

## MySQL Notifier

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## Abstract

This is the MySQL™ Notifier Reference Manual. It documents the MySQL Notifier 1.1 release series.

**End of Product Lifecycle.** MySQL Notifier is now covered under Oracle Lifetime Sustaining Support. For more information, see <https://www.mysql.com/support/eol-notice.html>.

For notes detailing the changes in each release, see the [MySQL Notifier Release Notes](#).

For legal information, see the [Legal Notices](#).

For help with using MySQL, please visit the [MySQL Forums](#), where you can discuss your issues with other MySQL users.

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# Preface and Legal Notices

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# Chapter 1 MySQL Notifier Overview

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MySQL Notifier is a tool that enables you to monitor and adjust the status of your local and remote MySQL server instances through an indicator that resides in the Microsoft Windows taskbar. MySQL Notifier also gives quick access to MySQL Workbench through its context menu. For convenience, MySQL Notifier can be configured to start automatically each time Microsoft Windows is started.

To install, download and execute the [MySQL Notifier MSI file](#).

For notes detailing the changes in each release of MySQL Notifier, see the [MySQL Notifier Release Notes](#).

Visit the [MySQL Notifier forum](#) for additional MySQL Notifier help and support.

## Features Include:

- Start, stop, and restart instances of the MySQL server.
- Automatically detects (and adds) new MySQL server services. These are listed under **Manage Monitored Items**, and may also be configured.
- The Tray icon changes, depending on the status. It is a right-pointing green triangle if all monitored MySQL server instances are running or a red square if at least one service is stopped. The **Update MySQL Notifier tray icon based on service status** option, which dictates this behavior, is enabled by default for each service.
- Links to other applications like MySQL Workbench, MySQL Installer, and the MySQL Utilities. For example, choosing **Manage Instance** will load the MySQL Workbench Server Administration window for that particular instance.
- If MySQL Workbench is also installed, then the **Manage Instance** and **SQL Editor** options are available for local (but not remote) MySQL instances.
- Monitors both local and remote MySQL instances.

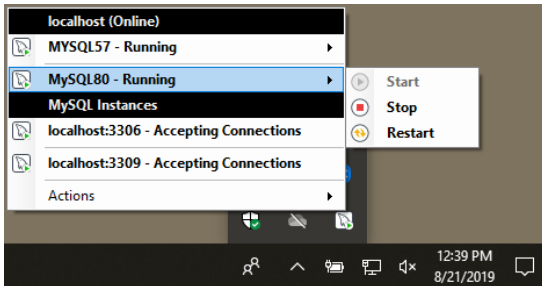
## 1.1 MySQL Notifier Tasks

MySQL Notifier provides visual status information for the MySQL servers that are monitored on both local or remote computers. The MySQL Notifier icon in the taskbar changes color to indicate the current status: Running or Stopped.

MySQL Notifier automatically adds discovered MySQL services on the local computer. By default, the **Automatically add new services whose name contains** option is enabled and set to `mysql`. Related notification options include being notified when new services are either discovered or experience status changes, and are also enabled by default. Uninstalling a service removes the service from MySQL Notifier.

Clicking the MySQL Notifier icon from the Windows taskbar reveals the MySQL Notifier main menu, which lists each MySQL server separately and displays its current status. You can start, stop, or restart each MySQL server from the menu as the following figure shows. When MySQL Workbench is installed locally, the **Manage Instance** and **SQL Editor** menu items start the application.

**Figure 1.1 MySQL Notifier Service Instance Menu**



The **Actions** menu includes the following items:

- **Manage Monitored Items**
- **Launch MySQL Installer** (Only when the product is installed.)
- **Check for Updates** (Only when MySQL Installer is installed.)
- **MySQL Utilities Shell** (Only when the product is installed.)
- **Refresh Status**
- **Options**
- **About**
- **Close MySQL Notifier**

The main menu does not show the **Actions** menu when there are no services being monitored by MySQL Notifier.

## 1.2 MySQL Notifier Options

The **Actions**, **Options** menu provides a set of options that configure MySQL Notifier operations. Options are grouped into the following categories: **General Options**, **Notification Options**, and **MySQL Server Connections Options**.

Click **Accept** to enable the selected options or **Cancel** to ignore all changes. Click **Reset to Defaults** and then **Accept** to apply default option values.

**General Options.** This group includes:

- **Use colorful status icons:** Enables a colorful style of icons for the tray of MySQL Notifier. Selected by default.
- **Run at Windows Startup:** Allows the application to be loaded when Microsoft Windows starts. Deselected by default.
- **Automatically Check For Updates Every # Days:** Checks for a new version of MySQL Notifier, and runs this check every # days (1 to 365). This configurable option is enabled by default.



- **Automatically add new services whose name contains:** The text used to filter services and add them automatically to the monitored list of the local computer running MySQL Notifier and on remote computers already monitoring Windows services. Selected by default for names containing `mysql`.
- **Ping monitored MySQL Server instances every # seconds:** The interval (in seconds) to ping monitored MySQL Server instances for status changes. Longer intervals might be necessary if the list of monitored remote instances is large. 30 seconds by default.

**Notification Options.** This group includes:

- **Notify me when a service is automatically added:** Display a balloon notification from the taskbar when a newly discovered service is added to the monitored services list. Selected by default.
- **Notify me when a service changes status:** Displays a balloon notification from the taskbar when a monitored service changes its status. Selected by default.

**MySQL Server Connections Options.** This group includes:

- **Automatic connections migration delayed until:** When there are connections to migrate to MySQL Workbench (if installed), this option postpones the migration by one hour, one day, one week, one month, or indefinitely.

## 1.3 Managing Monitored Items

**Manage Monitored Items** in the **Actions** menu enables you to add, configure, and delete the services and MySQL instances you intend to monitor. The Manage Items window has two tabs: **Services** and **Instances**. This section describes the following aspects of Managed Items window:

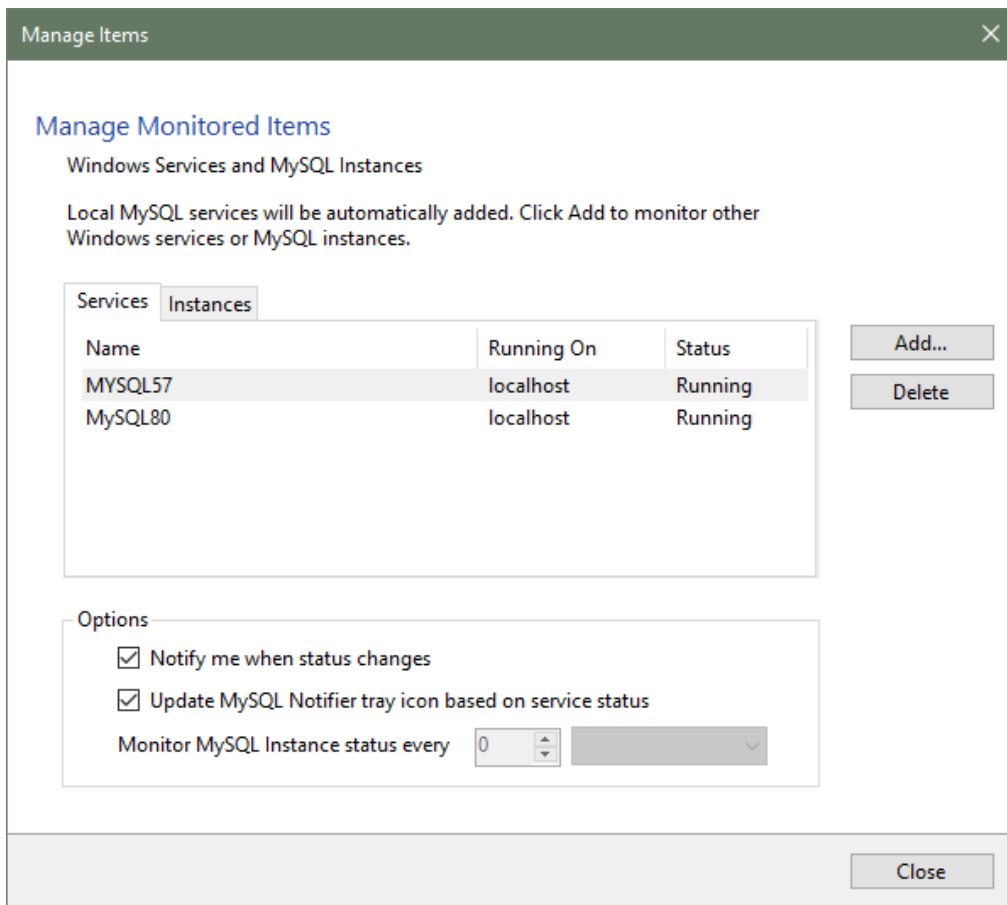
- [Services Tab](#)
- [Instances Tab](#)
- [MySQL Server Connections](#)

### Services Tab

When MySQL is configured as a local service, MySQL Notifier adds the service to the **Services** tab automatically. With the **Services** tab open, you can select the following options that apply to all services being monitored:

- **Notify me when status changes**
- **Update MySQL Notifier tray icon based on service status**

The next figure shows the Monitored Items windows with the **Services** tab open. This tab lists the service name, the computer where the service is hosted, and the current status of each service monitored by MySQL Notifier.

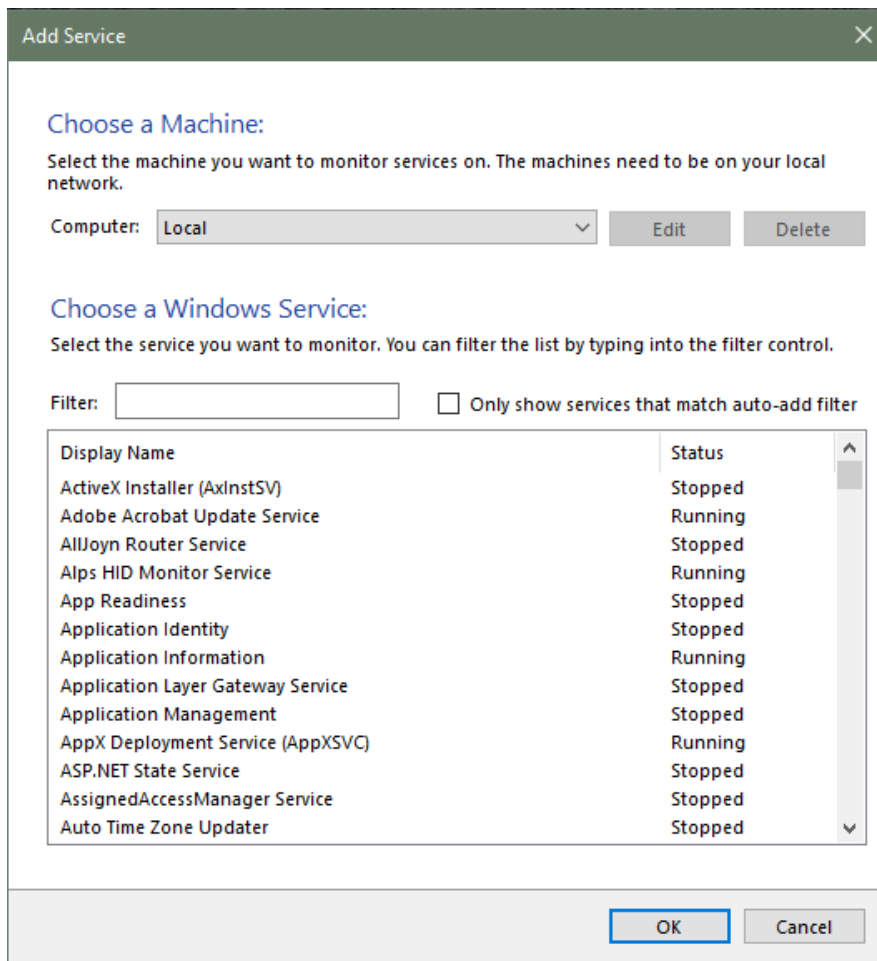
**Figure 1.2 MySQL Notifier: Manage Monitored Services**

To stop monitoring a service, select it from the list of monitored services and click **Delete**.

To begin monitoring a service, click **Add** to open the Add Service window. Select a computer from the drop-down list, locate and select the service to be monitored from the list, and then click **OK**. Use the **Filter** field to reduce the set of services in the list or select **Only show services that match auto-add filter** to reuse the general-options filter from the **Options** menu.

A variety of Windows services (including MySQL) may be selected as the following figure shows. In addition to the service name, the list shows the current status of each Windows services for the selected computer.

Figure 1.3 MySQL Notifier: Add New Services

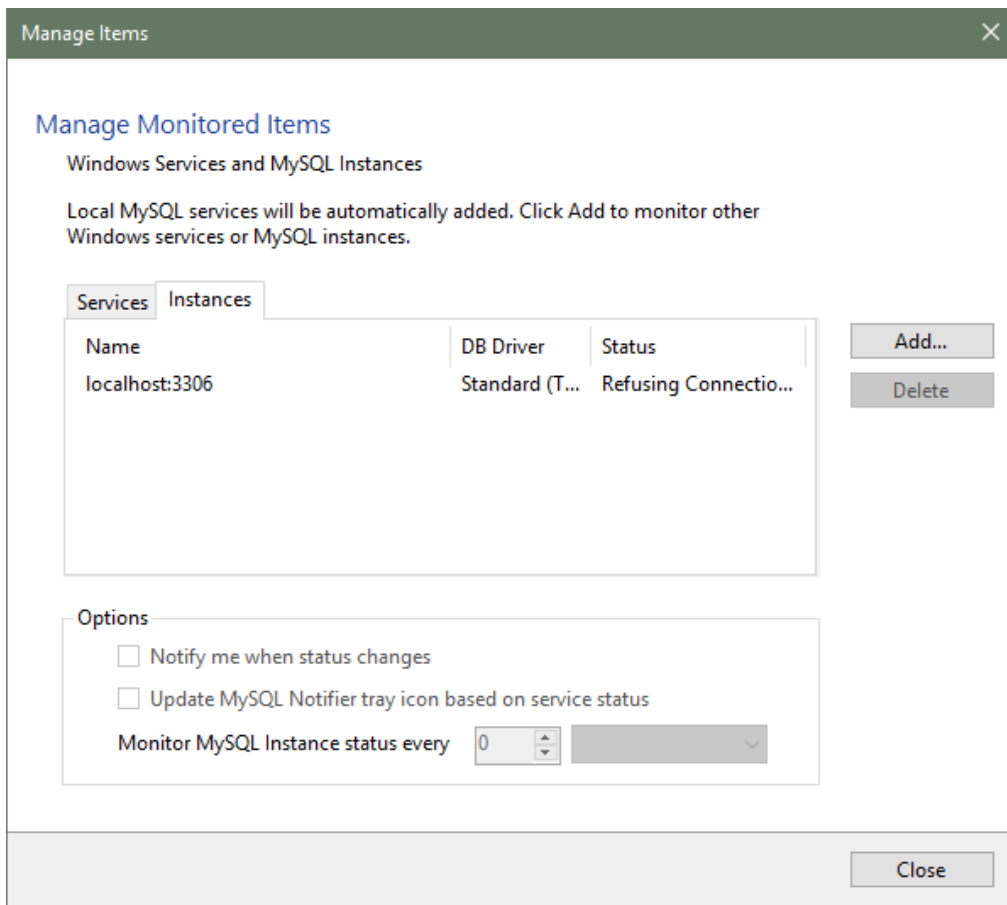


## Instances Tab

When MySQL is configured as a MySQL instance, MySQL Notifier adds the instance to the **Instances** tab automatically. With the **Instances** tab open, you can select the following options that apply to each instance being monitored:

- **Notify me when status changes**
- **Update MySQL Notifier tray icon based on service status**
- **Monitor MySQL Instance status every [ # ] [ seconds | minutes | hours | days ]**

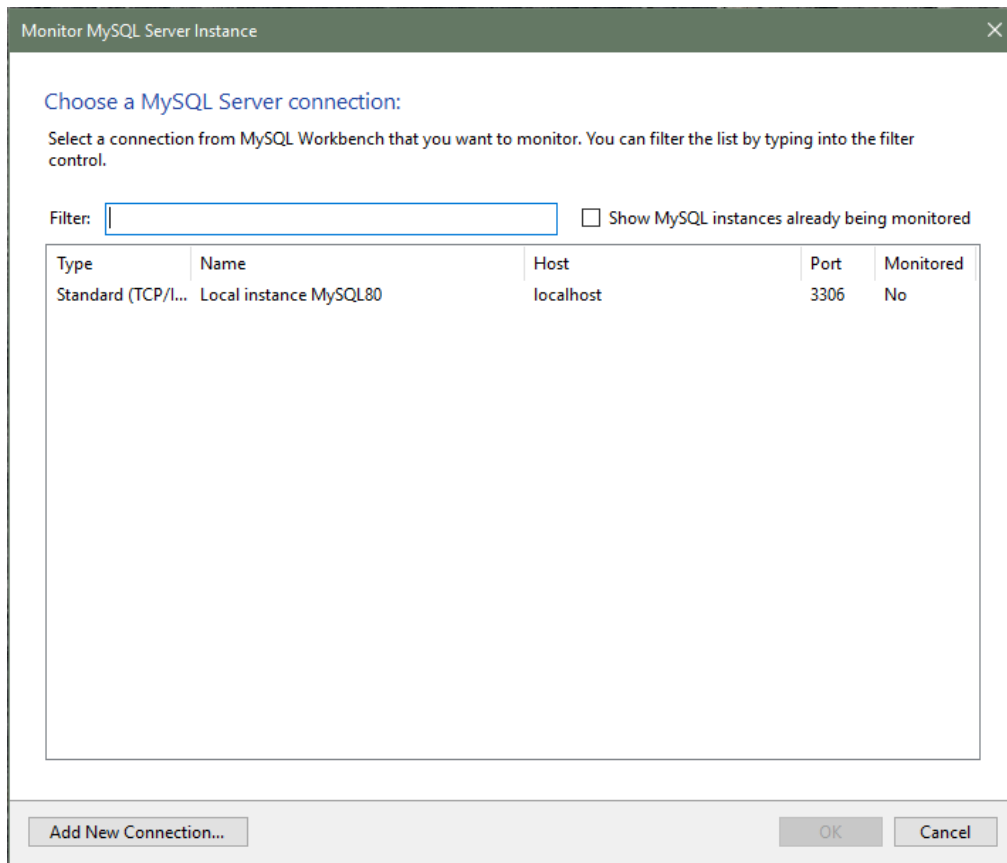
The next figure shows the **Instances** tab open and both options selected. Monitoring the instance status is set to every two minutes in this example. This tab shows the instance name, the database driver, and the current status of the instance.

**Figure 1.4 MySQL Notifier: Manage MySQL Instances**

To stop monitoring an instance, select it from the list of monitored MySQL instances and click **Delete**.

To begin monitoring an instance, click **Add** to open the Monitor MySQL Server Instance window. Use the **Filter** field to reduce the set of instances in the list or select **Show MySQL instances already being monitored** to show monitored items only.

Optionally, you can select a connection from MySQL Workbench to monitor. Click **Add New Connection**, shown in the next figure, to create a new connection.

**Figure 1.5 MySQL Notifier: Adding New Instances**

## MySQL Server Connections

New server connections are configured in the MySQL Server Connection window. Connection names must be unique. An alert icon (!) indicates that an option value is required. The figure that follows shows the MySQL Server Connection window with the **Parameters** tab selected.

**Figure 1.6 MySQL Notifier: MySQL Server Connection**

For each connection, provide the connection details, click **Test Connection** to confirm the MySQL connection is valid, and click **OK** to save the new connection. The type of connection you create can vary depending on the configuration of the server, the client host computer, and the level of security you want. MySQL Notifier supports the following connection types:

**Basic connections.** A basic connection is either unencrypted or encrypted (in MySQL 8.0, SSL is enabled by default) and the connection is made using standard TCP/IP, which is the default connection method in MySQL Notifier to connect to the MySQL RDBMS. Basic connections are easy to configure, particularly if MySQL Notifier and the MySQL server are on the same host computer or operate within the same local area network. To configure a basic connection, set the **Connection Method** option to [TCP/IP \(standard\)](#) and use the **Parameters** tab to configure the connection.

**SSL connections.** Both the MySQL server and the client must be configured to enable SSL encryption (see [Using Encrypted Connections](#)). To configure this type of connection, set the **Connection Method** option to [TCP/IP \(standard\)](#) and use the **Parameters** tab to configure the basic connection. Next, select the **SSL** tab to identify the appropriate files. MySQL Server uses the PEM format for certificates and private keys. In addition to providing the paths to certificate files, you can specify the SSL mode to use for your connection. The following table describes each **Use SSL** option value and indicates which files are required.

**Table 1.1 Use SSL Option Values**

Option value	Description
No	Do not use SSL. No SSL files are required.
If Available	Use SSL if the server supports it, but allow connection in all cases. No SSL files are required; however, providing the SSL CA file is the best practice for connections made to MySQL 8.0 servers.

Option value	Description
<a href="#">Require</a>	Always use SSL and deny a connection if the server does not support SSL. Do not perform server certificate validation. No SSL files are required.
<a href="#">Require and Verify CA</a>	Always use SSL. Validate the certificate authorities (CA), but tolerate a name mismatch. Requires the SSL CA file.
<a href="#">Require and Verify Identity</a>	Always use SSL and fail if the host name is not correct. Requires valid SSL CA, SSL Cert, and SSL Key files.

**SSH connections.** SSH tunnels permit you to connect to a MySQL database from behind a firewall when the MySQL server port is blocked. To configure this type of connection, set the **Connection Method** option to [Standard TCP/IP over SSH](#) and use the **Parameters** tab to configure the connection.

Additional considerations:

- The SSH server communicates with a MySQL server instance in an unencrypted or encrypted mode, based on the value selected for the SSL mode (see [Table 1.1, "Use SSL Option Values"](#)). Select the **SSL** tab to specify a value for the **Use SSL** option.
- The account you use to run MySQL Notifier must be authorized on the SSH server in advance. To authenticate your account (specified by [SSH User Name](#)), you can use one of the following strategies:
  - [SSH User Name](#) and [SSH Password](#) only
  - [SSH User Name](#) and [SSH Key File](#) only

Your SSH server may require that you to also provide the [SSH Passphrase](#) property when using a key file. An invalid pass phrase generates an exception.

- [SSH User Name](#) and [SSH Key File](#) ([SSH Passphrase](#)) and [SSH Password](#)

The combination of user name + key file (passphrase) + password can perform fallback authentication when the key file and pass phrase are valid, but an error occurs on the server. Specifically, the first attempt to connect uses the key file, and if it fails, the next attempt to connect uses the password instead. If the SSH key file is null or empty, but the SSH password is provided, MySQL Notifier attempts to connect using the SSH password only.

## 1.4 Troubleshooting

For issues that are not documented here, visit the [MySQL Notifier Support Forum](#) for MySQL Notifier help and support.

- *Problem:* attempting to start/stop/restart a MySQL service might generate an error similar to "The Service **MySQLVERSION** failed the most recent status change request with the message "The service **mysqlVERSION** was not found in the Windows Services".

*Explanation:* this is a case-sensitivity issue, in that the service name is **MySQLVERSION** compared to having **mysqlVERSION** in the configuration file.

*Solution:* either update your MySQL Notifier configuration file with the correct information, or stop MySQL Notifier and delete this configuration file. The MySQL Notifier configuration file is located at [%APPDATA%\Oracle\MySQL Notifier\settings.config](#) where [%APPDATA%](#) is a variable and depends on your system. A typical location is "C:\Users\YourUsername\AppData\Roaming\Oracle\MySQL Notifier\settings.config" where [YourUsername](#) is your system user name. In this file, and within the ServerList

section, change the ServerName values from lowercase to the actual service names. For example, change **mysql**[VERSION](#) to **MySQL**[VERSION](#), save, and then restart MySQL Notifier. Alternatively, stop MySQL Notifier, delete this file, then restart MySQL Notifier.

- *Problem:* when connecting to a remote computer for the purpose of monitoring a remote Windows service, the Add Service window does not always show all the services shown in the Windows Services console.

*Explanation:* this behavior is governed by the operating system and the outcome is expected when working with nondomain user accounts. For a complete description of the behavior, see the [User Account Control and WMI](#) article from Microsoft.

*Solution:* when the remote computer is in a compatible domain, it is recommended that domain user accounts are used to connect through WMI to a remote computer. For detailed setup instructions using WMI, see [Chapter 2, Setting Up Remote Monitoring in MySQL Notifier](#).

Alternatively, when domain user accounts are not available, Microsoft provides a less secure workaround that should only be implemented with caution. For more information, see the [Description of User Account Control and remote restrictions in Windows Vista](#) KB article from Microsoft.



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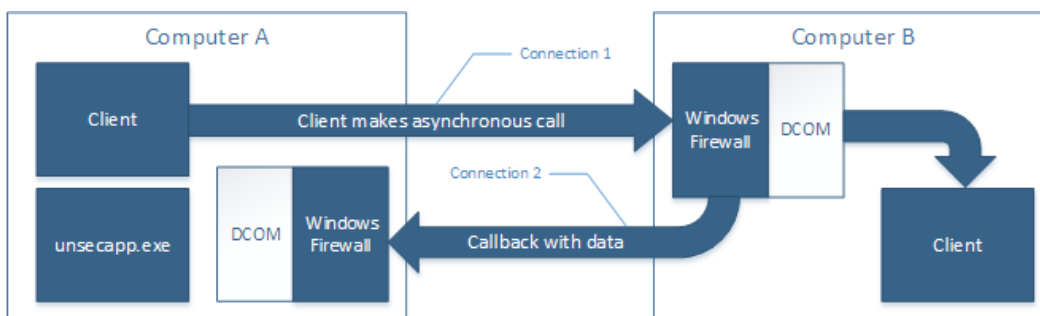
## Chapter 2 Setting Up Remote Monitoring in MySQL Notifier

MySQL Notifier uses Windows Management Instrumentation (WMI) to manage and monitor services on remote computers. This section explains how it works and how to set up your system to monitor remote MySQL instances.

In order to configure WMI, it is important to understand that the underlying Distributed Component Object Model (DCOM) architecture is doing the WMI work. Specifically, MySQL Notifier is using asynchronous notification queries on remote Microsoft Windows hosts as .NET events. These events send an asynchronous callback to the computer running MySQL Notifier so it knows when a service status has changed on the remote computer. Asynchronous notifications offer the best performance compared to semisynchronous notifications or synchronous notifications that use timers.

As the following figure shows, asynchronous notification requires the remote computer to send a callback to the client computer (thus opening a reverse connection), so the Windows Firewall and DCOM settings must be properly configured for the communication to function properly. The client (Computer A), which includes an unsecured application (`unsecapp.exe` in this example), makes an asynchronous call to a remote computer (Computer B) and receives a call back with data.

**Figure 2.1 MySQL Notifier Distributed Component Object Model (DCOM)**



Most of the common errors thrown by asynchronous WMI notifications are related to Windows Firewall blocking the communication, or to DCOM / WMI settings not being set up properly. For a list of common errors with solutions, see [Common Errors](#).

The following steps are required to make WMI function. These steps are divided between two machines. A single host computer that runs MySQL Notifier (Computer A), and multiple remote machines that are being monitored (Computer B).

### Computer running MySQL Notifier (Computer A)

1. Enable remote administration by either editing the **Group Policy Editor**, or using `NETSH`:

Using the **Group Policy Editor**:

- a. Click **Start**, click **Run**, type `GPEDIT.MSC`, and then click **OK**.
- b. Under the **Local Computer Policy** heading, expand **Computer Configuration**.
- c. Expand **Administrative Templates**, then **Network**, **Network Connections**, and then **Windows Firewall**.
- d. If the computer is in the domain, then double-click **Domain Profile**; otherwise, double-click **Standard Profile**.

- e. Double-click **Windows Firewall: Allow inbound remote administration exception** to open a configuration window.
- f. Check the **Enabled** option button and then click **OK**.

Using the [NETSH](#) command:



**Note**

The "netsh firewall" command is deprecated as of Microsoft Server 2008 and Vista, and replaced with "netsh advfirewall firewall".

- a. Open a command prompt window with Administrative rights (you can right-click the Command Prompt icon and select **Run as Administrator**).
- b. Execute the following command:

```
NETSH advfirewall firewall set service RemoteAdmin enable
```

2. Open the DCOM port TCP 135:

- a. Open a command prompt window with Administrative rights (you can right-click the Command Prompt icon and select **Run as Administrator**).
- b. Execute the following command:

```
NETSH advfirewall firewall add rule name=DCOM_TCP135 protocol=TCP localport=135 dir=in action=allow
```

3. Add the client application that contains the sink for the callback (`MySQLNotifier.exe`) to the Windows Firewall Exceptions List (use either the Windows Firewall configuration or `NETSH`):

Using the Windows Firewall configuration:

- a. In the Control Panel, double-click **Windows Firewall**.
- b. In the Windows Firewall window, click **Allow a program or feature through Windows Firewall**.
- c. In the Allowed Programs window, click **Change Settings** and do one of the following:
  - If `MySQLNotifier.exe` is in the Allowed programs and features list, make sure it is checked for the type of networks the computer connects to (Private, Public or both).
  - If `MySQLNotifier.exe` is not in the list, click **Allow another program**.
    - i. In the **Add a Program** window, select the `MySQLNotifier.exe` if it exists in the Programs list, otherwise click **Browse** and go to the directory where `MySQLNotifier.exe` was installed to select it, then click **Add**.
    - ii. Make sure `MySQLNotifier.exe` is checked for the type of networks the computer connects to (Private, Public or both).

Using the `NETSH` command:

- a. Open a command prompt window with Administrative rights (you can right-click the Command Prompt icon and click **Run as Administrator**).
- b. Execute the following command, where you change "`[YOUR_INSTALL_DIRECTORY]`":

```
NETSH advfirewall firewall add rule name=MySQLNotifier program=[YOUR_INSTALL_DIRECTORY]\MySQLNotifier.exe
```

4. If Computer B is either a member of `WORKGROUP` or is in a different domain that is untrusted by Computer A, then the callback connection (Connection 2) is created as an Anonymous connection. To grant Anonymous connections DCOM Remote Access permissions:
  - a. Click **Start**, click **Run**, type `DCOMCNFG`, and then click **OK**.
  - b. In the Component Services dialog box, expand Component Services, expand Computers, and then right-click **My Computer** and click **Properties**.
  - c. In the My Computer Properties dialog box, click the **COM Security** tab.
  - d. Under Access Permissions, click **Edit Limits**.
  - e. In the Access Permission dialog box, select **ANONYMOUS LOGON name** in the Group or user names box. In the Allow column under Permissions for User, select **Remote Access**, and then click **OK**.

## Monitored Remote Computer (Computer B)

If the user account that is logged on to the computer running the MySQL Notifier (Computer A) is a local administrator on the remote computer (Computer B), such that the same account is an administrator on Computer B, you can skip to the "Allow for remote administration" step.

Setting DCOM security to allow a non-administrator user to access a computer remotely:

1. Grant "DCOM remote launch" and activation permissions for a user or group:

- a. Click **Start**, click **Run**, type `DCOMCNFG`, and then click **OK**.
- b. In the Component Services dialog box, expand Component Services, expand Computers, and then right-click **My Computer** and click **Properties**.
- c. In the My Computer Properties dialog box, click the **COM Security** tab.
- d. Under Launch and Activation Permission, click **Edit Limits**.
- e. In the **Launch and Activation Permission** dialog box, follow these steps if your name or your group does not appear in the Groups or user names list:
  - i. In the **Launch and Activation Permission** dialog box, click **Add**.
  - ii. In the Select Users or Groups dialog box, add your name and the group in the **Enter the object names to select** box, and then click **OK**.
- f. In the **Launch and Activation Permission** dialog box, select your user and group in the Group or user names box. In the Allow column under Permissions for User, select **Remote Launch**, select **Remote Activation**, and then click **OK**.

Grant DCOM remote access permissions:

- a. Click **Start**, click **Run**, type `DCOMCNFG`, and then click **OK**.
  - b. In the Component Services dialog box, expand Component Services, expand Computers, and then right-click **My Computer** and click **Properties**.
  - c. In the My Computer Properties dialog box, click the **COM Security** tab.
  - d. Under Access Permissions, click **Edit Limits**.
  - e. In the Access Permission dialog box, select **ANONYMOUS LOGON name** in the Group or user names box. In the Allow column under Permissions for User, select **Remote Access**, and then click **OK**.
2. Allowing non-administrator users access to a specific WMI namespace:
- a. In the Control Panel, double-click **Administrative Tools**.
  - b. In the Administrative Tools window, double-click **Computer Management**.
  - c. In the Computer Management window, expand the **Services and Applications** tree.
  - d. Right-click the WMI Control icon and select **Properties**.
  - e. In the WMI Control Properties window, click the **Security** tab.
  - f. In the Security tab, select the namespace and click **Security**. Root/CIMV2 is a commonly used namespace.
  - g. Locate the appropriate account and check **Remote Enable** in the Permissions list.

3. Allow for remote administration by either editing the **Group Policy Editor** or using [NETSH](#):

Using the **Group Policy Editor**:

- a. Click **Start**, click **Run**, type [GPEDIT.MSC](#), and then click **OK**.
- b. Under the Local Computer Policy heading, double-click **Computer Configuration**.
- c. Double-click **Administrative Templates**, then **Network**, **Network Connections**, and then **Windows Firewall**.
- d. If the computer is in the domain, then double-click **Domain Profile**; otherwise, double-click **Standard Profile**.
- e. Click **Windows Firewall: Allow inbound remote administration exception**.
- f. On the Action menu either select **Edit**, or double-click the selection from the previous step.
- g. Check the **Enabled** radio button, and then click **OK**.

Using the [NETSH](#) command:

- a. Open a command prompt window with Administrative rights (you can right-click the Command Prompt icon and click **Run as Administrator**).
- b. Execute the following command:

```
NETSH advfirewall firewall set service RemoteAdmin enable
```

4. Confirm that the user account you are logging in with uses the [Name](#) value and not the [Full Name](#) value:
  - a. In the **Control Panel**, double-click **Administrative Tools**.
  - b. In the **Administrative Tools** window, double-click **Computer Management**.
  - c. In the **Computer Management** window, expand the **System Tools** then **Local Users and Groups**.
  - d. Click the **Users** node, and on the right side panel locate your user and make sure it uses the **Name** value to connect, and not the **Full Name** value.

## Common Errors

- [0x80070005](#)
  - DCOM Security was not configured properly (see Computer B, the [Setting DCOM security...](#) step).
  - The remote computer (Computer B) is a member of WORKGROUP or is in a domain that is untrusted by the client computer (Computer A) (see Computer A, the [Grant Anonymous connections DCOM Remote Access permissions](#) step).
- [0x8007000E](#)
  - The remote computer (Computer B) is a member of WORKGROUP or is in a domain that is untrusted by the client computer (Computer A) (see Computer A, the [Grant Anonymous connections DCOM Remote Access permissions](#) step).

- [0x80041003](#)
  - Access to the remote WMI namespace was not configured properly (see Computer B, the [Allowing non-administrator users access to a specific WMI namespace](#) step).
- [0x800706BA](#)
  - The DCOM port is not open on the client computers (Computer A) firewall. See the [Open the DCOM port TCP 135](#) step for Computer A.
  - The remote computer (Computer B) is inaccessible because its network location is set to Public. Make sure you can access it through the Windows Explorer.