MySQL and Solaris

Abstract

This is the MySQL Solaris extract from the MySQL 5.7 Reference Manual.

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For help with using MySQL, please visit the MySQL Forums, where you can discuss your issues with other MySQL users.

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Chapter 1 Installing MySQL on Unix/Linux Using Generic Binaries

Oracle provides a set of binary distributions of MySQL. These include generic binary distributions in the form of compressed `tar` files (files with a `.tar.gz` extension) for a number of platforms, and binaries in platform-specific package formats for selected platforms.

This section covers the installation of MySQL from a compressed `tar` file binary distribution on Unix/Linux platforms. For Linux-generic binary distribution installation instructions with a focus on MySQL security features, refer to the Secure Deployment Guide. For other platform-specific binary package formats, see the other platform-specific sections in this manual. For example, for Windows distributions, see Installing MySQL on Microsoft Windows. See How to Get MySQL on how to obtain MySQL in different distribution formats.

MySQL compressed `tar` file binary distributions have names of the form `mysql-`*`VERSION`*`-`*`OS`*`.tar.gz`, where *`VERSION`* is a number (for example, `5.7.44`), and *`OS`* indicates the type of operating system for which the distribution is intended (for example, `pc-linux-i686` or `winx64`).

Warnings

- If you have previously installed MySQL using your operating system native package management system, such as Yum or APT, you may experience problems installing using a native binary. Make sure your previous MySQL installation has been removed entirely (using your package management system), and that any additional files, such as old versions of your data files, have also been removed. You should also check for configuration files such as `/etc/my.cnf` or the `/etc/mysql` directory and delete them.

  For information about replacing third-party packages with official MySQL packages, see the related APT guide or Yum guide.

- MySQL has a dependency on the `libaio` library. Data directory initialization and subsequent server startup steps fail if this library is not installed locally. If necessary, install it using the appropriate package manager. For example, on Yum-based systems:

  ```
  $> yum search libaio  # search for info
  $> yum install libaio # install library
  ```

  Or, on APT-based systems:

  ```
  $> apt-cache search libaio # search for info
  $> apt-get install libaio1 # install library
  ```

- *For MySQL 5.7.19 and later:* Support for Non-Uniform Memory Access (NUMA) has been added to the generic Linux build, which has a dependency now on the `libnuma` library; if the library has not been installed on your system, use you system's package manager to search for and install it (see the preceding item for some sample commands).

- **SLES 11**: As of MySQL 5.7.19, the Linux Generic tarball package format is EL6 instead of EL5. As a side effect, the MySQL client `bin/mysql` needs `libtinfo.so.5`.

  A workaround is to create a symlink, such as `ln -s libncurses.so.5.6 /lib64/libtinfo.so.5` on 64-bit systems or `ln -s libncurses.so.5.6 /lib/libtinfo.so.5` on 32-bit systems.

To install a compressed `tar` file binary distribution, unpack it at the installation location you choose (typically `/usr/local/mysql`). This creates the directories shown in the following table.

Table 1.1 MySQL Installation Layout for Generic Unix/Linux Binary Package

Directory	Contents of Directory
`bin`	`mysqld` server, client and utility programs
`docs`	MySQL manual in Info format
`man`	Unix manual pages
`include`	Include (header) files
`lib`	Libraries
`share`	Error messages, dictionary, and SQL for database installation
`support-files`	Miscellaneous support files

Debug versions of the `mysqld` binary are available as `mysqld-debug`. To compile your own debug version of MySQL from a source distribution, use the appropriate configuration options to enable debugging support. See Installing MySQL from Source.

To install and use a MySQL binary distribution, the command sequence looks like this:

```
$> groupadd mysql
$> useradd -r -g mysql -s /bin/false mysql
$> cd /usr/local
$> tar zxvf /path/to/mysql-VERSION-OS.tar.gz
$> ln -s full-path-to-mysql-VERSION-OS mysql
$> cd mysql
$> mkdir mysql-files
$> chown mysql:mysql mysql-files
$> chmod 750 mysql-files
$> bin/mysqld --initialize --user=mysql
$> bin/mysql_ssl_rsa_setup
$> bin/mysqld_safe --user=mysql &
# Next command is optional
$> cp support-files/mysql.server /etc/init.d/mysql.server
```

> **Note**
>
> This procedure assumes that you have `root` (administrator) access to your system. Alternatively, you can prefix each command using the `sudo` (Linux) or `pfexec` (Solaris) command.

The `mysql-files` directory provides a convenient location to use as the value for the `secure_file_priv` system variable, which limits import and export operations to a specific directory. See Server System Variables.

A more detailed version of the preceding description for installing a binary distribution follows.

Create a mysql User and Group

If your system does not already have a user and group to use for running `mysqld`, you may need to create them. The following commands add the `mysql` group and the `mysql` user. You might want to call the user and group something else instead of `mysql`. If so, substitute the appropriate name in the following instructions. The syntax for `useradd` and `groupadd` may differ slightly on different versions of Unix/Linux, or they may have different names such as `adduser` and `addgroup`.

```
$> groupadd mysql
$> useradd -r -g mysql -s /bin/false mysql
```

> **Note**
>
> Because the user is required only for ownership purposes, not login purposes, the `useradd` command uses the `-r` and `-s /bin/false` options to create a user that does not have login permissions to your server host. Omit these options if your `useradd` does not support them.

Obtain and Unpack the Distribution

Pick the directory under which you want to unpack the distribution and change location into it. The example here unpacks the distribution under `/usr/local`. The instructions, therefore, assume that you have permission to create files and directories in `/usr/local`. If that directory is protected, you must perform the installation as `root`.

```
$> cd /usr/local
```

Obtain a distribution file using the instructions in How to Get MySQL. For a given release, binary distributions for all platforms are built from the same MySQL source distribution.

Unpack the distribution, which creates the installation directory. `tar` can uncompress and unpack the distribution if it has `z` option support:

```
$> tar zxvf /path/to/mysql-VERSION-OS.tar.gz
```

The `tar` command creates a directory named `mysql-VERSION-OS`.

To install MySQL from a compressed `tar` file binary distribution, your system must have GNU `gunzip` to uncompress the distribution and a reasonable `tar` to unpack it. If your `tar` program supports the `z` option, it can both uncompress and unpack the file.

GNU `tar` is known to work. The standard `tar` provided with some operating systems is not able to unpack the long file names in the MySQL distribution. You should download and install GNU `tar`, or if available, use a preinstalled version of GNU tar. Usually this is available as `gnutar`, `gtar`, or as `tar` within a GNU or Free Software directory, such as `/usr/sfw/bin` or `/usr/local/bin`. GNU `tar` is available from http://www.gnu.org/software/tar/.

If your `tar` does not have `z` option support, use `gunzip` to unpack the distribution and `tar` to unpack it. Replace the preceding `tar` command with the following alternative command to uncompress and extract the distribution:

```
$> gunzip < /path/to/mysql-VERSION-OS.tar.gz | tar xvf -
```

Next, create a symbolic link to the installation directory created by `tar`:

```
$> ln -s full-path-to-mysql-VERSION-OS mysql
```

The `ln` command makes a symbolic link to the installation directory. This enables you to refer more easily to it as `/usr/local/mysql`. To avoid having to type the path name of client programs always when you are working with MySQL, you can add the `/usr/local/mysql/bin` directory to your `PATH` variable:

```
$> export PATH=$PATH:/usr/local/mysql/bin
```

Perform Postinstallation Setup

The remainder of the installation process involves setting distribution ownership and access permissions, initializing the data directory, starting the MySQL server, and setting up the configuration file. For instructions, see Postinstallation Setup and Testing.

Chapter 2 Installing MySQL on Solaris

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2.1 Installing MySQL on Solaris Using a Solaris PKG 6

> **Note**
>
> MySQL 5.7 supports Solaris 11 (Update 3 and later).

MySQL on Solaris is available in a number of different formats.

- For information on installing using the native Solaris PKG format, see Section 2.1, “Installing MySQL on Solaris Using a Solaris PKG”.
- To use a standard `tar` binary installation, use the notes provided in Chapter 1, *Installing MySQL on Unix/Linux Using Generic Binaries*. Check the notes and hints at the end of this section for Solaris specific notes that you may need before or after installation.

  > **Important**
  >
  > The installation packages have a dependency on the Oracle Developer Studio 12.5 Runtime Libraries, which must be installed before you run the MySQL installation package. See the download options for Oracle Developer Studio here. The installation package enables you to install the runtime libraries only instead of the full Oracle Developer Studio; see instructions in Installing Only the Runtime Libraries on Oracle Solaris 11.

To obtain a binary MySQL distribution for Solaris in tarball or PKG format, https://dev.mysql.com/downloads/mysql/5.7.html.

Additional notes to be aware of when installing and using MySQL on Solaris:

- If you want to use MySQL with the `mysql` user and group, use the `groupadd` and `useradd` commands:

  ```
  groupadd mysql
  useradd -g mysql -s /bin/false mysql
  ```

- If you install MySQL using a binary tarball distribution on Solaris, because the Solaris `tar` cannot handle long file names, use GNU `tar` (`gtar`) to unpack the distribution. If you do not have GNU `tar` on your system, install it with the following command:

  ```
  pkg install archiver/gnu-tar
  ```

- You should mount any file systems on which you intend to store `InnoDB` files with the `forcedirectio` option. (By default mounting is done without this option.) Failing to do so causes a significant drop in performance when using the `InnoDB` storage engine on this platform.
- If you would like MySQL to start automatically, you can copy `support-files/mysql.server` to `/etc/init.d` and create a symbolic link to it named `/etc/rc3.d/S99mysql.server`.
- If too many processes try to connect very rapidly to `mysqld`, you should see this error in the MySQL log:

  ```
  Error in accept: Protocol error
  ```

  You might try starting the server with the `--back_log=50` option as a workaround for this.

- To configure the generation of core files on Solaris you should use the `coreadm` command. Because of the security implications of generating a core on a `setuid()` application, by default, Solaris does not support core files on `setuid()` programs. However, you can modify this behavior using `coreadm`. If you enable `setuid()` core files for the current user, they are generated using mode 600, and are owned by the superuser.

2.1 Installing MySQL on Solaris Using a Solaris PKG

You can install MySQL on Solaris using a binary package of the native Solaris PKG format instead of the binary tarball distribution.

> **Important**
>
> The installation package has a dependency on the Oracle Developer Studio 12.5 Runtime Libraries, which must be installed before you run the MySQL installation package. See the download options for Oracle Developer Studio here. The installation package enables you to install the runtime libraries only instead of the full Oracle Developer Studio; see instructions in Installing Only the Runtime Libraries on Oracle Solaris 11.

To use this package, download the corresponding `mysql-VERSION-solaris11-PLATFORM.pkg.gz` file, then uncompress it. For example:

```
$> gunzip mysql-5.7.44-solaris11-x86_64.pkg.gz
```

To install a new package, use `pkgadd` and follow the onscreen prompts. You must have root privileges to perform this operation:

```
$> pkgadd -d mysql-5.7.44-solaris11-x86_64.pkg
The following packages are available:
  1  mysql     MySQL Community Server (GPL)
               (i86pc) 5.7.44
Select package(s) you wish to process (or 'all' to process
all packages). (default: all) [?,??,q]:
```

The PKG installer installs all of the files and tools needed, and then initializes your database if one does not exist. To complete the installation, you should set the root password for MySQL as provided in the instructions at the end of the installation. Alternatively, you can run the `mysql_secure_installation` script that comes with the installation.

By default, the PKG package installs MySQL under the root path `/opt/mysql`. You can change only the installation root path when using `pkgadd`, which can be used to install MySQL in a different Solaris zone. If you need to install in a specific directory, use a binary `tar` file distribution.

The `pkg` installer copies a suitable startup script for MySQL into `/etc/init.d/mysql`. To enable MySQL to startup and shutdown automatically, you should create a link between this file and the init script directories. For example, to ensure safe startup and shutdown of MySQL you could use the following commands to add the right links:

```
$> ln /etc/init.d/mysql /etc/rc3.d/S91mysql
$> ln /etc/init.d/mysql /etc/rc0.d/K02mysql
```

To remove MySQL, the installed package name is `mysql`. You can use this in combination with the `pkgrm` command to remove the installation.

To upgrade when using the Solaris package file format, you must remove the existing installation before installing the updated package. Removal of the package does not delete the existing database information, only the server, binaries and support files. The typical upgrade sequence is therefore:

```
$> mysqladmin shutdown
$> pkgrm mysql
$> pkgadd -d mysql-5.7.44-solaris11-x86_64.pkg
$> mysqld_safe &
```

```
$> mysql_upgrade
```

You should check the notes in Upgrading MySQL before performing any upgrade.