README

MySQL Database Server Installation Guide for SAS® Financial Management 5.3 SAS® Human Capital Management 5.21 and SAS® Strategy Management 5.3

MySQL Database Server 5.1.55 Enterprise Edition Installation on Windows

MySQL can be found in your SAS Software Depot or media. For instance, a typical path would be `C:\SASSoftwareDepot\third_party\MySQL_Database_Server\5_1`

MySQL must be installed into a path with no spaces such as `C:\mysql`. Use the following instructions to install MySQL server.

1. Double-click on `mysql-enterprise-5.1.55-winx64.msi`. Using the instructions, make the appropriate selections and entries in each dialog and select **Next.**
2. Accept the license agreement.
3. Choose **Custom** install.
4. Change the default installation location. Press **Change…**
    A. Type in `C:\mysql` or the path to your installation in the bottom text box.
    B. Select **OK.**

    Note: *The path to MySQL Database Server should not contain spaces.*
5. Press **Install**.

It is not necessary to subscribe to any MySQL-related services described in the next few dialogs for this installation of MySQL.

6. Leave the "Configure the MySQL Server now" checkbox checked. Press **Finish**.
7. In the MySQL Server Instance Configuration Wizard, make the following selections:
    A. Detailed Configuration
    B. **Server Machine**
    C. **Transactional Database Only**
    D. Use Defaults for **InnoDB Tablespace Setting**.
    E. Set the approximate number of concurrent connections to **Manual Setting:**
    Set **Concurrent Connections** to `300`.
    F. Keep Defaults for **Enable TCP/IP Networking** and **Enable Strict Mode.**
    G. **Best Support of Multilingualism**

H. Install as a Windows Service.
   Check **Include Bin Directory in Windows PATH**. Leave **Launch the MySQL Server automatically** checked.
   Note: *Do not change the name of the service from "MySQL."*
I. Enter `root` for the password.
   Check **Enable root access from remote machines**.
   Note: *The SAS Software configuration will remove the MySQL root user account.*
J. Select **Execute**.
K. Select **Finish**.

MySQL Post-Installation Steps

1. To secure your database, grant full control to <*InstallDrive*>`:/mysql` and its subdirectories to Administrators only.
2. Grant **READ, EXECUTE** and **MODIFY** access to the "Everyone" group for the <*InstallDrive*>`:\mysql\bin`. After you finish the installation and configuration of SAS products, you will restrict the permissions. Make sure these permissions are inherited by the subdirectories and files.

MySQL Connector/J Jar

The Connector/J Jar can be found in your SAS Software Depot or media. If your SAS Software Depot is in the default location, then the `mysql-connector-java-commercial-5.1.13-bin.jar` file is located here:

```
C:\SASSoftwareDepot\third_party\MySQL_Connector_J\5_1\Portable_Entities
```

Place this jar in a known location. During the SAS Software Deployment Wizard, you will be prompted for the location of this jar. The default location is:

```
C:\Program Files\SAS\MySQLConnectorJ
```

Connector/J jar file is needed on **both** the data tier and the mid-tier server in a 3-tier install.

Make a note of the location of the file in the pre-installation checklist because the SAS Software Deployment Wizard will prompt for the location.

Note: *Remove any other Connector/J jars from this directory.*

MySQL Database Runtime Library

The MySQL Database Runtime Library can be found in your SAS Software Depot or media. Select the correct version for your operating system from Windows or Windows for x64. If your SAS Software Depot is in the default location, then the jar is located here:

```
C:\SASSoftwareDepot\third_party\MySQL_Database_Runtime_Library\5_1
```

If MySQL is on the same tier as SAS Foundation, the `libmysql.dll` file will be found in the `bin` directory of the MySQL Database Server installation, such as `C:\mysql\bin` and no further action is required for the MySQL Database Runtime Library.

If MySQL is **NOT** on the same tier as SAS Foundation, copy the `libmysql.dll` file from the SAS Software Depot to a folder that is in the system path. An example folder is the `system32` folder under the system directory. Grant **READ, EXECUTE** and **MODIFY** access privileges the "Everyone" group for the `libmysql.dll` if needed.

Make a note of the location of the file in the *Pre-Installation Checklist* because the SAS Software Deployment Wizard will prompt for the location.

MySQL Workbench

Install MySQL Workbench. This is optional.

The MySQL Workbench contains data modeling and administration tools. The tools can be downloaded from the MySQL website: http://www.mysql.com.

Note: *MySQL Workbench is compatible with MySQL Server 5.0, but not every feature of 5.0 may be supported.*

MySQL Database Server 5.1.55 Enterprise Edition Installation on UNIX

UNIX Hostname

The hostname command should return the fully qualified hostname for your servers. Verify this by issuing the hostname command:

```
% hostname
yourhost.yourdomain.com
```

If your site requires a shortened form of the hostname, then be sure to consistently use that name throughout your configuration steps.

MySQL Database Server 5.1.55 Enterprise Edition Installation

MySQL can be found in your SAS Software Depot or media. For instance, a typical path would be:

```
/usr/local/SASSoftwareDepot/third_party/MySQL_Database_Server/5_1
```

Select the appropriate version depending on your operating system. MySQL must be installed into a path with no spaces such as `/usr/local/mysql`.

Use the following instructions to install MySQL server on your single server or data tier server.

1. Change directory to the location where you want to install. In these instructions, `/usr/local` will be used as the default but the location can be any directory. You must have permission to create files and directories in this location. Change directories to the installation location:

   ```
   shell> cd /usr/local
   ```

2. As the SAS Install user, unzip the installation archive to create the installation directory. Use the –p flag on tar to preserve the ACLs on the files and directories. Then create a symbolic link to that directory based on the platform:

   #### AIX

   ```
   shell> gunzip < /path-to-depot/third_party/MySQL_Database_Server/5_1/64-
   bit_Enabled_AIX/mysql-enterprise-5.1.55-aix5.3-powerpc-64bit.tar.gz | tar xvpf
   -
   shell> ln -s /usr/local/mysql-enterprise-5.1.55-aix5.3-powerpc-64bit mysql
   ```

Solaris Sparc

```
shell> gunzip < /path-to-depot/third party/MySQL_Database_Server/5_1/64-
bit_Enabled_Solaris/mysql-enterprise-5.1.55-solaris10-sparc-64bit.tar.gz |
tar xvpf -
shell> ln -s /usr/local/mysql-enterprise-5.1.55-solaris10-sparc-64bit mysql
```

Linux

```
shell> gunzip < /path-to-depot/third_party/MySQL_Database_Server/5_1_55/64-
bit_Enabled_Linux/mysql-enterprise-5.1.55-1-rhel5-x86_64.tar.gz | tar xvpf -
shell> ln -s /usr/local/mysql-enterprise-5.1.55-rhel5.x86_64bit mysql
```

3. Create the MySQL grant tables where `installdir` is the path to the installation location such as `/usr/local/mysql`:

```
shell> cd mysql
shell> scripts/mysql_install_db --basedir=<installdir>
--datadir=<installdir>/data
```

4. Verify that the SAS Install user has permission to allocate enough memory with the `ulimit` command:

AIX

Edit the `/etc/security/limits` file to update if necessary. The soft data segment size in blocks may need to be increased for the install user. Re-login or get a new shell for these settings to take effect.

Solaris

Use the `limit` or `ulimit` command as the root user to increase the hard limit.

5. To start the MySQL server, use the following command:

```
shell> bin/mysqld --basedir=<installdir> --datadir=<installdir>/data &
```

If that command fails immediately and prints `mysqld ended`, you can find some information in the *host_name*.err file in the data directory.

6. If you want MySQL to start automatically when you boot your machine, you can copy `support-files/mysql.server` to the location where your system has its startup files. More information can be found in the `support-files/mysql.server` script itself. Be sure to run `mysql.server` as the SAS Install user and with the arguments above.

7. Grant access by root user. More restrictive permissions will be set later in the install process:

```
shell> bin/mysql --user=root
mysql> GRANT ALL PRIVILEGES ON *.* TO root@'%' IDENTIFIED BY 'root'
WITH GRANT OPTION;
mysql> GRANT ALL PRIVILEGES ON *.* TO root@'localhost' IDENTIFIED BY
'root' WITH GRANT OPTION;
mysql> GRANT ALL PRIVILEGES ON *.* TO root@'myhost.mydomain.com'
IDENTIFIED BY 'root' WITH GRANT OPTION;
mysql> GRANT ALL PRIVILEGES ON *.* TO root@'myhost' IDENTIFIED BY
'root' WITH GRANT OPTION;
mysql> quit
```

Note: *The SAS Software configuration will remove the MySQL root user account.*

8. You can verify that MySQL is started with the following command.

```
shell> bin/mysqladmin --user=root --password=root status
Uptime: 81160 Threads: 1 Questions: 1 Slow queries: 0 Opens: 11
Flush tables: 1 Open tables: 5 Queries per second avg: 0.000
```

MySQL Post-Installation Steps

1. Before continuing, stop MySQL:

```
shell> bin/mysqladmin --user=root --password=root shutdown
```

Note: *Do not restart the MySQL Server before the SAS system in configured.*

2. Remove the default INNODB database and logfiles:

```
shell> rm data/ib*
```

3. SAS Access to MySQL requires a shared object library be linked. Create a directory to hold that library and note the location. Make this directory writeable by the SAS Install User.

```
shell> mkdir /usr/local/SAS/libmysql
shell> chown sas /usr/local/SAS/libmysql
shell> chgrp sas /usr/local/SAS/libmysql
```

4. On AIX only, SAS Access to MySQL requires that `/usr/lib/libm.a` is installed to link the shared object library. This is in an optional file set install on AIX. Verify that `libm.a` has been installed into `/usr/lib`. If you need to install `libm.a`, mount the appropriate AIX media on `/mnt` and perform the following steps. You may get other prerequisite warnings with this fileset which you can ignore if you only need to install `libm.a`.

```
shell> smitty install
       Select "Install software"
       Where to install from: /mnt
       Hit PF4 to list software to install
       Select bos.adt
```

5. Setup environment variables for MySQL in install user's shell. These environment variables must be set in order to link the shared object library during the configuration phase of the installation. One way to accomplish this is to edit the install user's (sas) .profile and insert the following:

```
# MySQL HOME directory
MYSQL_HOME=/usr/local/mysql
export MYSQL_HOME

# Path to the libdir in your mysql install
MYSQL_LIBDIR=$MYSQL_HOME/lib
export MYSQL_LIBDIR

# Path to directory to hold shared library for SAS Access to MySQL
# Not needed on Linux
MYSQL_CLIENT_DIR=/usr/local/SAS/libmysql
export MYSQL_CLIENT_DIR

# Set or add to the shared library load path
```

```
# AIX:
LIBPATH=/usr/lib/:/lib:$MYSQL_LIBDIR:$MYSQL_CLIENT_DIR
export LIBPATH

# SOLARIS Sparc
LD_LIBRARY_PATH=/usr/lib/sparcv9:/usr/ucblib/sparcv9:$MYSQL_LIBDIR:$
MYSQL_CLIENT_DIR
export LD_LIBRARY_PATH

# Linux for X64
LD_LIBRARY_PATH=$MYSQL_LIBDIR:$LD_LIBRARY_PATH
export LD_LIBRARY_PATH

# Add mysql/bin to the PATH environment variable
PATH=$PATH:$MYSQL_HOME/bin
export PATH
```

Note: *Verify that link-editor for object files, `ld` is in your path. On Solaris, `ld` can be found in `/usr/ucb`. On Solaris, you will be prompted for the LD_LIBRARY_PATH in the SAS Software Deployment Wizard.*

Note: *A link is not required for Linux because it supports the MySQL dynamic library.*

MySQL Connector/J Jar

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Entities
```

Place this jar in a known location. During the SAS Software Deployment Wizard, you will be prompted for the location of this jar. The default location is:

```
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