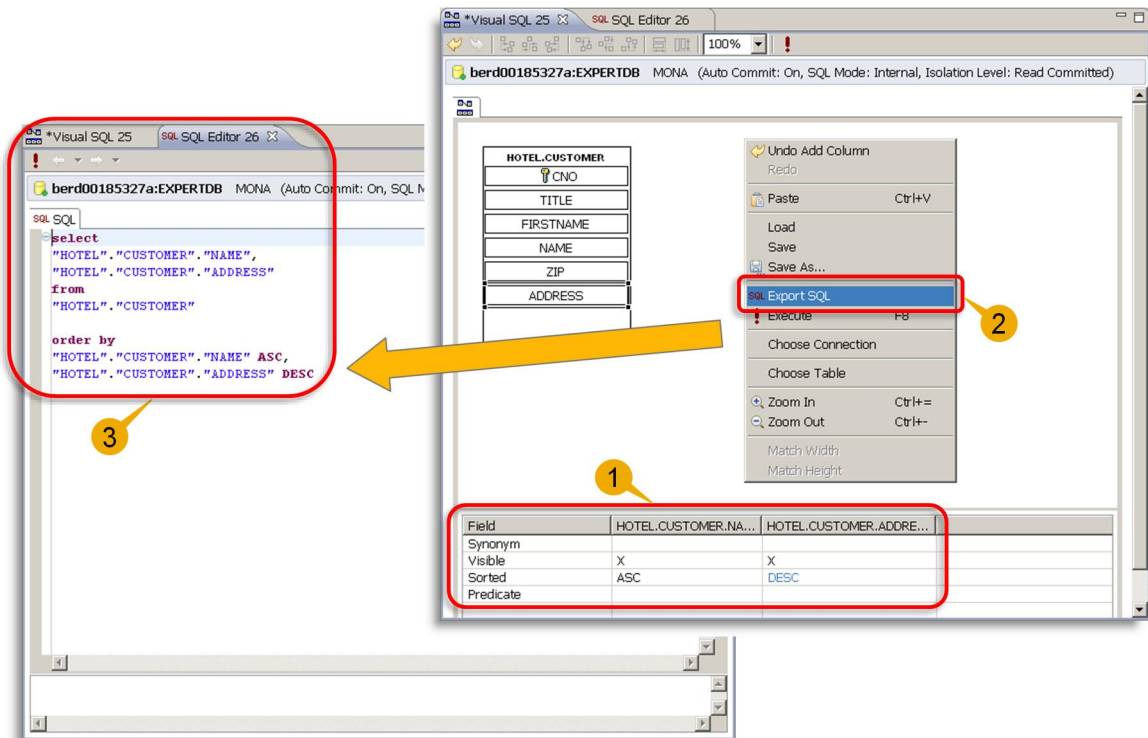
If there are foreign key references between those tables they will be shown as an arrow (4).

Now the required columns of each table can be dragged and dropped into the display below. Per default “Visible” is checked, sorting can be changed by clicking into the corresponding field (toggles between “”, “ASC” and “DESC”) (5).

To see the SQL command which will be generated item “Export SQL” has to be chosen from the context menu opened within the schematic table display (use right mouse button).

“When finished the exclamation mark has to be chosen (6).

### 3. Managing SQL objects in Database Studio (8 - Creating a 'visual' SELECT command)



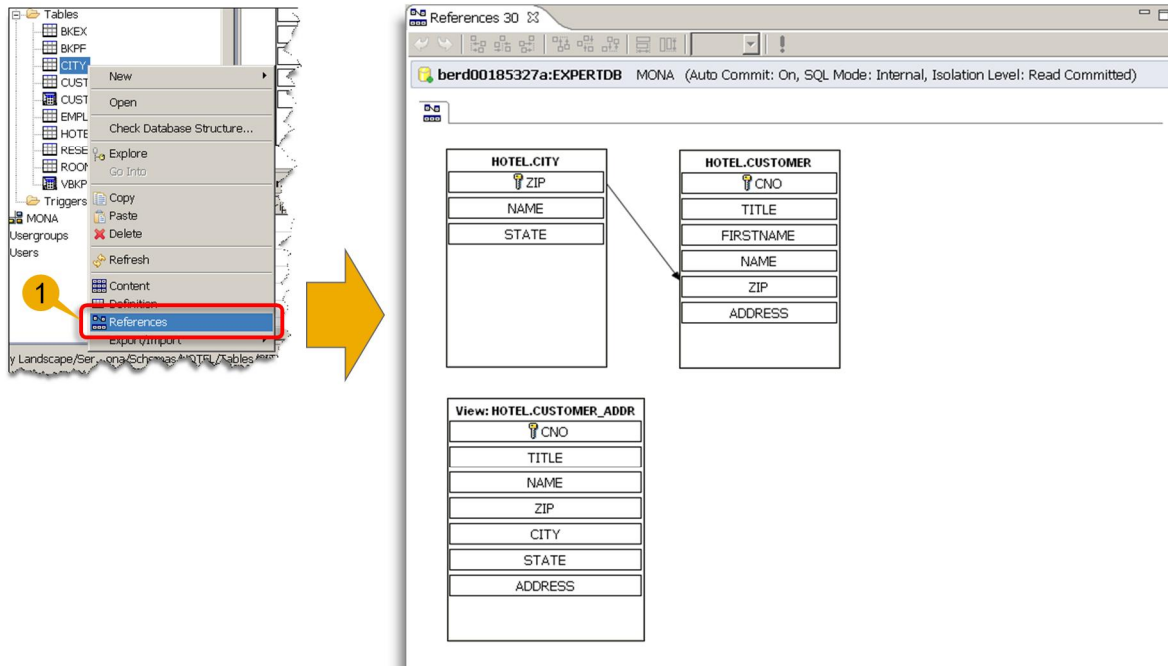
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Similar to creating a view it is possible to create a SELECT command. To do so within table's context menu "New" – "Visual SQL" has to be selected (use right mouse button). The required table columns are dragged and dropped from the schematic table display into the display below (1).

After choosing the sorting for each column the context menu within schematic table display has to be called and "Export SQL" has to be selected (2).

A new editor tab will be opened showing the corresponding SQL command (3).

### 3. Managing SQL objects in Database Studio (9 - Showing references and dependent objects)

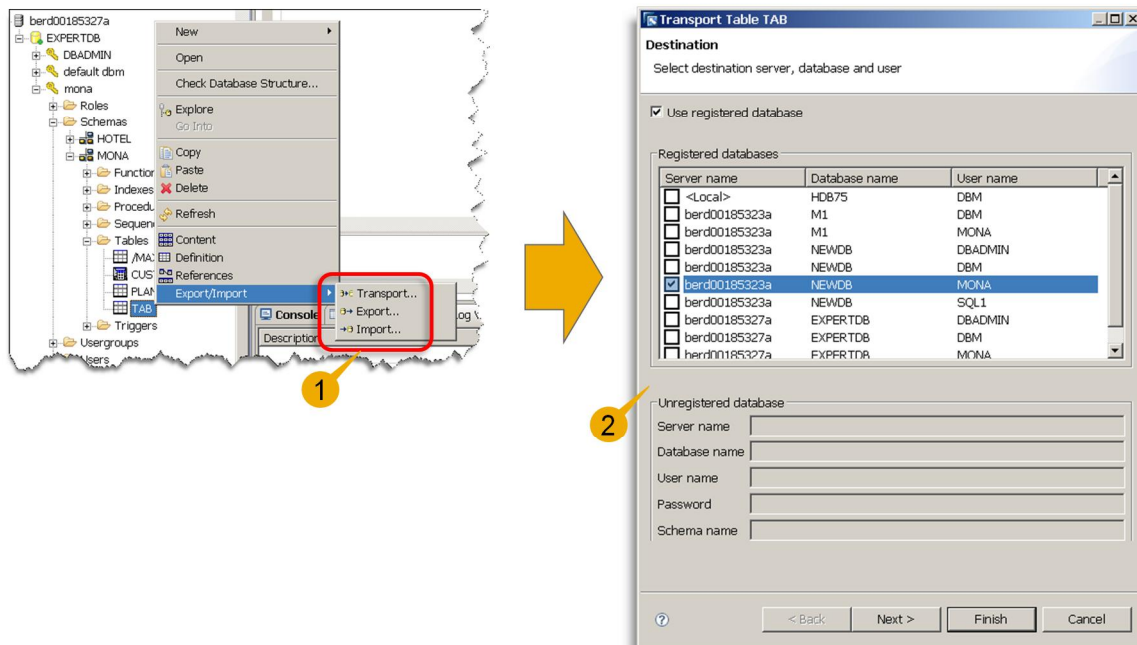


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Within table's context menu (use right mouse button) there is an item "References" (1).

It allows to show a schematic display presenting the table, foreign key references, indexes and views. It is an easy way of getting knowledge about dependencies of the selected table.

### 3. Managing SQL objects in Database Studio (10 - Export/Import of tables [1])

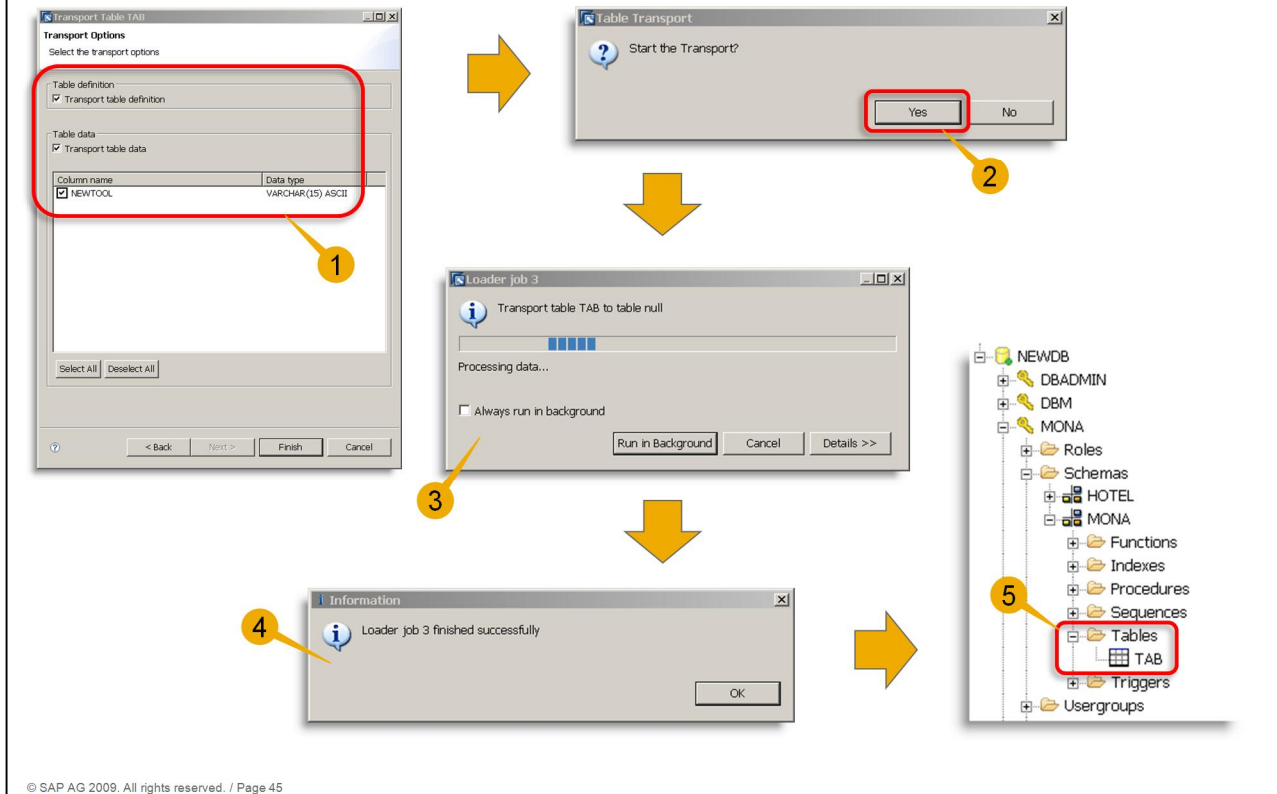


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Table's context menu "Export/Import" offers to transport a table to another SAP MaxDB database and to export or import tables (using package files) (1).

MaxDB tool "Loader" is used for this and integrated into Database Studio. To transport a table it is required to specify the destination database (one of the registered databases can be chosen or even an unregistered one) (2).

### 3. Managing SQL objects in Database Studio (10 - Export/Import of tables [2])



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When choosing "Next" transport scope can be determined (table definition and data) and the columns of the table are displayed and are checked by default (1).

After starting the transport (2) a progress bar is displayed while the transport is running (3) and a message is shown when the transport was successful (4).

The table is now listed below "Tables" within the explorer tree of the destination database (5).

### 3. Managing SQL objects in Database Studio (10 - Export/Import of tables [3])



The image illustrates the process of transporting a table in SAP Database Studio. It consists of four numbered steps:

- 1:** Selecting the source table 'TAB' in the 'Tables' folder of the source database explorer.
- 2:** The 'Transport Table TAB' dialog box, 'Transport Options' tab. The 'Target schema name' is set to 'MONA' and the 'Target table name' is 'TAB'. The 'Transport table definition' and 'Transport table data' checkboxes are checked.
- 3:** The 'Ready to transport table' dialog box, showing a summary of the transport parameters. The 'Options on transport' section is checked for 'Use existing schema and add table definitions and/or data' and 'Transport data'.
- 4:** The destination database explorer showing the table 'TAB' successfully transported to the 'Tables' folder of the target database.

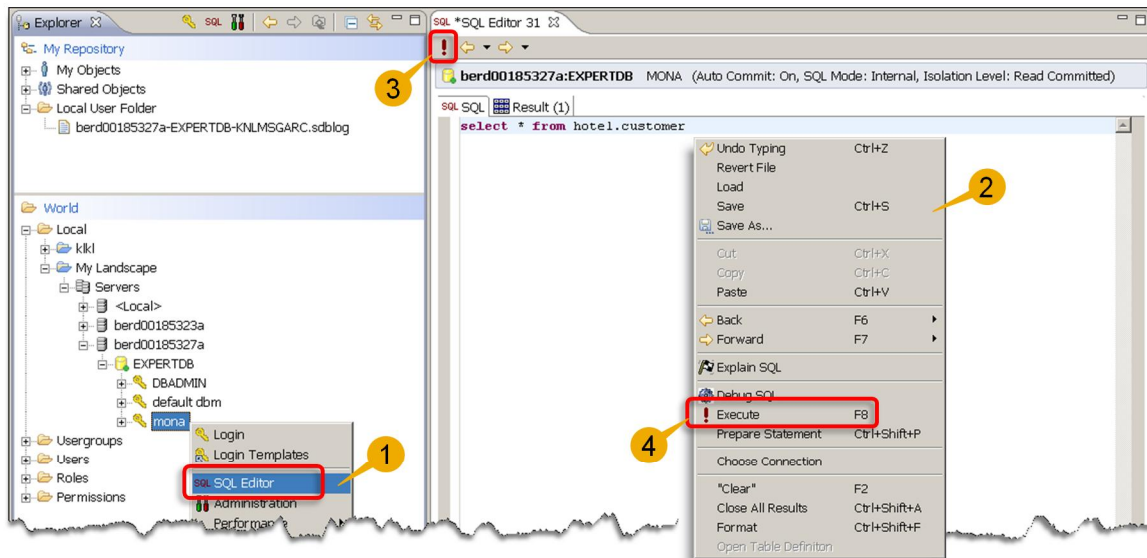
It is possible to transfer a table via drag and drop to a different database on a different database server within the network (1).

After displaying the transport options including the possibility to change them (2) a summary of the upcoming transport is shown (3).

When finished successfully the table is listed within the explorer tree of the destination database (4).

It is possible to transport a table to any schema of the destination database.

## 4. Running SQL commands via Database Studio (SQL Editor [1])



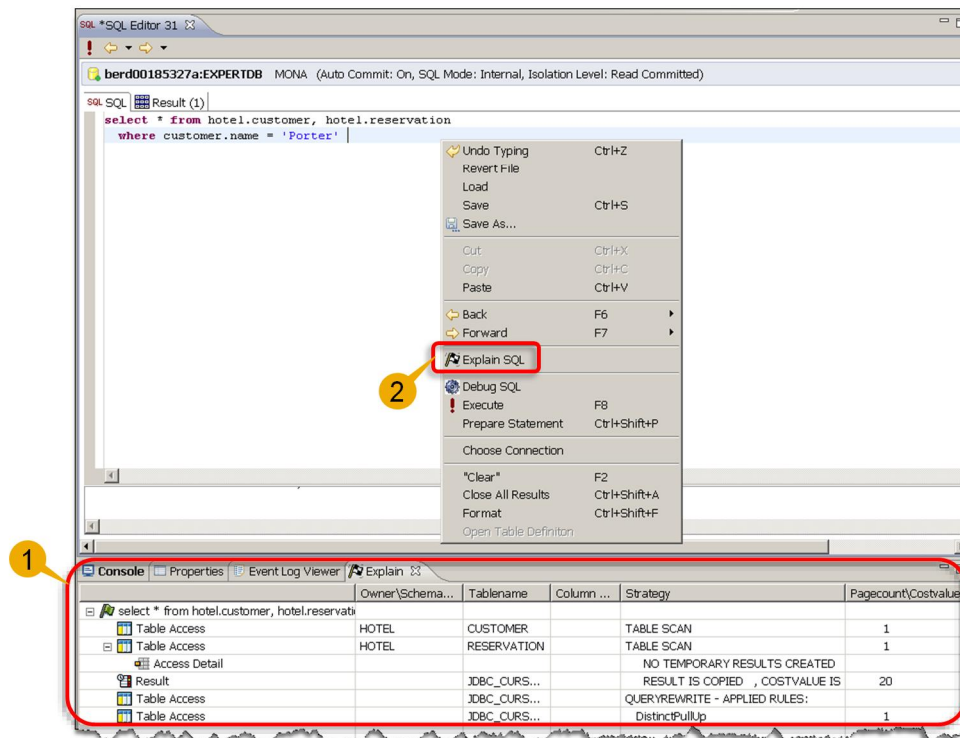
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To run SQL commands at first an SQL editor has to be opened via context menu of the specific SQL user (use right mouse button) (1).

Within this editor another context menu can be opened (use right mouse button) offering different options (2).

To execute an SQL command it has to be marked (only necessary if more than one command are listed within the SQL editor) and one of the following options has to be used: Firstly, pressing F8. Secondly, choosing the icon showing the exclamation mark within the toolbar (3). Thirdly, opening the context menu via right mouse button pointing to the corresponding SQL command and choose "Execute" (4).

## 4. Running SQL commands via Database Studio (SQL Editor [2])



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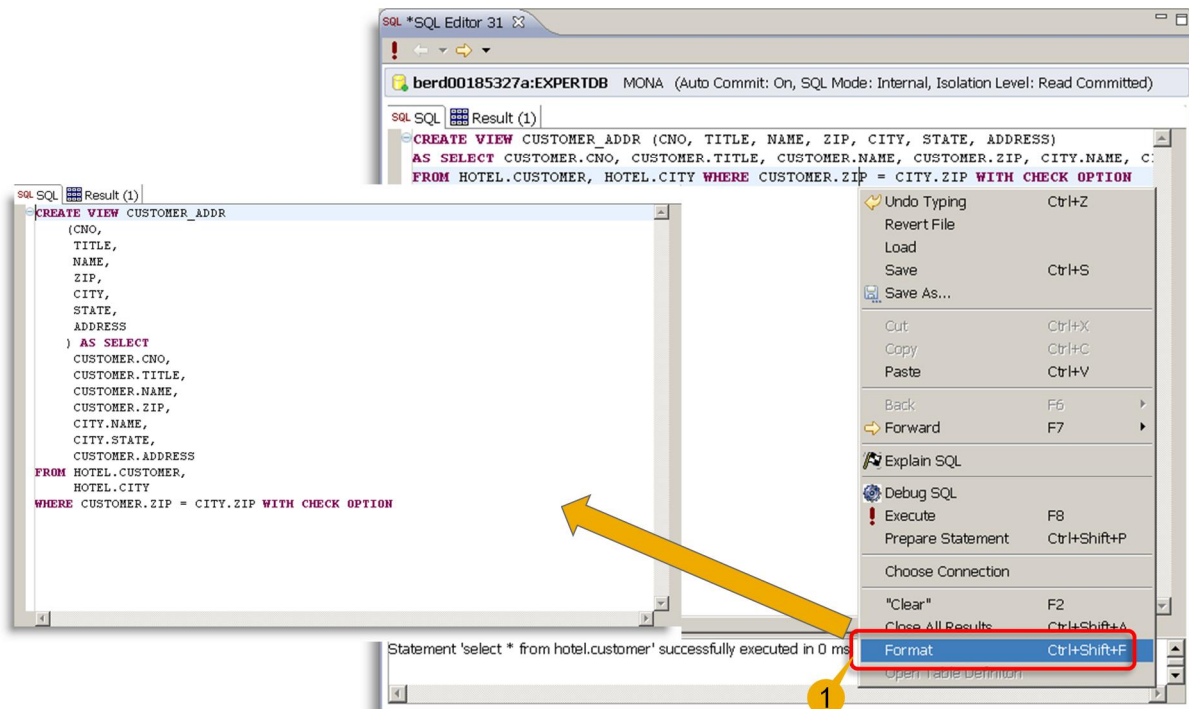
Database Studio provides the possibility to display the execution plan of the corresponding SQL command as a separate tab alongside the event log viewer (1).

Within the context menu opened within the editor (use right mouse button) item "Explain SQL" has to be chosen (2).

It is also possible to add the key word "explain" just before the SQL command and execute it afterwards. In this case the result is shown in a separate tab within the SQL editor.



## 4. Running SQL commands via Database Studio (SQL Editor [3])



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Sometimes an SQL command is only available in a format which is difficult to read. To save the trouble of reformatting it manually Database Studio offers the option to do this work instantly. It is just required to open the context menu (use right mouse button), pointing to the SQL command and to choose "Format" (1).

## 4. Running SQL commands via Database Studio (SQL Editor [4])



The screenshot illustrates the workflow in the SAP SQL Editor. It shows three stages of the process:

- 1**: The SQL command is entered in the editor: `select * from hotel.customer, hotel.reservation where customer.name = ?`. The question mark is highlighted.
- 2**: The context menu is open, and the "Prepare Statement" option (Ctrl+Shift+P) is selected.
- 3**: A new tab titled "SQL Prepared SQL (1)" is opened, showing the prepared statement: `select * from hotel.customer, hotel.reservation where customer.name = ?`. The parameter is defined as "Parameter 1 (CHAR ASCII) | Porter".
- 4**: The "Execute" option is selected from the context menu, and the results are displayed in a table.

	CNO	TITLE	FIRSTNAME	NAME	ZIP	ADDRESS	RNO
1	3000	Mrs	Jenny	Porter	10580	1340 N.Ash Street, #3	100
2	3000	Mrs	Jenny	Porter	10580	1340 N.Ash Street, #3	110
3	3000	Mrs	Jenny	Porter	10580	1340 N.Ash Street, #3	120
4	3000	Mrs	Jenny	Porter	10580	1340 N.Ash Street, #3	130
5	3000	Mrs	Jenny	Porter	10580	1340 N.Ash Street, #3	140
6	3000	Mrs	Jenny	Porter	10580	1340 N.Ash Street, #3	150
7	3000	Mrs	Jenny	Porter	10580	1340 N.Ash Street, #3	160
8	3000	Mrs	Jenny	Porter	10580	1340 N.Ash Street, #3	170
9	3000	Mrs	Jenny	Porter	10580	1340 N.Ash Street, #3	180
10	3000	Mrs	Jenny	Porter	10580	1340 N.Ash Street, #3	190

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It is possible just to prepare an SQL command before the execution using parameters instead of the specific values within the WHERE clause. The reserved character for a parameter within an SQL command is the question mark (1).

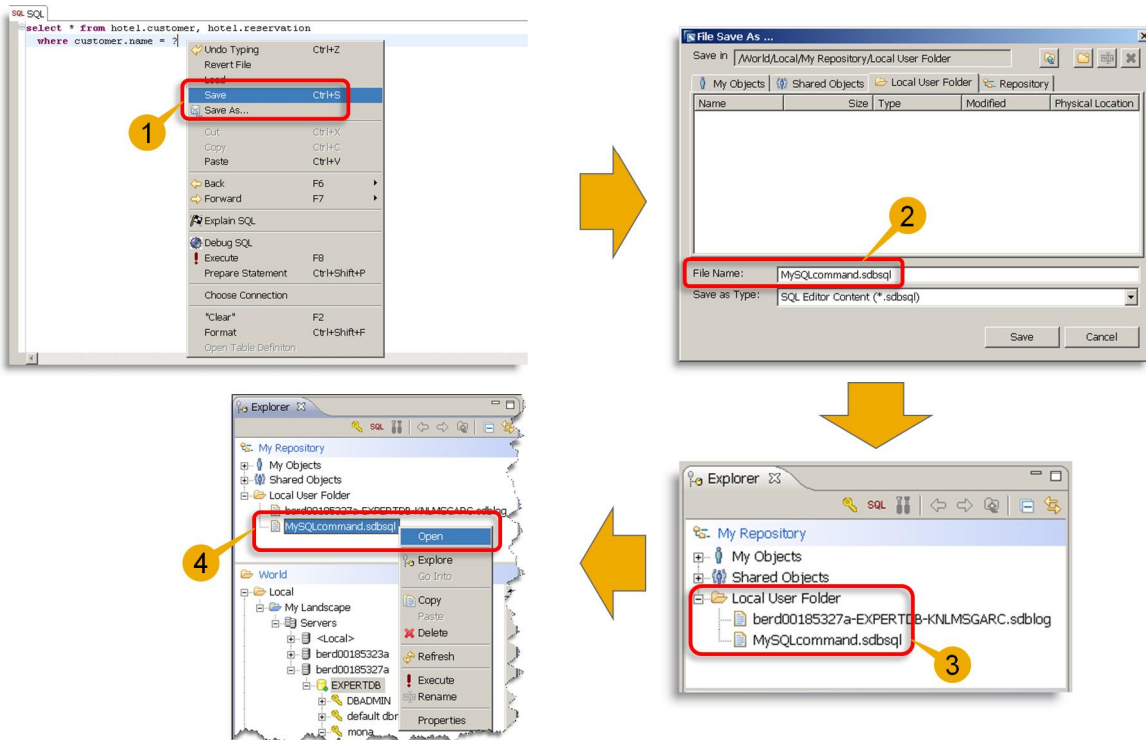
If such an SQL command was entered it is possible to choose "Execute" or "Prepare Statement" from the context menu or the exclamation mark from the toolbar (2).

A separate tab within the SQL editor is opened, called "Prepared SQL", where the specific values can be entered (3).

Choosing "Execute" runs the SQL command with the entered values (4).

The tab "Prepared SQL" remains opened and can be used repeatedly.

## 4. Running SQL commands via Database Studio (SQL Editor [5])



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If SQL commands are required to be saved for later reuse Database Studio provides the option to save it in files. Within the context menu (use right mouse button) "Save" or "Save as ..." has to be chosen (1).

Within the following input mask in field "File Name:" a meaningful name can be entered (2).

After choosing "Save" the file is listed within "Local User Folder" in view "My Repository" (3).

The physical location of the file within local file system is determined by the configured local folder ("Window – "Preferences").

To open such a file again item "Open" has to be chosen within context menu (opened via right mouse button when pointing to the file) (4). Opening is also possible by just double-clicking the file name (use left mouse button).

- contained documentation:
  - Menu bar in Database Studio:  
“Help“ – “Welcome“ – “Overview“
- SAP notes:
  - 1097311 (MaxDB Database Studio installation)
  - 1320057 (Missing or changed functions in the Database Studio)
  - 1315244 (Feature list for SAP MaxDB Database Studio)
- Link in SAP Community Network (SCN):
  - HowTo - Installation of a 32-bit Database Studio on a 64-bit server  
(obsolet as of Database Studio version 7.8)
  - <http://wiki.sdn.sap.com/wiki/x/cYDxB>

# Questions and Answers



**Thank You!**  
**Bye, Bye – And Remember Next Session**



November 24, 2009	Session 3: Basic Administration with CCMS Transactions



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