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TOOLS FOR SQL SERVER™

Migrate, Manage, Monitor SQL Server 2005: How Idera's Tools for SQL Server Can Help

White Paper
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Abstract

If you haven't already made the move to SQL Server 2005, most likely it is on your list of goals for 2007. Idera's award-winning tools for SQL Server management can help you streamline your move to SQL Server 2005 – and monitor, manage, and optimize the performance of your new SQL Server 2005 environment. Using the SQL Server 2005 Upgrade Handbook from Microsoft as a guideline, this whitepaper will highlight the four key phases of the upgrade process, and will illustrate how Idera's easy-to-use tools can assist in your migration and reduce the complexity of managing your SQL Server 2005 enterprise.

This whitepaper compliments the "Top 10 Essential Tips for Upgrading to Microsoft SQL Server 2005" whitepaper written by Idera and Scalability Experts. To download a copy of this paper, please visit: www.idera.com/migration

Building an upgrade roadmap

The SQL Server 2005 Upgrade Handbook from Microsoft breaks the upgrade process into these four phases:
1) Planning and research
2) Testing and process validation
3) The production upgrade
4) Post-upgrade considerations

The Upgrade Handbook provides valuable detail on the tasks that should be involved in each step. SQL Server management tools from Idera can play a key role in your migration by assisting in the planning and research, testing and process validation, and post-upgrade phases.

1) Planning and Research

Idera's tools for SQL Server can assist in the planning and research phase by helping you:
- Determine resource usage and growth trends
- Conduct a security audit and assess any changes that may be needed in your security model when you upgrade

Discover resource usage and growth trends
You may want to take advantage of the scalability features in SQL Server 2005 by consolidating servers as part of your migration. You should take the time to consider whether concentrating resources at the same time you upgrade would be beneficial to your company.

Idera's SQL diagnostic manager is an ideal tool for performing this type of analysis. Using a unique agent-less architecture, SQL diagnostic manager collects a wealth of performance and health information across all SQL Servers in your environment. SQL diagnostic manager also provides detailed reports on historical metrics to help you analyze overall server utilization, identify opportunities to consolidate or areas where hardware upgrades are needed, examine growth trends and make other critical decisions that can affect your upgrade plans.

Conduct a Security Audit

During your migration planning, it is also a good idea to conduct a security audit and assess any changes that may be needed in your security model when you upgrade. If a server has been around for awhile, it is common to have legacy applications and databases with leftover permissions that are out of line with what is actually needed. It is best to address these concerns before the upgrade so that any security holes are not carried over into the new environment. Additionally, SQL 2005 provides much more comprehensive security features than its predecessors. Now may be a good time to implement these improvements.

Discovering who can access what resources on your SQL Servers can be time consuming and very difficult. Idera's SQLsecure can do this for you by analyzing rights granted across SQL Server, Active Directory and Windows to calculate the effective access rights for any user, on any given object or access control. With SQLsecure, you can not only view the effective permissions of particular users or groups, but you can also select an individual database object, and see who has what rights on that particular object, and where those rights are granted. SQLsecure also allows you to monitor changes made to access rights and privileges so you can easily identify and remediate unwanted changes to your security model after the upgrade.

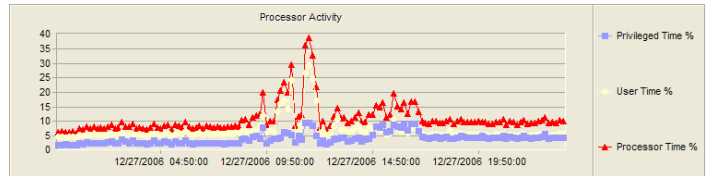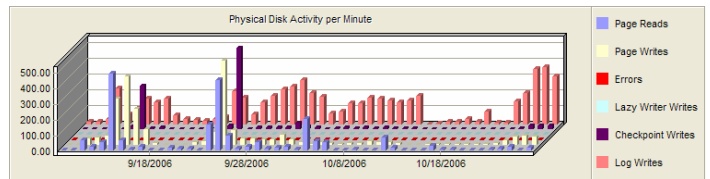**Figure 1. SQL diagnostic manager: Minute Activity of Processor**

Figure 2. SQL diagnostic manager: Hourly Activity of Processor Queue Length

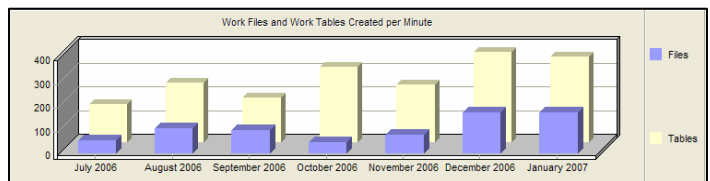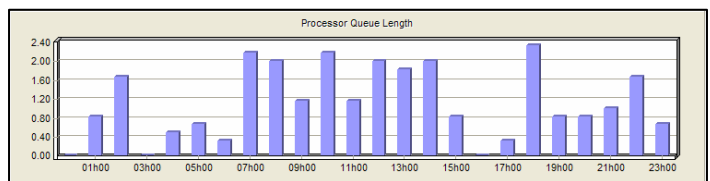**Figure 3. SQL diagnostic manager: Daily Activity of Physical Disk Activity**

Figure 4. SQL diagnostic manager: Monthly Work Files and Work Tables Created

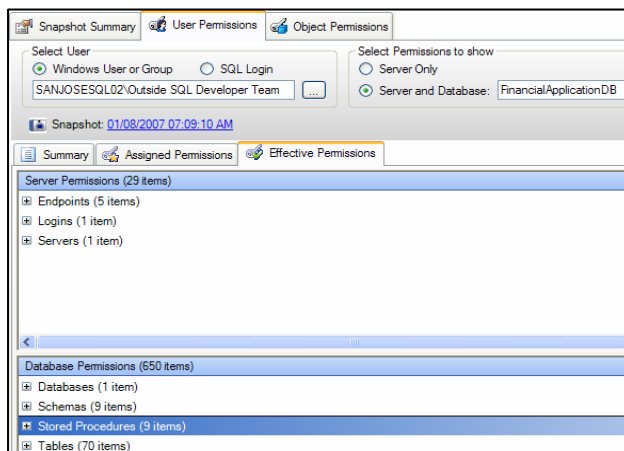**Figure 5. SQLsecure: Effective Permissions of a Windows Group**

Figure 6. SQLsecure: Effective Permissions on a SQL object

2) Test and Process Validation

Idera's tools for SQL Server can assist in the test and process validation phase by helping you:
- Develop, or review your disaster recovery plan
- Establish a performance baseline
- Develop a test plan

Develop or Review your Disaster Recovery Plan
A solid, tested disaster recovery plan is a key component of your migration planning. It is essential to develop and test your rollback procedures in case of an interruption during upgrade. The recovery plan should also include running a DBCC consistency check on the pre-upgrade databases before backup as well as a full restore of the database to validate recovery reliability. After the upgrade, you should again perform a consistency check and backup with validation enabled.

A back-up and restore product like Idera SQLsafe is a core component of any SQL Server disaster recovery plan. SQLsafe was built from the ground up for SQL Server and will save you hours of time by reducing backup times by at least 50% and reducing storage requirements by up to 95%. SQLsafe provides a full record of backups and restores for the test and production environments all in one place, which makes it much faster and simpler to recover, especially in the event of an upgrade failure.

Figure 7. SQL Safe Console showing enterprise view of backups and real-time status updates
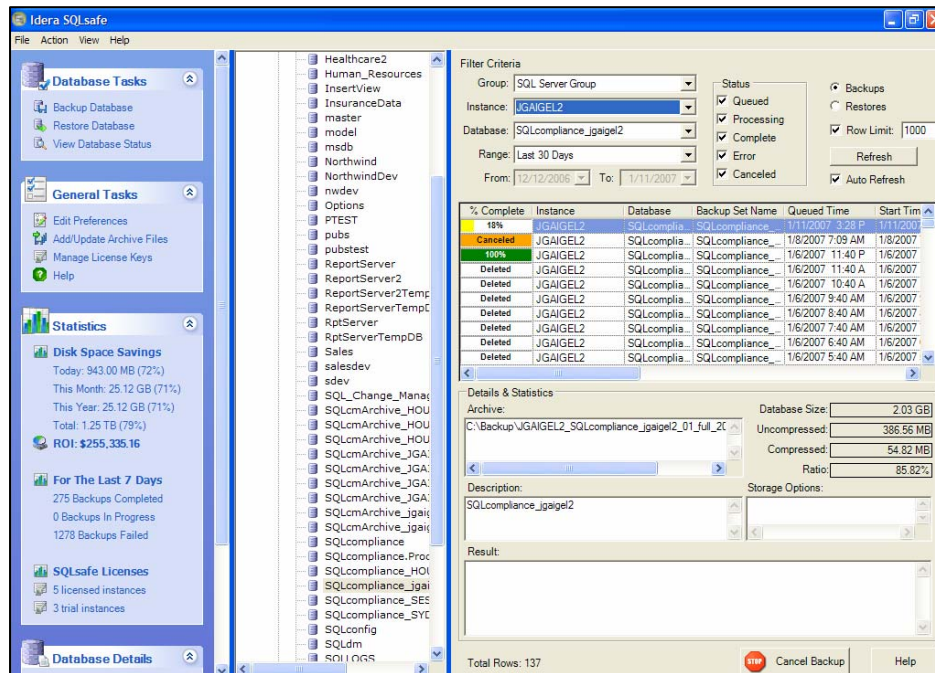
In addition to the ability to recover your data, it is also important to ensure that your database schema and other objects like stored procedures can be recovered in the event of an upgrade failure. Idera's SQL change manager can help with this part of your disaster recovery planning. With SQL change manager, you can take a snapshot of all database objects prior to your upgrade and then check or re-synch objects against the original after migration to ensure your data model remains intact.

Figure 8: SQL change manager Database Object Comparison
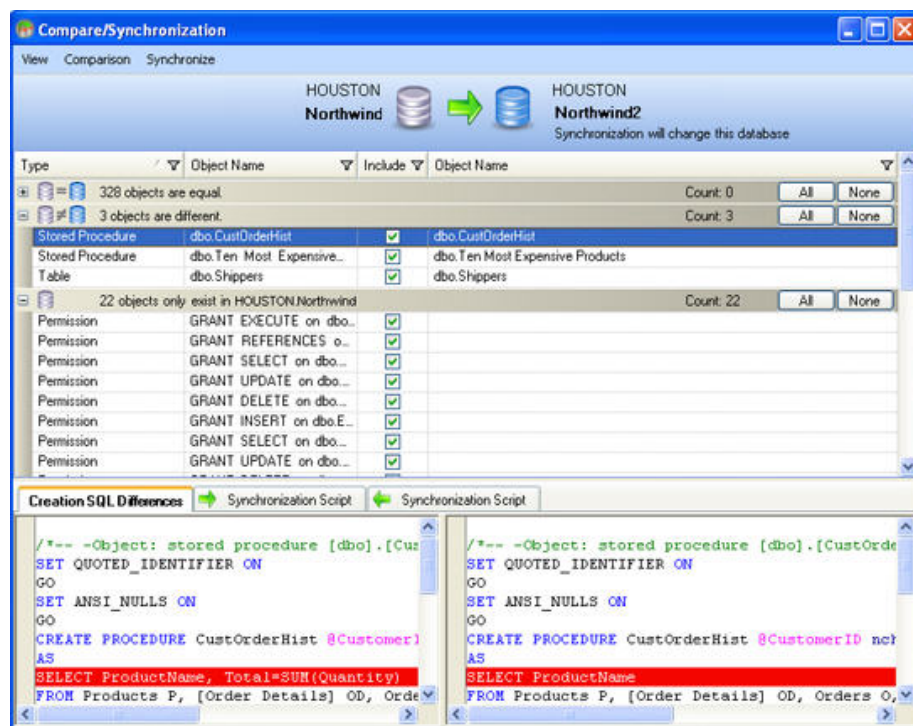
Establish a performance baseline

Before upgrading to SQL Server 2005, you should establish a performance baseline in your current environment so you can evaluate your system post-upgrade to confirm functional equivalence and identify any performance changes. Idera's SQLscaler is an ideal tool for comparing your SQL Server 2005 environment against a performance baseline. Using SQLscaler, you can create a performance baseline by monitoring approximately 90 SQL Server performance metrics. While you are capturing the performance data, you should also record a trace file, which you can then save as a workload type in SQLscaler to replay on your SQL 2005 server post-upgrade while collecting the same set of performance metrics. SQLscaler also includes tools for analyzing your results, making it easy to conduct side-by-side comparison of your SQL 2005 environment versus the baseline.

Figure 9. SQLscaler baseline comparison
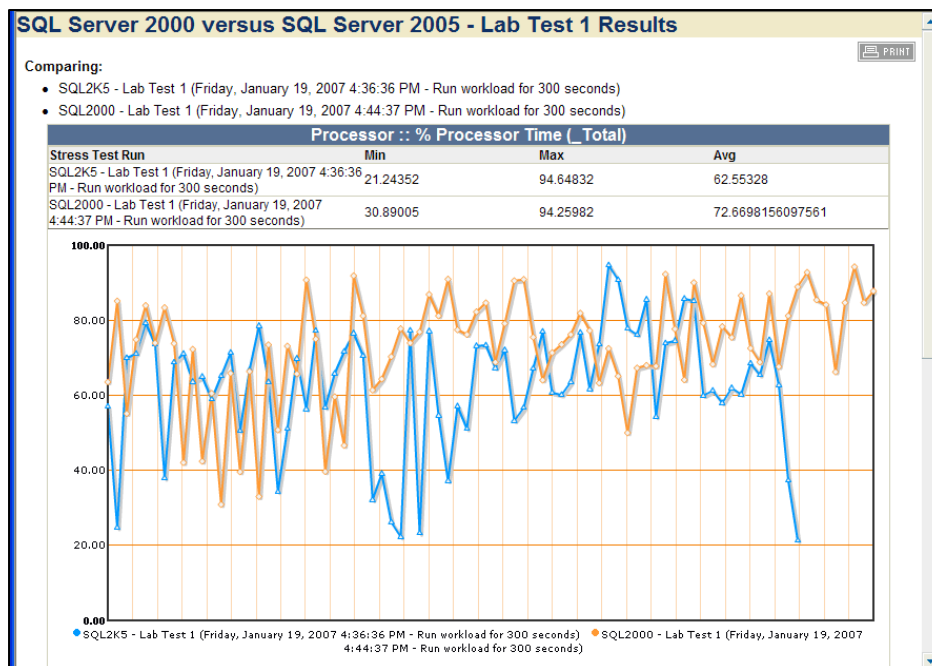
Develop a test plan

Testing is essential, even if you only plan to upgrade the SQL Server database engine without changing your application. Testing will identify any backward-compatibility problems or behavioral changes from previous SQL Server platforms. Your testing script or test procedures should cover the following areas: data validation, data processing, stress and workload, client/server performance, and application functionality.

Idera's SQLscaler is a must-have tool for conducting the stress and workload portion of your test plan. In addition to the baseline testing discussed above, you can also run database inflation tests to establish the scalability constraints of your SQL 2005 environment. When creating your database inflation tests in SQLscaler, you can actually specify the data characteristics to use in the tests to ensure that the results reflect realistic conditions. Additionally, SQLscaler can test not only the Relational Engine (database) components of SQL server, but also the Business Intelligence components. This is particularly important if you plan to migrate your DTS packages to SSIS to take advantage of the enhanced configuration options available in SSIS.

Figure 10. SQLscaler: Configuration options for database inflation testing
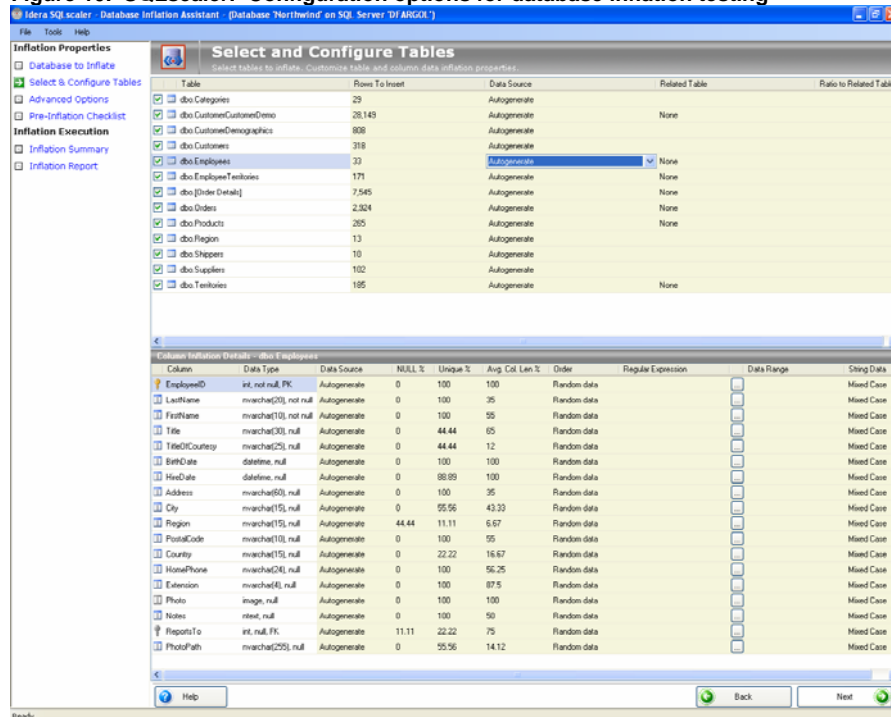
3) Production Upgrade

Once your planning and research and testing and process validation steps are complete, you are ready to start your production upgrade. The Microsoft Upgrade Handbook has a helpful listing of specific steps to take to proceed through your upgrade. You can access that guide on the Microsoft website under: http://www.microsoft.com/technet/prodtechnol/sql/2005/sqlupgrd.mspx

4) Post-Upgrade Considerations

Now that you've completed your upgrade, Idera's tools for SQL Server can assist post-upgrade by helping you:

- Validate your security model
- Validate your data model
- Monitor your servers for performance issues
- Monitor your servers for failures such as access right denials

Validate your security model

Based on the security audit you conducted prior to your upgrade, you can now use SQLsecure to verify that the security model in your SQL Server 2005 environment is configured as it should be. If not, SQLsecure shows you exactly where each permission is granted, so you can easily pinpoint where adjustments need to be made. Additionally, SQLsecure can help you on an ongoing basis by monitoring changes made to access rights and privileges over time so you can easily identify and remediate unwanted changes to your security model.

Validate your data model

With the database object snapshot you took with SQL change manager prior to upgrade, you can now compare your SQL 2005 data model against the original to ensure that no unwanted changes have been introduced during the migration. If you do find changes, you can roll-back to the original with just a few clicks. Additionally, if you need to update your stored procedures after upgrade, you can use SQL change manager to take snapshots as you are updating them, and easily roll-back to a previous version in the event that you have an issue along the way. SQL change manager will also continuously monitor your database objects, and highlight any changes made so you can quickly investigate and reverse unwanted changes.
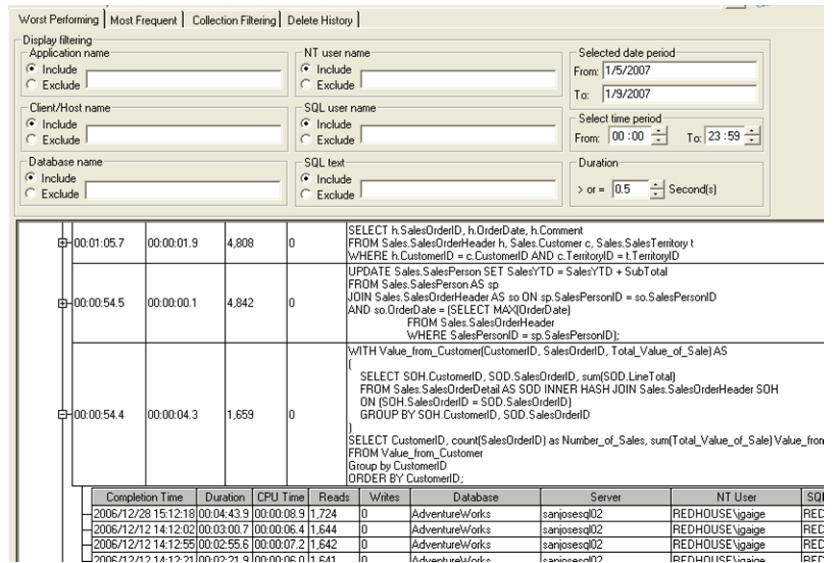

Figure 10. Collection of Worst Performing Code

Monitor your servers for performance issues

It is always a best practice to monitor key performance counters on SQL Server to spot potential performance problems early. Proactive monitoring is even more critical right after your upgrade to SQL Server 2005 just in case any issues with your stored procedures, scripts, or queries went undetected during the upgrade and testing process.

One of the most difficult aspects of managing SQL Server is tracking down code that runs slowly or bogs down your server. SQL diagnostic manager makes this easy by showing you which stored procedures, batches, triggers, and SQL statements are causing a problem on the SQL Server 2005. This feature is particularly valuable right after upgrade when you need to watch for unanticipated problems.

Additionally, Idera offers a complementary tool to SQL diagnostic manager, SQL mobile manager, which gives you real-time monitoring, alerting, and remediation capabilities from a Windows Mobile device. Remote monitoring capabilities are particularly valuable right after an upgrade when you will want to keep a close eye on your SQL Server 2005 environment to quickly resolve any unanticipated problems.

### *Monitor your servers for failures*

No matter how well you plan your upgrade, it is likely that something will be missed along the way, causing failures such as access right denials, unexpected login failures, or other transactional issues. Idera's SQL compliance manager is an ideal tool for catching these issues. SQL

Figure 11. Idera SQL mobile manager provides mobile SQL Server performance monitoring.

compliance manager monitors virtually all activity on your SQL Servers, telling you who did what, when and how, and can alert you when important events such as the failures referenced above occur. Additionally, SQL compliance manager includes a wealth of pre-defined compliance reports to help you sail through your next internal or external audit.

Figure 12: SQL compliance manager
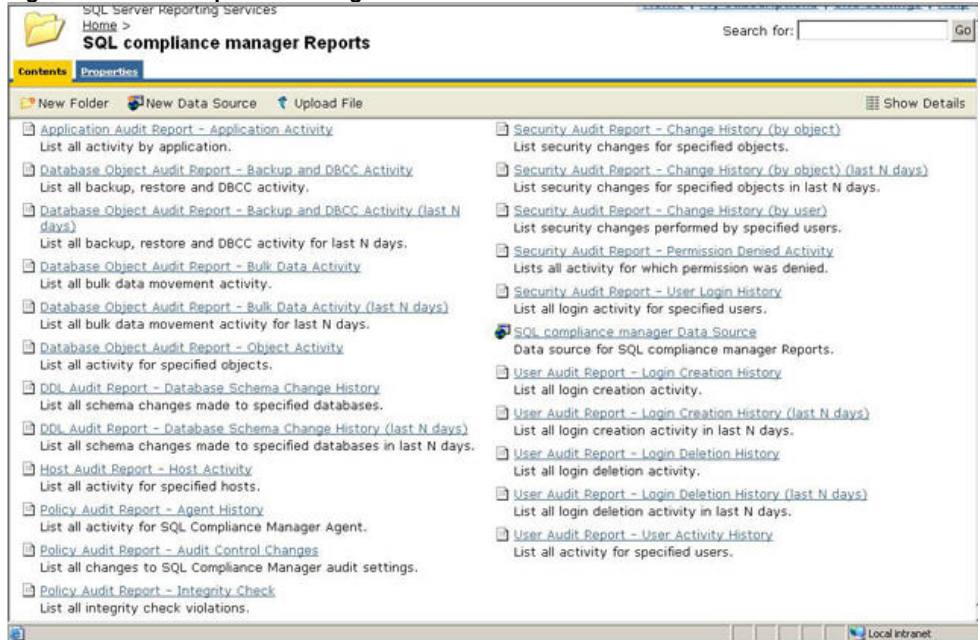
Summary

In conclusion, upgrading to SQL Server 2005 can bring many benefits to your organization. However, the migration process needs to be carefully planned and managed to ensure a smooth transition and minimize problems after the upgrade takes place. Idera's portfolio of SQL Server management tools can assist in the upgrade process to ensure success and help you capitalize on the full benefits of migrating to SQL Server 2005.

- **SQL diagnostic manager:** Identify consolidation opportunities, and monitor for worst-performing code after your migration
- **SQLscaler:** Conduct baseline and database inflation testing to ensure proper functionality and performance in the new environment
- **SQLsecure:** Evaluate your security model pre- and post-upgrade to ensure users' have appropriate access rights
- **SQLsafe:** Develop and test a comprehensive disaster recovery plan in the event that something goes wrong during your migration
- **SQL change manager:** Capture your data model as part of your disaster recovery plan, and easily check or re-synch objects against the original to ensure your data model remains intact.
- **SQL mobile manager:** Monitor your SQL servers from a Windows Mobile device post-upgrade and take corrective action anytime, anywhere if problems arise.
- **SQL compliance manager:** Monitor your SQL servers for failures, such as access right denials, to troubleshoot configuration and permission issues.