



Q-DAS Database Manual

Scripts for Microsoft SQL Server Maintenance Procedure

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Table of Contents

1	CREATING A NEW DATABASE2
2	CREATING A NEW DATABASE USER6
3	INSTALLING THE Q-DAS TABLES 10
3.1	Q-DAS Tables (all Me x versions)15
3.2	Support of additional fields on the values level in the database16
4	CONNECTING QS-STAT TO AN MS-SQL-DATABASE24
5	OPTIMIZING THE QUERY TIME ON QS-STAT CLIENTS25
6	DATABASE MAINTENANCE PROCEDURE26
6.1	Time Testing with Reference Data26
7	HISTORY OF CHANGES 27



1 Creating a New Database

qs-STAT needs a database to be created on the SQL Server. This database will finally contain all the database objects (e.g. tables) qs-STAT has to deal with.

The database is created using the SQL Server Enterprise Manager (SQL Server7 or 2000). If you have SQL Server 2005, you can use the "SQL Server Management Studio" instead, which offers similar functionality.

🚡 SQL Server Enterprise Manager	Accessories	Microsoft Access			_ B ×
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🔶 Favorites	Microsoft Works				
Documents	Microsoft Excel				
Settings	Microsoft Outlook				
Search	Microsoft PowerPoint				
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🛃 Start 🔄 for homepage_200306x	🔏 Windows Messenger		QL Server Enterprise M		« 🔳 🔂 11:59 AM



The tree on the left has to be expanded until the database branch is visible. A right mouse click on "Databases" offers the possibility to create a new database.



In this dialog the database name (e.g. QDAS) has to be defined.

The scripts for the database tables default to a database name "QDAS". The database can be given a different name, too. In this case, the script for the table needs to be changed to that name as well.



	Location	Initial size (MB)	Filegroup
QDASDB_Data	C:\Program	Files\Micros 100	PRIMARY
le properties			Delete
Automatically g	row file	- Maximum file size	
- File growth			
File growth C In megabytes:	1	Unrestricted file growth	

As "Location" a folder and file name can be defined; it may be sensible not to use the default entry. The file size of the data files should be adjusted to start with an appropriate size, as the automatic file growth takes performance.

Also for "Transaction Log", a file needs to be defined. It may be sensible to use a physically different drive.

DASDB_Log	C:\Pr	ogram Files\Microsoft S	10
e properties			Delete
Automatically grow f File growth C In megabytes:		Maximum file size Maximum file size Maximum file size	owth



After the database has been created, its properties can be edited (right mouse-click on the new database, "Properties"). It is very important to set the "ANSI NULL default" option. In addition, the database should be set to "Auto Shrink". Also, to prevent the transaction log file from growing beyond any limit, the Recovery model should be set to "Simple" for SQL Server 2000 and SQL Server 2005. If SQL Server 7.0 is used, the "Truncate log on checkpoint" option should be activated instead.



SQL Server 2000 / 2005



2 Creating a New Database User

Select "Security \rightarrow Logins" in the Enterprise Manager. With a right mouse-click, a new login user (e.g. "QDAS") can be created.

🌇 SQL Server Enterprise Manager		_ 8 ×
File Action View Tools Window Help		
← → 🗈 🖬 🕋 🔂 💀 🔮 🔆 🕼 🚺) 🗓 🗔	
Image: Sold Server Enterprise Manager File Action View Tools Window Help Image: Sold Server Sol	Coroup/(local) (Windows III)(Security/Lagins Logins 3 Items Isame / Type Server Access Default Database Sol. Server Roles Database Access Orneral Server Roles Database Server Roles Orneral Server Roles Database Access Orneral Server Roles Database Server Server Server Access Orneral Server Roles Database Server Server Server Access Orneral Server Roles Database Server Server Server Server Server Access Orneral Server Roles Database Server S	X

The new user should use SQL Server authentification and take the new database (e.g. "QDAS") as default database.

SQL Server Login Properties - New Login
General Server Roles Database Access
Mame: DDAS
Authentication
○ <u>W</u> indows NT authentication
Do <u>m</u> ain:
Security access:
Grant access
C Deny access
SQL Server authentication
Defaults
Specify the default language and database for this login.
Database: qdas 💌
Language: <pre></pre>
OK Abbrechen Hilfe



Remark: The "SQL Server authentification" can only be enabled, if SQL Server and Windows is enabled in the Security tab of the Database Server properties.





Set the Server Role to "System Administrator" in order to be able to use SQL Profiler.

General Server Roles Database Access Server Roles Server roles are used to grant server-wide security login. Server Role Server Role Server Administrators	
Server Roles Server roles are used to grant server-wide security login. Server Role Server Role Server Role Server Administrators Server Administrators Server Administrators Process Administrators	
Server roles are used to grant server-wide security login. Server Role Server Role System Administrators Server Administrators Server Administrators Server Administrators Server Administrators Server Administrators Server Administrators	
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Process Administrators	
Disk Administrators	
Database Creators	<u> </u>
_ <u>D</u> escription	
Can perform any activity in the SQL Server ins	tallation.
Properties	
	11

The user needs to have database permit for the new database and the "public" database role. The user should also be declared as "db_owner" of the new database.

SQL Server I	Login Pr	operties - N	ew Login		X
General S	ierver Rol	es Databas	e Access		
Database	access				
	Specify v	vhich databas	ses can be ac	cessed by this lo	ogin.
	Permit	Database	User		
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		master			
		model			
		msdb			
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		qdasdb	QDAS		
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	Database	e roles for 'qd	asdb':		
	Permit i	n database ro	le		
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The new Login should now appear as a user for the new database in "Enterprise Manager".





3 Installing the Q-DAS Tables

Q-DAS GmbH provides SQL Scripts which are recommended to create the tables and further database objects qs-STAT needs.

The first command in each script provided by Q-DAS GmbH is "USE QDAS". If a database name different from "QDAS" is used (See Chapter 1), this command needs to be modified to the desired name (use a simple ASCII editor like "Notepad").

In case of the necessity of using Unicode characters, e.g. with Asian languages, the scripts should be modified in the following manner: The "varchar" and "text" data types have to be replaced by "nvarchar" and "ntext" data types, which support Unicode. This can easily be achieved using Notepad's replace function. If SQL Server 2000 or 2005 is used, it is also strongly recommended to install SQL Server 2000 Service Pack 3a.

SQL scripts can be performed through the SQL Server Profiler. This program can be found in the Tools Menu in SQL Server Enterprise Manager.

🚡 SQL Server Enter	prise Manager				
File Action View	Tools Window Help				
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Konsolenstamm	Replication Euli-Text Indexing	► <mark>>\(loc</mark> Jsers	cal) (Windows NT)\Da 2 Items	tabases\QDASDB	\Users
🖻 🗐 Microsoft SQL :	SOL Ouery Analyzer	Name	A	Login Name	Database Access
E SQL Server	SQL Profiler	dbo	2		Permit
⊡∰ (local) ⊡ ⁽ ⊡ Da ⊡	<u>G</u> enerate SQL Script <u>W</u> izards	sbp	35	qdas	Permit
	Database Maintenance <u>P</u> lanner <u>B</u> ackup Database <u>R</u> estore Database				
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SQL Profiler	
File Edit View Replay	y Tools Window Help
New	
Open	Trace Template
Close Ctrl+F	F4 Trace File
Save	Trace Table
Save As	SQL Script
Properties	
Run Trace	
Pause Trace,	
Stop Trace	
Script Trace	•
Exit	

To load a SQL script, select "Open→SQL Script" in the File menu.

Open up the "Tables_ME_MSSQL.sql".

If the database name was created differently from "QDAS", the "use QDAS" command at the beginning of this script needs to be changed into "use <actual database name>" using Notepad before opening and running the script. Also, it is recommended that a Q-DAS employee individually adjusts this script so that the database provides the optimum performance and uses as little disk space as possible.

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File <u>n</u> ame:	Tables_ME_MSSQL.	sql		<u>O</u> pen	
F1 ()	SQL Script (*.sql)		•	Cancel	



Inside the Profiler window a new window appears which shows a part of the script.

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rentClass	TextData	^
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SQL:BatchStarting		
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SQL:BatchStarting	create table CHARGE (CHTEIL	
SQL:BatchStarting	create table CNF_PART (CNNO	
5QL:BatchStarting	create unique index CNF_PART on CNF	
SQL:BatchStarting	create table EG_AEND (EGTEIL	
SQL:BatchStarting	create unique index EG_AEND on EG_A	×

To start the script, click onto the yellow arrow button in this window.

antClass	TextData	
OL:BatchStarting		
QL:BatchStarting		
QL:BatchStarting	create table AUFTRGEB (AULFD	
QL:BatchStarting	create table AUSPRAEG (AUGRO	
QL:BatchStarting	create unique index AUSPRAEG on AUS	
QL:BatchStarting	create table AUSPRAEGGRP (AU	
QL:BatchStarting	create unique index AUSPRAEGGRP on	
QL:BatchStarting	create table BERART (BEBERAR	
QL:BatchStarting	create table CHARGE (CHTEIL	
QL:BatchStarting	create table CNF_PART (CNNO	
QL:BatchStarting	create unique index CNF_PART on CNF	
QL:BatchStarting	create table EG_AEND (EGTEIL	
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Log on with the new user using SQL Server authentication.

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Use-Anweisung wird für use QDAS	MS SQL Server 7.0 und	Windows authentication SQL Server authentication Login name: qdas Password:	-
Done		Jun I, Col 1	Rows: 234 //.

optional: turn the event log on

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SQL:BatchStarting	Insert INTO SIGNATUR_REASON VALUES(
SQL:BatchStarting	Insert INTO SIGNATUR_REASON VALUES(
SQL:BatchStarting	CREATE VIEW V_WERKZEUGNEST AS SELE					
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Prozedur WVINSERT zum Anl CREATE PROCEDURE WVINSERT	egen von Meßwerten @PARA1 int, @PARA2 smallint, @PARA3 smallint, @PARA5 FLOAT, @PARA6 smallint,			1- 224		×
Done				JLN 234, C	LOI I ROW	5: 234 //.

After the script is done, SQL profiler can be closed.

The Q-DAS Tables should now be visible in the SQL Server Enterprise Manager after a refresh.

🖌 Konsolenstamm\Microsoft SQL Servers\SQL S	erver Group\(local) (Windows NT)\	Databases\QDAS	DB\Tables		>
Konsolenstamm	Tables 133 Items				
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E D Deteland	AG	dbo	User	4/5/2004 6:12:11 PM	
Databases	ALARM_FILES	dbo	User	4/5/2004 6:12:11 PM	
H- master	ALARMS	dbo	User	4/5/2004 6:12:11 PM	
E medb	AUFTRGEB	dbo	User	4/5/2004 6:12:11 PM	
Northwind	AUSPRAEG	dbo	User	4/5/2004 6:12:11 PM	
	AUSPRAEGGRP	dbo	User	4/5/2004 6:12:11 PM	
	BERART	dbo	User	4/5/2004 6:12:11 PM	
DODAS	BEREICH	dbo	User	4/5/2004 6:12:11 PM	
- at Diagrams	BUILDPHASE	dbo	User	4/5/2004 6:12:11 PM	
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Stored Procedures	DB VERSION	dbo	User	4/5/2004 6:12:11 PM	
Users	TT EG AEND	dbo	Liser	4/5/2004 6:12:11 PM	
- Roles	EINHEIT	dbo	User	4/5/2004 6:12:11 PM	
Rules	EMPB 3000	dbo	Liser	4/5/2004 6:12:11 PM	
- Defaults	EPETC	dbo	User	4/5/2004 6:12:11 PM	
- 💁 User Defined Data Types	EREIGKAT	dbo	User	4/5/2004 6:12:11 PM	
- Signa User Defined Functions	EREIGRAT	dbo	User	4/5/2004 6:12:11 PM	
🗄 🚺 tempdb	EDEADT	dbo	User	4/5/2004 6:12:11 PM	
Data Transformation Services	ENFART	dbo	User	4/5/2004 6:12:11 PM	
🕀 🦲 Management	E CRIMASCH	dbo	User	4/5/2004 6:12:11 PM	
Replication	ERGEBINIS	dbo	User	4/5/2004 6:12:11 PM	
E Security	ERGEBZEITRAUM	dbo	User	4/5/2004 6:12:11 PM	
Logins	ERZEUGNIS	dbo	User	4/5/2004 6:12:11 PM	
Server Roles	FEHLKLAS	dbo	User	4/5/2004 6:12:11 PM	
E	FERTART	dbo	User	4/5/2004 6:12:11 PM	
Remote Servers	FSK	dbo	User	4/5/2004 6:12:11 PM	
E Support Services	HERSTELL	dbo	User	4/5/2004 6:12:11 PM	
H Meta Data Services	HIERARCHIE	dbo	User	4/5/2004 6:12:11 PM	
	HIERATEIL	dbo	User	4/5/2004 6:12:11 PM	
	KOSTST	dbo	User	4/5/2004 6:12:11 PM	
	E KUNDE	dbo	User	4/5/2004 6:12:11 PM	
	LAST_UPLOAD	dbo	User	4/5/2004 6:12:11 PM	
	LASTIDENT	dbo	User	4/5/2004 6:12:11 PM	
	LIEFERAN	dbo	User	4/5/2004 6:12:11 PM	



3.1 Q-DAS Tables (all Me x versions)

If you want to install the tables for **qs-stat millennium** on a fresh instance, run the script **Tables_ME_MSSQL.sql**.

It is possible to **customize** the script by deleting unused columns in the CREATE statements of the parts table (TEIL) and characteristics table (MERKMAL)

In table TEIL the following columns must not be deleted: TETEIL and the columns used in the upload program as key fields.

In table MERKMAL the following columns must not be deleted: METEIL MEMERKMAL MEZYKLUS MEGLEITSTUMF MEPRUEFZST MEAUGROUP MEUPPERMERKMAL MEPRUEFORT MEUNTERSART MEPMGRUPPE and the columns used in the upload program as key fields.

This script creates the new tables TEIL (parts table) and MERKMAL (characteristics table) and copies the contents of the old tables TEIL1, TEIL2, MERKMAL1, MERKMAL2, MERKMAL3 and MERKMAL_AD to the new tables. Further new tables are created and new columns added.

If you want to **update from an older version of qs-stat millennium**, run the scripts **Tables_Update_ME_MSSQL.sql and PARTCHARACTERISTIC_NEWFIELDS_MSSQL.SQL.** If you use customized parts and characteristics tables (see above), you do not need the second script.

Through Enterprise Manager, start SQL Server Line Profiler. Load the script file(s) you need and start it/them with the yellow arrow.

Note: Using the script "Droptables_2000.sql" allows deletion of the created tables.



3.2 Support of additional fields on the values level in the database

It is possible to add additional fields on the values level to the database that are not supported by qs-STAT itself but by the qs-STAT query tool. This means, these additional fields can be used for specific database queries and filters. This is only possible, if the "COPY" option in the Upload is turned on that allows copying data from a specific K-field on the characteristics or the parts level to the values level. If this is required, please contact Q-DAS for more information.

The Q-DAS ASCII Data Transfer Format specifies two K-fields that will not be created by the default database scripts. These two fields are typically not used, but if in the database, would allow so save a very long text with each value. This would reduce the database performance in general.

These two K-fields are K-fields K0009 (text) and K0011 (process parameter). If required these fields can be added to the database later on using Enterprise Manager.

Adding K0009 and K0011 to the Database:

The columns for K0009 and K0011 need to be created in both database tables WERTEVAR and MEASVALUES with the column names "WV0009" and "WV0011" in both tables. Both fields need to be defined as a text data type and have a length 255 characters. After adding any fields to the values level table, the "wvinsert.sql" script needs to be run.



Find the WERTEVAR table, then do a right mouse click on it and select "Design table"





🐮 Start 🗍 🎑 My Documents SQL Server Enterprise... 🦉 21 sql repl. JPG - Paint

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dbo

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« 🔏 🛃 🛃 🔂 6:17 PM

4/5/2004 6:12:11 PM

After adding any new fields on the values level to the database (tables WERTEVAR and MESVALUES), it is very important to run the "wvinsert.sql" script.

🔯 SQL Profiler		
File Edit View Replay Tools Window	v Help	
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C:\Documents and Settings	eplay (F5) \My Documents \wvinsert.sql	
EventClass	TextData	
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SQL:BatchStarting	CREATE PROCEDURE WVINSERT @P	
USE QDASDB		<u> </u>
		•
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EventClass	TextData	
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USE QDASDB	C Windows authentication SQL Server authentication Login name: [qdas Password: [****]	*
▲ Done	OK Cancel Help	ol 1 Rows: 2

The database connections of the Upload and of qs-STAT Clients need to be re-established after adding the fields to the database in order to be able to use the new fields. This can be done by simply stopping, closing and re-opening the Upload and/or qs-STAT applications.

4 Connecting qs-STAT to an MS-SQL-Database

To establish a database connection to a MS-SQL database with qs-STAT, please open up qs-STAT ME on the "Client" computer.

Open the "Databases"-window with the menu-function "Options/System settings/Databases". With the "Choose connection"-icon, you can open the "Select Data Link File"-dialog. If there is no connection file available in this window yet, please enter your desired description as the "File name" and click on the "Open"-button.

Databases 🗵	Select Data Link File	? ×
Q-DAS Database	Look in: Patabases	
Choose connection		
- central DB configuration		
Choose connection		
- Pack database		
Pack database		
	File name: Connectio to Access DB	
- local DB configuration		_
Choose connection	Files of type: Microsoft Data Link Files (*.udl)	
	Calent the Misses of Data Liels file that describes the data second up with	
OK Help	to connect to.	

The "Data Link Properties" window opens up and the "Provider" tab is selected.

After a Data Link – file has been created, the "Data Link Properties" window opens up, which allows you to define the database-specific adjustments.

🗒 Data Link Properties	×
Provider Connection Advanced All	
Select the data you want to connect to:	
OLE DB Provider(s)	
MediaCatalogDB OLE DB Provider MediaCatalogWergedDB OLE DB Provider MediaCatalogWerbB OLE DB Provider Microsoft ISAM 1.1 OLE DB Provider Microsoft OLE DB Provider For Data Mining Services Microsoft OLE DB Provider for Indexing Service Microsoft OLE DB Provider for Intemet Publishing Microsoft OLE DB Provider for OLAP Services 8.0 Microsoft OLE DB Provider for Outook Search Microsoft OLE DB Provider for Outook Search Microsoft OLE DB Provider for SQL Server Microsoft OLE DB Simple Provider	
OLE DB Provider for Microsoft Directory Services Oracle Provider for OLE DB	
<u>N</u> ext >>	
OK Cancel Help	

The "Microsoft OLE DB Provider for SQL Server" has to be selected for the connection to a MS-SQL-Database. Then, please click on the "Next"-button to get to the "Connection" tab.

B Data Link Properties	Name of the DB-Servers
Specify the following to connect to SQL Server data:	
Select or enter a server name: Eefresh Eefresh C Use <u>Windows</u> NT Integrated security Use a specific user name and password:	Both settings are possible here!
User name: Password: Blank password Allow saving password 3. Select the glatabase on the server:	User name and password of the MS-SQL DB-User
C Attach a database file as a database name:	Select the Q-DAS-DB
Using the tilename:	

Test Connection button.

You can now automatically check your settings using the After the "Test Connection" has been performed successfully, you can close both the "Data Link Properties" and the "Database" windows with the "OK"-buttons.

For more information about the Database Upload application, please see our "Database" Manual.

Optimizing the query time on qs-STAT clients 5

The time that is needed to load data in gs-STAT can be optimized for either reading from the database or for reading in files. The default is set for working file-based. This optimization is an "either / or" setting.

To optimize for reading from the database: Find the "QSSTAT2000.INI" file in the qs-STAT installation directory (default: C:\Q-DAS\ME 20\BIN) on the CLIENT computer.

Open the file with Notepad and find the command: "swap_breite_urwerte=16" change the number into "swap_breite_urwerte=512" (or to a higher value, it should be the estimated average number of values per characteristic to be loaded)

NOTE: This speeds up the query time, but slows down the file loading time. This should only be used for a client PC, NOT an upload PC.

6 Database Maintenance Procedure

6.1 Time Testing with Reference Data

Time tests must be performed on each database instance. Over the life of the database, the documented time tests will help with grading the database.

Test Part

Predefined test parts will be used for half of the time tests. These test parts will include a part containing few characteristics with many values per characteristic, and a part containing many characteristics with a single value per characteristic.

Procedure:

- 1. **Upload each part separately**. Record the time it takes for each upload. Also record the Upload PC specifications. (CPU, memory, etc.)
- 2. Query each part separately, from the same client machine. Record the time it takes for each query. Also record the client PC specifications. (CPU, memory, etc.)
- 3. **Record these times in a text file**. Name the text file "xx-xx-xx-test-part.txt", including the date in which the tests were taken.
- 4. Place this file in the time-test folder, located in the maintenance directory.

Actual Data

Actual data will be used for the other half of the time tests. Two existing parts from the database will be used, each representing the type of parts used for in the previous time test (a part containing few characteristics with many values per characteristic, and a part containing many characteristics with a single value per characteristic).

Note: To collect this data, stop the upload process and collect some relevant files waiting to be uploaded. This will assure that the data does not get duplicated in the database.

Procedure:

- 1. **Upload each part separately**. Record the time it takes for each upload. Also record the Upload PC specifications. (CPU, memory, etc.)
- 2. **Query each part separately**, from the same client machine. Record the time it takes for each query. Also record the client PC specifications. (CPU, memory, etc.)
- 3. **Record these times in a text file**. Name the text file "xx-xx-real-part.txt", including the date in which the tests were taken.
- 4. Place this file in the time-test folder, located in the maintenance directory.

7 History of Changes

The history of changes is customer specific. This chapter should include every change to the database configuration, hardware configuration or software configuration.

It is **highly recommended** to document the changes for querying and saving specific parts in the database before and after the changes.