

XCAT 2.x MySQL Setup

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1.0 Switch to the MySQL database on the Management Node

The xCAT support for Service Nodes requires a database with remote access capabilities. The MySQL database is provided for this purpose. You must be running the xCAT 2.1 or later code to use MySQL.

1.1 Install MySQL

On AIX:

The xCAT RPM called `xcat-mysql-5.1-1` is provided as a convenience to help simplify the installation of MySQL on an AIX system. This RPM includes version 5.1.26 of MySQL, (`mysql-5.1.26-rc-aix5.3-powerpc.tar.gz`) which is available from <http://dev.mysql.com/downloads/mysql/5.1.html#aix>.

You will also need to install `perl-DBD-mysql`.

Both of these packages are included in the `xcat-deps.tar.gz` file that was downloaded when setting up the xCAT management node.

To install the packages use the following commands:

```
rpm -i xcat-mysql-5.1-1.aix5.3.ppc.rpm  
rpm -i perl-DBD-mysql-4.007-1.aix5.3.ppc.rpm
```

The `xcat-mysql` post processing will automatically unwrap MySQL in the `/usr/local` directory and will create a link for `/usr/local/mysql`. I will also update the `PATH` environment variable in the `/etc/profile` file.

On Linux:

MySQL comes as part of the OS. Insure that the following rpms are installed on your Management Node:

```
perl-DBD-MySQL*
mysql-server-5.*
mysql-5.*
mysql-devel-5.*
mysql-bench-5.*
mysql-5.*
mysql-connector-odbc-*
mysql-devel-5.*
```

1.2 Configure MySQL

To set up the MySQL database on the Management Node follow these steps. (See <http://dev.mysql.com/doc/refman/5.1/en/installing-binary.html> for additional details.)

This example assumes:

- mn20: hostname of management node
- xcatdb: database name
- mysql: database role (aka user)
- xcatadmin database user id used by xCAT for access
- xcat201: database password for xcatadmin

Substitute your addresses and desired database administration, password and database name as appropriate.

On AIX: The example assumes that **mysql** it was installed in */usr/local* and *commands and the database is under /usr/local/mysql* directory.

On Linux: mysql is already installed in */usr/bin* and the database is in */var/lib/mysql* (tested on Redhat).

Set your paths accordingly.

1. For AIX, add a login user and group for **mysqld** (this is probably already there on Linux):

```
add the group mysql
add the user mysql
```

2. On AIX, Update permissions on installed mysql

```
cd /usr/local/mysql
chown -R mysql .
chgrp -R mysql .
```

3. Create the MySQL data directory and initialize the grant tables:
On AIX: /usr/local/mysql/scripts/mysql_install_db --user=mysql
On Linux: /usr/bin/mysql_install_db --user=mysql

4. Edit Server config file to run in ANSI-QUOTES mode (required)
On AIX:
cp /usr/local/mysql/support-files/my-large.cnf /etc/my.cnf

On Linux and AIX: edit /etc/my.cnf .

under the # The MySQL server [mysqld] section

*add the following line: *sql_mode = ANSI_QUOTES**

5. *On AIX:*Update permissions for root to own database
cd /usr/local/mysql
chown -R root .
chown -R mysql data

6. Start the MySQL server (running as root must use the --user option):

On AIX:
/usr/local/mysql/bin/mysqld_safe --user=mysql &
On Linux:
/usr/bin/mysqld_safe --user=mysql & or
service mysqld start

Note: if you get errors such as :

/usr/local/mysql/bin/mysqld: Out of memory (Needed 219486208 bytes)
/usr/local/mysql/bin/mysqld: Out of memory (Needed 164613120 bytes)
/usr/local/mysql/bin/mysqld: Out of memory (Needed 123457536 bytes)
/usr/local/mysql/bin/mysqld: Out of memory (Needed 92593152 bytes)

Run the command ulimit -a and check the setting for memory:

```
ulimit -a
time(seconds) unlimited
file(blocks) 2097151
data(kbytes) 131072
stack(kbytes) 32768
memory(kbytes) 32768
coredump(blocks) 2097151
nofiles(descriptors) 2000
threads(per process) unlimited
```

Change the ulimit memory setting to unlimited.

7. Setup MySQL to make sure it is started automatically on reboot of the Management Node
On AIX:
In the `/etc/inittab`, add the following line and make sure it is started before the restart of `xcatd`.

```
mysql:2:once:/usr/local/mysql/bin/mysqld_safe --user=mysql &
```

On Linux:

```
chkconfig mysqld on
```

8. Change Admin password
ON AIX:
`/usr/local/mysql/bin/mysqladmin -u root password 'new-password'`
On Linux:
`/usr/bin/mysqladmin -u root password 'new-password'`

9. If command fails,
On AIX: check the `/usr/local/mysql/data/mn20.err` file.
On Linux: check `/var/log/mysqld.log`

10. To stop MySQL server run the following command:

```
On AIX: /usr/local/mysql/bin/mysqladmin -u root -p shutdown
```

```
On Linux: /usr/bin/mysqladmin -u root -p shutdown  
or service mysqld stop
```

11. Create the `xcatdb` database.
On AIX: /usr/local/mysql/bin/mysql -u root -p
On Linux: /usr/bin/mysql -u root -p
Enter password:
mysql > CREATE DATABASE xcatdb;

12. Create the xcat admin id with password xcat201 and set permissions.

On AIX: `/usr/local/mysql/bin/mysql -u root -p`

On Linux: `/usr/bin/mysql -u root -p`

Enter password:

```
mysql > CREATE USER xcatadmin IDENTIFIED BY 'xcat201';
```

```
mysql > GRANT ALL on xcatdb.* TO 'xcatadmin'@'mn20'  
IDENTIFIED BY 'xcat201';
```

```
mysql > GRANT ALL on xcatdb.* to 'xcatadmin'@'<servicenode  
ip(s)>' IDENTIFIED BY 'xcat201';
```

Substitute your own admin id name and password and management node and service node ip address or name.

13. Check the user table.

```
mysql > SELECT host, user FROM mysql.user;
```

14. Check the defined databases.

```
mysql > SHOW DATABASES;
```

15. To run commands against the *xcatdb* database you can enter MySQL commands as follows:

```
mysql > use xcatdb;
```

```
mysql > SHOW TABLES;
```

```
mysql > DESCRIBE <table name>;
```

To exit:

```
mysql > quit;
```

1.3 Migrate xCAT data to MySQL

1. Back up your xCAT data. (This is required even if you have not added anything to your xCAT database yet. Required default entries were created when the xCAT RPMs were installed on the management node and they must be migrated to the new MySQL database.)

```
mkdir -p ~/xcat-dbback
```

```
dumpxCATdb -p ~/xcat-dbback
```

2. `/etc/xcat/cfgloc` should contain the following line, substituting your specific info. This points the xCAT database access code to the new database.

```
mysql:dbname=xcatdb;host=mn20\xcatadmin\xcat201
```

Note: may need to use long hostname or ip address

```
mysql:dbname=xcatdb;host=mn20.cluster.net\xcatadmin\xcat201
```

3. Restore your database to MySQL (bypass mode runs the command without xcatd):

```
XCATBYPASS=1 restorexCATdb -p ~/xcat-dbback
```

4. Start the xcatd daemon using the MySQL database

On AIX: `xcatstart`

On Linux: `service xcatd restart`

1.4 Hierarchy

If running xCAT with Service Nodes, hierarchical mode, you will also have to install MySQL on the Service Nodes.

For AIX, read the [xCAT2onAIXServiceNodes](#) document.

For Linux, read the [xCAT2 Advanced Cookbook](#), section on Postgresql and just substitute MySQL as your database.

1.5 Add ODBC support

1. Install ODBC package and MySQL connector.

On AIX:

You'll need `unixODBC` and `mysql-connector-odbc` packages. Both of them are included in the `xcat-deps.tar.gz` file that was downloaded when setting up the xCAT management node.

To install the packages use the following commands:

```
rpm -i mysql-connector-odbc-*
```

```
rpm -i unixODBC-*
```

On Linux:

These packages comes as part of the OS. Please make sure the following packages are installed on your management node. Please refer to chapter 2.2.18 of the [xCAT Top Doc](#) for how to get packages from the distro.

For RedHat and Fedora:

```
unixODBC-*
```

```
mysql-connector-odbc-*
```

For SLES:

```
unixODBC-*  
mysql-client-*  
libmysqlclient*  
MyODBC-unixODBC-*
```

Please note that MyODBC-unixODBC rpm can be found in SDK CD 1 for SLES 11.

2. Configure ODBC

You need to make changes to *odbc.ini* and *odbcinst.ini* files so that ODBC works with xCAT database. These files come with unixODBC package and are located under /etc directory. (On SLES they are located under /etc/unixODBC directory).

First find the ODBC driver. For AIX, RH and Fedora:

```
rpm -ql mysql-connector-odbc
```

For SLES:

```
rpm -ql MyODBC-unixODBC
```

It will list the file names come for the MySQL connector. Pick the one that is called libmyodbc#.so as the driver and put it into odbcinst.ini file.

```
vi odbcinst.ini  
[MySQL]  
Description = ODBC for MySQL  
Driver      = /usr/lib64/libmyodbc3.so
```

Next, configure the DSN for ODBC:

```
vi odbc.ini  
[xCATDB]  
Driver      = MySQL  
SERVER     = mn20  
PORT       = 3306  
DATABASE   = xcatdb
```

3. Test ODBC

```
isql xCATDB xcatadmin xcat201
```

where *xcatadmin* is the admin user id for *xcatdb* database and *xcat201* is it's password. The user id and password can be found in /etc/xcat/cfgloc file.