Tecknodreams Software Consulting Pvt. Ltd.

SapphireIMS 4.0 Patch Upgrade Process Guide

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Overview

There are different types of patches that can be built for the patch releases based on the need. The following sections explain the different types of patches that are built.

Intermediate Patches

Intermediate Patches are planned patches that include few defect fixes or enhancements to address the customer needs. Such intermediate patches are built at regular intervals and will cumulate all the previous intermediate patches by making them obsolete. This ensures that it is sufficient to install intermediate patches, instead of all intermediate patches. The intermediate patches will undergo regular system testing by QA team, but only the defects included for the current intermediate patch will be tested. The intermediate patch will depend on a consolidated patch.

Consolidated Patches

Consolidated Patches are regular patches planned at regular intervals. These patches will consolidate all the defect fixes and enhancements released before in the form of intermediate patches and consolidated patches. The consolidated patches will automatically obsolete the old intermediate patches and old consolidated patches. Consolidated Patches undergo regular system testing by QA team. The complete product testing is carried out for consolidated patches.

Note:

Please refer the below link to download patches of SapphireIMS

http://sapphireims.com/patches/

SapphireIMS Professional Patch Upgrade Process

1. Stop the SapphireIMS service in SapphireIMS server
2. Exit SapphireIMS tray icon
3. Make sure that cmd executables and java executables related to SapphireIMS are not running in the process list (Task Manager)
4. Make sure that there are no processes running with the name SIMS_xxxxx, in the process list (Task Manager)
5. Make sure that the firewall/antivirus is not blocking SapphireIMS application/upgrade executables

Note: It is recommended to use the same user account (with administrative rights) used for Sapphire product installation for SAPP_4097 and above patch installation.

This is because the following issue was observed:

During SapphireIMS product installation (4.0 base package), components such as MySQL Server 5.5 and MySQL, ODBC drivers are installed which are based on MSI. MYSQL gets installed under user context(per-user) so it appears in “Programs and Features” for the corresponding account used during installation whereas, MYSQL ODBC drivers get installed in per-machine so it appears in “Programs and Features” for different user accounts also.

During SAPP_4097 patch upgrade, you need to uninstall MYSQL 5.5 so that you can upgrade to MYSQL 5.7 and if you use an account to install the patch other than what was used during product installation, MYSQL 5.5 un-installation fails as it is not in the context of new user account though he has the administrative rights.

Identify account used during base product installation

1. Log into the system with different user accounts and check against which user MYSQL Server 5.5 is appearing in “Programs and Features”. You can use that account for SAPP_4097 installation.

2. Navigate to HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\Installer\UserData and go through each SID->Products. Check against which user MYSQL is installed and perform the patch installation by logging into the system with the user who has installed the base package.

To get the username from SID, you can refer the link https://www.lifewire.com/how-to-find-a-users-security-identifier-sid-in-windows-2625149

3. Also

HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows NT\CurrentVersion\ProfileList key.

The *ProfileImagePath* value within each SID-named registry key lists the profile directory, which includes the username.

For example, if the *ProfileImagePath* value under the S-1-5-21-1180699209-877415012-3182924384-1004 key on a computer is C:\Users\Tim, it means that the SID for the user "Tim" is "S-1-5-21-1180699209-877415012-3182924384-1004".

Backup Process

1. Take database backup of SapphireIMS server. Execute the below command through command prompt (Run as administrator).

CMD: [Install Location] \MySQL Server 5.5\bin>mysqldump –u[username] –p[password] –P[port number] --events [database schema name] >"[Path]\backup.sql"

***Example**:*

CMD: C:\SapphireIMS\MySQL Server 5.5\bin>mysqldump –uims –pims123 –P3306 --events ims >"C:\imswithevents.sql"

2. Take the below mentioned file and folder backup from SapphireIMS server

a) Standalone.xml: [Install Location] \WebManagement\Standalone\configuration\

b) Web.xml: [Install Location] \WebManagement\standalone\deployments\SapphireIMS.war\WEB-INF\

c) Standalone.conf.bat: [Install Location] \WebManagement\bin\

d). dbreq: [Install Location] \Patches\

Note: .dbreq folder will be available in the above path as hidden

Patch Upgrade in SapphireIMS Server

1. Upgrade Consolidate patch (For example, SAPP_4085) in SapphireIMS server (You must right click on this installer and select "RUN AS ADMINISTRATOR"). Refer Appendix-A for installation steps.

Note:
****) Ensure SapphireIMS service is stopped and MySQL service is running***
****) Install only if consolidate patch is applicable***

2. Upgrade Intermediate patch (For example, SAPP_4087) in SapphireIMS server (You must right click on this installer and select "RUN AS ADMINISTRATOR"). Refer Appendix-B for installation steps.

3. Install Latin to UTF8 Converter in SapphireIMS server (You must right click on this installer and select "RUN AS ADMINISTRATOR"). Refer Appendix-C for installation steps.

Note:
****) Make sure this is installed only once in the environment. Please refer README file associated with SAPP_Latin1ToUTF-8Converter-1.0-Setup***
****) If this step is required, then please take complete database backup before executing Latin1 to UTF8 converter***

4. Check manual changes (optimization) performed on Standalone.xml, Standalone.Conf.bat and web.xml (if any) files remain the same. If not, perform the required optimization manually with necessary backup.

5. Please check the patch install log and see any errors related to SQL, if so kindly contact support team immediately. Please do not attempt to revert in case of failure without our support team knowledge.

6. Start MySQL service and SapphireIMS services in SapphireIMS server. Make sure the portal is up and running.

Notes:

1. If any issue is encountered during SapphireIMS patch upgrade process, please contact Support Team with encountered error screenshot and the patch installer logs.

Log Path: [Install Location]\Patches\[Patch Folder]\install.log

*2. After SAPP_4097 or later version patch upgrade, refer **Appendix D** to migrate the database from MySQL Server 5.5 to MySQL Server 5.7*

SapphireIMS Enterprise (Cluster) Patch Upgrade Process

1. Stop the SapphireIMS service in the cluster server and all cluster member servers
2. Exit SapphireIMS tray icon
3. Make sure that cmd executables and java executables related to SapphireIMS are not running in the process list (Task Manager).
4. Make sure that there are no processes running with the name SIMS_xxxxx, in the process list (Task Manager)
5. Make sure that the firewall/antivirus is not blocking SapphireIMS application/upgrade executables

Note: It is recommended to use the same user account (with administrative rights) used for Sapphire product installation for SAPP_4097 and above patch installation.

This is because the following issue was observed:

During SapphireIMS product installation (4.0 base package), components such as MySQL Server 5.5 and MySQL, ODBC drivers are installed which are based on MSI. MYSQL gets installed under user context(per-user) so it appears in “Programs and Features” for the corresponding account used during installation whereas, MYSQL ODBC drivers get installed in per-machine so it appears in “Programs and Features” for different user accounts also.

During SAPP_4097 patch upgrade, you need to uninstall MYSQL 5.5 so that you can upgrade to MYSQL 5.7 and if you use an account to install the patch other than what was used during product installation, MYSQL 5.5 un-installation fails as it is not in the context of new user account though he has the administrative rights.

Identify account used during base product installation

1. Log into the system with different user accounts and check against which user MYSQL Server 5.5 is appearing in “Programs and Features”. You can use that account for SAPP_4097 installation.

2. Navigate to HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\Installer\UserData and go through each SID->Products. Check against which user MYSQL is installed and perform the patch installation by logging into the system with the user who has installed the base package.

To get the username from SID, you can refer the link https://www.lifewire.com/how-to-find-a-users-security-identifier-sid-in-windows-2625149

3. Also

HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows NT\CurrentVersion\ProfileList key.

The *ProfileImagePath* value within each SID-named registry key lists the profile directory, which includes the username.

For example, if the *ProfileImagePath* value under the S-1-5-21-1180699209-877415012-3182924384-1004 key on a computer is C:\Users\Tim, it means that the SID for the user "Tim" is "S-1-5-21-1180699209-877415012-3182924384-1004".

Backup Process

1. Take database backup of the cluster server. Execute the below command through command prompt (Run as administrator).

CMD: [Install Location] \MySQL Server 5.5\bin>mysqldump –u[username] –p[password] –P [port number] --events [database schema name] >"[Path]\backup.sql"

***Example**:*

CMD: C:\SapphireIMS\MySQL Server 5.5\bin>mysqldump –uims –pims123 –P3306 --events ims >"C:\imswithevents.sql"

2. Take below mentioned file and folder backup from the cluster server and all cluster member servers

a) Standalone.xml: [Install Location] \WebManagement\Standalone\configuration\

b) Web.xml: [Install Location] \WebManagement\standalone\deployments\SapphireIMS.war\WEB-INF\

c) Standalone.conf.bat: [Install Location] \WebManagement\bin\

d). dbreq: [Install Location] \Patches\

Note:. dbreq folder will be available in the above path as hidden

Patch Upgrade in the Cluster Server

1. Upgrade Consolidate patch (For example, SAPP_4085) in the cluster server (You must right click on this installer and select "RUN AS ADMINISTRATOR"). Refer Appendix-A for installation steps.

Note:
****) Ensure SapphireIMS service is stopped and MySQL service is running***
****) Install only if consolidate patch is applicable***

2. Upgrade Intermediate patch (For example, SAPP_4087) in MSP central server (You must right click on this installer and select "RUN AS ADMINISTRATOR"). Refer Appendix-B for installation steps.

3. Install Latin to UTF8 Converter in the cluster server (You must right click on this installer and select "RUN AS ADMINISTRATOR"). Refer Appendix-C for installation steps.

Note:
****) Make sure this is installed only once in the environment. Please refer README file associated with SAPP_Latin1ToUTF-8Converter-1.0-Setup***
****) If this step is required, then please take complete database backup before executing Latin1 to UTF8 converter***

4. Check manual changes (optimization) performed on Standalone.xml, Standalone.Conf.bat and web.xml (if any) files remain the same. If not, perform the required optimization manually with necessary backup.

5. Please check the patch install log for any errors related to SQL, if so kindly contact support team immediately. Please do not attempt to revert in case of failure without our support team knowledge.

6. Start MySQL service and SapphireIMS services in the cluster server. Make sure the portal is up and running.

Patch Upgrade in Individual Cluster Member Servers

Please follow the below steps on each cluster member servers.

1. Upgrade Consolidate patch (For example, SAPP_4085) in cluster member servers (You must right click on this installer and select "RUN AS ADMINISTRATOR"). Refer Appendix-A for installation steps.

Note:
****) Ensure SapphireIMS service is stopped and MySQL service is running***
****) Install only if consolidate patch is applicable***

2. Upgrade Intermediate patch (For example, SAPP_4087) in MSP probe servers (You must right click on this installer and select "RUN AS ADMINISTRATOR"). Refer Appendix-B for installation steps.

3. Install Latin to UTF8 Converter in all cluster member servers (You must right click on this installer and select "RUN AS ADMINISTRATOR"). Refer Appendix-C for installation steps.

Note:
****) Make sure this is installed only once in the environment. Please refer README file associated with SAPP_Latin1ToUTF-8Converter-1.0-Setup***
****) If this step is required, then please take complete database backup before executing Latin1 to UTF8 converter***

4. Check manual changes (optimization) performed on Standalone.xml, Standalone.Conf.bat and web.xml (if any) files remain the same. If not, perform the required optimization manually with necessary backup.

5. Please check the patch install log for any errors related to SQL, if so kindly contact support team immediately. Please do not attempt to revert in case of failure without our support team knowledge.

6. Start SapphireIMS services in the cluster member server.

Notes:

1. If any issue is encountered during SapphireIMS patch upgrade process, please contact Support Team with encountered error screenshot and the patch installer logs.

Log Path: [Install Location]\Patches\[Patch Folder]\install.log

2. After SAPP_4097 or later version patch upgrade, refer Appendix D to migrate the database from MySQL Server 5.5 to MySQL Server 5.7

SapphireIMS Enterprise Plus (MSP) Patch Upgrade Process

1. Stop the SapphireIMS service in the MSP Central server and all MSP probe servers
2. Exit SapphireIMS tray icon
3. Make sure that cmd executables and java executables related to SapphireIMS are not running in the process list (Task Manager)
4. Make sure that there are no processes running with the name SIMS_xxxxx, in the process list (Task Manager)
5. Make sure that the firewall/antivirus is not blocking SapphireIMS application/upgrade executables

Note: It is recommended to use the same user account (with administrative rights) used for Sapphire product installation for SAPP_4097 and above patch installation.

This is because the following issue was observed:

During SapphireIMS product installation (4.0 base package), components such as MySQL Server 5.5 and MySQL, ODBC drivers are installed which are based on MSI. MYSQL gets installed under user context(per-user) so it appears in “Programs and Features” for the corresponding account used during installation whereas, MYSQL ODBC drivers get installed in per-machine so it appears in “Programs and Features” for different user accounts also.

During SAPP_4097 patch upgrade, you need to uninstall MYSQL 5.5 so that you can upgrade to MYSQL 5.7 and if you use an account to install the patch other than what was used during product installation, MYSQL 5.5 un-installation fails as it is not in the context of new user account though he has the administrative rights.

Identify account used during base product installation

1. Log into the system with different user accounts and check against which user MYSQL Server 5.5 is appearing in “Programs and Features”. You can use that account for SAPP_4097 installation.

2. Navigate to HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\Installer\UserData and go through each SID->Products. Check against which user MYSQL is installed and perform the patch installation by logging into the system with the user who has installed the base package.

To get the username from SID, you can refer the link https://www.lifewire.com/how-to-find-a-users-security-identifier-sid-in-windows-2625149

3. Also

HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows NT\CurrentVersion\ProfileList key.

The *ProfileImagePath* value within each SID-named registry key lists the profile directory, which includes the username.

For example, if the *ProfileImagePath* value under the S-1-5-21-1180699209-877415012-3182924384-1004 key on a computer is C:\Users\Tim, it means that the SID for the user "Tim" is "S-1-5-21-1180699209-877415012-3182924384-1004".

Backup Process

1. Take database backup of the MSP central server and all MSP probe servers. Execute the below command through command prompt (Run as administrator).

Note: For MSP central server take backup of each customer schema individually along with ims schema

CMD: [Install Location] \MySQL Server 5.5\bin>mysqldump –u[username] –p[password] –P [port number] --events [database schema name] >"[Path]\backup.sql"

Example:

- CMD: C:\SapphireIMS\MySQL Server 5.5\bin>mysqldump –uims –pims123 –P3306 --events ims >"C:\imswithevents.sql"
- CMD: C:\SapphireIMS\MySQL Server 5.5\bin>mysqldump –uims –pims123 –P3306 --events customername >"C:\customer.sql"

2. Take the below mentioned file and folder backup from the MSP Central server and all MSP Probe servers

a) Standalone.xml: [Install Location] \WebManagement\Standalone\configuration\

b) Web.xml: [Install Location] \WebManagement\standalone\deployments\SapphireIMS.war\WEB-INF\

c) Standalone.conf.bat: [Install Location] \WebManagement\bin\

d) .dbreq: [Install Location] \Patches\

Note: .dbreq folder will be available in the above path as hidden

Patch Upgrade in MSP Central Server

1. Upgrade Consolidate patch (For example, SAPP_4085) in MSP Central server (You must right click on this installer and select "RUN AS ADMINISTRATOR"). Refer Appendix-A for installation steps.

Note:
****) Ensure SapphireIMS service is stopped and MySQL service is running***
****) Install only if consolidate patch is applicable***

2. Upgrade Intermediate patch (For example, SAPP_4087) in MSP central server (You must right click on this installer and select "RUN AS ADMINISTRATOR"). Refer Appendix-B for installation steps.

3. Install Latin to UTF8 Converter in MSP Central server (You must right click on this installer and select "RUN AS ADMINISTRATOR"). Refer Appendix-C for installation steps.

Note:
****) Make sure this is installed only once in the environment. Please refer README file associated with SAPP_Latin1ToUTF-8Converter-1.0-Setup***
****) If this step is required, then please take complete database backup before executing Latin1 to UTF8 converter***

4. Check manual changes (optimization) performed on Standalone.xml, Standalone.Conf.bat and web.xml (if any) files remain the same. If not, perform the required optimization manually with necessary backup.

5. Please check the patch install log for any errors related to SQL, if so kindly contact support team immediately. Please do not attempt to revert in case of failure without our support team knowledge.

6. Start MySQL service and SapphireIMS services in MSP central server. Make sure the portal is up and running.

Patch Upgrade in Individual MSP Probe Servers

Please follow the below steps on each MSP probe server

1. Upgrade Consolidate patch (For example, SAPP_4085) in MSP Probe servers (You must right click on this installer and select "RUN AS ADMINISTRATOR"). Refer Appendix-A for installation steps.

Note:
****) Ensure SapphireIMS service is stopped and MySQL service is running***
****) Install only if consolidate patch is applicable***

2. Upgrade Intermediate patch (For example, SAPP_4087) in MSP probe servers (You must right click on this installer and select "RUN AS ADMINISTRATOR"). Refer Appendix-B for installation steps.

3. Install Latin to UTF8 Converter in all MSP probe servers (You must right click on this installer and select "RUN AS ADMINISTRATOR"). Refer Appendix-C for installation steps.

Note:
****) Make sure this is installed only once in the environment. Please refer README file associated with SAPP_Latin1ToUTF-8Converter-1.0-Setup***
****) If this step is required, then please take complete database backup before executing Latin1 to UTF8 converter***

4. Check manual changes (optimization) performed on Standalone.xml, Standalone.Conf.bat and web.xml (if any) files remain the same. If not, perform the required optimization manually with necessary backup.

5. Please check the patch install log for any errors related to SQL, if so kindly contact support team immediately. Please do not attempt to revert in case of failure without our support team knowledge.

6. Start MySQL service and SapphireIMS services in MSP Probe server. Make sure portal is up and running.

Notes:

1. If any issue is encountered during SapphireIMS patch upgrade process, please contact Support Team with encountered error screenshot and the patch installer logs.

Log Path: [Install Location]\Patches\[Patch Folder]\install.log

2. After SAPP_4097 or later version patch upgrade, refer Appendix D to migrate the database from MySQL Server 5.5 to MySQL Server 5.7

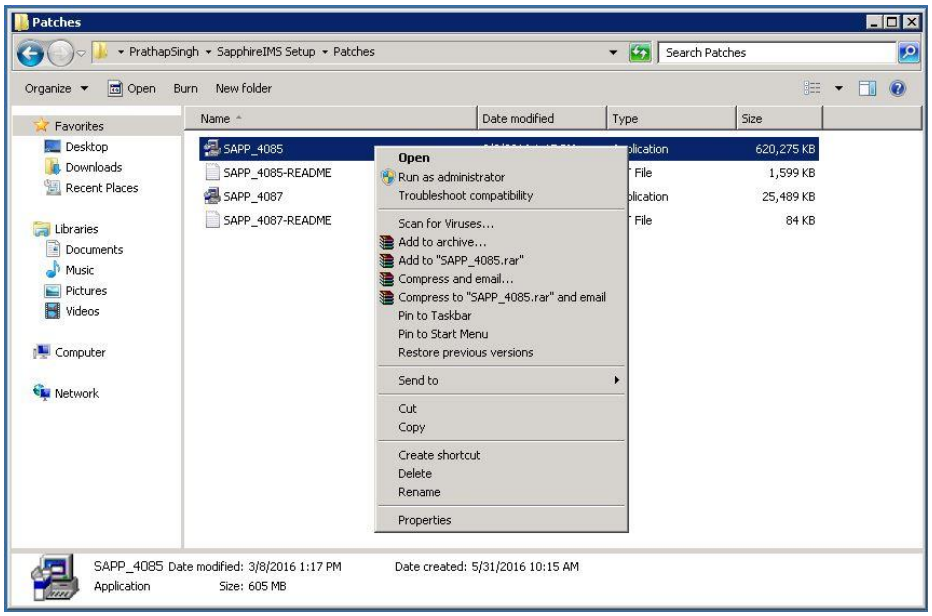
Appendix

Appendix-A

Consolidate Patch installation steps

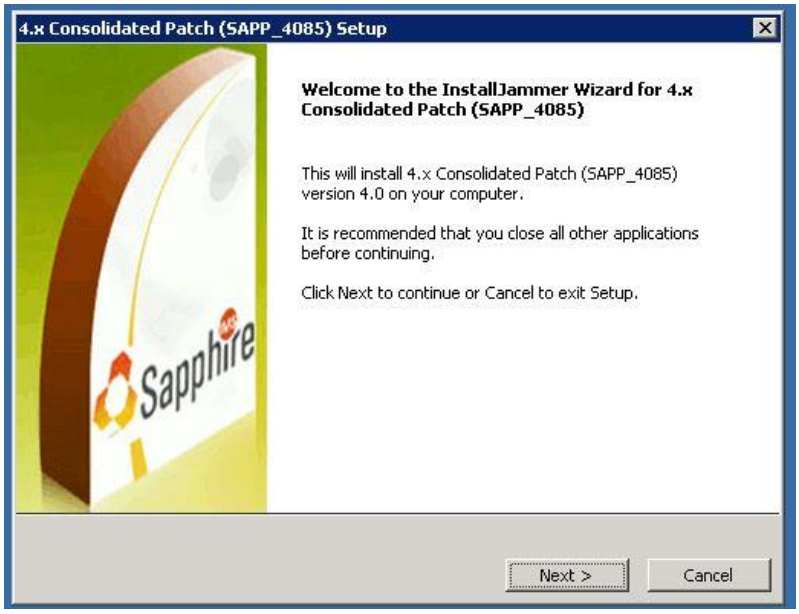
Step 1:

Right click on the consolidate patch installer and launch the process with administrative privilege



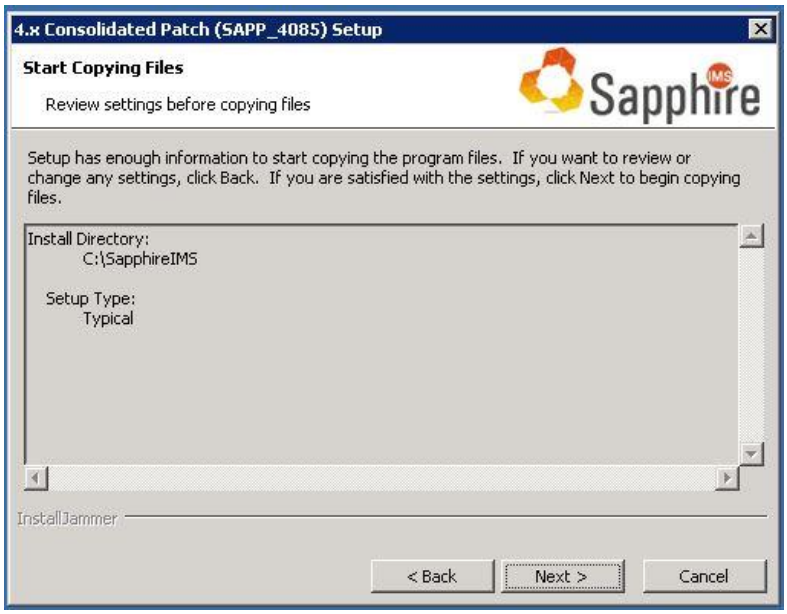
Step 2:

Make sure SapphireIMS service is stopped, all SapphireIMS executables are killed and MySQL service is running. Click on Next to proceed with the installation.



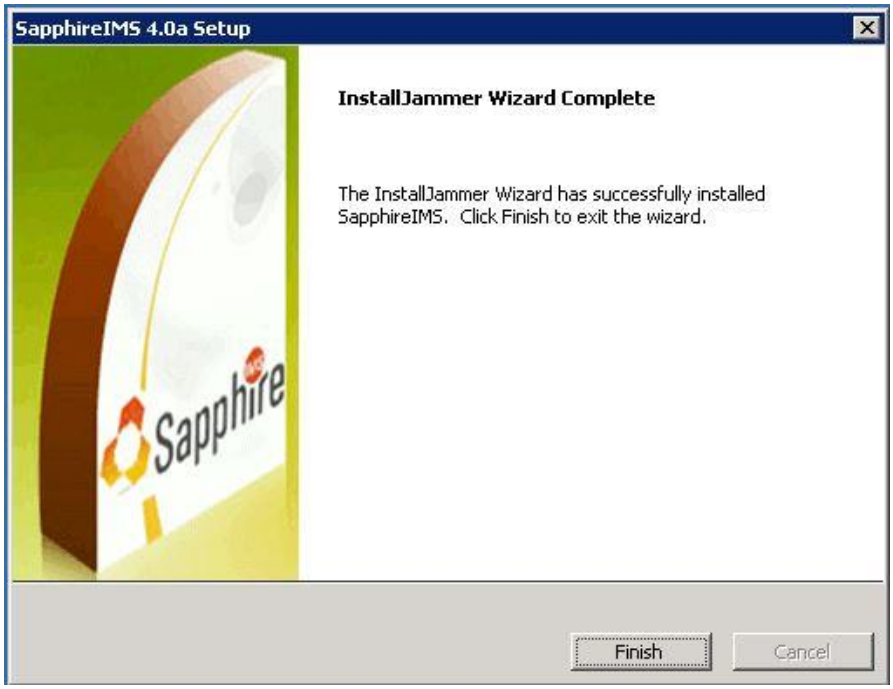
Step 3:

Indicates the installed location of SapphireIMS application on the server. Click Next to proceed with the installation.



Step 4:

On successful completion of all file changes and database changes to the SapphireIMS application, click Finish to exit the wizard.

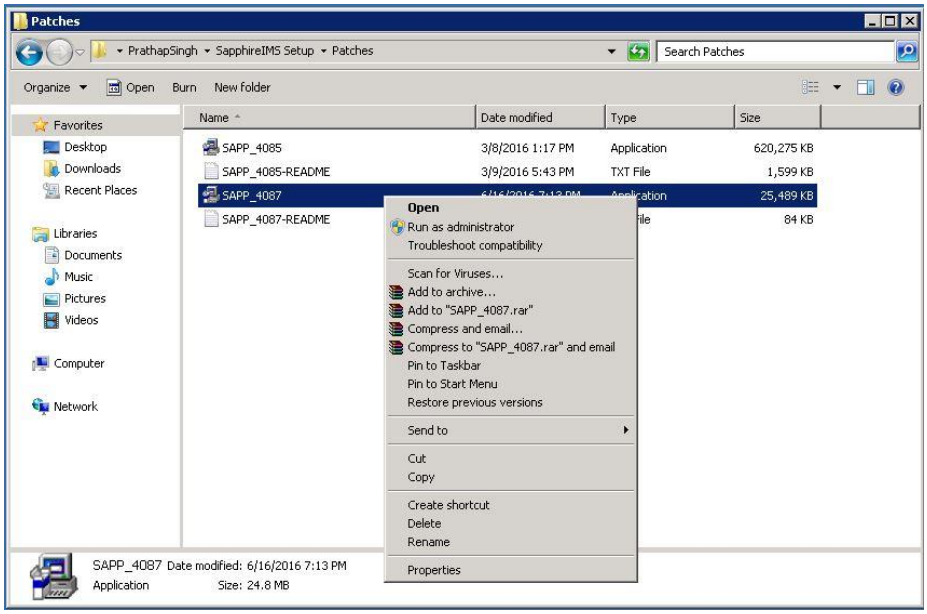


Appendix-B

Intermediate Patch installation steps

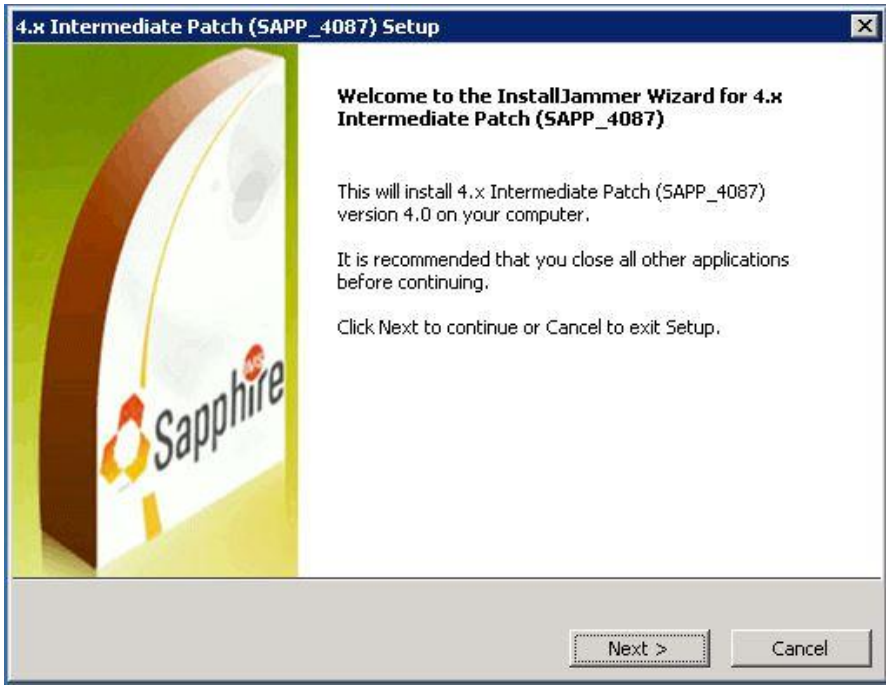
Step 1:

Right click on the intermediate patch installer and launch the process with administrative privilege



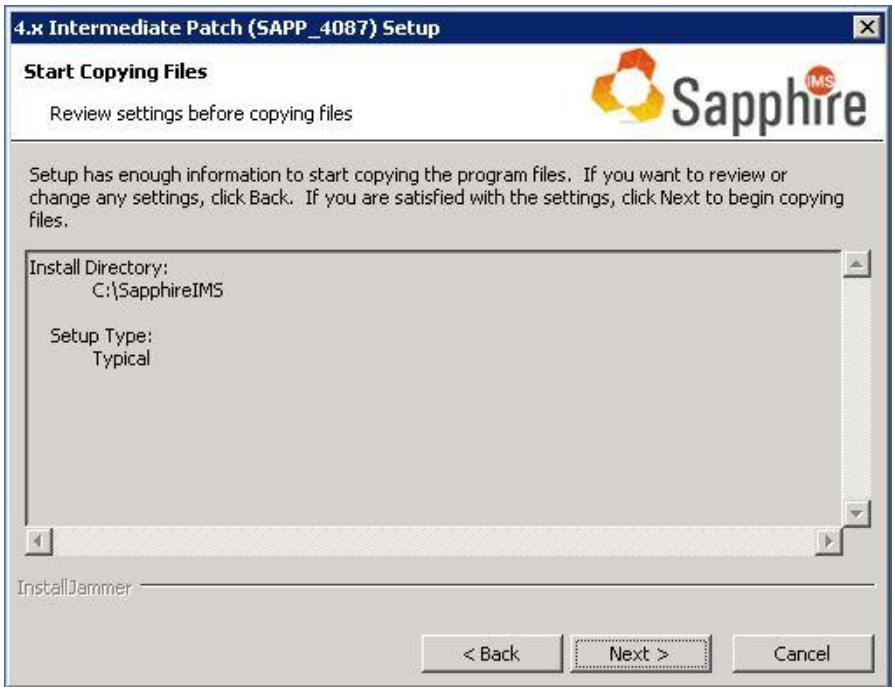
Step 2:

Make sure SapphireIMS service is stopped, all SapphireIMS executables are killed and MySQL service is running. Click on Next to proceed with the installation.



Step 3:

Indicates the installed location of SapphireIMS application on the server. Click Next to proceed with the installation.



Step 4:

On successful completion of all file changes and database changes to the SapphireIMS application, click Finish to exit the wizard.

Appendix-C

Latin1toUTF8 Converter installation steps

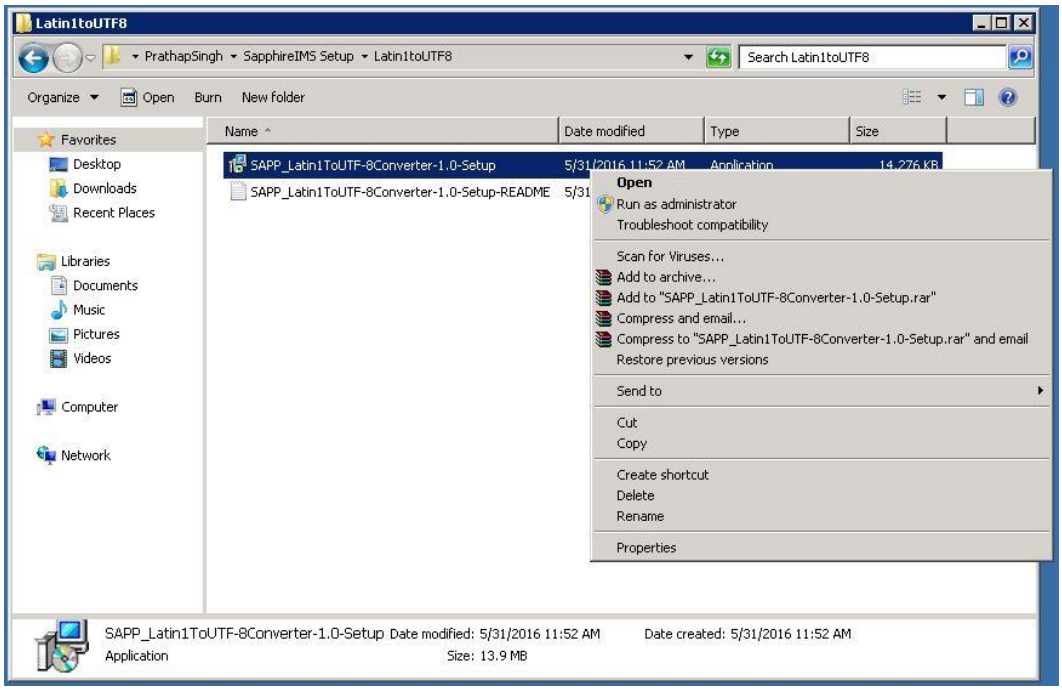
By default, SapphireIMS 4.0 is available with database character set as “Latin1”. After the release of SAPP_4080 patch level “UTF8” character set is available for database and it is mandatory to convert the database from Latin1 to UTF8 character.

Note:

This conversion activity needs to be done on any patch above SAPP_4080 only once

Step 1:

Right click on the installer of Latin1toUTF8 converter and launch the process with administrative privilege



Step 2:

Choose the installation language and Click Ok to proceed with the installation

Step 3:

Make sure Latin1toUTF8 converter is installed only once on the server and MySQL service is running. Click on Yes to proceed with the installation.

Step 4:

On successful completion of converting the database to UTF8 character set, update ODBC connector to Unicode driver and click the Finish button to exit the wizard.

Appendix D

Steps to upgrade MySQL 5.5 to MySQL 5.7

MySQL 5.5 to MySQL 5.7 Automatic Batch File Upgrade

MySQL database upgrade from 5.5 to 5.7 can be done by executing the MySQLUpgrade.bat provided as part of SAPP_4097 patch and is located under <SapphireIMS Installed path>\ConsoleManagement\ExternalWar\SoftwareRepository.war\MySQL5.7Upgrade\MySQLUpgrade\ folder. But during the batch file execution, if you encounter any issues or the script failed to upgrade MySQL Server, then follow the steps mentioned in ***Upgrade Steps (Windows)*** to install MySQL 5.7 Server manually.

Case I - SapphireIMS Server and MySQL Server both on same machine

1. Unzip the MySQLUpgrade.zip file.
2. Download mysql-installer-community-5.7.17.0.msi from the following link and copy to

   <SapphireIMS Installed path>\ConsoleManagement\ExternalWar\SoftwareRepository.war\MySQL5.7Upgrade\MySQLUpgrade\MySQL Msi\ folder.

   (https://downloads.mysql.com/archives/get/file/mysql-installer-community-5.7.17.0.msi)
3. Note down the following variable values from MySQL Server 5.5 my.ini file.

   Post MySQL 5.7 installation and before restoring the database backup, update the respective variable values in MySQL Server 5.7 my.ini file.

   i. max_connections

   ii. tmp_table_size

   iii. key_buffer_size

   iv. innodb_log_buffer_size

   v. innodb_buffer_pool_size

Note: Apart from above changes, if any other parameters are customized in MySQL 5.5 my.ini file, then similar changes must be done in MySQL 5.7 my.ini as well.

4. Open a new command prompt as "Run as administrator", then execute the MySQLUpgrade.bat batch file.

E.g.: <SapphireIMS Installed path>\ConsoleManagement\ExternalWar\SoftwareRepository.war\MySQL5.7Upgrade\MySQLUpgrade\MySQLUpgrade.bat

Case II - SapphireIMS Server and MySQL Server (Windows) on different machines

Execute MySQLUpgrade.bat on both SapphireIMS Server and MySQL Server installed machines.

Steps to execute MySQLUpgrade.bat on SapphireIMS Server installed machine

1. Unzip the MySQLUpgrade.zip file.

2. Download mysql-installer-community-5.7.17.0.msi from the following link and copy to

<SapphireIMS Installed path>\ConsoleManagement\ExternalWar\SoftwareRepository.war\MySQL5.7Upgrade\MySQLUpgrade\MySQL Msi\ folder.

(https://downloads.mysql.com/archives/get/file/mysql-installer-community-5.7.17.0.msi)

3. Open a new command prompt as "Run as administrator", then execute the MySQLUpgrade.bat batch file.

E.g.: <SapphireIMS Installed path>\ConsoleManagement\ExternalWar\SoftwareRepository.war\MySQL5.7Upgrade\MySQLUpgrade\MySQLUpgrade.bat

Steps to execute MySQLUpgrade.bat on MySQL Server installed machine

1. Copy the entire 'MySQL5.7Upgrade' folder with mysql-installer-community-5.7.17.0.msi

   from SapphireIMS Server installed machine to MySQL Server installed machine.

2. Note down the following variable values from MySQL Server 5.5 my.ini file

Post MySQL 5.7 installation and before restoring the database backup, update the respective variable values in MySQL Server 5.7 my.ini file.

i. max_connections

ii. tmp_table_size

iii. key_buffer_size

iv. innodb_log_buffer_size

v. innodb_buffer_pool_size

Note: Apart from above changes, if any other parameters are customized in MySQL 5.5 my.ini file then similar changes must be done in MySQL 5.7 my.ini as well.

3. Open a new command prompt as "Run as administrator", then execute the MySQLUpgrade.bat batch file.

E.g.: <MySQL5.7Upgrade Folder path>\MySQL5.7Upgrade\MySQLUpgrade\MySQLUpgrade.bat

Case III - SapphireIMS Server and MySQL Server (Linux)

Refer to the MySQL 5.5 to 5.7 Upgrade.docx to manually upgrade MySQL Server on Linux machine.

Case IV - MySQL Server Re-installation (Windows)

In case of re-installation of MySQL Server 5.7 due to previous installation issues, follow the steps given below.

1. Uninstall MySQL Server 5.7 using control panel.

2. Uninstall MySQL community using control panel.

3. Delete the following MySQL Server 5.7 folders including their contents.

   1. <SapphireIMS installed path>\MySQL Server 5.7\

   2. C:\ProgramData\MySQL\MySQL Server 5.7\

4. Refer to the MySQL 5.5 to 5.7 Upgrade.docx to manually upgrade MySQL Server.

5. Post successful installation of MySQL 5.7 Server, delete the following MySQL Server 5.5 folders including their contents.

   1. <SapphireIMS installed path>\MySQL Server 5.5\

   2. C:\ProgramData\ MySQL\ MySQL Server 5.5

6. Uninstall MySQL community using control panel.

Notes:

1. ***Upgrade logs can be found in the following folder.***

   <SapphireIMS Installed path>\ConsoleManagement\ExternalWar\SoftwareRepository.war\MySQLUpgrade\Logs

2. ***Database backup files can be found in the following folder.***

   <SapphireIMS Installed path>\ConsoleManagement\ExternalWar\SoftwareRepository.war\MySQLUpgrade\MySQLBackup

II. Securing MySQL Configuration (Restricting External Connections)

For restricting external connections on MySQL server, refer to "Securing MySQL Server" section of MySQL 5.5 to 5.7 Upgrade.docx.

MySQL 5.5 to 5.7 Manual Upgrade

The database upgrade is done in stages and personnel involved in upgrade should check the error log (<mysql_upgrade_folder>/logs/sims_mysqlupgrade_log.txt) to determine the cause of the failure and the step at which the error occurred. Once the failure step is known, then proceed with the manual upgrade from that step directly and skip all other previous steps.

E.g.: In the event of MySQLUpgrade.bat batch file failure, after analysing the log file it is established that the script failed during **Step 4**, it means that batch file is successfully executed up to **Step 3** and you may skip **Steps 1, 2** and **3** and directly jump to **Step 4**.

This document also includes steps to be followed to secure MySQL server by restricting global access to the database and enable access to the SapphireIMS server alone.

Prerequisites

- The SapphireIMS Patch version should be SAPP_4096
- MySQL 5.7 installer is downloaded by the user and is ready for installation

Note: Windows version of MySQL 5.7 installer can be downloaded from the following link https://downloads.mysql.com/archives/get/file/mysql-installer-community-5.7.17.0.msi

- .NET Framework 4.0 or above needs to be installed before installing MySQL Server 5.7

Upgrade Steps (Windows)

Follow the steps mentioned below to manually upgrade MySQL Server 5.5 to 5.7.

Backing up my.ini Configuration Settings

Note down the following variable values from MySQL Server 5.5 my.ini file. After MySQL 5.7 installation and before restoring the database backup, update the respective variable values in MySQL Server 5.7 my.ini file.

1. max_connections
2. tmp_table_size
3. key_buffer_size
4. innodb_log_buffer_size
5. innodb_buffer_pool_size

Note : Apart from above changes, if any other parameters are customized in MySQL 5.5 my.ini file, then similar changes must be done in MySQL 5.7 my.ini as well.

Backing up MySQL 5.5 Schema

This step involves taking a schema backup of MySQL 5.5 server.

Note: In Cluster member / SapphireIMS standalone setups ignore this step.

- In case of Professional setup, you need to backup 'ims' DB alone.
- If the setup is MSP, then you need to backup both 'ims' and Customer Schema one by one.
  Note: Follow similar steps for add-on MSP Server.
- Before taking the backup, source AlterScript.sql file if ODBC 5.1 is installed. If ODBC 5.2 is installed then ignore sourcing AlterScript.sql file.
  Note: AlterScript.sql can be found in the <mysql_upgrade_folder>\MySQL Msi\ folder.

  Where to source AlterScript.Sql

  - In Professional / MSP Probe/ Cluster Server, on system where MySQL server is installed, need to source this file in 'ims' schema.
  - In MSP Server setup, on system where MySQL server is installed, source this file in **customer** schema only **(i.e. 'ims' schema must be excluded).**

Backup 'ims' database:

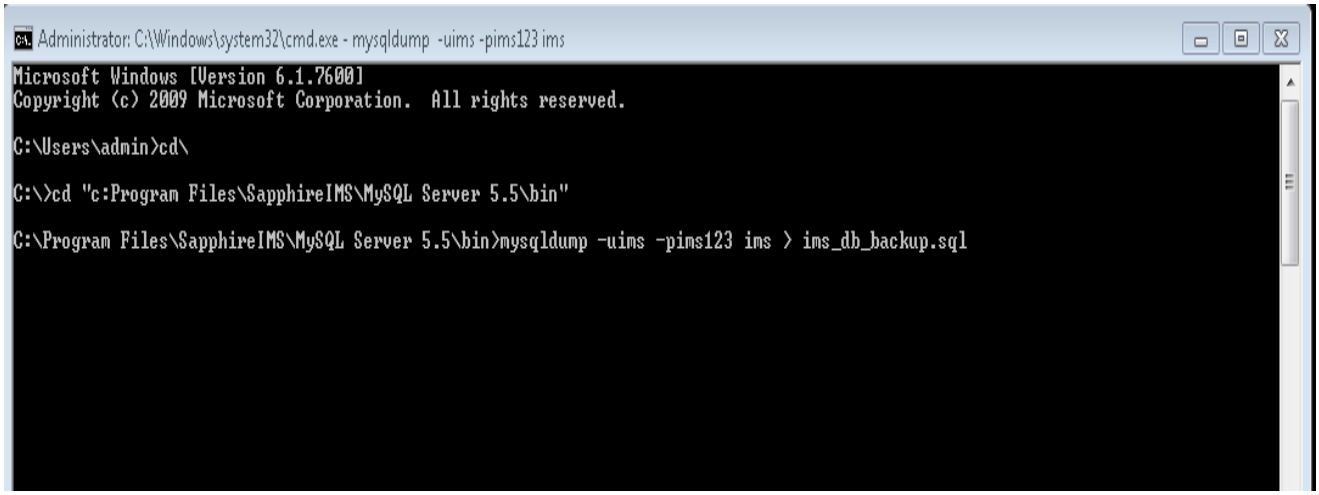


Fig1: Backing up ims database

- Execute the following command to backup ims database**.** Make sure that entire schema is backed up and keep the backup file in a safe place.

  mysqldump -uims -pims123 --events -R --triggers ims > ims_db_Dump.sql

Backup customer schema:

- Execute the following command to backup customer database**.** Make sure that entire schema is backed up and keep the backup file in a safe place.

  mysqldump -uims -pims123 --events -R --triggers [customer schema name] > [customer schema name]_db_Dump.sql

  E.g.mysqldump -uims -pims123 --events -R --triggers customer_1 > customer_1_db_Dump.sql

Installing MySQL Community

This step involves installing MySQL community edition. Follow the steps given below.

- Open folder **MySQLUpgrade\MySQL Msi** and look for a file named **mysql-installer-community-5.7.17.0.msi**

- Open a command prompt in Administrative mode and execute the following command as shown in the **Fig 2: MySQL Community installation**

  msiexec /i mysql-installer-community-5.7.17.0.msi /passive

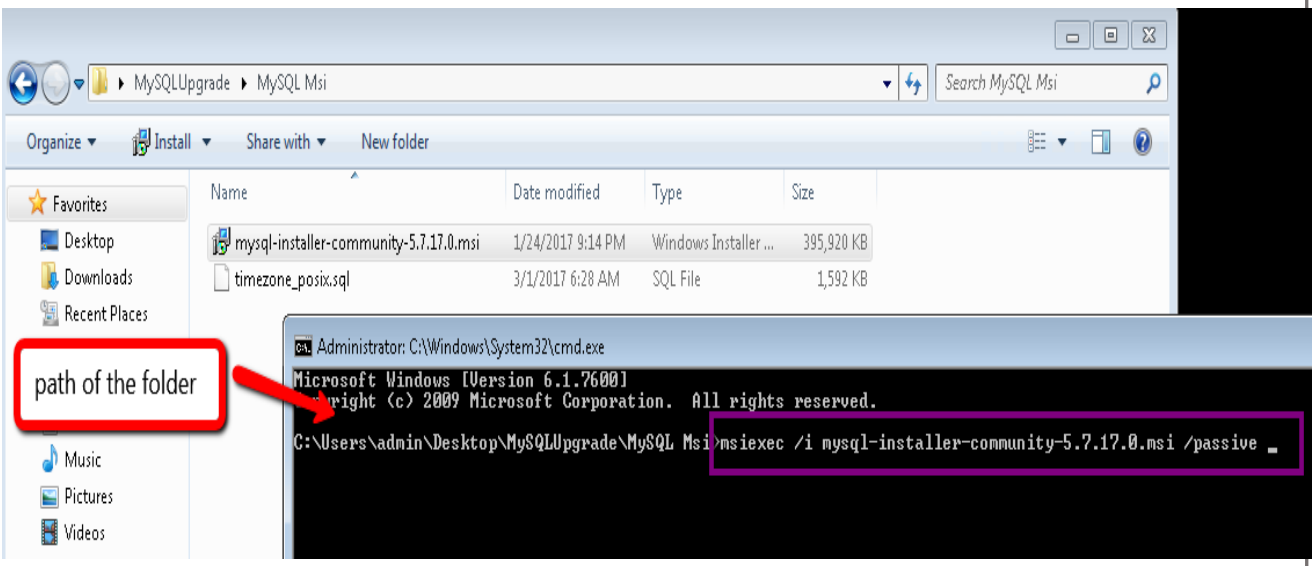


Fig 2: MySQL Community installation

Installing ODBC 5.2

This step involves installing MySQL ODBC 5.2 driver. Follow the steps given below.

- Find the version of the MySQL ODBC driver installed on the server using any of the 2 methods listed below.

  Method 1:
  Look for "**MySQL ODBC Connector"** folder in SapphireIMS installed location. You may find the version number suffixed to the folder name.

  E.g. If SapphireIMS server installed location contains a folder "**MySQL ODBC Connector 5.1**" then it means that MySQL server ODBC driver 5.1 is installed.

  Method 2:
  Check **Control panel** for version of the MySQL ODBC driver installed.

- If ODBC driver 5.1 is installed on server
  - Perform utf8 conversion and definer changes by executing the following command.

    Note : MySQL Upgrade will change only DEFINER=`ims`@`` to DEFINER=`ims`@`localhost`, remaining possibilities like some other definers found then need to handle accordingly by the end user.

    cd <mysql_upgrade_folder>\MySQL Msi\SedUtility
    sed.exe -e "s/latin1_swedish_ci/utf8_general_ci/" -e "s/latin1/utf8/" -e "s/DEFINER=`ims`@``/DEFINER=`ims`@`localhost`/" < "<mysql_upgrade_folder>\MySQLBackup\ims_DB_Dump.sql">"<mysql_upgrade_folder>\MySQLBackup \ims_DB_utf8.sql"

Note: sed.exe can be found in the <mysql_upgrade_folder>\MySQL Msi\SedUtility\ folder.

After successful execution, it will create utf8 converted file by the name ***ims_DB_utf8.sql.*** Keep this file in a safe place for future reference.

- Manually un-install the **ODBC driver5.1** from the SapphireIMS Server hosted machine.

- Install ODBC 5.2 (ignore if ODBC 5.2 is already installed) support files by executing **vcredist_x86_2010.exe.** Make sure to run the executable by selecting **Run as Administrator** option.

Note: vcredist_x86_2010.exe can be found in the <mysql_upgrade_folder>\MySQL Msi\folder.

- Install the ODBC driver 5.2 on SapphireIMS Server is installed machine for below mentioned setup types.

  - Professional
  - MSP Server
  - MSP Probe
  - Cluster Server
  - Cluster Member

- Open **Regedit** to update the ODBC driver 5.2 path by editing the **Driver** key for all underlying schema as shown in the **Fig 3.1.**

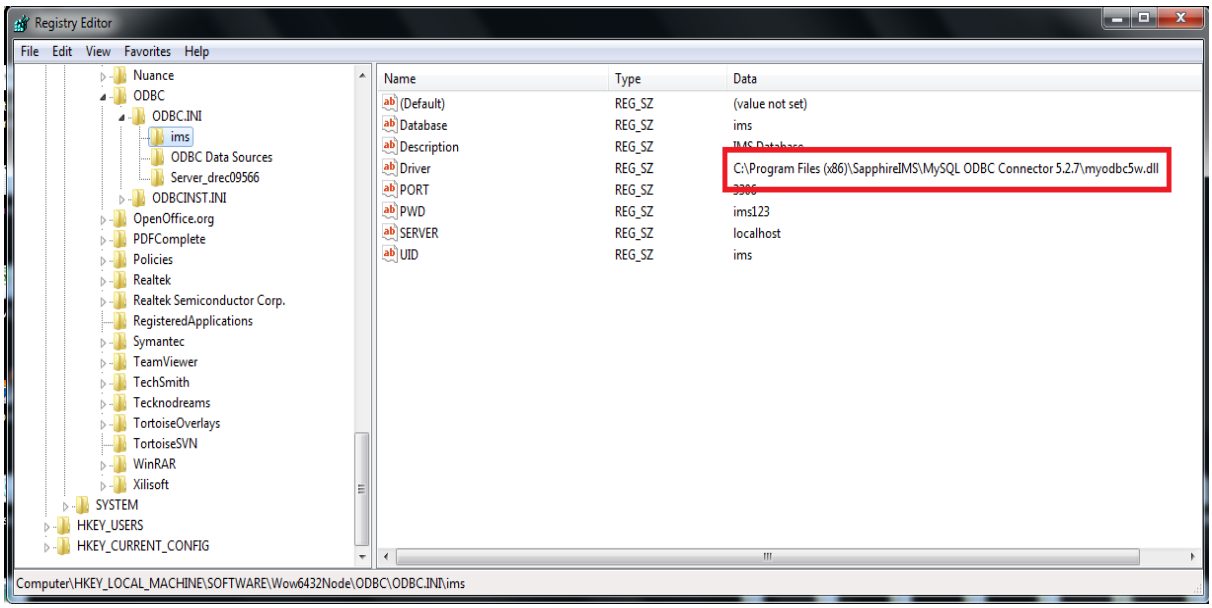


Fig 3.1: Configure ODBC driver key

- Similarly update the ODBC Data Sources to point to the ODBC 5.2 driver as shown in the **Fig 3.2.**

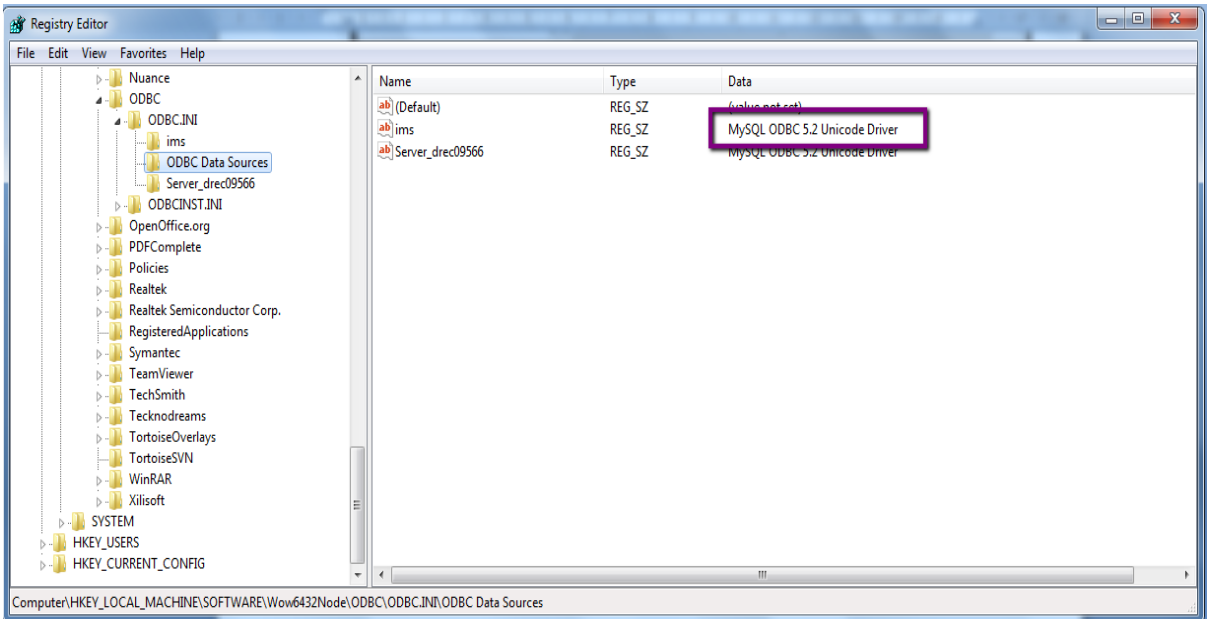


Fig 3.2: Configure ODBC Data Sources

- If ODBC driver 5.2 is installed on the server
  Utf8 changes are already applied on SapphireIMS database and hence utf8 data conversion is not required, but need to make definer changes by executing the following command.

Note : MySQL Upgrade will change only DEFINER=`ims`@`` to DEFINER=`ims`@`localhost`, remaining possibilities like some other definers found then need to handle accordingly by the end user.

cd <mysql_upgrade_folder>\MySQL Msi\SedUtility
sed.exe -e "s/DEFINER=`ims`@``/DEFINER=`ims`@`localhost`/"
<"<mysql_upgrade_folder>\MySQLBackup\ ims_DB_Dump.sql"
>"<mysql_upgrade_folder>\MySQLBackup \ims_DB_Backup.sql"

Note: After MySQL 5.7 Server installation, you need to restore either <Schema Name>_DB_utf8.sql or <Schema Name>_DB_backup.sql file present in the MySQLBackup folder.

Un-installing MySQL 5.5

Next step is to uninstall MySQL 5.5 Server. Follow the steps given below.

- Go to control panel and Un-install MySQL 5.5 Server as shown in **Fig 4: Un-installing MySQL 5.5**.

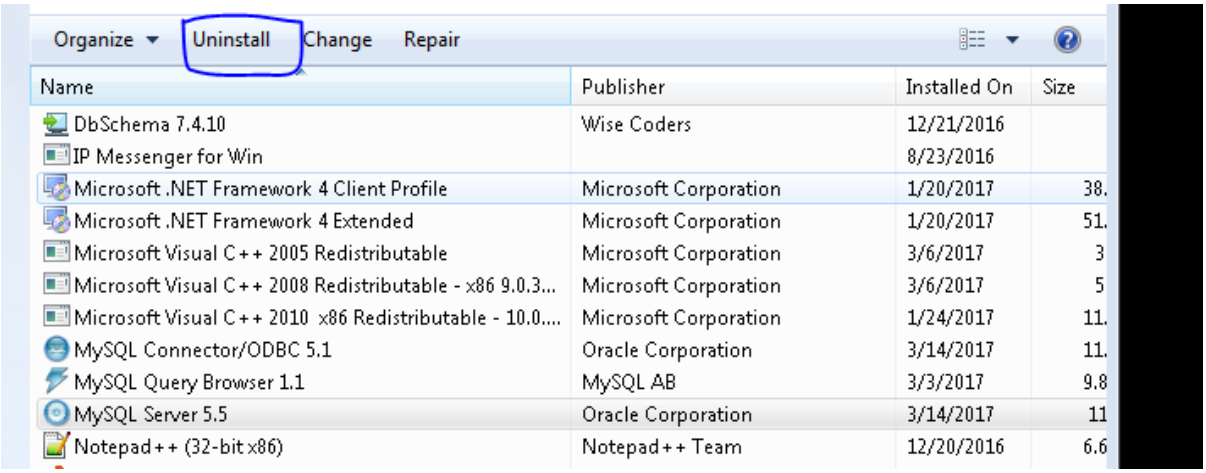


Fig 4: Un-installing MySQL 5.5

- After successful un-installation, go to SapphireIMS installed path and data folder path to clean up the following **MySQL Server 5.5** folder traces.

Note : This step is preferable after successful up-gradation of MySQL Server 5.7.

1. C:\Program Files (x86)\SapphireIMS\MySQL Server 5.5\

   Note: This path may vary. Check the relevant MySQL Server installed path on the local machine.

2. C:\ProgramData\MySQL\MySQL Server 5.5\

Installing MySQL 5.7 Server

- If a previous installation MySQL 5.7 Server is failed, then the MySQL installer may have left some traces. Clean up the traces by deleting all the files and folders present in the following folders, including the folders and then proceed with the server installation.

Note: Un-install MySQL Server 5.7 via control panel if an option exists. After un-installation, delete the following folders including their contents.

1. C:\Program Files (x86)\SapphireIMS\MySQL Server 5.7\

   Note: This path may vary. Check the relevant MySQL Server installed path on the local machine.

2. C:\ProgramData\MySQL\MySQL Server 5.7\

- If MySQLUpgrade.bat file is failed to install MySQL Server 5.7, it means that MySQLUpgrade.bat file had already installed the MySQL Community.

- So un-install the MySQL Community manually via control panel to avoid unwanted errors. After un-installation, delete the following folders including their contents.

1. C:\Program Files (x86) or Program Files\MySQL\MySQL Installer for Windows\
2. C:\ProgramData\MySQL\ MySQL Installer for Windows\

- After that install MySQL Community Manually by referring the **3.3 Installing MySQL Community** section**.**

- Collect the information about the below mentioned parameters that will be used in the section to follow.

  Open the **SIMS_MysqlUpgrade_log.txt** file present in the <***SapphireIMS Installed path>\ConsoleManagement\ExternalWar\SoftwareRepository.war\MySQL5.7Upgrade\MySQLUpgrade\Logs*** *folder* to find the information about MySQL Bit, MySQL Port, MySQL install directory, MySQL Service Name and MySQL Data Directory as shown in the **Fig 5.**

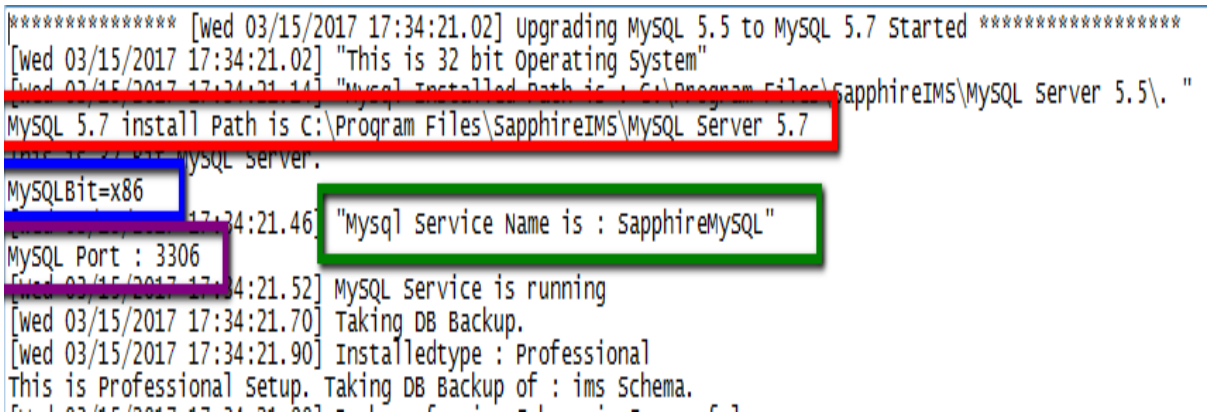


Fig 5: SIMS_MysqlUpgrade_log.txt file

Example

MySQL Bit:	x86 or x64
MySQL Port:	3306
MySQL Install Directory:	C:\Program Files\SapphireIMS\MySQL Server 5.7
MySQL Service Name:	SapphireMySQL
MySQL Data Directory:	C:\Program Files\SapphireIMS\MySQL Server 5.7

For Professional, MSP Server, MSP Probe, Cluster Server and MySQL Stand-alone system

Install and configure the MySQL Server 5.7 as shown in the **Fig 6: MySQL 5.7 installation and configuration**.

For Cluster Member and SapphireIMS Server without MySQL database

Simply install MySQL without configuration as explained in the following section**.**

Note: Choose either x86 or x64 bit mysql-5.7.17-xxx.msi installer available in **C:\ProgramData\MySQL\MySQL Installer for Windows\Product Cache** folder depending on the **MySQLBit** parameter available in the **SIMS_MysqlUpgrade_log.txt** file as shown in the **Fig 5.**

MySQL Bit**: x86**

msiexec /imysql-5.7.17-win32.msi INSTALLDIR=<Install Directory path> /passive

MySQL Bit**: x64**

msiexec /i mysql-5.7.17-winx64.msi INSTALLDIR="Install Directory path" /passive

- Run the following commands by replacing the variables with appropriate values as shown in the **Fig 6** to install and configure MySQL 5.7 server.

cd "C:\Program Files or Program Files (x86)\ MySQL\ MySQL Installer for Windows"

MySQLInstallerConsole.exe community install Server;5.7.17;<MySQL Bit>***:*:type=config;port=***<MySQL Port>***;slowlog=false;rootpasswd=ims123;installdir=***<MySQL Install Directory>***;ServiceName=***<MySQL Service Name>***;datadir=***<MySQL Data Directory>*** -silent***

- Upon successful installation of MySQL 5.7 server, you will see a success message printed on the command prompt as shown in **Fig 6.**

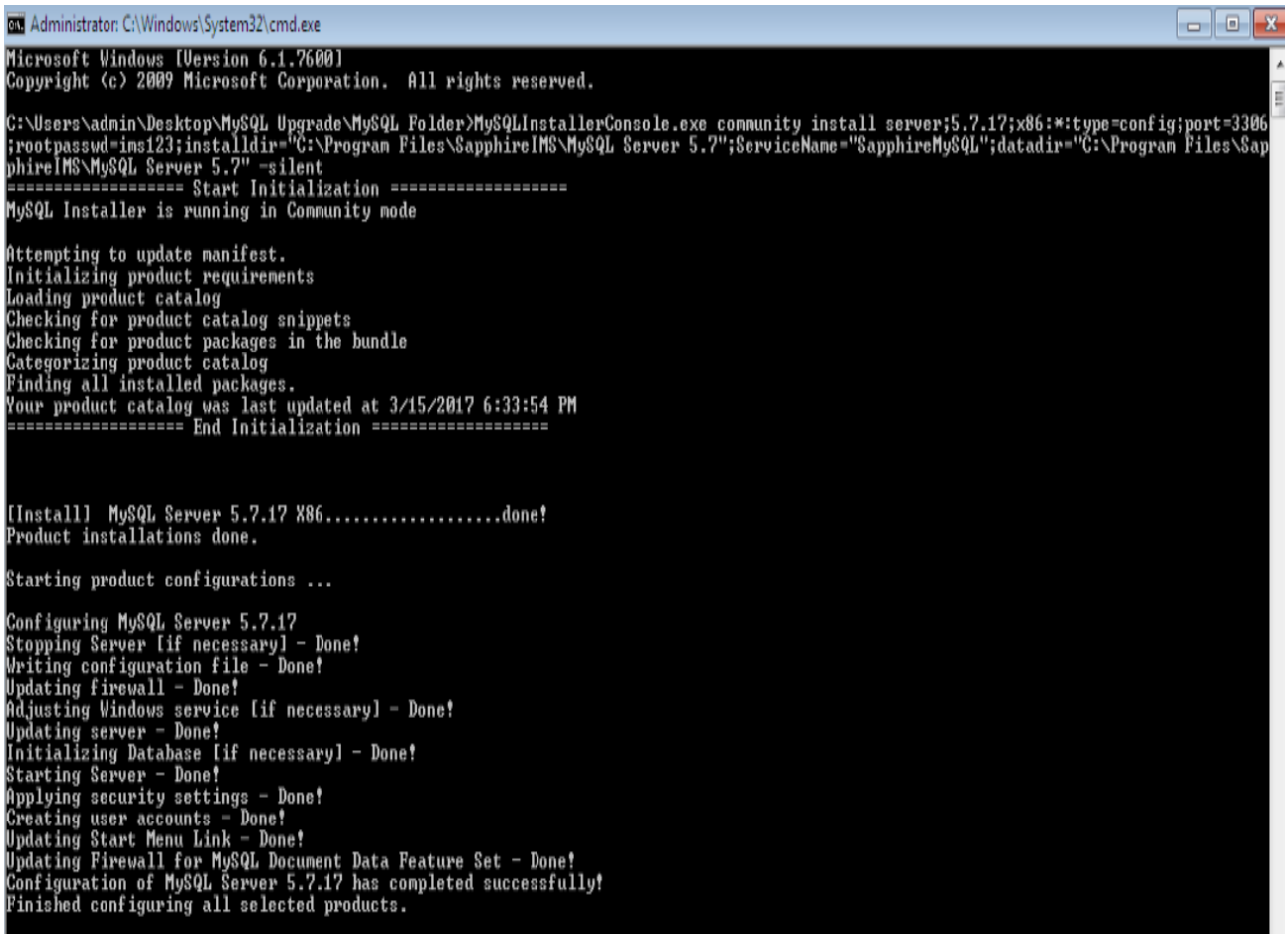


Fig 6: MySQL 5.7 installation and configuration

- Upon successful installation of MySQL 5.7, edit the ***<SapphireIMS Installed path>/ ConsoleManagement/Database/*****Config.bat** file and update the parameters **imsMySQLPath** and **imsMySQLPwd** as described in the following section.

- Go to line containing ***imsMySQLPath*** and change to ***set imsMySQLPath="<SapphireIMS installed path> \MySQL Server 5.7\bin"***
- Go to line containing ***imsMySQLPwd*** and change to ***set imsMySQLPwd="ims123"***
- Go to line containing **imsMySQLDriver** and change to **set imsMySQLDriver="*<SapphireIMS installed path>\MySQL ODBC Connector 5.2.7*\myodbc5w.dll"**

After making above changes a sample config.bat will look as follows.

set imsMySQLPath="C:\Program Files (x86)\SapphireIMS\MySQL Server 5.7\bin"
set imsMySQLServer="localhost"
set imsMySQLUsrName="root"
set imsMySQLPwd="ims123"
set imsMySQLPort="3306"
set imsMySQLSchema=ims
set imsMySQLDriver="C:\Program Files (x86)\SapphireIMS\MySQL ODBC Connector 5.2.7\myodbc5w.dll"

Note: In MySQL Server 5.7 the default root password is ims123

Restoring Time Zone Changes

Time zone changes can be restored by executing the following command as shown in the **Fig 7.**

Note: In Cluster member / SapphireIMS standalone setups ignore this step

cd "C:\Program Files or Program Files (x86)\SapphireIMS\MySQL Server 5.7\bin"
mysql-uims -pims123 mysql< "<mysql_upgrade_folder>\MySQL Msi\timezone_posix.sql"

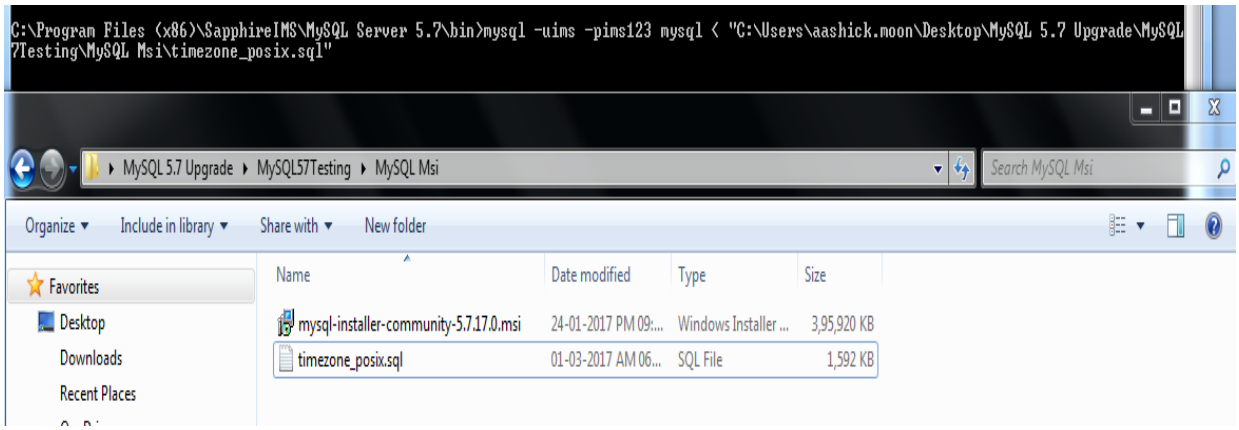


Fig 7: Restoring time zone changes

Restoring my.ini Configuration Settings

- Copy the following variable values backed up from MySQL Server 5.5 my.ini file and update the respective variable values in MySQL Server 5.7 my.ini file and then restart SapphireMySQL service.

E.g. *<SapphireIMS server installed path>/SapphireIMS/MySQL server 5.7/* folder.

1. max_connections
2. tmp_table_size
3. key_buffer_size

4. innodb_log_buffer_size
5. innodb_buffer_pool_size

- Apart from above changes, if any other parameters are customized in MySQL 5.5 my.ini file then similar changes must be done in MySQL 5.7 my.ini as well.

Note:

- ***In case of Cluster Setup, copy the my.ini from the cluster server and place it inside the "MySQL Server 5.7 directory" of the Cluster member.***
- ***If MySQL installed in remote machine then copy the my.ini file from MySQL Server and place it inside the "MySQL Server 5.7 directory" of the SapphireIMS Server machine.***

Location of MySQL Server 5.7 is " <SapphireIMS Installation Location>\ MySQL Server 5.7"

Restoring Database Backup

All SapphireIMS database backup files can be found in the MySQLBackup folder as shown in the **Fig 9.1: Database backup files.**

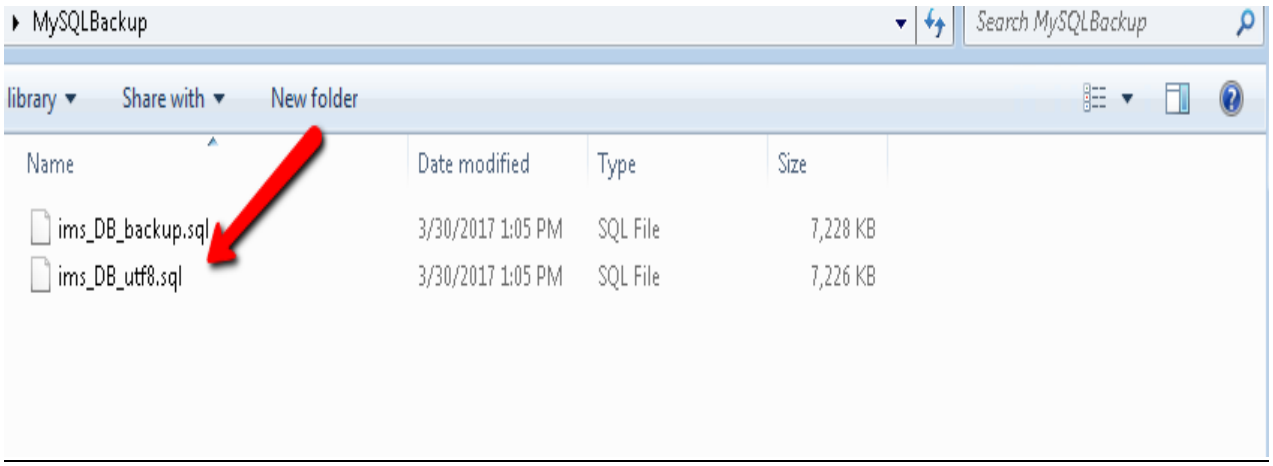


Fig 8.1: Database backup files

- Before starting the database restore, set **max_allowed_packet** variable by executing the following command. This setting is mandatory until entire database restoration is completed.

  set global max_allowed_packet = 1073741824;

  Note: If you restart the MySQL Service then this variable will be revert back to its old value.

- Create database (schema) by executing the following command.

  CREATE DATABASE ims;

- Restore the ims DB by executing either of the following commands as shown in **Fig 9.2.** If you find that ims_DB_utf8 file is present (Refer to **Fig 9.1),** then need to restore **ims_DB_uft8.sql**instead of **ims_DB_backup.sql** file**.**

mysql -uims -pims123 –f ims< "<folder path>\MySQLBackup\ims_DB_uft8.sql";

OR

mysql -uims -pims123 –f ims< "<folder path>\MySQLBackup\ims_DB_backup.sql";

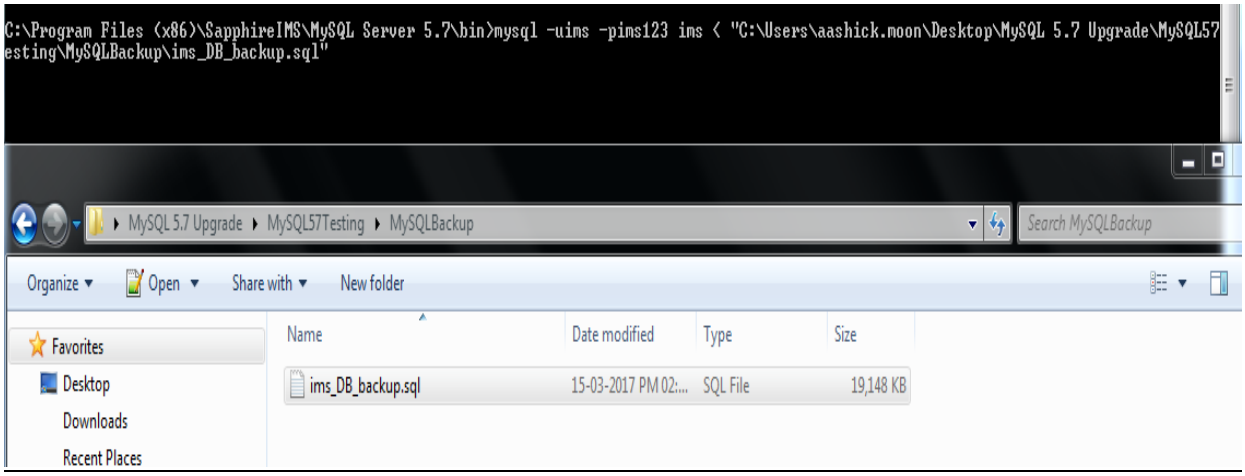


Fig 8.2: Restoring 'ims' schema backup

- Similarly for MSP Setup, all customer files backed up during the Step 1 must be restored.

Securing MySQL Server

MySQLUpgrade.bat will create pre-shipped users (ims, imsagent, imsweb and imshealth) without any access restrictions. In order to restrict global access to the database, follow the steps given below.

Note: In Cluster member / SapphireIMS standalone setups ignore this step

There are two ways to restrict user access to the database.

- Configuring the bind address
- Adding access restrictions to the database users

- **Configuring the bind address**

  This method is applicable for **Professional** setup alone. By configuring the bind address, we can apply network restrictions on MySQL server. Follow the steps given below to configure the bind address.

  - Choose bind-address

    Correct bind address must be chosen by referring to the below section. This bind-address must be used in all subsequent step below.

    Professional setup (SapphireIMS Server and MySQL Server on same machine)

    bind-address=127.0.0.1

    Professional setup (SapphireIMS Server and MySQL Server on different machines)

    bind-address=<*IPAddress of the MySQL Server installed machine****>***

    Enterprise setup

    On Enterprise setups we cannot configure ***bind-address***, so kindly proceed with the user level restriction section described below.

  - Update **my.ini**

Add a new line or update the existing line containing bind-address in the [mysqld] section of my.ini file and restart the SapphireMySQL Service. In case SapphireIMS and MySQL server is installed on different machines, after updating the bind address kindly proceed with the user level restrictions.

```
67  [mysqld]
68
69  # The TCP/IP Port the MySQL Server will listen on
70  port=3306
71  bind-address=127.0.0.1
72
```

Fig 9.1: Updating Bind-address in my.ini

- Update **config.bat**

  Open <SapphireIMS installed path>/ConsoleManagement/Database/c**onfig.bat** file and set **imsMySQLServer** variable value to either **localhost** or **<IPAddress>**of the MySQL Server installed machine.

  E.g. If bind-address = 127.0.0.1 then set **imsMySQLServer** variable to **localhost** or if bind-address = <IPAddress of MySQL Server installed machine> then set **imsMySQLServer** variable to **<IPAddress>**

- Update **standalone.xml**

  Open <SapphireIMS installed path>/WebManagement/standalone/configuration/**standalone.xml** file and change lines containing **jdbc:mysql** to above selected **bind-address**.

  E.g.: If ***bind-address = 127.0.0.1,*** *change the line* jdbc:mysql://172.16.11.1:3306 to jdbc:mysql://localhost:3306

```
<connection-url>
jdbc:mysql://172.16.11.1:3306/ims?eroDateTimeBehavior=convertToNull&amp;useOldAliasMetadataBehavior=true&amp;autoReconnect=true
</connection-url>
<driver>
```

Fig 9.2: Updating Standalone.xml

- Update **System DSN**

  Update System DSN using **ODBC Data Source Administrator** as shown in **Fig 7**(by running the command C:\Windows\SysWOW64\odbcad32.exe). Select **SystemDSN** and select the **System Data Sources**('ims'or Customer schema if any) and press **Configure**. Change **TCP/IP Server** as either **localhost** or **<IPAddress of MySQL Server installed machine>.**

  E.g. If bind-address = 127.0.0.1 then set **TCP/IP Server** to **localhost** or if bind-address = <IPAddress of MySQL Server installed machine> then set **TCP/IP Server** to **<IPAddress>**

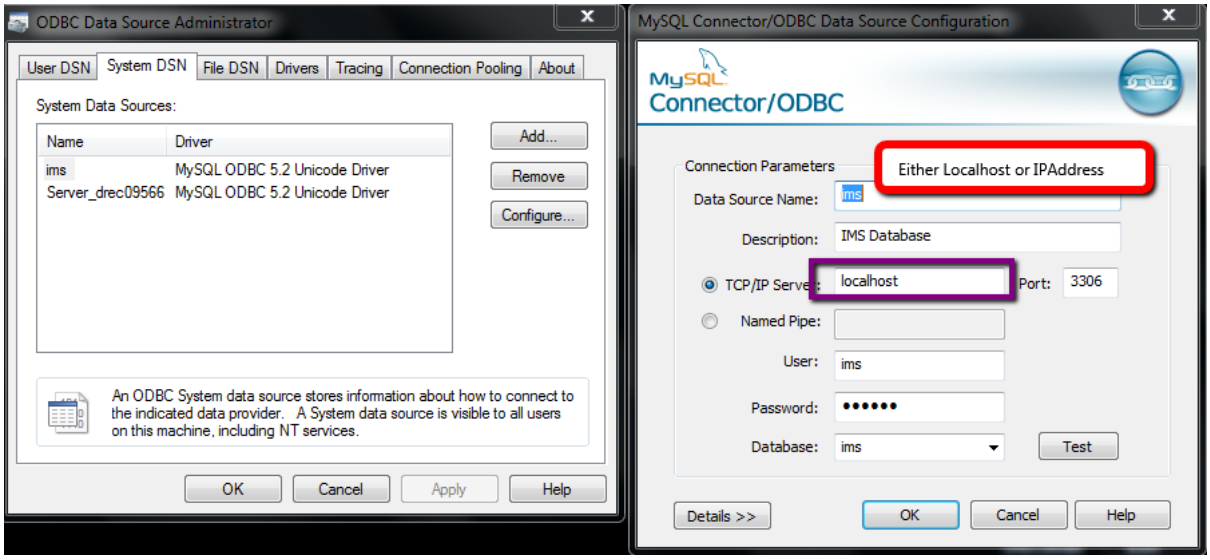


Fig 9.3: Updating System DSN

- **User level Restrictions**

  By applying user level restrictions, we can restrict database access to only known hosts and there by securing the database. Follow the steps given below to apply access restrictions on database users.

  Note: Following commands must be executed by connecting to MySQL server as root user.

  - Delete existing users by executing the following command.

    DELETE FROM mysql.user WHERE USER IN ('ims', 'imsweb', 'imsagent', 'imshealth');

  - Flush the privileges by executing the following command.

    FLUSH PRIVILEGES;

  - Create the users ims, imsweb, imsagent and imshealth by executing the following commands after replacing the **<IP Address>**and**<hostname>**with appropriate IP address and host name of the SapphireIMS server installed machine respectively.

  - If SapphireIMS Server and MySQL Server both are in same machine then create users as given below.

    CREATE USER 'ims'@'localhost' IDENTIFIED BY 'ims123';
    CREATE USER 'imsweb'@'localhost' IDENTIFIED BY 'ims123';
    CREATE USER 'imsagent'@'localhost' IDENTIFIED BY 'ims123';
    CREATE USER 'imshealth'@'localhost' IDENTIFIED BY 'ims123';

    CREATE USER 'ims'@'<IP Address>' IDENTIFIED BY 'ims123';
    CREATE USER 'imsweb'@'<IP Address>' IDENTIFIED BY 'ims123';
    CREATE USER 'imsagent'@'<IP Address>' IDENTIFIED BY 'ims123';
    CREATE USER 'imshealth'@'<IP Address>' IDENTIFIED BY 'ims123';

CREATE USER 'ims'@'<hostname>' IDENTIFIED BY 'ims123';
CREATE USER 'imsweb'@'<hostname>' IDENTIFIED BY 'ims123';
CREATE USER 'imsagent'@'<hostname>' IDENTIFIED BY 'ims123';
CREATE USER 'imshealth'@'<hostname>' IDENTIFIED BY 'ims123';

GRANT ALL ON *.* TO 'ims'@'localhost' WITH GRANT OPTION;
GRANT ALL ON *.* TO 'imsweb'@'localhost'WITH GRANT OPTION;
GRANT ALL ON *.* TO 'imsagent'@'localhost'WITH GRANT OPTION;
GRANT SELECT,EXECUTE,PROCESS ON *.* TO 'imshealth'@'localhost';

GRANT ALL ON *.* TO 'ims'@'<IP Address>'WITH GRANT OPTION;
GRANT ALL ON *.* TO 'imsweb'@'<IP Address>' WITH GRANT OPTION;
GRANT ALL ON *.* TO 'imsagent'@'<IP Address>' WITH GRANT OPTION;
GRANT SELECT,EXECUTE,PROCESS ON *.* TO 'imshealth'@'<IP Address>';

GRANT ALL ON *.* TO 'ims'@'<hostname>' WITH GRANT OPTION;
GRANT ALL ON *.* TO 'imsweb'@'<hostname>' WITH GRANT OPTION;
GRANT ALL ON *.* TO 'imsagent'@'<hostname>' WITH GRANT OPTION;
GRANT SELECT,EXECUTE,PROCESSON *.* TO 'imshealth'@'<hostname>';

- If SapphireIMS Server and MySQL Server are on different machines, then give access to the SapphireIMS installed machine by executing the following commands.

CREATE USER 'ims'@'<IP Address of SapphireIMS installed machine>' IDENTIFIED BY 'ims123';
CREATE USER 'imsweb'@'<IP Address of SapphireIMS installed machine>' IDENTIFIED BY 'ims123';
CREATE USER 'imsagent'@'<IP Address of SapphireIMS installed machine>' IDENTIFIED BY 'ims123';
CREATE USER 'imshealth'@'<IP Address of SapphireIMS installed machine>' IDENTIFIED BY 'ims123';

GRANT ALL ON *.* TO 'ims'@'<IP Address of SapphireIMS installed machine>'WITH GRANT OPTION;
GRANT ALL ON *.* TO 'imsweb'@'<IP Address of SapphireIMS installed machine>' WITH GRANT OPTION;
GRANT ALL ON *.* TO 'imsagent'@'<IP Address of SapphireIMS installed machine>' WITH GRANT OPTION;
GRANT SELECT,EXECUTE,PROCESS ON *.* TO 'imshealth'@'<IP Address of SapphireIMS installed machine>';

- Give access to all cluster member machines for all the users (ims, imsagent, imsweb, imshealth) by executing the following commands.

CREATE USER 'ims'@'<IP Address>' IDENTIFIED BY 'ims123';

CREATE USER 'imsweb'@'<IP Address>' IDENTIFIED BY 'ims123';
CREATE USER 'imsagent'@'<IP Address>' IDENTIFIED BY 'ims123';
CREATE USER 'imshealth'@'<IP Address>' IDENTIFIED BY 'ims123';

GRANT ALL ON *.* TO 'ims'@'<IP Address>'WITH GRANT OPTION;
GRANT ALL ON *.* TO 'imsweb'@'<IP Address>' WITH GRANT OPTION;
GRANT ALL ON *.* TO 'imsagent'@'<IP Address>' WITH GRANT OPTION;
GRANT SELECT,EXECUTE,PROCESS ON *.* TO 'imshealth'@'<IP Address>';

Note: Where <IPAddress> is the IPAddress of the cluster member installed machines.

Executing Post Installation Steps

Post successful installation of MySQL Server 5.7, execute the steps given below.

- Delete the MySQL Server 5.5 folders
  - Go to SapphireIMS installed path.
  - Delete the MySQL Server 5.5 folder as shown in the **Fig 10**.

  E.g. C:\Program Files (x86)\SapphireIMS\MySQL Server 5.5\

  Note: This path may vary. Check the relevant MySQL Server installed path on the local machine.
  - Delete the MySQL Server 5.5 folder from ProgramData folder.

  E.g.C:\ProgramData\MySQL\MySQL Server 5.5\

- Uninstall MySQL community using control panel

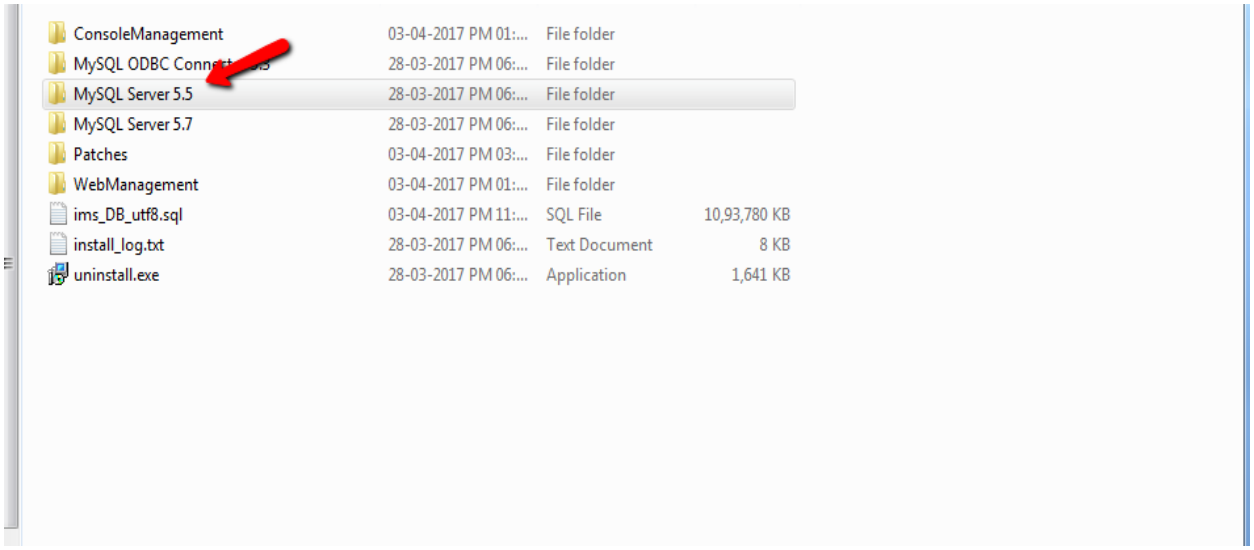


Fig 10: Delete MySQL Server 5.5 folder

- Post database restore, in case of **MSP** Setup, update the ***customermaster*** table by executing the following query in both ims and customer databases

  update customermaster set DBPWD = 'aW1zMTIz' where DBUID = 'root';

- Post Restoration of database backup, run the mysql_upgrade.exe as given below. Open Command Prompt as **Run as Administrator**, and execute the following command.

  <MySQL Bin Path>\mysql_upgrade.exe -u <UserName> -p <Password>

Upgrade Steps (Linux)

Follow the steps mentioned below to manually upgrade MySQL Server 5.5 to 5.7 on a Linux system.

Backing up my.cnf Configuration Settings

Note down the following variable values from MySQL Server 5.5 my.cnf file. Post MySQL 5.7 installation and before restoring the database backup, update the respective variable values in MySQL Server 5.7 my.cnf file.

1. max_connections
2. tmp_table_size
3. key_buffer_size
4. innodb_log_buffer_size
5. innodb_buffer_pool_size

Note : Apart from above changes, if any other parameters are customized in MySQL 5.5 my.ini file then similar changes must be done in MySQL 5.7 my.ini as well.

Backing up MySQL 5.5 Schema

This step involves taking a schema backup of MySQL 5.5 server.

Note: In Cluster member / SapphireIMS standalone setups ignore this step

- In case of Professional setup, you need to backup 'ims' DB alone.
- If the setup is MSP, then you need to backup both 'ims' and Customer Schema one by one.
- Before taking the backup, source AlterScript.sql file if ODBC 5.1 is installed. If ODBC 5.2 is installed then ignore sourcing AlterScript.sql file.

Note: AlterScript.sql can be found in the <mysql_upgrade_folder>\MySQL Msi\ folder.

- In Professional / MSP Probe/ Cluster Server, on system where MySQL server is installed, need to source this file in '**ims'** schema. Open **Command Prompt** as **Run as Administrator** and execute the following commands**.**

  cd <SapphireIMS installed path>/MySQL Server 5.5/bin/

mysql -h<MySQL Server installed machine IPAddress>-u ims -p<ims password>ims <<mysql_upgrade_folder>/MySQL Msi/AlterScript.Sql

- In MSP Server setup, on system where MySQL server is installed, source this file in **customer** schema only **(i.e. 'ims' schema must be excluded).** Open **Command Prompt** as **Run as Administrator** and execute the following commands**.**

  cd <SapphireIMS installed path>/MySQL Server 5.5/bin/

  mysql -h<MySQL Server installed machine IPAddress> -uims -p <ims password> <Customer Schema Name> < "<mysql_upgrade_folder>/MySQL Msi/AlterScript.Sql"

Backup ims database:

- Execute the following command to backup **ims** database by connecting to MySQL Server remotely from SapphireIMS installed machine**.** Make sure that entire schema is backed up and keep the backup file in a safe place.

  mysqldump -h<IPAddress of the MySQL Server installed machine>-uims -pims123 --events -R --triggers ims > ims_db_Dump.sql

Backup customer schema:

- If the setup is **MSP**, then you need to backup Customer Schema one by one.
- Execute the following command to backup customer database**.** Make sure that entire schema is backed up and keep the backup file in a safe place.

  mysqldump -h<IPAddress of the MySQL Server installed machine>-uims -pims123 --events -R --triggers [customer schema name] > [customer schema name]_db_Dump.sql

  E.g. mysqldump -*h172.11.12.01*-uims -pims123 --events -R --triggers customer_1 >customer_1_db_Dump.sql

Executing Pre Installation Steps

This step involves preparing the setup for MySQL Server 5.7 installation.

- Find the version of the MySQL ODBC driver installed on the server using any of the 2 methods listed below.

  Method 1:
  Look for "**MySQL ODBC Connector"** folder in SapphireIMS installed location. You may find the version number suffixed to the folder name.

  E.g. If SapphireIMS server installed location contains a folder "**MySQL ODBC Connector 5.1**" then it means that MySQL server ODBC driver 5.1 is installed.

  Method 2:
  Check **Control panel** for version of the MySQL ODBC driver installed.

- If ODBC driver 5.1 is installed on server
  - Perform utf8 conversion changes by executing the following command.

Note : MySQL Upgrade will change only DEFINER=`ims`@`` to DEFINER=`ims`@`localhost`, remaining possibilities like some other definers found then need to handle accordingly by the end user.

cd <mysql_upgrade_folder>\MySQL Msi\SedUtility
sed.exe -e "s/latin1_swedish_ci/utf8_general_ci/" -e "s/latin1/utf8/" -e "s/DEFINER=`ims`@``/DEFINER=`ims`@`localhost`/" < "<mysql_upgrade_folder>\MySQLBackup\ims_DB_Dump.sql">"<mysql_upgrade_folder>\MySQLBackup \ims_DB_utf8.sql"

Note: *sed.exe* can be found in the <mysql_upgrade_folder>\MySQL Msi\SedUtility\ folder.

Post successful execution, it will create utf8 converted file by the name ***ims_DB_utf8.sql.*** Keep this file in a safe place for future reference.

- If ODBC driver 5.2 is installed on the server

Utf8 changes are already applied on SapphireIMS database and hence utf8 data conversion is not required, but need to make definer changes by executing the following command.

Note : MySQL Upgrade will change only DEFINER=`ims`@`` to DEFINER=`ims`@`localhost`, remaining possibilities like some other definers found then need to handle accordingly by the end user.

cd <mysql_upgrade_folder>\MySQL Msi\SedUtility
sed.exe -e "s/DEFINER=`ims`@``/DEFINER=`ims`@`localhost`/" <"<mysql_upgrade_folder>\MySQLBackup\ ims_DB_Dump.sql" >"<mysql_upgrade_folder>\MySQLBackup \ims_DB_Backup.sql"

Note: Post MySQL 5.7 Server installation, you need to restore either <Schema Name>_DB_utf8.sql or <Schema Name>_DB_backup.sql file present in the MySQLBackup folder.

Installing MySQL 5.7 Server

- Manually Un-install MySQL 5.5 Server from Linux machine.
- Install MySQL 5.7.17 Server manually on Linux machine according to the flavour of the Linux machine.

Note: Currently SapphireIMS supports MySQL Server Version 5.7.17.

Restoring my.cnf Configuration Settings

- Copy the following variable values backed up from MySQL Server 5.5 my.cnf file and update the respective variable values in MySQL Server 5.7 my.cnf file.

1. max_connections
2. tmp_table_size

3. key_buffer_size
4. innodb_log_buffer_size
5. innodb_buffer_pool_size

Note : Apart from above changes, if any other parameters are customized in MySQL 5.5 my.ini file then similar changes must be done in MySQL 5.7 my.ini as well.

- Restart the **SapphireMySQL** Service.

Creating database users

- Connect to MySQL Server 5.7 as **root** user on Linux machine and then execute the following commands

CREATE USER 'root'@'<IPAddress of MySQL Server installed machine>' IDENTIFIED BY 'ims123';
CREATE USER 'root'@'<HostName of MySQL Server installed machine>' IDENTIFIED BY 'ims123';

GRANT ALL ON *.* TO 'root'@'<IPAddress of MySQL Server installed machine>' WITH GRANT OPTION;
GRANT ALL ON *.* TO 'root'@'<HostName of MySQL Server installed machine>' WITH GRANT OPTION;

CREATE USER 'ims'@'%' IDENTIFIED BY 'ims123';
CREATE USER 'imsweb'@'%' IDENTIFIED BY 'ims123';
CREATE USER 'imsagent'@'%' IDENTIFIED BY 'ims123';
CREATE USER 'imshealth'@'%' IDENTIFIED BY 'ims123';

GRANT ALL ON *.* TO 'ims'@'%' WITH GRANT OPTION;
GRANT ALL ON *.* TO 'imsweb'@'%'WITH GRANT OPTION;
GRANT ALL ON *.* TO 'imsagent'@'%'WITH GRANT OPTION;
GRANT SELECT,EXECUTE,PROCESS ON *.* TO 'imshealth'@'%';

Restoring Time Zone Changes

Time zone changes can be restored by executing the following command as shown in the **Fig 12.**

cd "C:\Program Files or Program Files (x86)\SapphireIMS\MySQL Server 5.7\bin"
mysql-uims -pims123 mysql< "<mysql_upgrade_folder>\MySQL Msi\timezone_posix.sql"

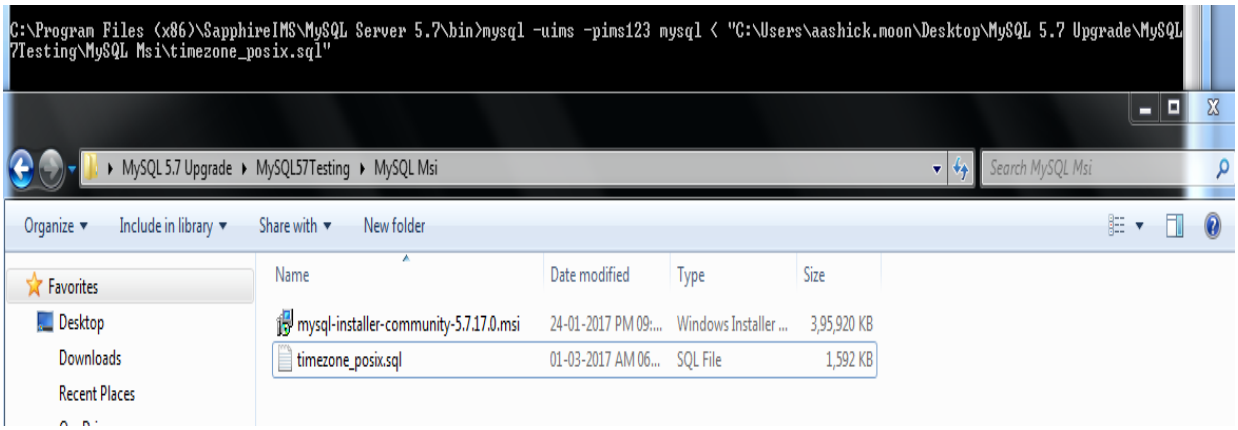


Fig 12: Restoring time zone changes

Restoring Database Backup

All SapphireIMS database backup files can be found in the MySQLBackup folder**.**

- Before starting the database restore, set **max_allowed_packet** variable by executing the following command. This setting is mandatory until entire database restoration is completed.

  set global max_allowed_packet = 1073741824;

  Note: If you restart the MySQL Service then this variable will be revert back to its old value.

- Create '**ims'** schema by executing the following command.
  mysql -h<IPAddress of MySQL Server installed machine> -uims -pims123 -e "CREATE DATABASE ims"

- Restore '**ims'** Schema by executing either of the following commands.
  mysql –h<IPAddress of MySQL Server installed machine> -uims -pims123 –f ims < "<Backup file path>\ims_DB_uft8.sql";
  OR
  mysql -h<IPAddress of MySQL Server installed machine>-uims -pims123 –f ims< "<Backup file path>\ims_DB_backup.sql";

- Similarly for MSP Setup, restore all customer backed up files by executing the following steps.
  mysql –h<IPAddress of MySQL Server installed machine>-uims -pims123 –f <customer schema name> < "<Backup file path>\<customer schema name>_DB_uft8.sql";
  OR
  mysql -h< IPAddress of MySQL Server installed machine> -uims -pims123 –f <customer schema name> < "<Backup file path>\<customer schema name>_DB_backup.sql";

- Post Restoration of database backup, run the mysql_upgrade.exe as given below. Open Command Prompt as **Run as Administrator**, and execute the following command.

  <MySQL Bin Path>\mysql_upgrade.exe -u <UserName> -p <Password>

- Post restoration of Database backup Run **MySQLUpgrade.bat** in SapphireIMS installed machine.

Securing MySQL Server

In order to restrict global access to the database and enable access to the SapphireIMS server alone, follow the steps given below.

There are two ways to restrict user access to the database. Choose either of the following methods based on the SapphireIMS setup type installed.

  - Configuring the bind address
  - Adding access restrictions to the database users

- **Configuring the bind address**

This method is applicable for **Professional** setup alone. By configuring the bind address, we can apply network restrictions on MySQL server. Follow the steps given below to configure the bind address.

- Choose bind-address
  Correct bind address must be chosen by referring to the below section. This bind-address must be used in all subsequent step below.

  Professional setup
  bind-address* = <IPAddress of the MySQL Server installed machine***>***

  Enterprise setup
  On Enterprise setups we cannot configure ***bind-address***, so kindly proceed with the user level restriction section described below.

- Update **my.cnf**

  - Add a new line or update the existing line containing bind-address in the [mysqld] section of my.cnf file and restart the MySQL Service. After updating the bind address kindly proceed with the user level restrictions.

- **User level Restrictions**
  By applying user level restrictions, we can restrict database access to only known hosts and there by securing the database. Follow the steps given below to apply access restrictions on database users.

  Note: Following commands must be executed by connecting to MySQL server as root user.

  - Delete existing users by executing the following command.

    DELETE FROM mysql.user WHERE USER IN ('ims', 'imsweb', 'imsagent', 'imshealth');

  - Flush the privileges by executing the following command.

    FLUSH PRIVILEGES;

  - Create the users ims, imsweb, imsagent and imshealth by executing the following commands after replacing the **<IP Address>**with appropriate IP address of the SapphireIMS server installed machine.

    CREATE USER 'ims'@'<IP Address>' IDENTIFIED BY 'ims123';
    CREATE USER 'imsweb'@'<IP Address>' IDENTIFIED BY 'ims123';
    CREATE USER 'imsagent'@'<IP Address>' IDENTIFIED BY 'ims123';
    CREATE USER 'imshealth'@'<IP Address>' IDENTIFIED BY 'ims123';

    GRANT ALL ON *.* TO 'ims'@'<IP Address>'WITH GRANT OPTION;
    GRANT ALL ON *.* TO 'imsweb'@'<IP Address>' WITH GRANT OPTION;
    GRANT ALL ON *.* TO 'imsagent'@'<IP Address>' WITH GRANT OPTION;
    GRANT SELECT,EXECUTE,PROCESS ON *.* TO 'imshealth'@'<IP Address>';

Executing MySQLUpgrade.bat

Follow the steps given below to execute MySQLUpgrade.bat on SapphireIMS Server installed machine.

- Unzip the MySQLUpgrade.zip file.
- Download mysql-installer-community-5.7.17.0.msi from the following link and copy to<MySQLUpgrade Folder path>\MySQLUpgrade\MySQL Msi\ folder.

  (**https://downloads.mysql.com/archives/get/file/mysql-installer-community-5.7.17.0.msi**)

- Open a new command prompt as "Run as administrator", then execute the MySQLUpgrade.bat batch file.

  E.g.: <MySQL5.7Upgrade Folder path>\MySQL5.7Upgrade\MySQLUpgrade\MySQLUpgrade.bat

- Post Upgrade to MySQL 5.7, Copy the **my.cnf** file from Linux (MySQL Server installed) machine and paste it inside the "MySQL Server 5.7 directory" of the SapphireIMS Server machine and change the extension to **.cnf** to **.ini** .