HammerDB Quick Start Tutorial

This quick start tutorial gets you up and running with the essentials of load testing for Oracle, Microsoft SQL Server, MySQL, PostgreSQL and Redis . We assume that you have a standalone notebook or desktop running Windows or Linux (Windows is required for SQL Server) and connection to the internet. We do not assume you already have Oracle, SQL Server, MySQL, PostgreSQL or Redis installed and assume no prior knowledge in scripting, coding or databases. All software referenced is free so no licenses are required. You should be able to complete all of the tasks within approximately 1-2 hours and we recommend that you approach each task in order.
On completion of this tutorial your system will be installed with Oracle, SQL Server (if running Windows) , MySQL, PostgreSQL and Redis and you will have created a schema, populated it with data and run a load test on all five databases.
This guide will provide you with the fundamental knowledge of installing and configuring HammerDB to proceed to more sophisticated database load testing projects.

Installing HammerDB

HammerDB is installed on both Linux and Windows with a graphical installer, consequently on Linux you need an X Windows environment with which to display the installer. Configure your DISPLAY environment variable to point to the correct X Windows display.

```
[oracle@server1 ~]$ export DISPLAY=server1:0.0
```

To start the installer on Linux make the installer file executable and then run the installer executable.

```
[oracle@server1 ~]$ chmod u+x HammerDB-2.13-Linux-x86-64-Install

[oracle@server1 ~]$ ./ HammerDB-2.13-Linux-x86-64-Install
```

On Windows double-click on the setup file that is appropriate for your system. Note that for Oracle Users, Oracle Express is only available as a 32-bit application on Windows and therefore HammerDB for 32-bit Windows should be installed.

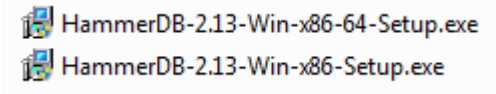

Figure 1 HammerDB Windows Setup

The installer will start giving you the option of selecting the installation language

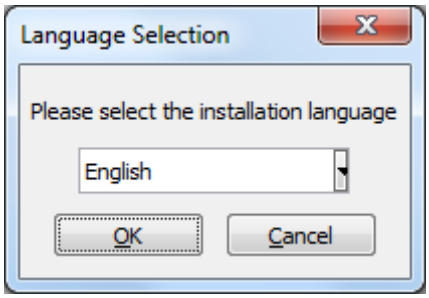

Figure 2 Select Language

You can then choose whether to continue with the installation

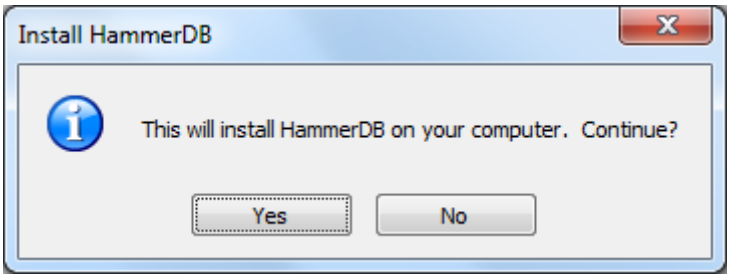

Figure 3 Continue

At the start of the install wizard, click next

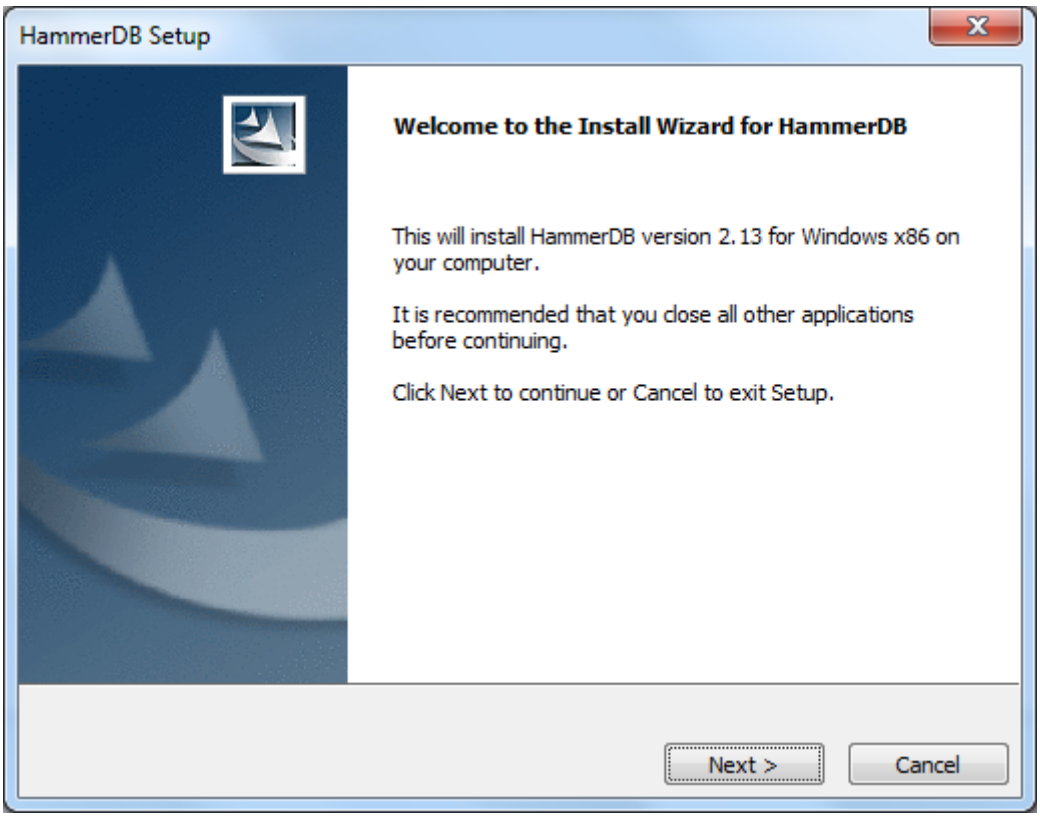

Figure 4 Welcome

Choose the destination location and Click Next. To change the default location Click Browse and select a new location.

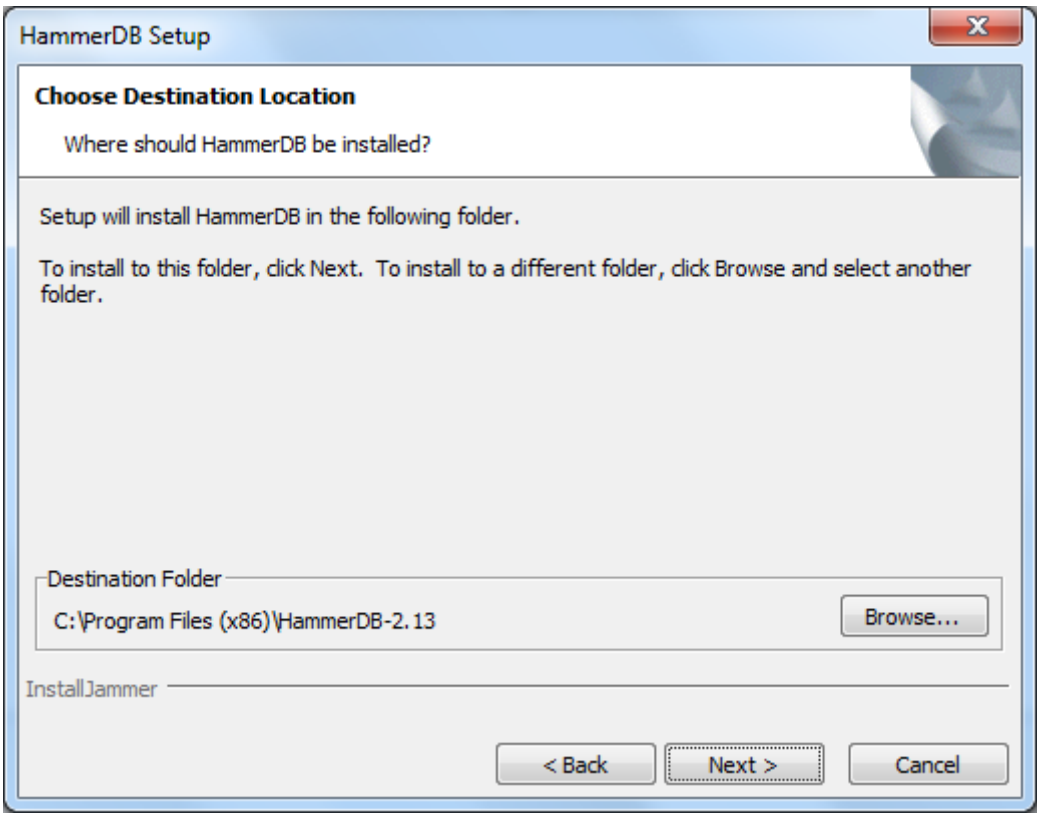

Figure 5 Choose Location

Click next to start copying the installation files

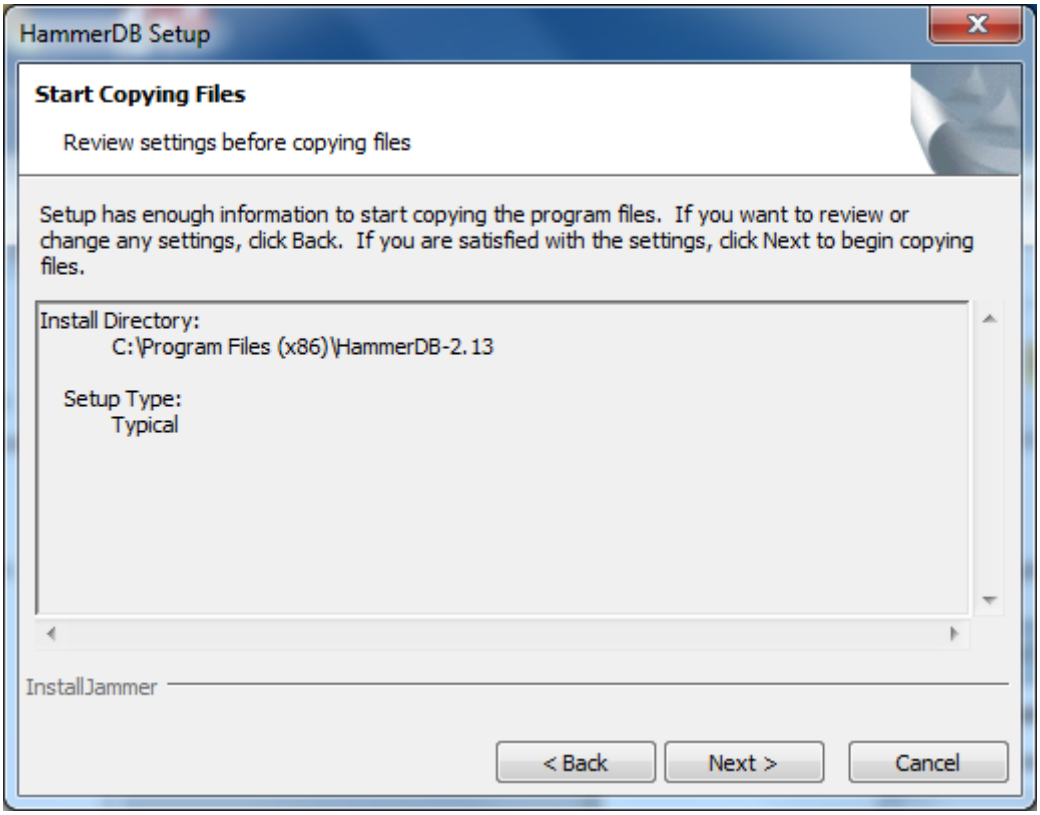

Figure 6 Start Copying

HammerDB will be installed in your selected location

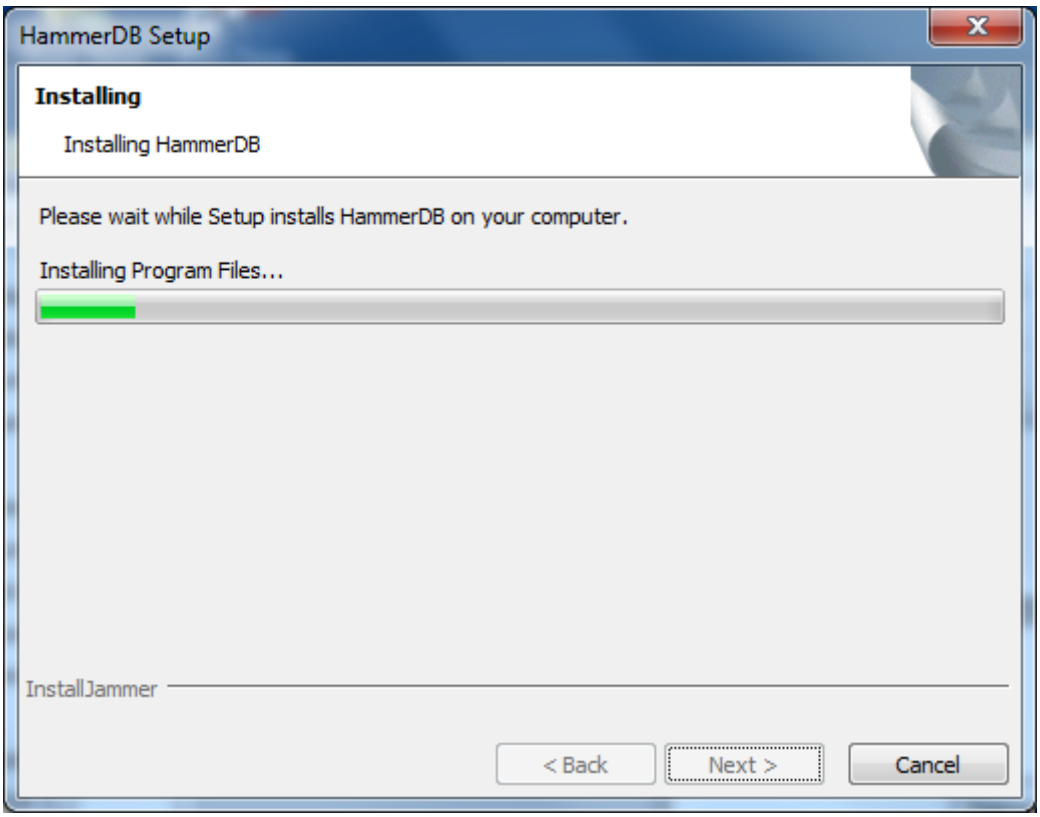

Figure 7 Installing

On the completion screen click finish

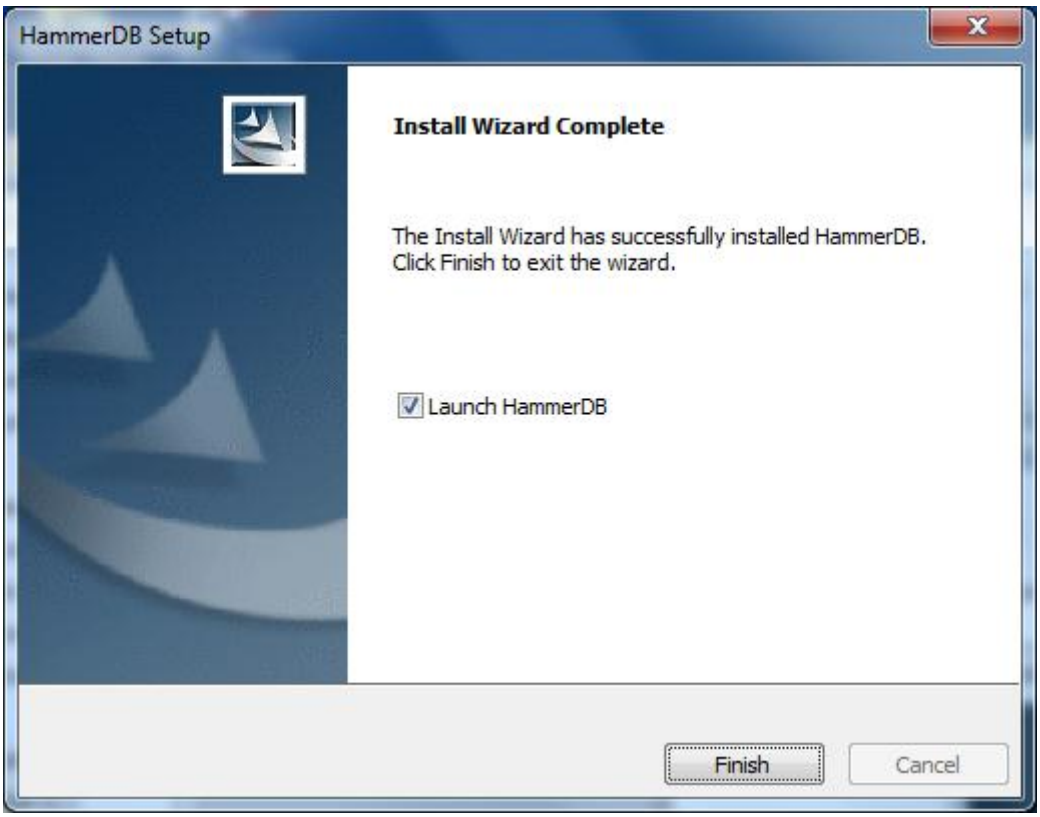

Figure 8 Complete

If you opt to launch HammerDB the main application window is displayed.

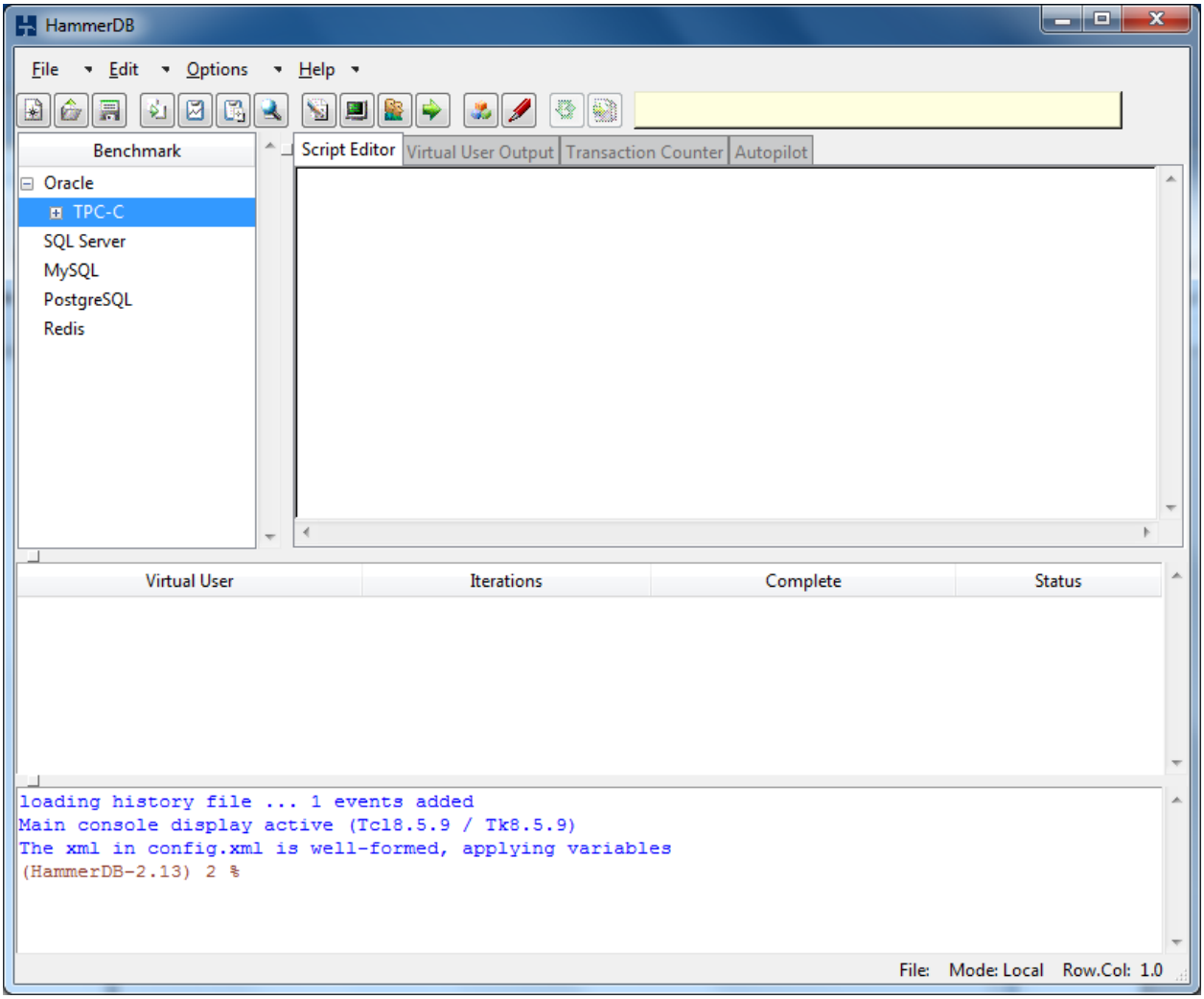

Figure 9 Application Window

Install Oracle Express

Fetch Oracle Express Edition from Oracle at the following URL:
http://www.oracle.com/technology/software/products/database/xe/index.html
and run the installer package.

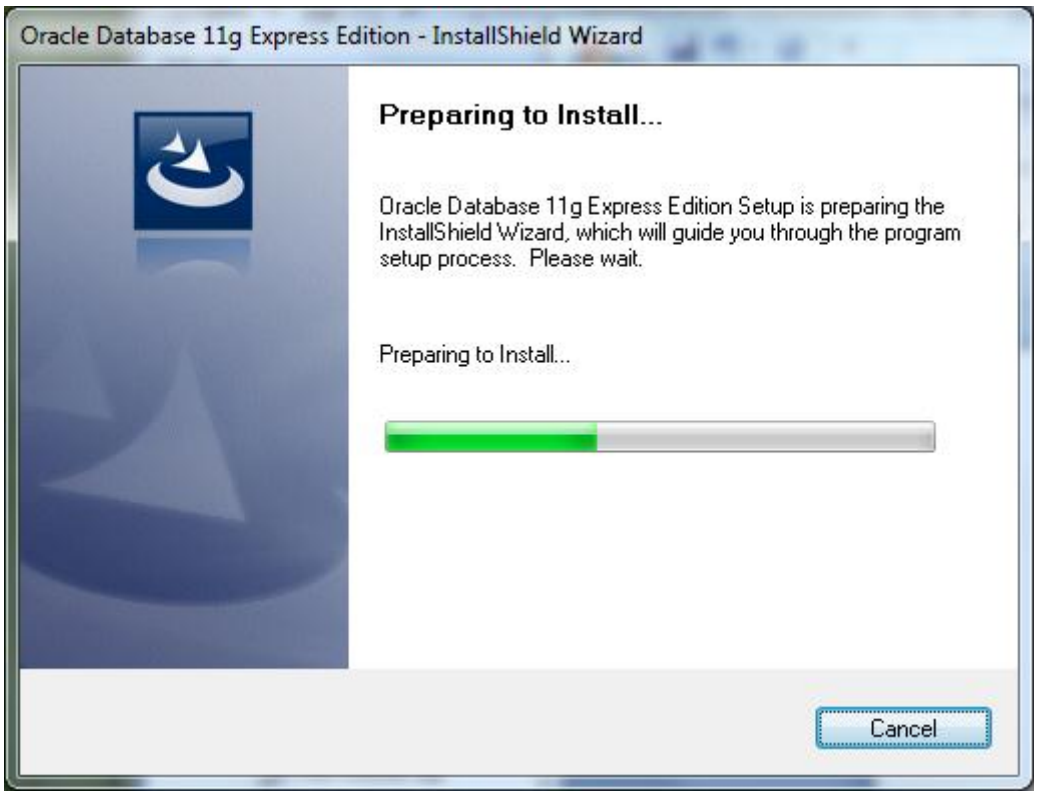

Figure 10 Prepare to install

Click next on the Welcome Screen.

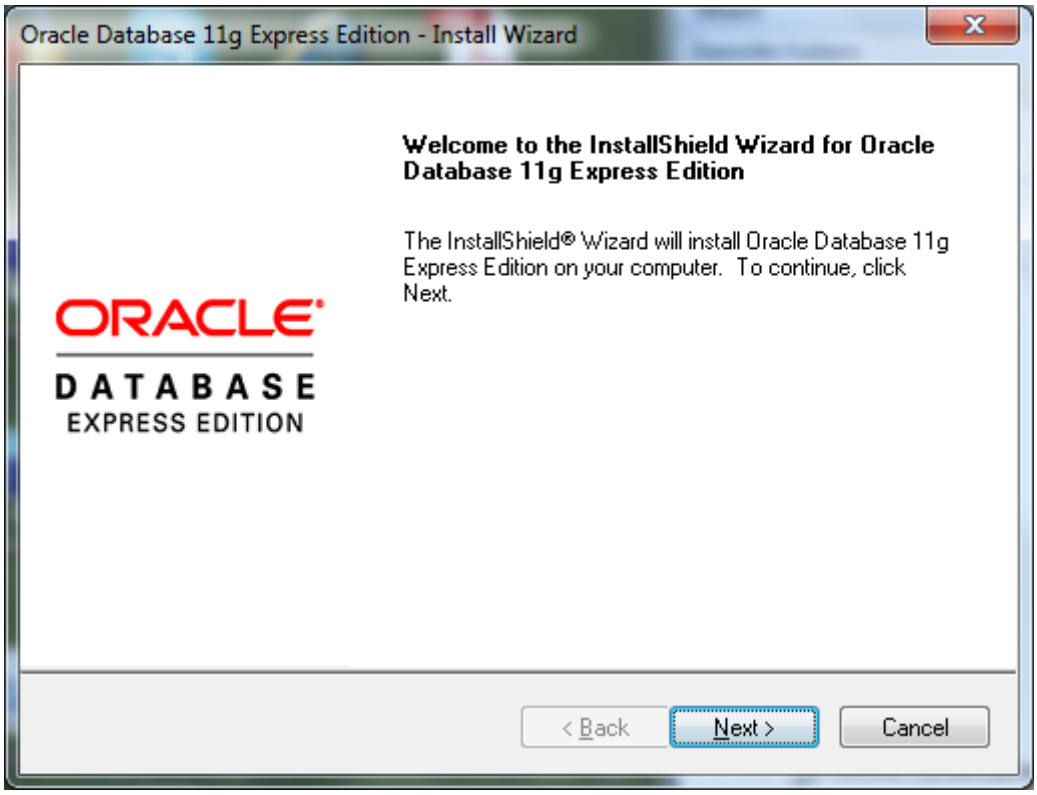

Figure 11 Welcome

Click next, to agree to the license agreement

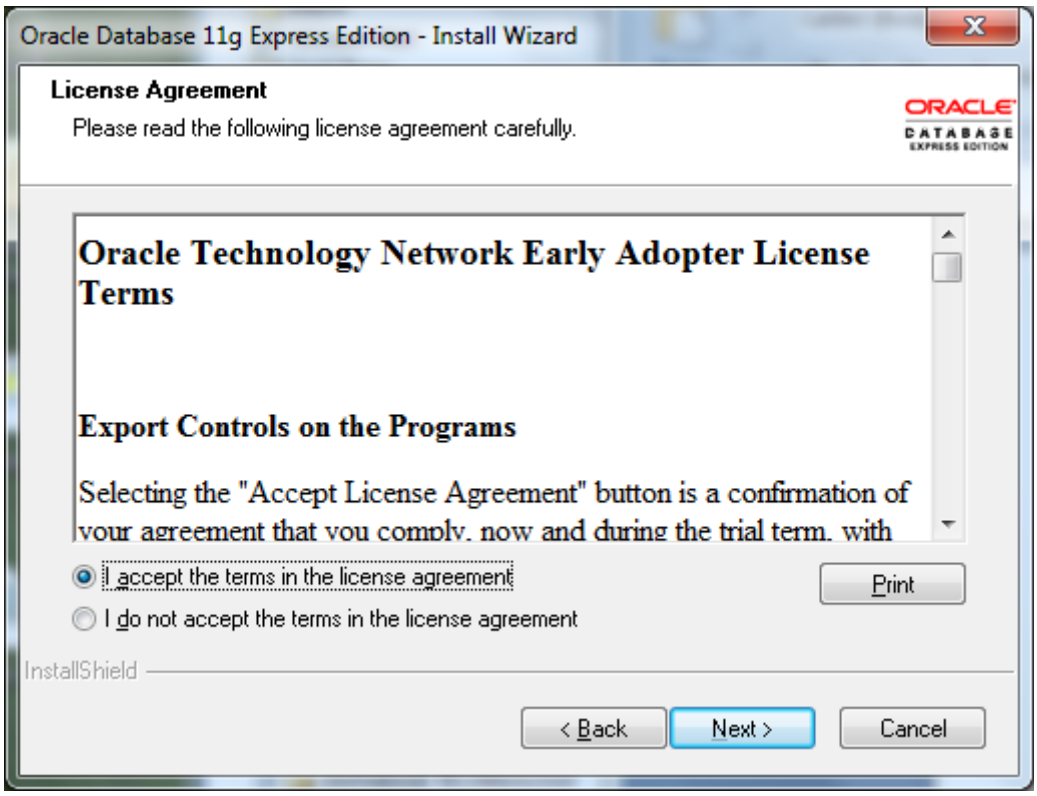

Figure 12 License Agreement

Choose your destination location. In this example Oracle Express will be installed in the D:\oraclexe directory.

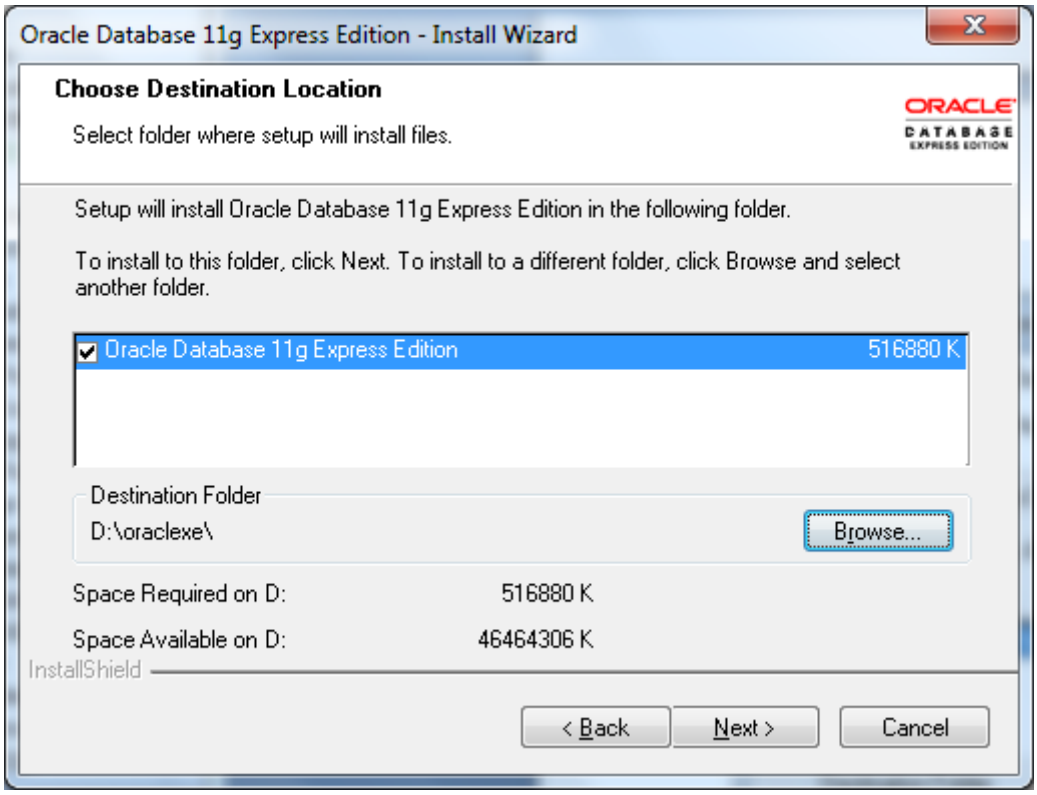

Figure 13 Destination Location

Specify your Database passwords and note them down as you will need them later for HammerDB. It is the SYSTEM user password we are going to use which is set to the same as the SYS user.

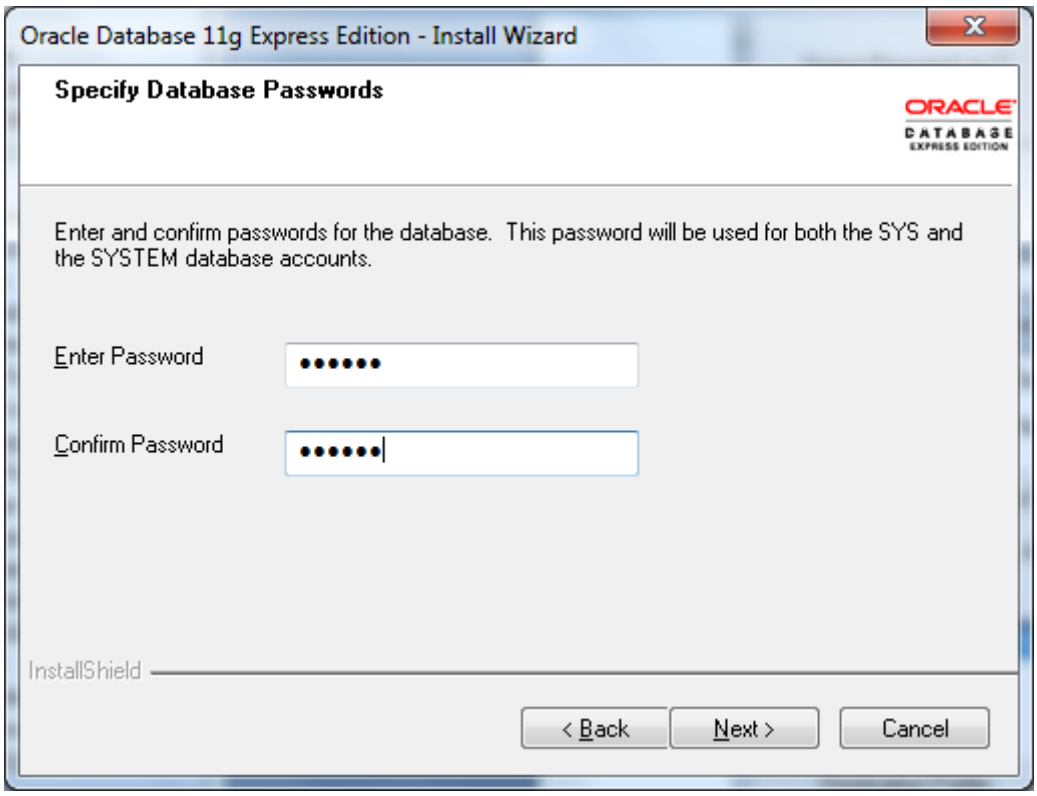

Figure 14 Set Password

On the Summary page, click Install

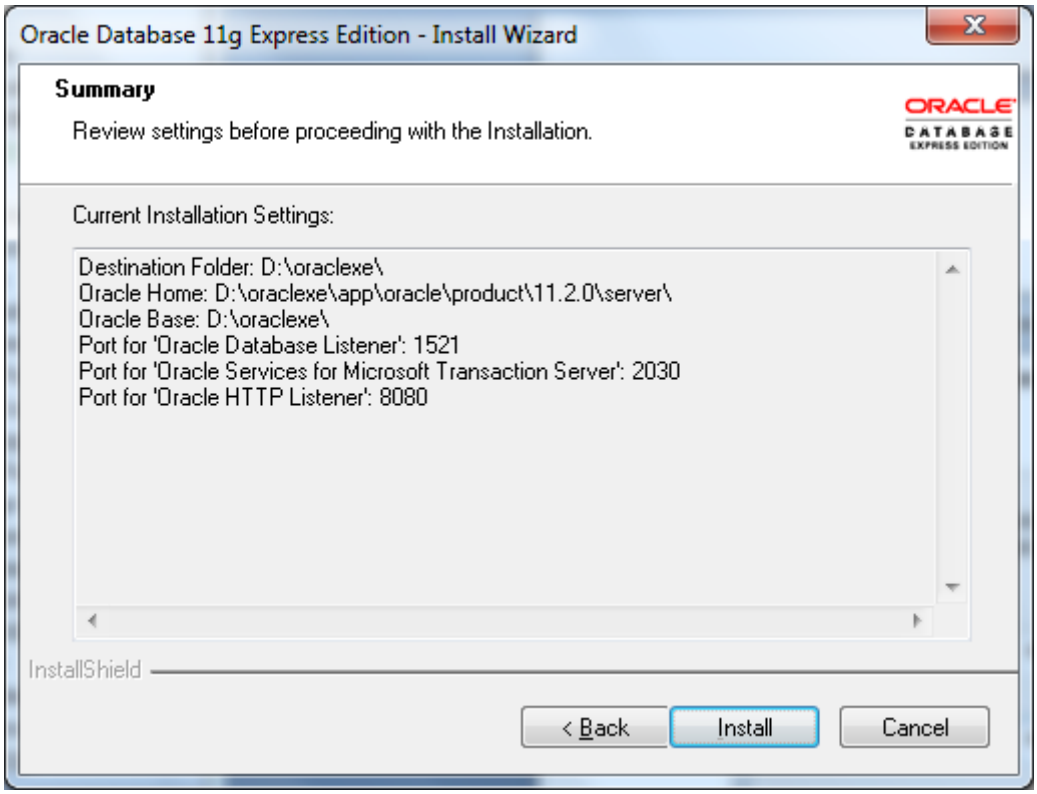

Figure 15 Install

The installer copies the install files

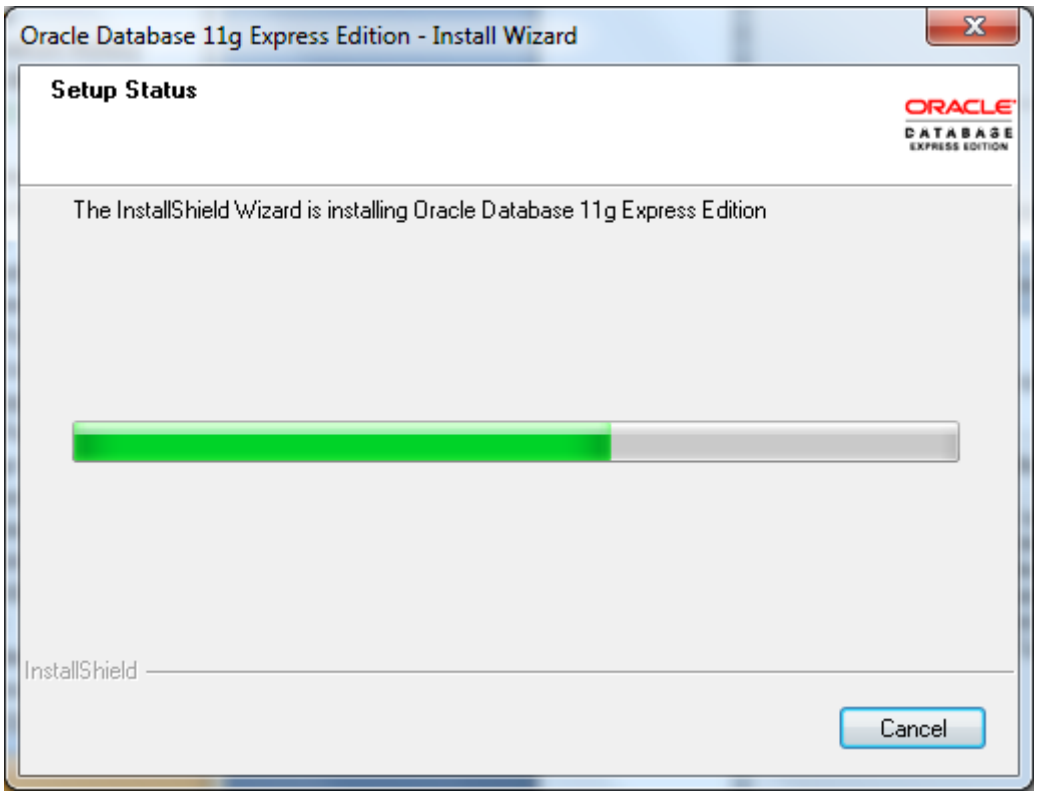

Figure 16 Copy Files

And shows the progress of the install

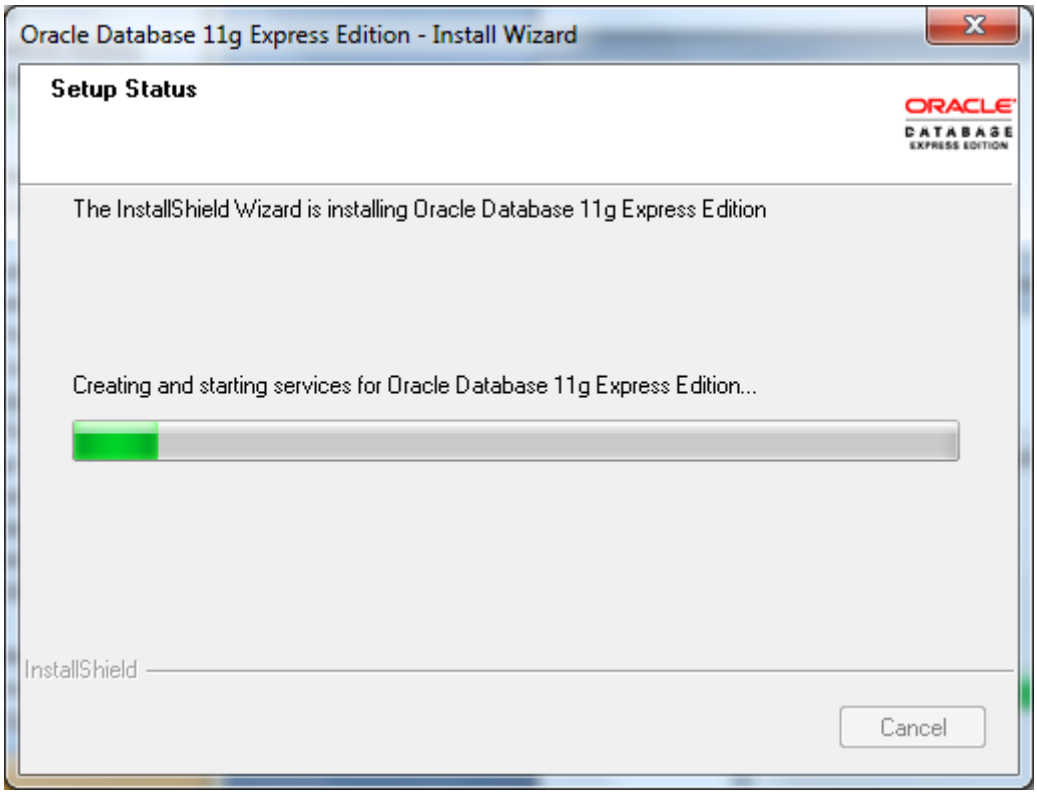

Figure 17 install Progress

When the install is complete click Finish to launch the homepage

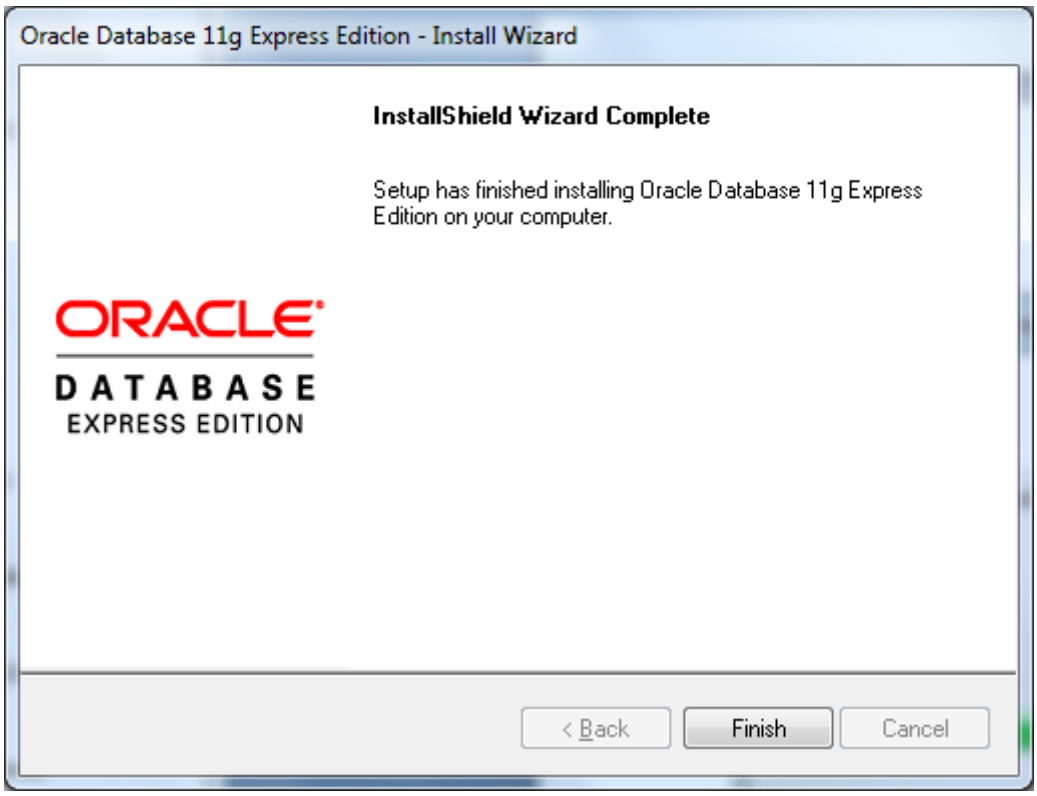

Figure 18 Install complete

Login as the sys or system user using the password you set earlier

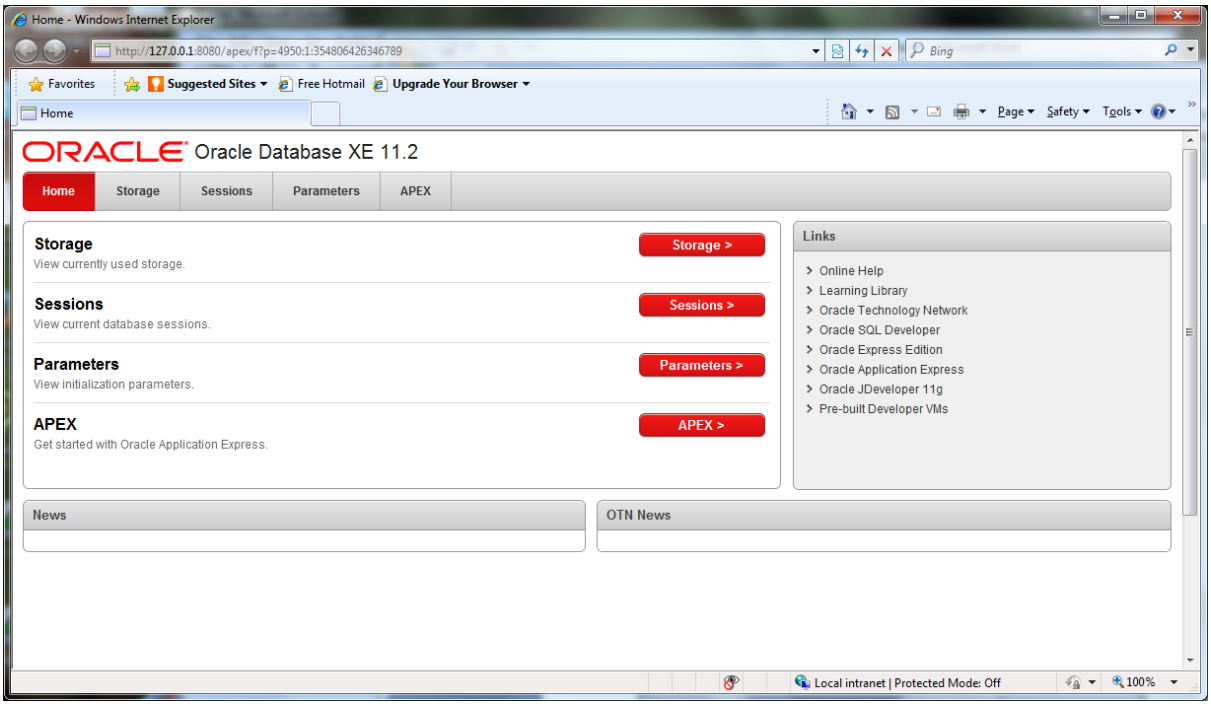

Figure 19 Login

Get familiar with the Oracle Express interface

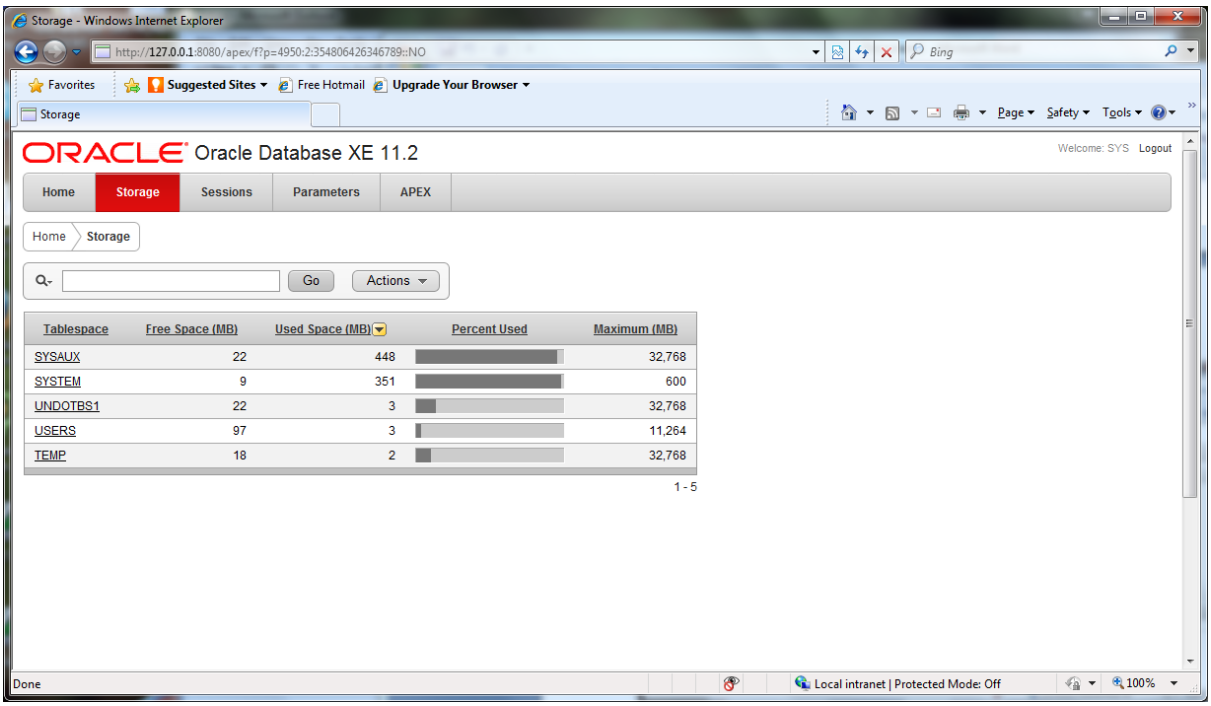

Figure 20 Oracle Express Interface

Now Reboot your system. Oracle Express modifies the PATH environment variable and for subsequent Program installations you must reboot for this change to take effect across the system. You now have an installation of the Oracle Database.

NOTE:

If you are running HammerDB against Oracle 11g on Windows there a known issues with the Oracle 11g Diagnosability Infrastructure that can cause application crashes for multithreaded applications on Windows.

To resolve this Oracle issue add the following entry to your SQLNET.ORA file.

This file is actually generated by netca. But if customers choose to
install "Software Only", this file wont exist and without the native
authentication, they will not be able to connect to the database on NT.

SQLNET.AUTHENTICATION_SERVICES = (NTS)
DIAG_ADR_ENABLED=OFF
DIAG_SIGHANDLER_ENABLED=FALSE
DIAG_DDE_ENABLED=FALSE

Create an Oracle Test Schema

Click on the Benchmark tree view and under TPC-C select TPC-C Schema options to display the TPC-C Schema options Window. Within this Window enter the details of your newly installed configuration with a service name of xe the system user password you entered during the install and a default tablespace of users which already exists within Express Edition. Note that the data

populated here is derived from the configuration file config.xml in the HammerDB directory so you can change the data to suit your environment without typing it in every time. Select a number of warehouses with the slider, 5 or 10 is good for a first test and set the Number of Threads to the number of cores or Hyper Threads on your system. Click OK.

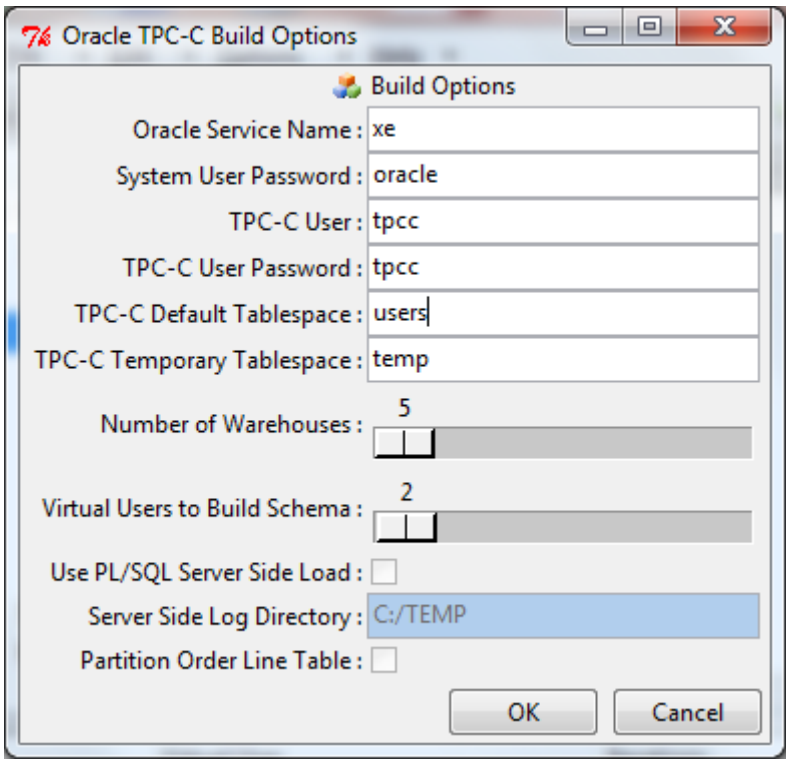

Figure 21 TPC-C Schema Options

Double-click on the Build option as shown in Figure 22.

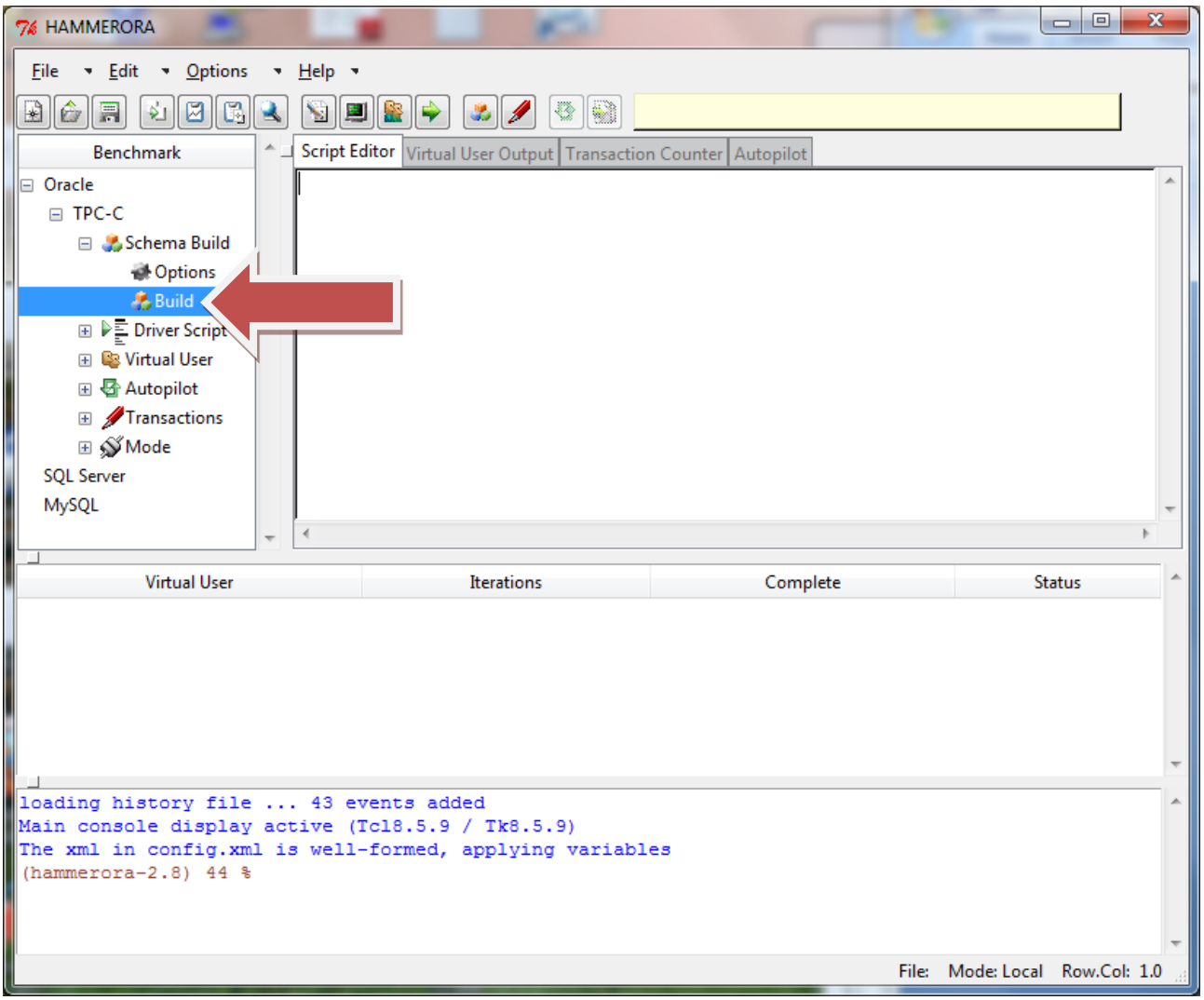

Figure 22 Create TPC Schema

On the Create Schema prompt check the details and Click Yes.

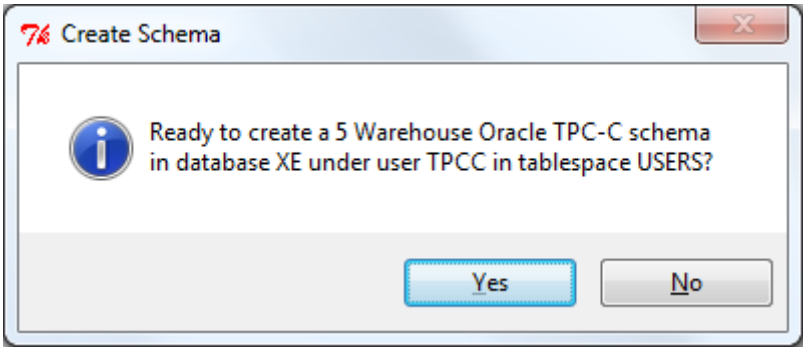

Figure 23 Create Schema Prompt

If you got an error at this point did you reboot after installing Oracle Express Edition? If not now is a good time to do the reboot to set your environment variables system wide.
Wait for the Schema creation to complete, the time to completion depends on your system but should normally be less than 5 minutes.

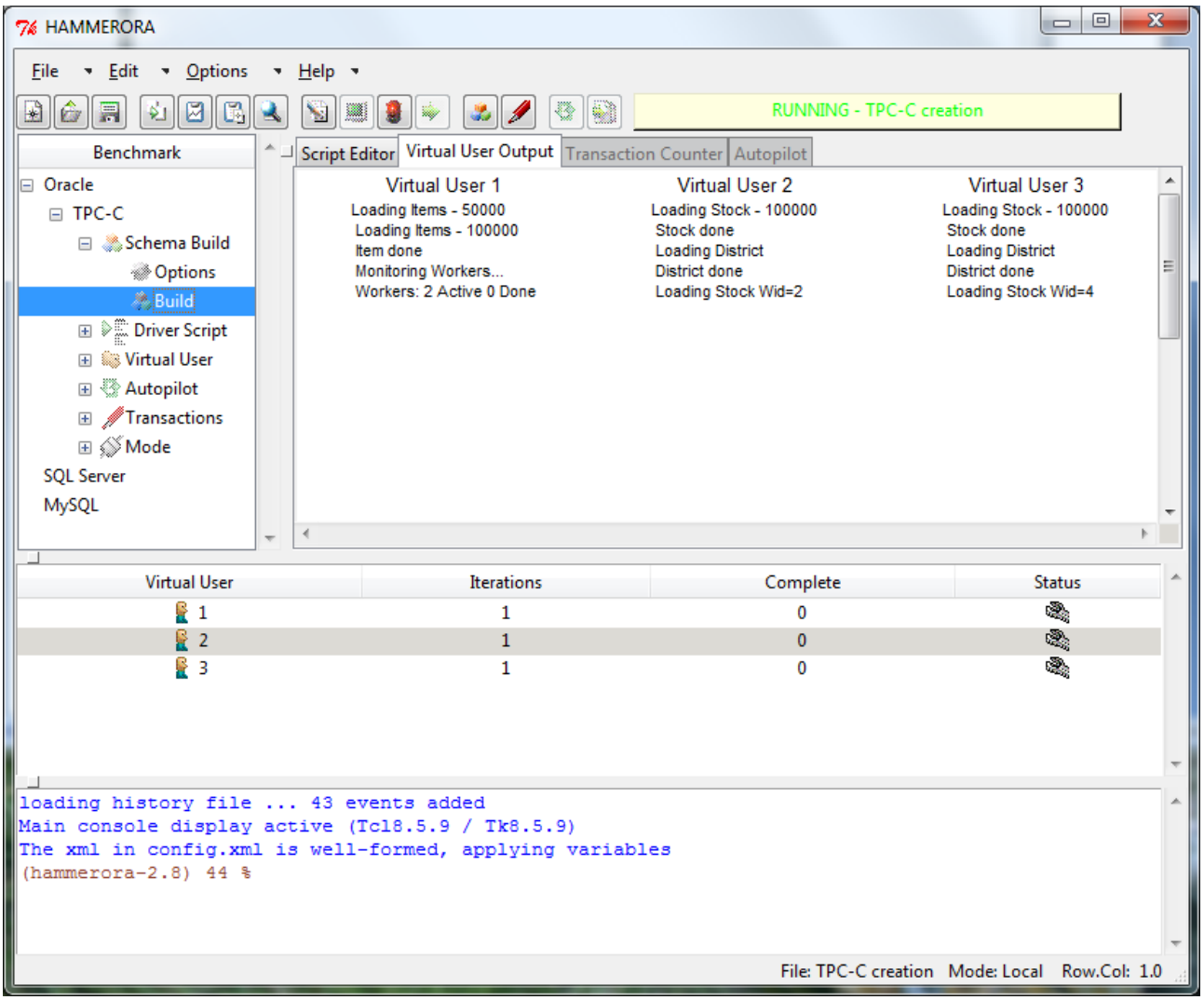

Figure 24 Schema Creating

When the Display shows TPCC SCHEMA COMPLETE and all users have completed successfully the build is finished. Press the red traffic light icon to close the users down.

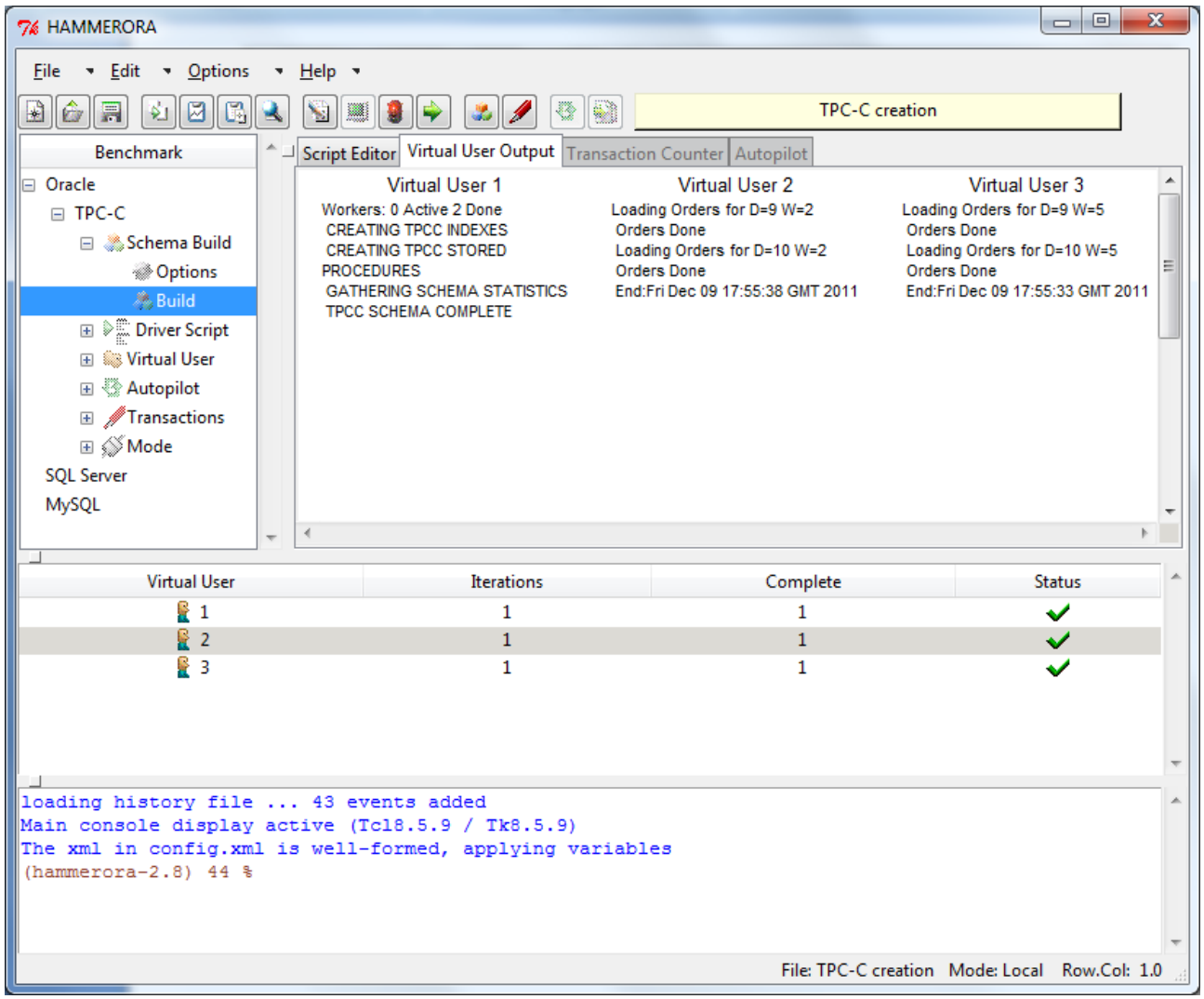

Figure 25 Schema Complete

Now log in to the Oracle Express Homepage as a user with DBA privilege with the password you specified.

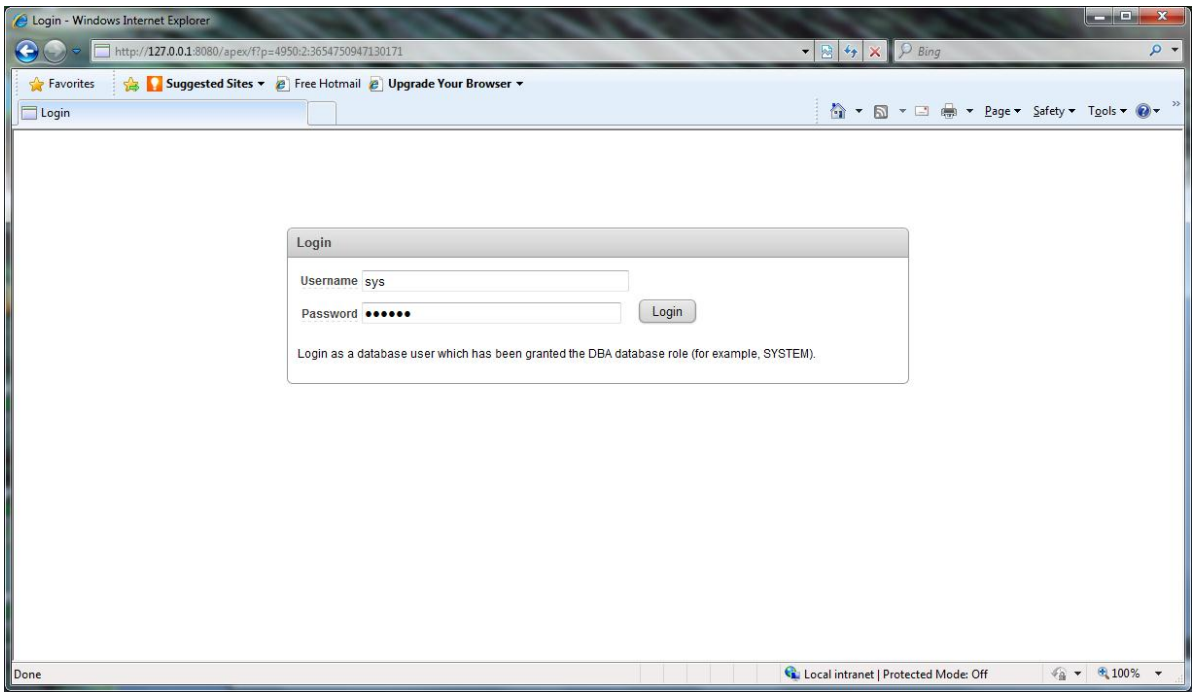

Figure 26 Login as SYS

Take a moment to browse the schema and observe the created tables and data that has populated them.

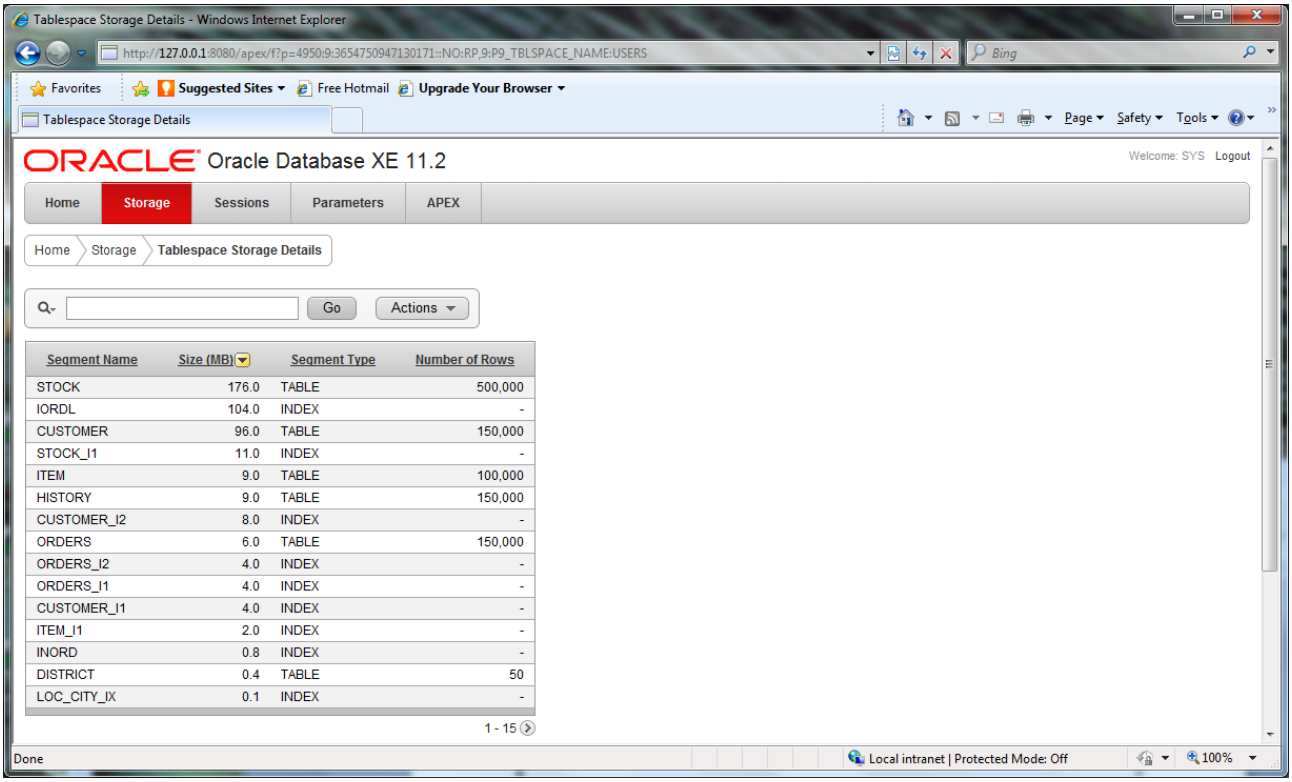

Figure 27 Browse Schema

Running an Oracle Load Test

You can now proceed to run a load test against your created schema. Under the benchmark tree view

select Driver Script and options. The choices to select for the driver script are displayed. Note that the service name and usernames if changed for the build options will also be reflected here. Accept the default values and click OK.

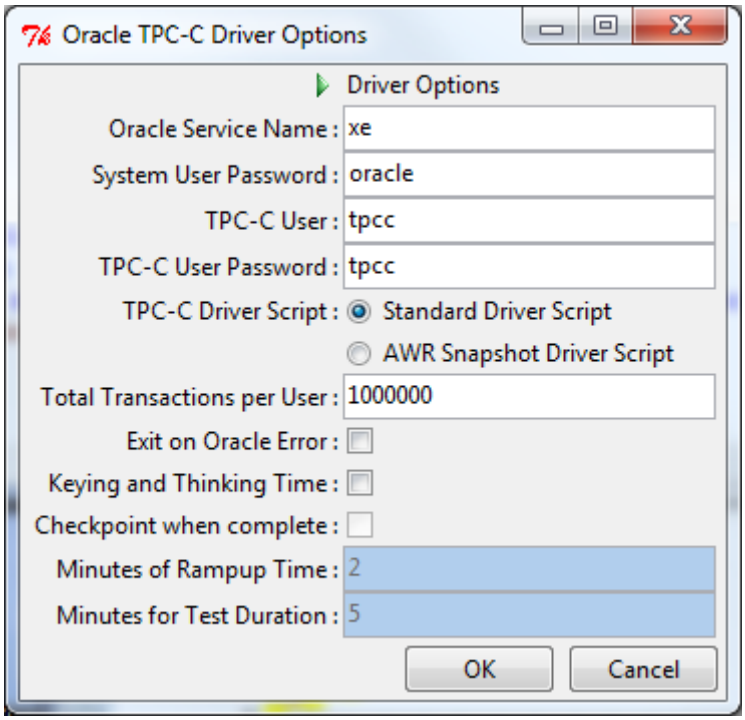

Figure 28 Driver Options

Now select Driver Script option double-click on Load, this populates the Script Editor Window with the driver script. You can observe that the EDITABLE OPTIONS correspond to the driver script options set in the previous step. You do not need to edit the script.

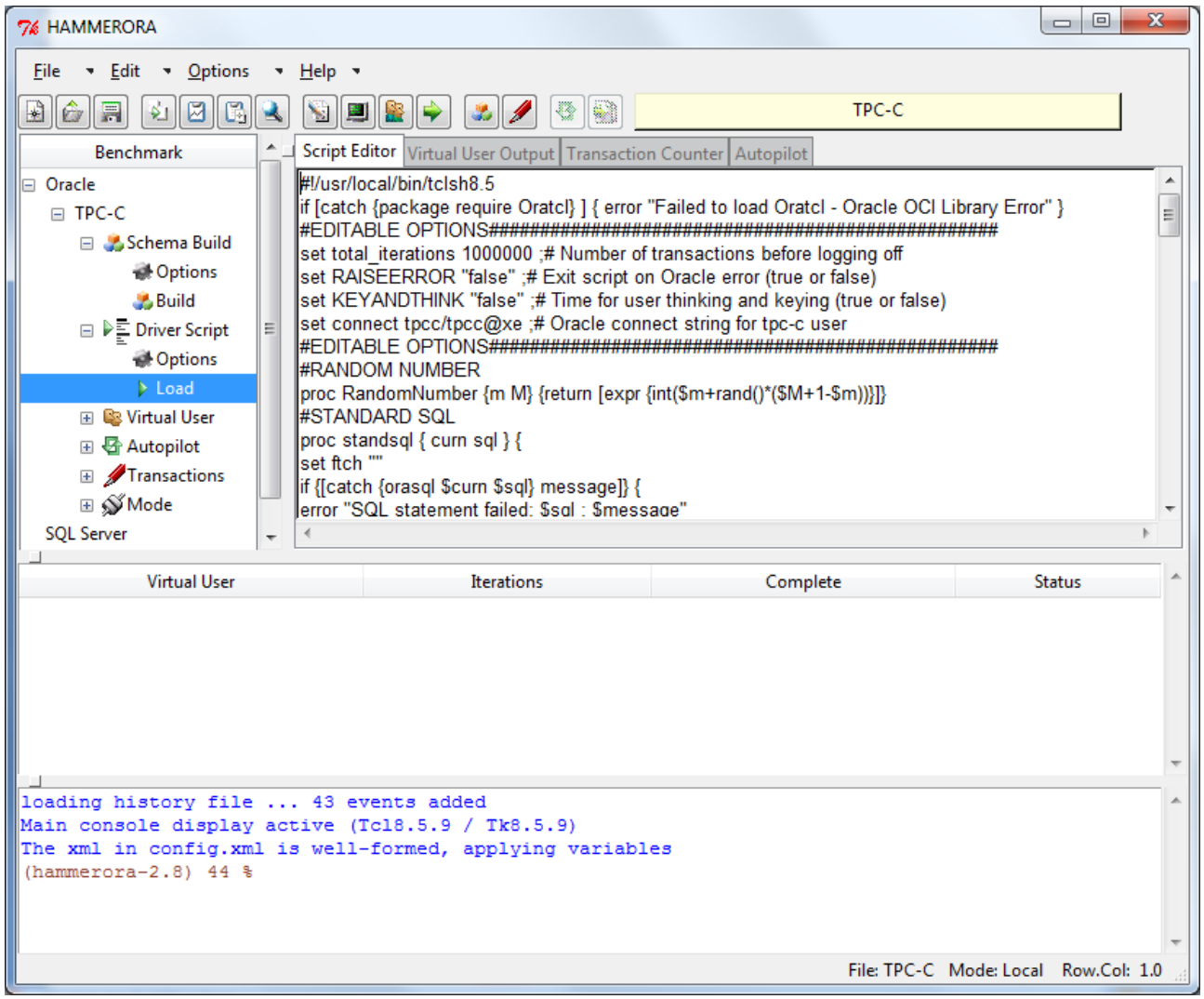

Figure 29 Driver Script

Under the Virtual User view double-click on Options and enter the number of users you wish to run against your system. Don't select too many to start with as the workload is intensive. If you wish check the Show Output button to see what your users are doing whilst the test is running, however note that displaying the output will reduce the overall level of performance and click OK.

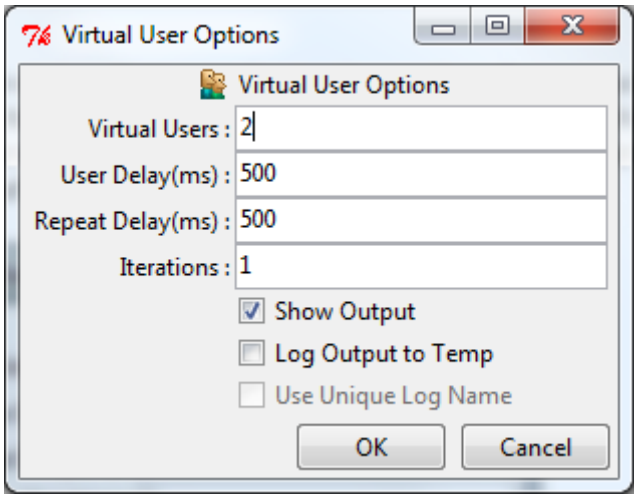

Figure 30 Virtual User Options

Double-click on Create Virtual Users as shown in Figure 31 to create the virtual users, they will not start

running yet.

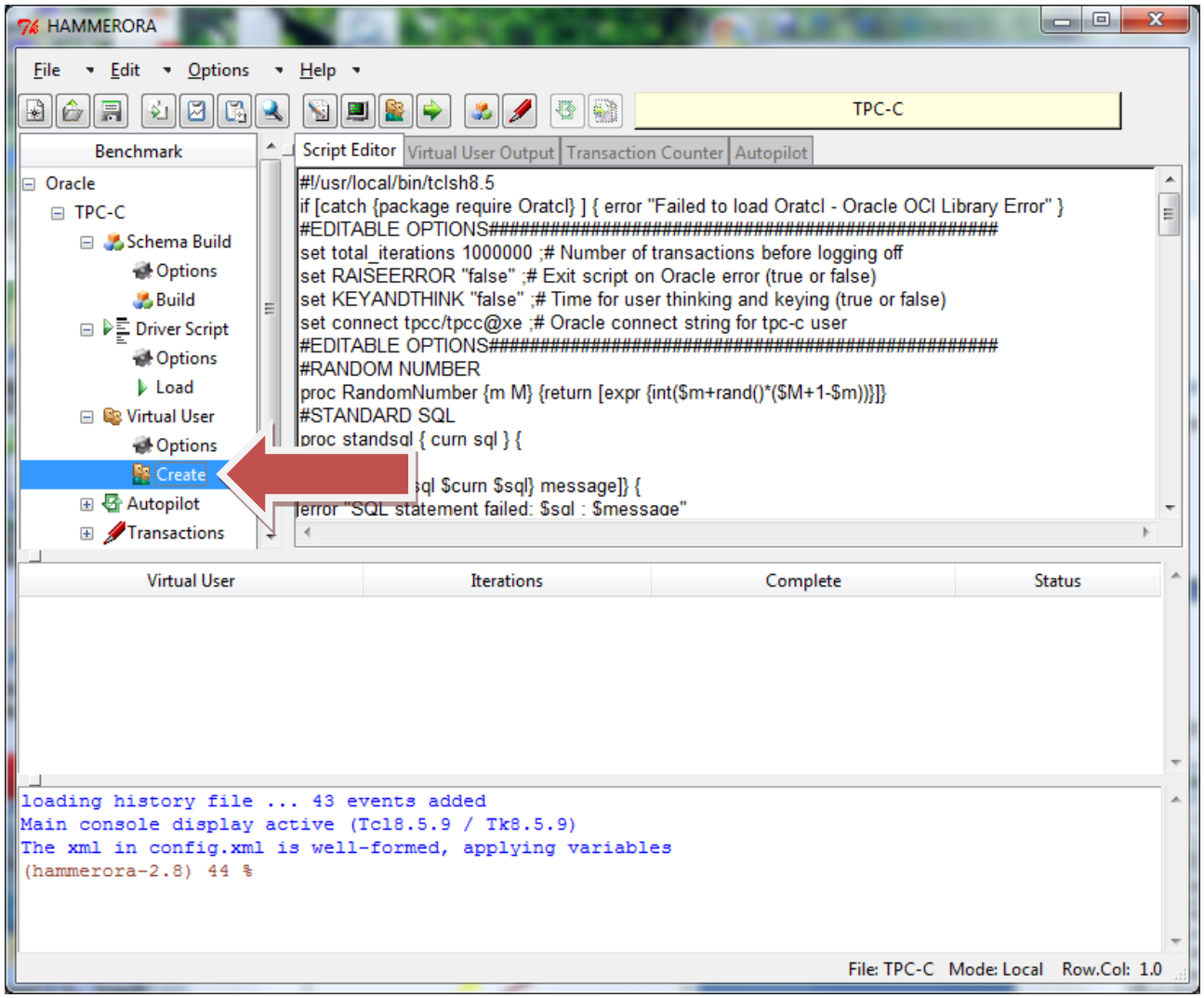

Figure 31 Create Virtual Users

You can observe that the virtual users have been created but their status is shown as waiting.

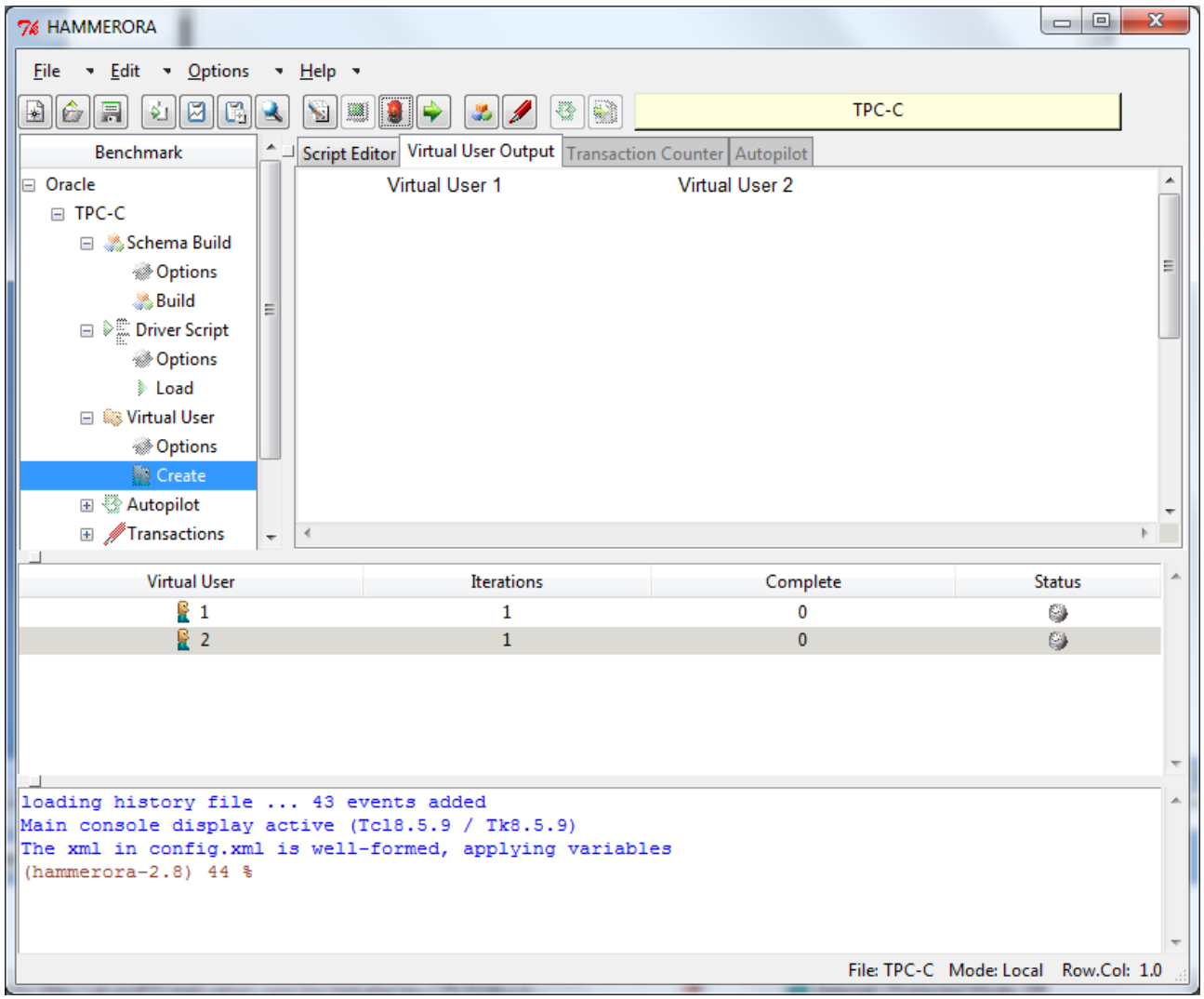

Figure 32 Virtual Users Created

Now click the Run Virtual Users button as shown in figure 33 to start the test. The virtual users will begin to execute the driver script in the Script Editor Window.

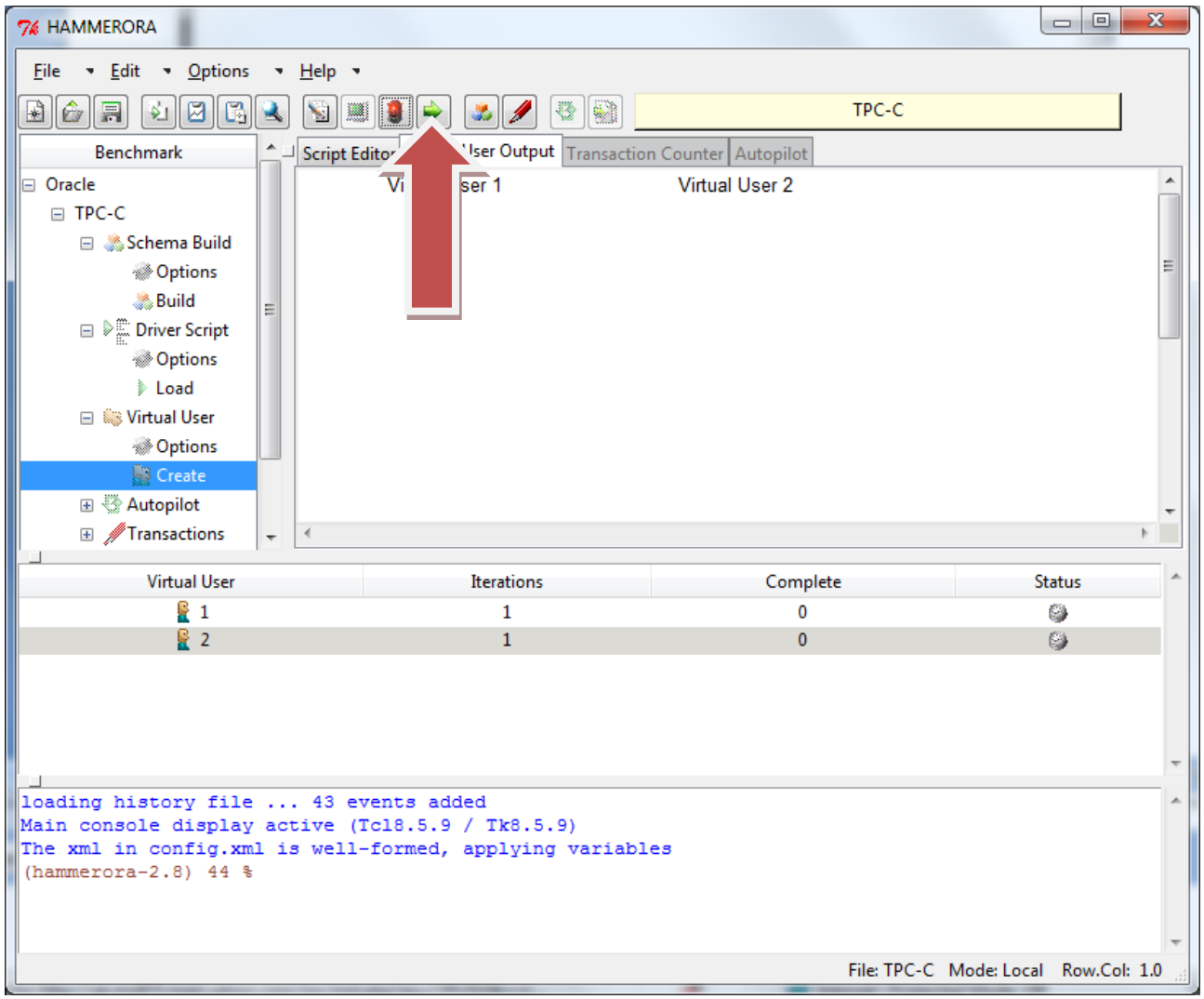

Figure 8 Run Virtual Users

You can now observe that the load test is in progress as the virtual users display their output.

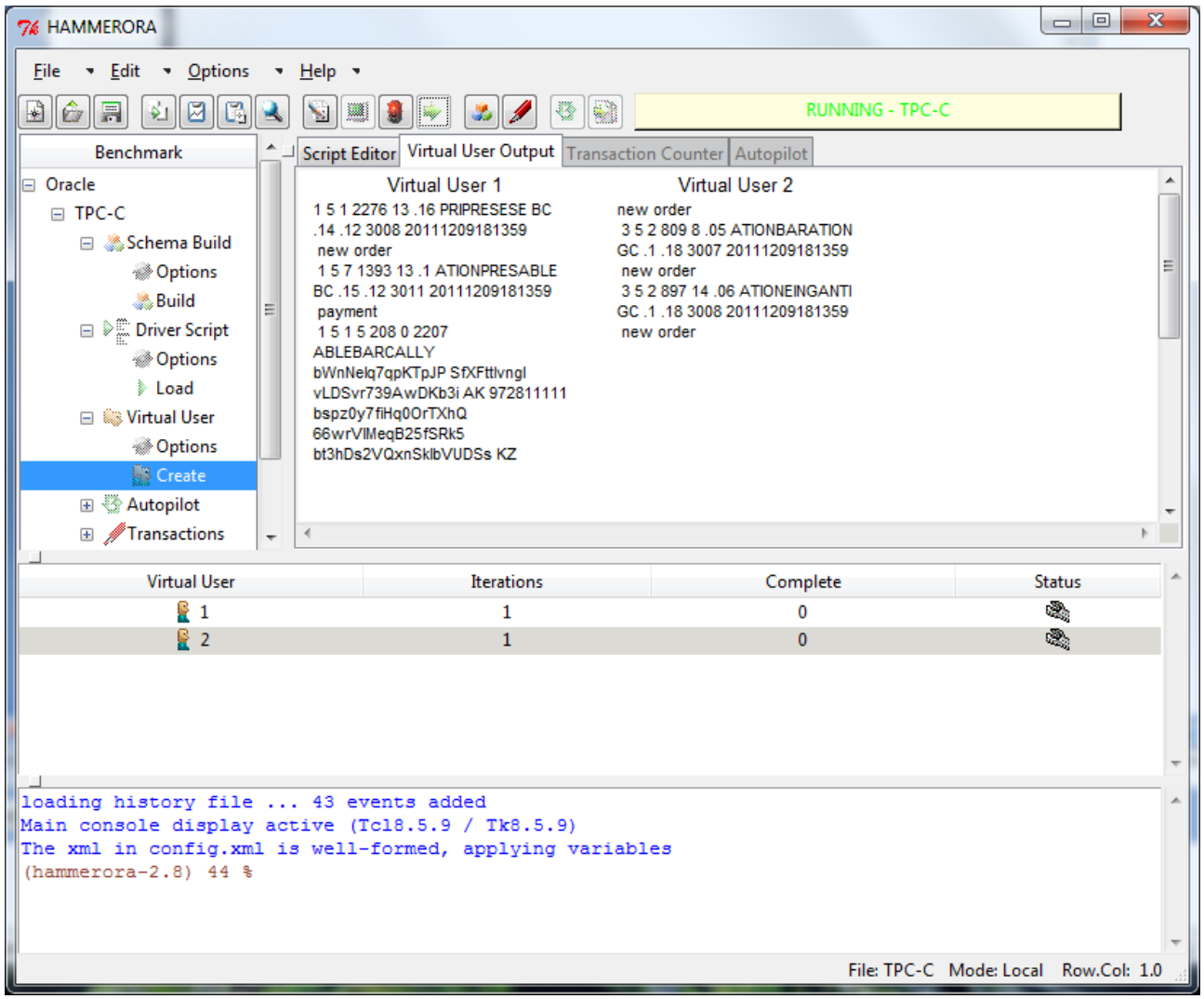

Figure 34 Running a Load Test

Also observe your system Task Manager or system performance monitor utilities. You can see that a load has been placed on the system.

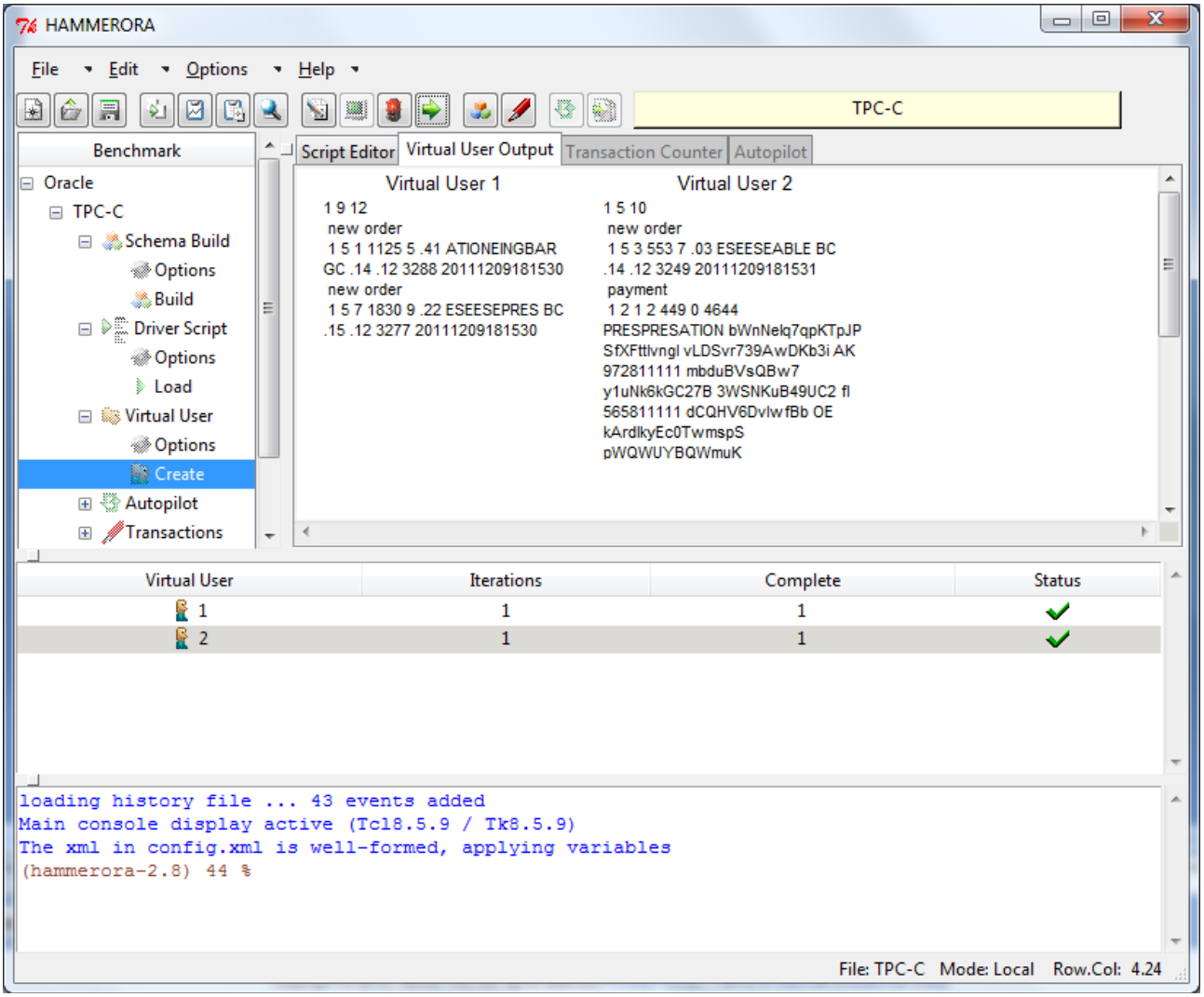

Figure 35 Virtual Users Complete

You can also observe the Oracle Performance whilst the test is in progress. To do so you can either select the Transactions Option from the treeview when virtual users are not created or while they are configured and running from the Options menu and Transaction Counter and in the connect string enter the system user with the password you set and the xe service name as shown in Figure 36.

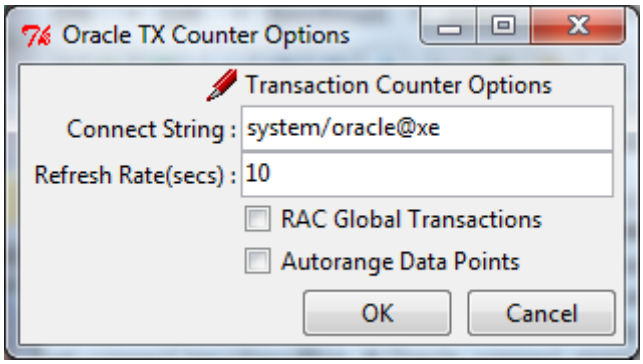

Figure 36 Transaction Counter Options

Now Press the Pencil Icon as shown in figure 37 to start the transaction counter.

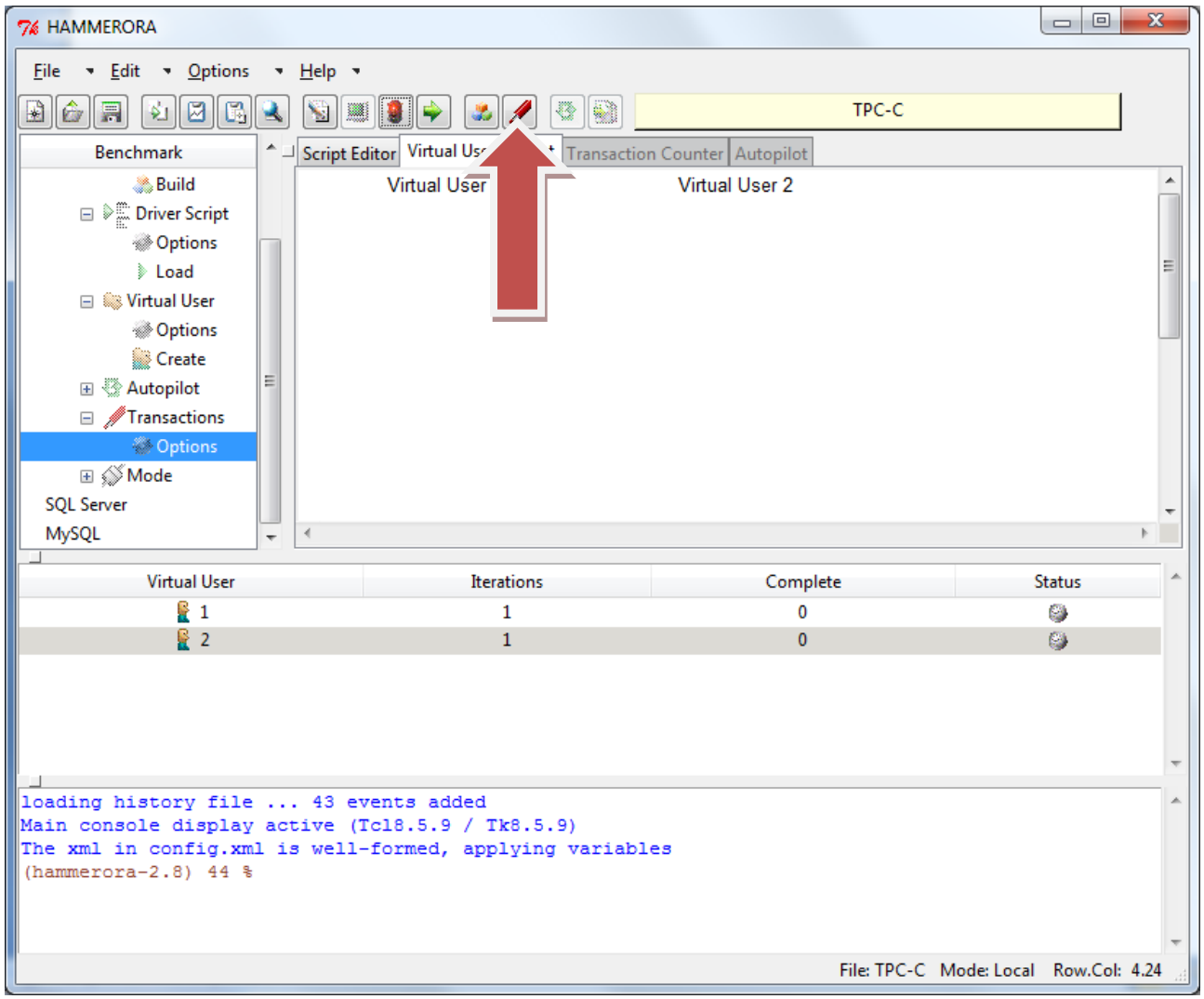

Figure 37 Start Transaction Counter

The Transaction Counter notebook pane is now activated and the message Waiting for Data… is shown as HammerDB gathers your transaction information.

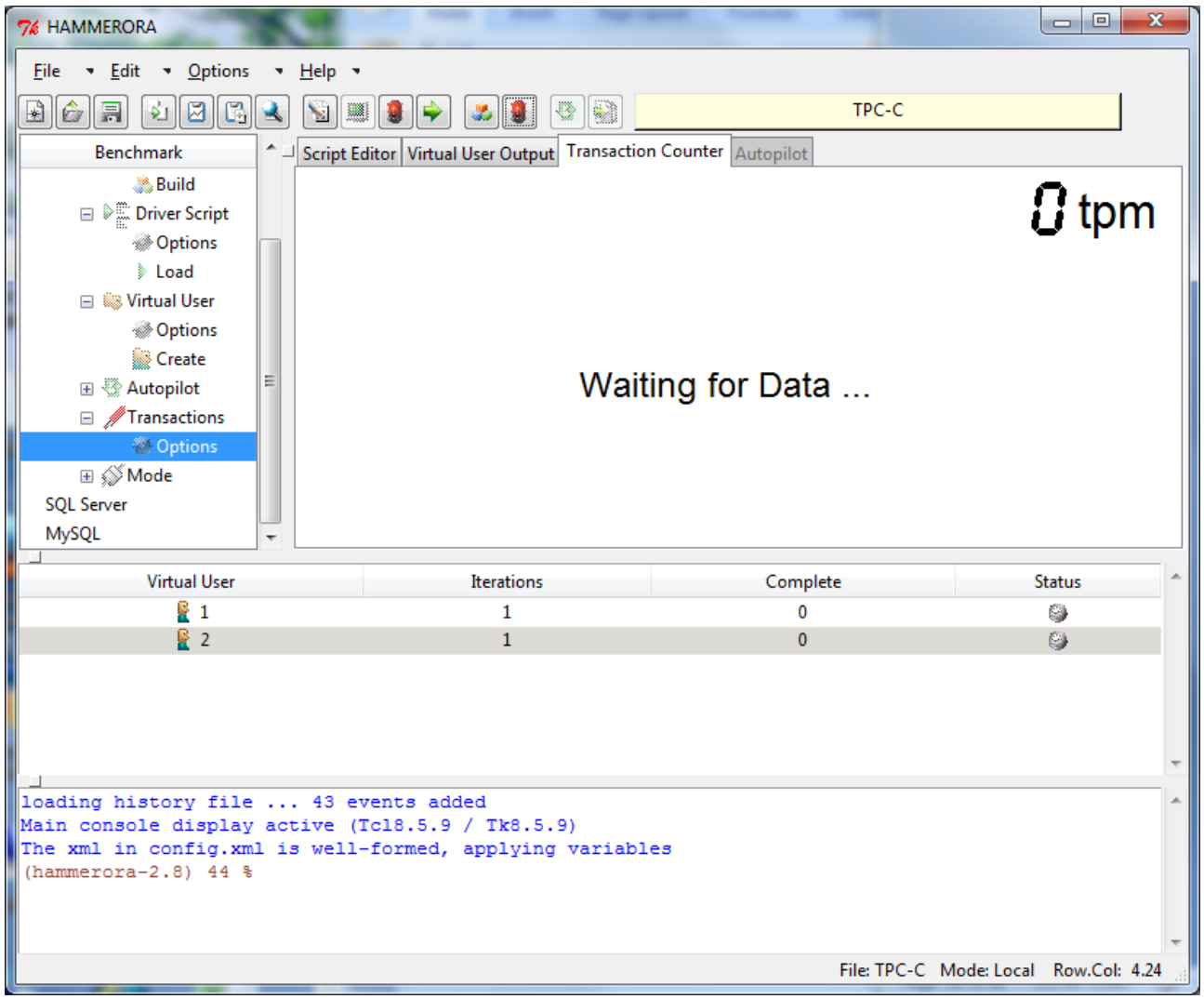

Figure 38 Transaction Counter Started

Run the HammerDB Load Test as you did previously, in this example Virtual User Output has been disabled. On the Transaction Counter Pane observe the database performance of your system.

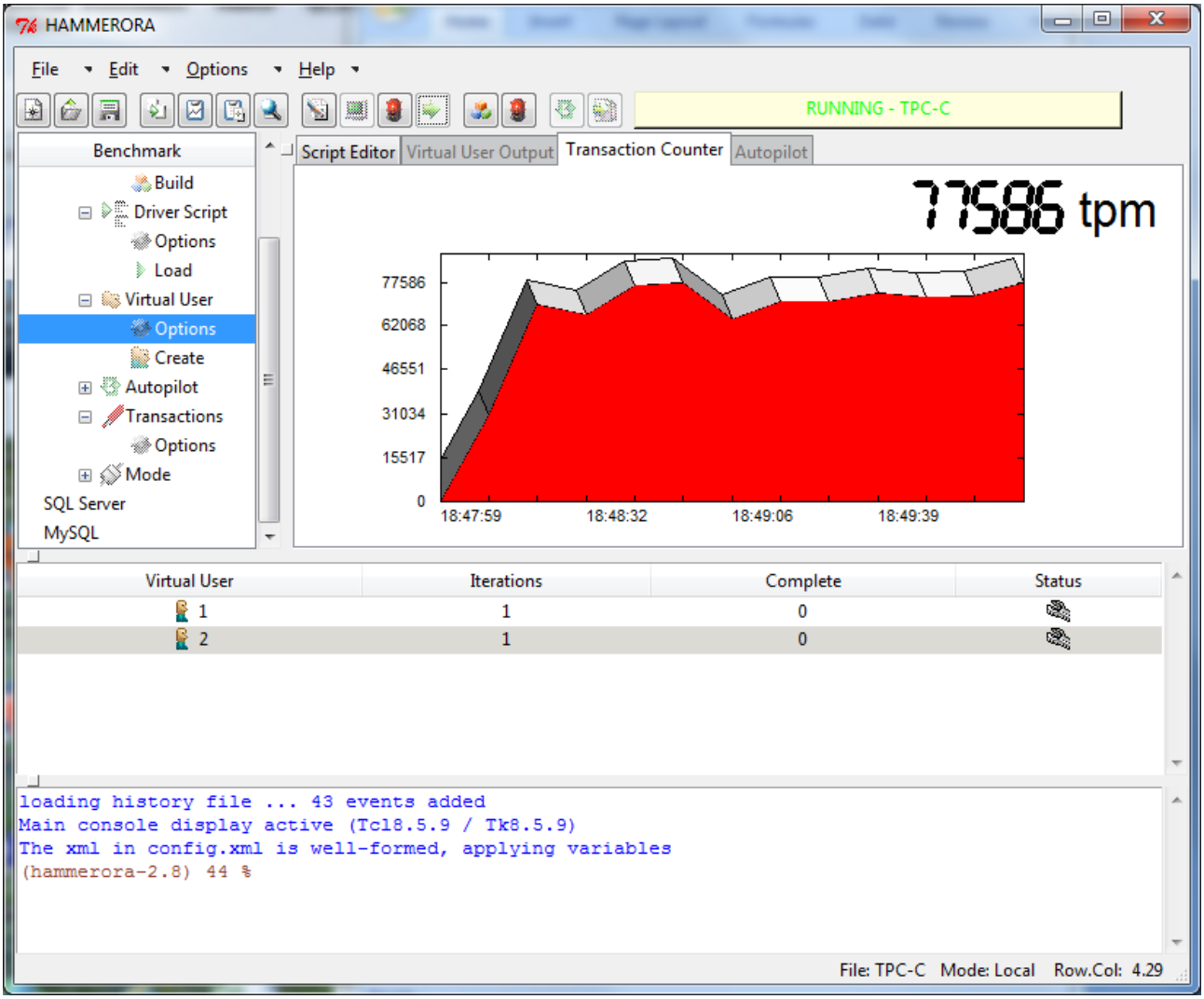

Figure 39 Transaction Counter

The traffic light icons can be used to close down the Transaction Counter and Virtual Users Respectively. You can close HammerDB by selecting Exit from the File Menu.

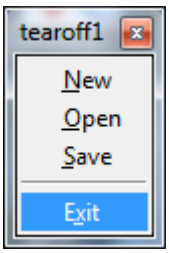

Figure 40 Exit

Congratulations you have now run your first Oracle load test.

Install Microsoft SQL Server Express

Fetch SQL Server Express Edition from Microsoft at the following URL:
http://www.microsoft.com/sqlserver/en/us/editions/express.aspx
and run the installer package.

Select the new installation link as shown in figure 40.

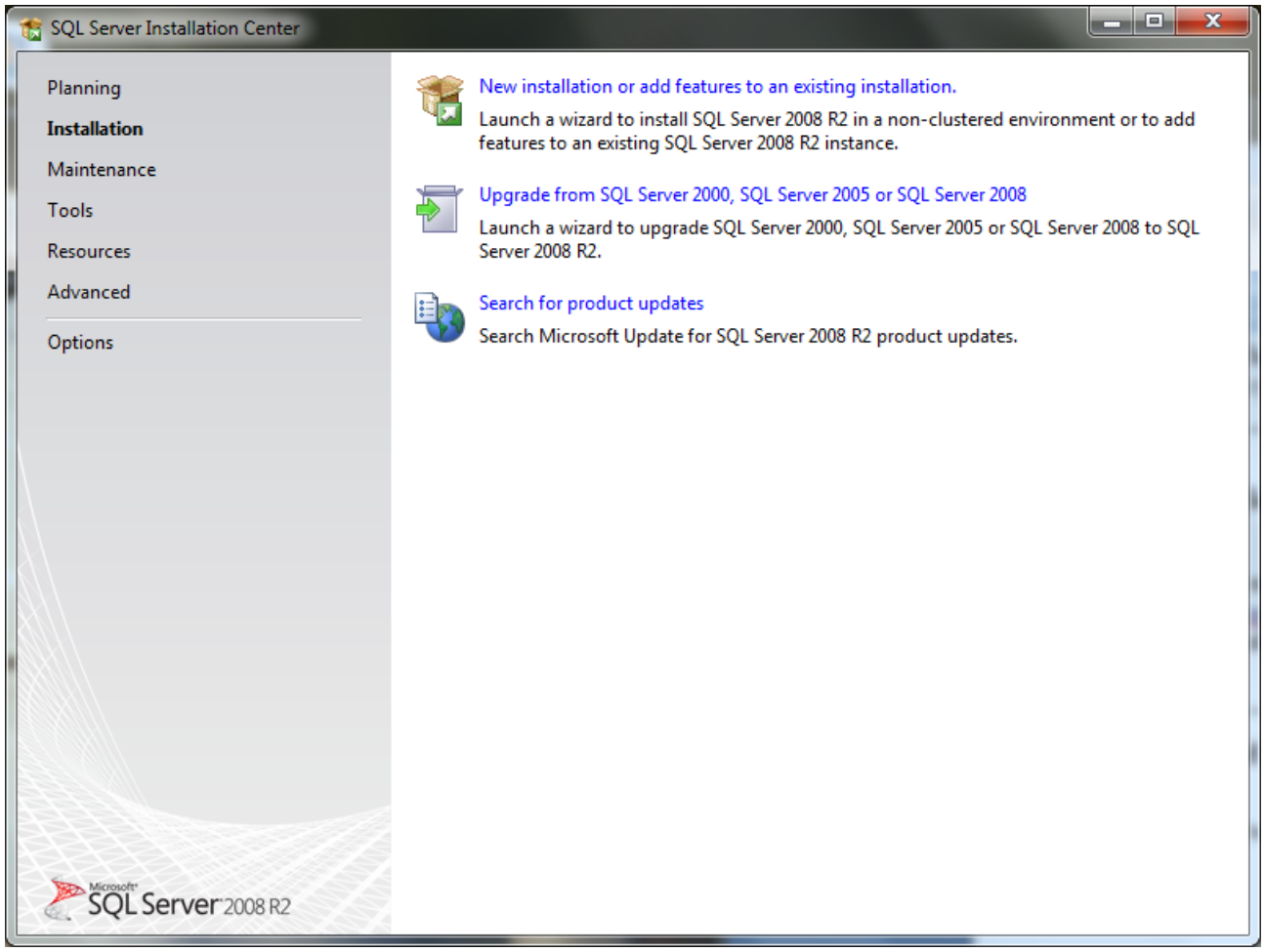

Figure 41 New Installation

Review and Accept the license conditions to be able to continue.

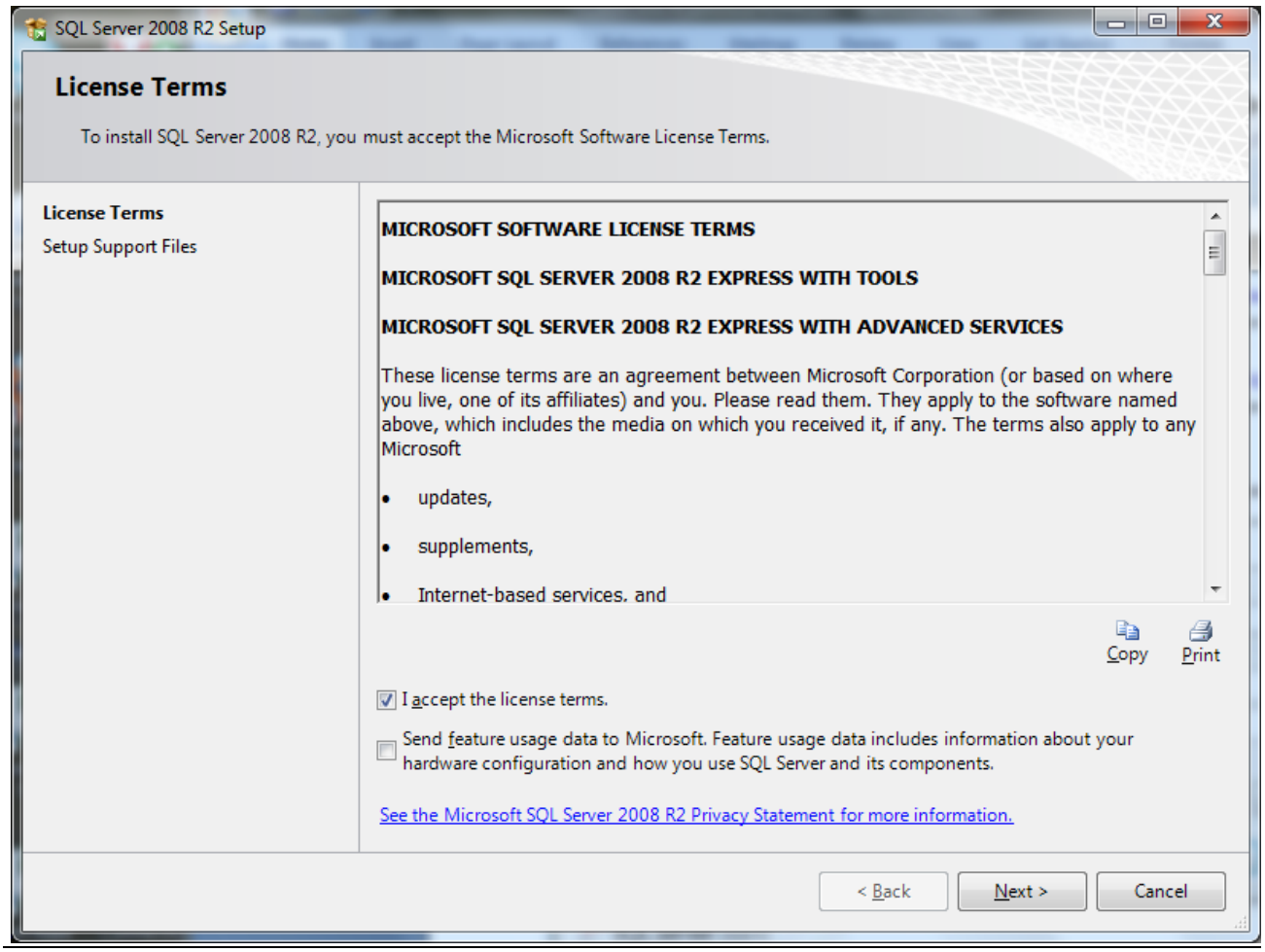

Figure 42 Accept License

Select your features and click Next.

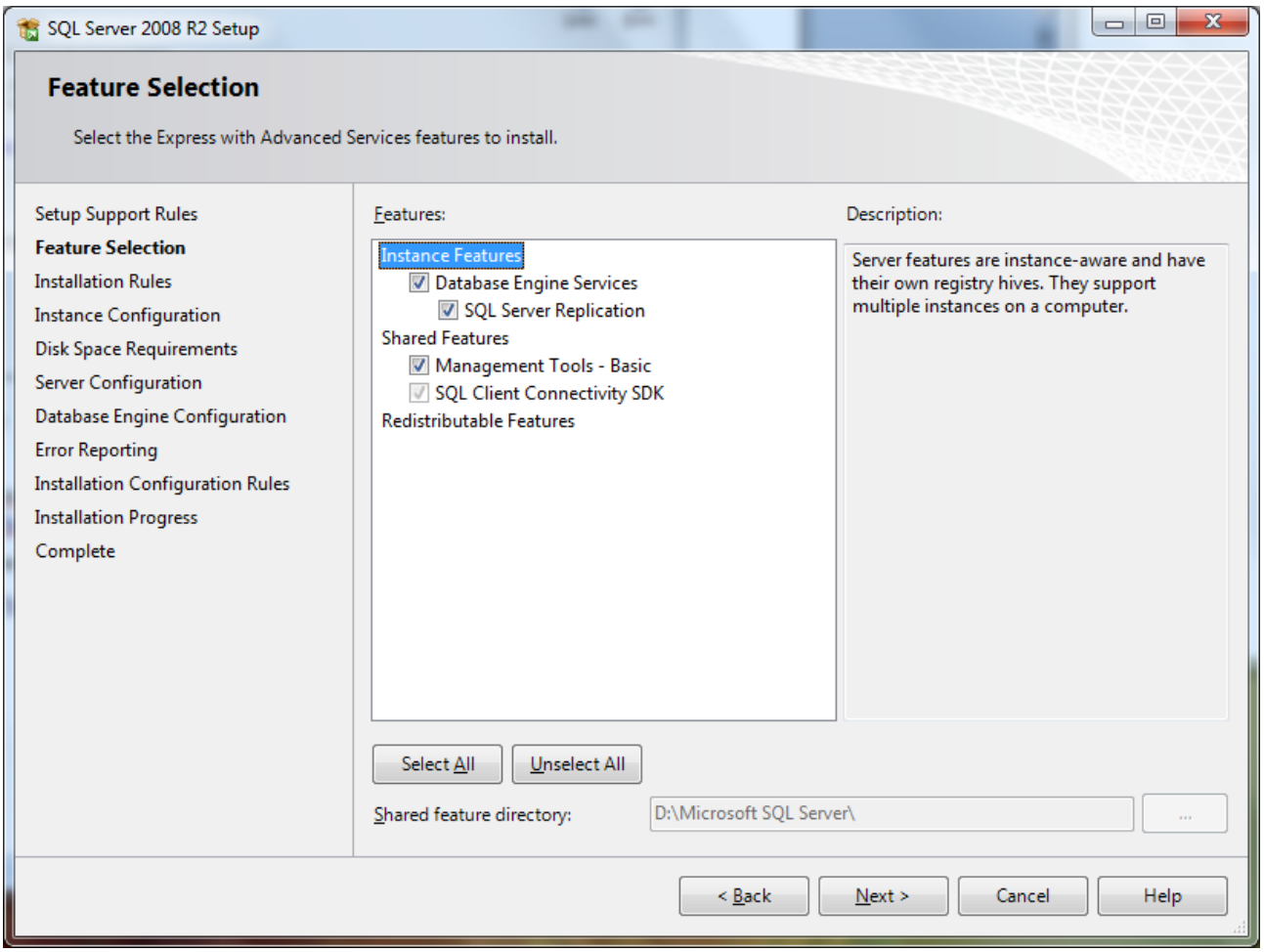

Figure 43 Feature Selection

Specify the instance name and note this down for later use in HammerDB and click Next.

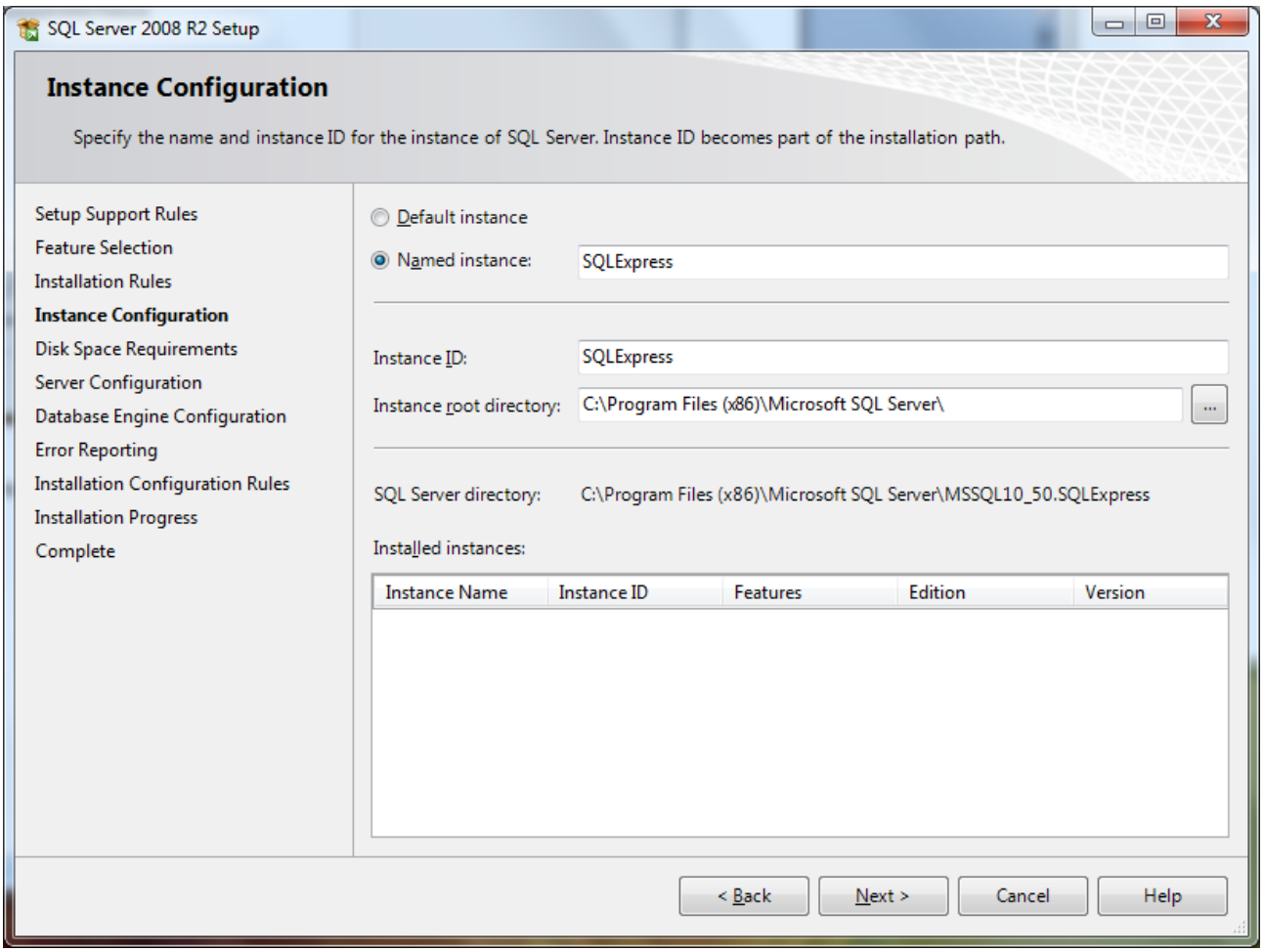

Figure 44 Instance Configuration

Specify your service configuration and click Next.

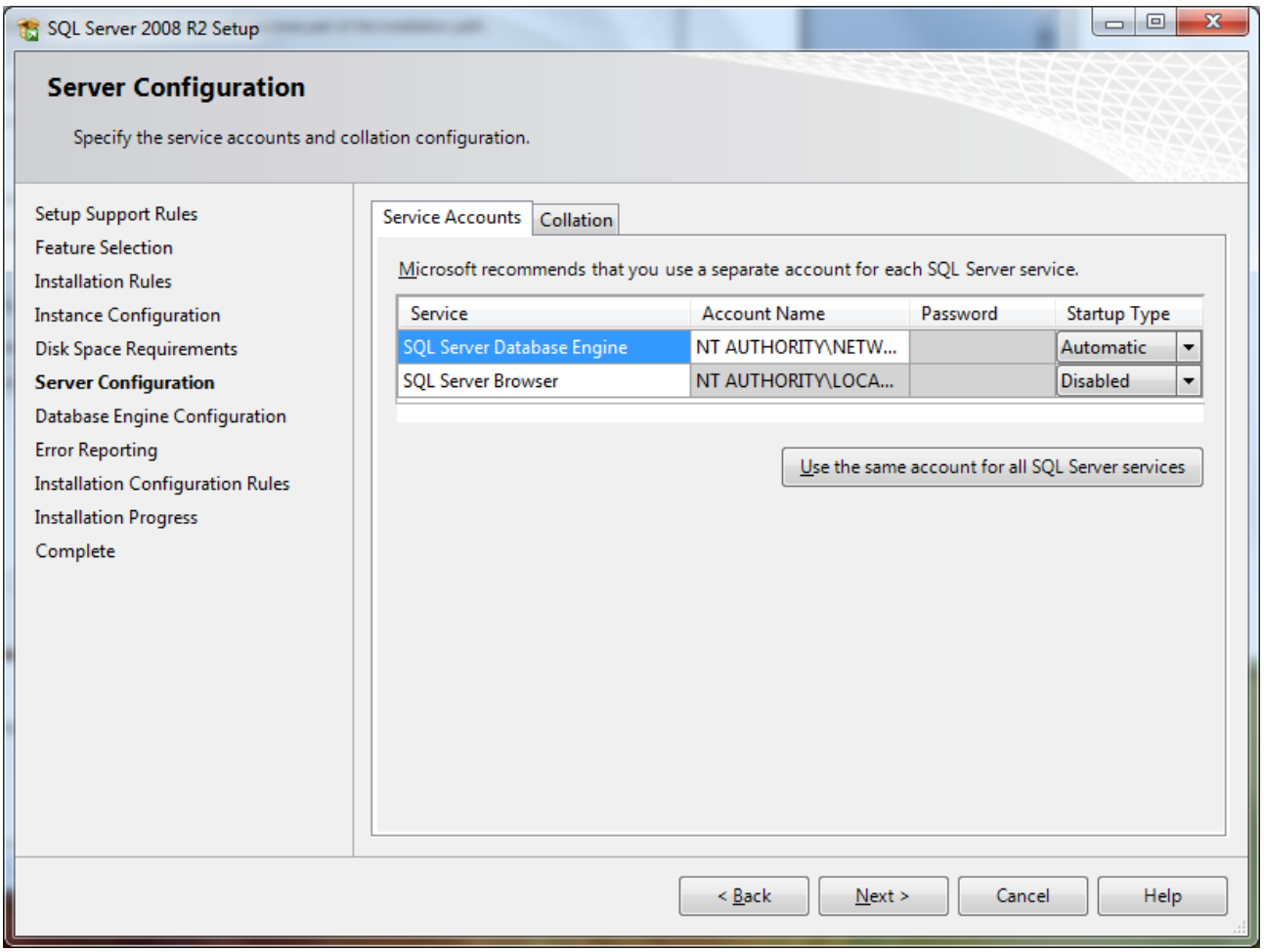

Figure 45 Server Configuration

Enter the details of your Database Configuration. Pay particular attention to whether you are using Windows Authentication or Mixed Mode Authentication. You can modify this after installation however if you wish to use a named user and account you must specify Mixed Mode Authentication at this point. Also make sure that you click on the Data Directories tab and specify where your database files will be installed, when complete, click Next.

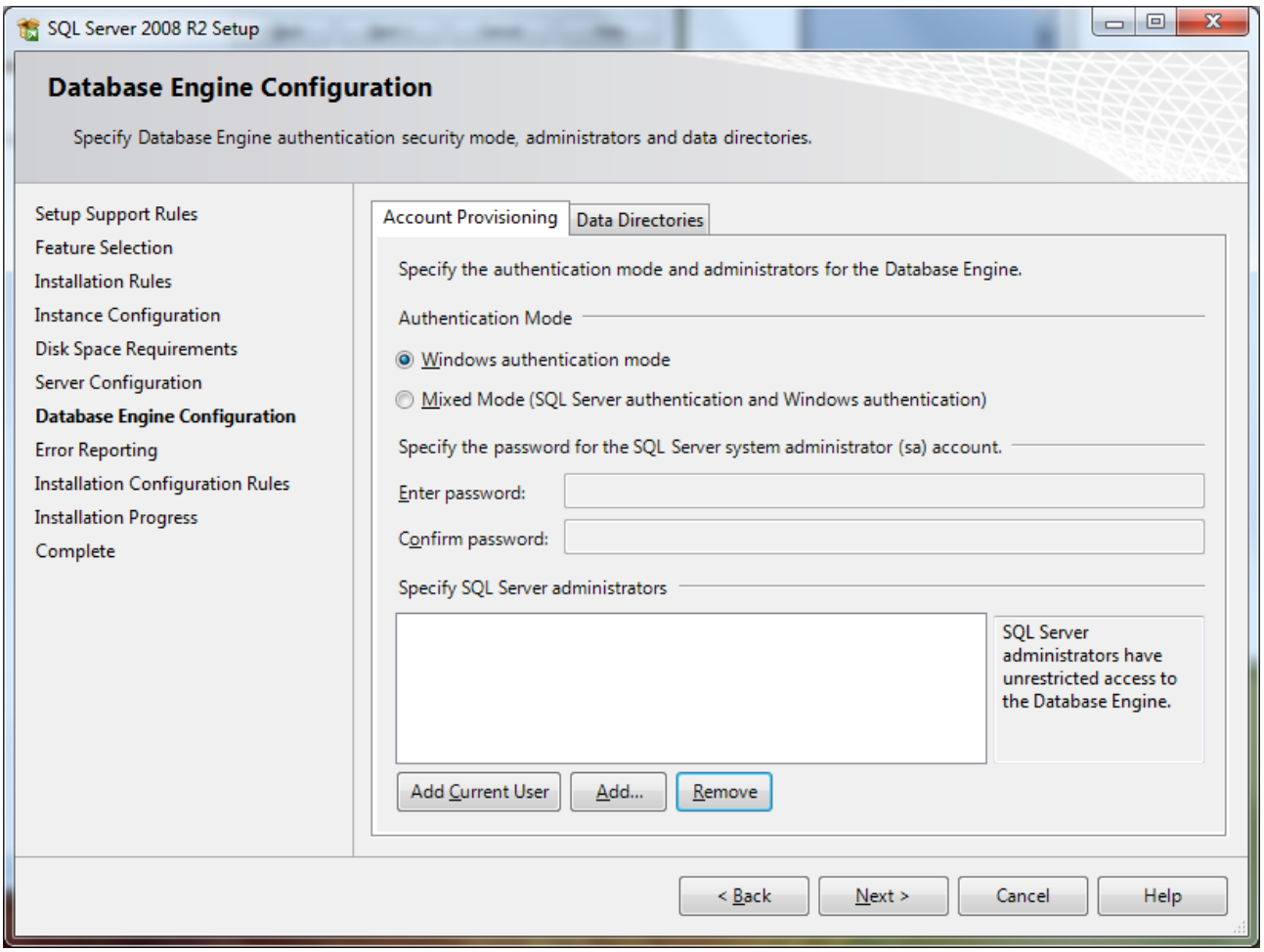

Figure 46 Database Engine Configuration

Review the information on Error Reporting and Click Next.

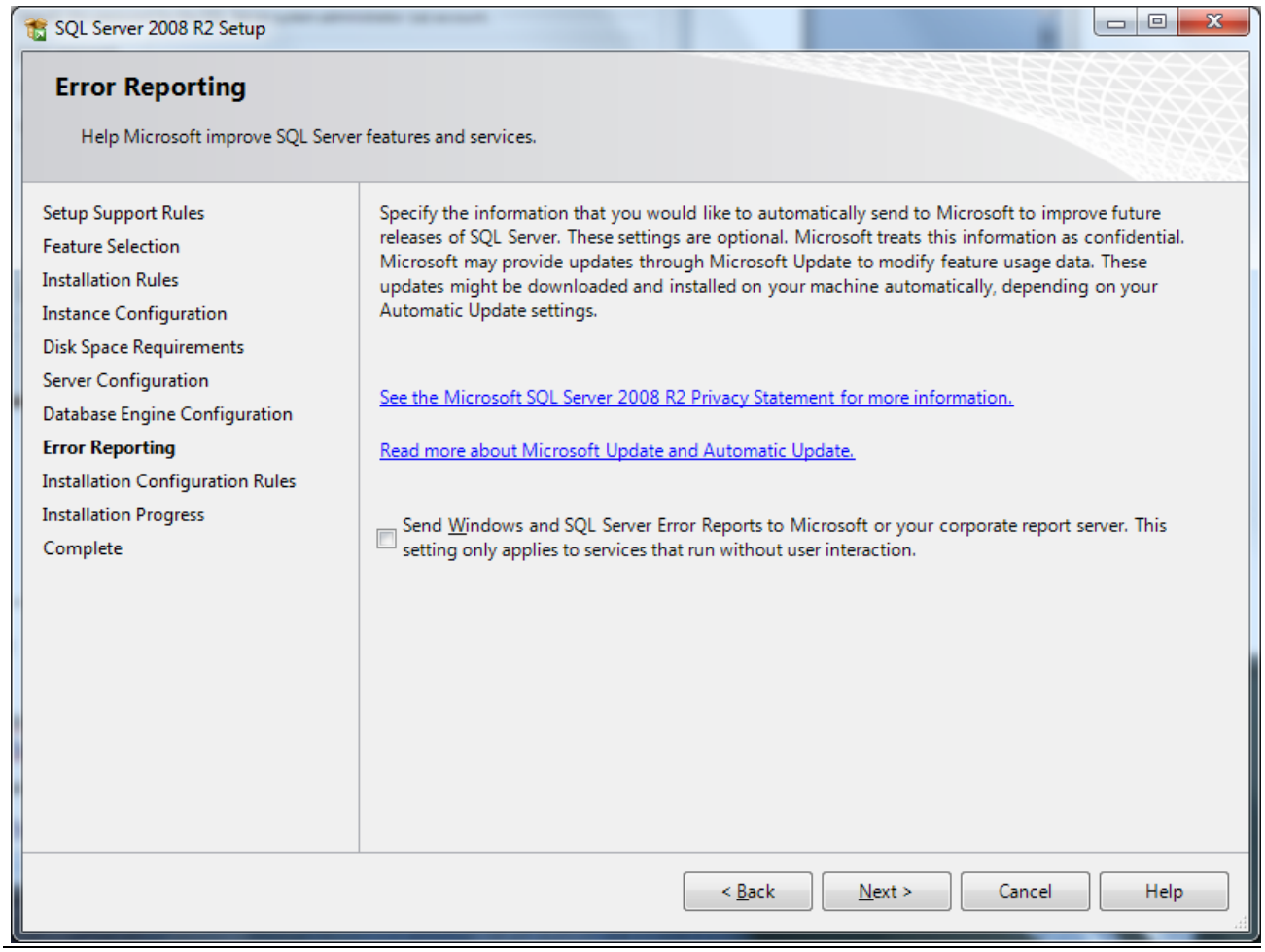

Figure 47 Error Reporting

Monitor the installation progress.

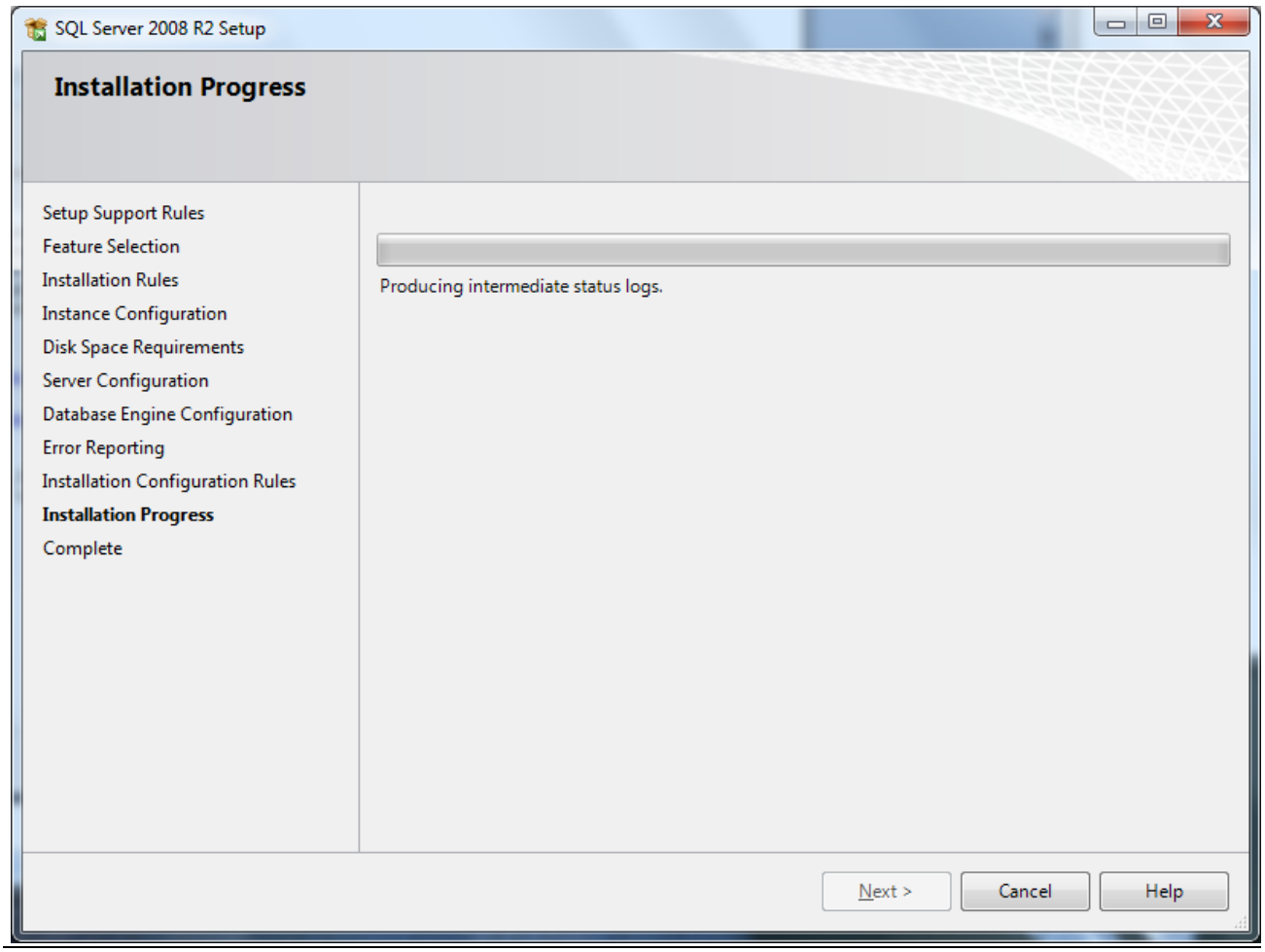

Figure 48 Installation Progress

On the complete screen click close.

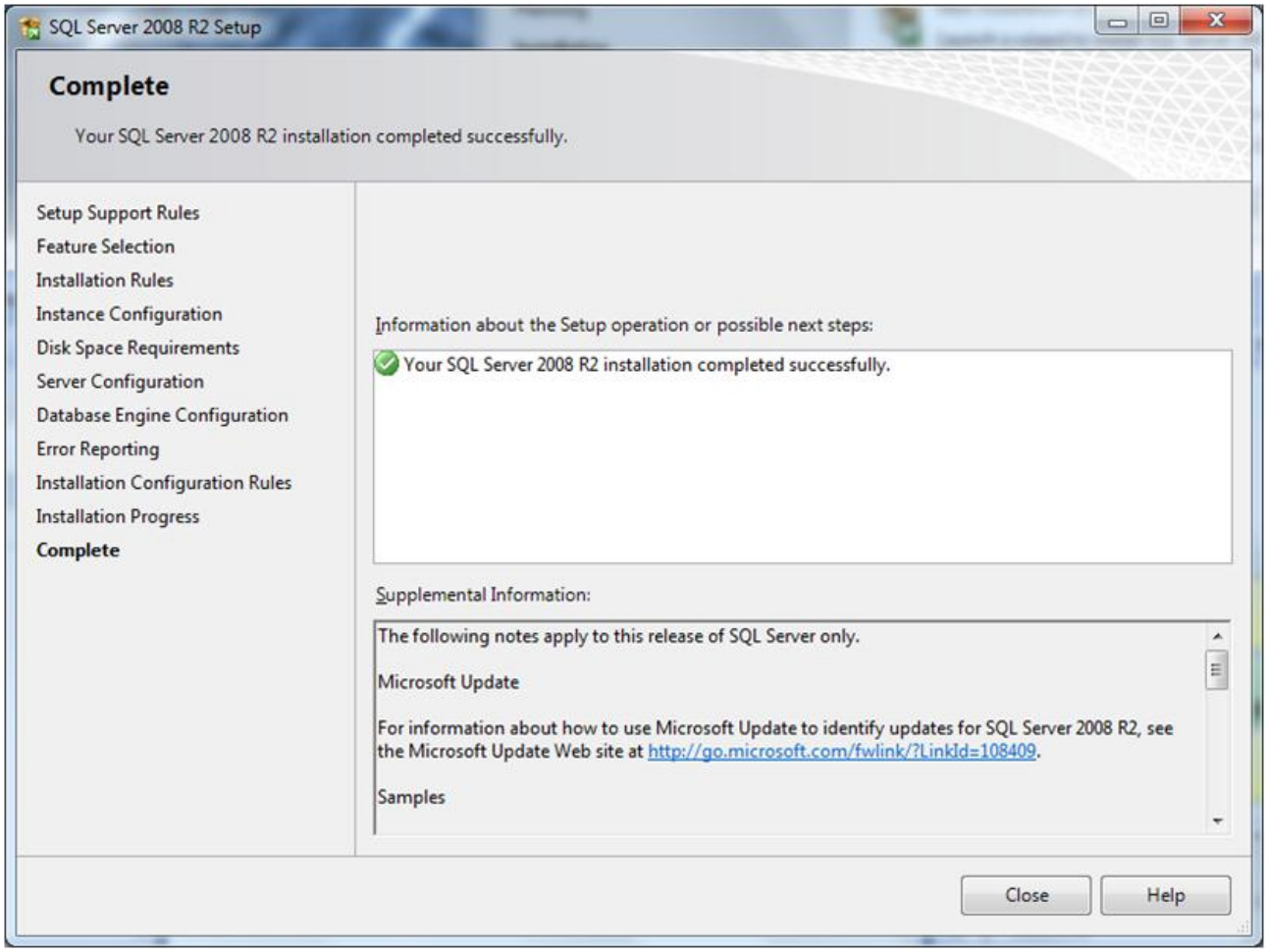

Figure 49 Complete

SQL Server Express is now installed and you proceed to creating a test schema.

Create a SQL Server Test Schema

In the Benchmark treeview double-click on SQL Server.

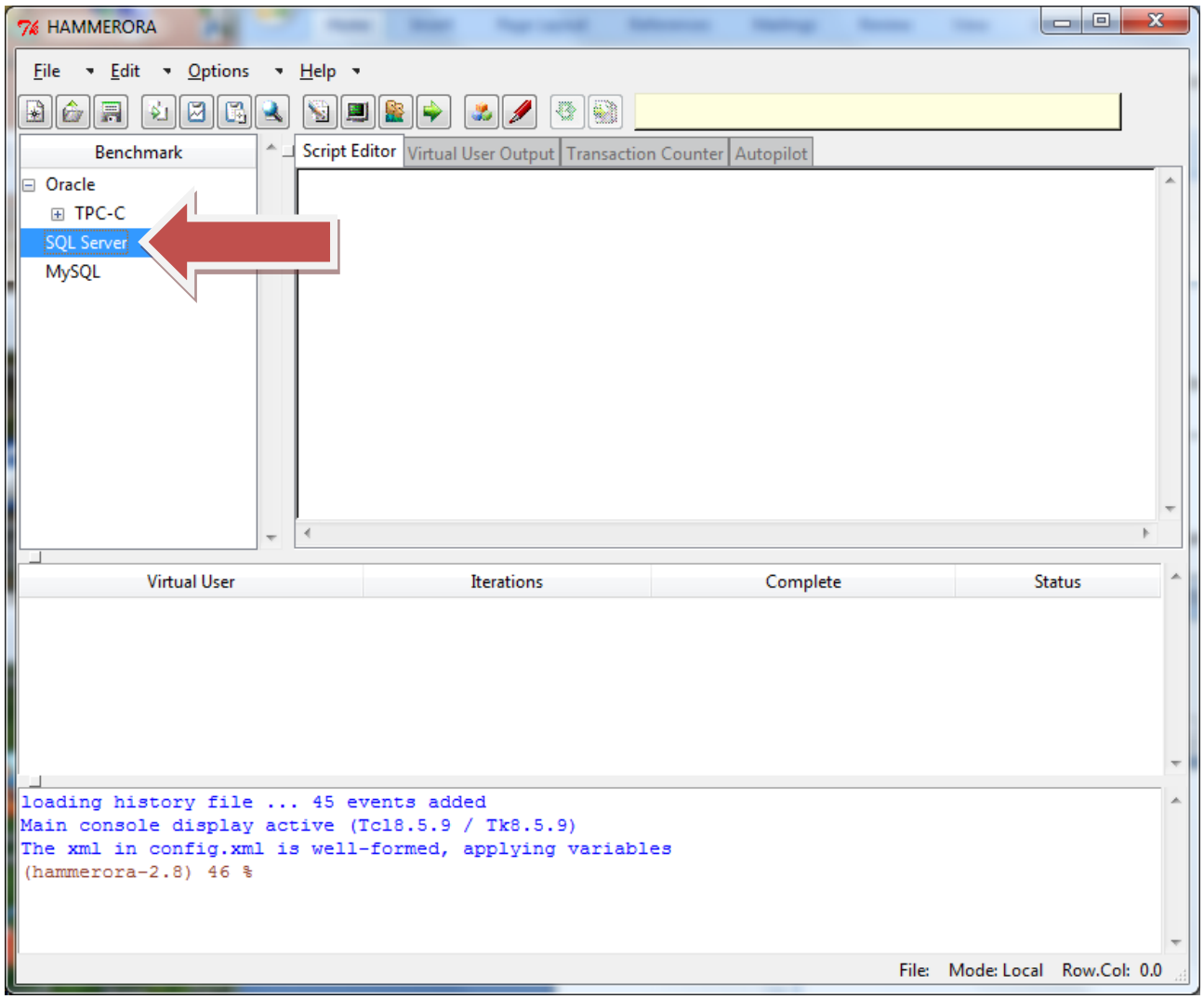

Figure 50 Benchmark Options

SQL Server and TPC-C will be pre-selected.

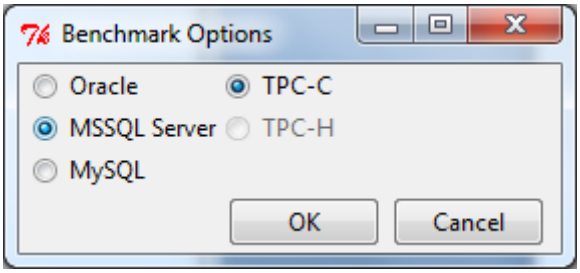

Figure 51 Benchmark Options

In the confirmation dialog click OK.

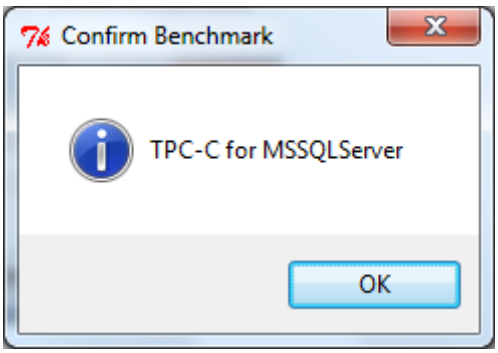

Figure 52 TPC-C for MSSQL Server

Click on the Benchmark tree view and under TPC-C select TPC-C Schema options to display the TPC-C Schema options Window. Fill out the options according to your installation. In this example (local) has been used to specify the localhost with the SQLEXPRESS instance. Also Windows Authentication has been used. To use SQL Server Authentication Mixed Mode Authentication must have been specified during installation or manually enabled. Select the number of Warehouses and the Virtual Users to build the schema and click OK.

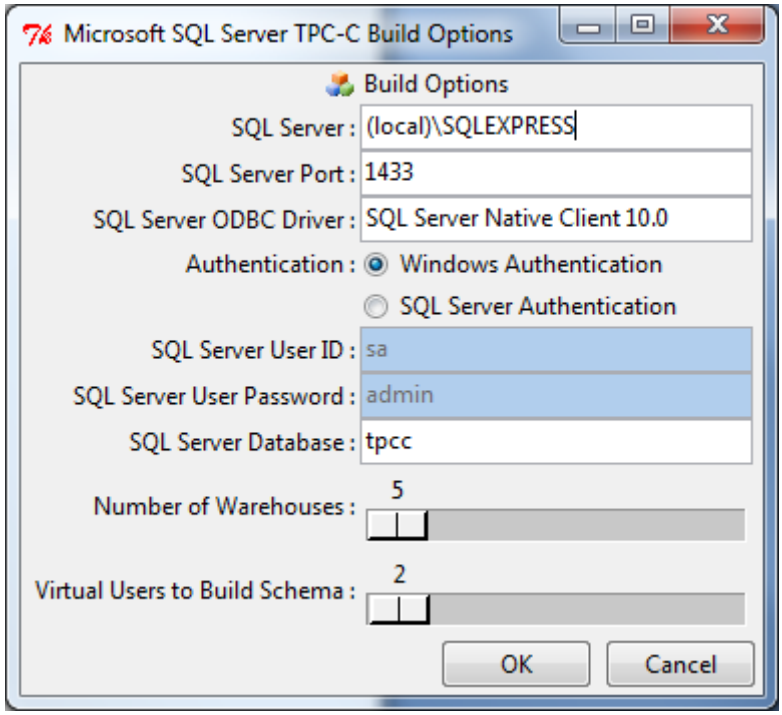

Figure 53 SQL Server TPC-C Schema Options

Select the Build option.

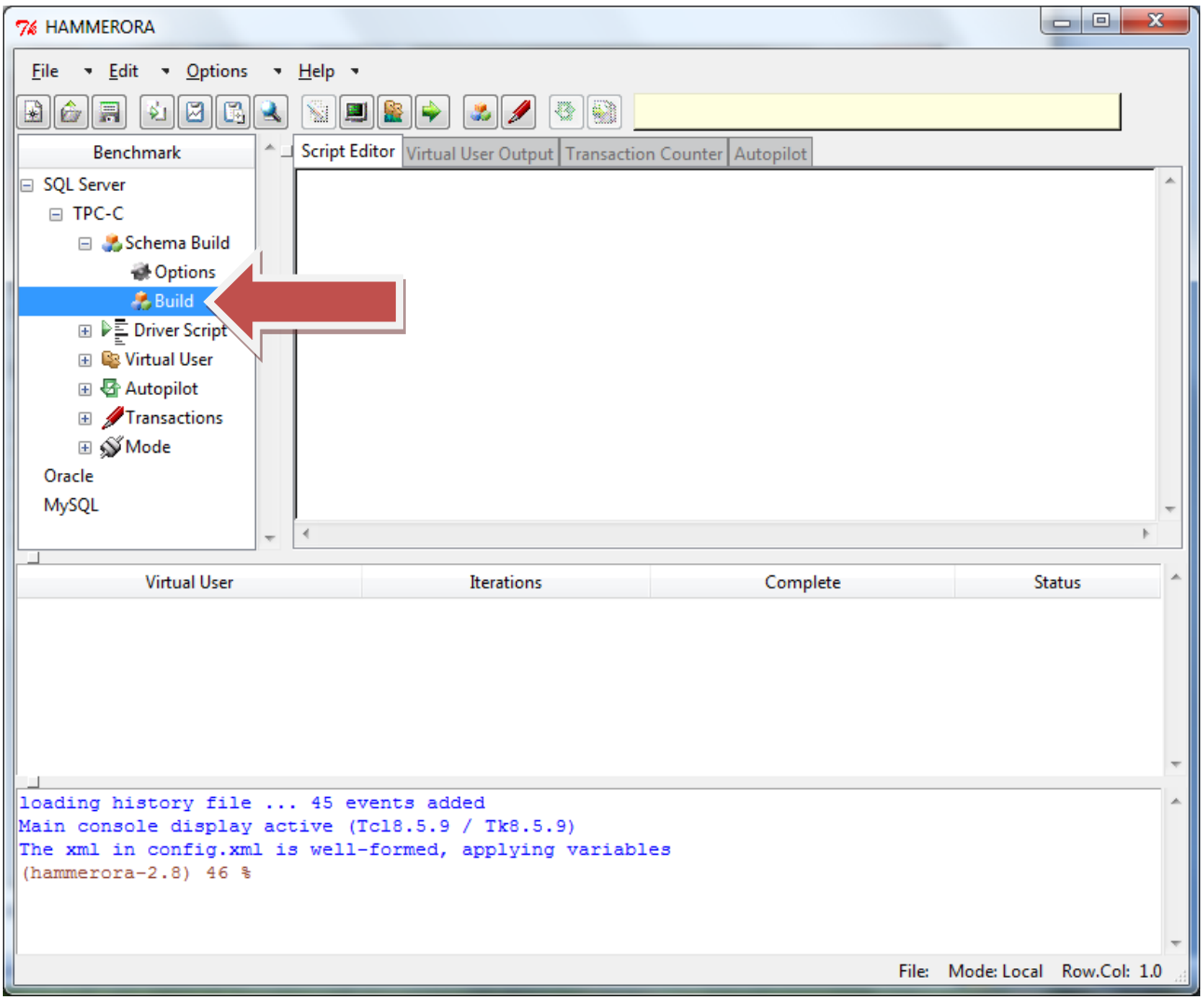

Figure 54 Create TPC-C Schema

Review your information and click OK to begin the schema build

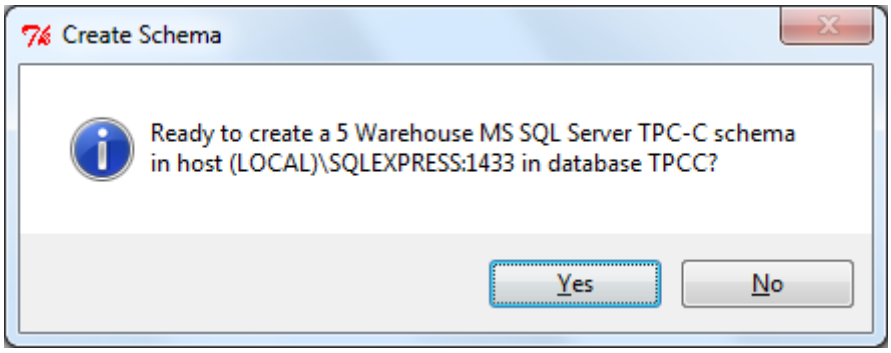

Figure 55 Create Schema

The Schema build begins

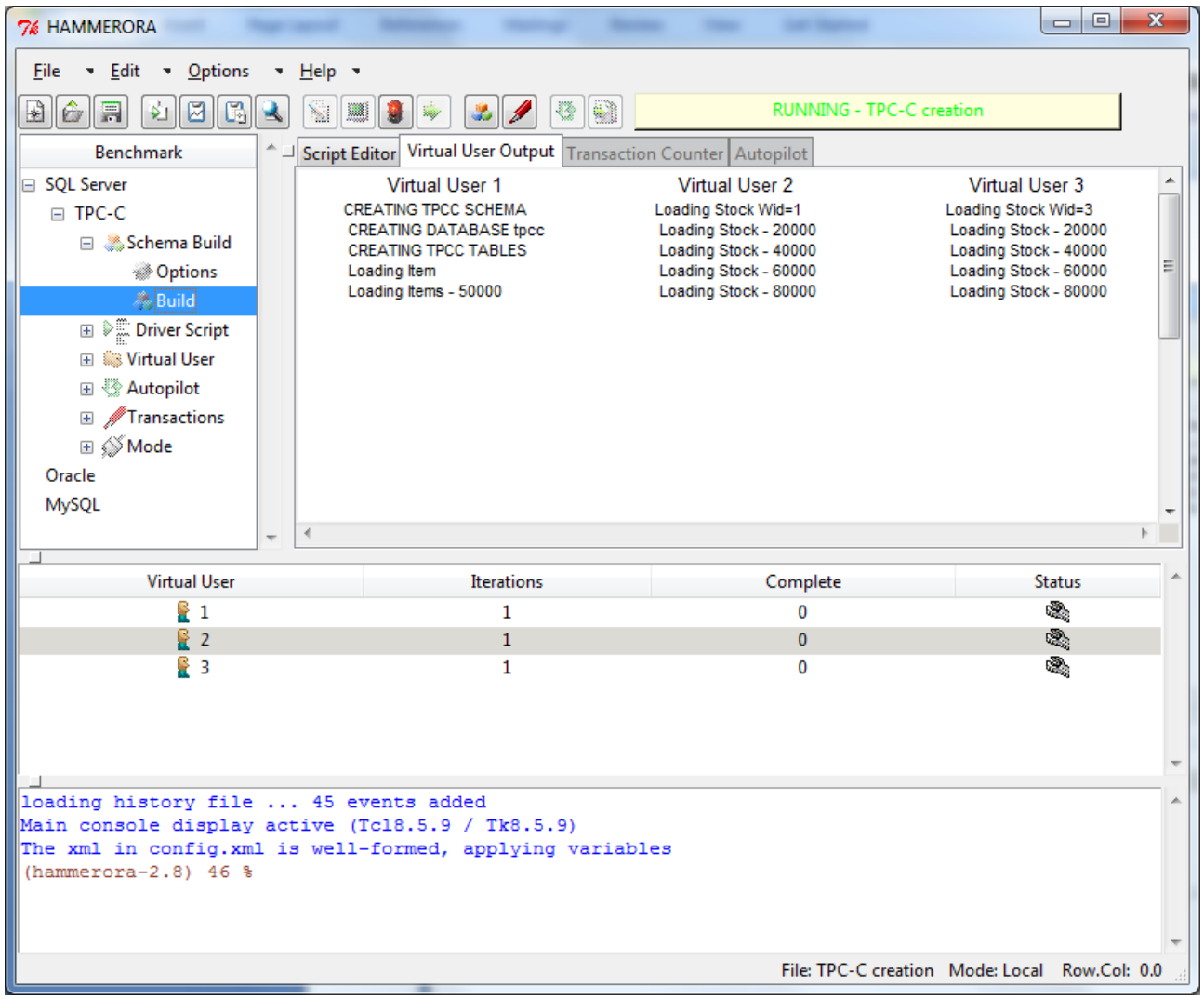

Figure 56 TPC-C Schema Creation

When the schema build process has finished it will show the message TPCC SCHEMA COMPLETE and all Virtual Users have completed successfully. Press the Red Traffic Light Icon to close down the Virtual Users and press the first button to Clear the Screen.

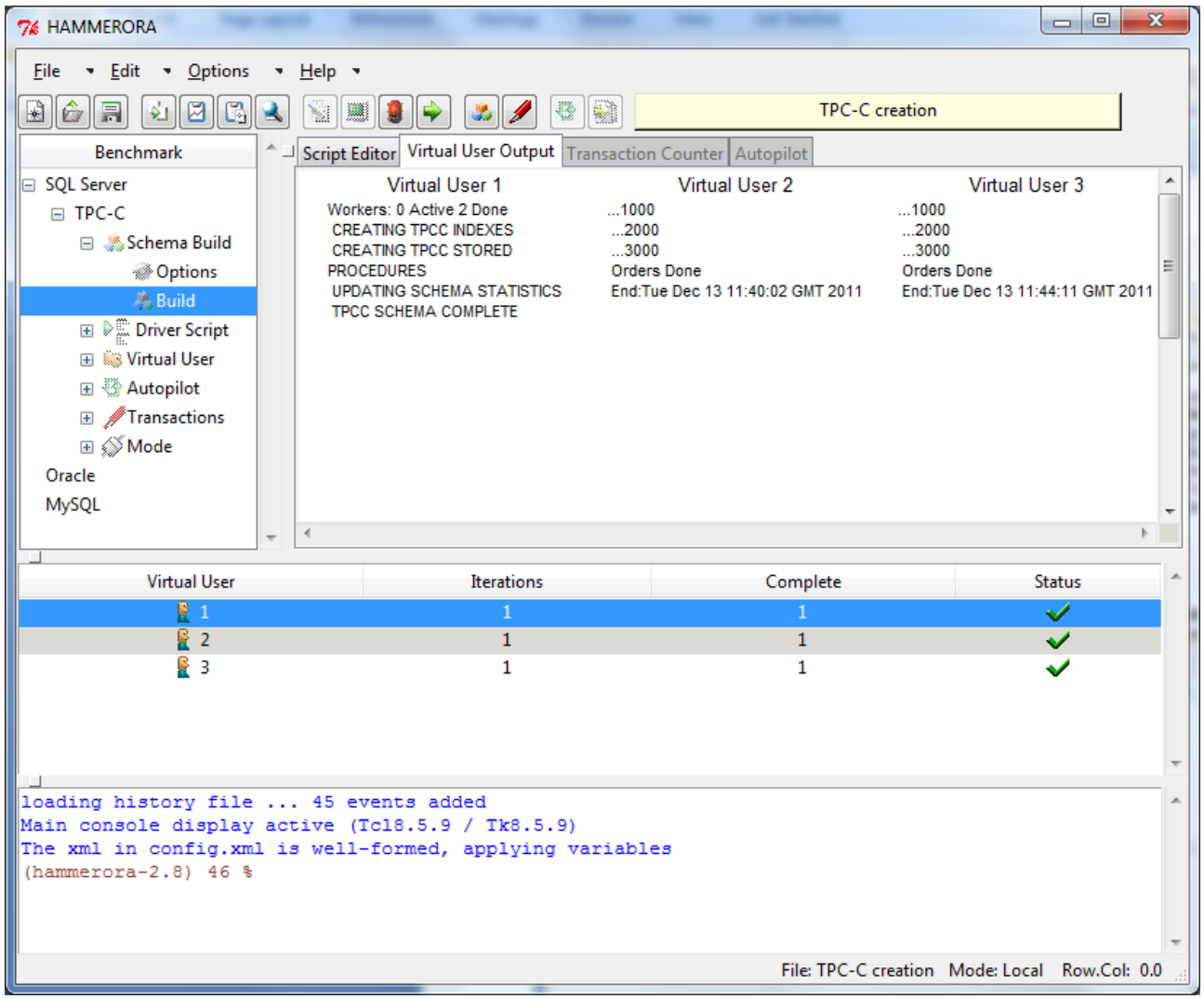

Figure 57 Schema Creation Complete

Use your SQL Server Management Studio to browse your newly created Schema.

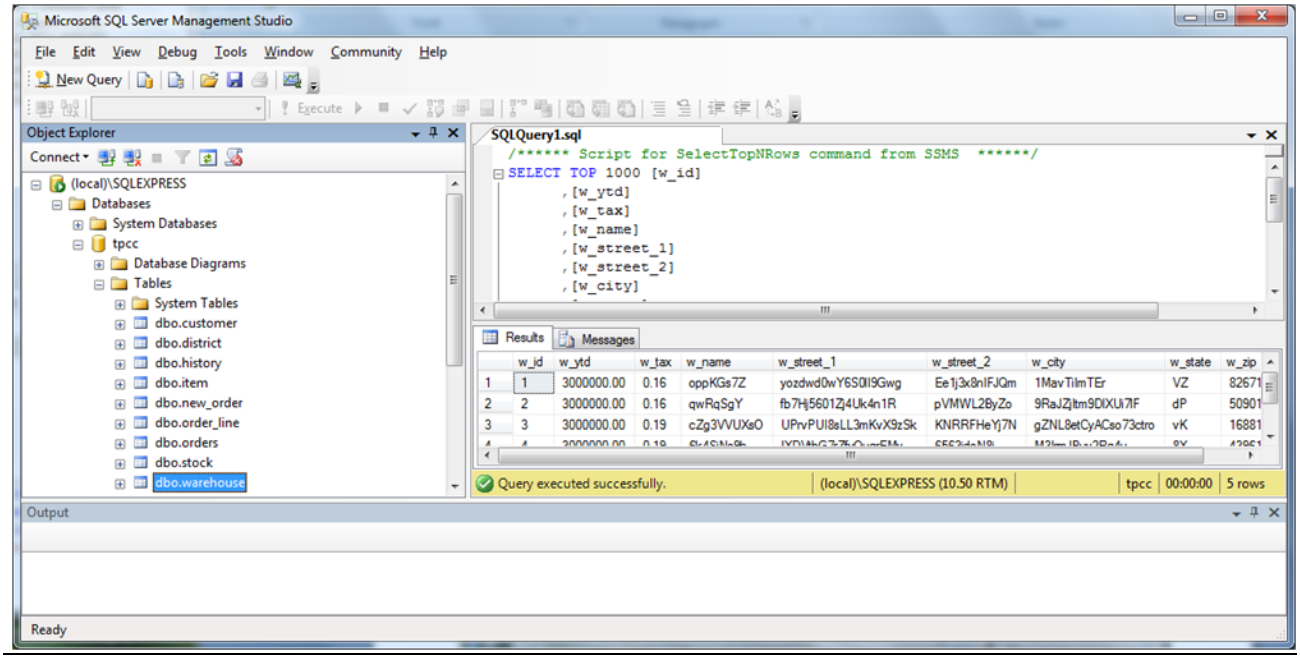

Figure 58 SQL Server Management Studio

Running an SQL Server Load Test

You can now proceed to run a load test against your created schema. Under the SQL Server and TPC-C treeview select Options. this displays the driver script options Window with the connection details previously set for the schema build. Click OK to save the options and then select Load under the driver script treeview.

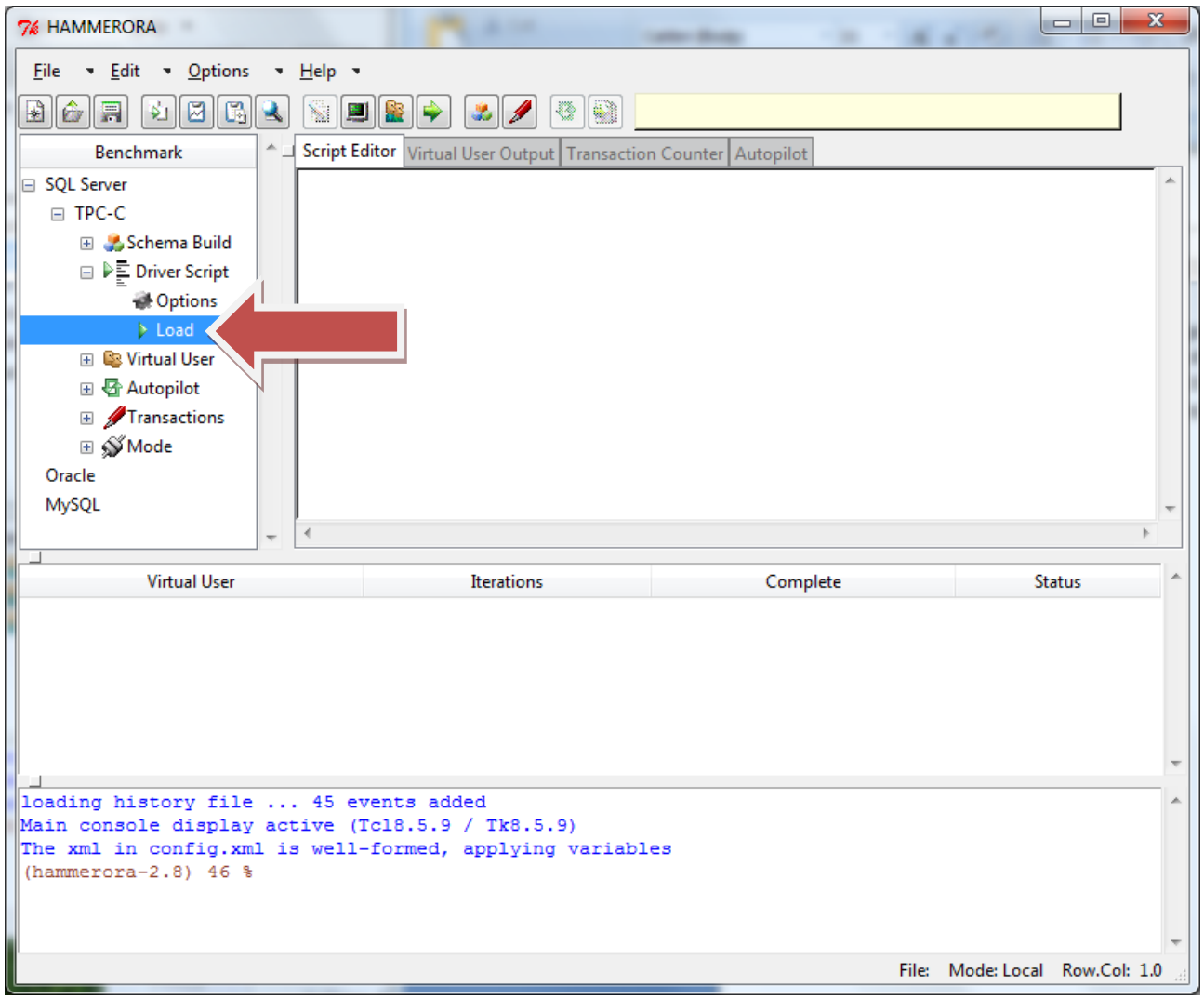

Figure 59 SQL Server Management Studio

You can observe that the EDITABLE OPTIONS correspond to the driver script options. You do not need to edit the script.

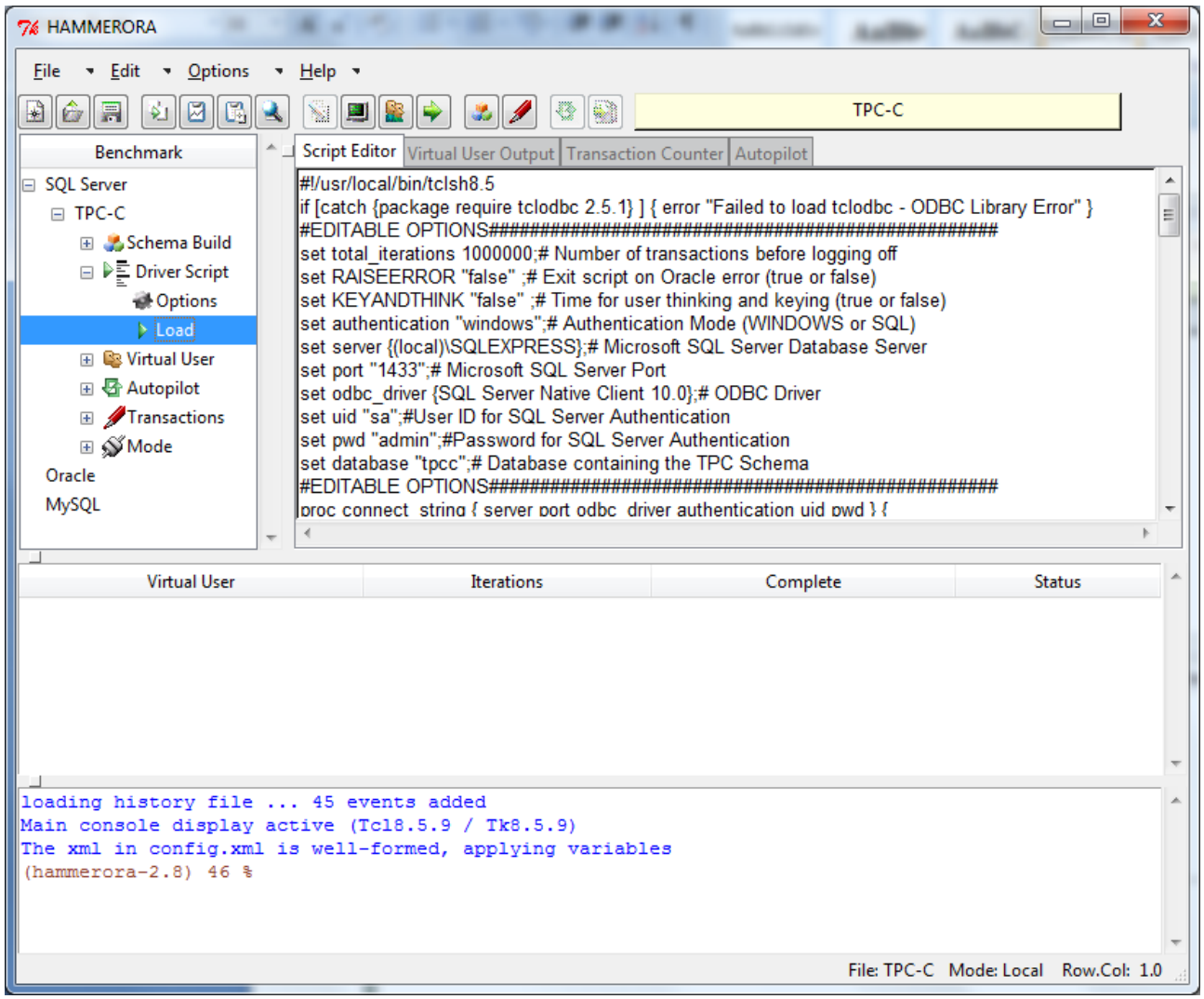

Figure 60 Driver Script

Under the Virtual Users treeview select Virtual User and Options and enter the number of users you wish to run against your system. Don't select too many to start with as the workload is intensive. If you wish check the Show Output button to see what your users are doing whilst the test is running, however note that displaying the output will reduce the overall level of performance and click OK.

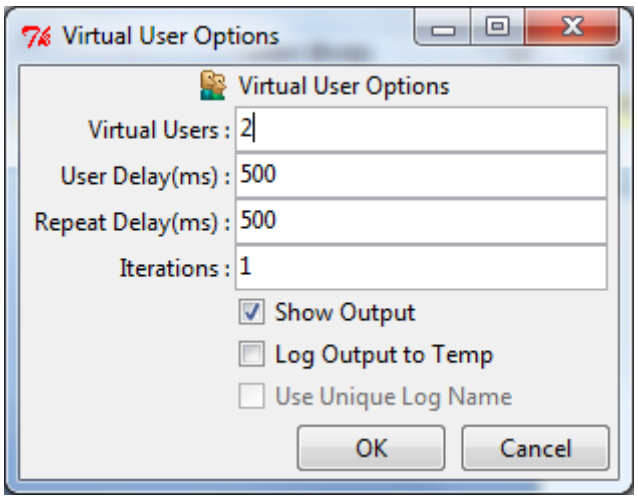

Figure 61 Virtual User Options

Click the Create Virtual Users treeview option as shown in Figure 62 to create the virtual users, they will not

start running yet.

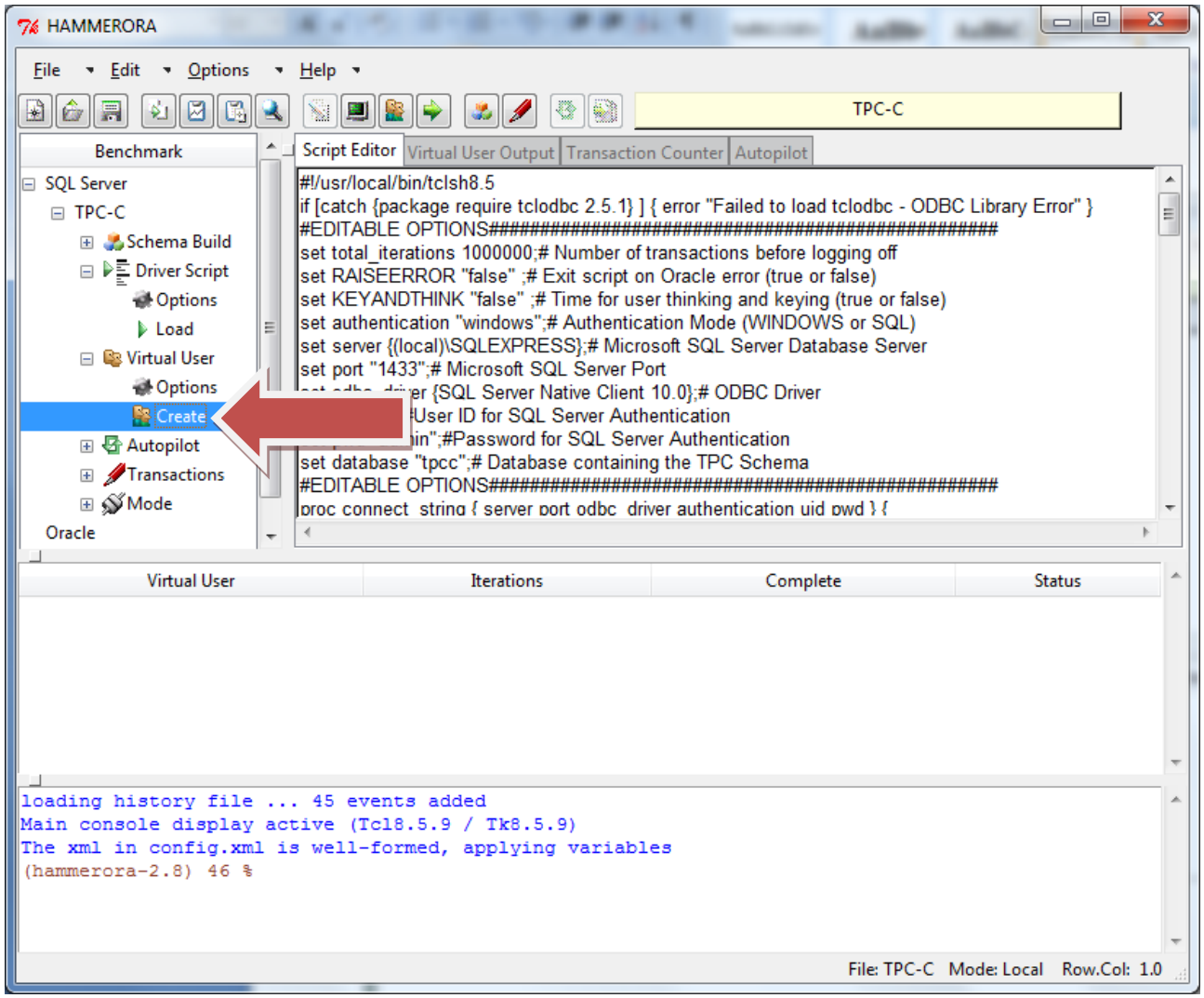

Figure 62 Create Virtual Users

You can observe that the virtual users have been created but their status is shown as waiting.

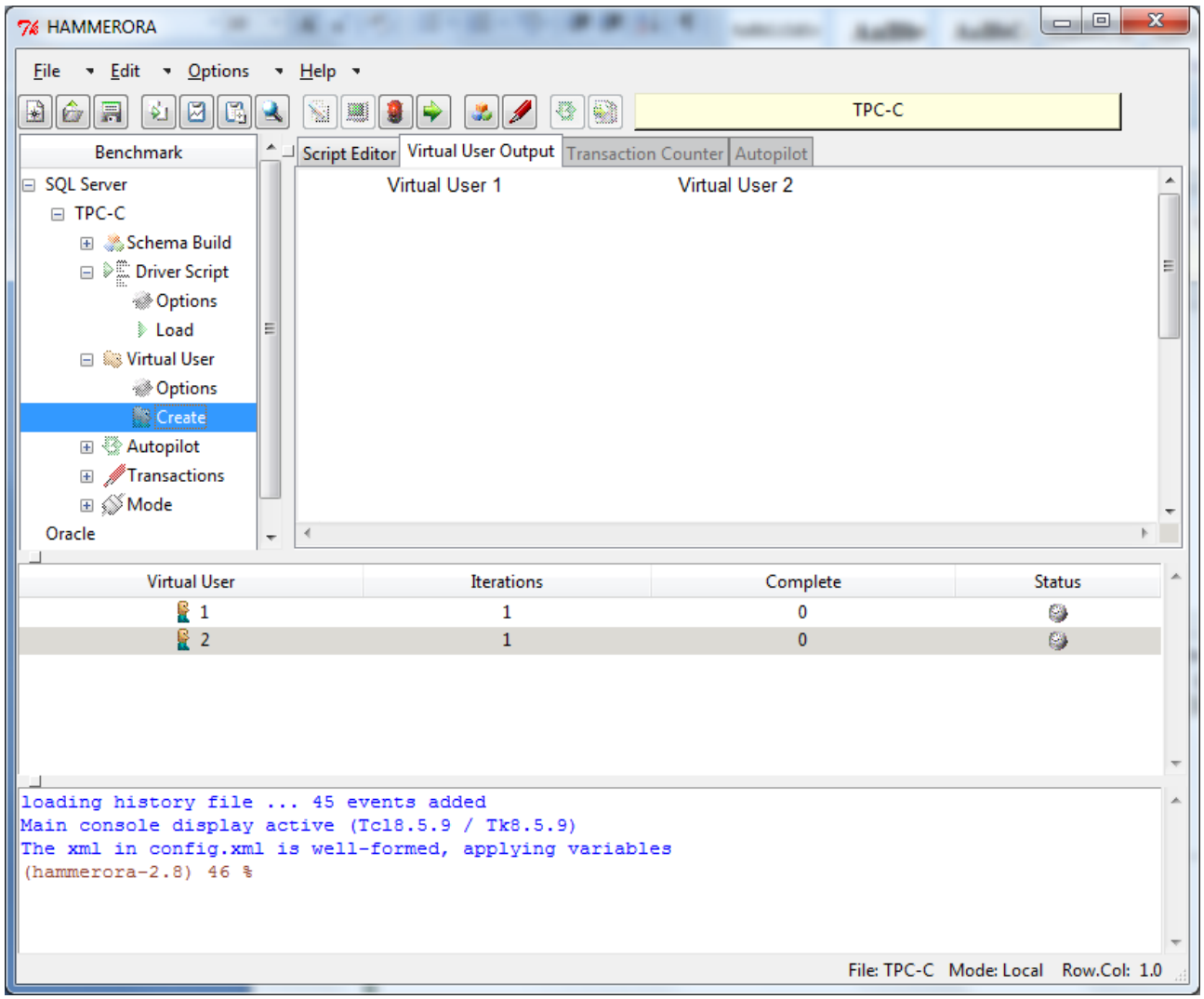

Figure 63 Virtual Users Created

Now click the Run Virtual Users button as shown in figure 64 to start the test. The virtual users will begin to execute the driver script in the Script Editor Window.

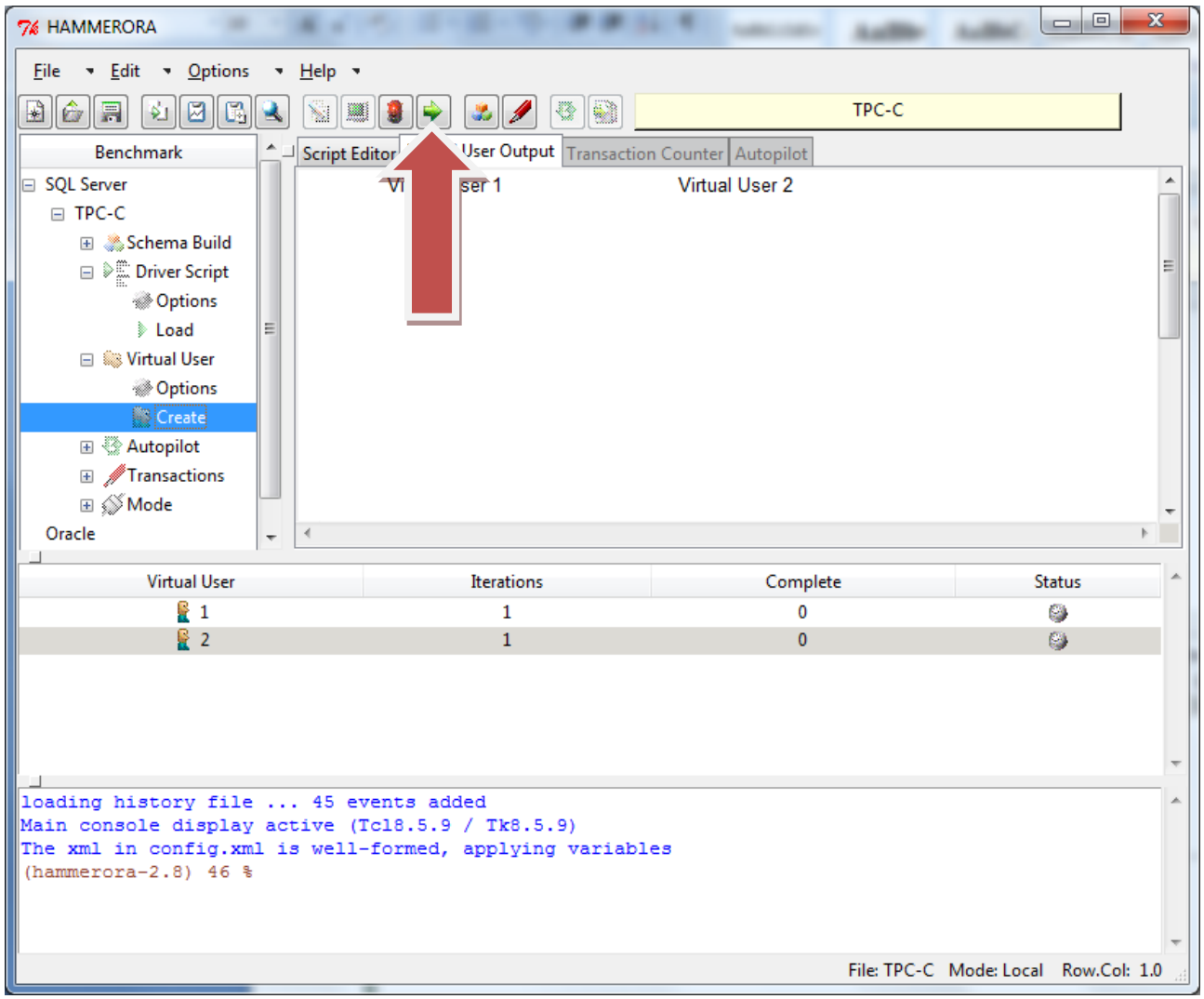

Figure 64 Run HammerDB Loadtest

You can now observe that the load test is in progress as the virtual users display their output.

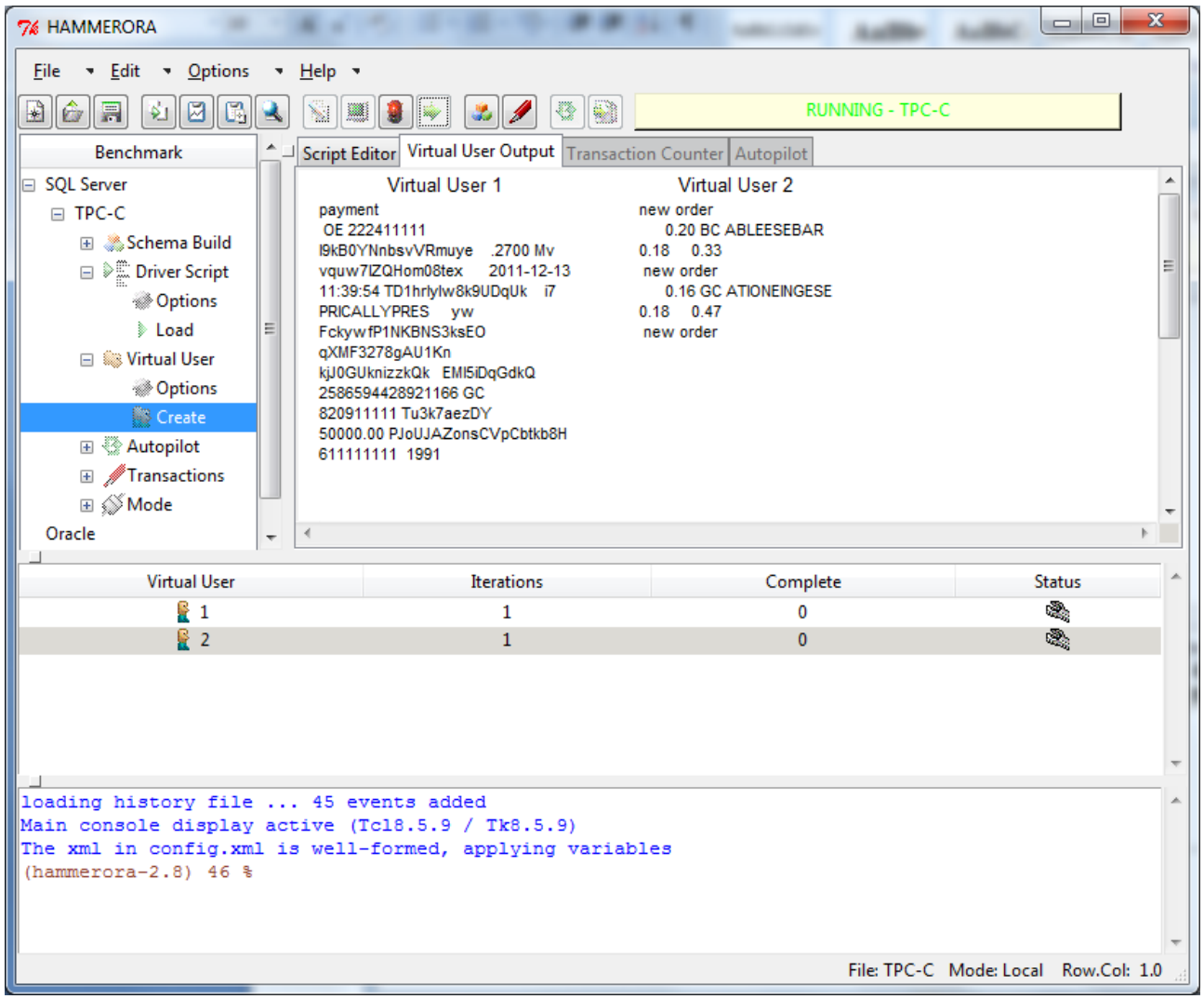

Figure 65 Running a Load Test

Also observe your system Task Manager or system performance monitor utilities. You can see that a load has been placed on the system. You can either terminate the load test by pressing the red traffic light icon or waiting until the Virtual Users complete.

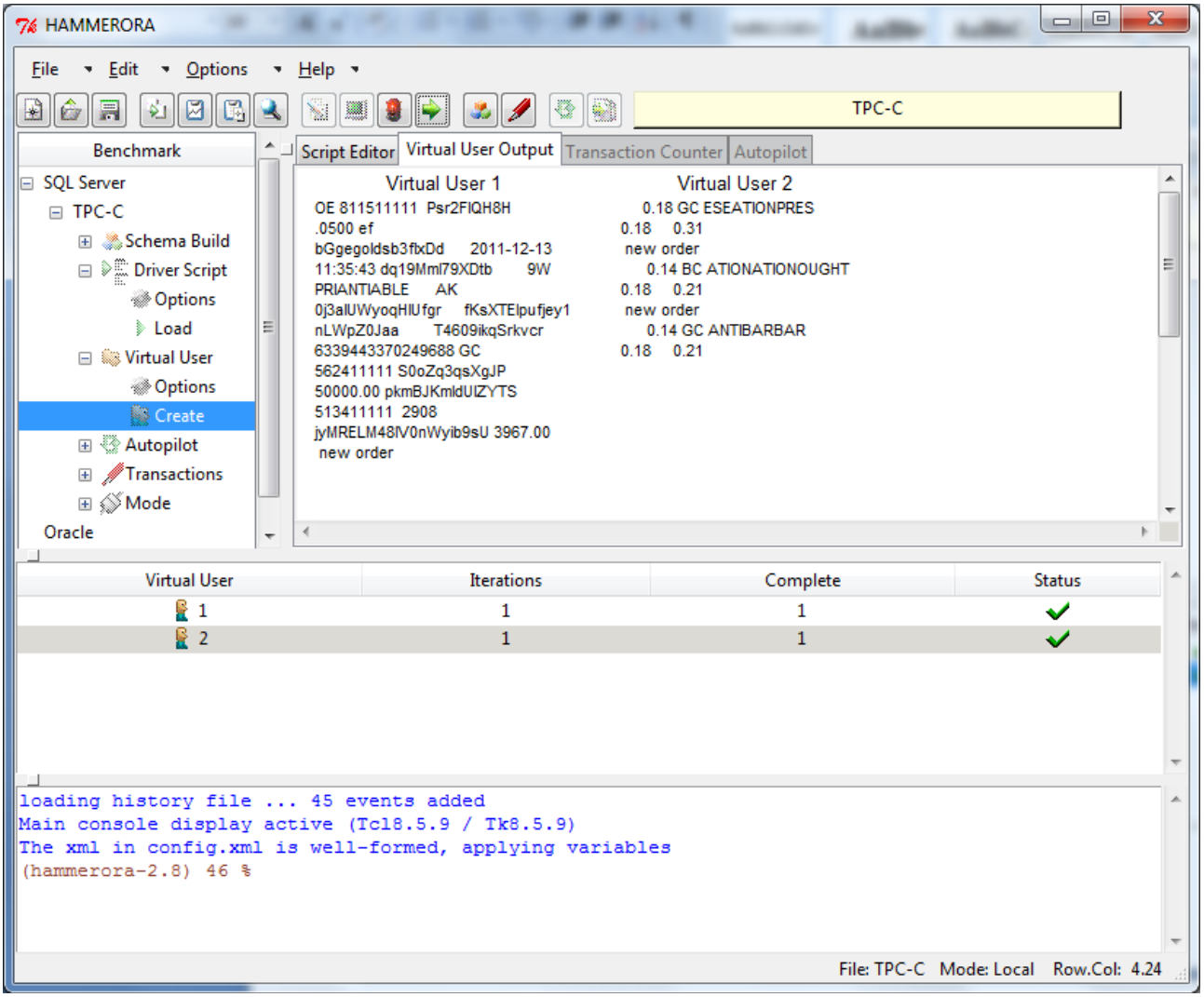

Figure 66 Virtual Users Complete

You can also observe the SQL Server Performance whilst the test is in progress. To do so on the Transaction Counter treeview or from the options Menu select the Transaction Counter Options and enter your connection details as shown in Figure 67.

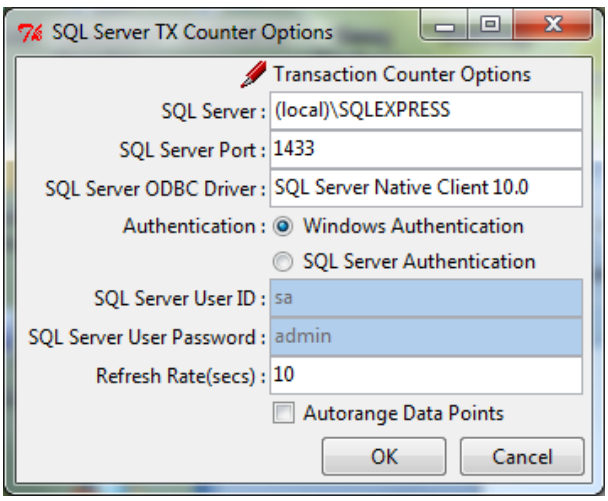

Figure 67 Transaction Counter Options

Now Press the Pencil Icon as shown in figure 68 to start the transaction counter.

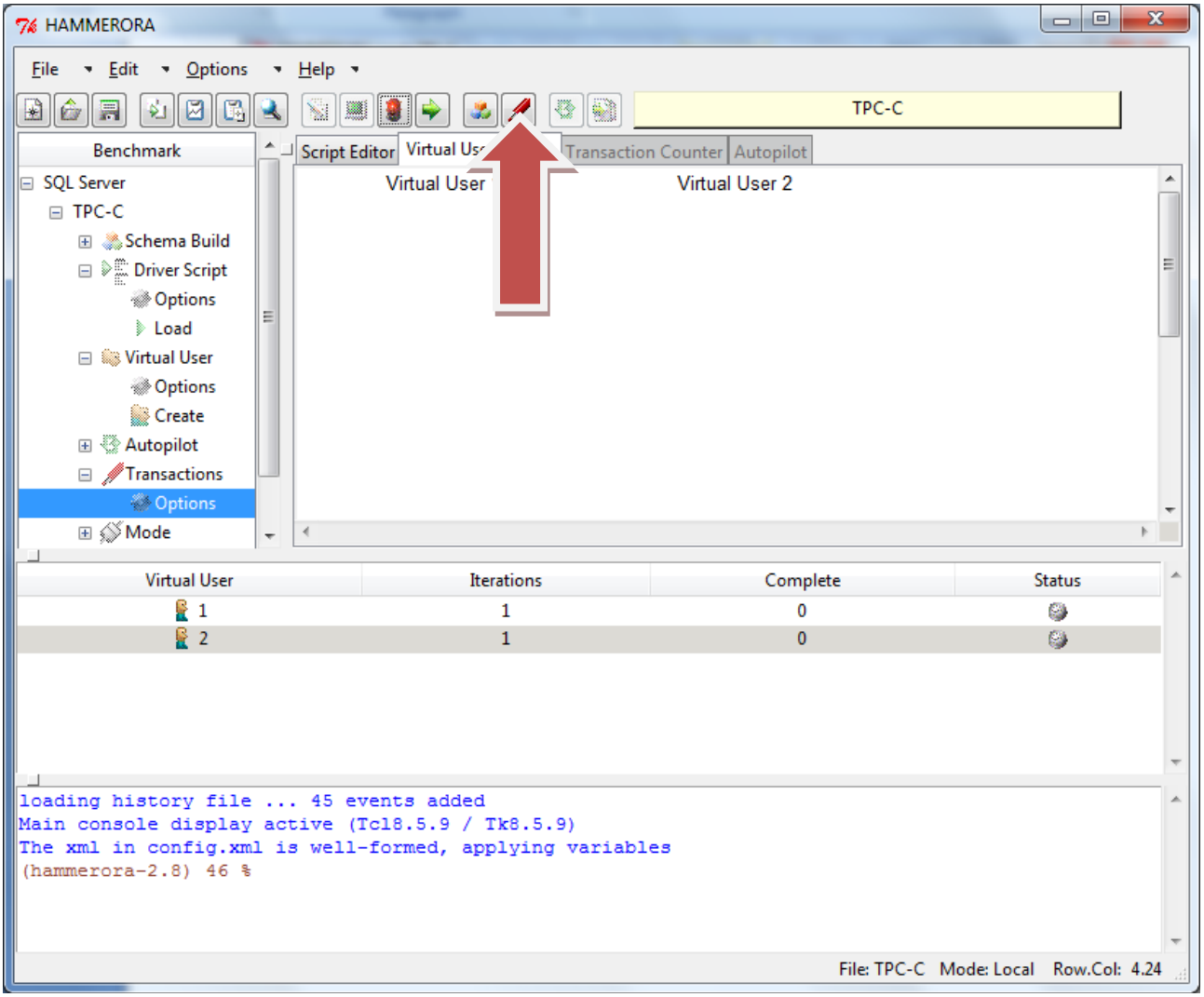

Figure 68 Start Transaction Counter

The Transaction Counter notebook pane is now activated and the message Waiting for Data… is shown as HammerDB gathers your transaction information.

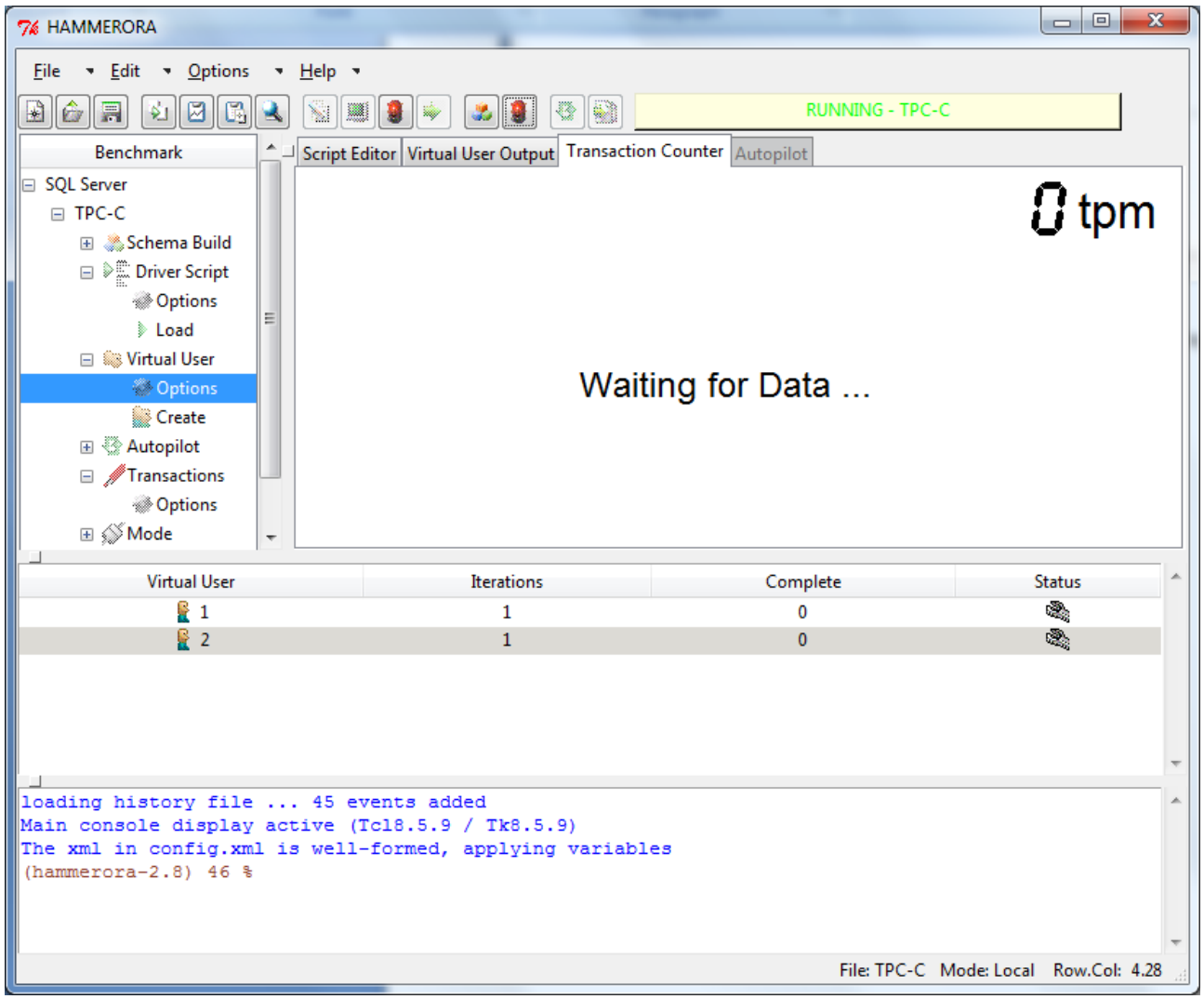

Figure 69 Transaction Counter Started

Run the Virtual Users as you did previously, in this example Virtual User Output has been disabled. On the Transaction Counter Pane observe the database performance of your system. Note that if you have previously run a load test against Oracle Express the TPM values measure different values and cannot be used in any way to provide a comparison.

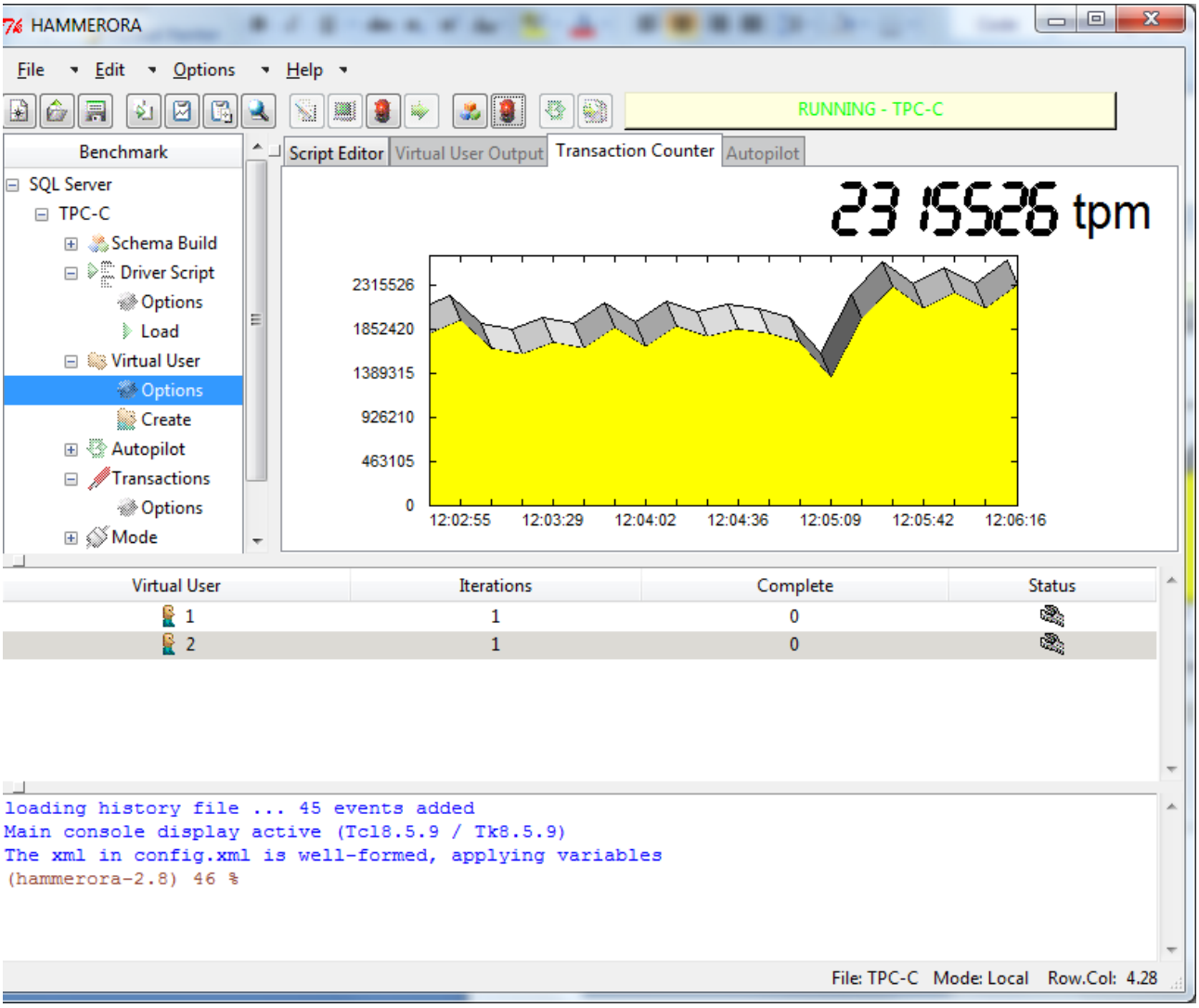

Figure 70 Transaction Counter

The traffic light icons can be used to close down the Transaction Counter and Virtual Users Respectively.
You can close HammerDB by selecting Exit from the File Menu.
Congratulations you have now run your first SQL Server load test.

Install MySQL Community Edition

You can now proceed to installing and configuring MySQL on your system. Download the community edition of MySQL from the following location.
http://www.mysql.com/downloads/mysql/
Run the installer and select Next.

Figure 71 MySQL Welcome

Review the License agreement and select Next.

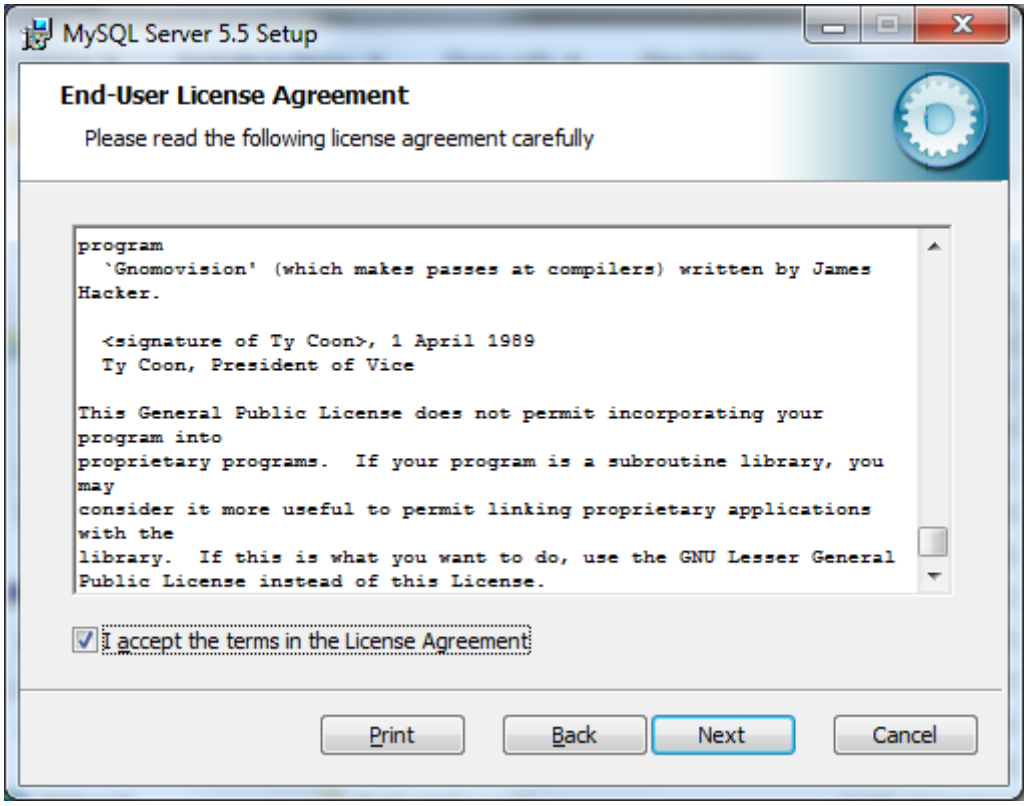

Figure 72 License Agreement

If you are happy with the default options select a typical install. In this example we will select Custom to change the installation directory.

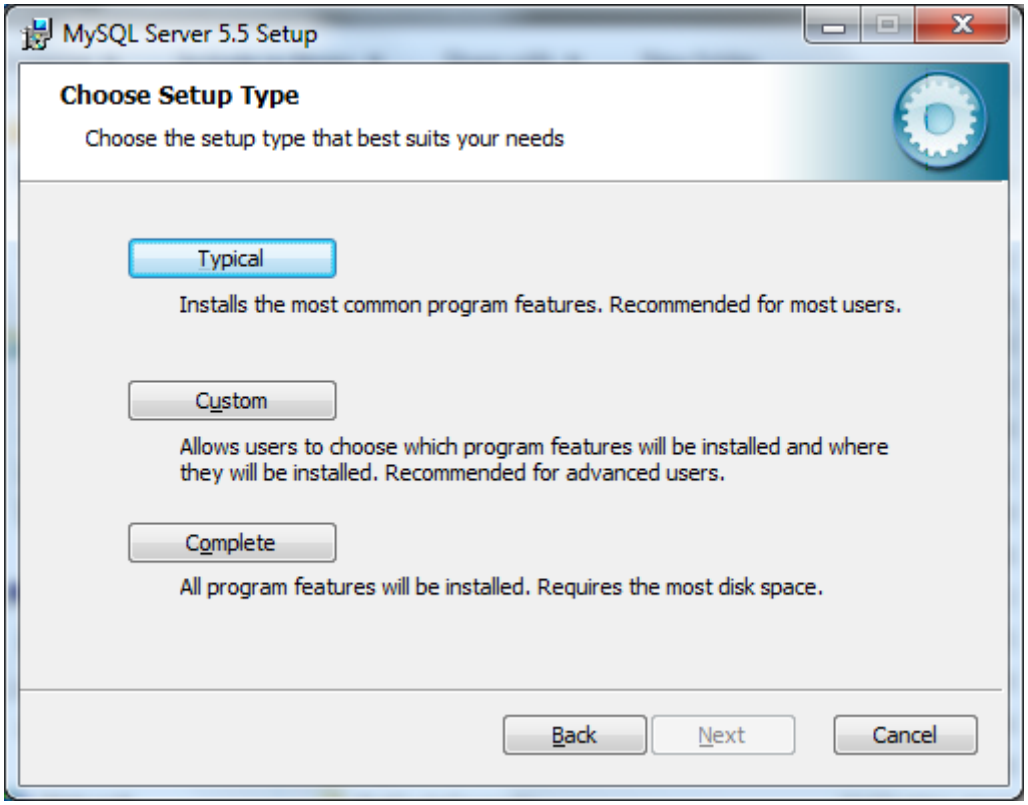

Figure 73 Setup Type

Choose your installation options and press Next.

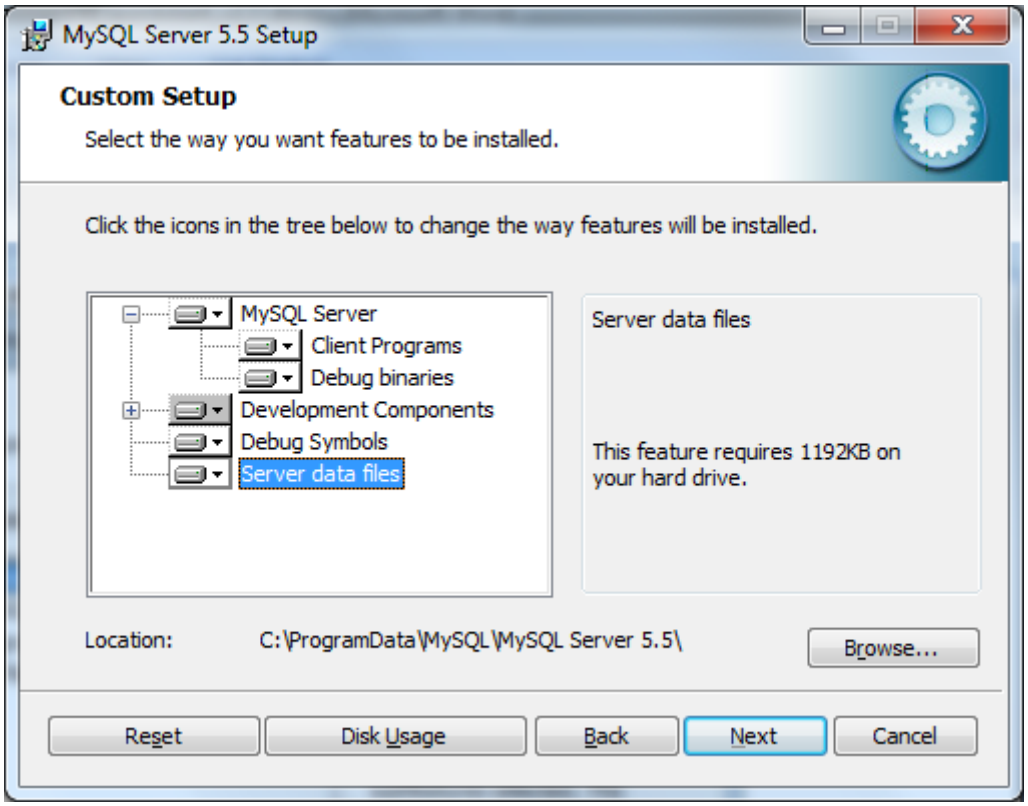

Figure 74 Custom Setup Options

Confirm your selected options and press Install

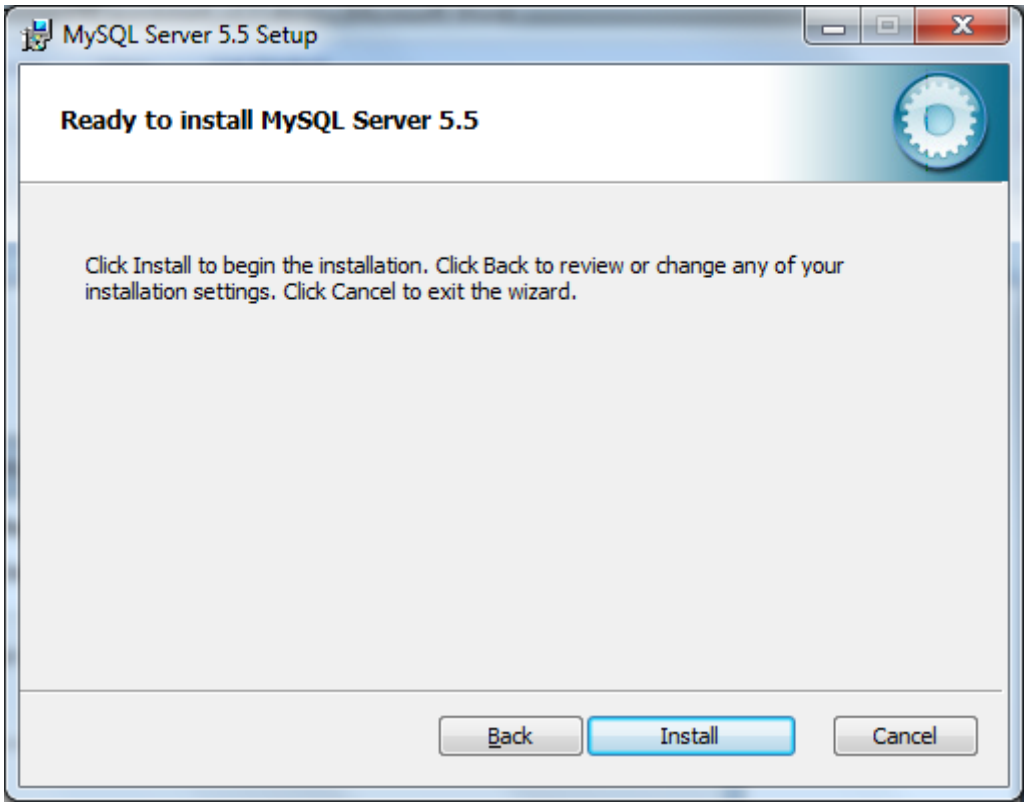

Figure 75 MySQL Welcome

Press next on the MySQL Enterprise information page

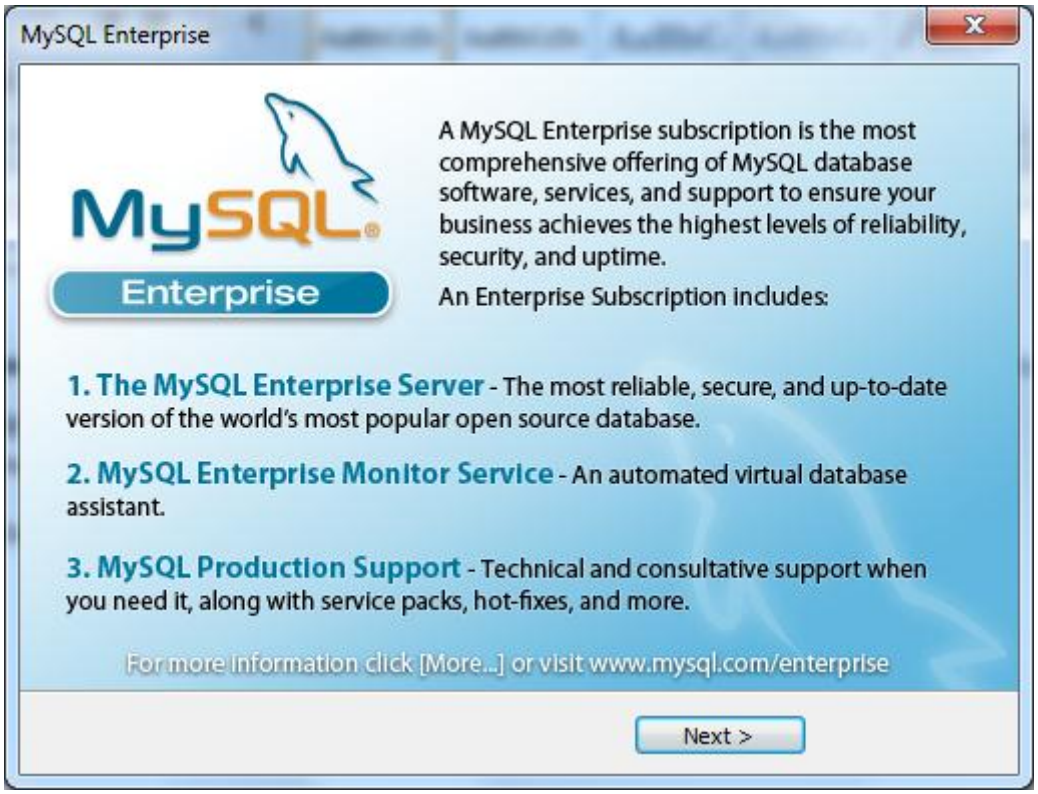

Figure 76 MySQL Enterprise

Press Next on the MySQL Enterprise Monitor page

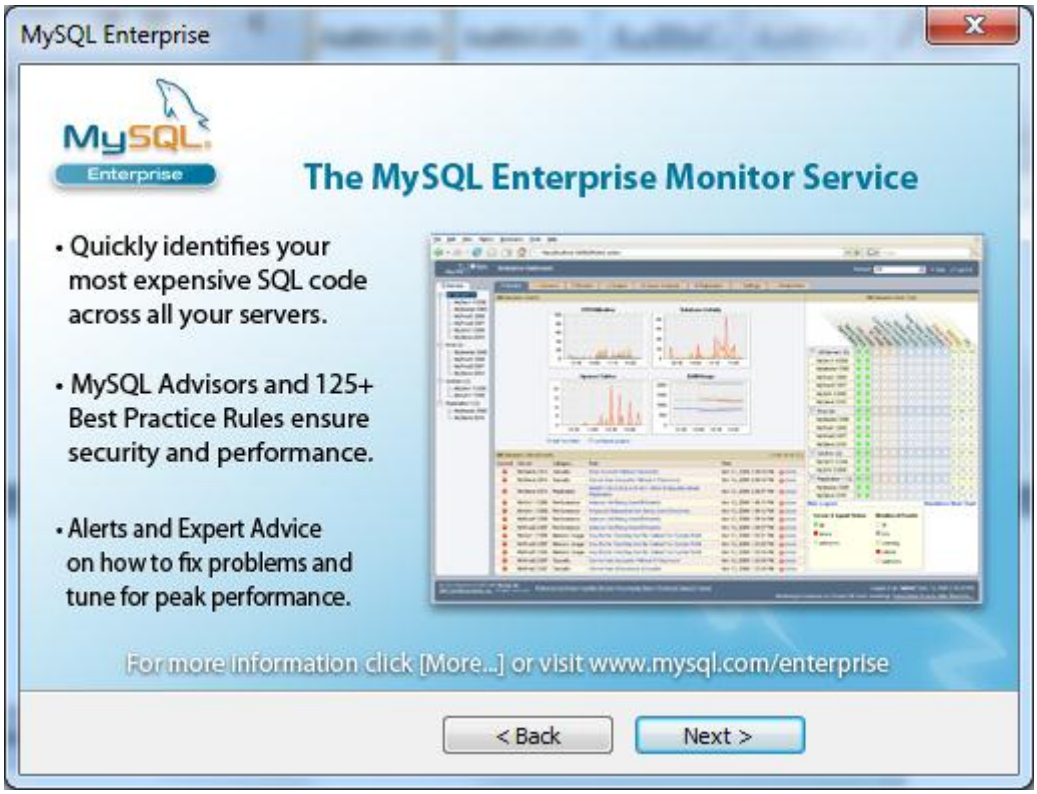

Figure 77 MySQL Monitor

When the installer has completed choose to configure now and press Finish.

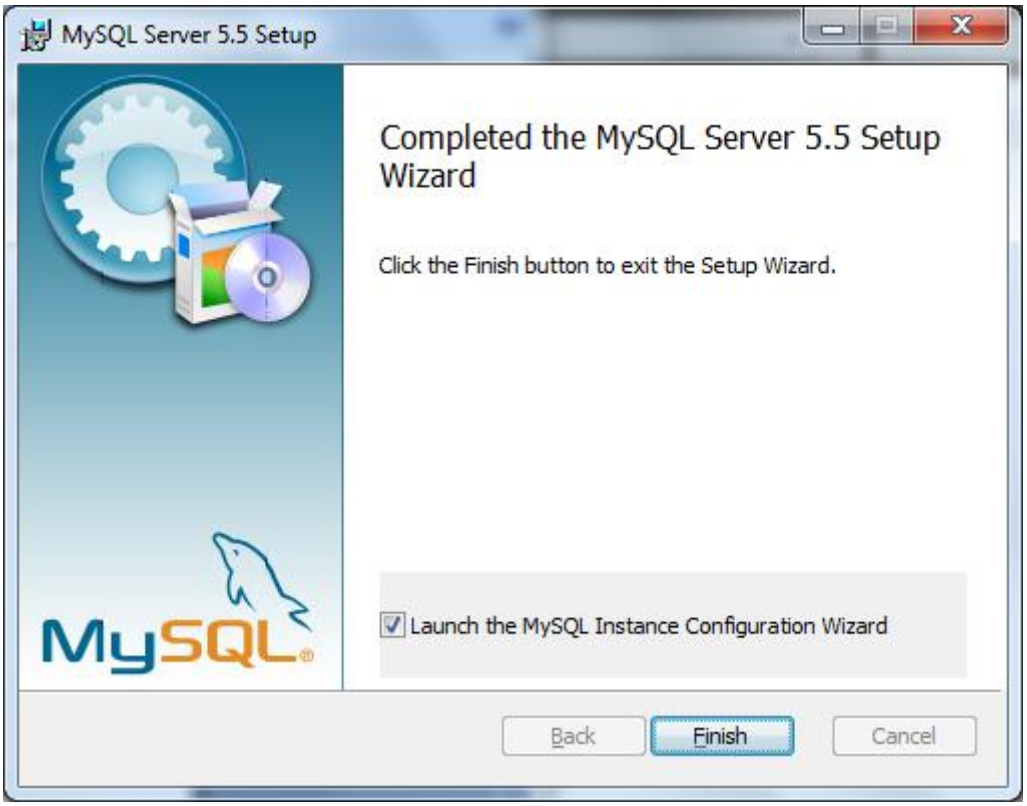

Figure 78 Wizard Completed

At the configuration wizard press Next.

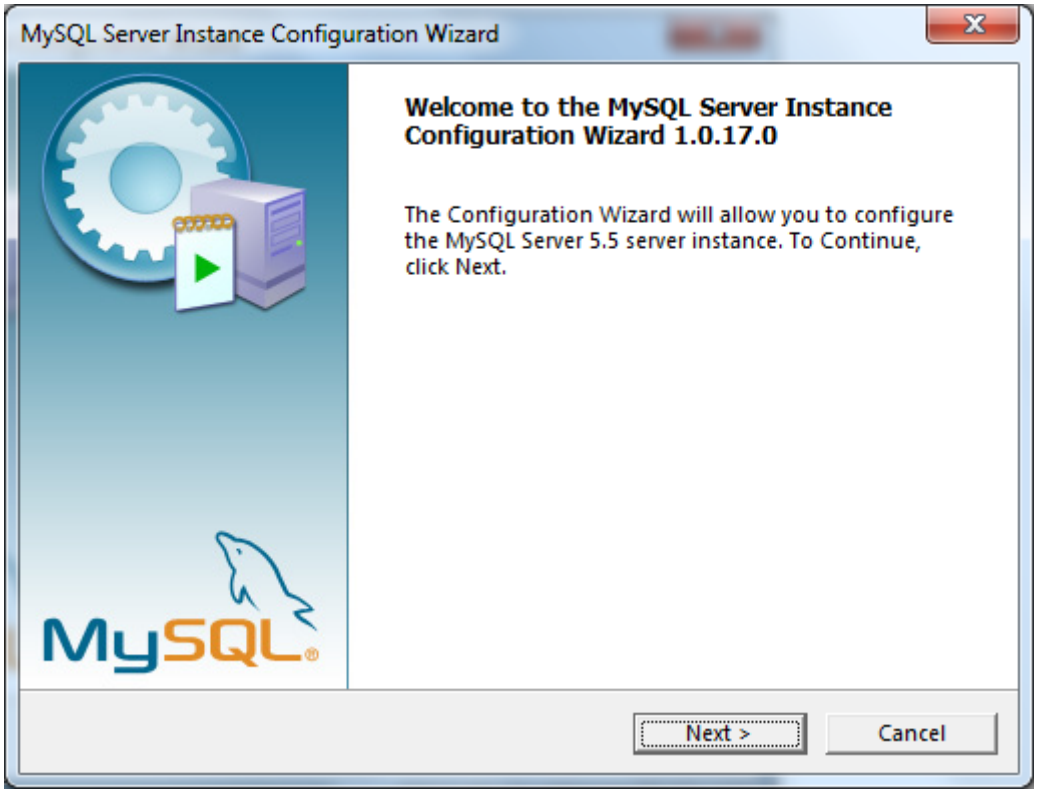

Figure 79 Instance Configuration

On the Instance Configuration Page choose Standard Configuration and Press Next.

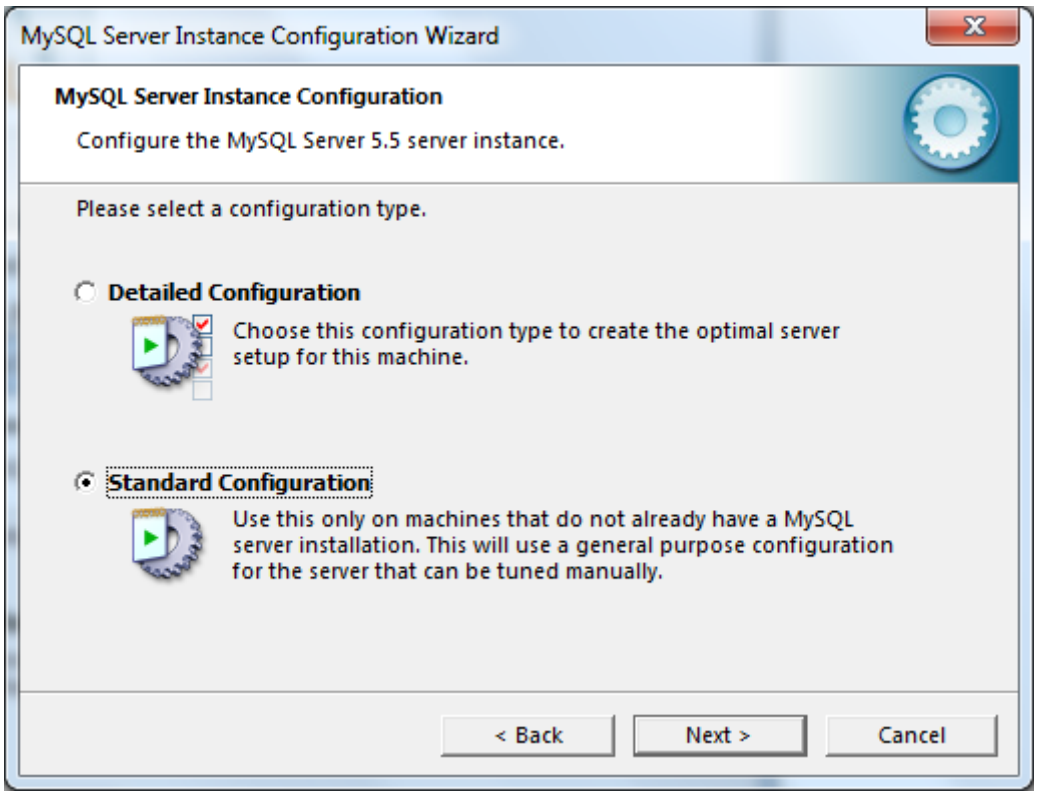

Figure 80 Standard Configuration

Accept MySQL as a service and choose to add the MySQL directory to your path and press Next.

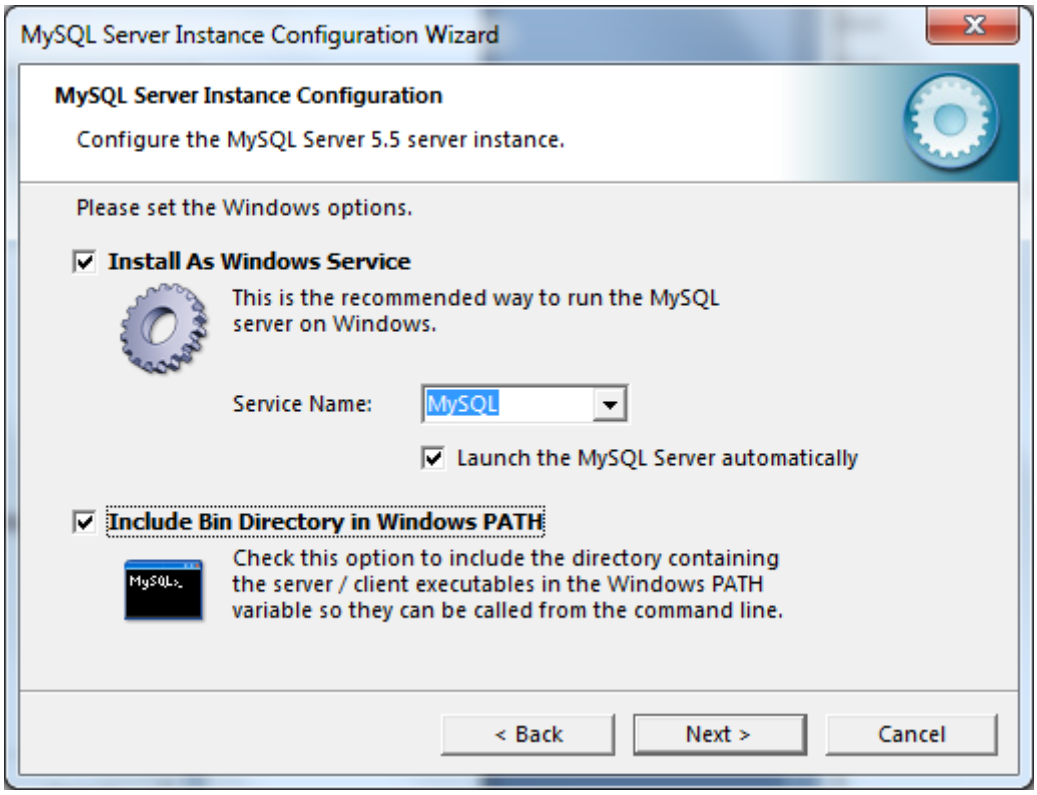

Figure 81 MySQL Service

Choose a password for your root user and Press Next.

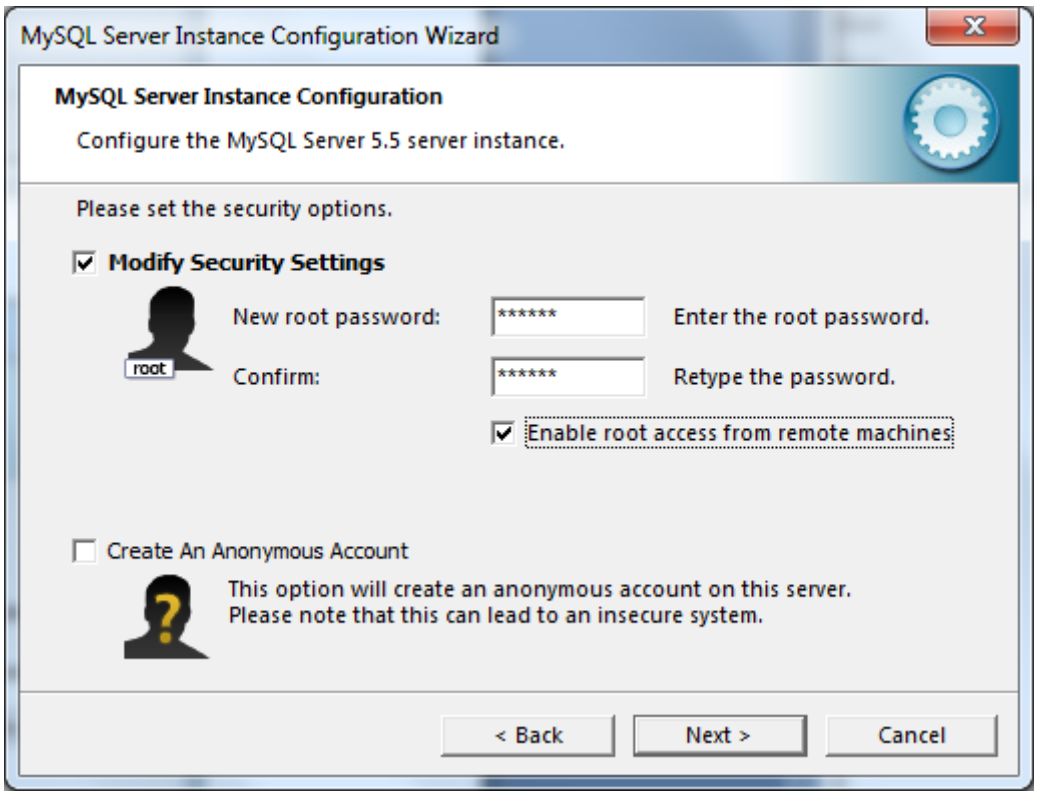

Figure 81 Create Account

Press Execute to process your configuration and when complete press Finish.

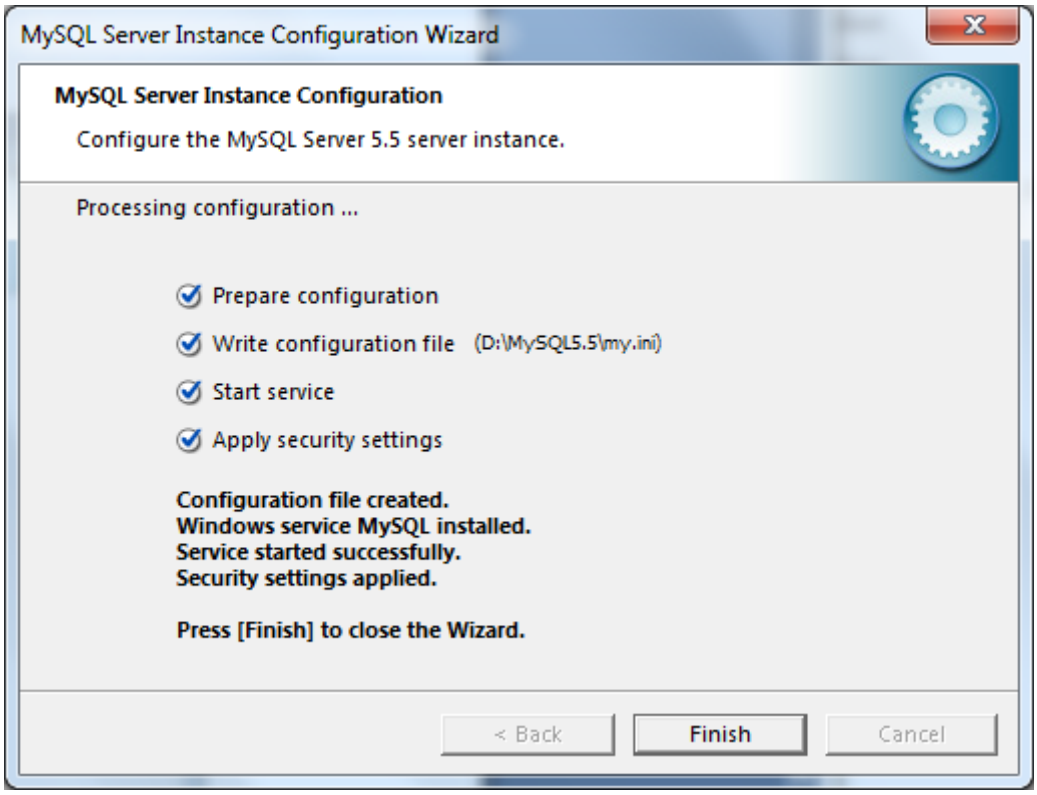

Figure 82 Processing Configuration

Create a MySQL Test Schema

Under the Benchmark treeview double-click on MySQL click OK on the Benchmark Options dialog and on the confirmation window press OK.

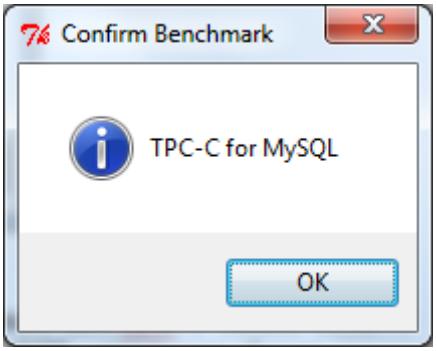

Figure 83 TPC-C for MySQL

Now when you select TPC-C Schema Options under the Benchmark and TPC-C treeview observe that the options have changed from the Oracle and SQL Server information to MySQL. Select the Build Options from the treeview, enter your chosen values and click OK.

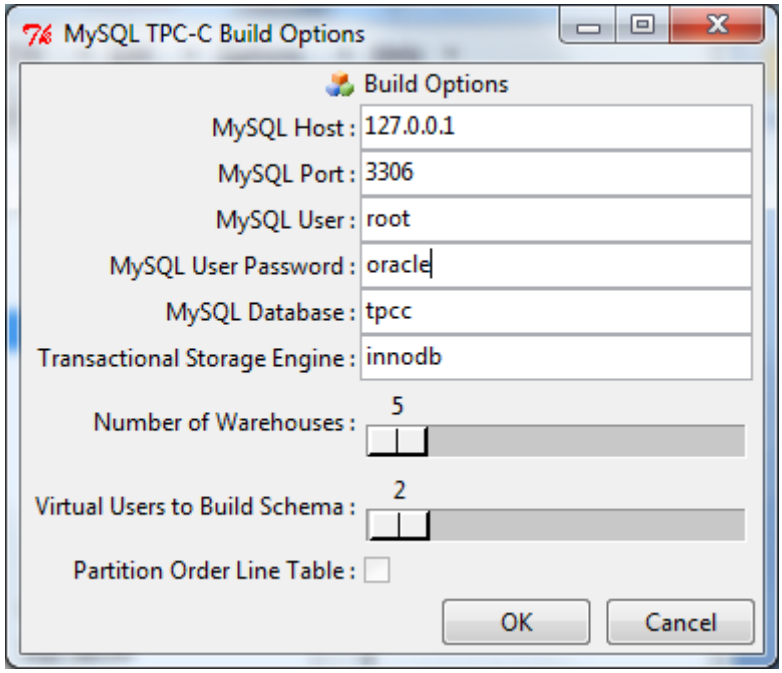

Figure 84 Schema Options

Start the schema build in exactly the same way that you did for Oracle and SQL Server by pressing the building blocks icon either from the treeview or the buttons. Press Yes on the create schema prompt.

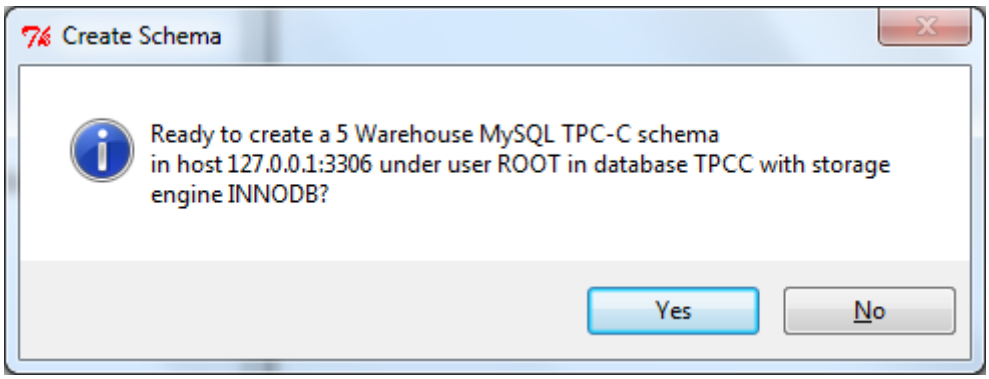

Figure 85 Schema Prompt

The Creation process begins in the same manner you are familiar with from Oracle and SQL Server except this time it is populating your MySQL Database.

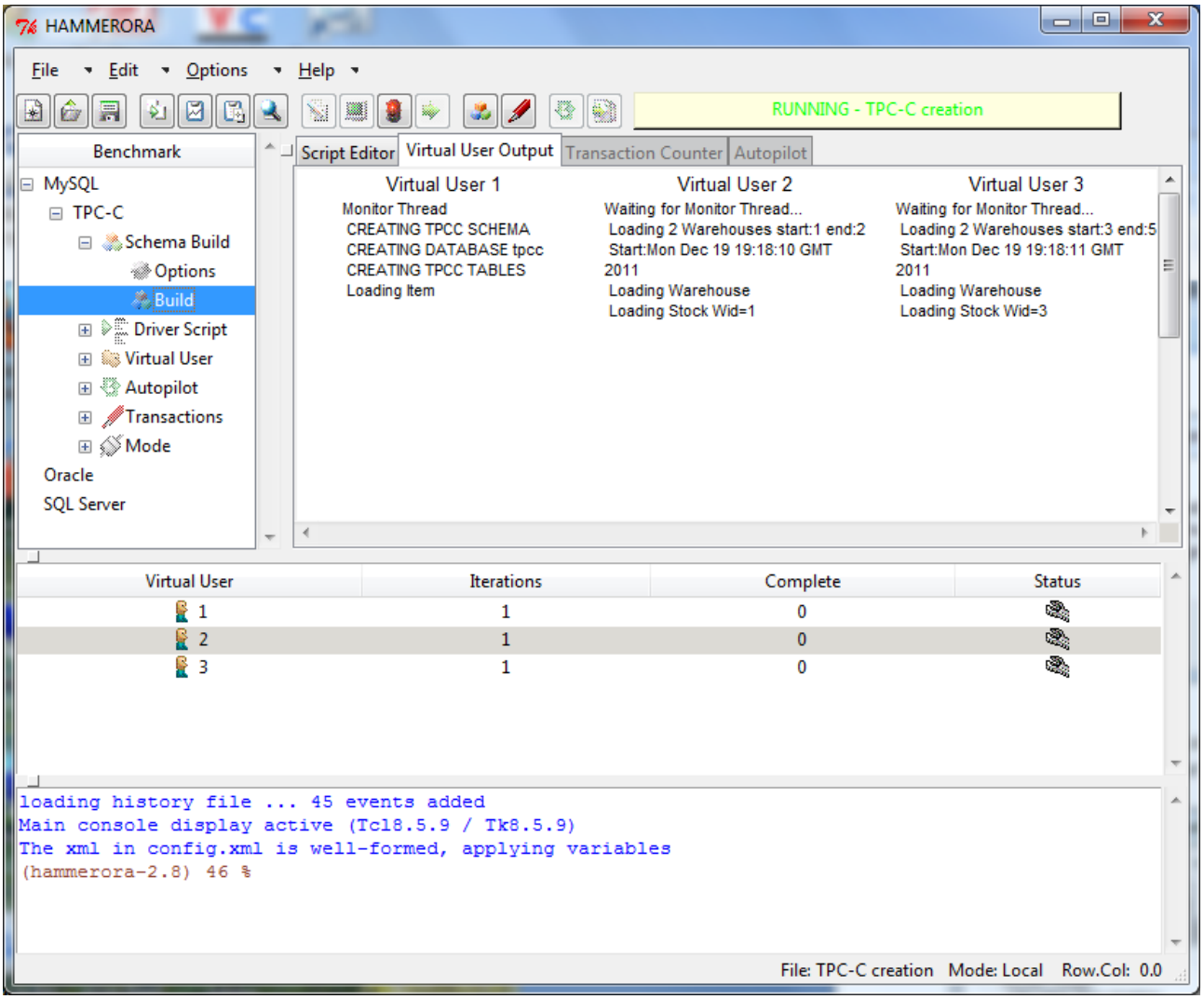

Figure 86 Schema Creation

Wait until your schema creation has completed as shown in Figure 87.

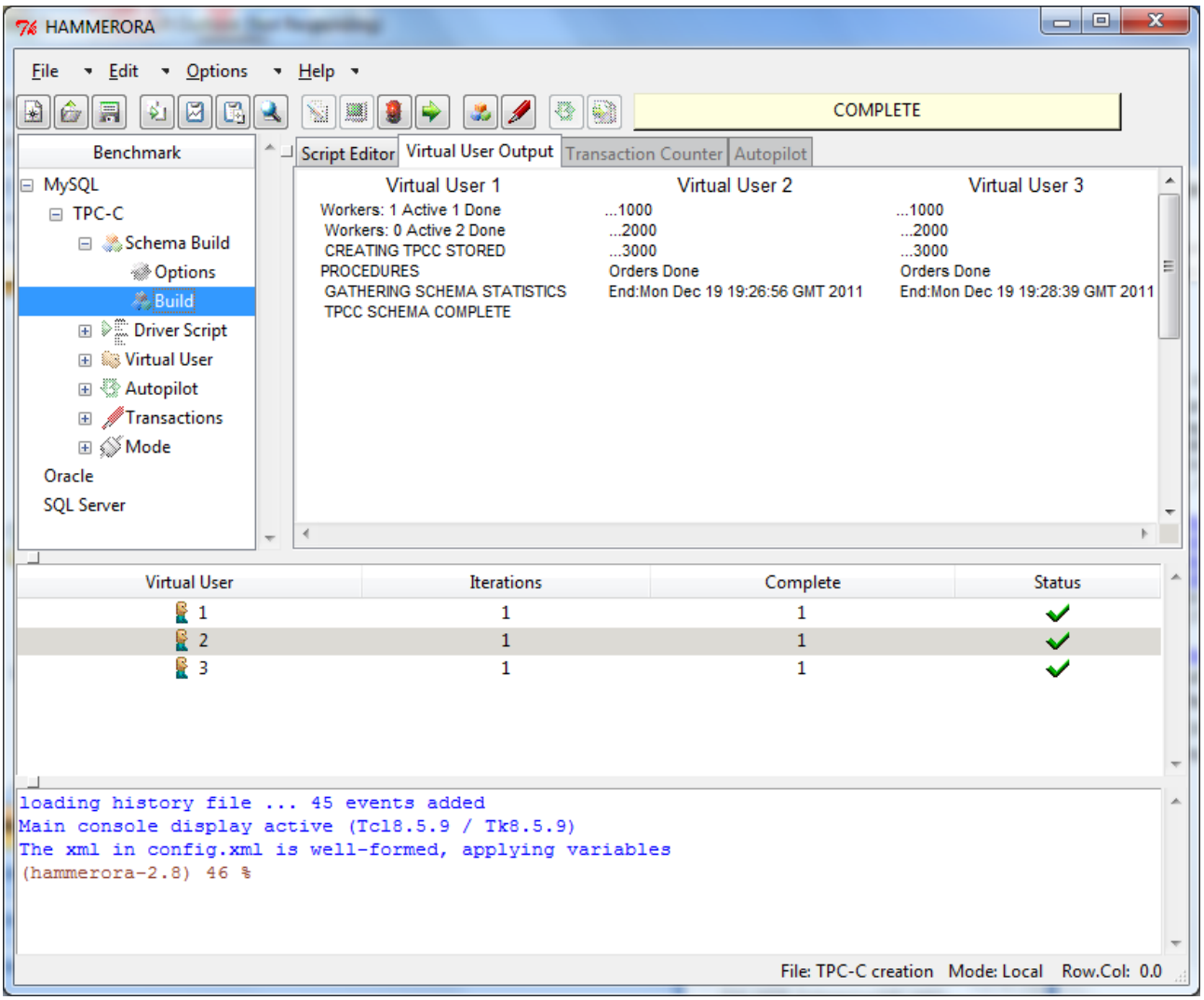

Figure 87 Creation Complete

Take a moment to browse the schema that you have created and observe the populated data.

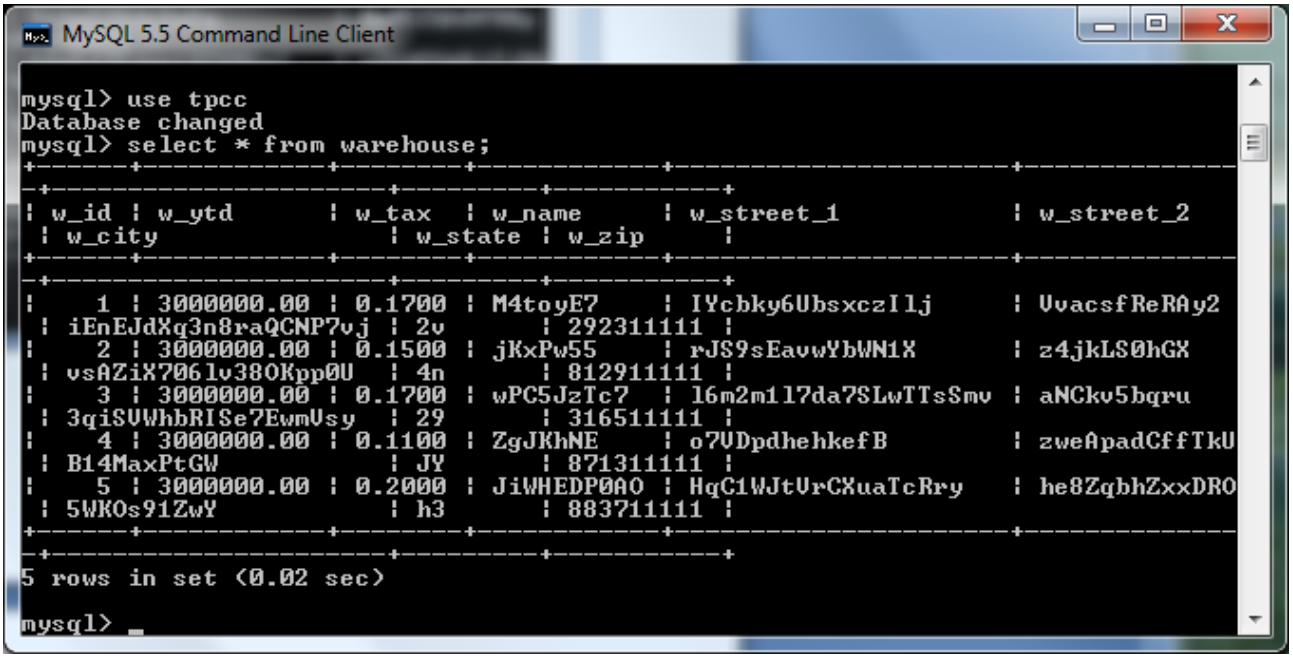

Figure 88 MySQL Data

Running a MySQL Load Test

In the same manner as you did for Oracle select the TPC-C Driver Script from the Benchmark and TPC-C treeview to populate the Script Editor Window. Observe that the driver script contains the MySQL and not the Oracle or SQL Server options.

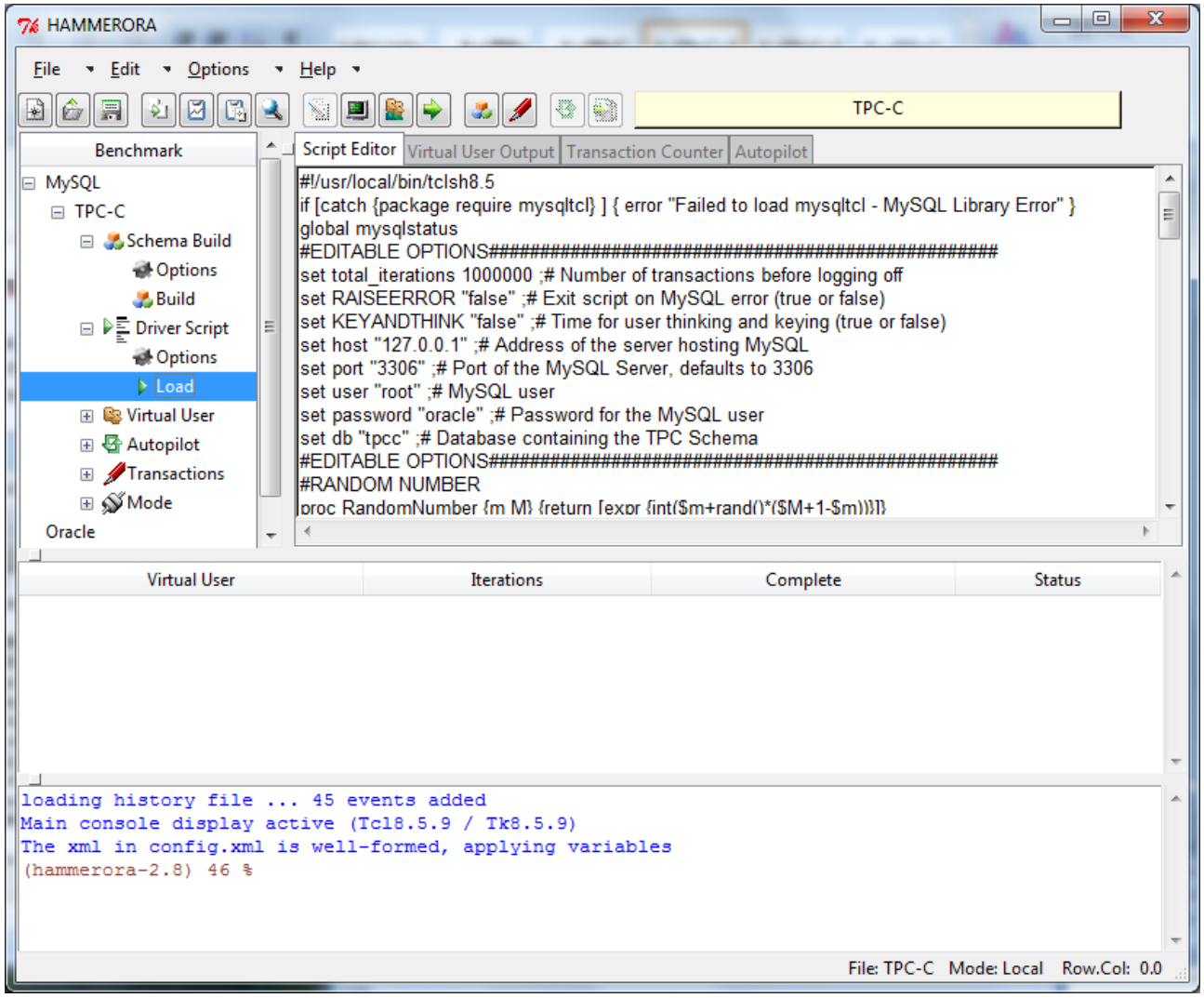

Figure 89 MySQL Driver Script

In the same way as you did for Oracle and SQL Server create and run the Virtual Users.

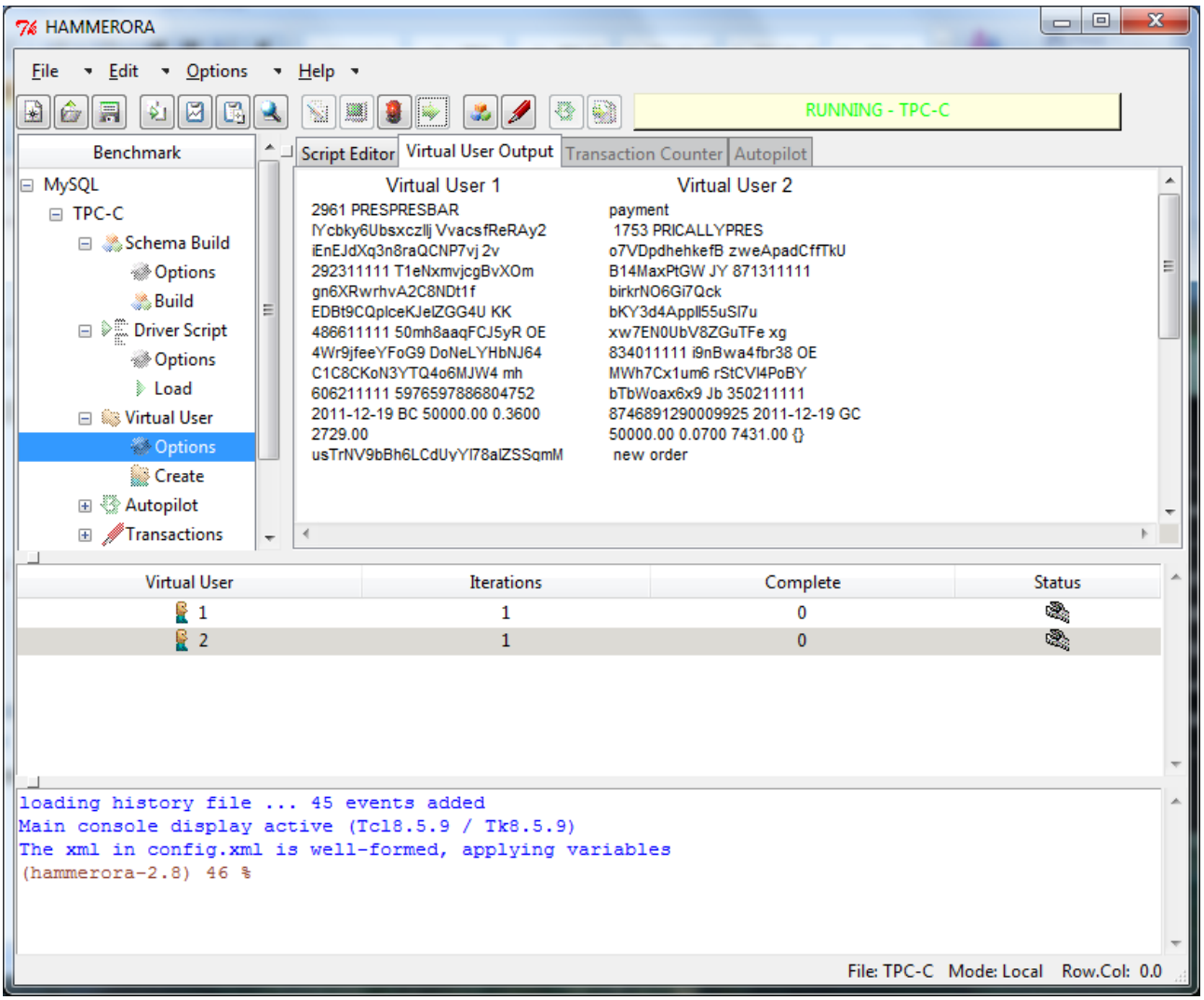

Figure 90 MySQL Load Test

The Load Test will show the status of the virtual users when the test is complete.

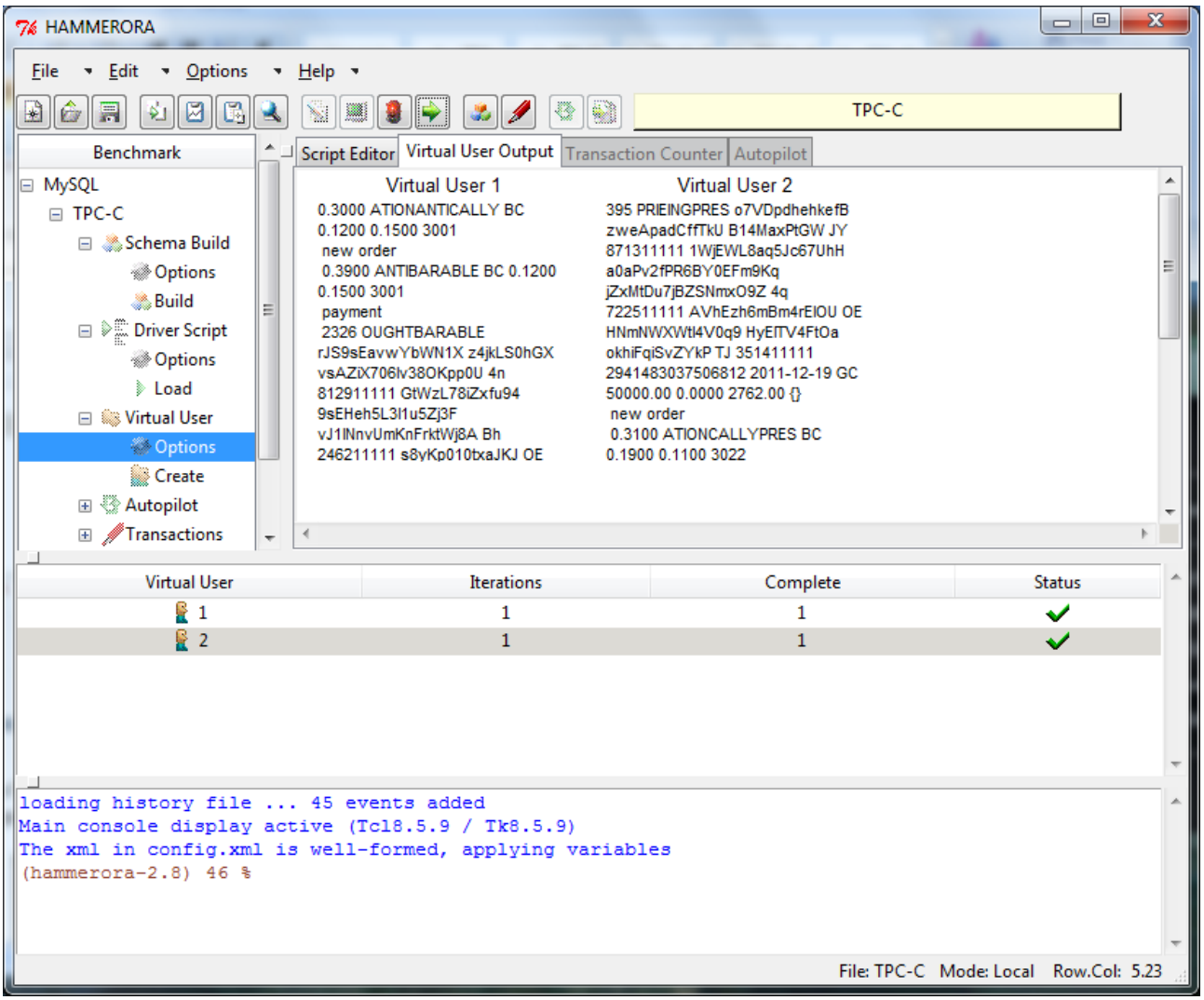

Figure 91 Test Complete

You can also observe the Transaction Counter for MySQL throughput. Under the treeview or TX Counter Menu option select TX Counter Options and populate the fields with your data.

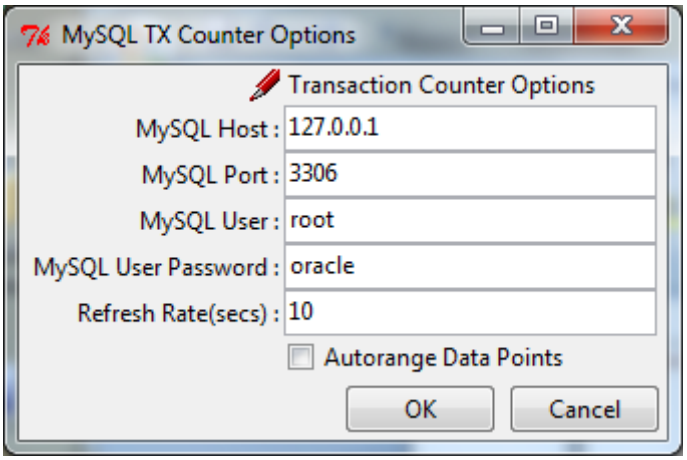

Figure 92 Transaction Counter

Start the Transaction Counter in the same way as you did for Oracle and SQL Server with the pencil icon. Re-run the load test and observe the MySQL Transaction Counter.

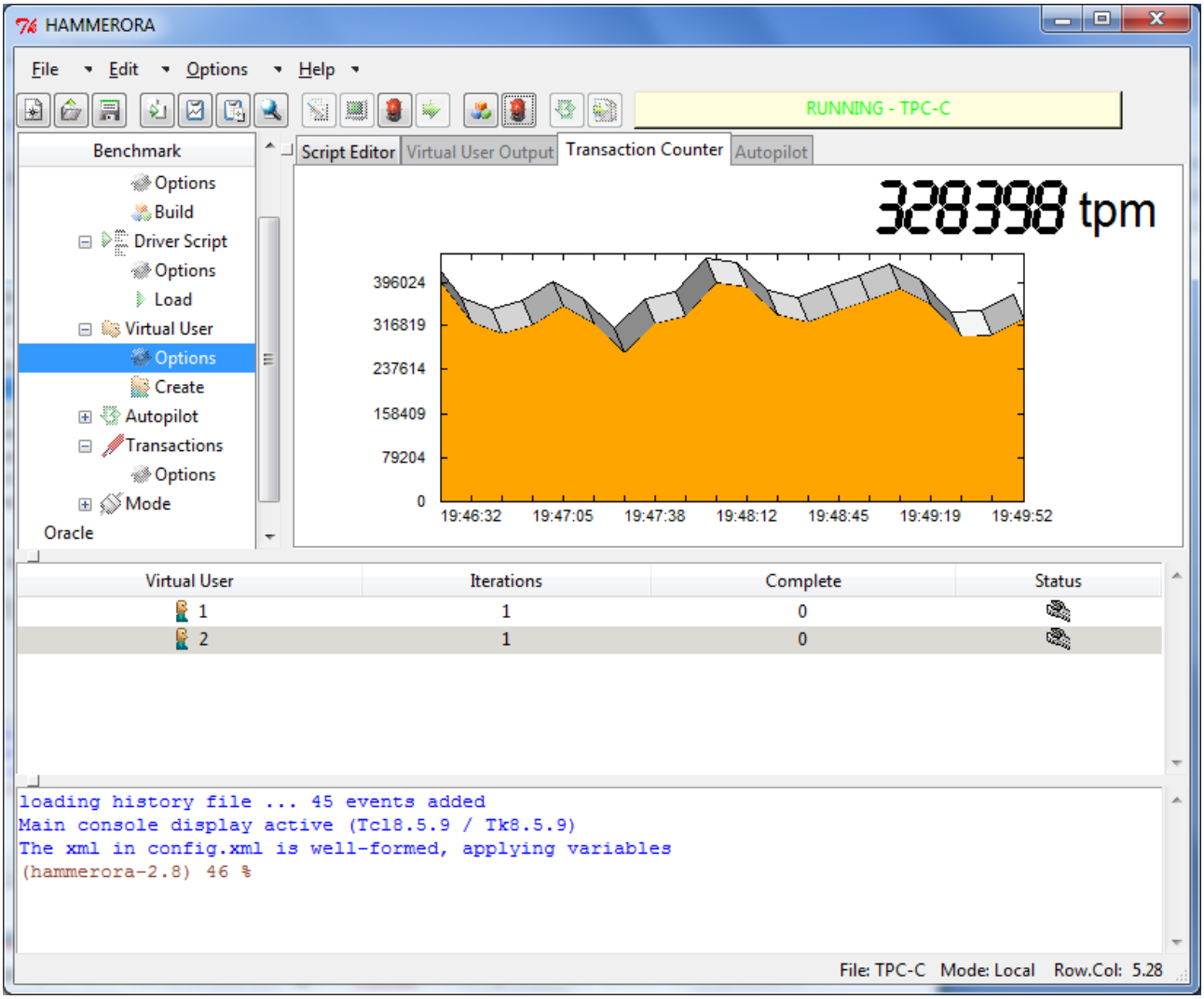

Figure 93 MySQL Transaction Counter

Congratulations you have now run a load test against MySQL and can proceed to PostgreSQL.

Install PostgreSQL

You can now proceed to installing and configuring PostgreSQL on your system. EnterpriseDB make available graphical installers for PostgreSQL here http://www.enterprisedb.com/downloads/postgres-postgresql-downloads . There are two downloads available PostgreSQL and Postgres Plus Advanced Server. Postgres Plus Advanced Server provides optional functionality compatible with the Oracle database. HammerDB supports this Oracle compatible functionality and can run in Oracle compatible or native PostgreSQL mode, however to use Oracle compatible mode you must install Postgres Plus Advanced Server. In this quick start guide we will install standard PostgreSQL and consider Oracle compatible mode in the detailed PostgreSQL OLTP testing guide.

Run the installer and select Next.

Figure 94 PostgreSQL Setup

Choose an installation directory and press Next

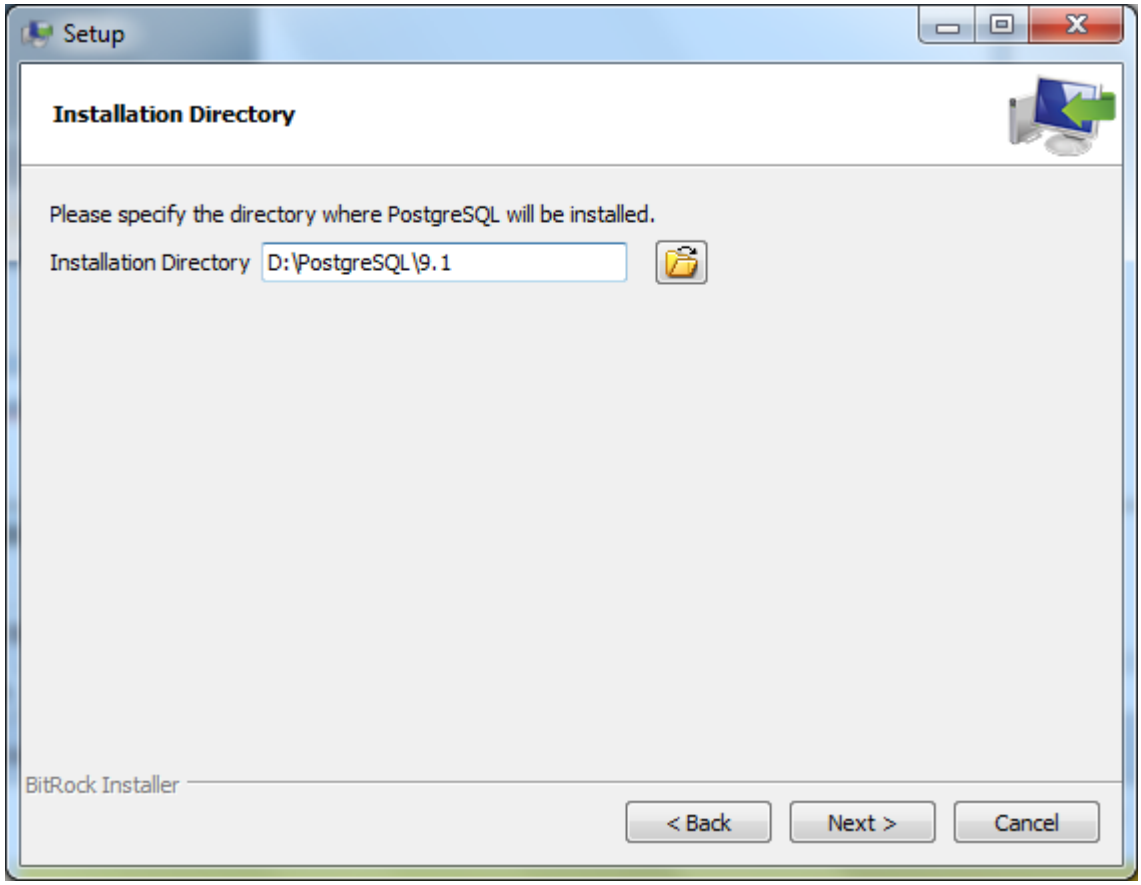

Figure 95 PostgreSQL Directory

Choose a data directory which is usually located under the installation directory and press Next

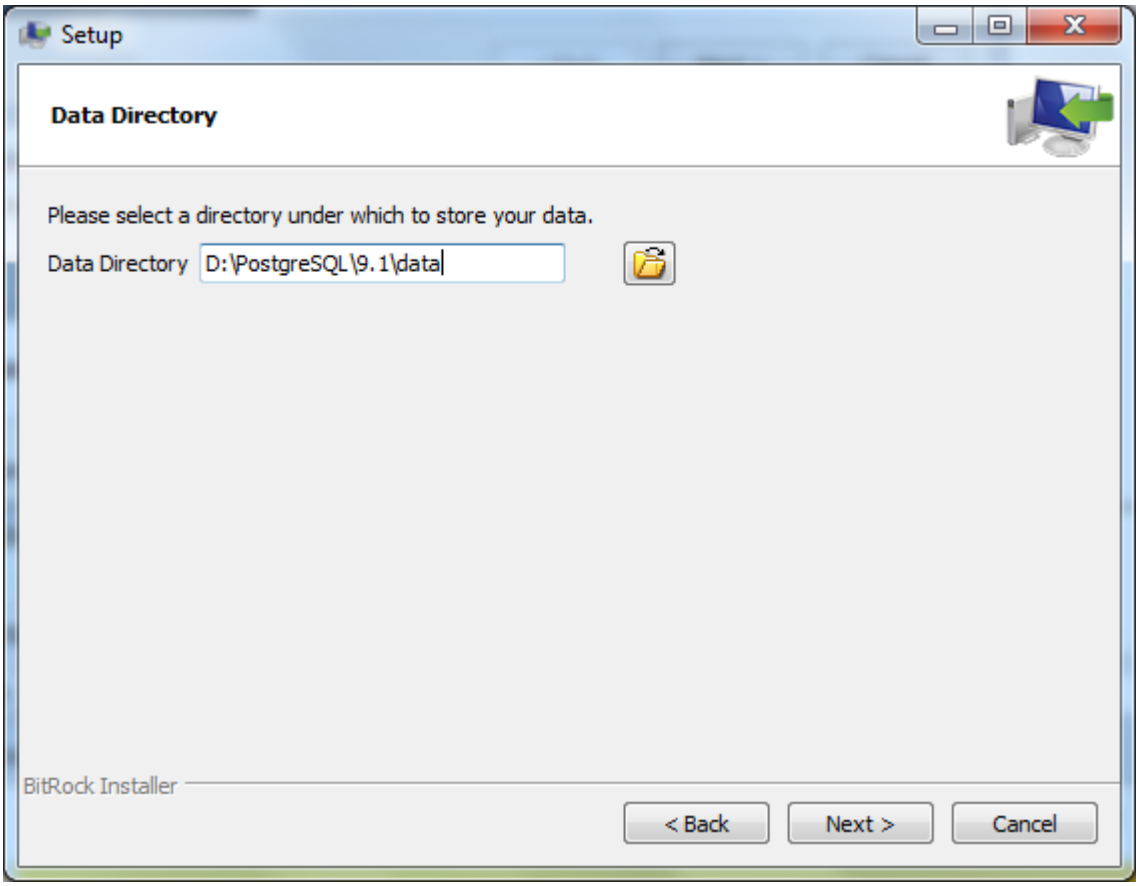

Figure 96 PostgreSQL Data

Choose a password for a first install, a windows service account is created with the password and therefore you will need to remember the password for subsequent re-installs, after entering a password press Next

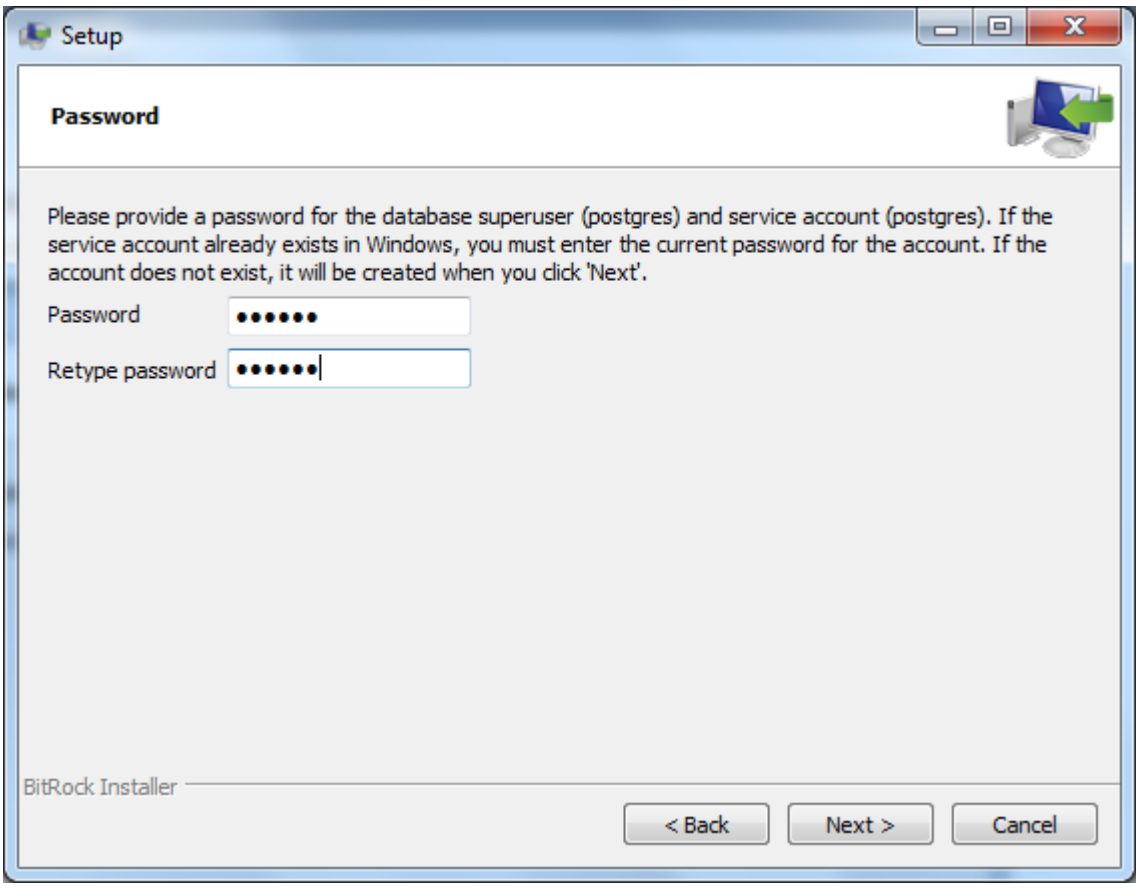

Figure 97 PostgreSQL Password

Accept the default port and press Next.

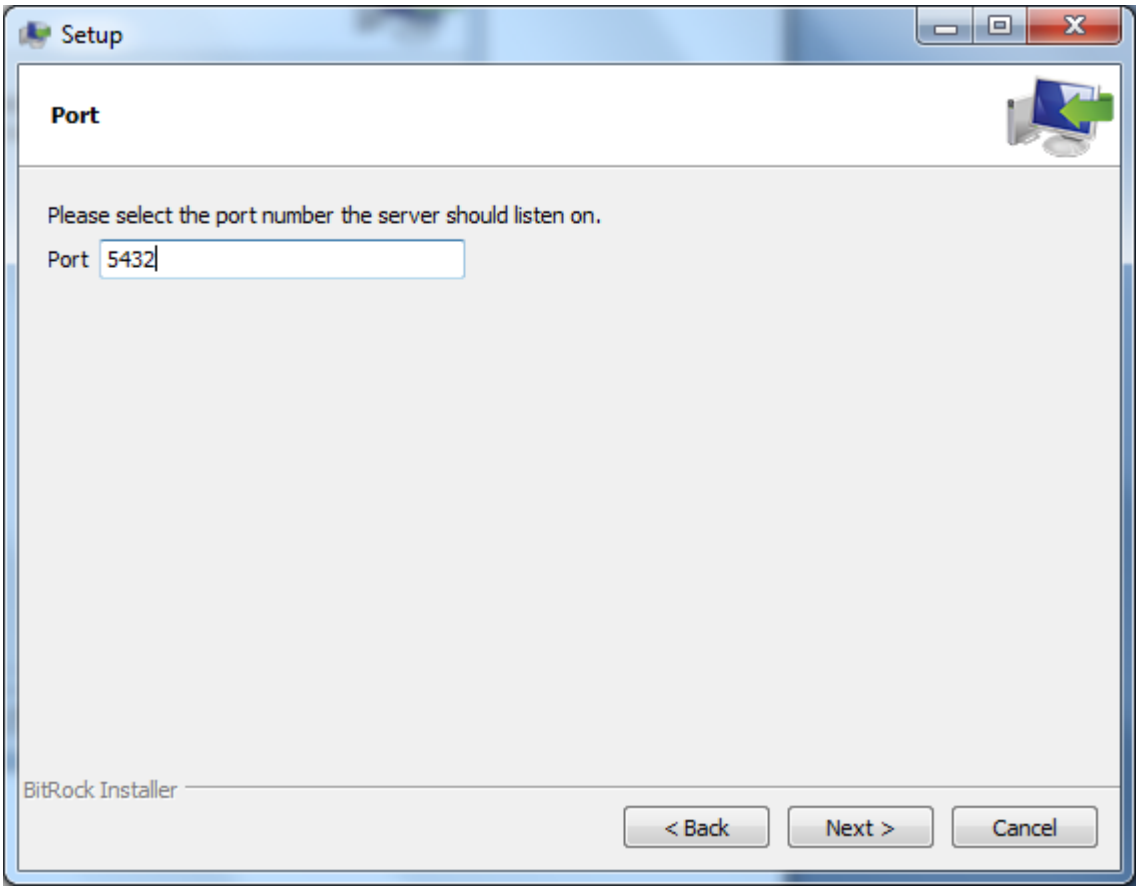

Figure 98 PostgreSQL Port

Choose the locale settings and press Next. Note that PostgreSQL uses cluster terminology for a standard single instance installation.

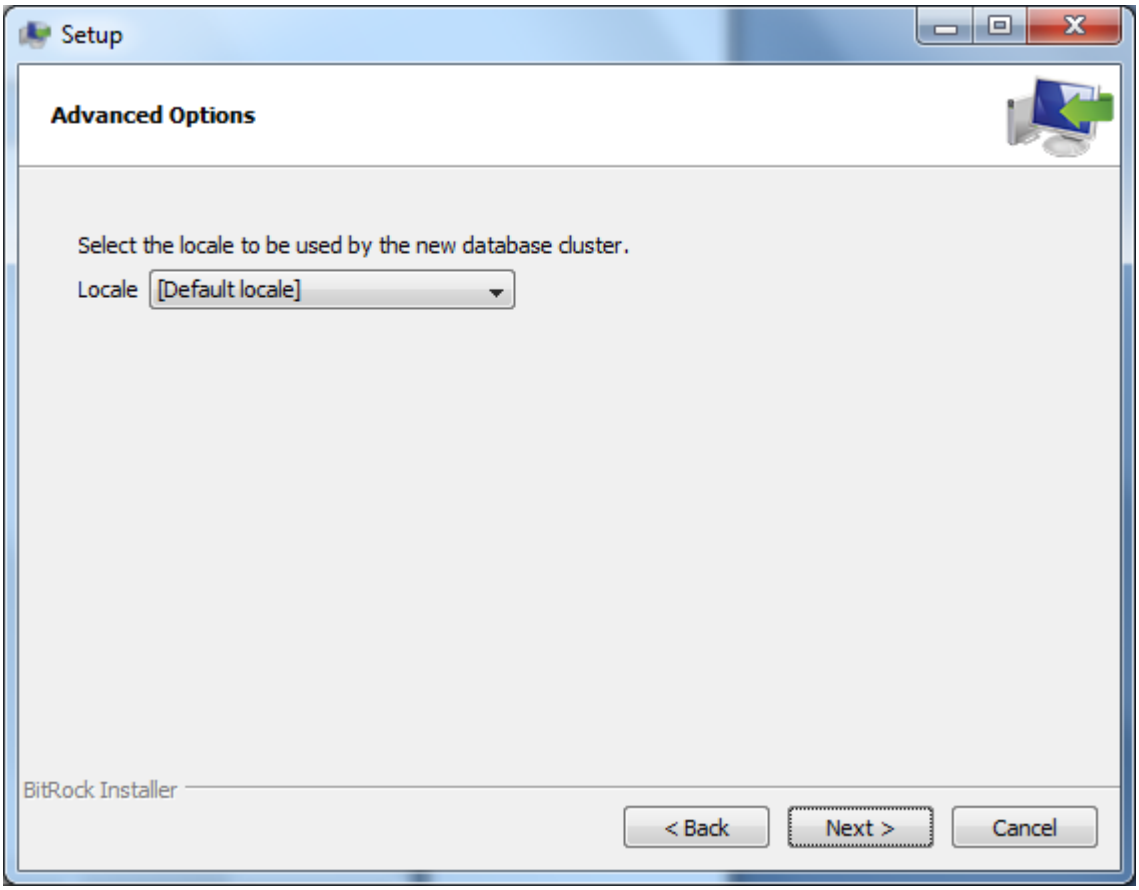

Figure 99 PostgreSQL Locale

At ready to install press Next.

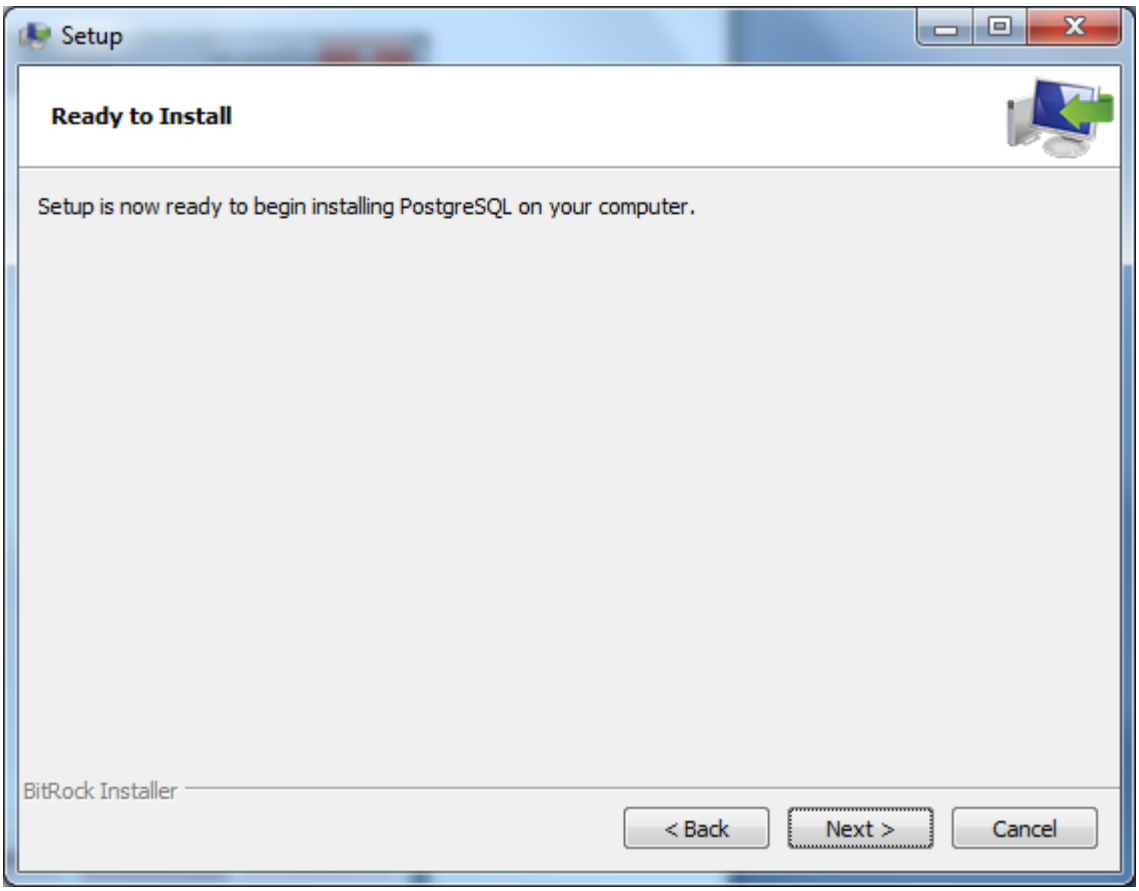

Figure 100 PostgreSQL Ready to Install

PostgreSQL will begin copying files.

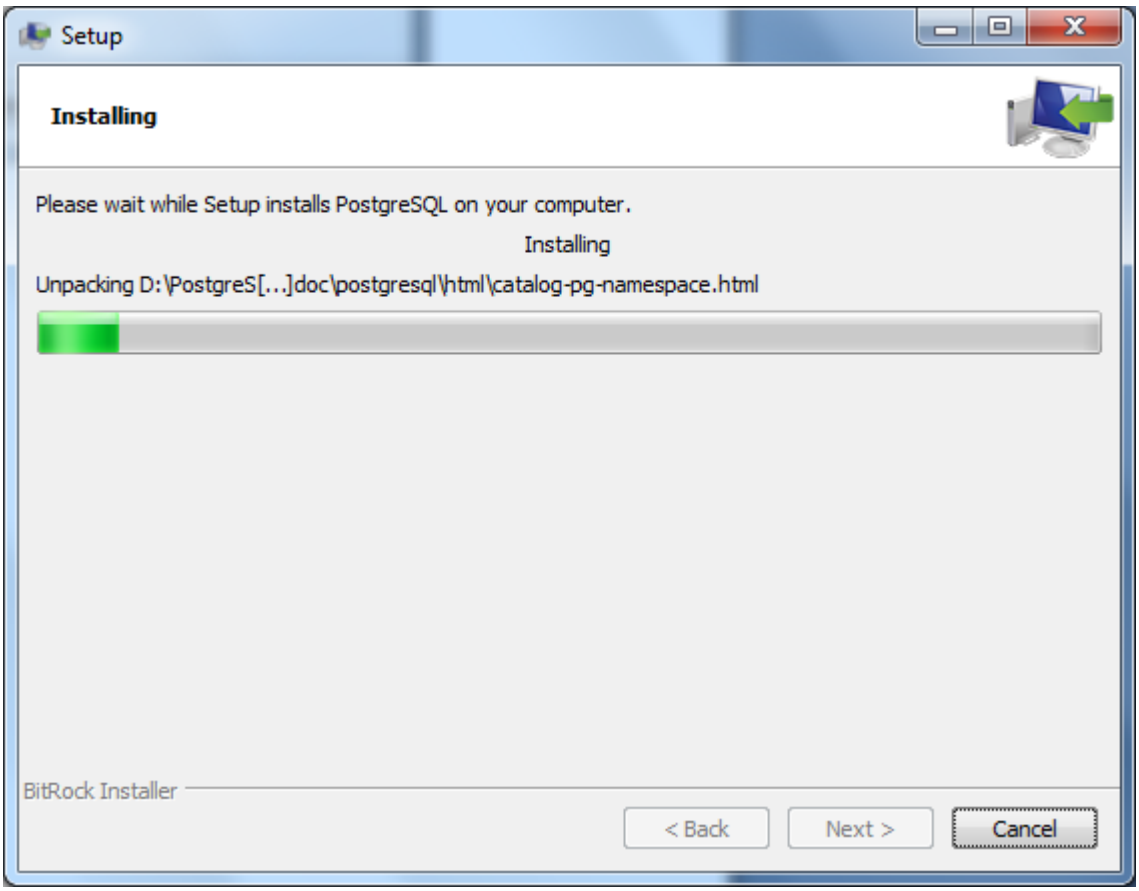

Figure 101 PostgreSQL installing

Complete the PostgreSQL install wizard and press Finish.

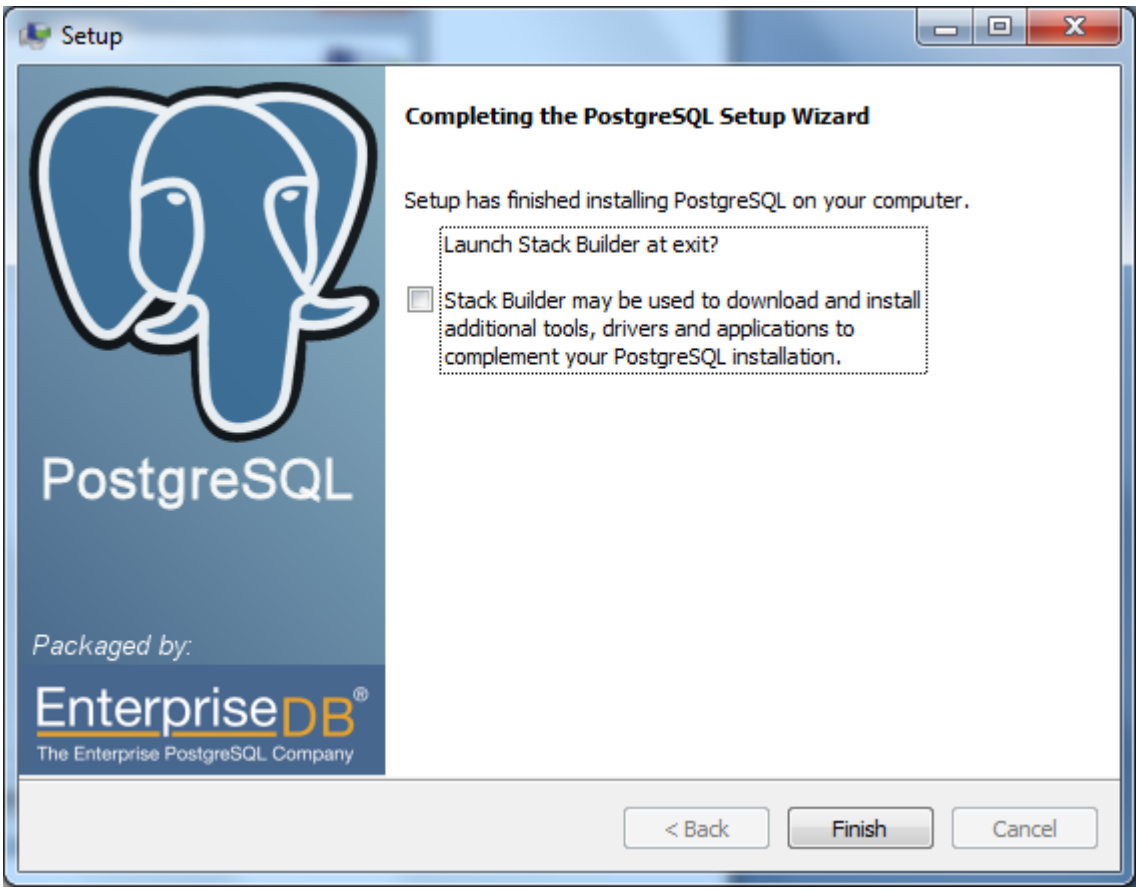

Figure 102 PostgreSQL installed

Create a PostgreSQL Test Schema

Under the Benchmark treeview double-click on PostgreSQL click OK on the Benchmark Options dialog and on the confirmation window press OK.

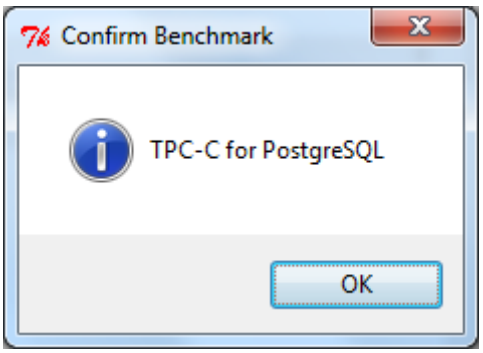

Figure 103 TPC-C for PostgreSQL

Now when you select TPC-C Schema Options under the Benchmark and TPC-C treeview observe that the options have changed from the Oracle, SQL Server and MySQL information to PostgreSQL. Select the Build Options from the treeview, enter your chosen values and click OK. The PostgreSQL Superuser password is the same password that you entered for your PostgreSQL account during installation.

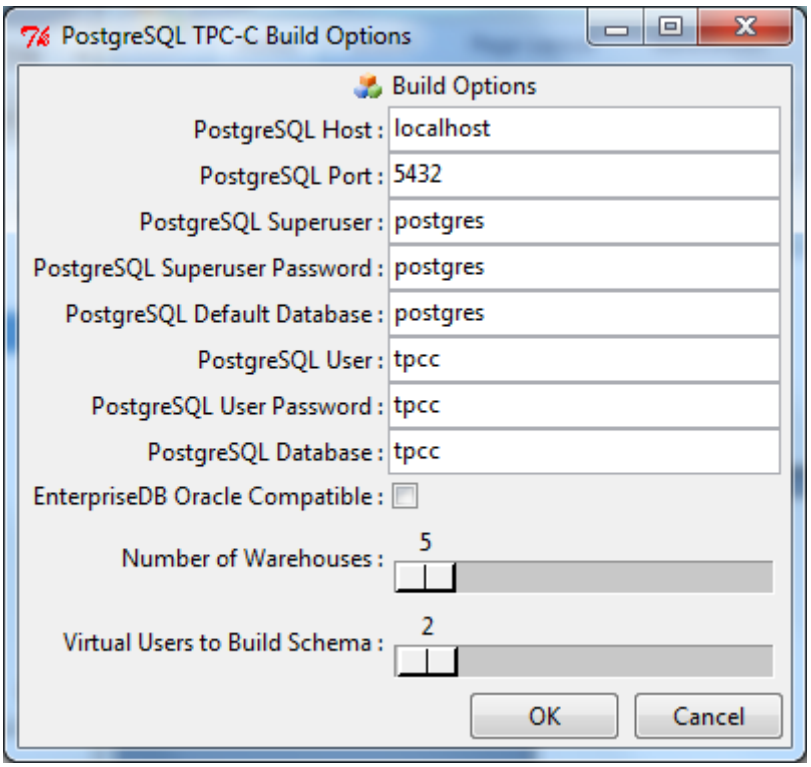

Figure 104 Schema Options

Start the schema build in exactly the same way that you did for Oracle, SQL Server and MySQL by pressing the building blocks icon either from the treeview or the buttons. Press Yes on the create schema prompt.

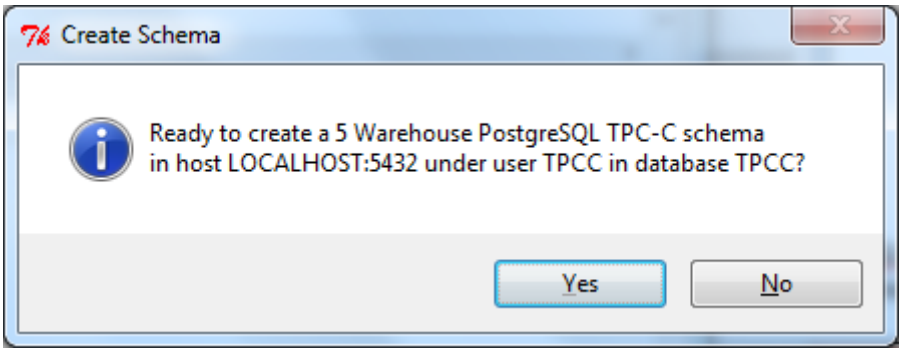

Figure 105 Schema Prompt

The Creation process begins in the same manner you are familiar with from Oracle, SQL Server and PostgreSQL except this time it is populating your PostgreSQL Database.

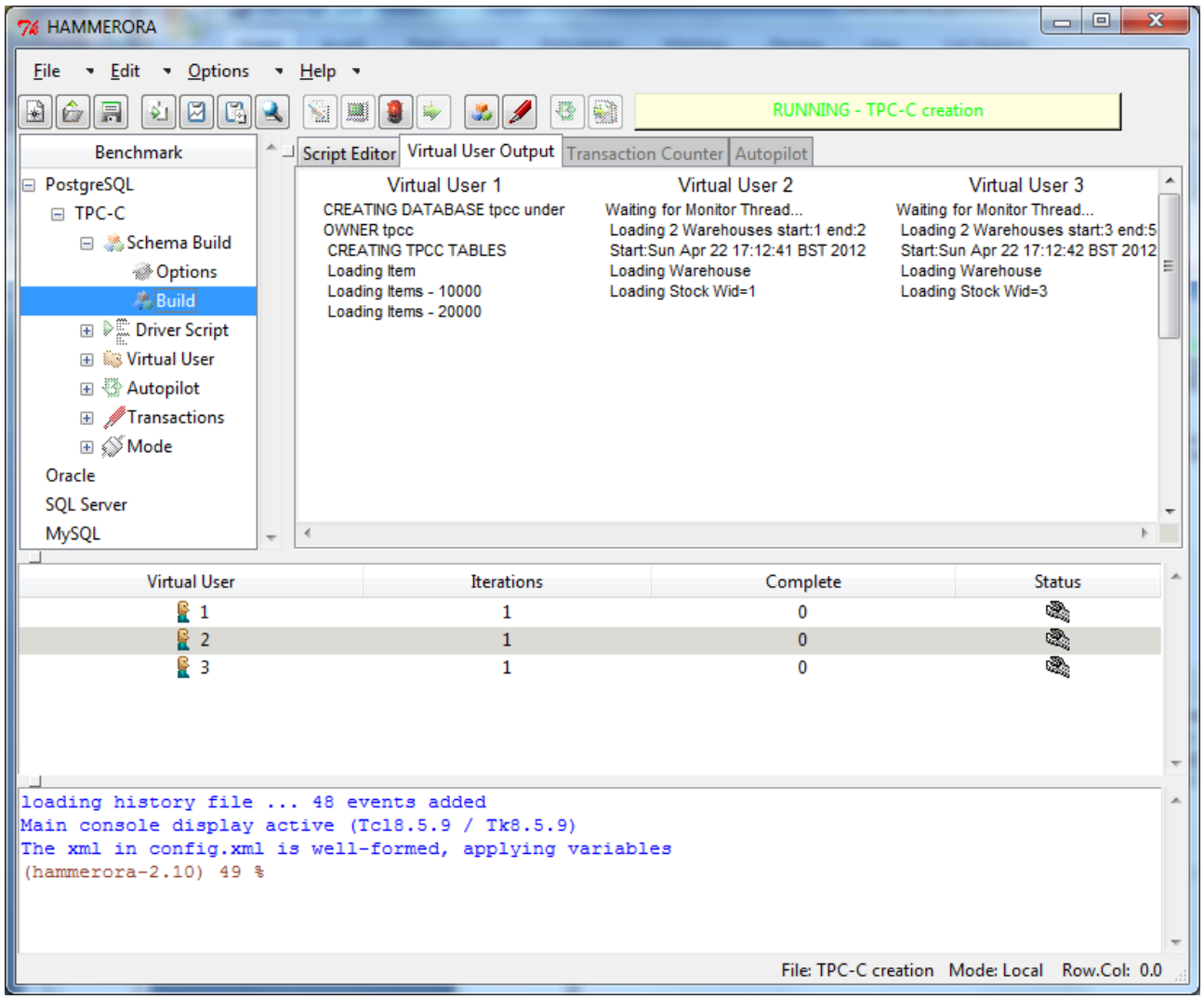

Figure 106 Schema Creation

Wait until your schema creation has completed as shown in Figure 107.

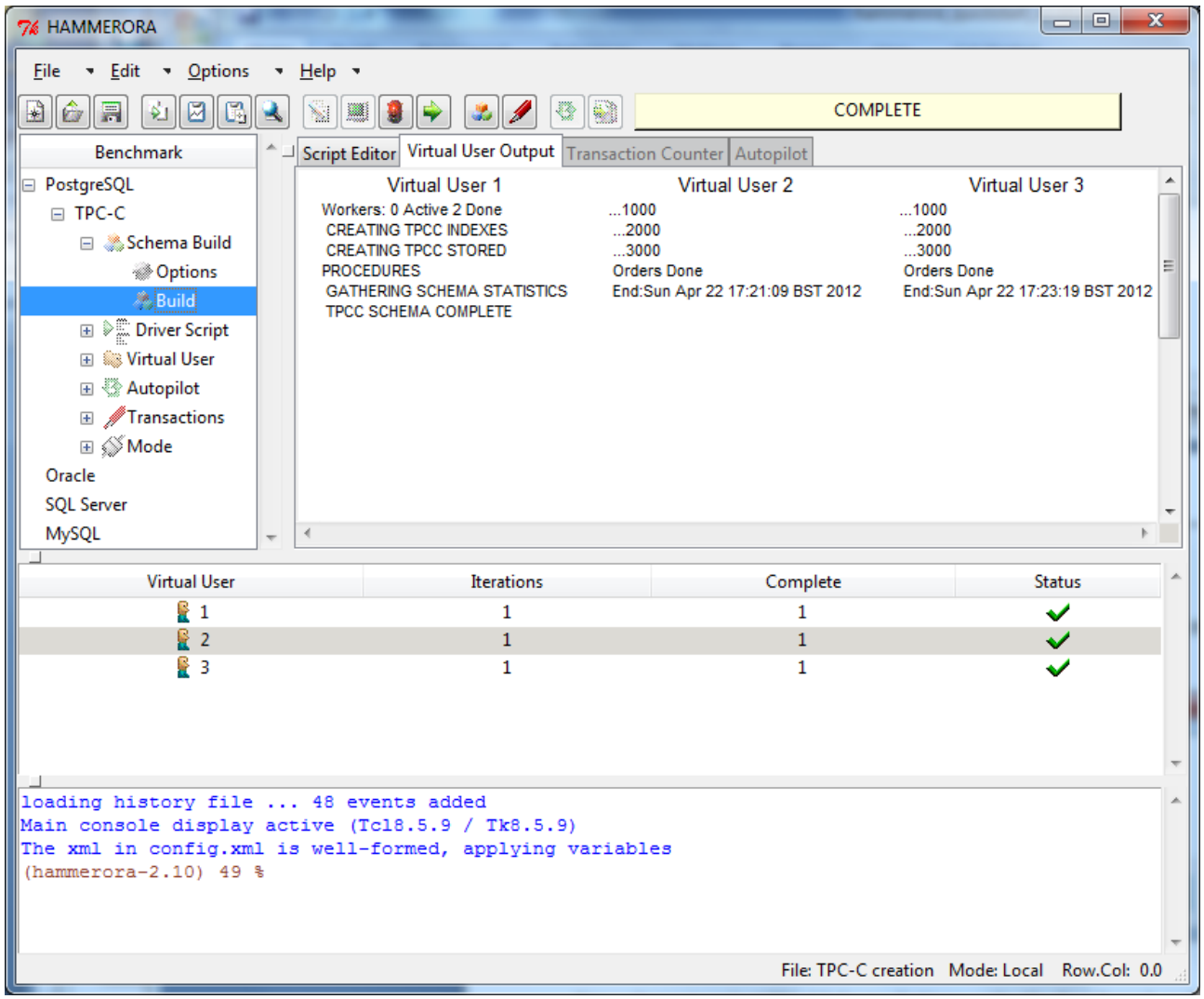

Figure 107 Creation Complete

Take a moment to browse the schema that you have created with the pgAdmin utility and observe the populated data.

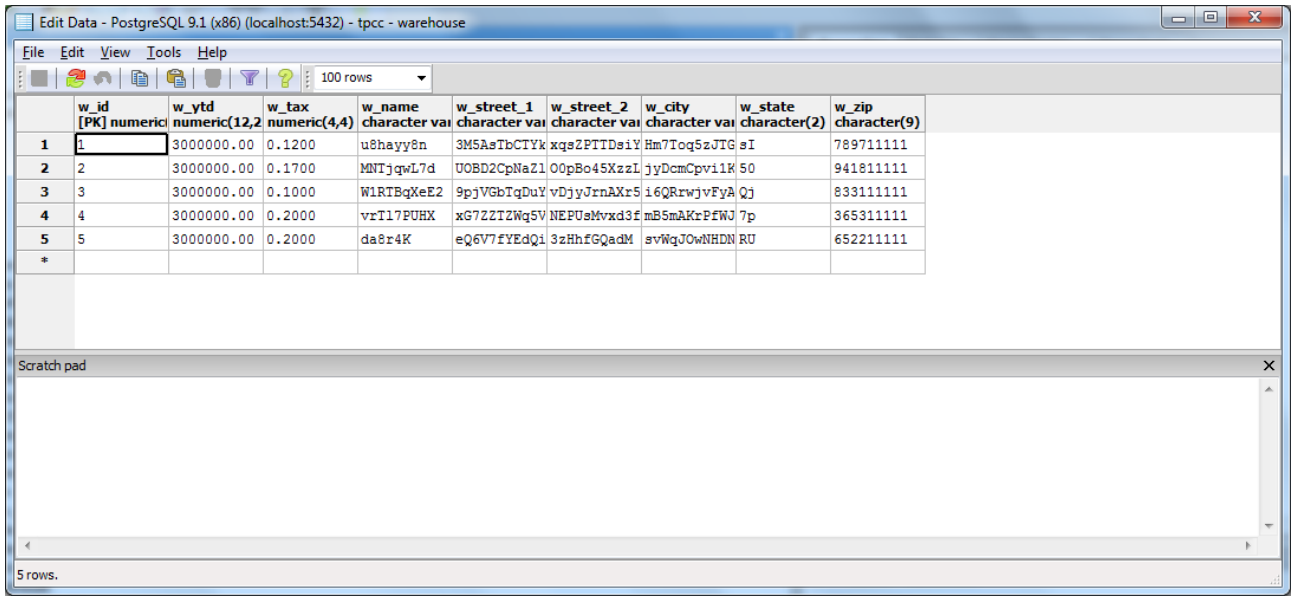

Figure 108 View Data

Running a PostgreSQL Load Test

In the same manner as you did for Oracle select the TPC-C Driver Script from the Benchmark and TPC-C treeview to populate the Script Editor Window. Observe that the driver script contains the PostgreSQL and not the Oracle, SQL Server or MySQL options.

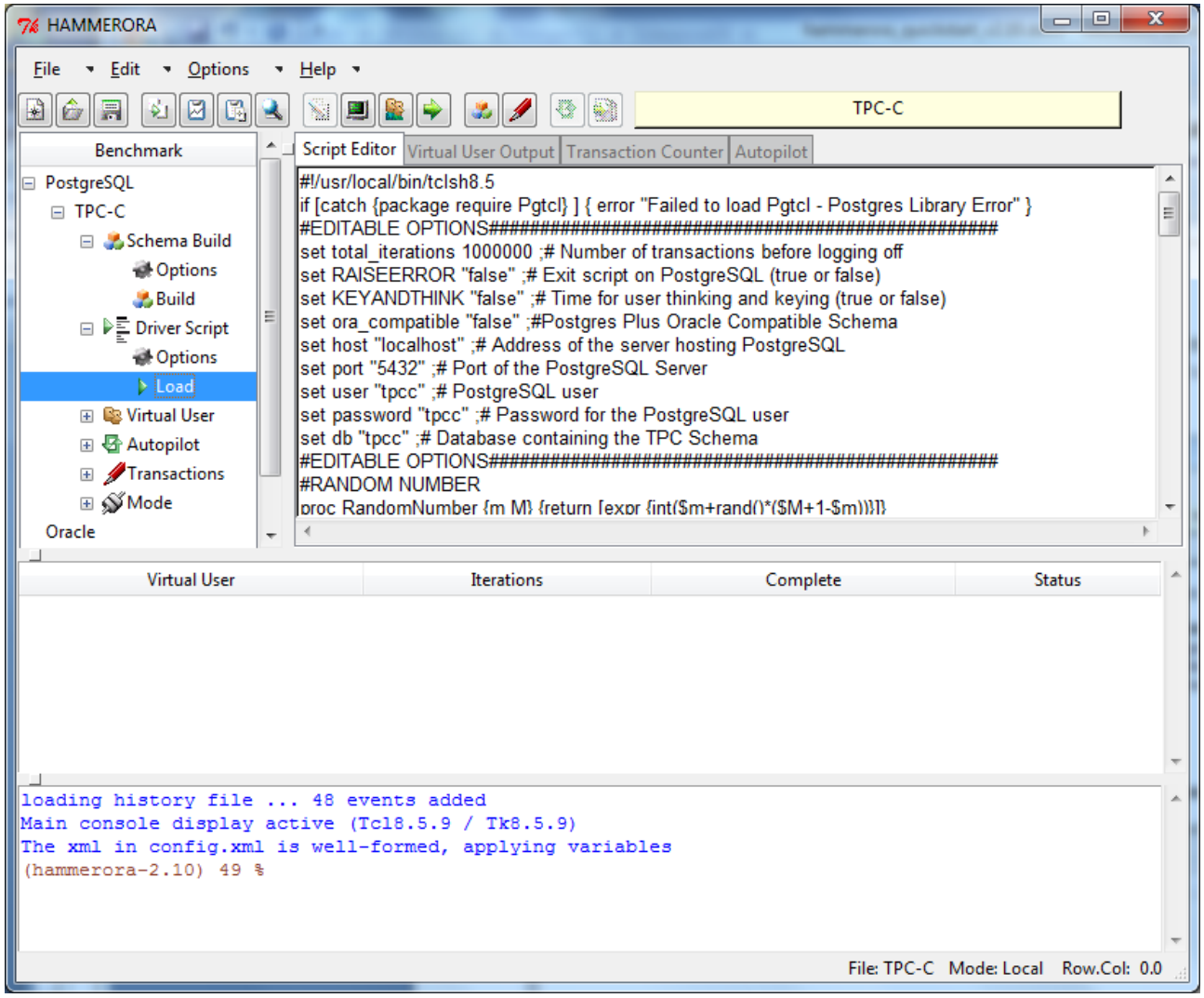

Figure 109 PostgreSQL Driver Script

In the same way as you did for Oracle, SQL Server and MySQL create and run the Virtual Users.

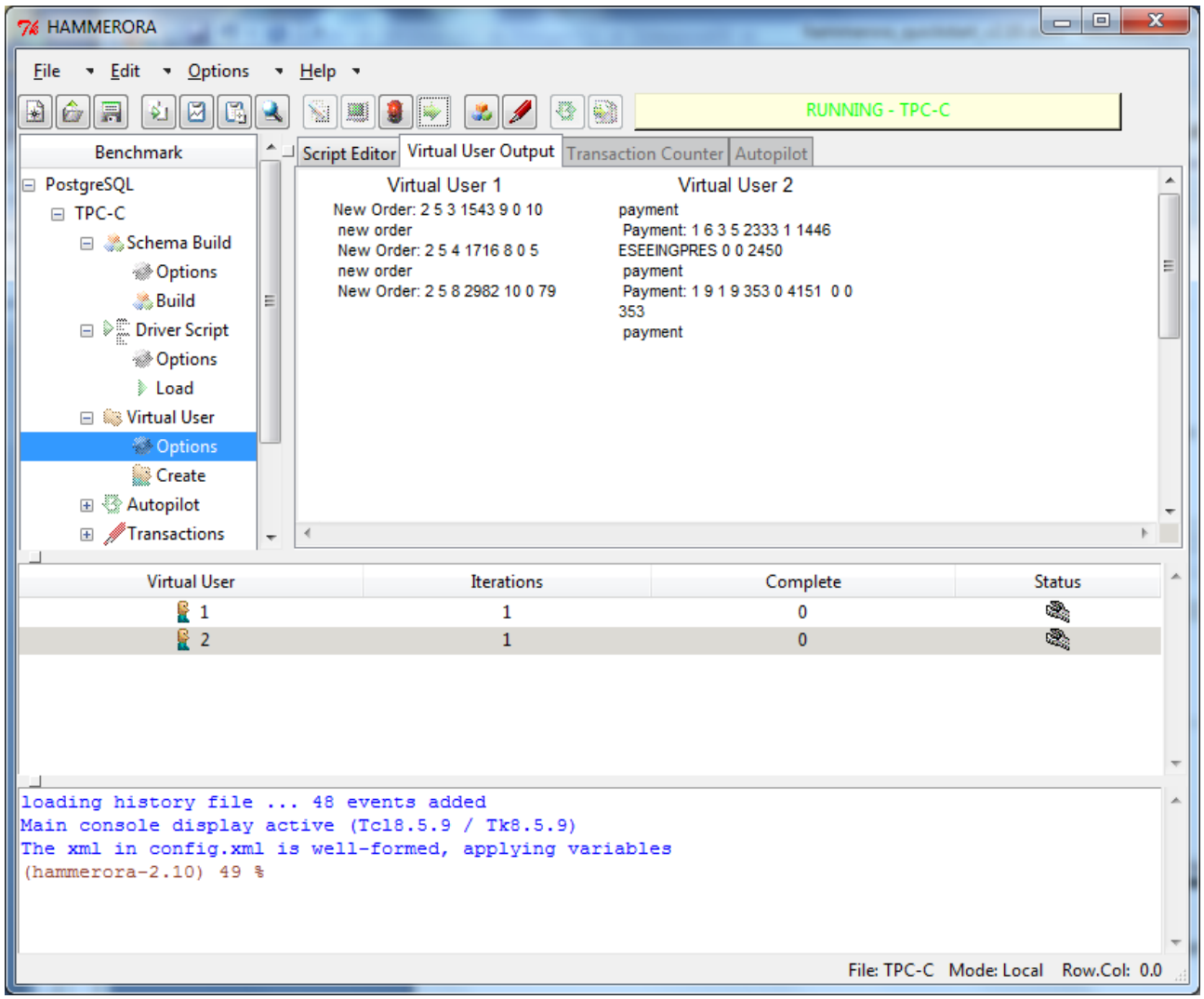

Figure 110 PostgrSQL Load Test

The Load Test will show the status of the virtual users when the test is complete.

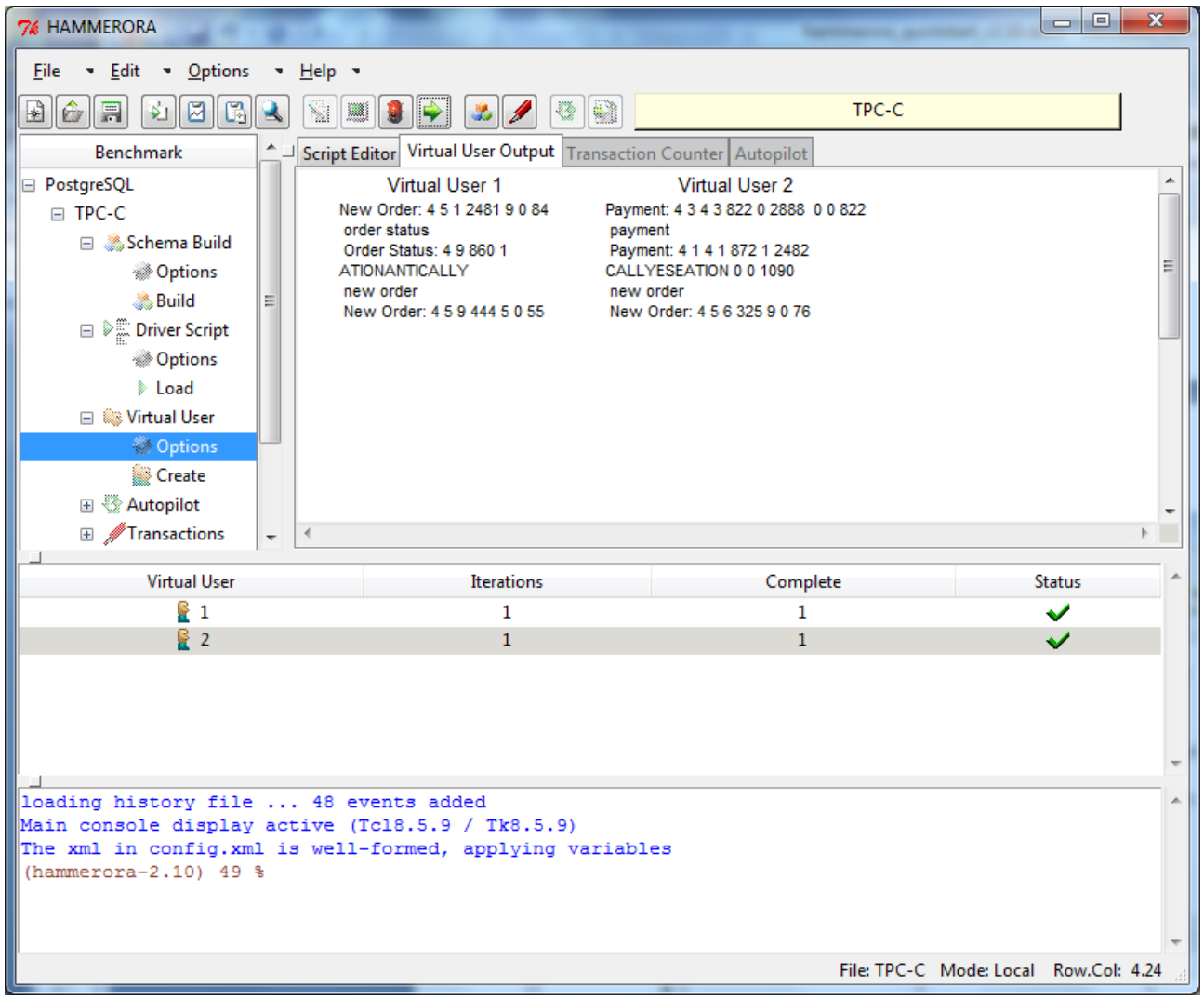

Figure 111 Test Complete

You can also observe the Transaction Counter for PostgreSQL throughput. Under the treeview or TX Counter Menu option select TX Counter Options and populate the fields with your data.

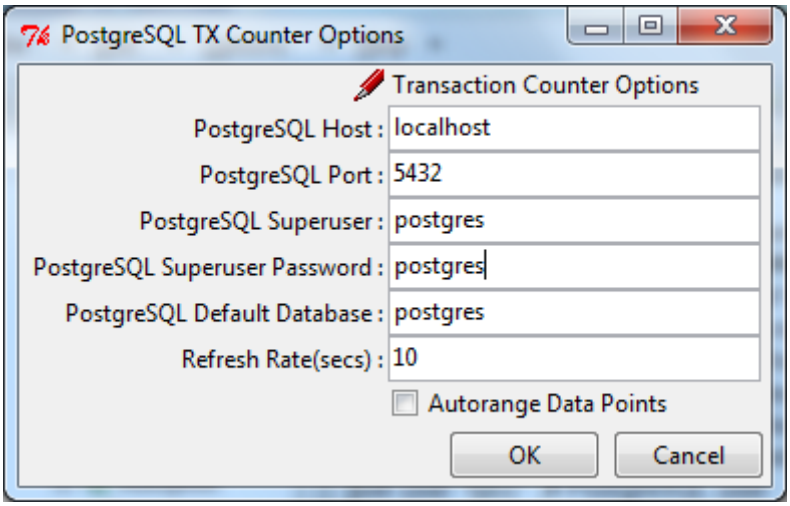

Figure 112 Transaction Counter

Start the Transaction Counter in the same way as you did for Oracle, SQL Server and MySQL with the pencil icon. Re-run the load test and observe the PostgreSQL Transaction Counter.

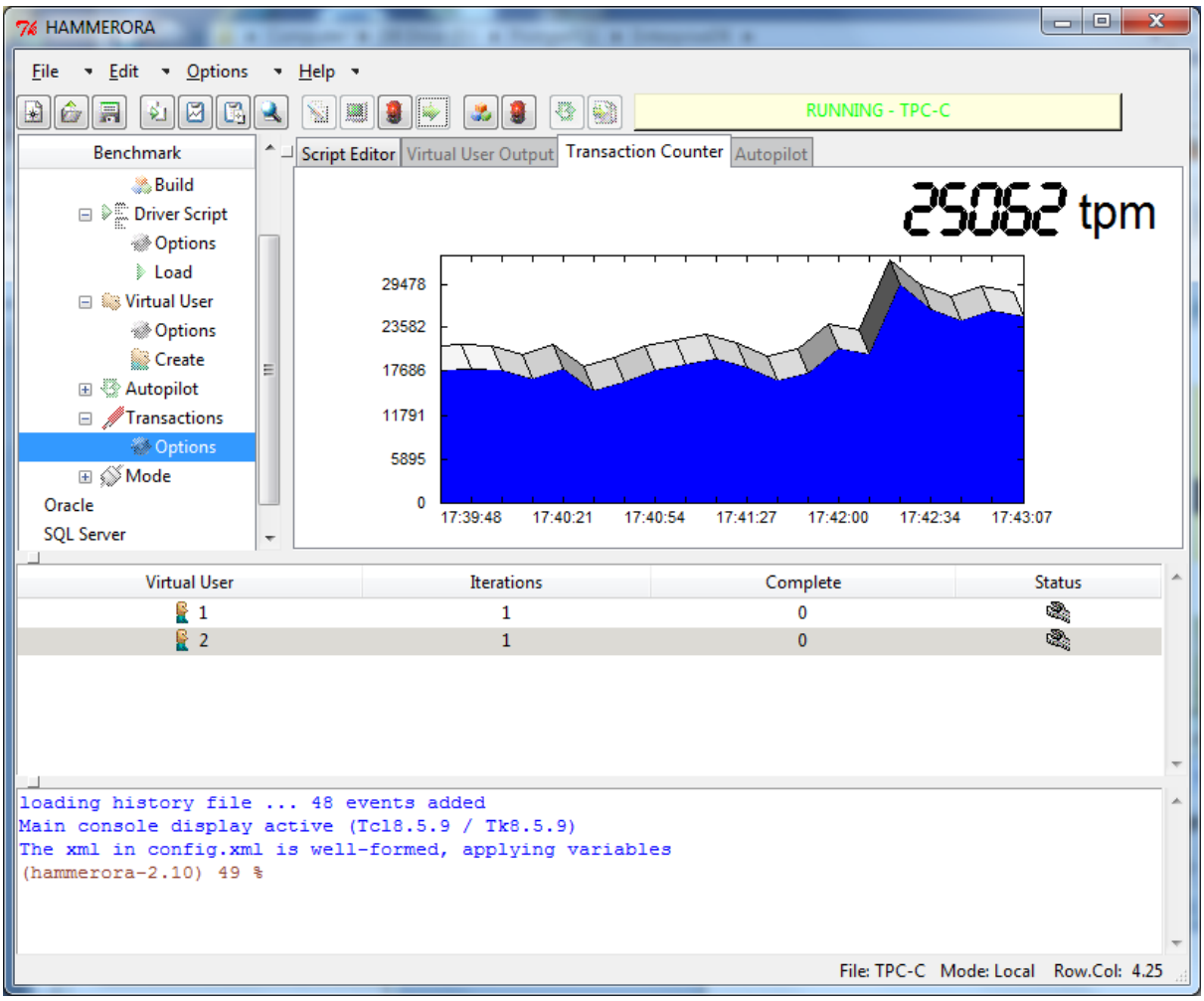

Figure 113 PostgreSQL Transaction Counter

Congratulations you have now run a load test against PostgreSQL.

Install Redis

You can now proceed to installing and configuring Redis on your system. Redis for Linux can be downloaded from here http://redis.io/download and Redis for windows here https://github.com/MSOpenTech/Redis . Note that for windows the pre-built executables are already included. Download the repository as a zipfile and the 32 and 64-bit binaries are included in the redis-2.4\msvs\bin\release directory in the zipfiles redisbin.zip and redisbin64.zip respectively. Extract one of these zipfiles to find the redis binaries as shown in Figure 114.

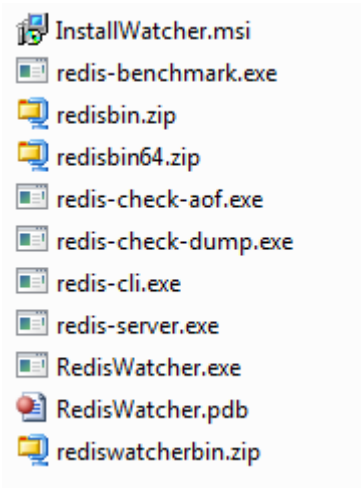

Figure 114 Redis Binaries

The Redis Watcher can be installed to run Redis as a Windows service, however for testing double-click on redis-server.exe to start Redis as shown in Figure 115.

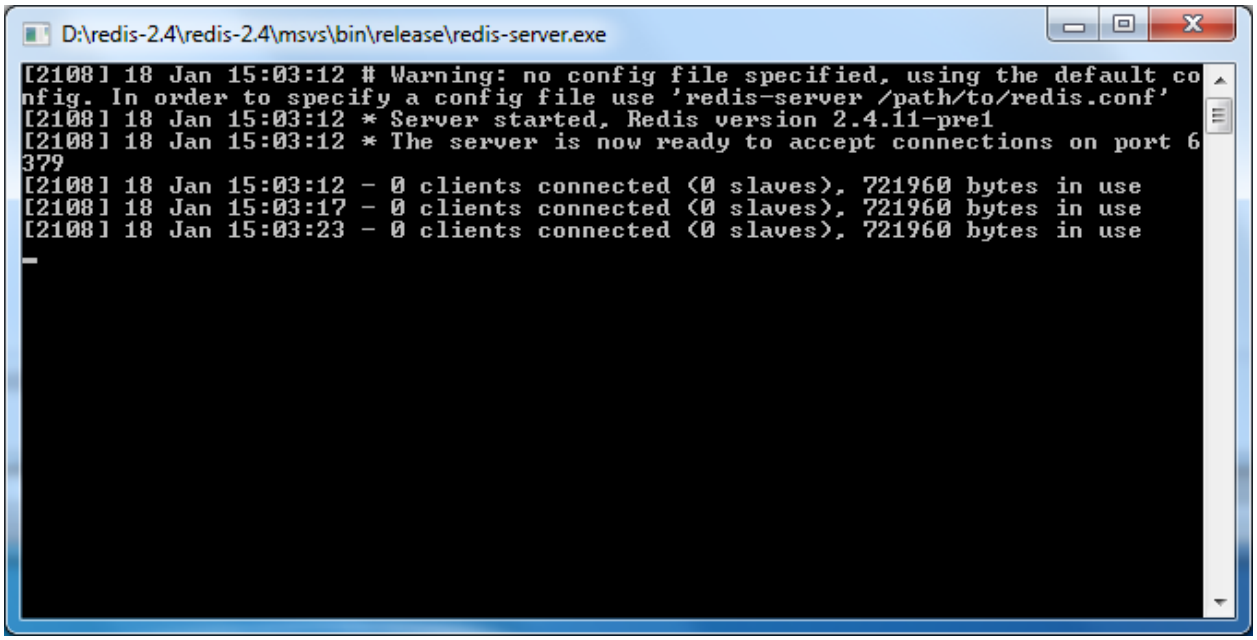

Figure 115 Redis Server

Similarly redis-cli.exe gives a command line interface to the Redis Server that has just been started as shown in Figure 116. Redis is now installed.

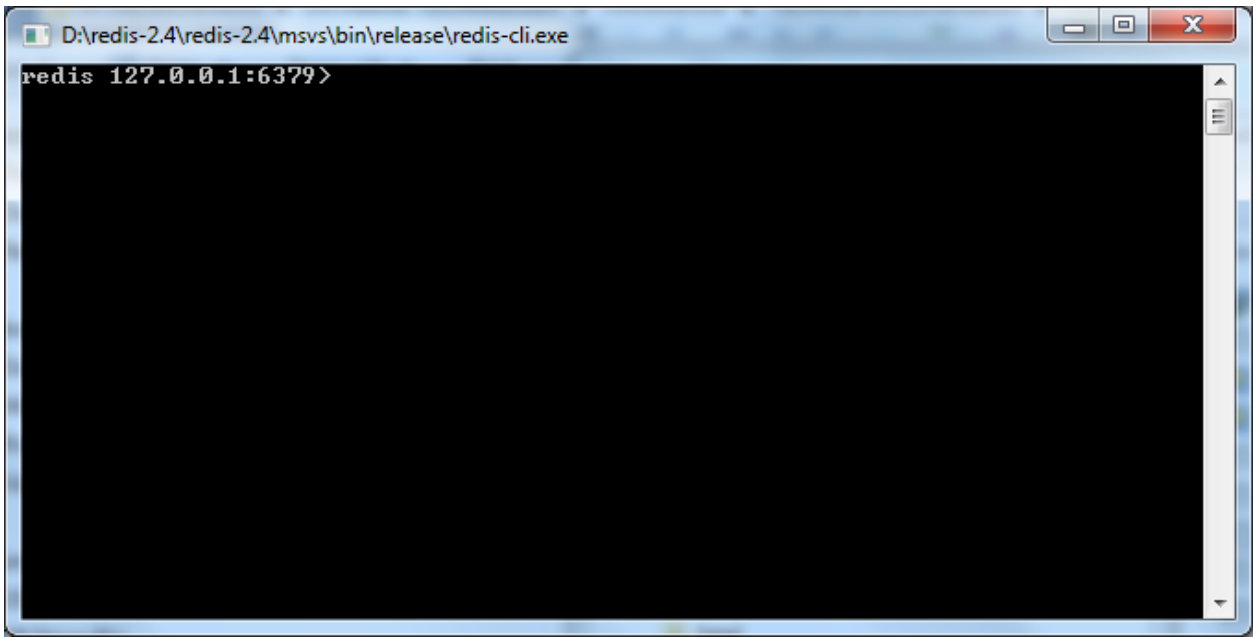

Figure 116 Redis Client

Create a Redis Test Schema

Under the Benchmark treeview double-click on Redis click OK on the Benchmark Options dialog and on the confirmation window press OK.

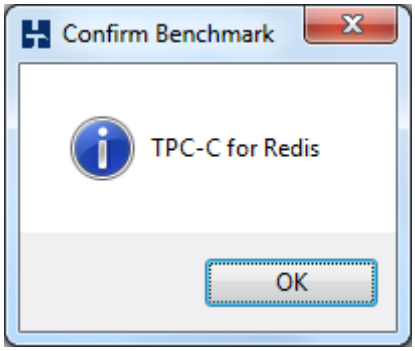

Figure 117 TPC-C for Redis

Now when you select TPC-C Schema Options under the Benchmark and TPC-C treeview observe that the options have changed from the Oracle, SQL Server, MySQL and PostgreSQL information to Redis. Select the Build Options from the treeview, enter your chosen values and click OK.

Note that Redis is a single-threaded database, this means that it will utilise the resources available on the database server equivalent to a single core and therefore you should not overconfigure the number of warehouses or virtual users to build the schema.

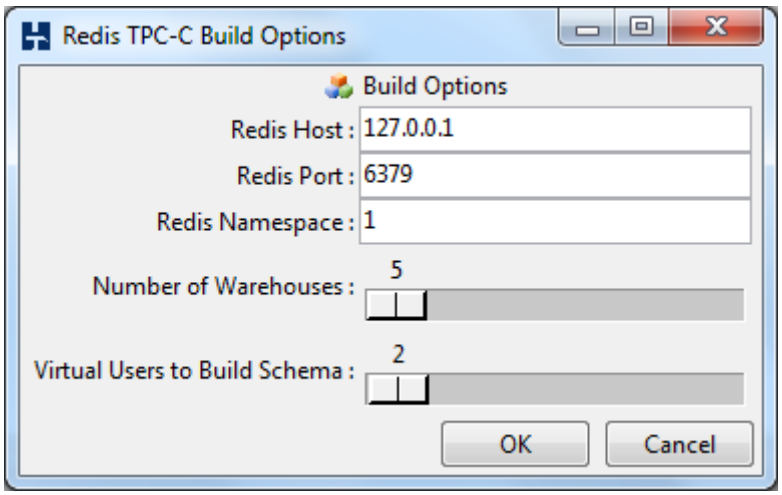

Figure 118 Schema Options

Start the schema build in exactly the same way that you did for Oracle, SQL Server , MySQL and PostgreSQL by pressing the building blocks icon either from the treeview or the buttons. Press Yes on the create schema prompt.

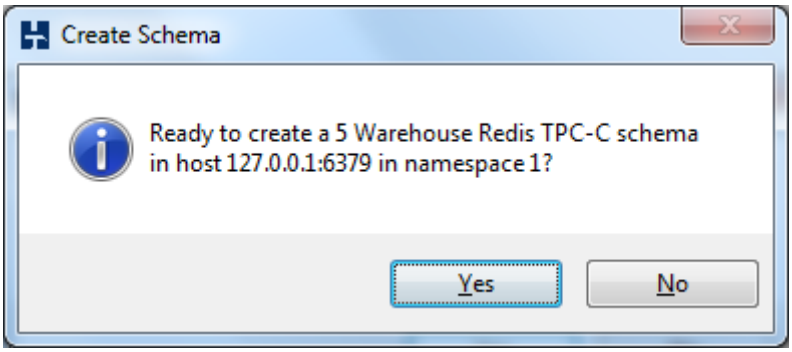

Figure 119 Schema Prompt

The Creation process begins in the same manner you are familiar with from Oracle, SQL Server, MySQL and PostgreSQL except this time it is populating your Redis Database.

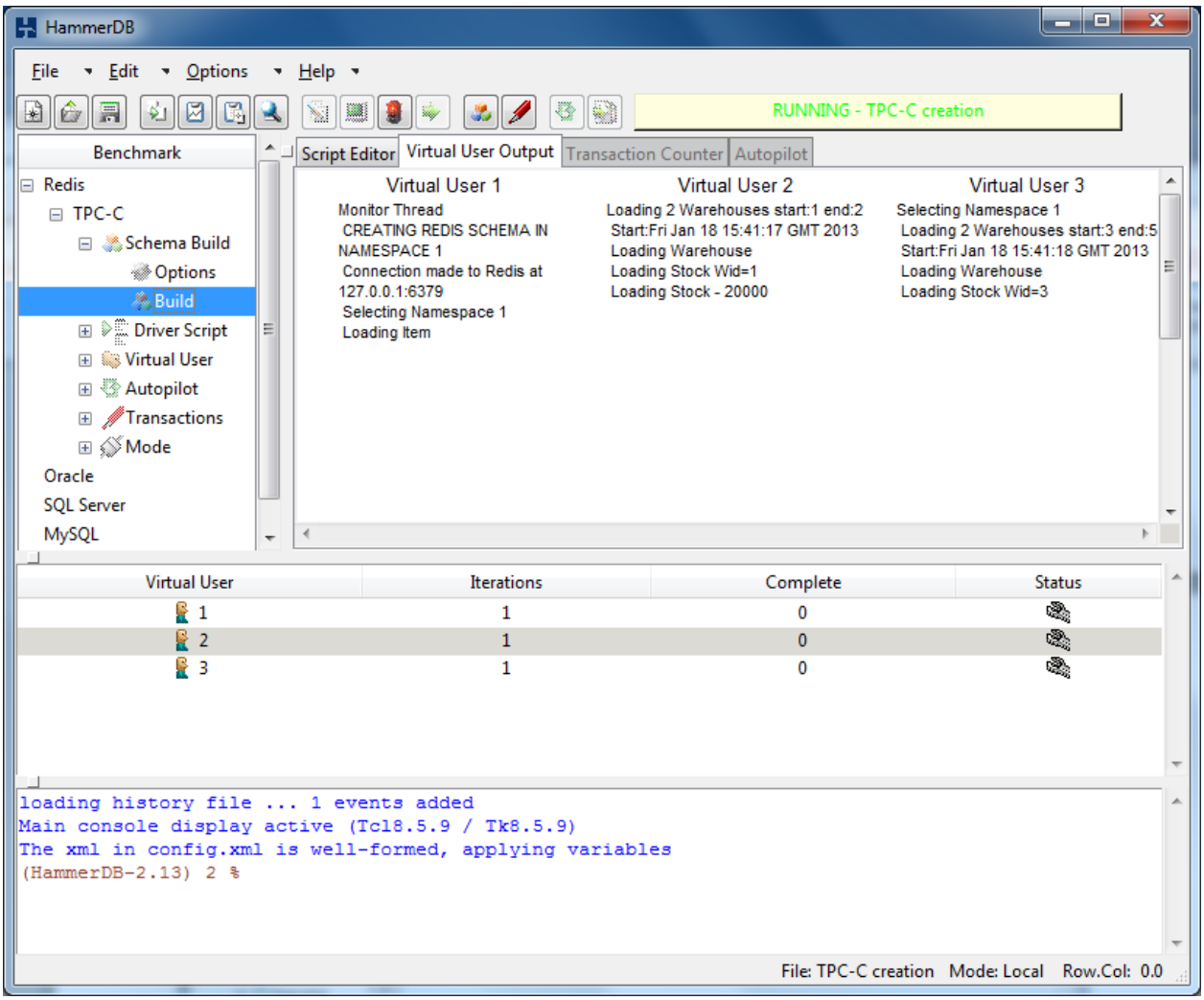

Figure 120 Schema Creation

Wait until your schema creation has completed as shown in Figure 121.

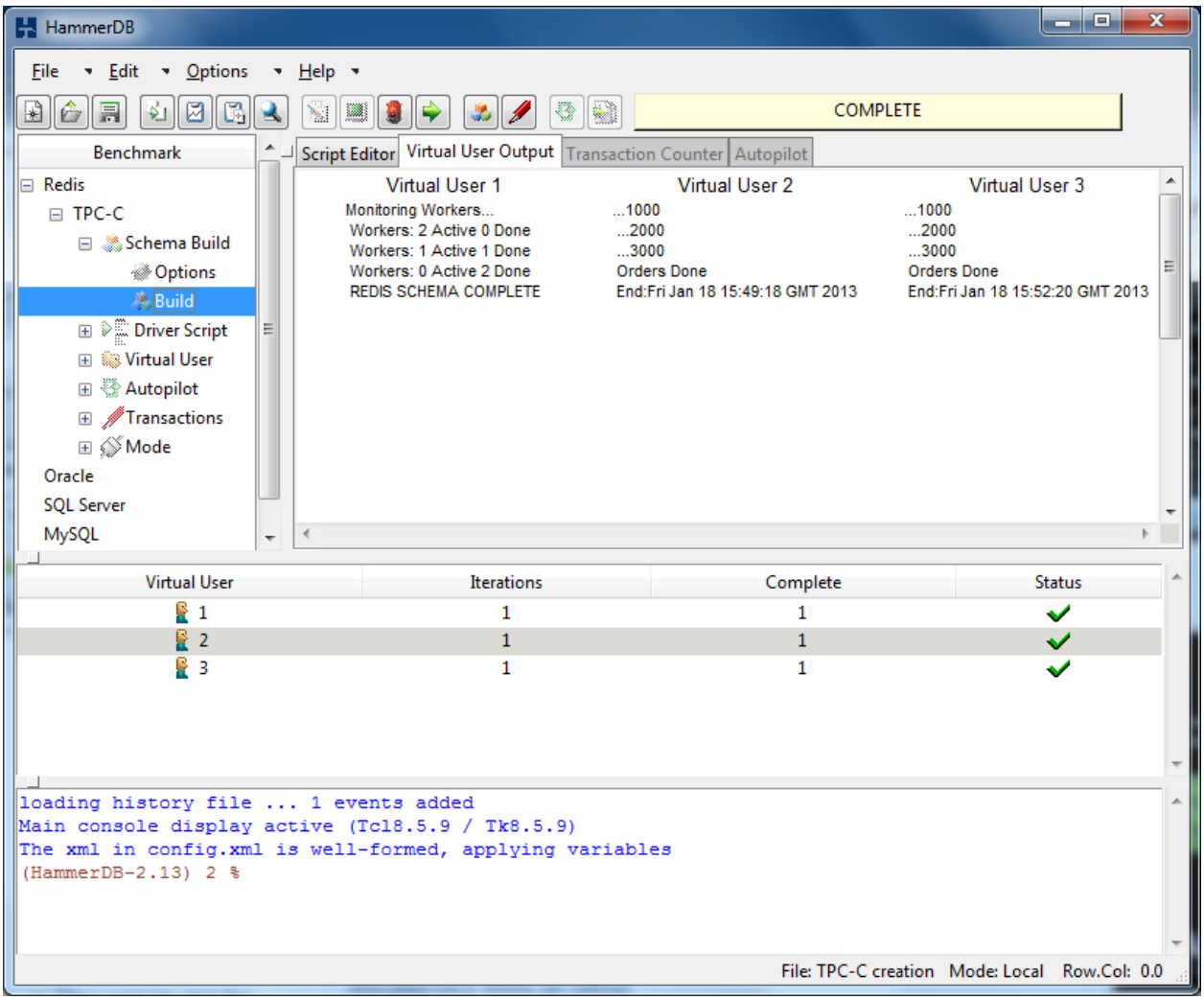

Figure 121 Creation Complete

Take a moment to browse the schema that you have created with the command line utility and observe the populated data.

```
redis 127.0.0.1:6379[1]> hgetall WAREHOUSE:1
 1) "W_ID"
 2) "1"
 3) "W_NAME"
 4) "WRxi4dyy"
 5) "W_STREET_1"
 6) "CLfqQuvHt7gY6CfY"
 7) "W_STREET_2"
 8) "gsKlLdfRf2K"
 9) "W_CITY"
10) "O7SyuBsrHuecIb"
11) "W_STATE"
12) "DD"
13) "W_ZIP"
14) "431811111"
15) "W_TAX"
16) ".20"
17) "W_YTD"
18) "3000000.00"
```

Figure 122 View Data

Running a Redis Load Test

In the same manner as you did for Oracle select the TPC-C Driver Script from the Benchmark and TPC-C treeview to populate the Script Editor Window. Observe that the driver script contains the Redis and not the Oracle, SQL Server, MySQL or PostgreSQL options.

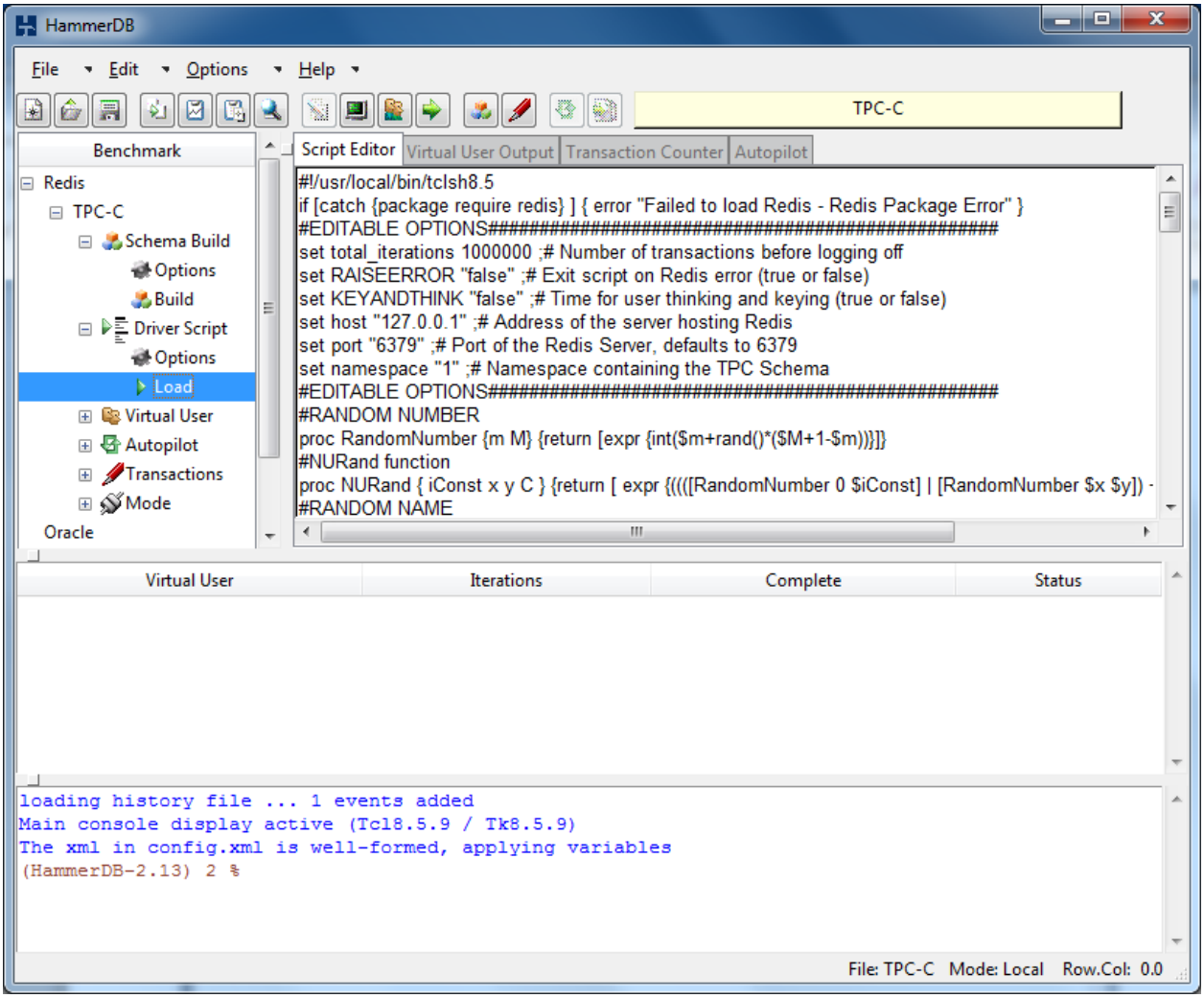

Figure 123 Redis Driver Script

In the same way as you did for Oracle, SQL Server, MySQL and PostgreSQL create and run the Virtual Users.

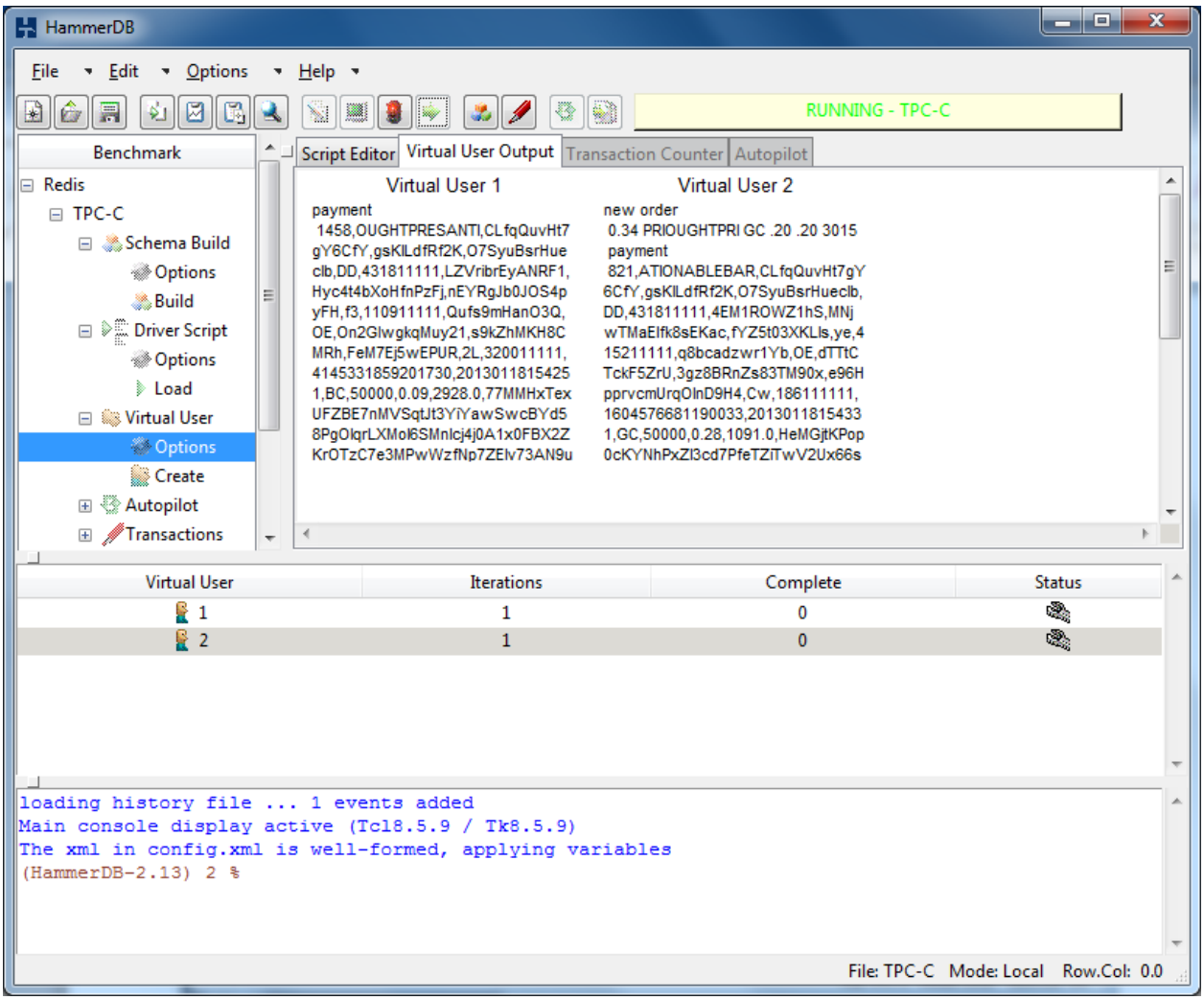

Figure 124 Redis Load Test

The Load Test will show the status of the virtual users when the test is complete.

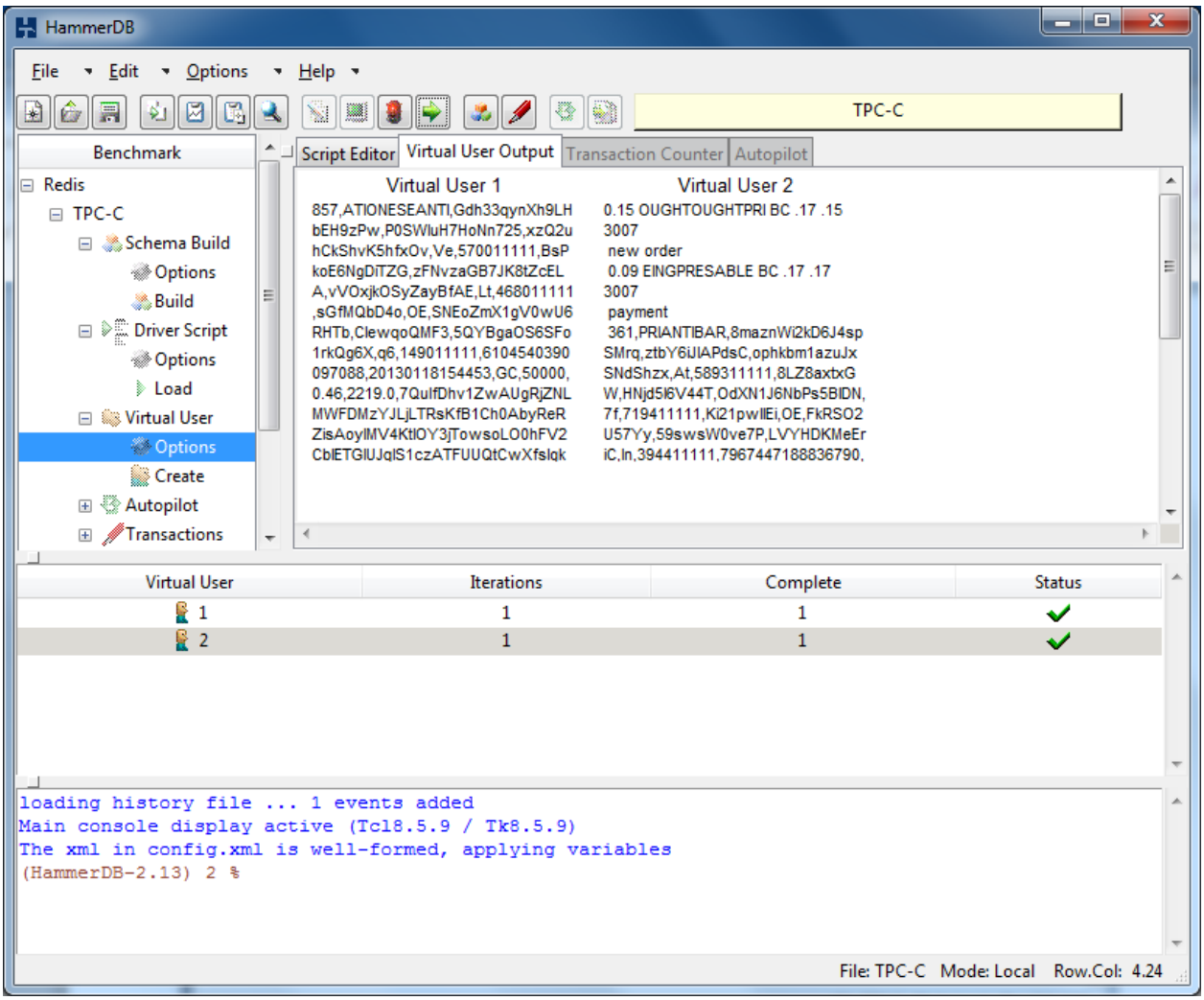

Figure 125 Test Complete

You can also observe the Transaction Counter for PostgreSQL throughput. Under the treeview or TX Counter Menu option select TX Counter Options and populate the fields with your data.

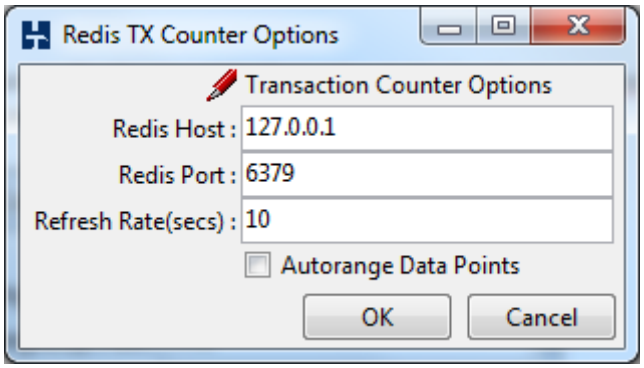

Figure 126 Transaction Counter

Start the Transaction Counter in the same way as you did for Oracle, SQL Server, MySQL and PostgreSQL with the pencil icon. Re-run the load test and observe the Redis Transaction Counter.

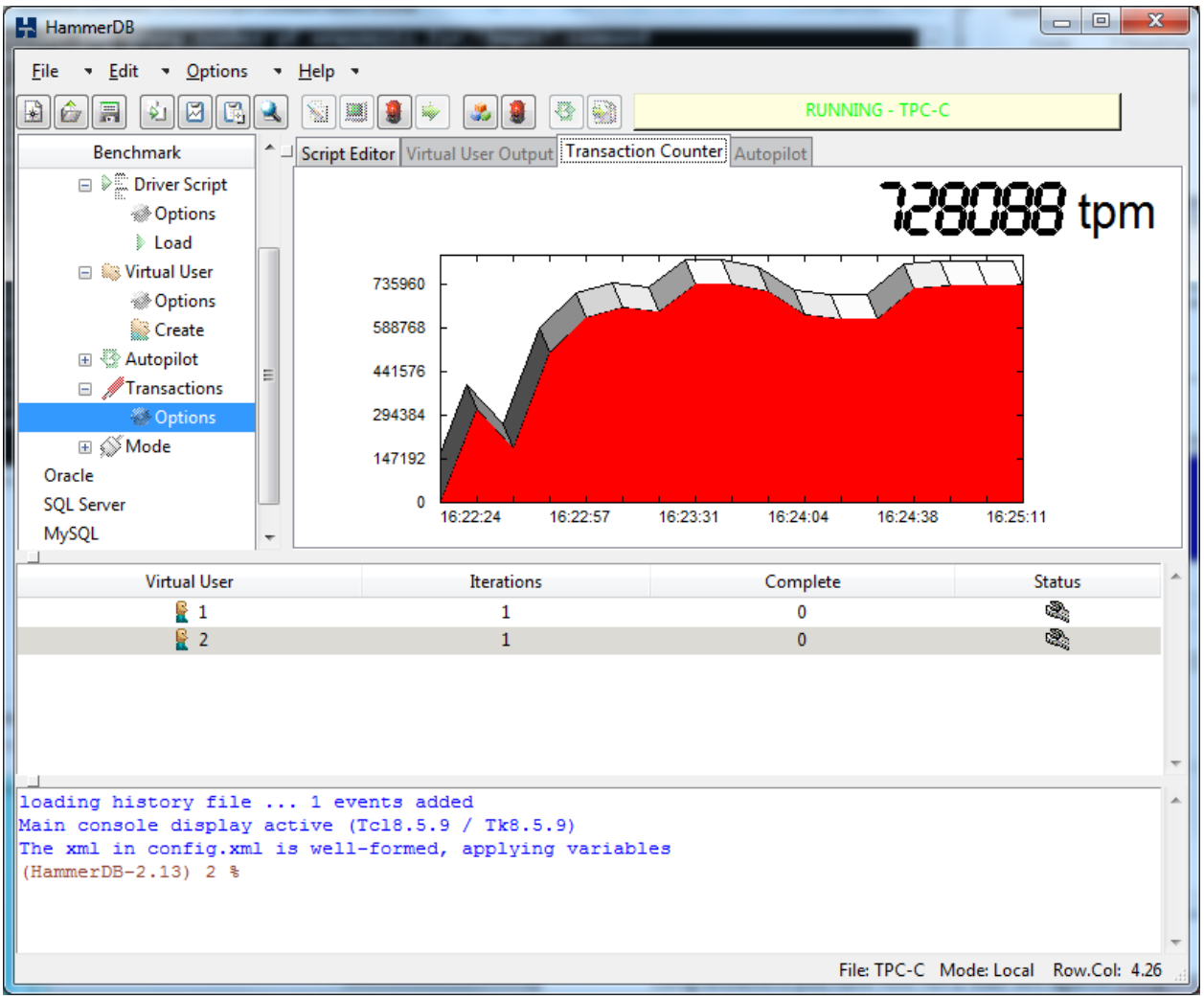

Figure 127 Redis Transaction Counter

Congratulations you have now run a load test against Redis.

Next Steps

In this tutorial we have introduced you to HammerDB and the steps to begin creating your own load testing scenarios. HammerDB will scale to test the largest of enterprise database environments processing many millions of transactions a minute and we have barely scratched the surface on HammerDB's capabilities. You will benefit from taking the time to browse the documentation guides on the HammerDB website to improve your load testing expertise. In particular you may wish to investigate the following features:

1. **SQL Server, MySQL and Redis timed tests** and the generation of **Oracle AWR reports and PostgreSQL DRITA** reports to accurately assess the performance of your system and compare and contrast with the NOPM value. View the OLTP Test Guide for your database.

2. The **TPC-H workload** will be of interest to Data Warehouse Users

.

3. The **Autopilot** feature also gives you the opportunity to run multiple tests with a varying number of users without interaction for overnight and weekend testing to improve your productivity.

4. The **Modes feature** allows you to connect multiple instances of HammerDB across a network to generate as large a load as required.

5. **Oracle Trace File Conversion and replay** allows you to record and replay the bespoke Oracle environments and write your own load tests.

6. Middleware users can take advantage of HTTP **Web Testing** capabilities and record web browsing sessions using the Firefox web browser and replay them through HammerDB.

Support and Discussion

Need help? Try the HammerDB Sourceforge forum.

Want to discuss your results or have tips on tuning and configuration? Open a Discussion topic.