Upgrading the IBM Rational ClearQuest Feature Level

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As anyone with any experience with software knows, most software applications are not static, but are constantly being fixed, improved, and updated. For any commercial application of note, there are normally regularly scheduled releases both of new versions and also patch bundles for older versions.

This upgrade process acquires an extra dimension when there is an integration with some secondary application, or with an external database. This is the case with IBM Rational ClearQuest, which can utilize any of a number of databases as a backend data repository. The options for this are Oracle, IBM DB2, Microsoft Access and SQL Server. The database type we will be working with today is IBM DB2.

When ClearQuest is updated it can be the case that changes are also made to the database schema which is used by ClearQuest. So, in order to use the new features of the updated ClearQuest, it is necessary to also upgrade the database being used so that all the new ClearQuest features will become available for use.

But if a new version of the database schema is needed to fully utilize a new version of the application, we need to think about how older and newer versions of ClearQuest can coexist. The answer in this case is "feature levels" for the database. The database contains a field which identifies which schema the database is currently using. This identifier is the feature level.

Older versions of ClearQuest will use a different version, or feature level of the database schema. Newer versions have the option of continuing to use the older feature level, or of upgrading the database to the newer feature level. This is what this paper is concerned with, how to upgrade a ClearQuest database to a more current feature level.

In the example we will go through below, there is a schema database, and two user databases named: CQTSCH1, CQTUSR1, and CQTUSR2, respectively. These databases were created with feature level 6. In the course of the upgrade, we will move them to feature level 7. The capabilities of the different feature levels are beyond the scope of this example, consult the relevant IBM Rational documentation if you need this information.

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We begin the process of upgrading a database feature level by using the ClearQuest Maintenance Tool. A screenshot of the Maintenance Tool can be seen below.
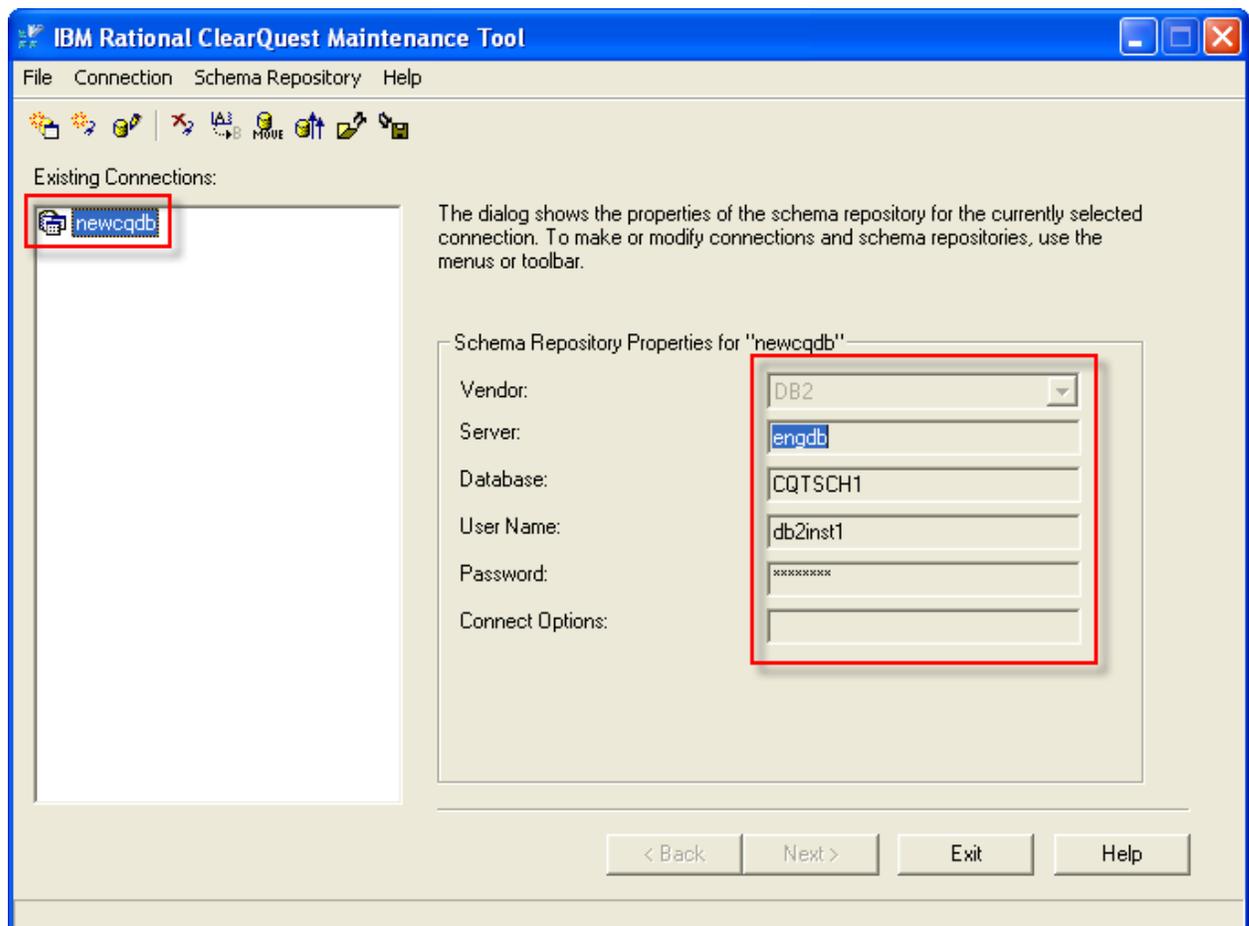
Note in the Maintenance Tool, we have a single database connection, "newcqdb". This is used to access the ClearQuest schema database. The schema database, in turn, provides access to any associated user databases.

The properties of the schema database can be seen outlined in red on the right side of the screen. We will proceed first with upgrading the schema database to feature level 7. One thing to keep in mind is that IBM allows for two methods of accomplishing the upgrade.

One method is to create a new database (with a different name) for each database to be upgraded. Then the old version of the database is copied into the newly created database along with the updates needed to create a feature level 7 database. This is considered the safest way to go, as far as insuring against data loss.

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The other method, an "in place" upgrade, reads the data from a given database, and then writes an updated version of the data back into the same database. If something goes wrong, there can be problems with data availability, as you might imagine.

In our example, we are going to do an in place upgrade. As always, whenever doing these kinds of upgrades, it is essential that backups be taken of all databases involved, so that reverting back to the previous state can be undertaken if there are problems with the upgrade.

The next screenshot shows how to begin the upgrade. Note that "Upgrade" is selected from the drop down menu, and not "Update".
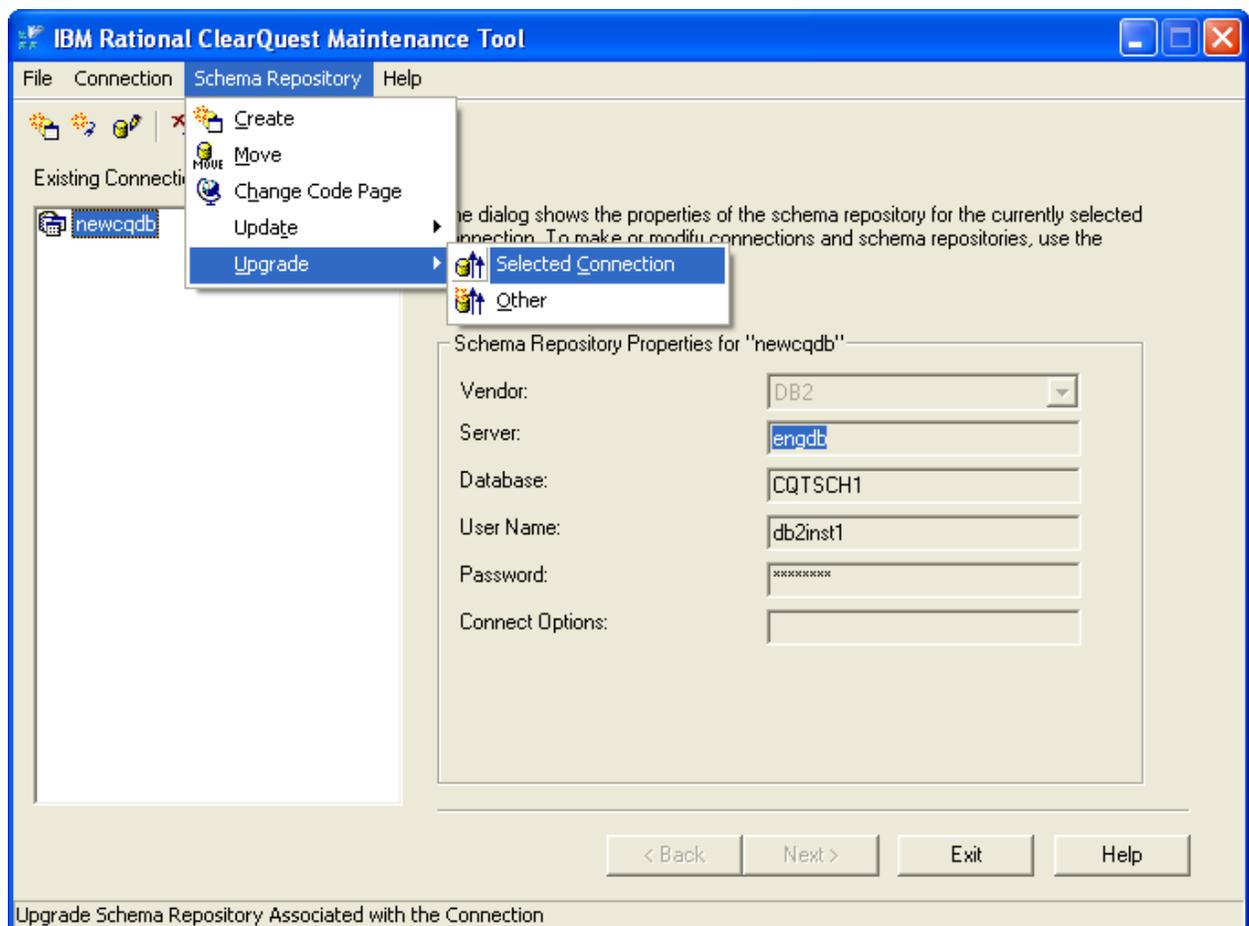
After selecting Upgrade, we are presented with the following screenshot. Note the message outlined in red which says that the Maintenance Tool is ready to proceed with the upgrade. Click Next to continue. The second screenshot below then gives the option of also upgrading the user databases, in addition to the schema database.
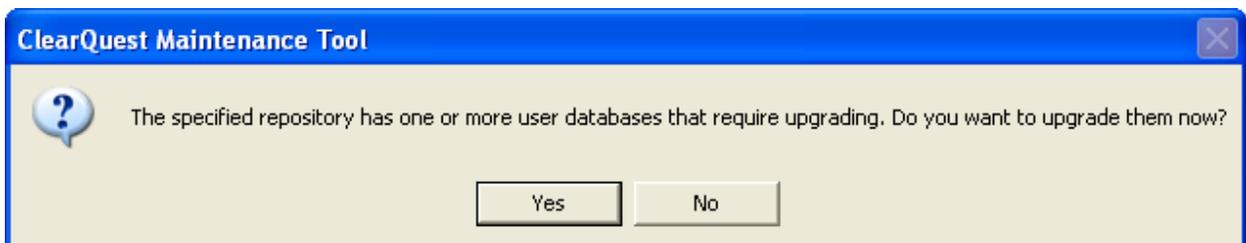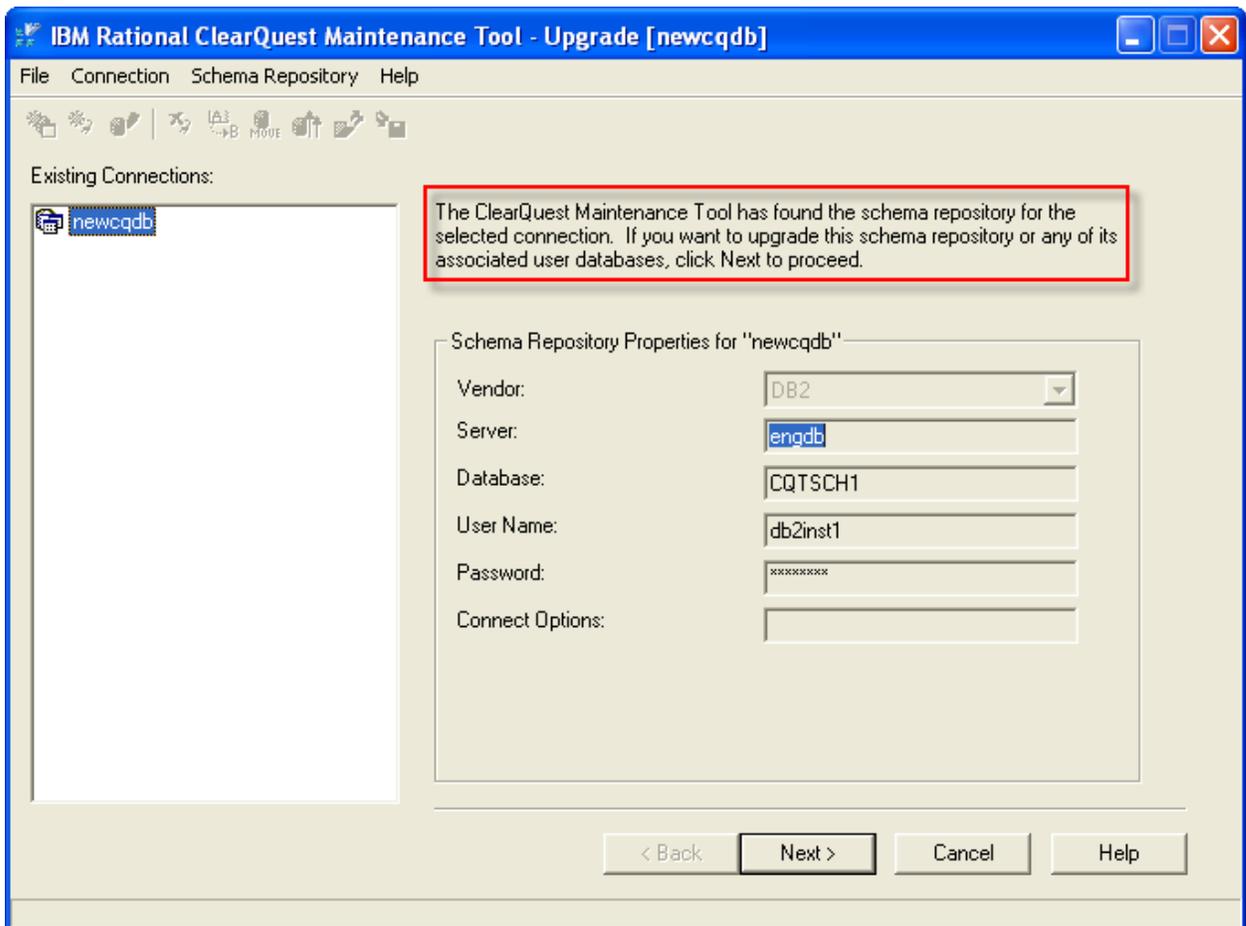
In order to proceed with the upgrade, credentials must first be given. Note also that the check box for "Upgrade user databases" is also selected. Click Next to proceed with upgrading the feature level of the schema database.
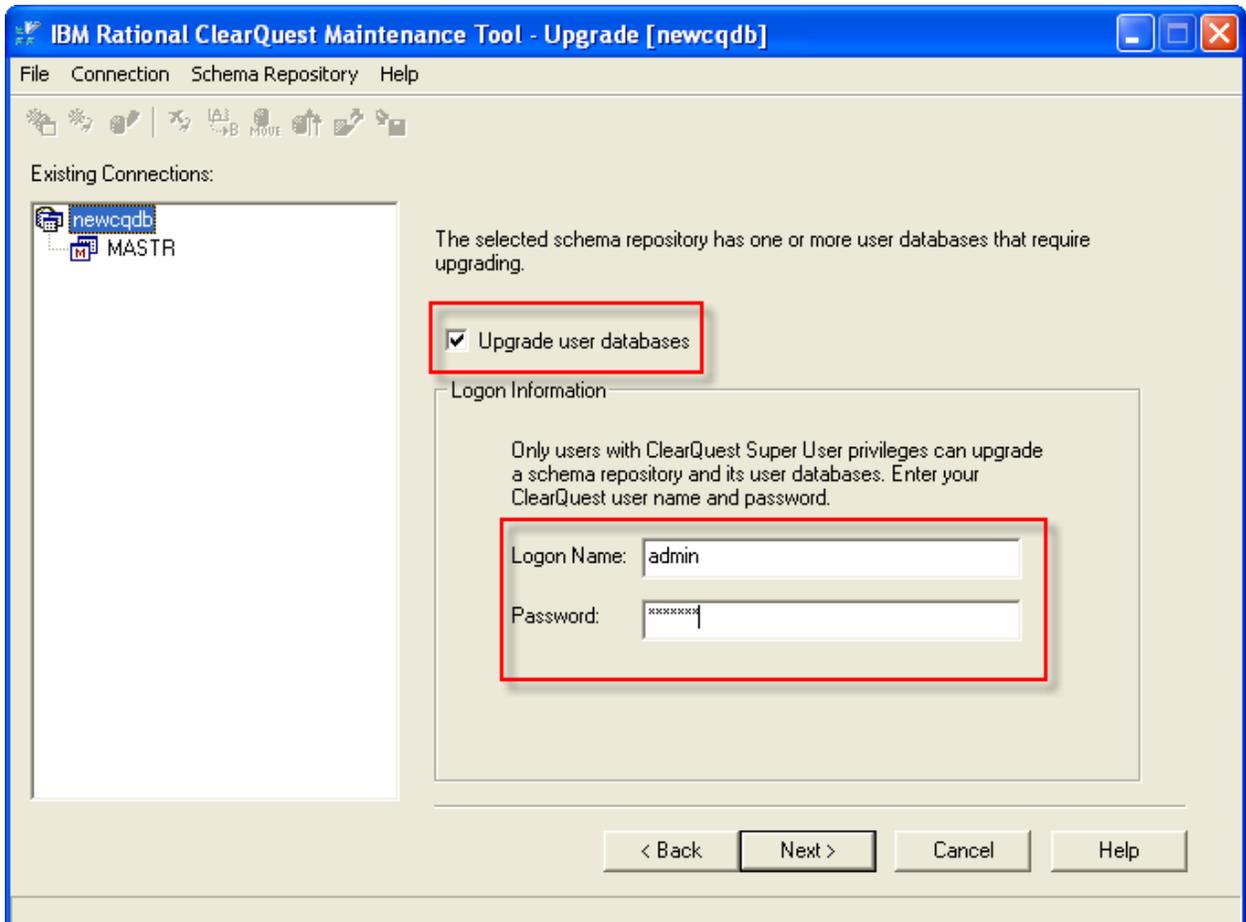
With this next screen, we have the opportunity of selecting which of the user databases might be included, or excluded, from the upgrade process. Note that both databases will be upgraded, and also that the names given are the logical database names, not the physical database names. Click Next to proceed.
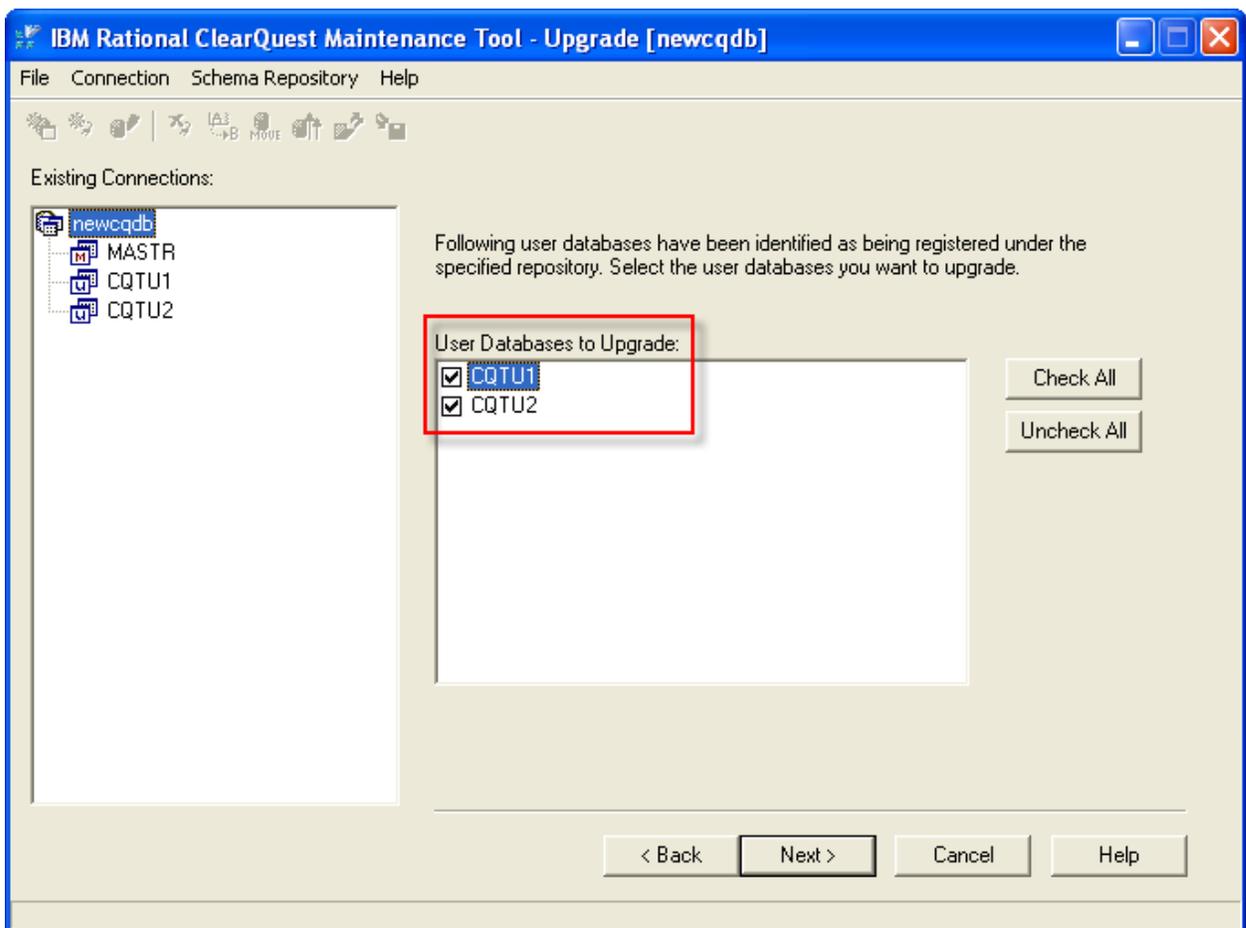
On this screen, we specify the destination database for the upgraded schema database. Since we are doing an in place upgrade, the source and destination database names will be the same. The database names can be seen outlined in red.

Note also that the new feature level for the converted database is also specified as feature level 7. Click Next to begin the upgrade.
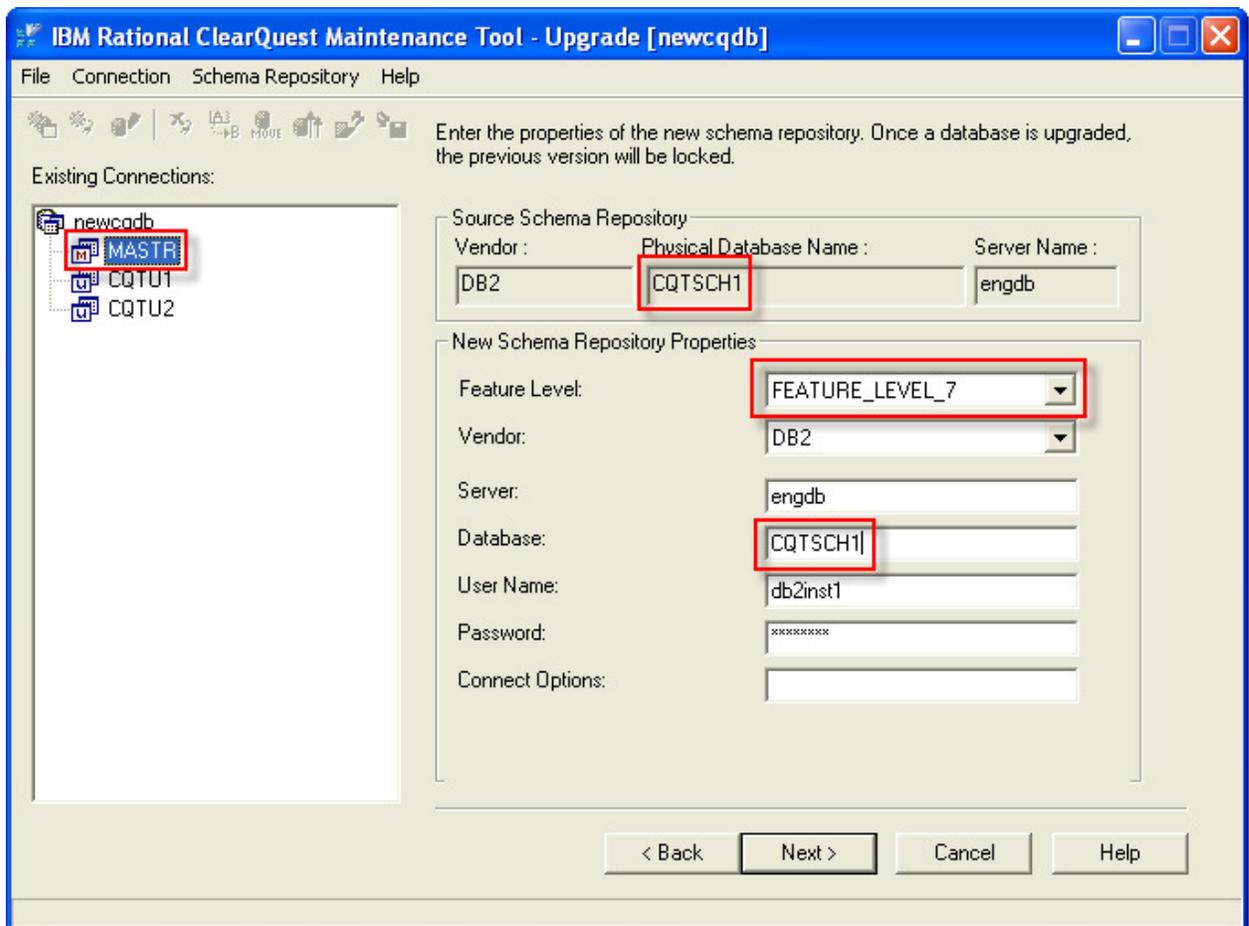
After clicking Next, the following screenshot presents a warning that backups are important for an in place upgrade. Click Yes, or No, depending on the disposition on any backup taken.
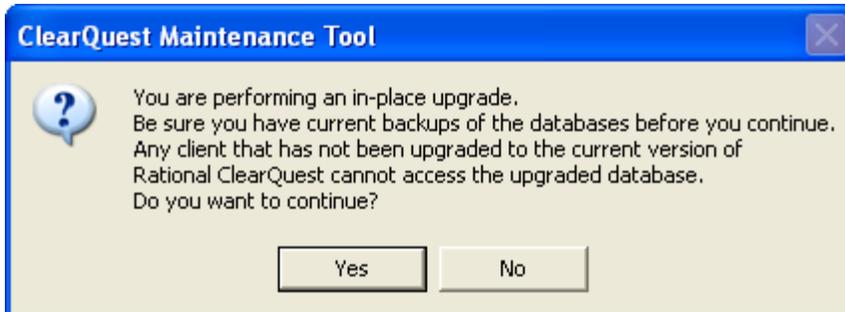
The screenshot below specifies the target location for the first user database upgrade. Note again that this is an in place upgrade, and the source and target databases are the same. Click Next to proceed.
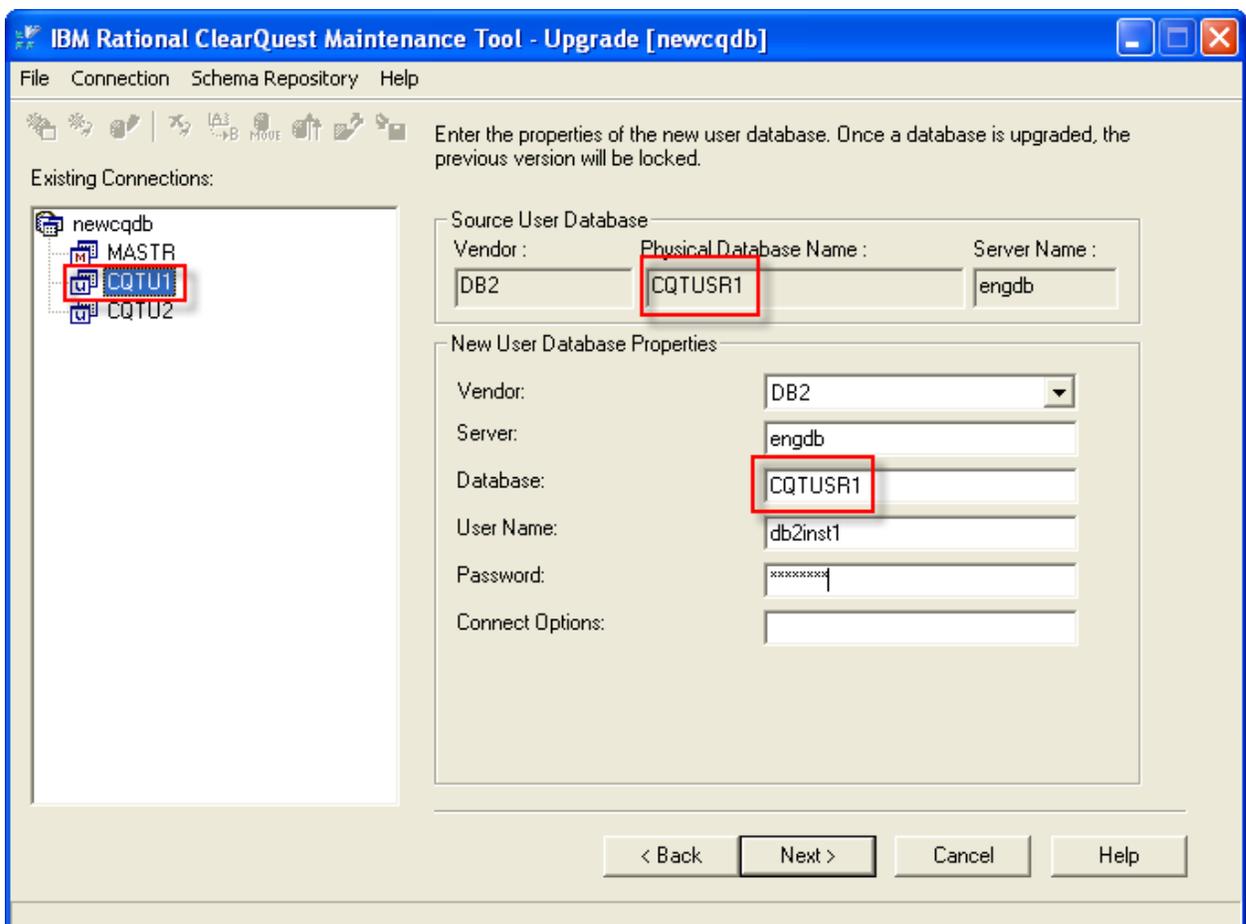
As with the scheme database previously, we again receive a warning and we have a chance to cancel the upgrade if the backups previously taken are not satisfactory.
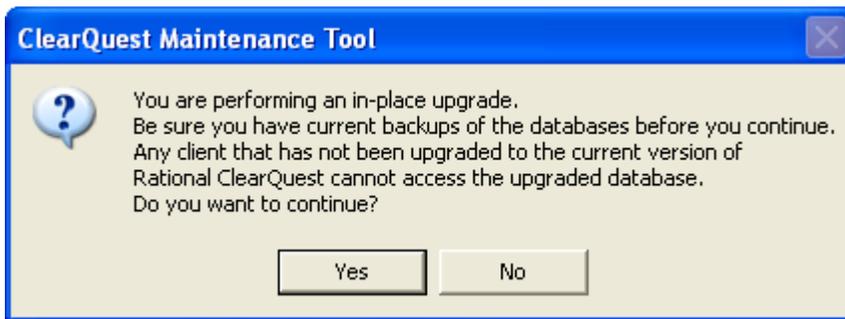
The second user database is also an in place upgrade, and the database names are the same for that reason. We now click Finish to launch the upgrade for the databases.
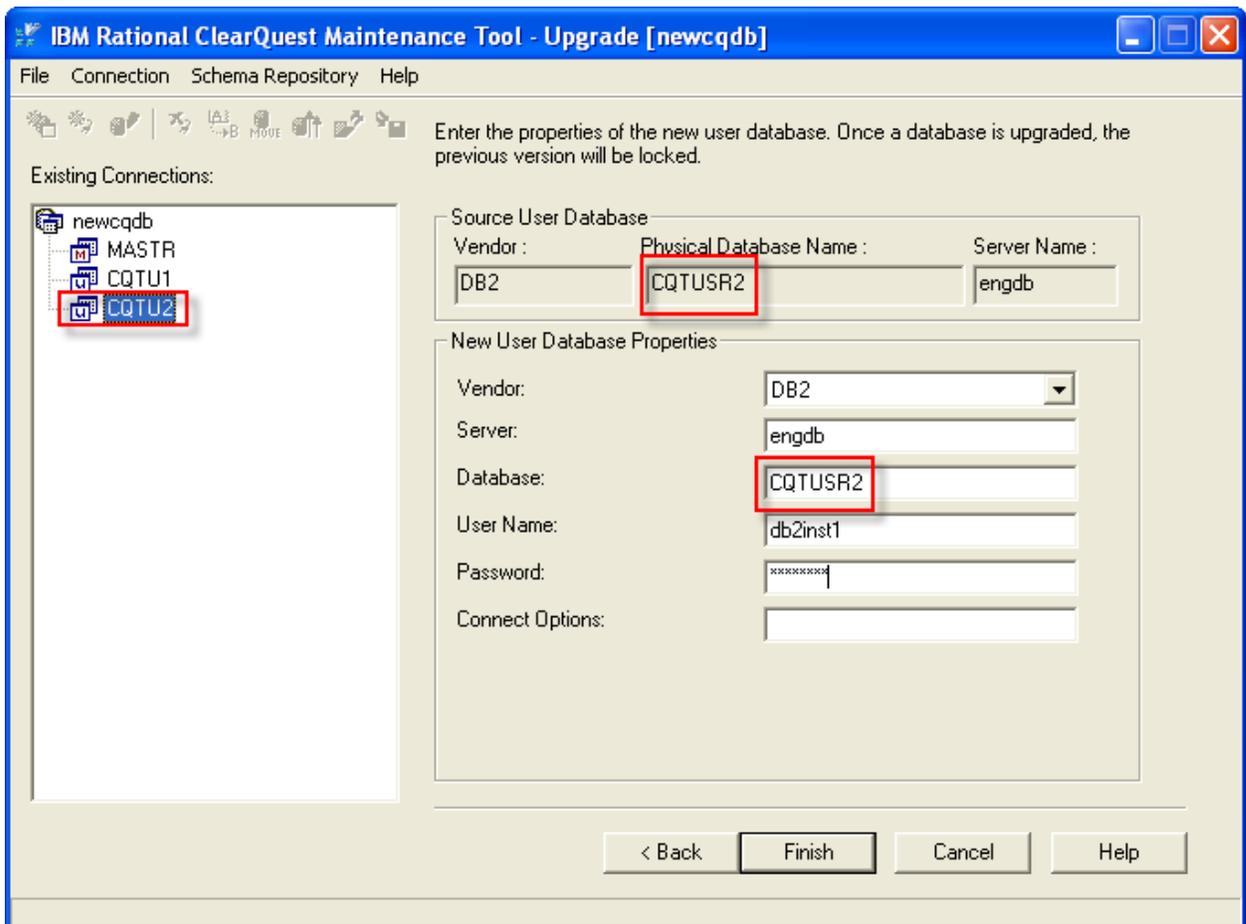
One last check regarding the backup for the second user database. Click Yes if you want to proceed.
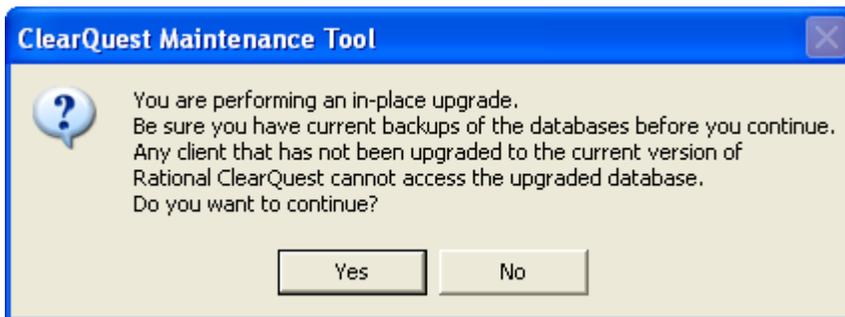
Up, up, and away. The screenshot below shows the initiation of the upgrade process.
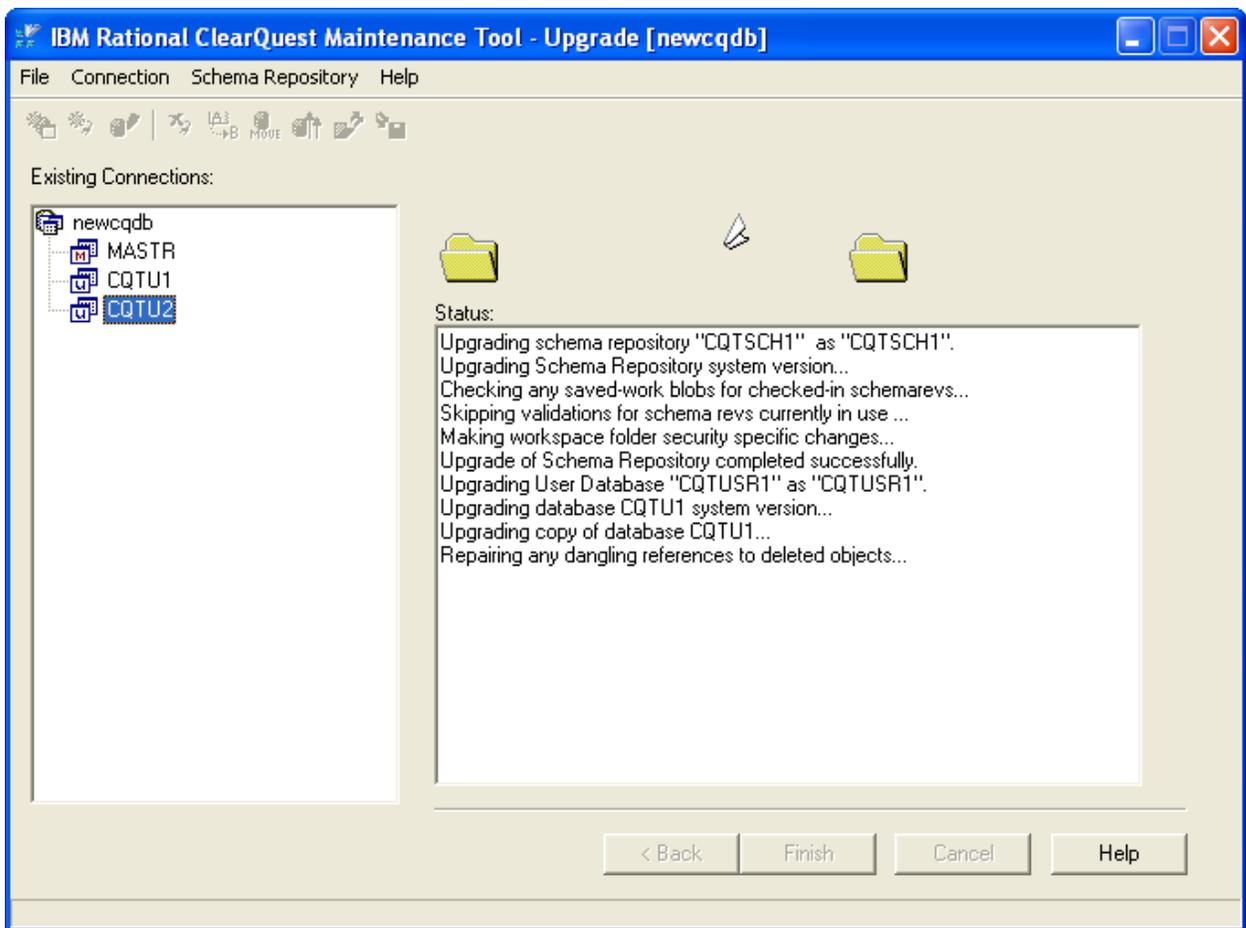
The next screenshot shows the final successful result of the upgrade. Note that each database upgrade is mentioned in the status log, along with each successful conclusion (outlined in red). Click Done to complete the upgrade process.
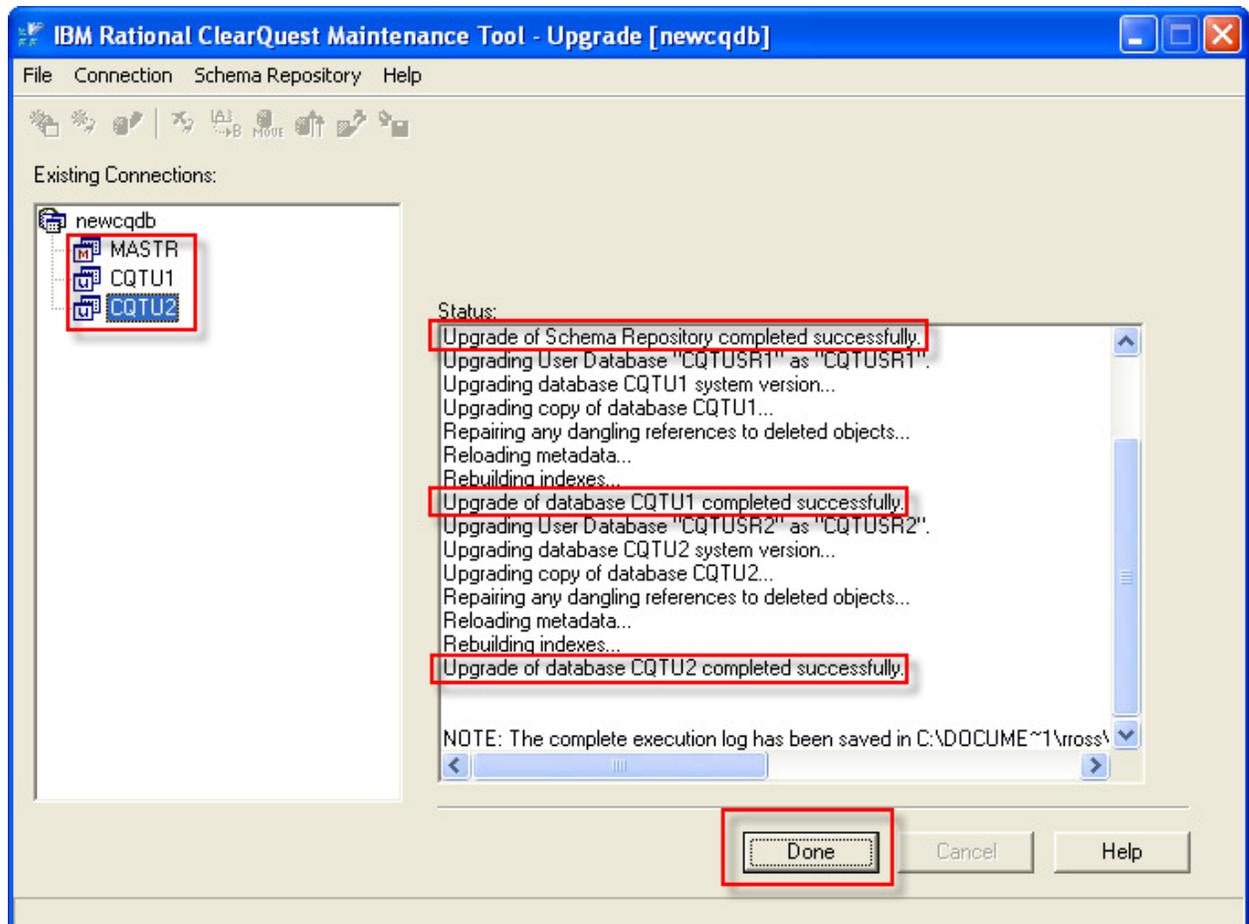
The next screen takes us back to where we started.

We are now done with the upgrade. Click Exit in the screenshot below to close the ClearQuest Maintenance Tool.
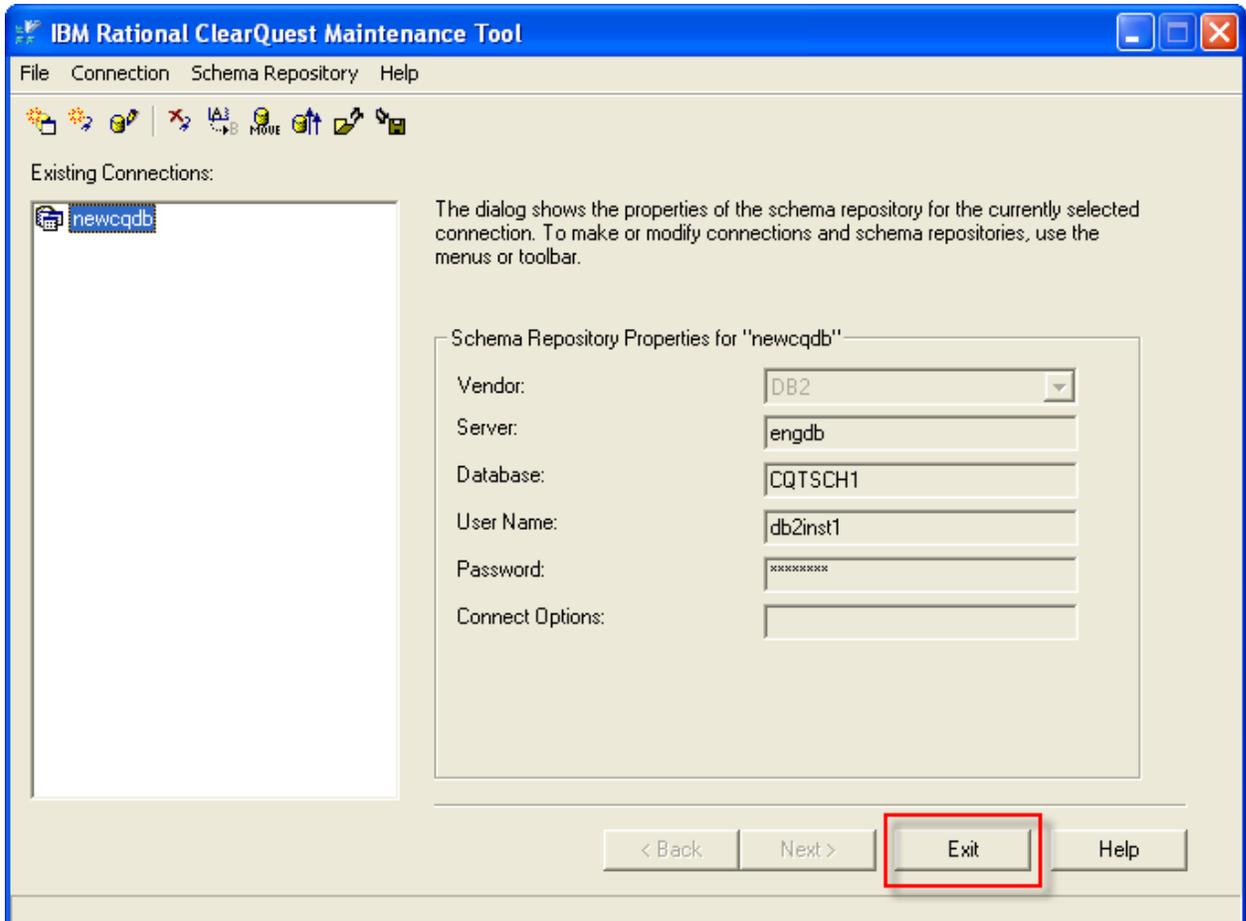
This concludes the demonstration of upgrading a ClearQuest back end database to feature level 7. The main thing to keep in mind when conducting such an upgrade is whether or not you want to do an in place upgrade, or direct the upgrade to a second database.

If a second database is used, it would be specified in the upgrade panels above. There will be no consequence to the users of ClearQuest, who will see no difference when they launch ClearQuest (aside from any new features provided by the upgrade).

The reason for this is that the logical database name used in the ClearQuest schema database abstracts the user from knowing about the physical database name. The physical database name can change, and even be a new database, but the user experience remains the same. Keep this in mind when deciding on how to do any feature level upgrade. The in place upgrade does have some additional risks associated with it, so in any case, it always pays to do a backup before undertaking any significant changes to a software application such as ClearQuest.