SCALABILITY EXPERTS

SQL Server Upgrade Assistant 2008

User Guide

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User Guide

This user guide is a basic and complete set of instructions for using SQL Server Upgrade Assistant 2008. Scalability Experts also provides online help and release notes to support your success in learning and using SQL Server Upgrade Assistant 2008. There is a table of contents on the next page and an index at the end of this guide to help you locate information easily. The release notes are included with the online help.

IMPORTANT BETA NOTICE:

The SQL Server 2008 Upgrade Assistant is currently in beta release. As with all beta software, please be aware that there may be deficiencies in the product that may or may not be known to the development team. This includes the accompanying documentation. As such, we do not recommend installing this tool on a production server.

We welcome feedback on bugs, feature behavior and enhancement requests. Please contact us via connect.microsoft.com/sqlserver/feedback and prefix your subject with Upgrade Assistant.

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1.0 Introduction to the SQL Server Upgrade Assistant

SQL Server Upgrade Assistant 2008 (Upgrade Assistant) allows you to verify how an application designed for SQL Server 2000 or SQL Server 2005 will run on SQL Server 2008. Upgrade Assistant guides you through the steps to setup and obtain baseline data on an instance of SQL Server 2000/2005, upgrade the database to SQL Server 2008 and obtain the same data to identify differences, if any. In this process, Upgrade Assistant provides automation for backing up and restoring necessary databases, capturing and replaying workload traces and recoding relevant playback data. Finally, Upgrade Assistant compares the trace results and identifies areas where the workload replayed different on SQL Server 2008 from SQL Server 2000/2005.

1.1 Upgrade Assistant process

Application compatibility testing using the Upgrade Assistant is a fairly simple process. The following summarizes the key steps involved:

1. Prepare test infrastructure – setup test computers with necessary software and appropriate configuration.
2. Capture playback – backup relevant databases and capture a trace of your application's workload that will be used in testing
3. Setup baseline– transfer the relevant files and database to your baseline test computer
4. Run Upgrade Advisor – analyze database schema, trace files and script files for potential compatibility issues using Upgrade Advisor
5. Replay baseline trace workload – replay the captured trace workload on your test computers and capture relevant execution data
6. Setup test – transfer the relevant files and database to your baseline test computer and upgrade to SQL Server 2008
7. Replay test trace workload – replay the captured trace workload on your test computers and capture relevant execution data
8. Compare results – compare and review data from the workload trace replays to identify potential compatibility issues

Upgrade Assistant automates most of the tasks in each step of your testing. If you follow the instructions provided, your testing should be smooth and productive.

1.2 Upgrade Assistant Results

Upgrade Assistant compares how an application's queries run on SQL Server 2000 or SQL Server 2005 with how they run in SQL Server 2008. When you complete all of the tasks associated with Upgrade Assistant you will:

- Identify any compatibility issues with an application that need to be corrected before you upgrade to SQL Server 2008.
- Have experience upgrading from SQL Server 2000/2005 to SQL Server 2008.

1.3 Required Knowledge and Skills

To use Upgrade Assistant, you should be familiar with the following tasks and concepts:

- Installing and configuring SQL Server 2000, SQL Server 2005 and SQL Server 2008.
- Installing and operating any client applications that you support with SQL Server 2000 or SQL Server 2005.
- Backing up and restoring databases. See Backing Up and Restoring Databases in Microsoft SQL Server 2005 Books Online.
- Collecting and replaying a trace. See Using SQL Server Profiler in Microsoft SQL Server 2005 Books Online.

Table 1. Required Knowledge and Skills

	Task	Description
	Create a Test Environment	Create a test environment. In a test environment the functionality in an application can be tested without affecting production databases. Create the test environment before launching Upgrade Assistant. This step is not associated with the screen in the Upgrade Assistant interface.
	Capture a Playback	Capture a playback. A play back consists of a backup of all system and user databases, and a trace that can be replayed. During the trace the client application will be used to connect to the database and make changes to the data. Use as many features of the client application as possible to create a comprehensive trace.
	Setup a Playback Baseline System	Restore the databases from the backups created in Step 2.
	Run Upgrade Advisor	Run Upgrade Advisor and correct any issues that Upgrade Advisor encounters. Upgrade advisor is a free tool provided by Microsoft to prepare Administrators to upgrade from SWL Server 2000. Download a copy of Upgrade Advisor from the Microsoft Download Center.
	Replay Trace on SQL Server 2000	Replay the trace created in Step 2. The replayed trace becomes the baseline from SQL Server 2000. This baseline is compared with the same trace, replayed on SQL Server 2005, to help the Administrator understand any changes to expect after upgrading production servers.
	Setup Playback Test System	Restore Databases from backups created in Step 2.
	Upgrade to SQL Server 2005	Upgrade Databases to the latest version of SQL Server.
	Replay Trace on SQL Server 2005	In order to evaluate how your application will perform on SQL Server 2005, replay the trace from the playback. The results from this playback are compared to the baseline to help the Administrator understand any differences to expect after upgrading to SQL 2005.
	Compare Trace Files	At this point there are results from a single trace file, replayed twice—once against SQL Server 2000 and once against SQL Server 2005. Upgrade Assistant now evaluates both trace results and creates a report comparing the two.
	View Replay Differences	The playback results analyzer (PRA) viewer is the final step in Upgrade Assistant. Perform this step to view the trace results from SQL Server 2000 and SQL Server 2005 side by side.

2.0 Getting Started

In This Section:

- Documentation Conventions
- Release Notes
- System Requirements

2.1 Documentation Conventions

Throughout this guide, there are a number of documentation conventions used to distinguish between different elements.

Table 2. Conventions

Convention	Use
UPPERCASE	T-SQL keywords
`Fixed space font`	Code Samples
Bold text notes	Command prompts, utilities, menus, commands, dialog box options, programming elements and text that must be typed exactly as shown. Helpful notes or useful tips.

2.2 Release Notes

(March 20, 2008)
This document provides additional details on new features and known issues with SQL Server Upgrade Assistant 2008.

Note: Before running Upgrade Assistant, ensure that your computer meets the System Requirements. If you do not have the appropriate software installed Upgrade Assistant may not function properly.

Features

This is the beta release of SQL Server 2008 Upgrade Assistant, which is a utility used to assist in the upgrade path from SQL Server 2000 to SQL Server 2005. This tool provides a method to capture playback from existing servers, then replay the trace files to gain valuable baseline information.

In addition, there is a built-in report viewer that allows you to compare test data.

Known Issues

Due to the difference in the Profiler T-SQL Replay trace template between SQL Server 2000 and SQL Server 2005, there are minor variations in the files required for a replay. However, if you use Upgrade Assistant to perform the capture, this will not impact you in any way. If you capture your trace workload manually, please pay attention to the instruction to ensure you have all required files for a successful capture.

2.3 System Requirements

The table below outlines the system requirements for Upgrade Assistant:

Table 3. System Requirements

Component	Details
Operating System:	• Microsoft Windows Server 2003 R2 or later • Windows XP SP2 or later • Windows Vista * Both 32-bit (x86) and 64-bit (x64 & IA64) operating system versions are supported
SQL Server:	• SQL Server 2000 SP4 or later • SQL Server 2005 SP2 or later. **The test computer must have the same service pack level, hotfixes, critical updates, and security updates as the production computer. SQL Server collation ** The test computer must have the same SQL Server collation setting as the computer where you captured the workload trace.
Other software:	• .NET Framework version 2.0. • SQL Server 2008 Client tools • SQL Server Upgrade Assistant 2008
Databases:	• System databases Copies restored from the production server. • User databases Copies restored from the production server, including all user databases required by client application. **Note:** The user running Upgrade Assistant must have administrator privileges on the computer on the instance of SQL Server. Make sure that BUILTIN\Administrators Windows login exists and is part of the System Administrators role. If this account does not exist, create it, and then delete it after you have completed the test. Client application (or business program or Web application that connects to your instance of SQL Server) Run the client application locally or connect to the test server over the network. Internet access May be required. For example, to download SQL Server 2005 Upgrade Advisor requires Internet access.
Local Area Network	The test computer requires access to a local network if there are plans to do any of the following: • Connect to the server remotely • Save backups to (or restore from) a network share. Ensure that the SQL Server account has read/write access to the share. • Save trace results to (or restore from) a network share. Ensure that the SQL Server account has read/write access to the share. • Save analysis results to (or review results from) a network share. Ensure that the SQL Server service account and the Windows account for the user running Upgrade Assistant have read/write access to the share. • Install SQL Server 2005 from a Network Share. • Run different steps of Upgrade Assistant on different computers.

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Version 2.1.0.0 March 2006

3.0 Create a Test Environment

Upgrade Assistant is designed to run in a test environment. Although Upgrade Assistant has been tested to ensure consistent and accurate results, it has not been optimized. Scalability Experts therefore does not recommend installing or running Upgrade Assistant on production servers or servers running databases required for business operations. Instead, run Upgrade Assistant on a test server that is identical, to the extent feasible, to your production system.

You can create a test environment to conduct the entire test on a single computer or on separate computers. For information on configuring a lab to conduct the test on a single computer, see Create a Single-Computer Test Environment.

If you have multiple computers, you can perform various steps on different computers. For example, you can create the playback and replay the trace on one computer with SQL Server 2000/2005 and run the trace simultaneously on a separate computer with SQL Server 2008. To configure a lab for various computers, see Create a Multiple-Computer Test Environment.

3.1 Create a Single-Computer Test Environment

You can configure a single computer to run SQL Server Upgrade Assistant (Upgrade Assistant). Choose this configuration when resources are not available to use a second computer to replay the trace. You may also choose this configuration to simplify the test process; however the process will take longer. Scalability Experts does not recommend running Upgrade Assistant on a single computer if the computer is a production computer supporting business operations. We also do not recommend running the Upgrade Assistant on the same network segment as your production network. This is to avoid any potential naming conflicts when you replay your trace workload.

Requirements

Install Upgrade Assistant on a computer reserved for testing applications and databases. The computer must meet the minimum hardware and software requirements for SQL Server 2008. For information on hardware requirements, please visit the SQL Server page on the Microsoft Web site.

The table below lists additional specific requirements for each component:

Table 4. Component Requirements

Component	Details
Operating System	• Microsoft Windows Server 2003 R2 or later • Windows XP SP2 or later • Windows Vista * Both 32-bit (x86) and 64-bit (x64 & IA64) operating system versions are supported
SQL Server 2000	Service Pack 4 or later
SQL Server 2005	Service Pack 2 or later Backwards compatibility comp
SQL Server Collation	Same as the computer where the trace workload was captured
.NET Framework	.NET Framework 2.0 Service Pack 1 or later
SQL Server 2008	Database, Client Tools
System Databases	Backed up from the computer where the trace workload was captured.
User Databases	Backed up from the computer where the trace workload was captured
Upgrade Assistant	Run this program on the computer that is used for testing.

	Note: The User running Upgrade Assistant must have Administrator privileges on the computer on the instance of SQL Server. Make sure that BUILTIN\Administrators Windows login exists and is part of the System Administrator role. If this account does not exist, create it, and delete it after the test has been run.
Client Application (or business program or web application that connects to SQL Server)	Run the client application locally or connect to the test server on the network.
Internet Access	Highly recommended but not mandatory. For example, you may need to download an updated version of SQL Server 2005 Upgrade Advisor or a service pack/hot-fix.
Local area network	The test computer requires access to a local area network if you plan to do any of the following: • Connect to the server remotely • Save backups to (or restore from) a network share. Ensure that the SQL Server account has read/write access to the share. • Save trace results to (or restore from) a network share. Ensure that the SQL Server account has read/write access to the share. • Save analysis results to (or review results from) a network share. Ensure that the SQL Server service account and the Windows account for the user running Upgrade Assistant have read/write access to the share. • Install SQL Server 2005 from a Network Share. • Run different steps of Upgrade Assistant on different computers.

Testing on a Single Computer

After you have configured the test computer to meet the above requirements, run Upgrade Assistant. Follow the steps listed in the pane on the left side of Upgrade Assistant. For more information, see Introducing SQL Server Upgrade Assistant. The following summarizes the steps for "single-computer testing":

Step	Task	Computer	SQL Server Version	Notes
1	Create a Test Environment	Baseline	2000 / 2005	
2	Capture a Playback	Baseline	2000 /2005	
3	Set Up Playback Baseline System	Baseline	2000 /2005	Restore your source database(s) to a SQL Server 2000/2005 instance including system databases (optional)
4	Run Upgrade Advisor	Baseline	2000 /2005	Identify issues that may prevent a successful upgrade
5	Replay Trace on SQL Server 2000	Baseline	2000 /2005	Replay the trace workload you captured on your original SQL Server version (either 2000 or 2005)
6	Set Up Playback Test System	Baseline becomes Test	2000 /2005	This is done on the same SQL Server 2000/2005 database engine where your source database(s) are restored. **The replay trace in step 6 must be completed before you can proceed with this step.**
7	Upgrade to SQL Server 2005	Test	2000 /2005 becomes 2008	This is via in-place upgrade where you will run setup.exe from your SQL Server 2008 media and complete the in-place upgrade workflow
8	Run TEST trace playback	Test	2008	Replay your trace workload on SQL Server 2008
9	Compare and analyze	Test	2008	Compare output from both replay tests and

				analyze the results using the report viewer

3.2 Create a Multiple-Computer Test Environment

You can configure multiple computers to run SQL Server Upgrade Assistant (Upgrade Assistant). Choose this configuration to see trace files replayed simultaneously. Also, follow the instructions in this topic if you chose to collect the trace from a production server. Scalability Experts does not recommend running Upgrade Assistant on a production computer supporting business operations. We also do not recommend running the Upgrade Assistant on the same network segment as your production network. This is to avoid any potential naming conflicts when you replay your trace workload.

Multiple Computer Test Scenarios

To run the test on multiple computers, designate one computer for a baseline and another server for the test. Configure both computers identically but give them different names. For example, name one computer BASELINE and the other computer TEST.

Requirements

Install Upgrade Assistant on each computer that you will use for testing applications and databases. Each computer must meet the minimum hardware and software requirements for SQL Server 2008. For information on hardware requirements, please visit the SQL Server page on the Microsoft Web site.

The table below lists specific requirements for each component.

Table 5. Component Requirements for each computer

Component	Details
Operating System	• **Microsoft Windows Server 2003 R2 or later** • **Windows XP SP2 or later** • **Windows Vista** *** Both 32-bit (x86) and 64-bit (x64 & IA64) operating system versions are supported**
SQL Server 2000	**Service Pack 4 or later**
SQL Server 2005	**Service Pack 2 or later** **Backwards compatibility comp**
SQL Server Collation	**Same as the computer where the trace workload was captured**
.NET Framework	**.NET Framework 2.0 Service Pack 1 or later**
SQL Server 2008	**Database, Client Tools**
System Databases	**Backed up from the computer where the trace workload was captured.**
User Databases	**Backed up from the computer where the trace workload was captured**
Upgrade Assistant	**Run this program on the computer that is used for testing.** **Note: The User running Upgrade Assistant must have Administrator privileges on the computer on the instance of SQL Server. Make sure that BUILTIN\Administrators Windows login exists and is part of the System Administrator role. If this account does not exist, create it, and delete it after the test has been run.**
Client Application (or business program or web application that connects to SQL Server)	**Run the client application locally or connect to the test server on the network.**
Internet Access	**Highly recommended but not mandatory. For example, you may need to download an updated version of SQL Server 2005 Upgrade Advisor or a service pack/hot-fix.**
Local area network	**The test computer requires access to a local area network if you plan to do any of the following:** • **Connect to the server remotely** • **Save backups to (or restore from) a network share. Ensure that the SQL Server account has read/write access to the share.** • **Save trace results to (or restore from) a network share. Ensure that the SQL Server account has read/write access to the share.** • **Save analysis results to (or review results from) a network share. Ensure that the**

	SQL Server service account and the Windows account for the user running Upgrade Assistant have read/write access to the share. • **Install SQL Server 2005 from a Network Share.** • **Run different steps of Upgrade Assistant on different computers.**

Testing on Multiple Computers

After you have configured the test computers to meet the above requirements, run Upgrade Assistant on the baseline computer. Follow the steps listed in the pane on the left side of Upgrade Assistant. The following table shows what steps to perform on each computer.

Table 6. Steps for using Upgrade Assistant

Step	Task	Computer	SQL Server Version	Notes
1	Create a Test Environment	Baseline	2000 / 2005	
2	Capture a Playback	Baseline	2000 /2005	
3	Set Up Playback Baseline System	Baseline	2000 /2005	Restore your source database(s) to a SQL Server 2000/2005 instance including system databases (optional)
4	Run Upgrade Advisor	Baseline	2000 /2005	Identify issues that may prevent a successful upgrade
5	Replay Trace on SQL Server 2000	Baseline	2000 /2005	Replay the trace workload you captured on your original SQL Server version (either 2000 or 2005)
6	Set Up Playback Test System	Test	2008	This is done on the TEST machine and can be started independent from the previous steps. You will install a SQL Server 2008 instance on the test computer.
7	Upgrade to SQL Server 2005	Test	2008	You will restore a SQL Server 2008 instance on the TEST machine and **restore** the databases from your playback capture manually. This is a side-by-side upgrade workflow.
8	Run TEST trace playback	Test	2008	Replay your trace workload on SQL Server 2008
9	Compare and analyze	Test	2008	Compare output from both replay tests and analyze the results using the report viewer

3.3 Installing SQL Server Upgrade Assistant

Use the procedure below to install SQL Server Upgrade Assistant:

1. Ensure that your computer meets the system requirements.
2. Double-click the `SSUASetup.exe` to launch the installation wizard.
3. Review the License Agreement and click to select **I accept the terms in the license agreement, and t**hen click **Next**.
4. **On t**he **Destination Folder** page of the installation wizard, you can click **Change** to specify the folder to install the Upgrade Assistant. If you wish to install in the default folder, simply click **Next** to continue.
5. Click **Install** to begin the installation process.
6. Click **Finish** to close the wizard. You can launch Upgrade Assistant from the Scalability Experts programs group in the Start-Programs menu.

4.0 Capturing a Workload Playback

The Capture Playback workflow in Upgrade Assistant automates the workload trace capture process to be used for playback later. A playback consists of a backup of all system and user databases and a trace file. SQL Server Upgrade Assistant (Upgrade Assistant) will restore the databases and replay the trace file in later pages.

This process is intended to be conducted on a non-production server due to several potential concerns as documented in section 4.1 below. Please read the following section on how to capture a high quality playback before starting with the capture process. However, if you do not have a test or development system that you can use to accurately re-create a good workload for capture, you may capture the workload from a production server. Just make sure you are aware of the potential issues as described in section 4.1..

4.1 Important information on capturing a playback

If you must capture the playback from a production server, please ensure you understand the potential impact documented below. Some users will experience little to no impact while others may encounter significant issues.

The capture playback process utilizes SQL Server's Profiler tool to record the workload for replay later. Depending on the system's capacity, workload characteristics, storage sub-system performance and current activity level, the server where you are running the capture may experience mild to moderate performance impact. In some very rare cases the performance impact may be significant.

Part of the playback capturing process includes backing up all system and user databases on the SQL Server instances you run the playback capture on. This is a full database backup. As such, if run on a production system, this process has effectively altered regular database backup sequence. This may have significant impact on your system's high availability and disaster recovery strategy. Please make sure you understand the impact of an unscheduled full database backup may have in your environment.

4.2 Guidelines for capturing a high quality playback

Playback testing is most valuable when the playback captures a wide diversity of application behavior. For this reason we recommend capturing your playback against a test system by executing automated and/or manual test procedures that exercise most of the functionality of your application. This type of playback is known as a "code coverage" playback because it contains a wide diversity of Transact-SQL interaction that occurs between your application and databases. A high quality code coverage playback should contain 90% or more of the different types of Transact-SQL commands generated by your application. 100% is ideal.

While production playbacks are interesting, they usually do not provide good code coverage since all of the features of your application may not be in use during playback capture period. If you run the playback capture process for extended periods to obtain good code coverage, the size of the playback capture may become unmanageable. Finally, as indicated earlier, the playback capture process may interfere with your production server operations.

If you do not have a test environment and decide to create your playback using a production system, capturing your playback overnight or on weekends may result in the least impact on performance of your production system, but may not provide good code coverage.

Use the following guidelines to judge the quality of your playback:

- The playback provides good code coverage and was created against a test system using automated and/or manual testing procedures that exercise most of the features of your application.
- Database objects should be unencrypted, if possible.

- The majority of the commands captured do not depend on external resources such as other SQL Server instances, extended stored procedures, distributed partitioned views, linked servers, distributed transactions or replication.
- The majority of the commands captured do not depend upon bulk copy operations performed during trace capture. Bulk copy operations cannot be replayed in the test environment.
- The trace capture began as soon as database backups were complete ensuring that there are no gaps in activity missed during playback capture that may cause failures during replay.

4.3 Capture playback process

This tool will capture a Playback by performing the following steps:

- Query information about the specified server's configuration
- Backup all databases in the specified instance
- Begin a trace capture of your server's workload
- Await user intervention to manually stop trace capture
- Report on the capture process

4.4 Before starting the capture playback process

Please review the following before starting the capture playback process:

- **Important:** The Upgrade Assistant capture function will backup all databases on the specified instance that you run the capture task on. If you are trying to capture the workload of a database that resides in an instance that has many other databases, consider taking the unrelated databases offline or detaching them temporarily during the capture process. If this is not possible/practical, please ensure your target location has sufficient disk space to store the backup files for all the databases in that instance and the trace file.
- The default maximum size for the trace file is 1 gigabyte (GB). Large workload captures can take a significant amount of time to replay and are generally not required for good code coverage testing.
- If you are capturing multiple playbacks, the folder must be empty before the capture can begin.
- If possible, run the Upgrade Assistant Playback Capture on the same physical computer where your SQL Server 2000/2005 instance is located.
- When specifying a path in Upgrade Assistant Playback Capture, local paths will be mapped to the machine on which the tool is being run. For example, specifying a path of C:\Playback while running the capture Playback tool on a machine named “Client” would map to: \\Client\c$\Playback. If your path is on another machine, ensure that you give the full network path.
- Please ensure that your SQL Server service account has write access to the directory specified. This may require running your server as a domain user, or running the capture tool on the same machine as your server instance.
- All database backups, as well as the trace file, will be stored in a single location. Ensure that the path you specify has enough disk space for full database backups and the Profiler trace file.
- Stop SQL Agent, replication and other services that generate connections if possible. Stop all management tools and applications that have active connections to your SQL Server instance and restart SQL Server before running Upgrade Assistant Playback Capture. Then, start your application. If you are capturing against a production instance you can skip this step.
- If you accidentally clicked the “Stop” button and are not done with the capture process, just click on “No” in the confirmation dialog.
- The login ID used for the Playback Capture Wizard tool must be a member of the Sysadmin role in order to capture a Playback.
- Make sure that BUILTIN\Administrators windows login exists and is part of the System Administrators role. If this account does not exist, create it temporarily for the purpose of capturing your playback. You may delete it after you have created your playback.

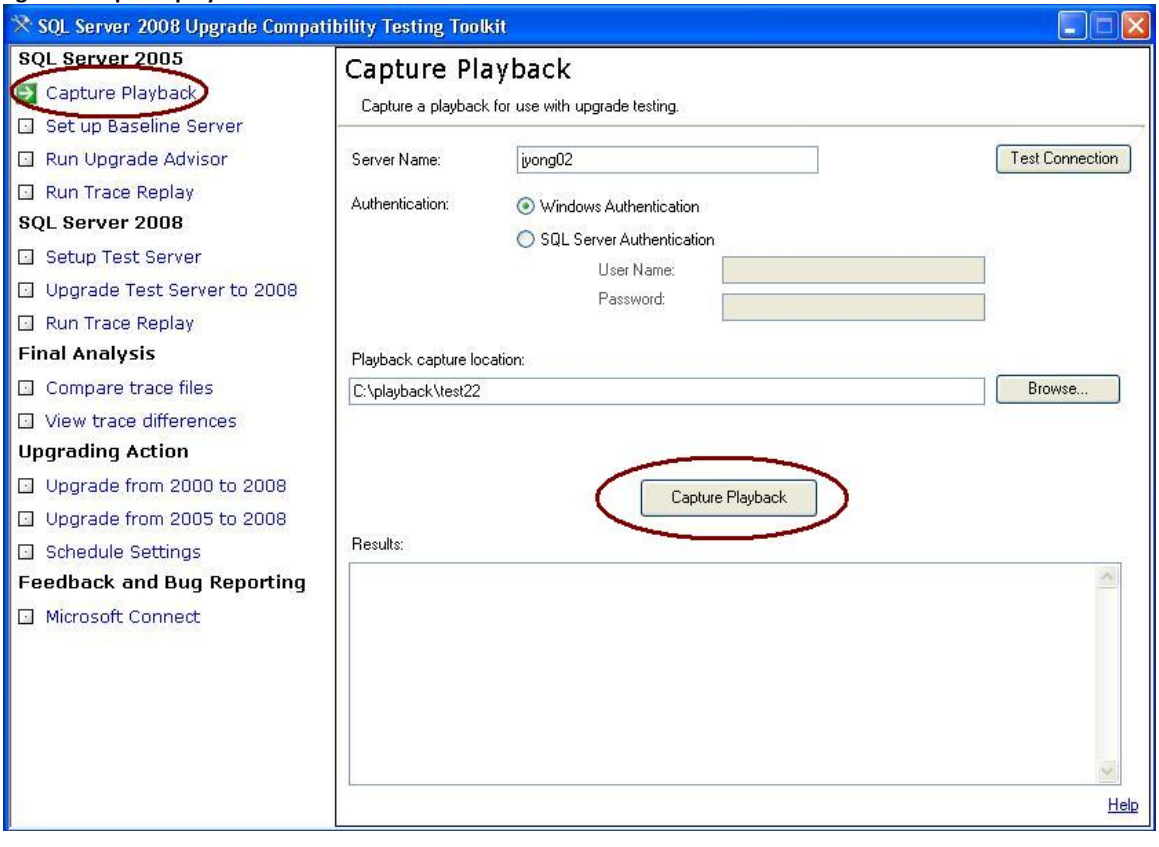
- Use a SQL Server Login or Built-in Administrator if possible, to reduce the occurrence of a non-critical error (when attempting to set the user name) during replay.

4.5 Capturing a playback

There are 3-steps to complete the playback capture process. The SSUA Playback Capture provides detailed information about each step and the specific parameters and/or options for each step. Please refer to the help documentation if you are uncertain about the data to provide at each step.

4.5.1: Launch Upgrade Assistant AppCompatLabWizard (appcompatlabwizard.exe)

Figure 1. Capture playback



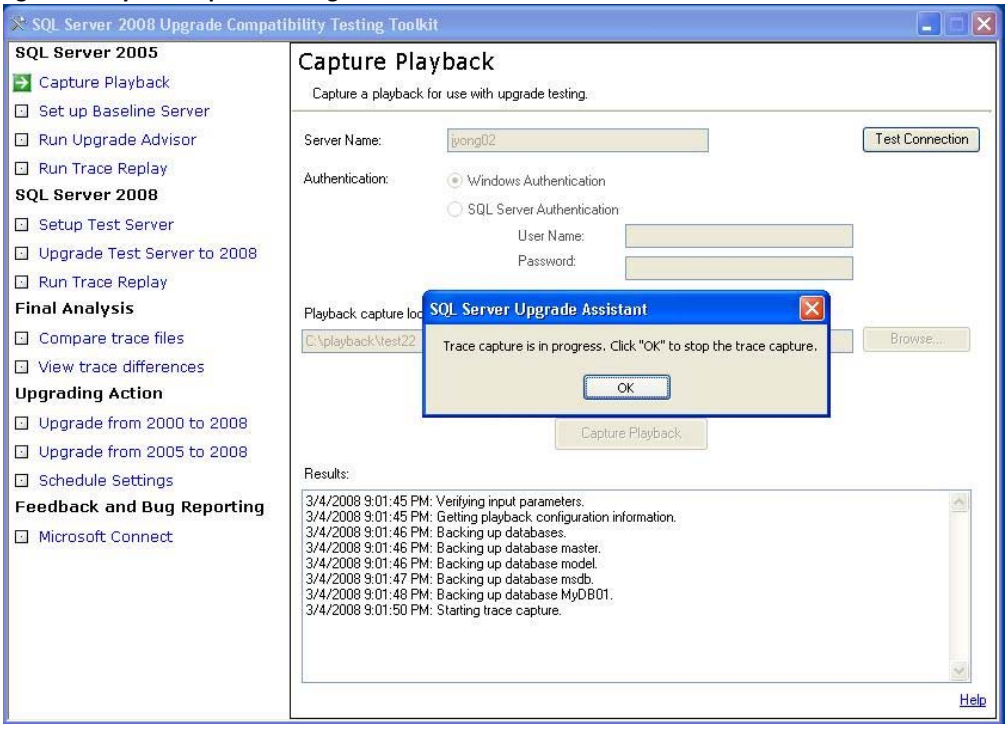
Enter the name of your server (and instance if applicable using the server\instance fomat) and login information here. Both Windows and SQL Server logins are supported but using a SQL Server login will avoid some non-critical error messages during playback. Click on the “Test Connection” button to verify that you can connect to the server/instance you just specified.

Enter the location where your playback files (database backups, environment configuration and trace files) will be stored. Make sure you have enough disk space to store all the files that will be placed there. Use local or SAN storage instead of a network share to avoid potential performance problems and/or trace capture corruption due to network errors.

Click on the “Capture Playback” button when you have entered all the correct values and are ready to begin the playback capture process.

4.5.2 Capture Playback

Figure 2. Playback Capture In Progress



After you click on the “Capture Playback” button in Step 1 above, the tool will proceed with some basic checks and obtaining system configuration information. It will then backup all databases in the instance. This may take several minutes to hours depending on the size of the databases, number of databases and hardware performance.

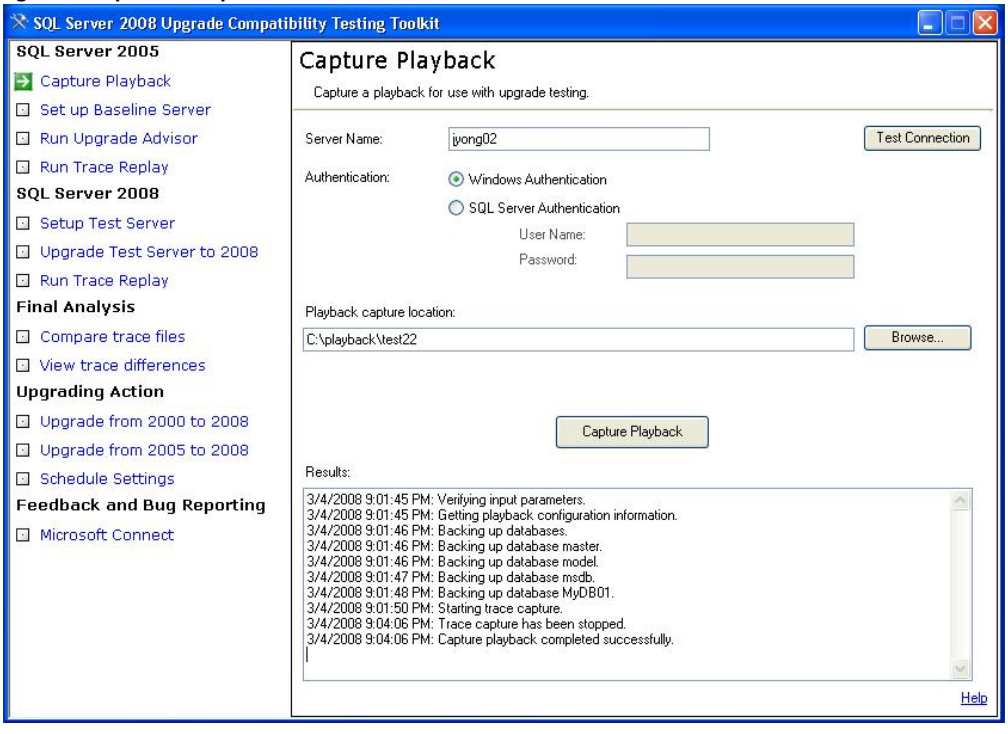
When the backups are completed, a dialog box will appear as shown in the image above. This indicates that the trace process has been started. If you are capturing off a production server, no further action is necessary at this time. If you are capturing from a test/staging environment, you may now run your workload generators (scripts, users, load tools, etc…).

You do not need to monitor this window during the capture process as no progress information will be provided. However, please check on this regularly to ensure there are no issues on the machine or infrastructure that has interfered with the captured process (e.g. ran out of disk space).

When you have run the Capture Playback process long enough on the production system to capture a good representative workload or you have finished running the relevant load generation activities (if capturing from a test/staging server), click on the “Ok” button in the dialog box. You will then be prompted with another dialog box to confirm that you are ready to stop the trace. Click on “Yes” to stop the capture process or “No” if you want to continue running the capture process.

4.5.3 Completed Capture Playback

Figure 3. Capture Complete



When you are done with the capture process, the tool will post messages of the tasks successfully completed (as shown above). This concludes the playback capture process using the SSUA Playback Capture.

You should now review the files in your playback folder to ensure the relevant database backups, trace and log files are present. Also verify that your trace file size is consistent with what you would expect from the workload captured. If your trace file is very small (less than 128K), you may not have a good workload for testing or a problem may have occurred during the capture process. You may review its contents by opening the file with SQL Profiler to ensure the TSQL statements from your workload were captured. To verify the backup files, you may test by performing a “trial restore” if you are running SQL Server 2000 or use RESTORE VERIFYONLY for Server 2005.

5.0 SQL Server 2000/2005 Baseline System

This section described the process for setting your test computers in preparation for workload replay. It assumes you have completed the trace capture as described in the preceding section.

5.1 Set up Playback Baseline System

Use this page of SQL Server Upgrade Assistant (Upgrade Assistant) to restore the user databases to a test computer. Upgrade Assistant will replay the trace against these databases in a later step.

If you are using multiple computers for the test, perform this task on the BASELINE server. For more information, see Create a Multiple-Computer Test Environment.

Launching the Setup Baseline workflow

1. Navigate to C:\Playback and copy all the files you prepared using the SSUA Capture Playback feature to this directory.
2. Verify that you have the database backup files and a playback.trc file that were
3. Open File Explorer and create a new folder as follows: `C:\Playback\Base32Data`
4. Start the Upgrade Assistant tool
5. If your trace workload is from a SQL Server 2005 database, click on the **"Upgrade from 2005 to 2008"** button on the left panel, under the Upgrade Actions section then click on the "Setup Baseline Server" button.
   Note: If your trace workload is from a SQL Server 2000 database, click on the "Upgrade from 2000 to 2008" button on the left panel, under the Upgrade Actions section then click on the "Setup Baseline Server" button.

Options Server name

Specify the name of the server or instance where the databases will be restored. By default this field contains the name of the local computer. For a named instance, specify `servername\instancename`.

Authentication

Specify the type of connection to use to restore the databases. **Windows Authentication** is specified by default. If you specify **SQL Server Authentication**, enter the **User Name** and **Password** for a SQL Server account that is a member of the sysadmin server role. You may click on the "Test Connection" button to verify that you have provided the correct database and connection information.

Playback source directory

Specify the full path of the folder where the database backups are. This is usually C:\Playback or wherever you placed the files created in the "Capture Playback" process.

If you used Upgrade Assistant to capture a playback, the backup files are in the folder you specified in Playback capture location. If you created the backups manually, enter the path to the local folder or network share where the backup files are. Click **Browse** to locate the directory, or type the folder path.

Restore databases directory

Specify the full path of the folder where the user databases should be restored. The default directory is the folder where you installed Upgrade Assistant. The instance of SQL Server 2000/2005 must have appropriate permissions for this directory.

Click **Browse** to locate the directory, or type the full path.

Set Up Playback

Restore the user databases. This button is enabled when **Server name**, **Authentication**, **Playback source directory file** and **Restore database directory** are specified.

Results

Displays results as the user databases are restored. Once the Playback has been set up, you will receive a message in the Results window that states **Server setup was completed successfully**.

6.0 Run Upgrade Advisor

The SQL Server 2008 Upgrade Advisor (Upgrade Advisor) analyzes the objects in your SQL Server database, and generates a report that identifies issues to address to ensure a successful upgrade.

Important: You must fix these issues before you proceed to the next step in Upgrade Advisor. SQL Server Upgrade Assistant was created to work in conjunction with Upgrade Advisor, and each utility focuses on different tasks.

Run Location

If you are using multiple computers for the test, run Upgrade Advisor on the baseline server. Database issues identified on the baseline server must also be fixed on the test server before you upgrade. For more information, see Create a Multiple-Computer Test Environment

7.0 Replay Baseline Trace on SQL Server 2000/2005

Use this page of SQL Server Upgrade Assistant (Upgrade Assistant) to specify the trace file to replay and the trace output file. The trace file is the file you created from SQL Server 2000/2005. The trace output file will contain the results of the replayed playback trace file.

If you are using multiple computers for the test, perform this task on the baseline server. For more information, see Create a Multiple-Computer Test Environment.

Options

Server name

Specify the name of the server or instance where the trace will be replayed. By default this text box contains the name of the local computer. To replay traces on a different server, specify the `servername\instancename`.

Authentication

Specify the type of connection to use to replay the trace. Windows Authentication is specified by default. If you specify SQL Server Authentication, enter the User Name and Password for a SQL Server account that has permission to replay a trace on the server.

Playback trace file

Specify the full path to the trace file.

Note: If you used Upgrade Assistant to capture a playback, the trace file is in the folder you specified for Playback capture location. Click **Browse** to locate the directory, or type the full path.

Trace output file

Specify the full path for the replay results. By default, this is in the log folder where Upgrade Assistant is stored. Pay attention to the path and name of your output file and make sure there is no other file with the same name. You will need this file later for analysis.

Replay Trace

Replay the trace file. This button is enabled when **Server name**, **Authentication**, **Playback trace file**, and **Trace output file** are specified.

Results

Displays the events as they are replayed.

Status

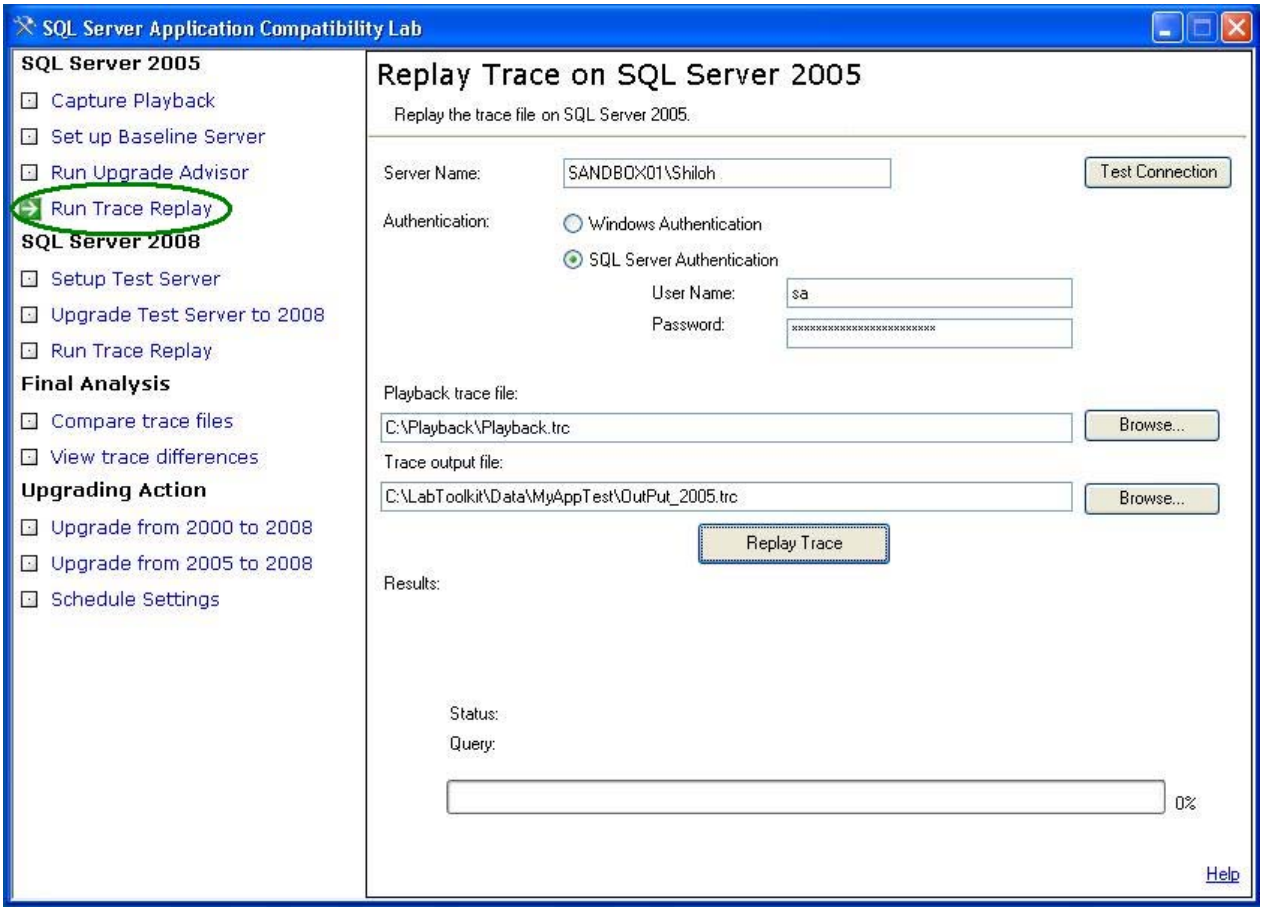
Displays the status of the replay as it progresses.

Query

Displays the query that is currently being replayed.

Figure 4 below is a sample screenshot of the baseline trace replay page for a SQL Server 2005 playback.

Figure 4. Baseline Trace Replay



8.0 Set up Playback Test System

This page of SQL Server Upgrade Assistant (Upgrade Assistant) is used to restore the user databases to an instance of SQL Server 2000/2005. The Upgrade Assistant Setup Test Server workflow is designed to setup the test server that has SQL Server 2000/2005 installed. Once setup is complete, you will then upgrade the test computer to SQL Server 2008 and replay a trace against these databases at a later step.

If you are using multiple computers for the test, run this step on the test server. For more information, See Create a Multiple-Computer Test Environment.

Options

Server name

Specify the name of the SQL Server 2000/2005 server or instance for the **test** computer where the databases will be restored. By default this field contains the name of the local computer. For a named instance, specify `servername\instancename`.

Authentication

Specify the type of connection to use to restore the databases. **Windows Authentication** is specified by default. If you specify **SQL Server Authentication**, enter the **User Name** and **Password** for a SQL Server account that is a member of the sysadmin fixed server role.

Playback source directory

Specify the full path of the folder containing the database backups.

Note: If you used Upgrade Assistant to capture a playback, the backup files are in the folder you specified in Playback capture location. If you created the backups manually, enter the path to the local folder or network share where the backup files are. Click **Browse** to locate the directory, or type the full path.

Restore databases directory

Specify the full path of the folder where the user databases should be restored. The default directory is the folder where you installed Upgrade Assistant. The instance of SQL Server 2000/2005 must have appropriate permissions for this directory.

Click **Browse** to locate the directory, or type the full path.

Set Up Playback

Restore the user databases. This button is enabled when **Server name**, **Authentication**, **Playback source directory**, and **Restore databases** directory are specified.

Results

Displays results as the user databases are restored.

8.1 Upgrade to SQL Server 2008

In this step you will upgrade your database to SQL Server 2008 from the original 2000/2005 instance. This is an in-place upgrade exercise that will involve installing SQL Server 2008.

1. Navigate to where your SQL Server 2008 installation source is located, drill into the \Servers folder and run Setup.exe
2. Accept the license terms and click “Next”
3. In the “Installation Prerequisites” screen, click “Install”. This will install the necessary setup application and files required for the SQL Server 2008 Installation Center.

4. When the prerequisites installation completes successfully, you will be presented with the SQL Server Installation Center console. Click on the “Upgrade from SQL Server 2000 or SQL Server 2005” option and make sure the next screen does not report any errors.
5. Make sure the “Upgrade Selected Instance and Shared Components” radio button is checked then select the SS2005 or SS2000 instance (depending on your source DB version) from the drop-down listbox.
6. Accept all the default options and complete the upgrade process.
7. When this step is complete, you have just performed an in-place upgrade of your SQL Server 2000/2005 database to SQL Server 2008

9.0 Replay Trace on SQL Server 2008

Use this page of SQL Server Upgrade Assistant (Upgrade Assistant) to specify the trace file to replay against SQL Server 2008 and the trace output file. The trace file is the trace file you created from SQL Server 2000/2005. The trace output file will contain the results of the replayed trace file.

If you are using multiple computers for the test, perform this step on the upgraded test server. For more information, see Create a Multiple-Computer Test Environment.

Options

Server name

Specify the name of the SQL Server 2008 server and instance where the trace will be replayed. By default this field contains the name of the local computer. To replay the trace to a different server, specify the server name. For a named instance, specify `servername \instancename`.

Authentication

Specify the type of connection to use to replay the trace. **Windows Authentication** is specified by default. If you specify **SQL Server Authentication**, enter the **User name** and **Password** for a SQL Server account that has permission to replay a trace on the server.

Playback trace file

Specify the full path of the trace file.

Note: If you used Upgrade Assistant to capture a playback, the trace file is in the folder you specified as the Playback capture location. Click **Browse** to locate the directory, or type the full path.

Trace output file

Specify the full path to store the results of the replay. By default, this is the log folder where Upgrade Assistant is stored. Pay attention to the path and name of your output file and make sure there is no other file with the same name. You will need this file later for analysis.

Replay Trace

Replay the playback trace file. This button is enabled when **Server name**, **Authentication**, **Playback trace file**, and **Trace output file** are specified.

Results

Displays each event as it is replayed.

Status

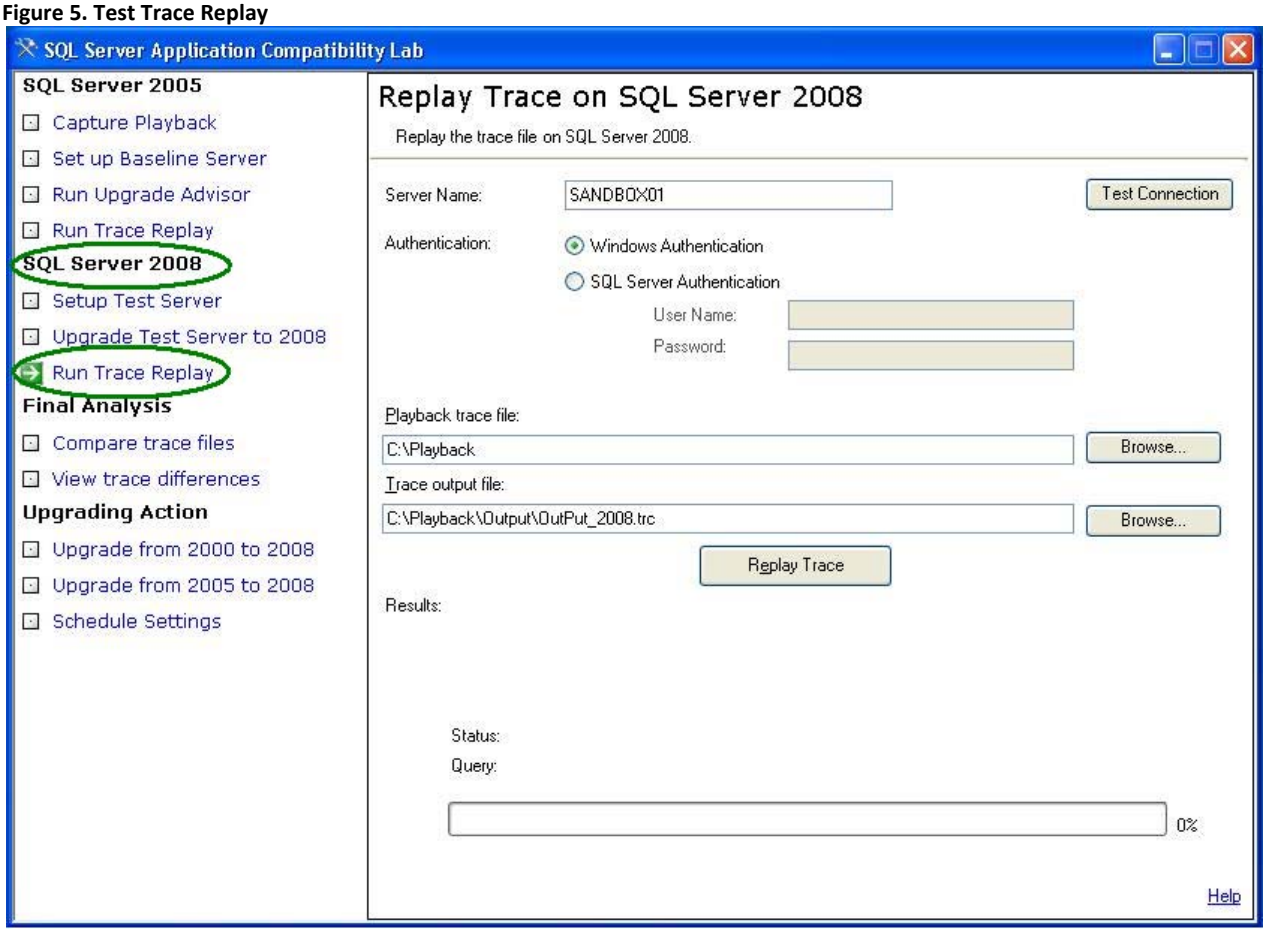
Displays the status of the replay as it progresses.

Query

Displays the query that is currently being replayed.

Figure 5 below is a sample screenshot of the TEST trace replay page for the SQL Server 2008 playback.

Figure 5. Test Trace Replay



10 Compare Trace Files

Use this page of SQL Server Upgrade Assistant (Upgrade Assistant) to compare the trace output files collected from one instance of SQL Server 2000/2005 and one instance of SQL Server 2008.

If you are using multiple computers for the test, run **Compare Traces** on the baseline server. For more information, see Create a Multiple-Computer Test Environment.

Options

Server name

Specifies the name of the baseline server and instance where the traces will be compared. By default this field contains the name of the local computer. To compare databases on a different server, specify the server name. For a named instance, specify `servername \instancename`.

Authentication

Specify the type of connection to use to connect to SQL Server 2008. **Windows Authentication** is specified by default. If you specify **SQL Server Authentication**, enter the **User name** and **Password** for a SQL Server account that has permission to create and drop databases on the server.

SQL Server 2000/2005 trace file

Specify the full path of the SQL Server 2000/2005 trace output file. This is the trace output file from the BASELINE trace replay you performed earlier.

Upgrade Assistant stores the trace output file to the log directory where Upgrade Assistant is installed. Click **Browse** to locate the directory, or type the full path.

SQL Server 2008 trace file

Specify the full path of the SQL Server 2008 trace output file. This is the trace output file from the TEST trace replay you performed earlier.

Upgrade Assistant stores the trace output file to the log directory where the Upgrade Assistant is installed. Click **Browse** to locate the directory, or type the full path.

Compare Traces

Compare the traces. This button is enabled when Server name, Authentication, SQL Server 2000/2005 trace file, and SQL Server 2008 trace file are specified. Results

Displays the progress as the trace output files are compared.

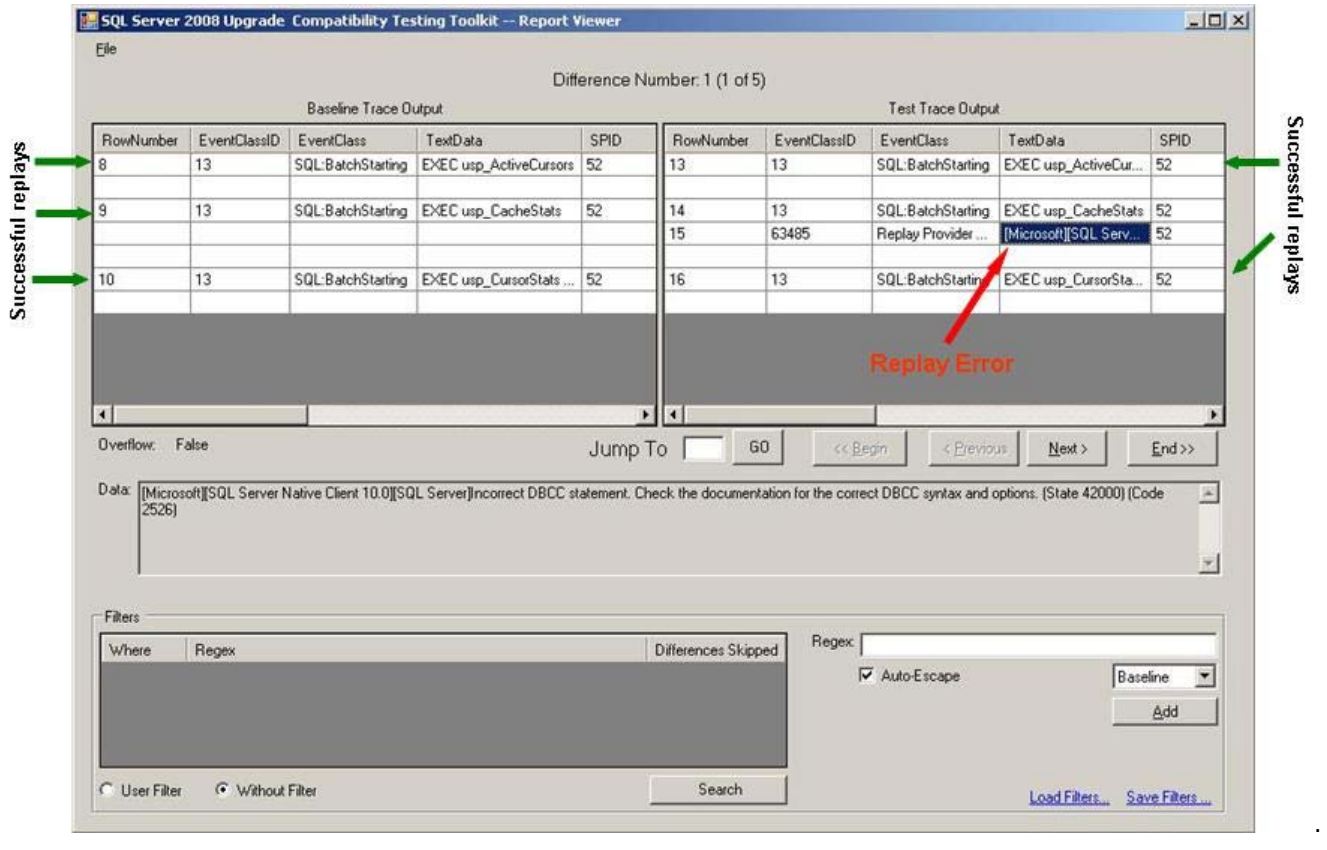
10.1 View Replay Differences

This step launches a viewer. Launch the viewer to view trace output files from SQL Server 2000/2005 and SQL Server 2008. To complete this page, perform the following: · Click **Launch Viewer** to view the replay differences. · Ensure that any differences between the SQL Server 2000/2005 trace output file and the SQL Server 2008 trace output file were identified by Upgrade Advisor.

If you are using multiple computers for the test, view the replay differences on the baseline server. For more information, see Create a Multiple-Computer Test Environment.

Figure 6 below is a sample screenshot of the replay difference viewer including descriptions on various parts of the viewer.

Figure 6. Replay Difference Viewer



Support

SQL Server Upgrade Assistant is provided as a free resource to the SQL Server community and is believed to be free of defects. While Scalability Experts does not provide any additional telephone or email support for this product, you can visit us online for additional information and tips at http://www. scalabilityexperts.com/ssua.

In addition, Scalability Experts is committed to continually refining and improving SQL Server Upgrade Assistant. If you do discover a bug or defect in the software, please visit http://www. scalabilityexperts.com/ssuabugs and submit a bug report.