

# **MySQL Guidelines for DTS**

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## Part I – Installing MySQL

### Download the latest stable release of MySQL (5.1.x)

Download MySQL from [mysql.com](http://mysql.com) . Please download the community edition of MySQL for Windows (<http://www.mysql.com/downloads/mysql/>). If you are short in disk space for your MySQL installation, there is also lightweight MySQL server called MySQL Essentials that you can download, which does not include the server instance manager tool, developer components and documentation. Also download MySQL Workbench (<http://wb.mysql.com/>) which is used for database server administration and SQL development. You can use it to create a DTS user and database (instead of issuing SQL commands using the MySQL client). MySQL Workbench requires .NET 2.0 or higher.

### Install MySQL

For Linux users, MySQL is already included with many Linux distributions (but most likely not installed for Red Hat Enterprise Linux). You can check if MySQL is installed with the following command:

```
[root@key ~]# rpm -qa | grep -i mysql
mysqlclient15-5.0.91-1.ius.e15
php53-mysql-5.3.2-6.ius.e15
MySQL-client-community-5.1.47-1.rhel5
MySQL-server-community-5.1.47-1.rhel5
```

This Linux PC already has MySQL community edition installed.

For detailed step by step instructions to install MySQL on Linux with Red Hat Enterprise Linux RPMs, please go to the following web site:

<http://www.thegeekstuff.com/2008/07/howto-install-mysql-on-linux/>

The entire MySQL installation for Windows is documented here.

<http://dev.mysql.com/doc/refman/5.1/en/windows-installation.html>

If you downloaded MySQL as a zip file for Windows, here are instructions on how to unzip and install.

<http://dev.mysql.com/doc/mysql-windows-excerpt/5.1/en/windows-install-archive.html>

For detailed step by step instructions to install and configure MySQL on Windows (MSI installer), please go to the following web page:

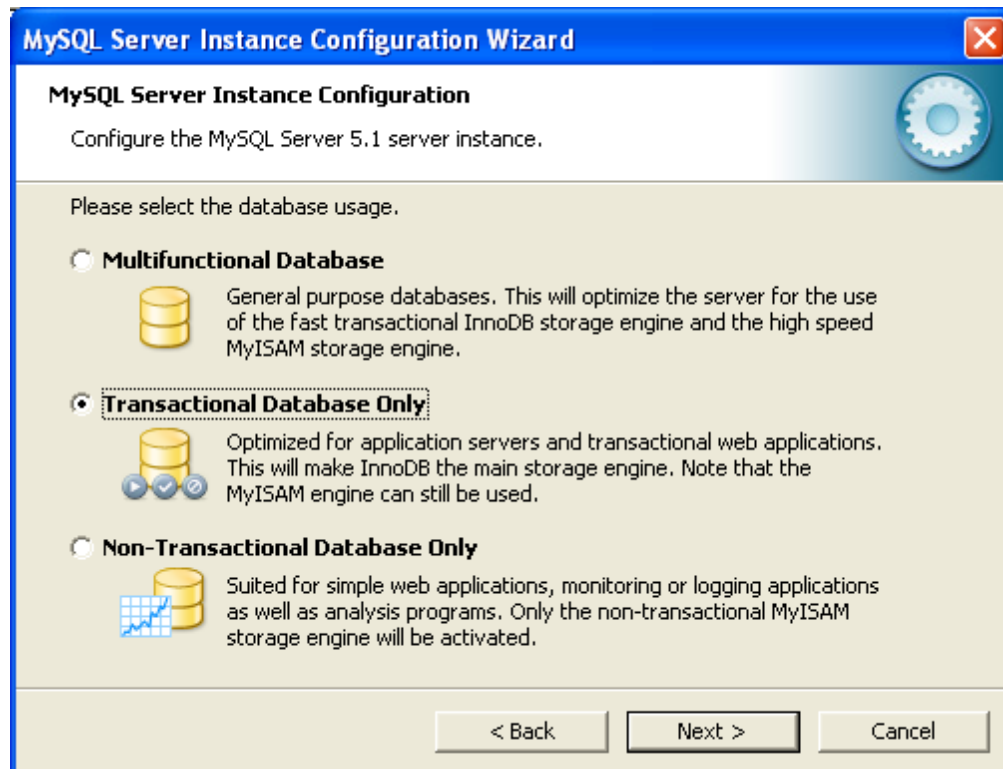
<http://www.globalnerdy.com/2009/05/04/installing-mysql-server-51-on-windows/>

While these step-by-stop instructions show detailed screenshots of the MySQL Server Instance



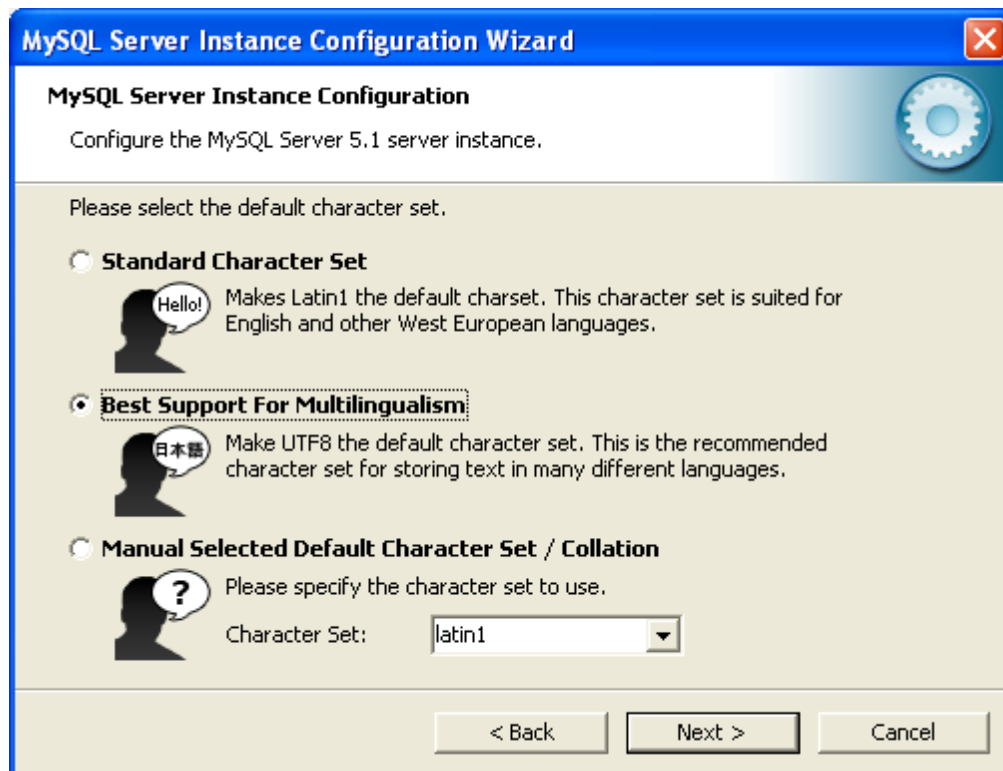
## Storage Engines

Use InnoDB as default storage engine.



## Default Character Encoding

Also make sure you select UTF8 encoding for the default character set.



These settings from the configuration wizard are saved in a configuration file. This MySQL server configuration file will have a different name depending on what operating system platform you are using. There is no configuration wizard for Linux, so you will have to edit the file manually to make changes.

### **my.ini configuration file (Windows)**

my.ini file should be located in %ProgramFiles%\MySQL\MySQL Server 5.1\ (if you are running MySQL Workbench you can locate it via the home screen->Manage Server Instances->Select your instance->tab System Profile->Path to configuration file).

To modify the my.ini file, open it with a text editor and make any necessary changes. You can also modify the server configuration with MySQL Workbench.

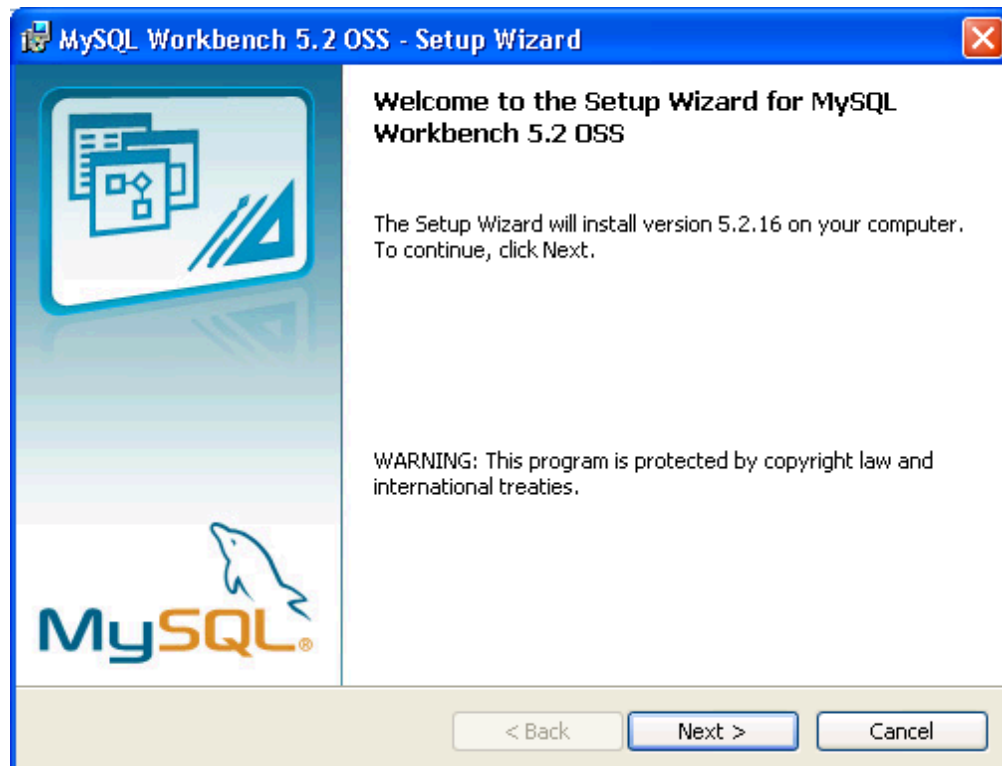
### **my.cnf configuration file (Linux)**

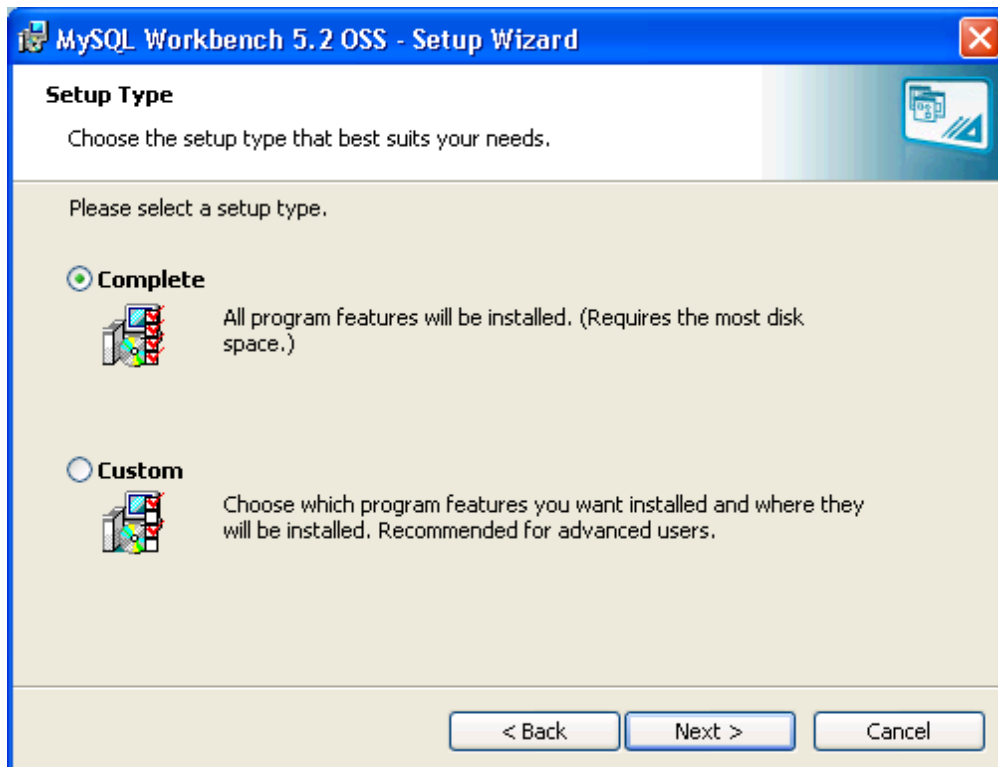
my.cnf is located in either /etc or /etc/mysql

## Part II – Install MySQL Workbench (Windows only)

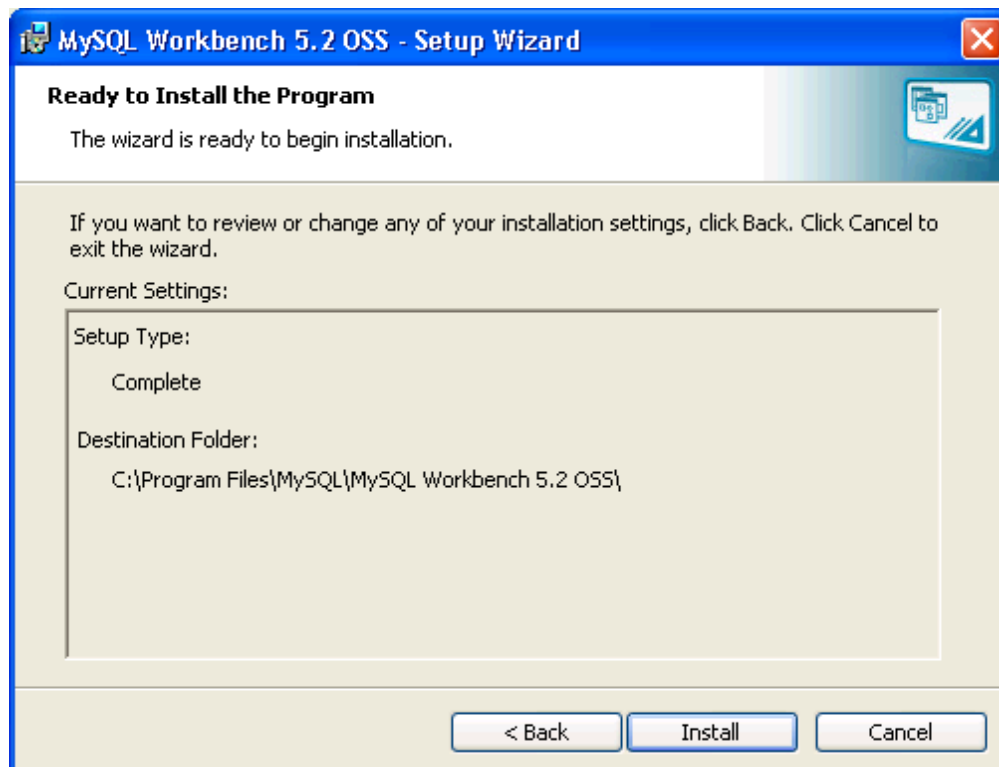
Install .NET Framework if it is not already on your machine. It is required for MySQL Workbench.

Launch MySQL Workbench Setup





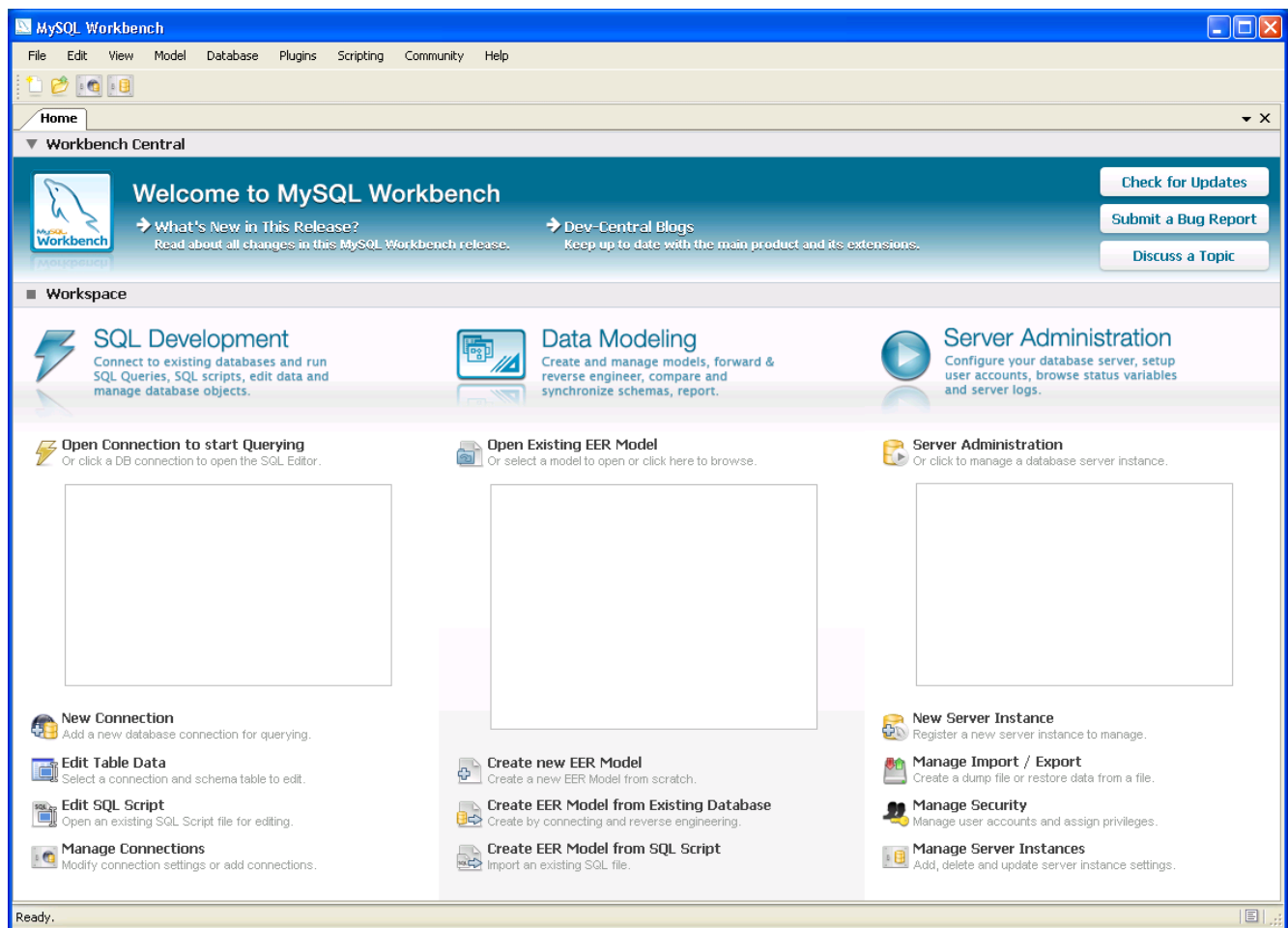
Click Install button.



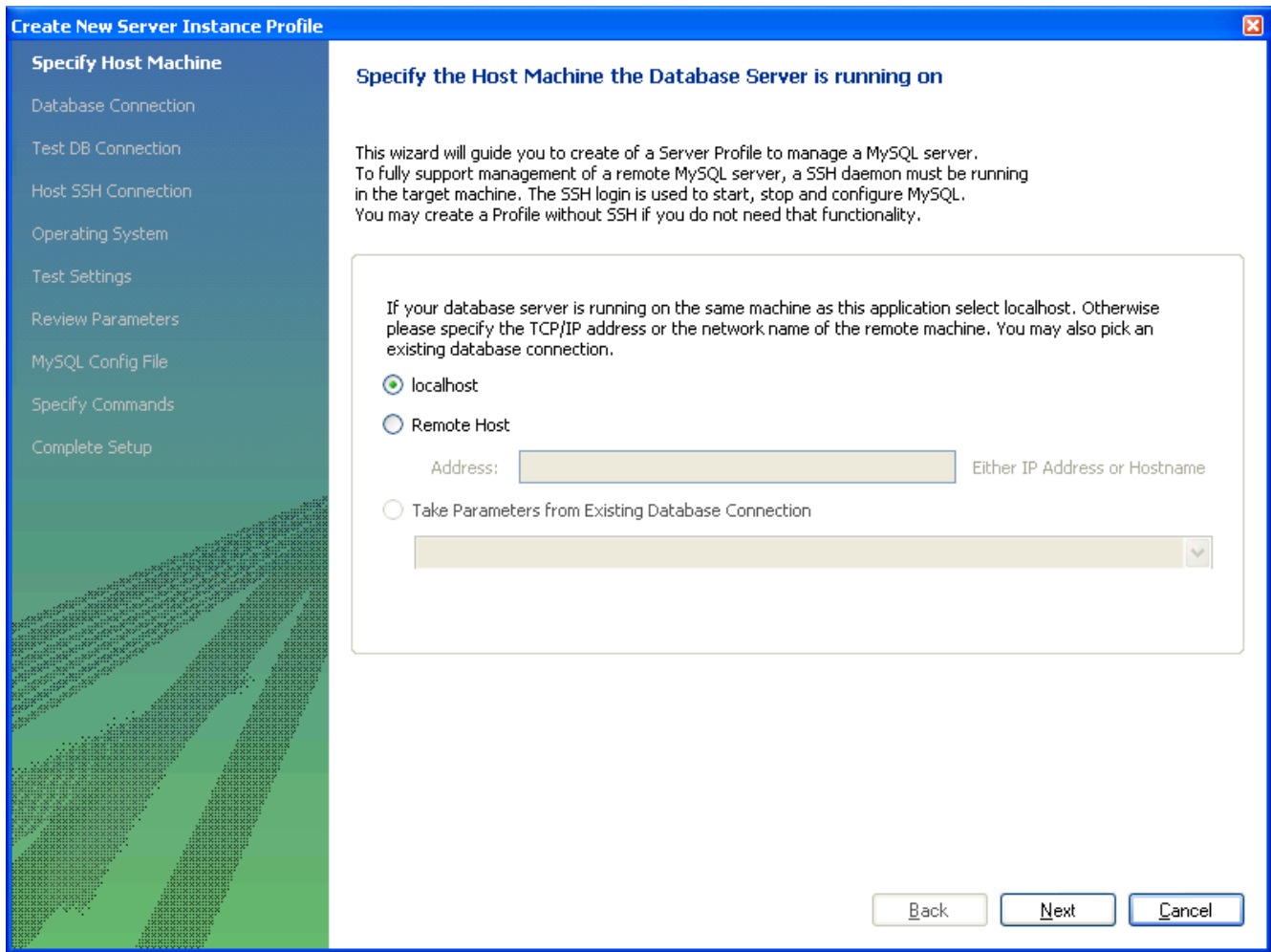


## Part III – Configure MySQL Workbench for your MySQL Server

Launch MySQL Workbench for the first time.



Register a new server instance to manage by clicking New Server Instance under Server Administration. If you are going to point to a remote Linux machine, choose Remote Host. Otherwise, choose localhost.



Set the connection values.

**Create New Server Instance Profile**

- Specify Host Machine
- Database Connection**
- Test DB Connection
- Host SSH Connection
- Operating System
- Test Settings
- Review Parameters
- MySQL Config File
- Specify Commands
- Complete Setup

### Set the Database Connection values

Connection Name:  Type a name for the connection

Connection Method:  Method to use to connect to the RDBMS

**Parameters** **Advanced**

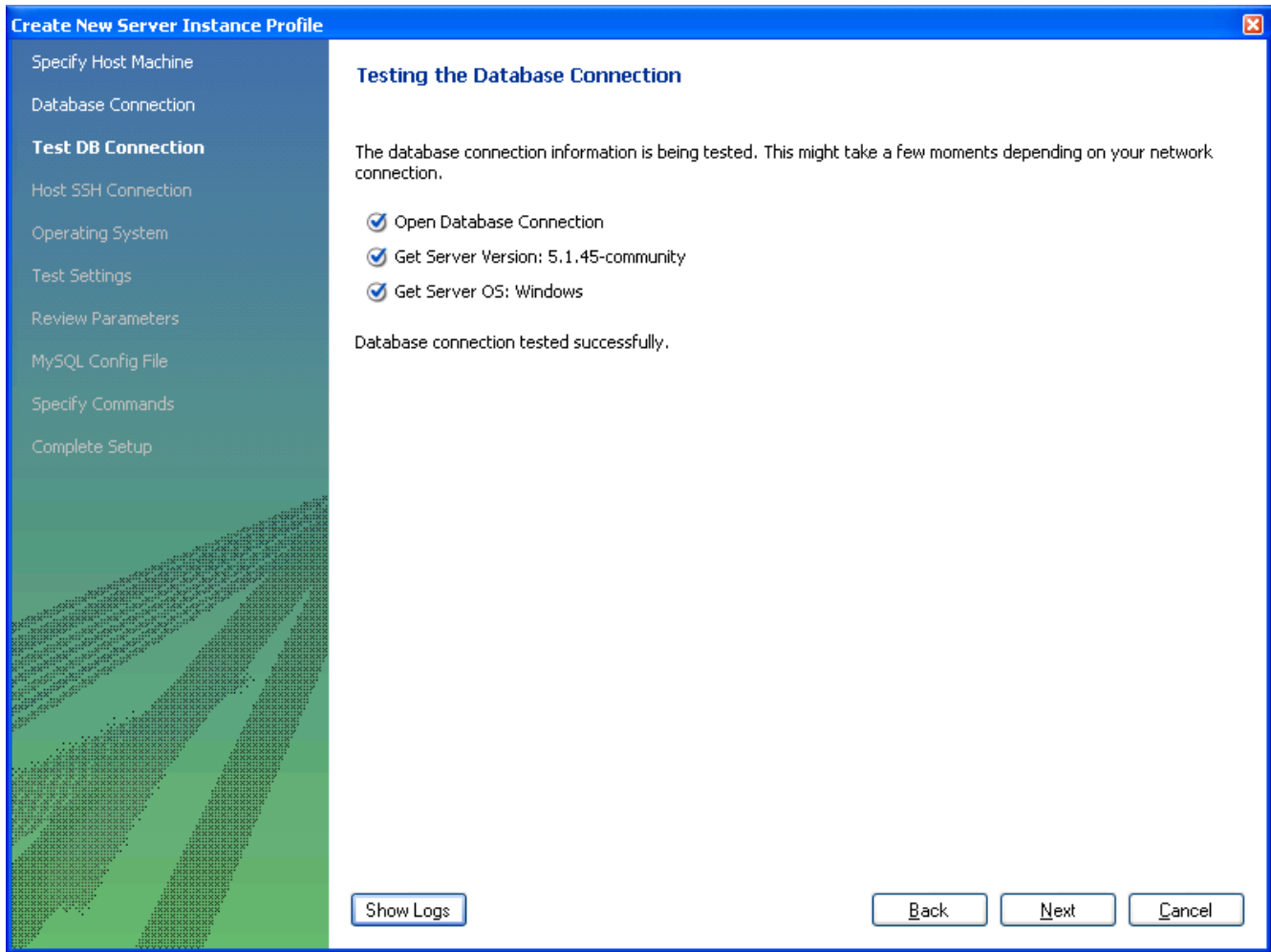
Hostname:  Port:  Name or IP address of the server host - TCP/I

Username:  Name of the user to connect with.

Password:   The user's password.

Default Schema:  The schema that will be used as default schem

## Test your connection



Specify your operating system.

Create New Server Instance Profile



Specify Host Machine

Database Connection

Test DB Connection

Host SSH Connection

**Operating System**

Test Settings

Review Parameters

MySQL Config File

Specify Commands

Complete Setup

Specify the operating system of the machine

Please select the operating system that is running on the target machine and the type of database installation. If you are unsure about the type of database installation select the (Vendor Package) variant. If your specific operating system is not in this list, select a related variant.

Operating System:

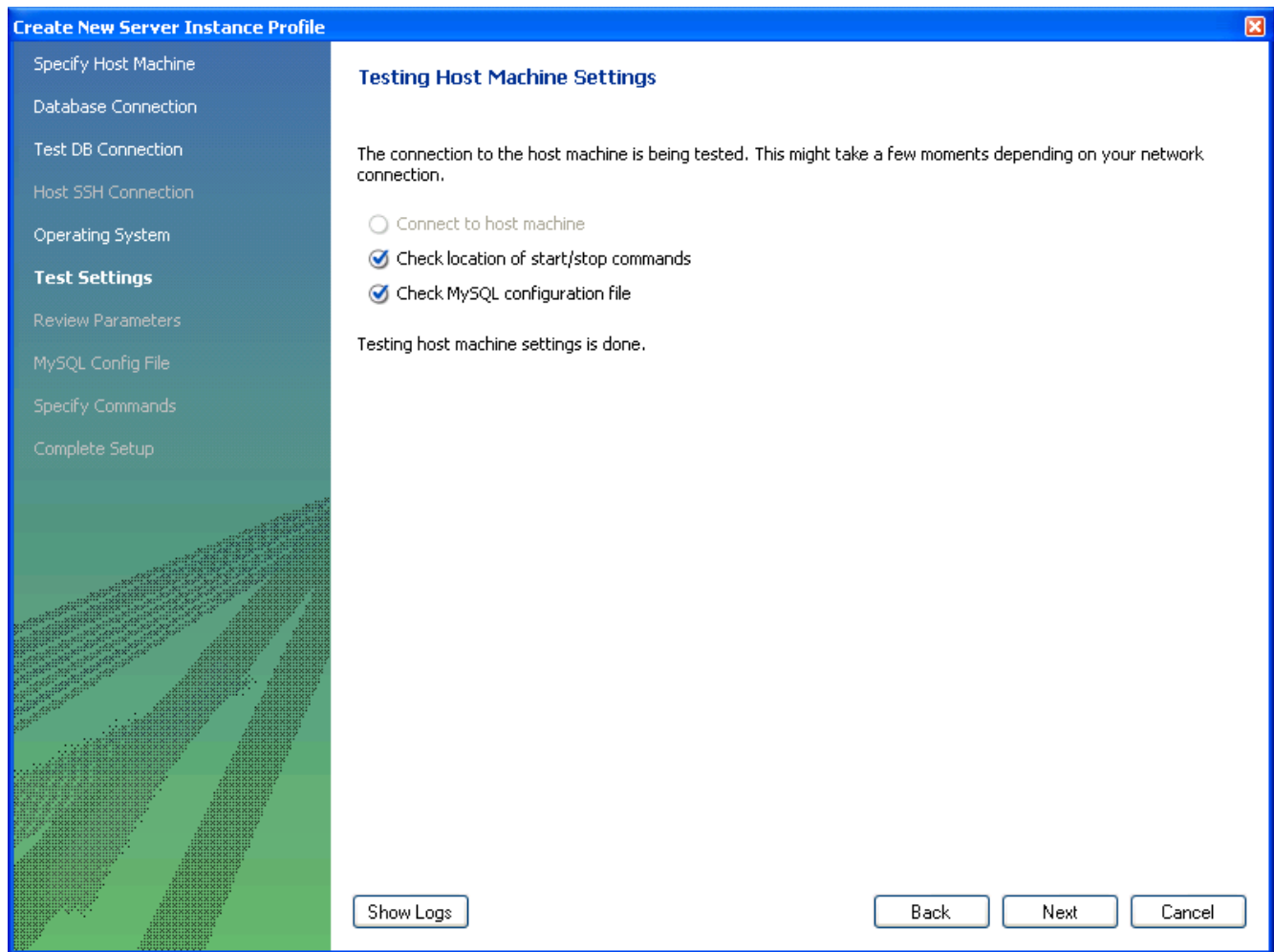
MySQL Installation Type:

Back

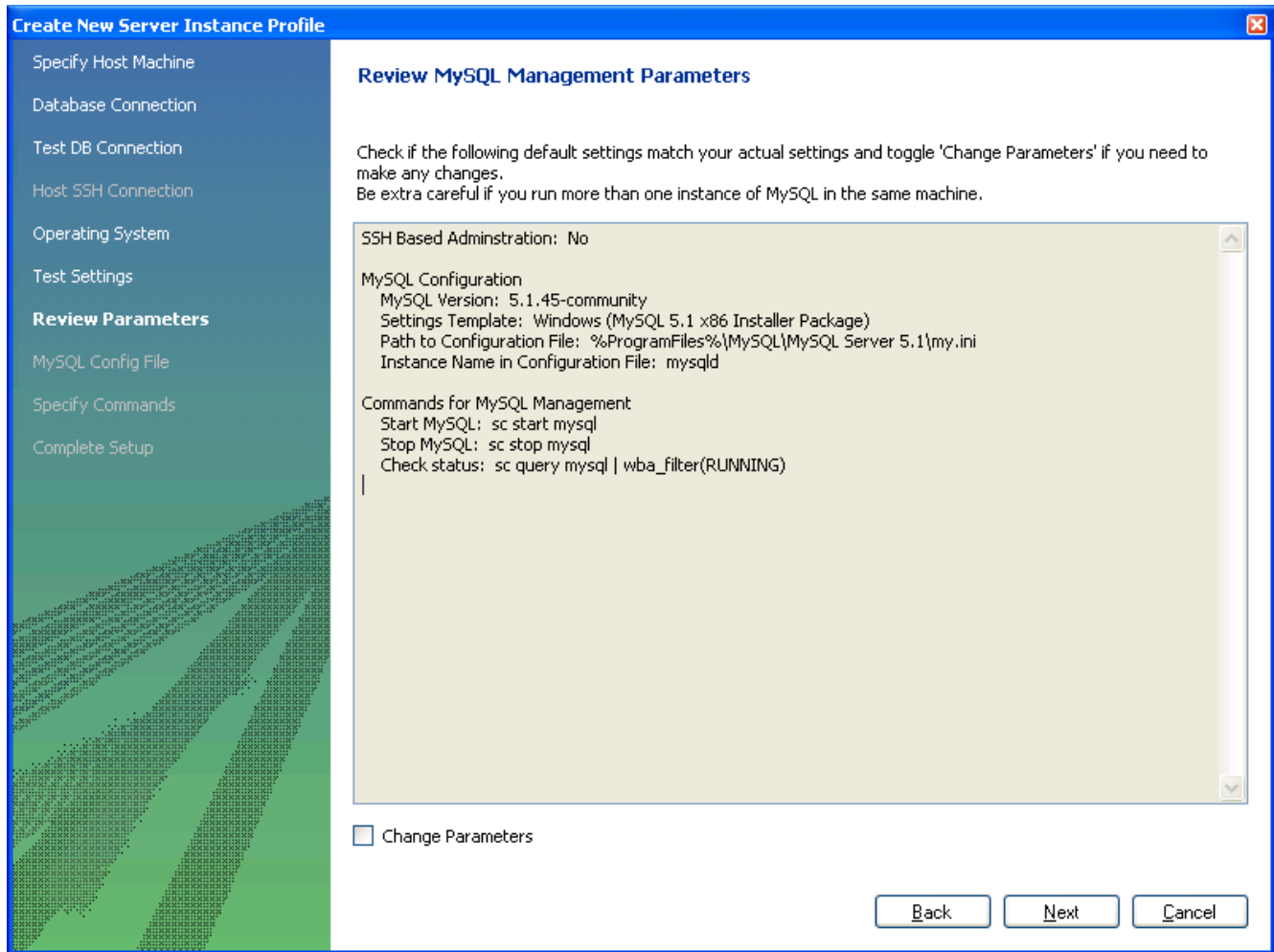
Next

Cancel

Test settings.



## Review Parameters



## Create Instance Profile and click FINISH

**Create New Server Instance Profile**

Specify Host Machine  
Database Connection  
Test DB Connection  
Host SSH Connection  
Operating System  
Test Settings  
Review Parameters  
MySQL Config File  
Specify Commands  
**Complete Setup**

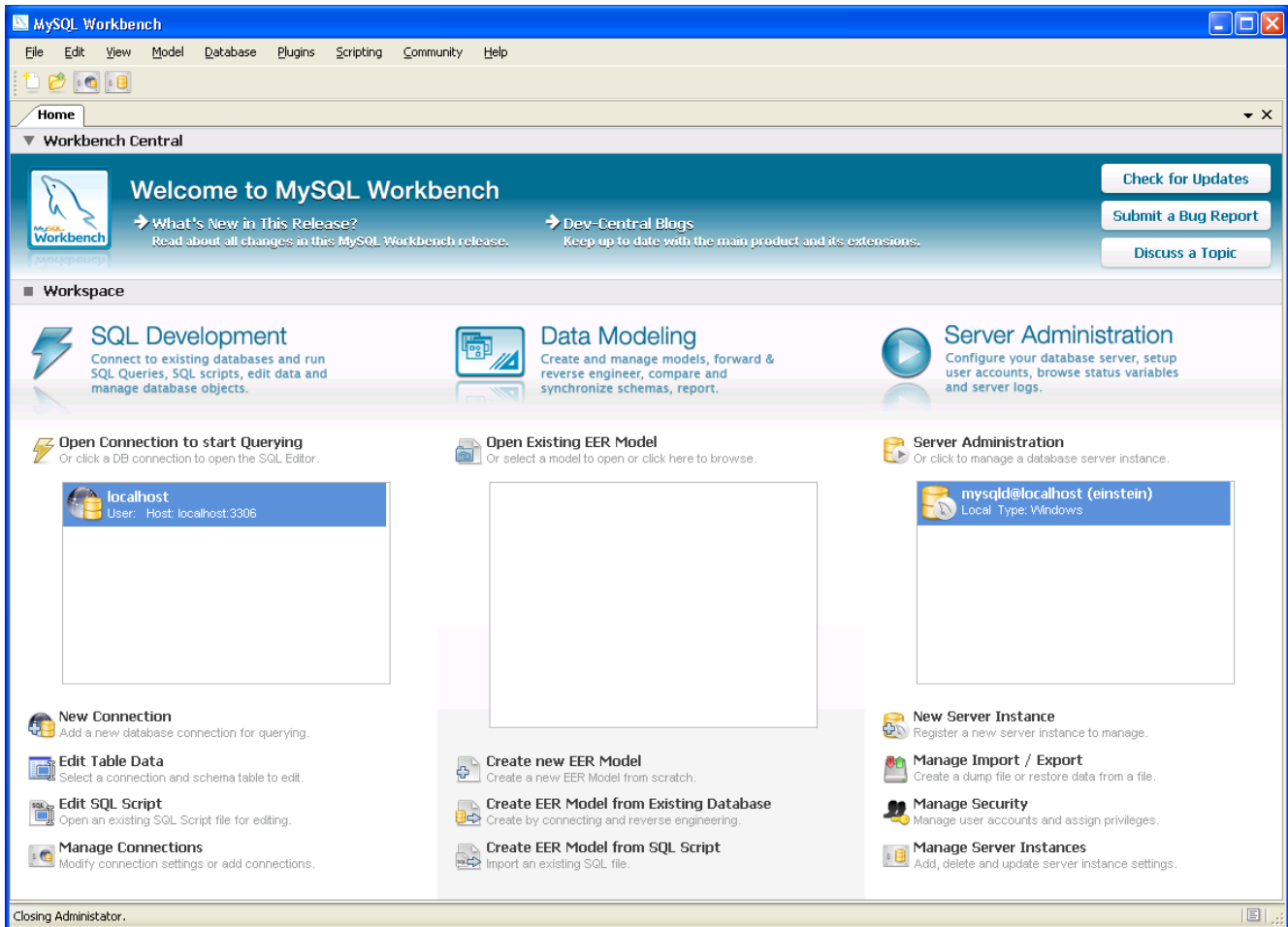
### Create the Instance Profile

Please enter a name for this server instance and click Next. A new Server Instance Profile entry will be created for managing this MySQL server.

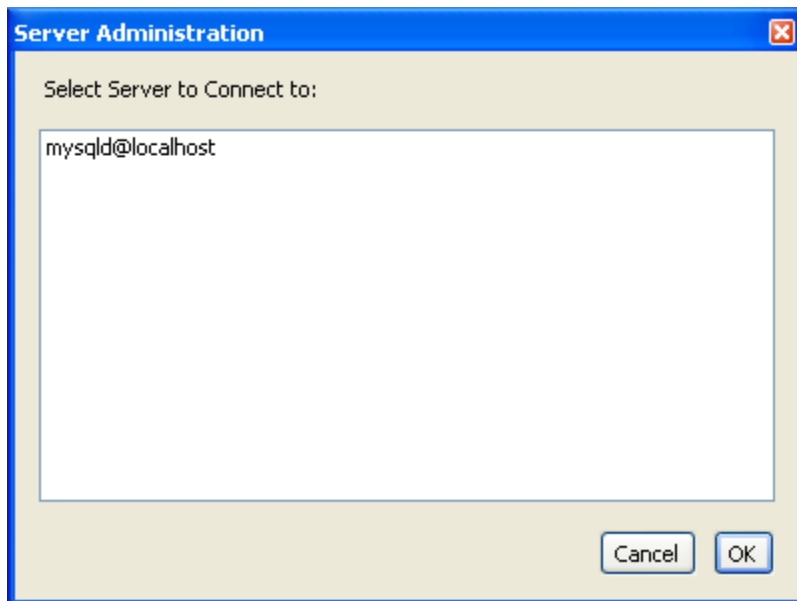
Server Instance Name:



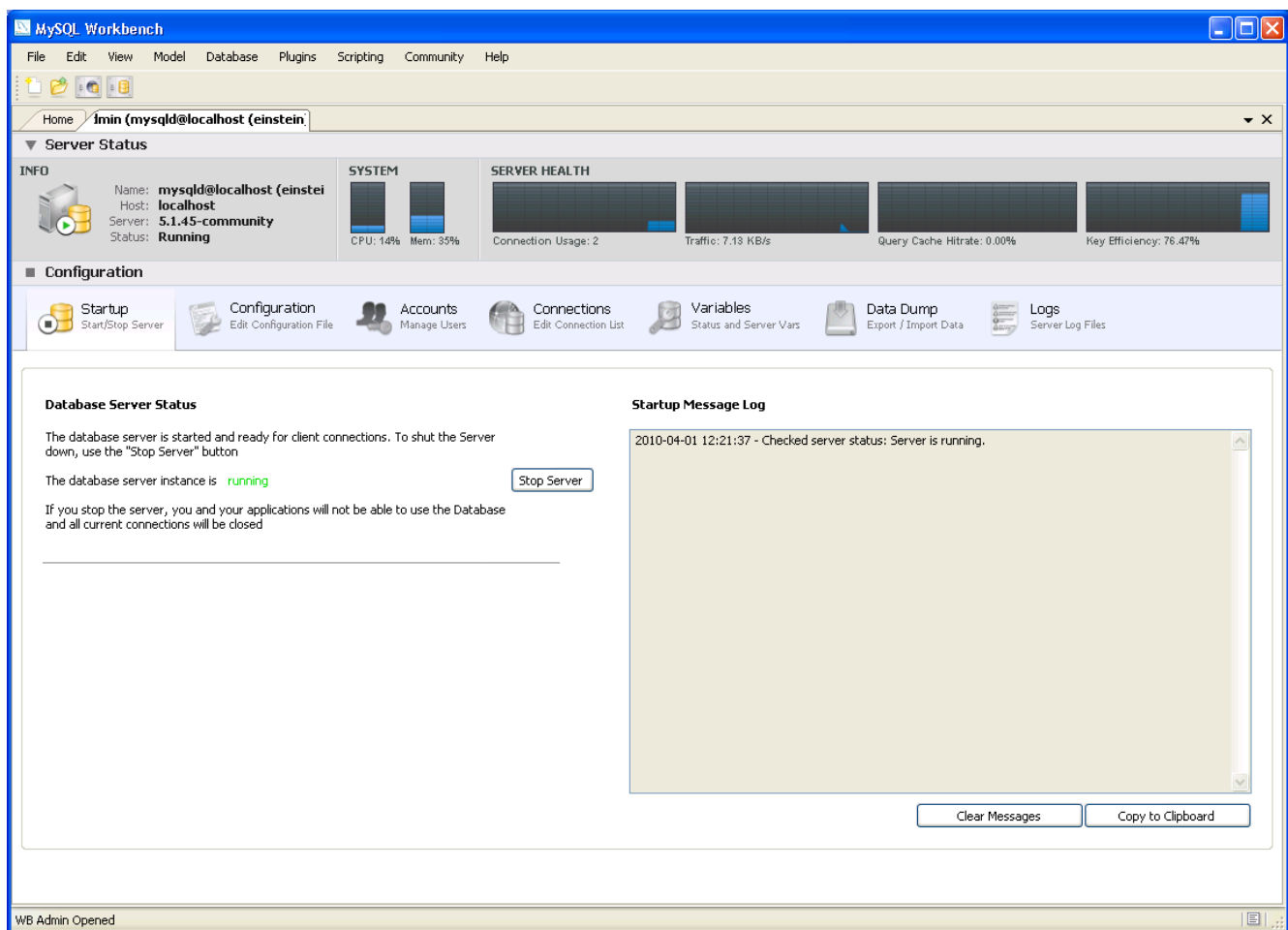
You should now see the server instance you created.



Click on Server Administration above the server you just created. You will get this popup. Choose your server and click OK.

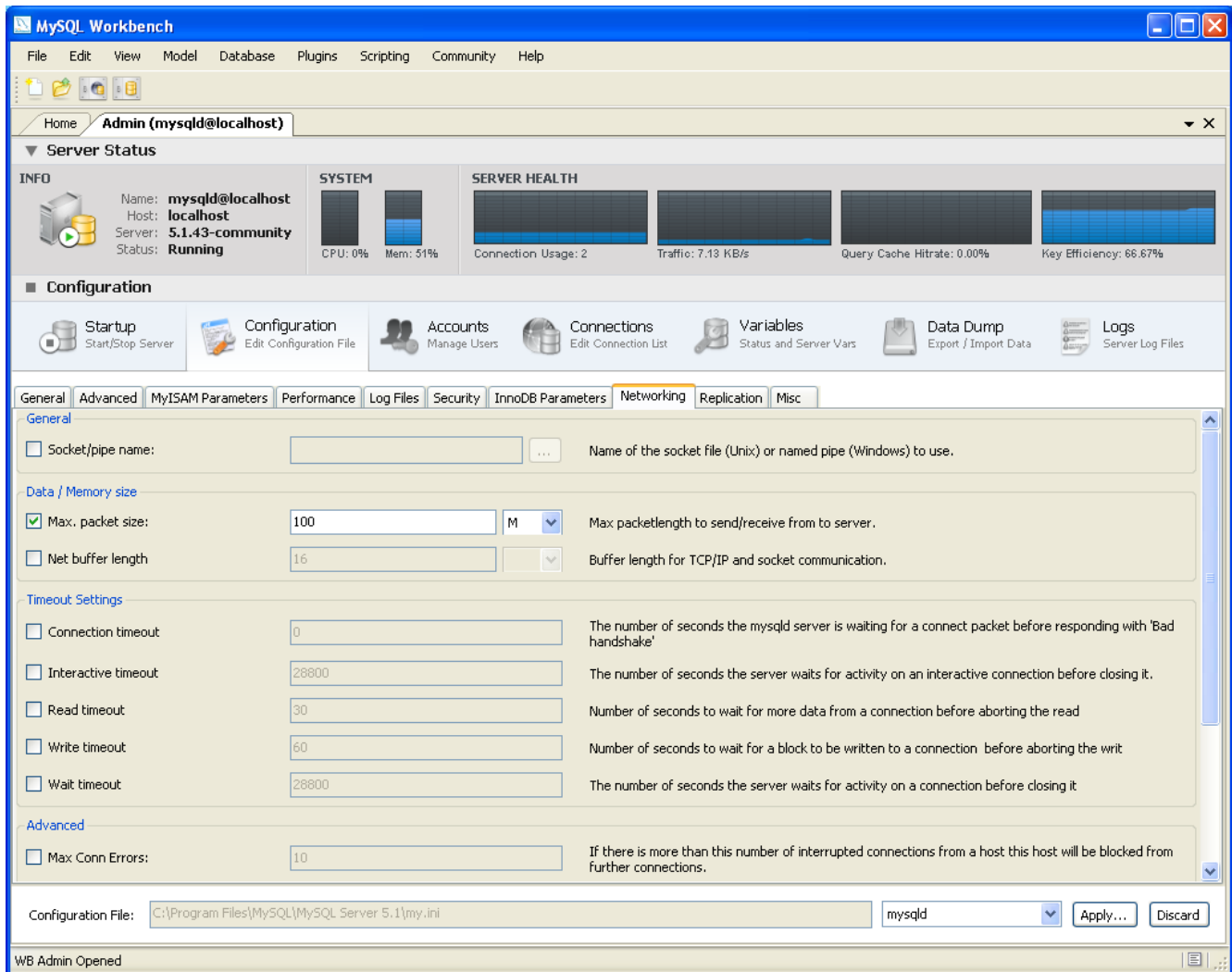


A new tab appears in your application.

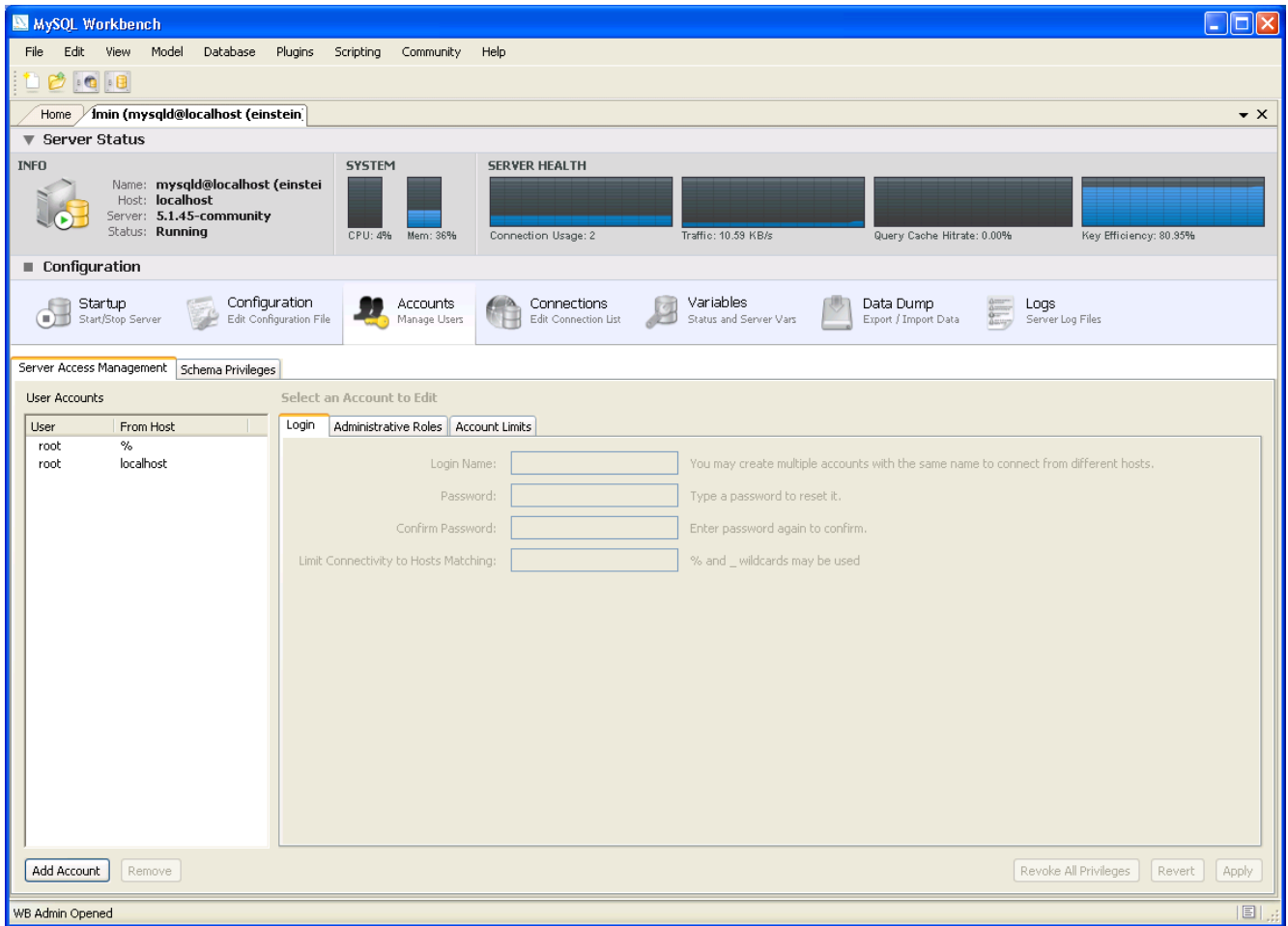


We need to set a system parameter here. Click the configuration tab, and then click on Network tab. Set max packet size to 100M (checkbox activates field for edit) and click Apply button at bottom to

write changes to my.ini configuration file.



Now click on Accounts tab under Configuration. This is where you will create your DTS user.



Click Add Account button in bottom left.

MySQL Workbench

File Edit View Model Database Plugins Scripting Community Help

Home **Imin (mysqld@localhost (einstein))**

▼ **Server Status**

**INFO**

Name: **mysqld@localhost (einstein)**  
 Host: **localhost**  
 Server: **5.1.45-community**  
 Status: **Running**

**SYSTEM**

CPU: 12% Mem: 37%

**SERVER HEALTH**

Connection Usage: 2 Traffic: 7.13 KB/s Query Cache Hitrate: 0.00% Key Efficiency: 80.95%

■ **Configuration**

Startup Start/Stop Server Configuration Edit Configuration File Accounts Manage Users Connections Edit Connection List Variables Status and Server Vars Data Dump Export / Import Data Logs Server Log Files

Server Access Management Schema Privileges

**User Accounts**

User	From Host
root	%
root	localhost
<b>newuser</b>	<b>%</b>

**Details for Account newuser@%**

Login Administrative Roles Account Limits

Login Name:  You may create multiple accounts with the same name to connect from different

Password:  Type a password to reset it.

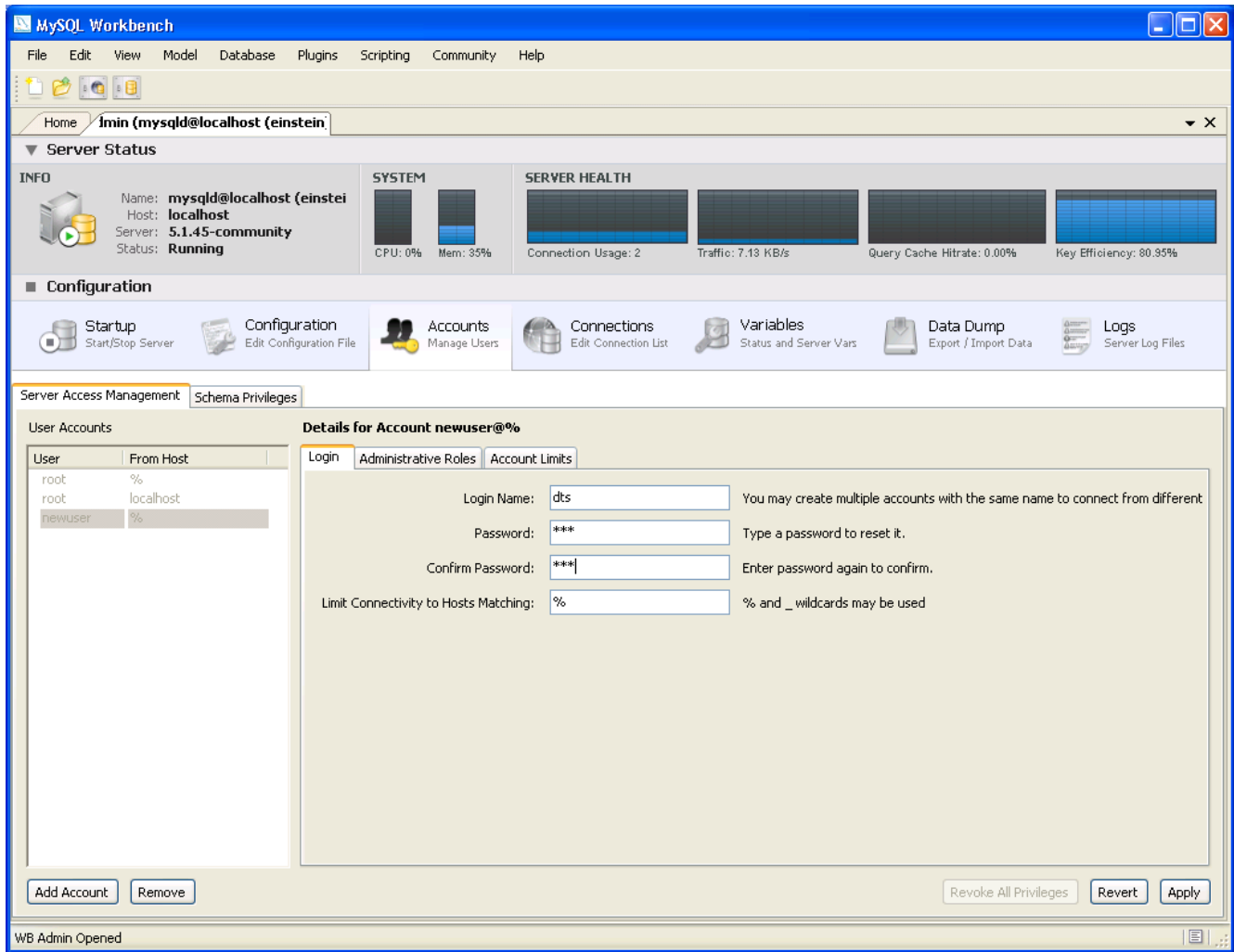
Confirm Password:  Enter password again to confirm.

Limit Connectivity to Hosts Matching:  % and \_ wildcards may be used

Add Account Remove Revoke All Privileges Revert Apply

WB Admin Opened

Change login name to DTS and enter passwords. Then click APPLY button.



Go back to your Home tab, and click New Connection. This popup appears. Set this up as your MySQL root account access (as seen below) and click the OK button.

**Connect to Database**

Stored Connection: localhost Select from saved connection settings

Connection Method: Standard (TCP/IP) Method to use to connect to the RDBMS

Parameters Advanced

Hostname: localhost Port: 3306 Name or IP address of the server host - TCP/IP port

Username: root Name of the user to connect with.

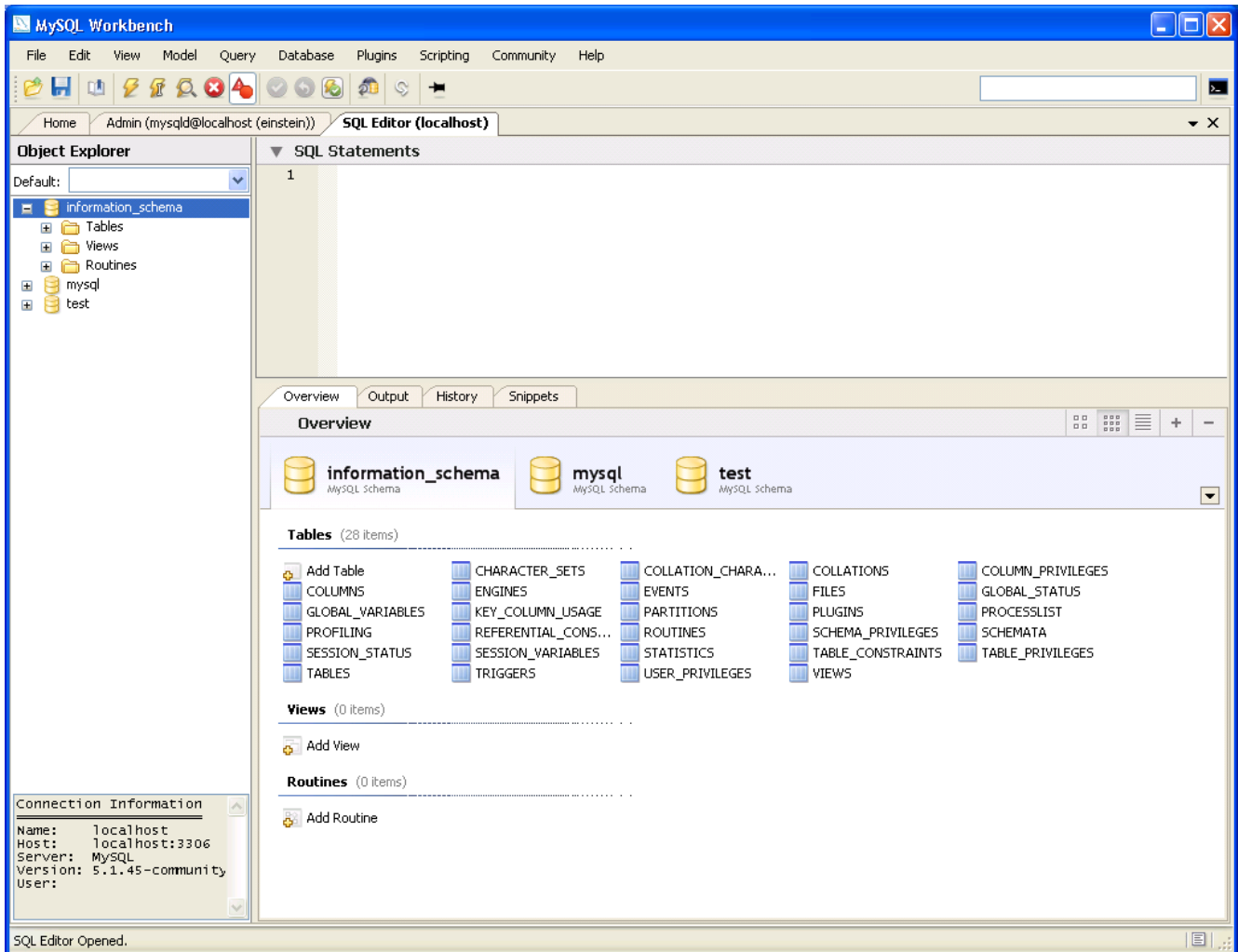
Password: Store in Vault ... Clear The user's password.

Default Schema: The schema that will be used as default schema

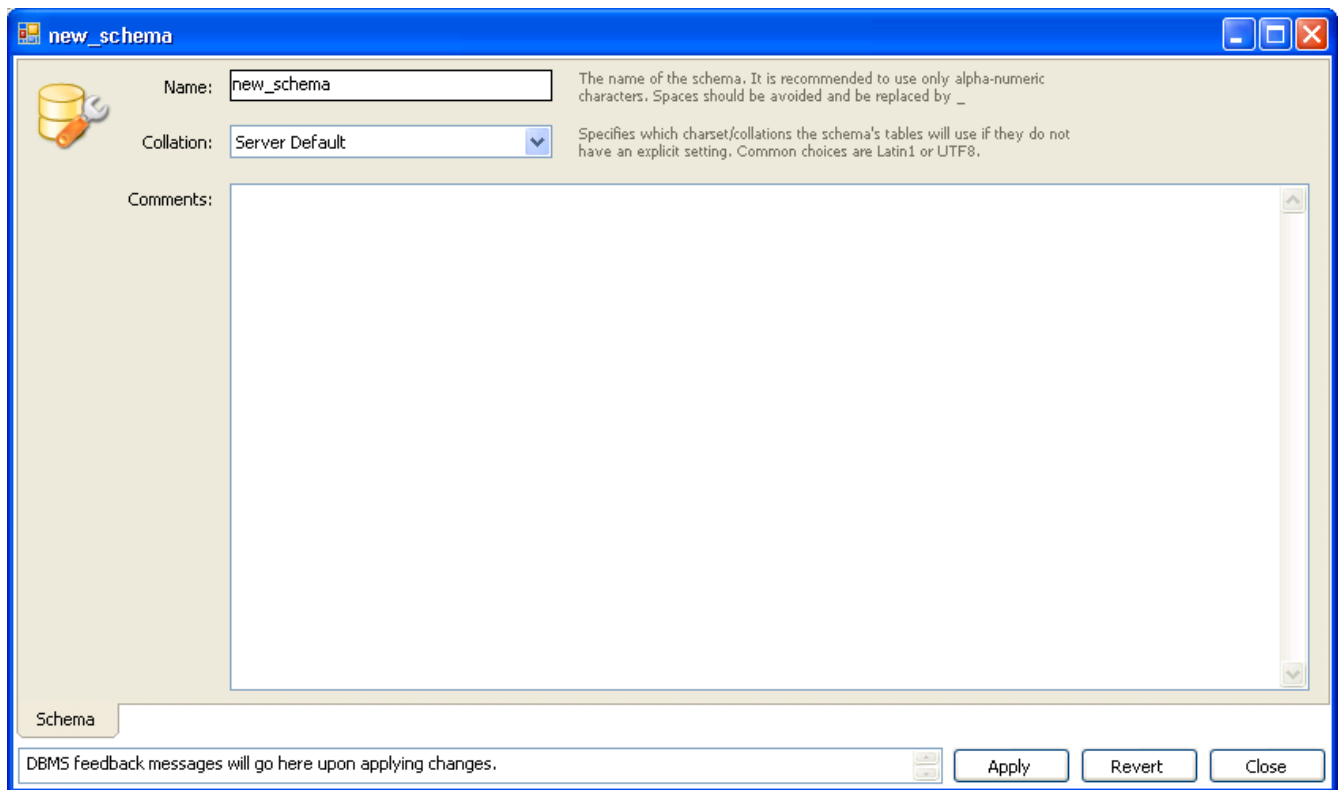
OK Cancel



A new tab appears.

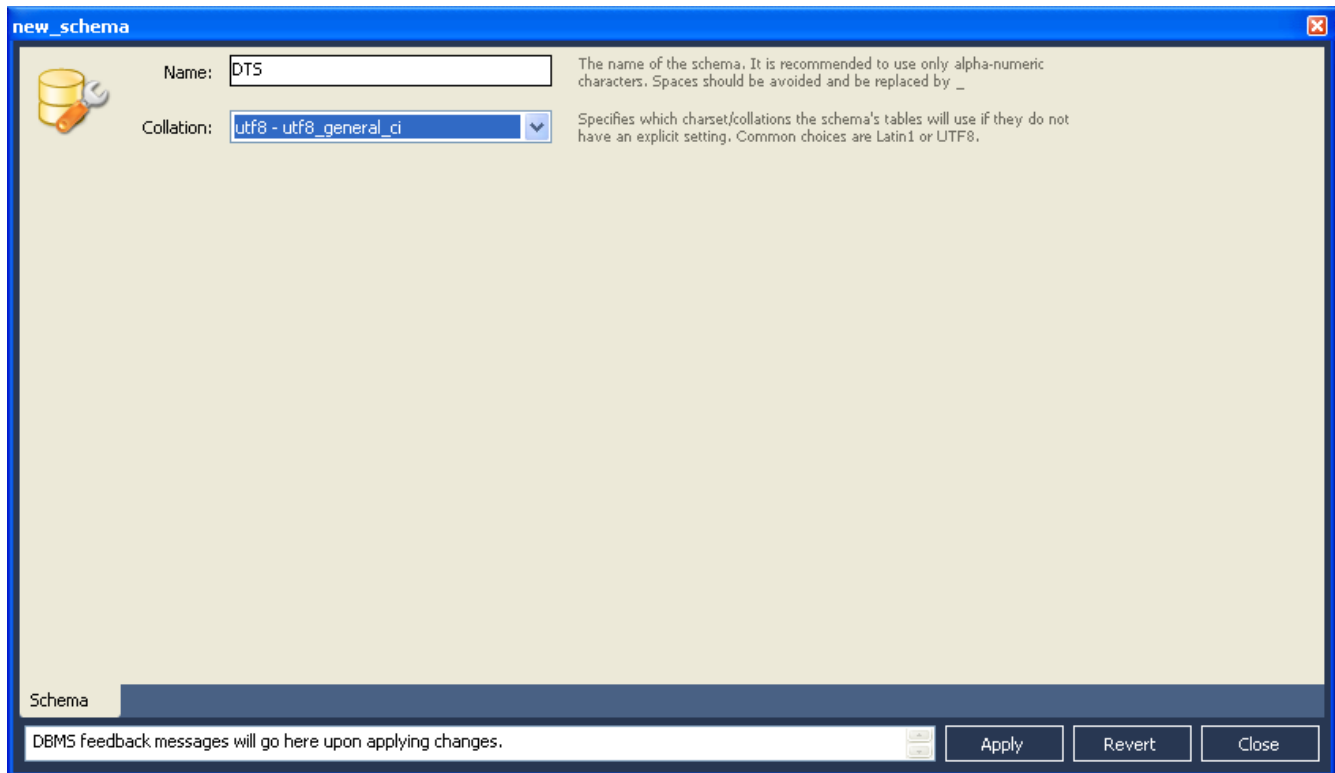


In the Object Explorer (left panel), when you right click and select menu item “Create Schema”, the following popup appears. Schema and Database are used interchangeably in MySQL, so you are really doing is creating your database here.



[Note: MySQL references tables by db\_name.tbl\_name].

Name your schema (preferably DTS). Select your Default Collation as utf8\_general\_ci



NOTE about Default collation: UTF8 Default collation needs to be utf8\_general\_ci since all DTS tables are created using this collation. Make sure “collation\_database”, “collation\_server” and “collation\_connection” system variables are all set to utf8\_general\_ci. This can be checked after database creation by running the following command in the SQL query window:

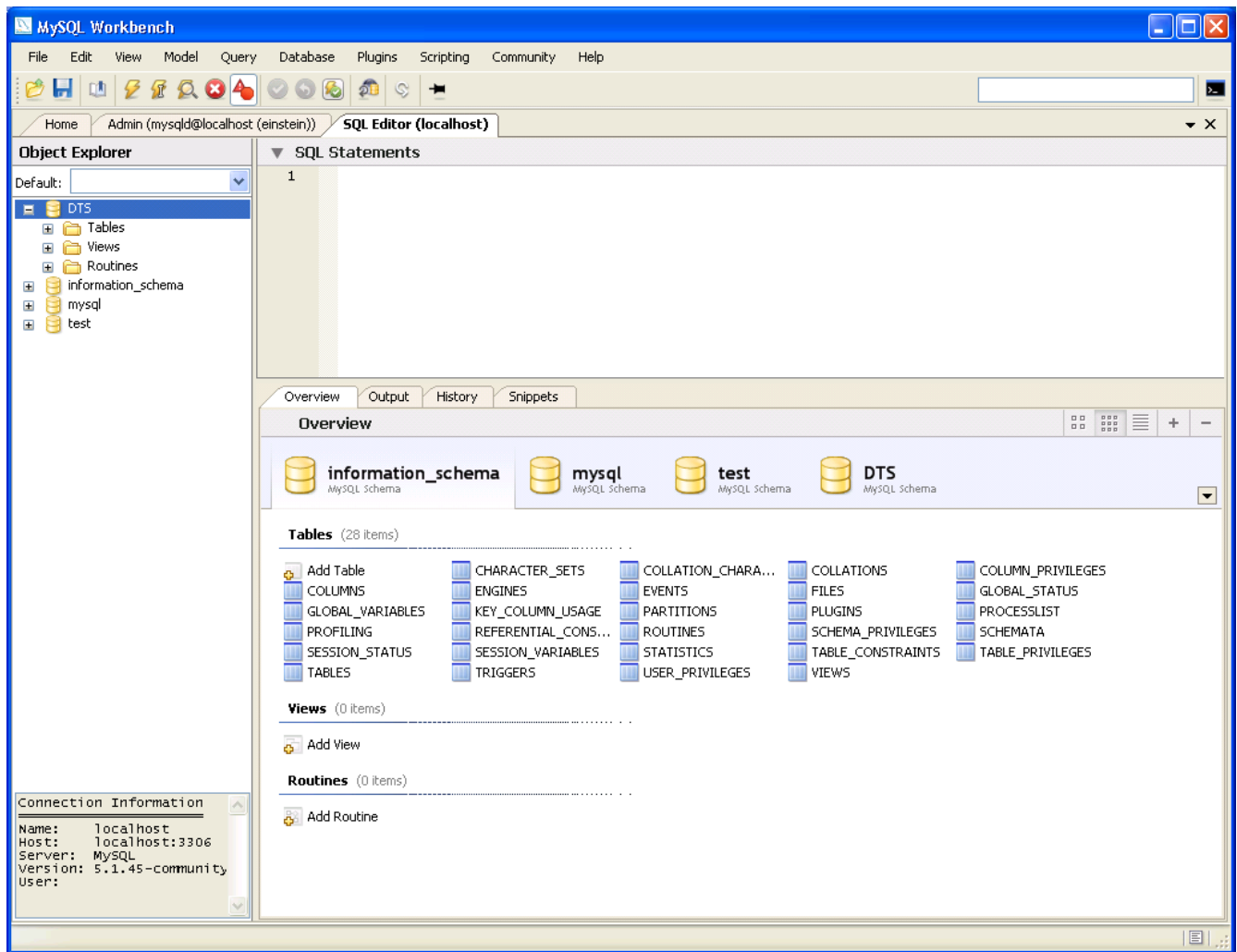
```
show variables like '%coll%';
```

When you are finished adding your information click Apply and a new window will open. This new window will inform you of all the changes that are about to take place. Click Apply Changes and the necessary SQL statements will execute to create your database.

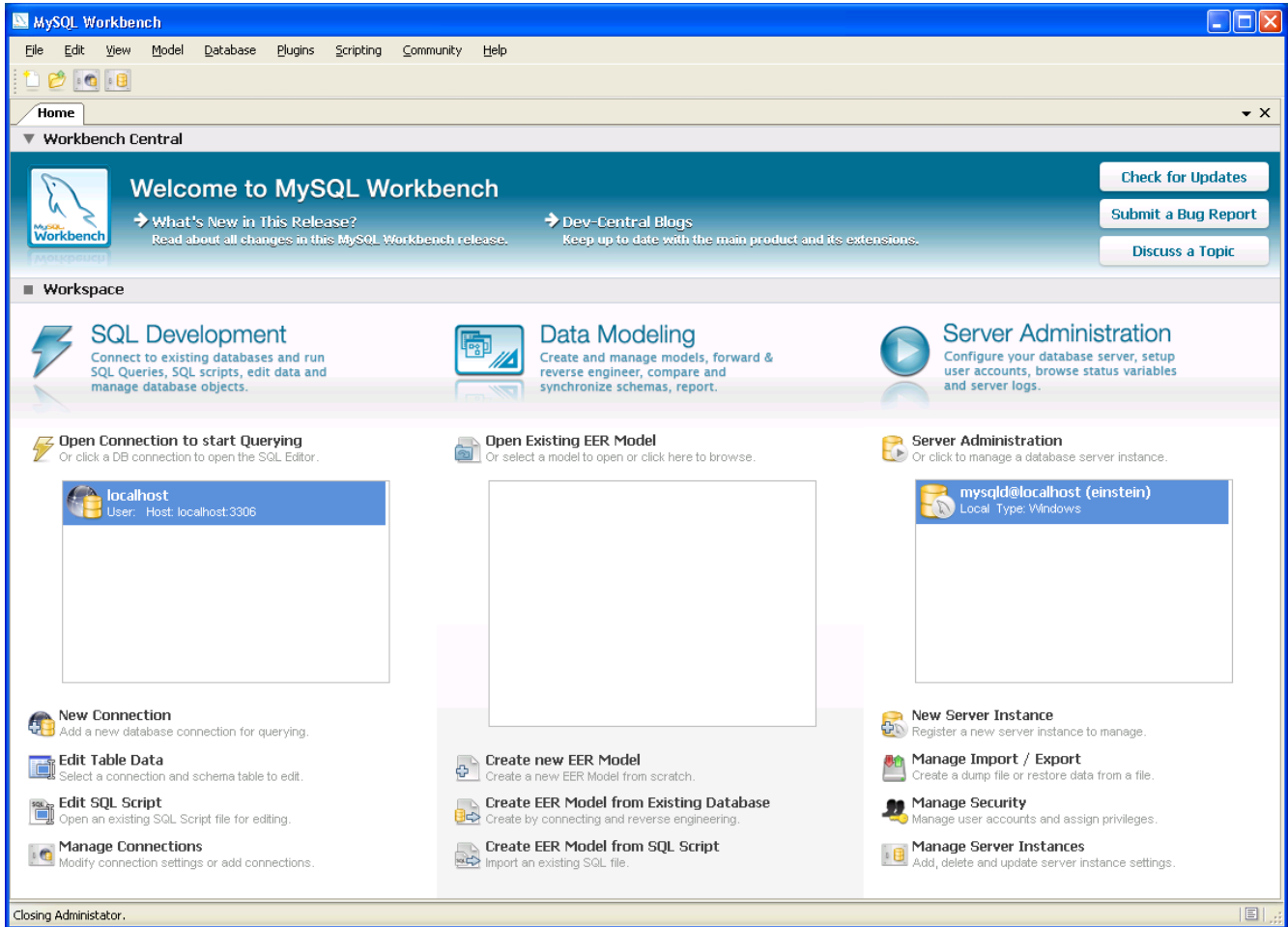
At first you will not see your database listed. In order to see your database you must click the Refresh button (circular arrows) in the toolbar. When you do this your new database will be listed and ready to go.

Note: if you forget to set your default collation to utf8\_general\_ci, you can change it later by logging in as your DTS user and running the following SQL statement (assuming your database/schema name is DTS):

```
alter database DTS default character set UTF8 collate utf8_general_ci;
```

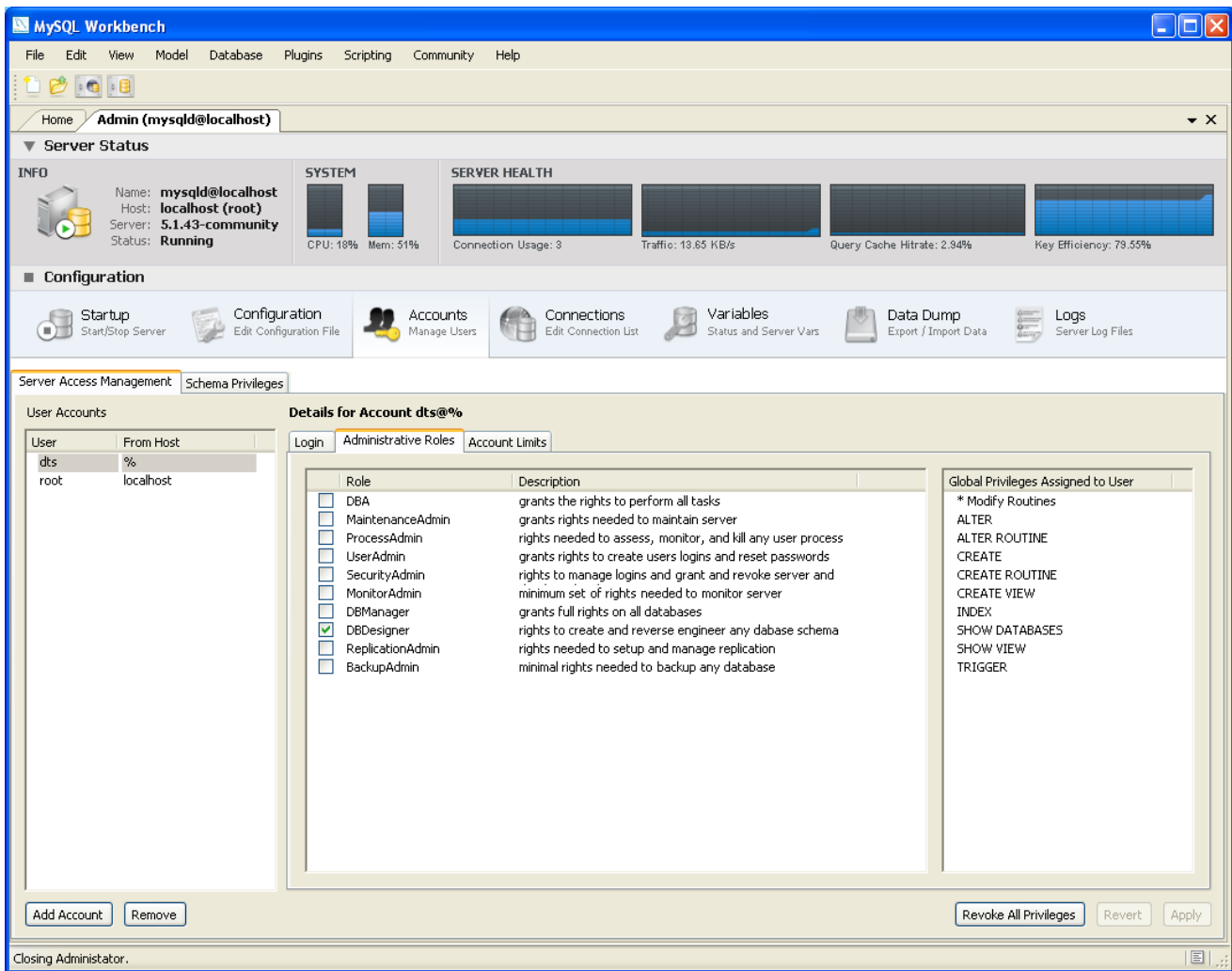


Now open up a tab for Server Administration for your MySQL server on localhost. Double click the [mysql@localhost](#) entry you created.

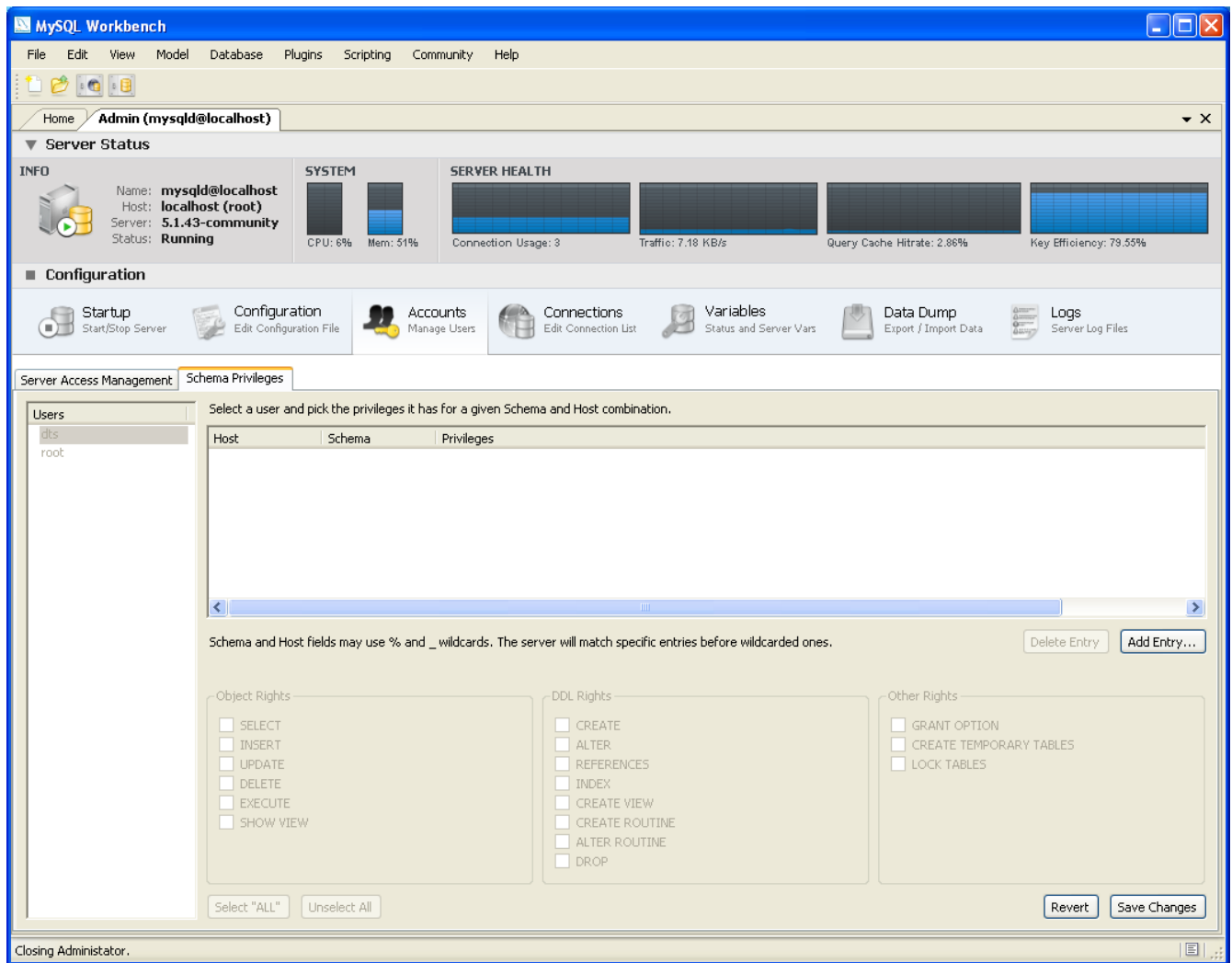


Now click on the Account Tab. Select dts from User Accounts and click Administrative Roles tab.

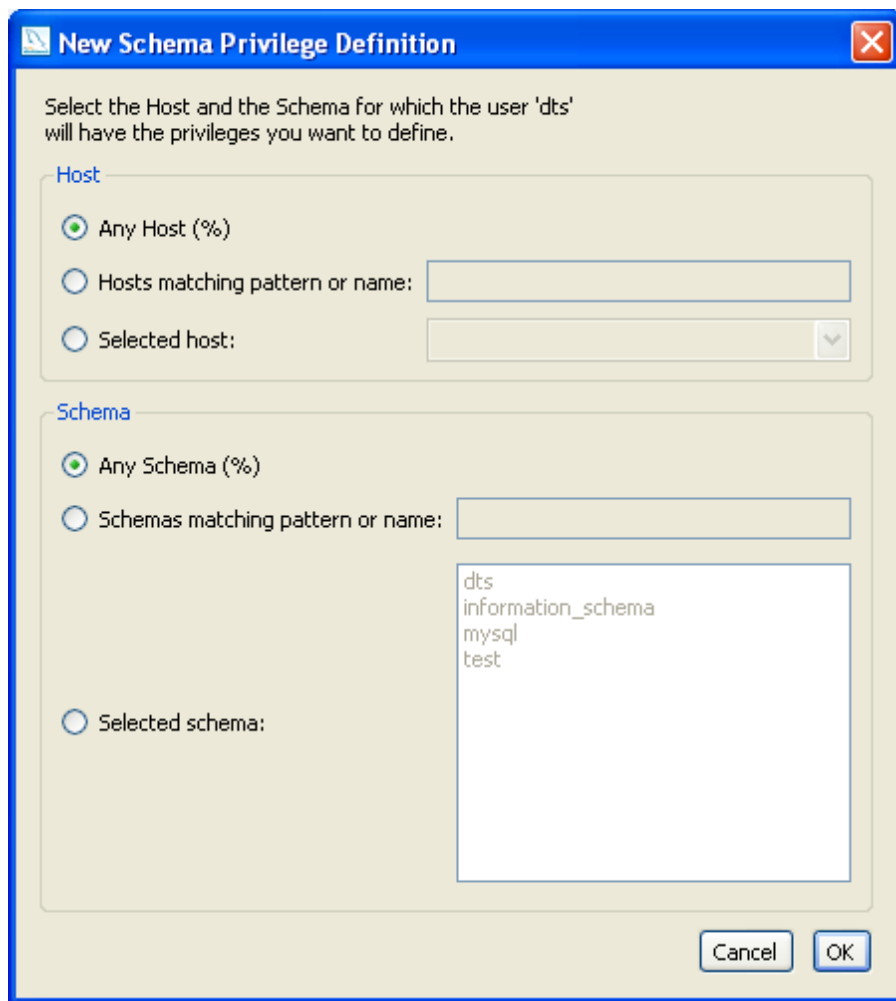
At a minimum you should have DBDesigner checked because we need Global Trigger privileges. You may also want to check MonitorAdmin and DBManager for additional global privileges.



Now click on Schema Privileges tab.

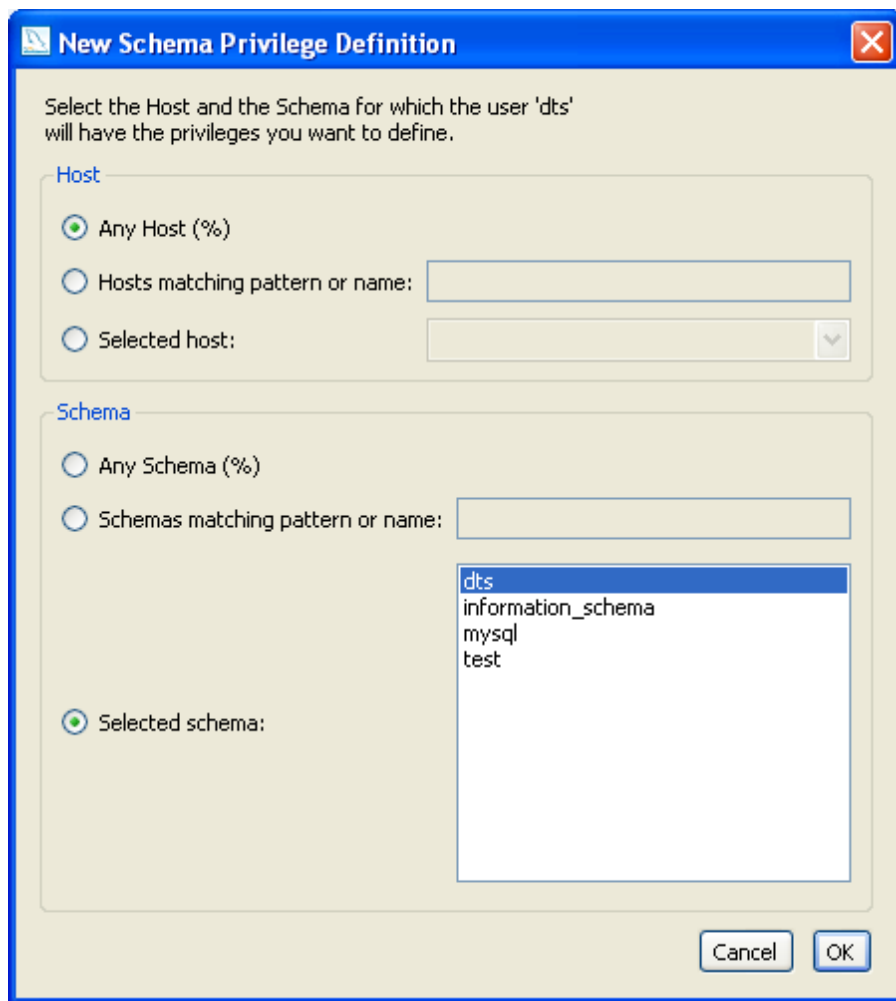


Click Add Entry button to added database privileges for user dts if you don't have an entry for it.

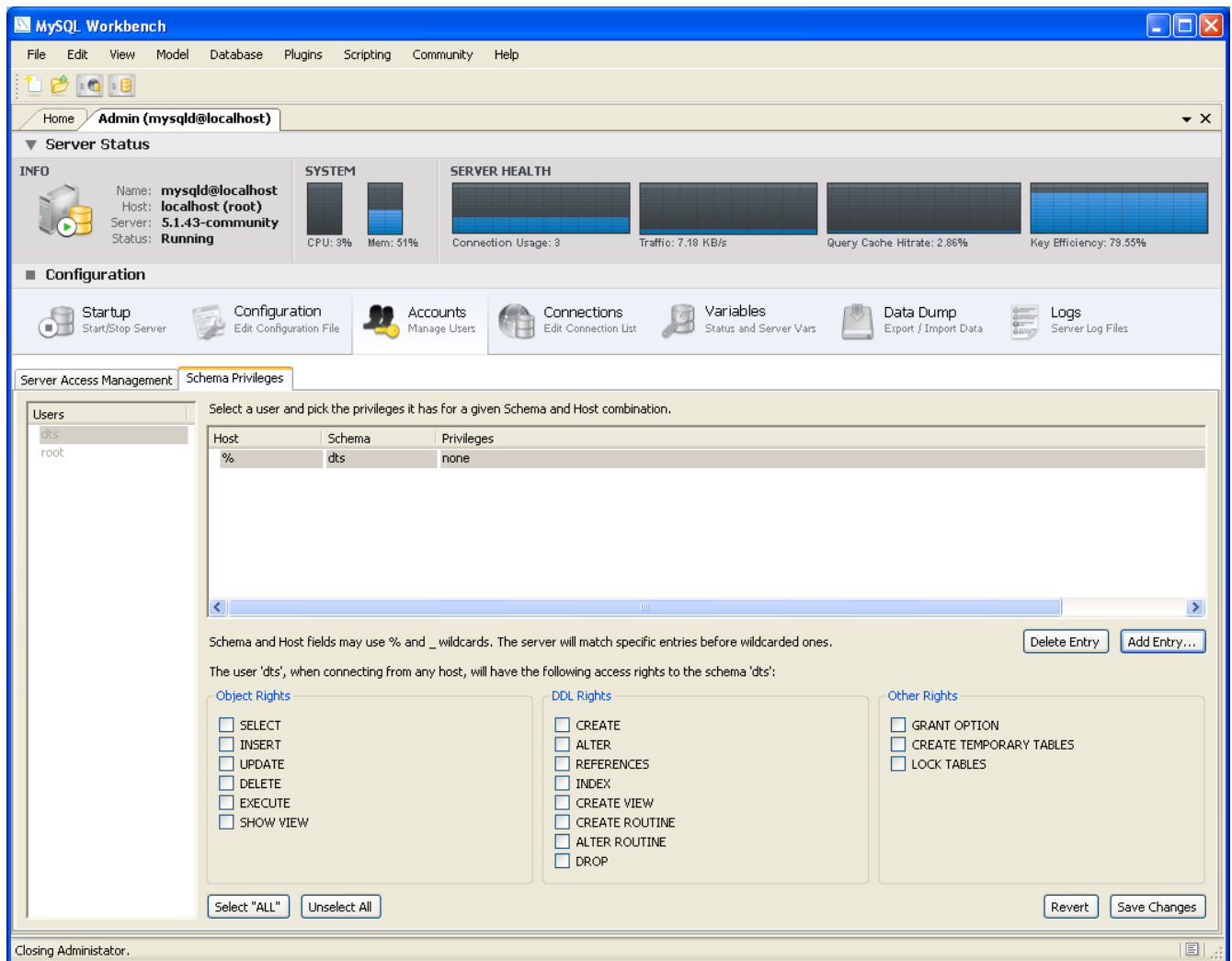


You can select dts as your schema and click OK. If you want additional security you can limit the hosts that can connect to this database remotely.

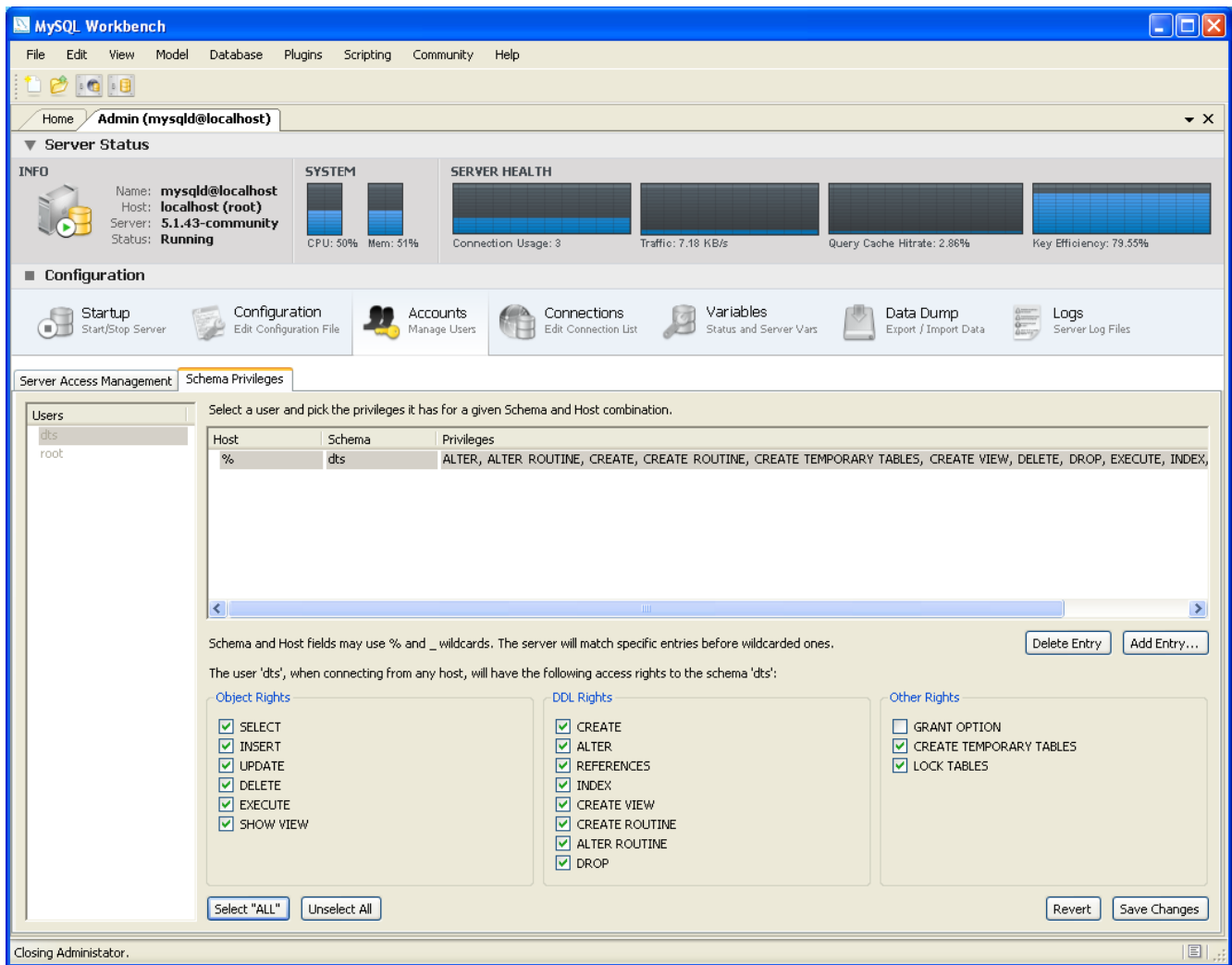




Now you will need to add privileges that the dts user needs for this database schema.



Click Select "ALL" button.



Before you click the Save Changes button, also check GRANT OPTION.

MySQL Workbench

File Edit View Model Database Plugins Scripting Community Help

Home Admin (mysqld@localhost)

### Server Status

**INFO**

Name: **mysqld@localhost**  
 Host: **localhost (root)**  
 Server: **5.1.43-community**  
 Status: **Running**

**SYSTEM**

CPU: 37% Mem: 55%

**SERVER HEALTH**

Connection Usage: 3 Traffic: 7.18 KB/s Query Cache Hitrate: 2.44% Key Efficiency: 78.41%

### Configuration

Startup Start/Stop Server Configuration Edit Configuration File Accounts Manage Users Connections Edit Connection List Variables Status and Server Vars Data Dump Export / Import Data Logs Server Log Files

Server Access Management Schema Privileges

Select a user and pick the privileges it has for a given Schema and Host combination.

Host	Schema	Privileges
%	dts	ALTER, ALTER ROUTINE, CREATE, CREATE ROUTINE, CREATE TEMPORARY TABLES, CREATE VIEW, DELETE, DROP, EXECUTE, GRANT

Schema and Host fields may use % and \_ wildcards. The server will match specific entries before wildcarded ones. Delete Entry Add Entry...

The user 'dts', when connecting from any host, will have the following access rights to the schema 'dts':

**Object Rights**

- SELECT
- INSERT
- UPDATE
- DELETE
- EXECUTE
- SHOW VIEW

**DDL Rights**

- CREATE
- ALTER
- REFERENCES
- INDEX
- CREATE VIEW
- CREATE ROUTINE
- ALTER ROUTINE
- DROP

**Other Rights**

- GRANT OPTION
- CREATE TEMPORARY TABLES
- LOCK TABLES

Select "ALL" Unselect All Revert Save Changes

WB Admin Opened

Go back to your Home tab on the main application window, and click New Connection to create a new DB connection.

The image shows a 'Manage DB Connections' dialog box with the following fields and values:

- Connection Name: localhost (dts) (Type a name for the connection)
- Connection Method: Standard (TCP/IP) (Method to use to connect to the RDBMS)
- Parameters tab selected
- Advanced sub-tab selected
- Hostname: 127.0.0.1 (Name or IP address of the server host - TCP/IP port)
- Port: 3306 (Name or IP address of the server host - TCP/IP port)
- Username: dts (Name of the user to connect with)
- Password: [Store in Vault ...] [Clear] (The user's password)
- Default Schema: dts (The schema that will be used as default schema)

Buttons at the bottom: Test Connection, Cancel, OK

This will be the connection you will use to test queries into the DTS database with the SQL Editor. You can click the Test Connection button to make sure you can login as the dts user.



## Part IV – Post Installation for Linux

Having case insensitive table names in MySQL under Linux, the bad news is ... you cannot. The closest solution to this would be to set `lower_case_table_names=1`, which would make all your tables lowercase, no matter how you write them. We need to set this system variable before running `kbcreate`.

**Since we are using InnoDB tables, you should set this variable to 1 on all platforms to force names to be converted to lowercase. Also set `max_allowed_packet` to maximum of 1GB to increase size of buffer between client and server.**

Do the following after you install MySQL on Linux.

- 1) Stop mysql server
- 2) Locate your `my.cnf` file on your Linux system (most likely in `/etc` or `/etc/mysql`)

<http://ronaldbradford.com/blog/how-do-i-identify-the-mysql-my-cnf-file-2010-03-09/>

If you cannot find `my.cnf` and you just installed the RPMs, try this command

```
ls -l /usr/share/mysql/my*.cnf
```

These files should show up:

```
-rwxr-xr-x 1 root root 4780 May 6 17:50 my-huge.cnf
-rwxr-xr-x 1 root root 20181 May 6 17:50 my-innodb-heavy-4G.cnf
-rwxr-xr-x 1 root root 4754 May 6 17:50 my-large.cnf
-rwxr-xr-x 1 root root 4765 May 6 17:50 my-medium.cnf
-rwxr-xr-x 1 root root 2403 May 6 17:50 my-small.cnf
```

Take one of these example files, rename it to `my.cnf` and copy `my.cnf` to `/etc`

- 3) Edit `my.cnf` file and append the following under `[mysqld]`

```
[mysqld]
lower_case_table_names=1
default-storage-engine=InnoDB
max_allowed_packet=100M
character-set-server=utf8
collation-server=utf8_general_ci
```

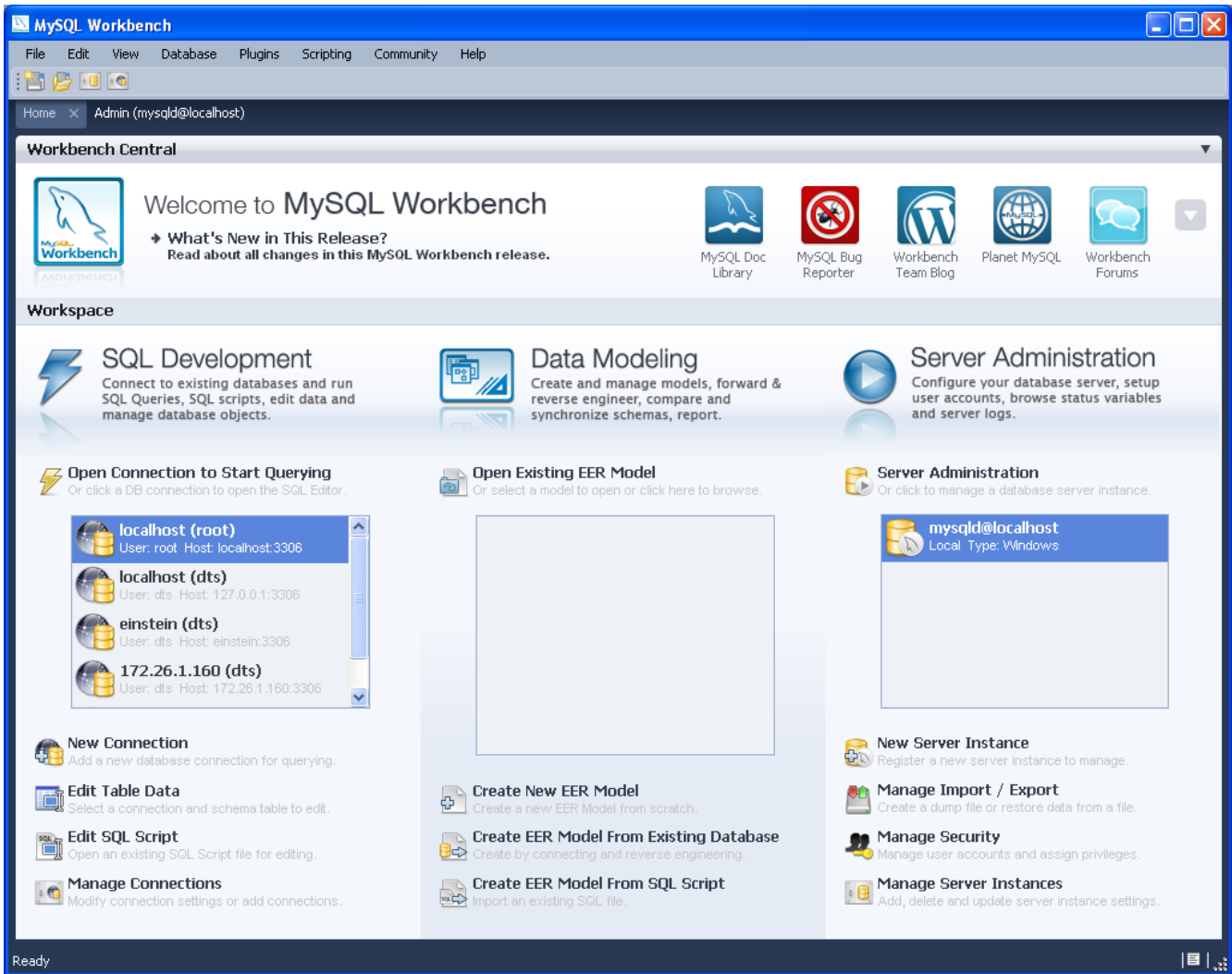
- 4) Start mysql server again and open a SQL window. Execute the statement: `show variables`. Look for the row `lower_case_table_names`, `max_allowed_packet` and `storage_engine` to verify settings.

As for adding a `dts` user to a Linux MySQL database, you can create a remote server instance with MySQL Workbench (which you installed on your Windows PC), and then add a user with MySQL workbench for that Linux server instance. You will also need to give remote access to your MySQL server on Linux for root access to the database before you create a new remote server instance with MySQL Workbench. This link below has more details.

<http://benrobb.com/2007/01/15/howto-remote-root-access-to-mysql/>

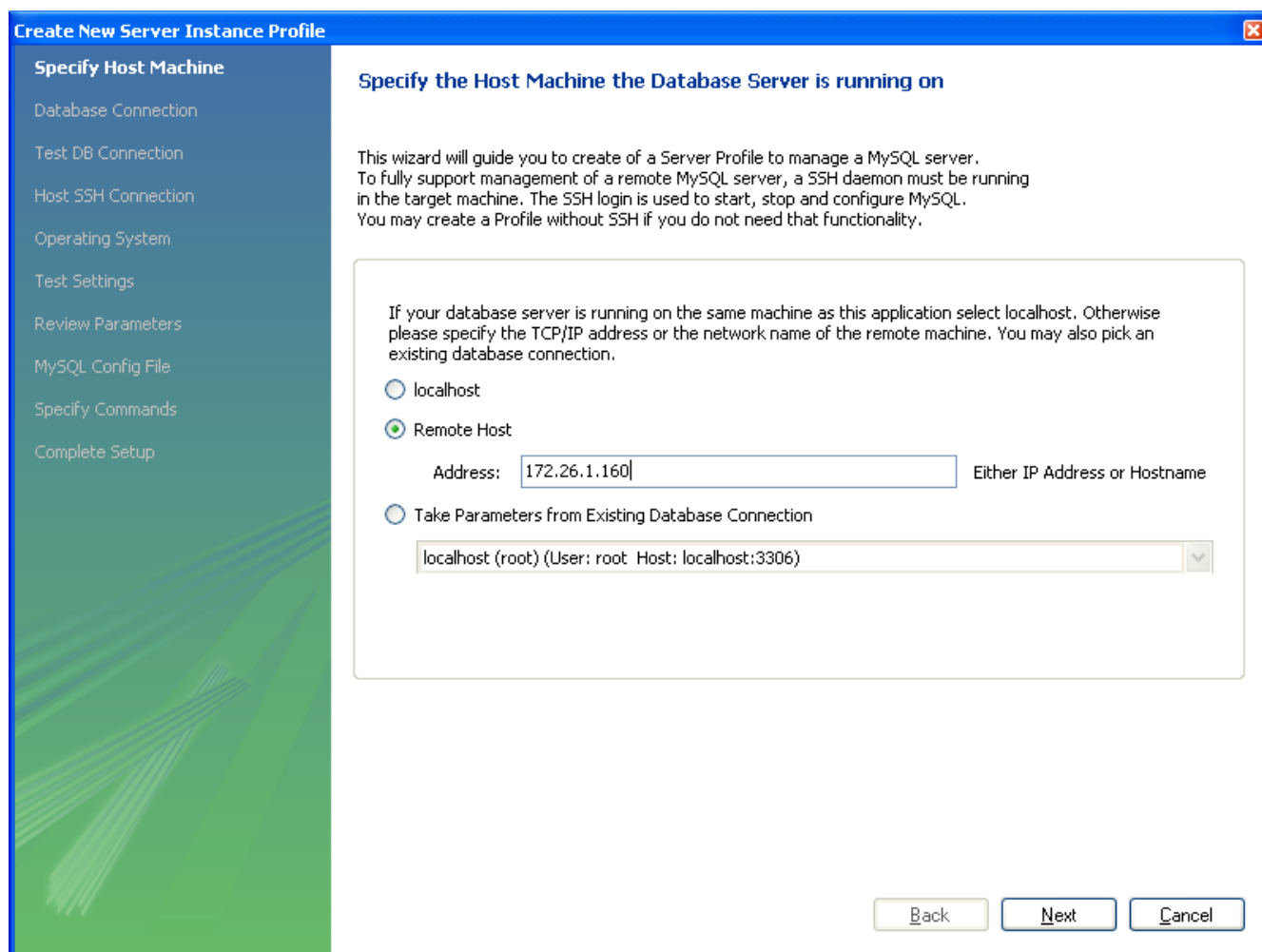
## Create a remote server

Click on New Server Instance in your Home tab of MySQL Workbench (right side under Server Administration)



The Create New Server Instance Wizard Popup appears. Fill in the IP address of your Linux server.





Click Next and complete the rest of the successive steps in the Wizard. I will skip the rest of the screenshots excepts for Host SSH Connection. You will need to enter ssh login information here.

## Create New Server Instance Profile

Specify Host Machine

Database Connection

Test DB Connection

**Host SSH Connection**

Operating System

Test Settings

Review Parameters

MySQL Config File

Specify Commands

Complete Setup

### Set remote configuration parameters

In order to remotely configure this database instance an SSH account on this host with appropriate privileges is required. This account needs write access to the my.cnf database config file, read access to the database logs and privileges to start/stop the database daemon.

If you do not have this information or you do not want to remotely configure the database instance please disable the following checkbox.

Enable SSH login based administration

Host Name:  Port:

User Name:

Authenticate Using SSH Key

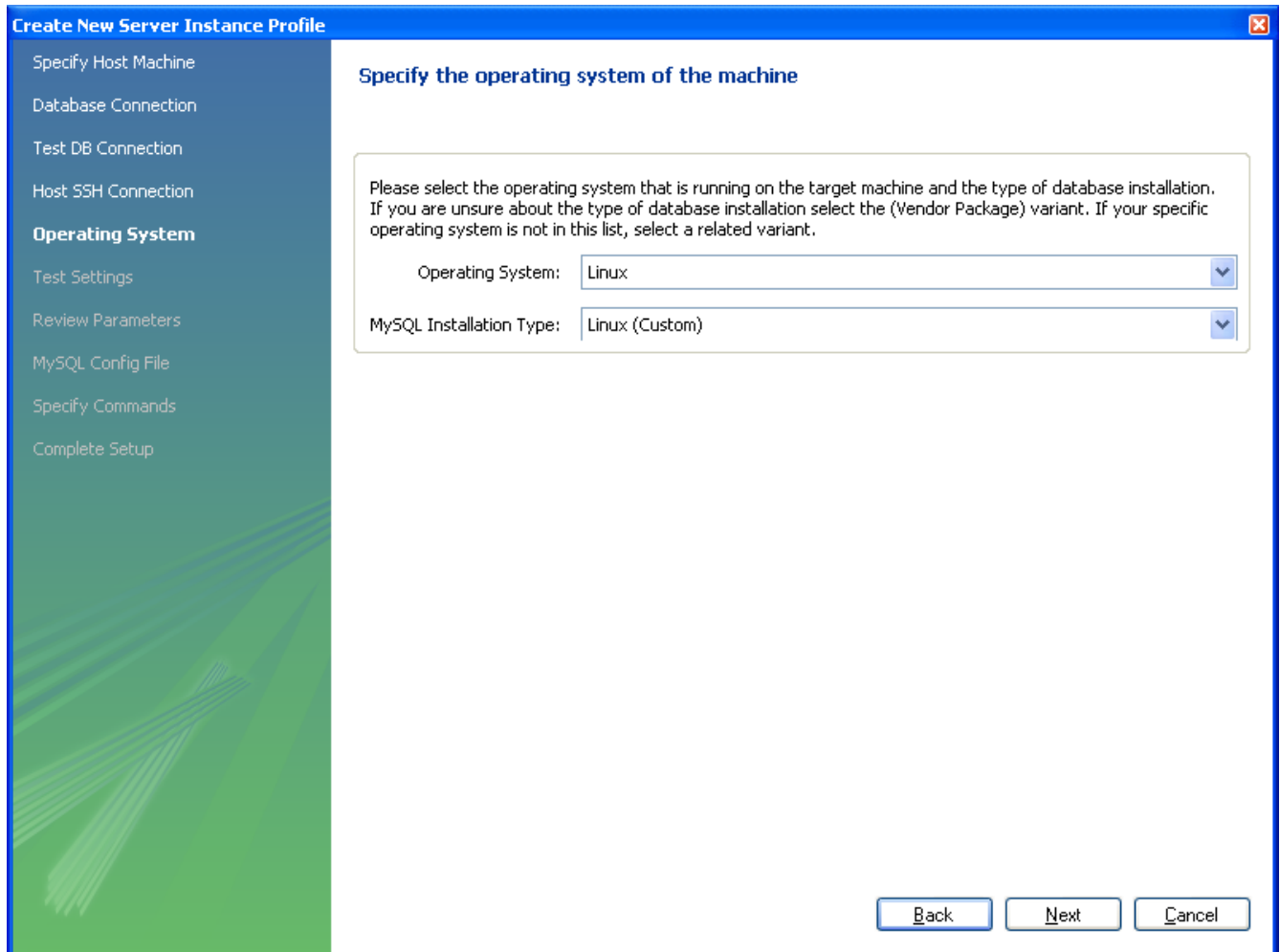
SSH Public Key Path:  ...

Back

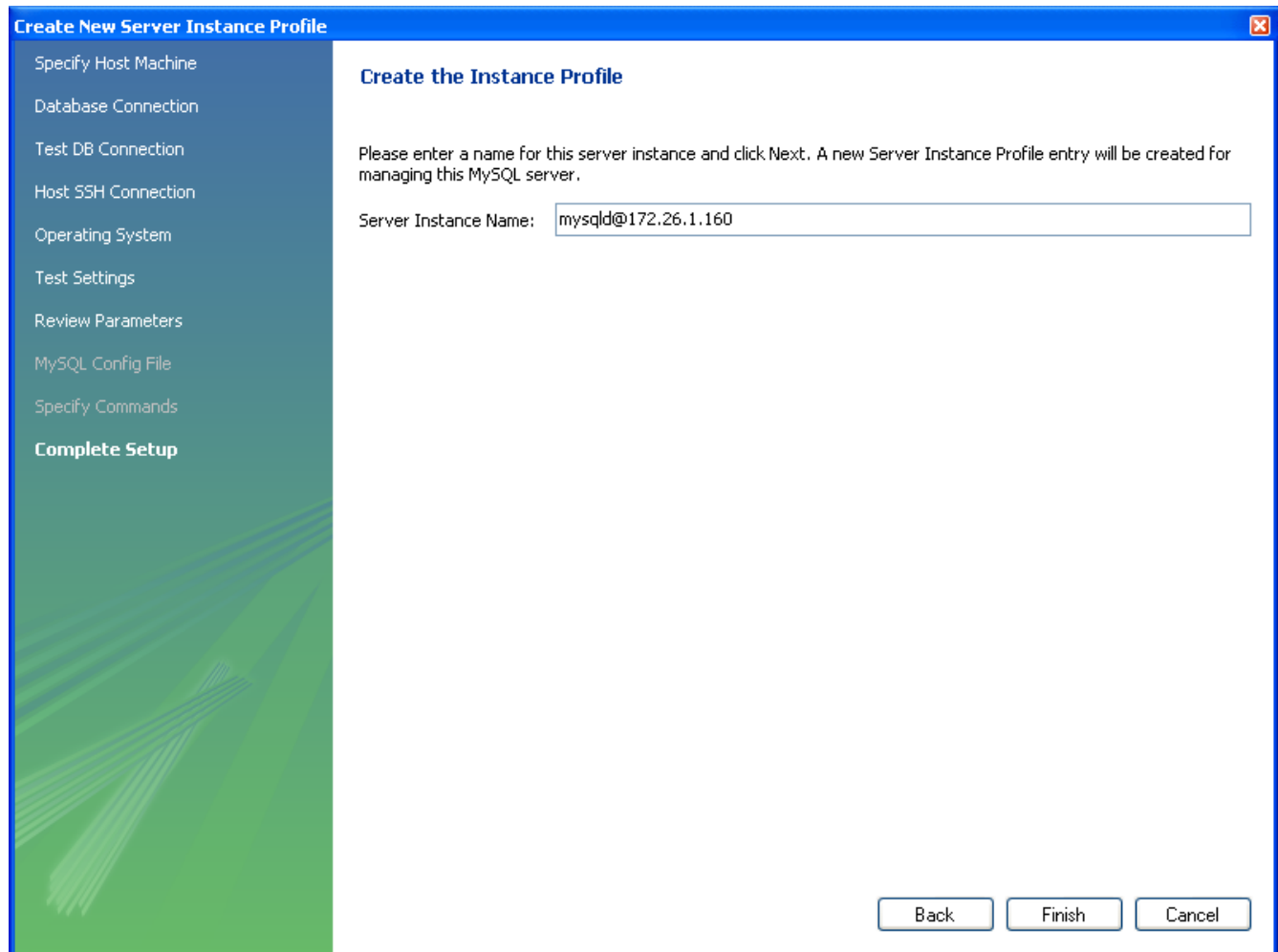
Next

Cancel

For the wizard step that asked for your Operating System, select “Linux (Custom)” since we downloaded the community edition).



Continue the rest of the wizard steps (not shown), when you reach the last page click Finish.



This following screenshot shows new entries named 172.26.1.160 (which refers to the Linux server) after configuration. Once configured, you can also start and stop the remote MySQL server from MySQL Workbench as well.

MySQL Workbench

File Edit View Model Database Plugins Scripting Community Help

Home

Workbench Central

## Welcome to MySQL Workbench

→ **What's New in This Release?**  
Read about all changes in this MySQL Workbench release.

→ **Dev-Central Blogs**  
Keep up to date with the main product and its extensions.

Check for Updates

Submit a Bug Report

Discuss a Topic

Workspace

### SQL Development

Connect to existing databases and run SQL Queries, SQL scripts, edit data and manage database objects.

### Data Modeling

Create and manage models, forward & reverse engineer, compare and synchronize schemas, report.

### Server Administration

Configure your database server, setup user accounts, browse status variables and server logs.

**Open Connection to start Querying**  
Or click a DB connection to open the SQL Editor.

- localhost (root)  
User: Host: localhost:3306
- 172.26.1.160 (dts)  
User: Host: 172.26.1.160:3306
- localhost (dts)  
User: Host: 127.0.0.1:3306

**Open Existing EER Model**  
Or select a model to open or click here to browse.

**Server Administration**  
Or click to manage a database server instance.

- mysql@localhost  
Local Type: Windows
- mysql@172.26.1.160 [Red Hat ...]  
Host: 172.26.1.160 Type: Linux

**New Connection**  
Add a new database connection for querying.

**Edit Table Data**  
Select a connection and schema table to edit.

**Edit SQL Script**  
Open an existing SQL Script file for editing.

**Manage Connections**  
Modify connection settings or add connections.

**Create new EER Model**  
Create a new EER Model from scratch.

**Create EER Model from Existing Database**  
Create by connecting and reverse engineering.

**Create EER Model from SQL Script**  
Import an existing SQL file.

**New Server Instance**  
Register a new server instance to manage.

**Manage Import / Export**  
Create a dump file or restore data from a file.

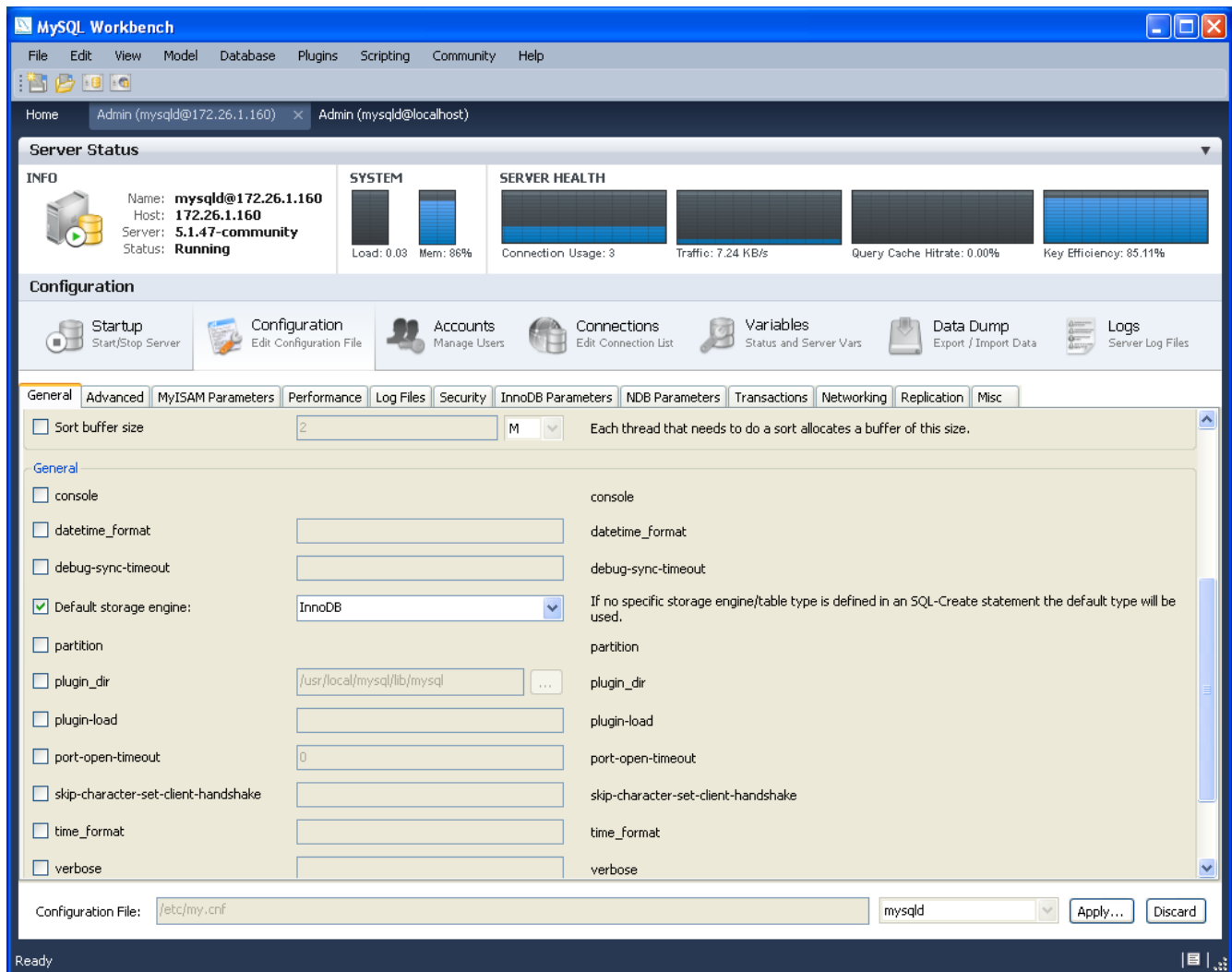
**Manage Security**  
Manage user accounts and assign privileges.

**Manage Server Instances**  
Add, delete and update server instance settings.

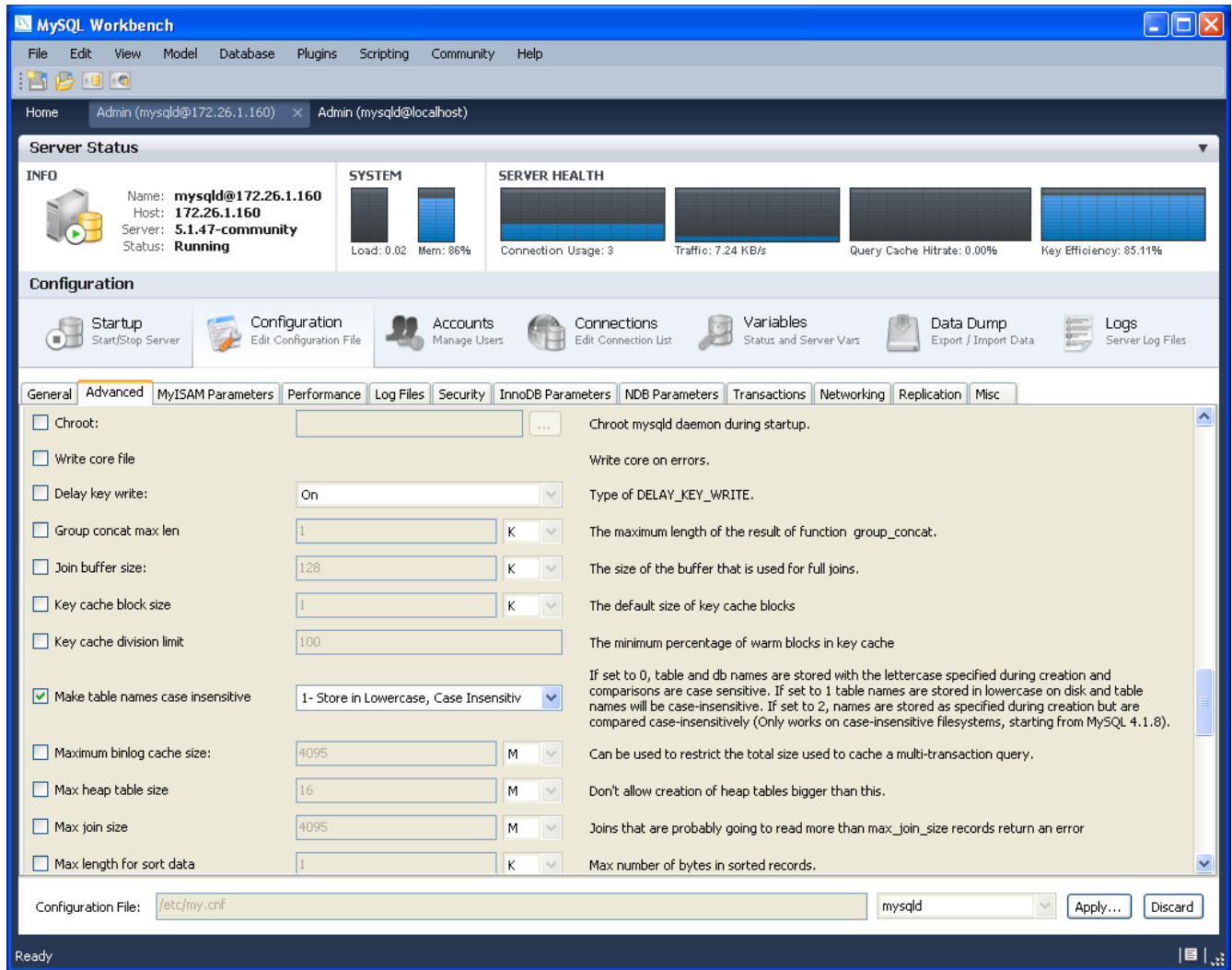
Ready.

Double click your remote MySQL server (under Server Administration) and you can customize your configuration. Your changes will be saved to /etc/my.cnf file if you click “Apply...” button in the bottom right.

Verify that your default storage engine is InnoDB.



Click on Advanced Tab and verify that your table names are case insensitive.



Click on Networking Tab and verify that maximum packet size is 100M.

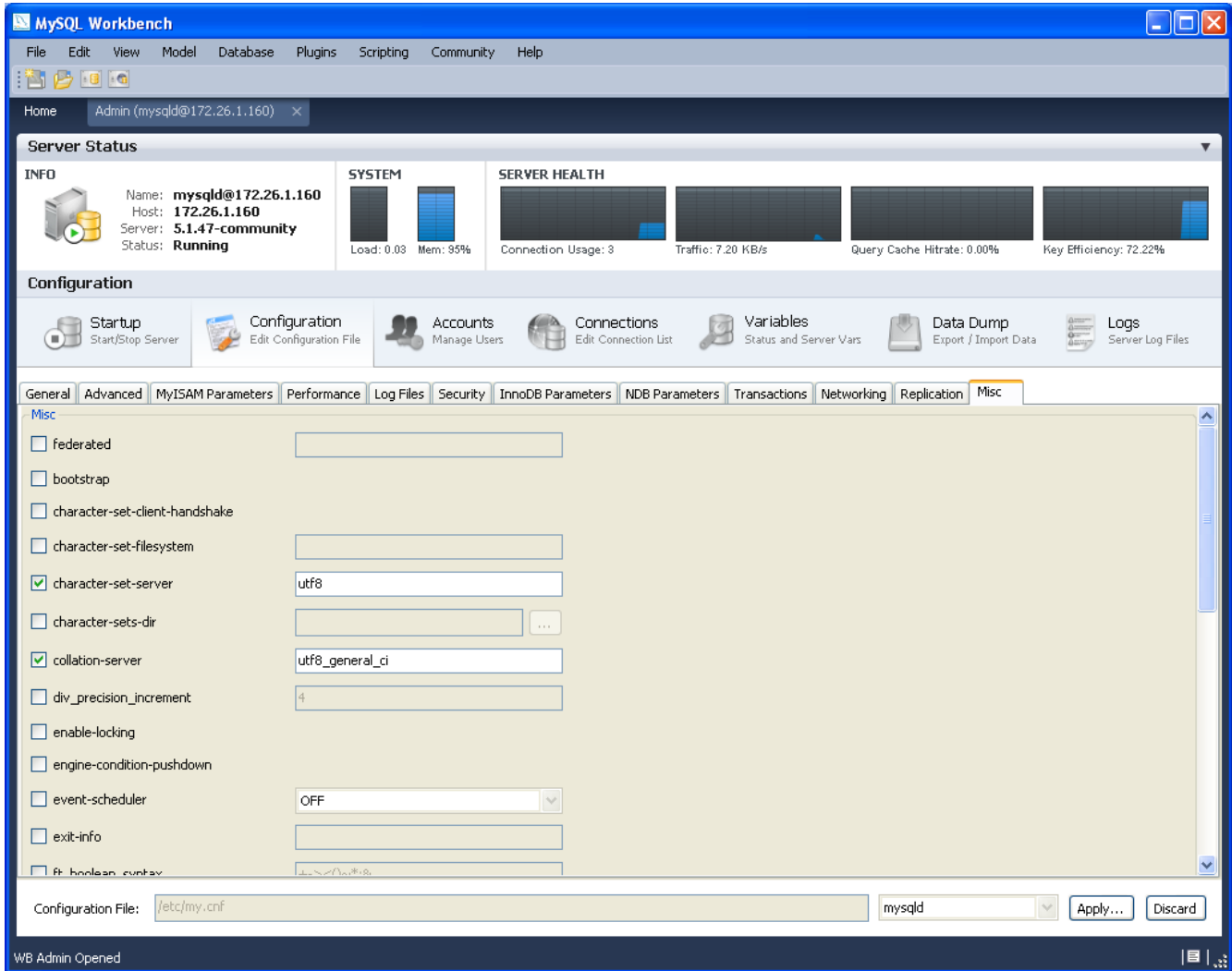
The screenshot shows the MySQL Workbench interface. At the top, the 'Server Status' tab is active, displaying server information: Name: mysqld@172.26.1.160, Host: 172.26.1.160, Server: 5.1.47-community, Status: Running. It also shows system metrics: Load: 0.02, Mem: 86%, Connection Usage: 3, Traffic: 7.24 KB/s, Query Cache Hitrate: 0.00%, and Key Efficiency: 85.11%.

The 'Configuration' tab is selected, and the 'Networking' sub-tab is active. The 'Max. packet size' is set to 100 M. Other settings include 'Socket/pipe name' as /var/lib/mysql/mysql.sock, 'Net buffer length' as 16, and various timeout settings (Connection, Interactive, Read, Write, Wait) all set to 0 or 28800. The 'Max Conn Errors' is set to 10. The configuration file is /etc/my.cnf and the user is mysqld.

Category	Setting	Value	Description
General	Socket/pipe name	/var/lib/mysql/mysql.sock	Name of the socket file (Unix) or named pipe (Windows) to use.
Data / Memory size	Max. packet size	100 M	Max packetlength to send/receive from to server.
Data / Memory size	Net buffer length	16	Buffer length for TCP/IP and socket communication.
Timeout Settings	Connection timeout	0	The number of seconds the mysqld server is waiting for a connect packet before responding with 'Bad handshake'
Timeout Settings	Interactive timeout	28800	The number of seconds the server waits for activity on an interactive connection before closing it.
Timeout Settings	Read timeout	30	Number of seconds to wait for more data from a connection before aborting the read
Timeout Settings	Write timeout	60	Number of seconds to wait for a block to be written to a connection before aborting the writ
Timeout Settings	Wait timeout	28800	The number of seconds the server waits for activity on a connection before closing it
Advanced	Max Conn Errors	10	If there is more than this number of interrupted connections from a host this host will be blocked from further connections.



Don't forget to check the character-set-server and collation-server settings under the Misc tab.



Check User accounts. Assuming you have created a user 'dts' make sure you can access it from any host. If the hostname is "%", you should have remote access through port 3306 from anywhere.

The screenshot displays the MySQL Workbench interface. At the top, the title bar reads "MySQL Workbench" and the menu bar includes "File", "Edit", "View", "Database", "Plugins", "Scripting", "Community", and "Help". Below the menu bar, there are two tabs: "Admin (mysqld@localhost)" and "Admin (mysqld@172.26.1.160)".

The main area is divided into several sections:

- Server Status:** This section contains three main panels:
  - INFO:** Displays server details: Name: **mysqld@172.26.1.160**, Host: **172.26.1.160**, Server: **5.1.47-community**, Status: **Running**.
  - SYSTEM:** Shows system metrics: Load: 0.03, Mem: 96%.
  - SERVER HEALTH:** Shows server health metrics: Connection Usage: 3, Traffic: 7.57 KB/s, Query Cache Hitrate: 0.00%, Key Efficiency: 100.00%.
- Configuration:** A row of icons for various configuration tasks: Startup (Start/Stop Server), Configuration (Edit Configuration File), Accounts (Manage Users), Connections (Edit Connection List), Variables (Status and Server Vars), Data Dump (Export / Import Data), and Logs (Server Log Files).
- Server Access Management:** This section is currently active and shows "Schema Privileges" as a sub-tab. It contains a "User Accounts" table and a "Select an Account to Edit" form.

The "User Accounts" table is as follows:

User	From Host
dts	%
root	%

The "Select an Account to Edit" form has three tabs: "Login", "Administrative Roles", and "Account Limits". The "Login" tab is selected and contains the following fields and instructions:

- Login Name:**  You may create multiple accounts with the same name to connect from different hosts.
- Password:**  Type a password to reset it.
- Confirm Password:**  Enter password again to confirm.
- Limit Connectivity to Hosts Matching:**  % and \_ wildcards may be used

At the bottom of the "Server Access Management" section, there are buttons for "Add Account", "Remove", "Revoke All Privileges", "Revert", and "Apply".

The status bar at the bottom left shows "WB Admin Opened" and the bottom right shows window control icons.

You can now finish the configuration just like on Windows by creating new connections for root and dts accounts.

