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AQUARIUS Time-Series: Installation Guide

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Contents

1 About this User Guide	6
2 System Requirements	7
2.1 AQUARIUS Time-Series Client	7
2.2 AQUARIUS Time-Series Server	8
3 Recommended Server Configuration	10
4 Install the AQUARIUS Time-Series Application Server	11
4.1 Prerequisites for Application Server Installation	11
4.1.1 Prerequisite 1: Internet Information Services (IIS) Web Server Installation	11
4.1.2 Prerequisite 2: Oracle Data Access Components (ODAC) - Oracle Installations Only	11
4.1.3 Prerequisite 3: Microsoft Updates	12
4.1.4 Prerequisite 4: Install AQUARIUS Licence Manager and Activate AQUARIUS Time-Series	12
4.2 Windows Integrated Authentication for AQUARIUS Time-Series Users	12
4.3 Install AQUARIUS Time-Series Server	12
5 AQUARIUS Time-Series Database Schema	14
6 Microsoft SQL Server Database Install	15
6.1 Obtain and Install SQL Server	15
6.2 Create your SQL Server Database	15
6.3 Copy the Installation Files	16
6.4 Install the Schema Admin Objects	16
6.5 Install the Core Schema Tables	17
6.6 Configure Database Server	17
6.6.1 Set the SQL Server Authentication Mode	17
6.6.2 Enable the TCP/IP Connection Protocol	17
6.6.3 Configure TempDB	18
6.6.4 Configure Firewall	18
7 Oracle Server Database Install	19
7.1 About the AQUARIUS Schema	19
7.1.1 Tablespace Considerations	19
7.2 About Installing Oracle Software	19
7.3 Summary of Steps	19
7.4 Create your Oracle Instance	20
7.5 Create the AQUARIUS Schema	20
7.6 Deploy Locally from the Database Server using OS Authentication	21
7.6.1 STEP 1: Place the Database Setup Folder	21
7.6.2 STEP 2: Run the Install Scripts	21
7.6.3 STEP 3: Check the Log Files	22

7.7 Deploy from a Client against a Remote Oracle Instance.....	22
7.7.1 STEP 1: Install the Database Setup Folder.....	22
7.7.2 STEP 2: Run the Install Scripts.....	23
7.7.3 STEP 3: Check the Log Files.....	23
8 Configure and License AQUARIUS Time-Series.....	24
8.1 Connect the AQUARIUS Server to the AQUARIUS Database.....	24
8.2 Start the AQUARIUS Server.....	24
8.3 Test the AQUARIUS Server.....	24
8.4 Additional Configuration and Resources.....	24
9 Customize your AQUARIUS Installation (if applicable).....	25
10 Install Client Software.....	26
10.1 Install Microsoft .NET Framework.....	26
10.2 Install the AQUARIUS Client software.....	26
10.3 Launch AQUARIUS Springboard.....	26
11 Upgrading AQUARIUS Time-Series.....	27
11.1 Before Upgrading.....	27
11.1.1 Resolve any Failed Events.....	27
11.1.2 Upgrade to AQUARIUS 2017.2 Update 1, If Required.....	27
11.1.3 Run the AQUARIUS 2017.2 Upgrade Tool, If Required.....	27
11.1.4 Windows Integrated Authentication for AQUARIUS Time-Series Users.....	27
11.2 Upgrading from AQUARIUS Time-Series Server 2015.3 or Later.....	28
11.2.1 Step 1: Stop all AQUARIUS Servers.....	28
11.2.2 Step 2: Upgrade AQUARIUS Licence Manager and Licence Keys.....	28
11.2.3 Step 3: Back up, then Upgrade the AQUARIUS Database.....	29
11.2.3.1 Before Upgrading the Database.....	29
11.2.3.2 Begin your Upgrade.....	29
11.2.4 Step 4: Install Microsoft .NET Framework.....	30
11.2.5 Step 5: Upgrade AQUARIUS Licence Manager and Activate Licence Key(s).....	30
11.2.6 Step 6: Upgrade Oracle Data Access Components (ODAC).....	30
11.2.7 Step 7: Upgrade the AQUARIUS Time-Series Server.....	30
11.2.7.1 Start the AQUARIUS Server.....	31
11.2.7.2 Verify the Server Upgrade.....	31
11.3 Upgrading AQUARIUS Time-Series Client Software.....	31
12 Troubleshooting.....	32
12.1 Issues Related to Upgrading.....	32
12.1.1 AQUARIUS Server Does Not Start.....	32
12.1.2 After an Upgrade My Time-Series Do Not Display.....	32
12.1.3 After an Upgrade AQUARIUS Time-Series Pages Do Not Display Properly.....	32
12.2 Issues Related to Licences and Licensing.....	33

12.2.1 Licensing Issues	33
12.3 Issues Related to AQUARIUS Server and Database.....	33
12.3.1 ODAC Installation when AQUARIUS Server and Database are Co-resident (Oracle Database Only).....	33
12.4 Issues Related to Database Connections.....	33
12.4.1 Database Connection Issues.....	33
12.5 Issues Related to AQUARIUS Data Connectors and Data Synchronization.....	34
12.5.1 AQUARIUS Samples and your AQUARIUS Samples Connector.....	34
12.6 Issues Related to AQUARIUS Manager.....	34
12.6.1 Presentation Framework Error.....	34
13 Support Contact.....	35
13.1 Vancouver, CANADA	35
13.2 Hobart, AUSTRALIA	35
Appendix A: Oracle User Privileges Required to Perform an AQUARIUS Install or Upgrade.....	36

1 About this User Guide

This guide pertains to the installation and upgrade of AQUARIUS Time-Series Server and its Client components.

2 System Requirements


The installed version of AQUARIUS Time-Series Server and AQUARIUS Time-Series Client must match.

2.1 AQUARIUS Time-Series Client

The following table summarizes the tested configurations for the AQUARIUS Time-Series Client.

Table 1 - Client-tested Configurations

Client-tested Configuration	
Processor	64-bit Quad-core (4 physical cores) or higher, 2 GHz clock speed
Operating System	Microsoft Windows 10 Enterprise (64-bit)
	Microsoft Windows 8.1 Enterprise (64-bit)
	Microsoft Windows 7 Enterprise (64-bit)
	Microsoft Windows Server 2012 R2 Standard Edition (64-bit)
Memory	4 GB
Free Disk Space	1 GB minimum for recommended installation
Internet Browser	Internet Explorer 11.0 (However, IE 11 is not supported on Windows 10)
	Microsoft Edge 40 (Windows 10 only)
	Google Chrome 53
	Mozilla Firefox 59
Client Configuration	Microsoft .NET Framework (4.7 and later)
Screen Display Resolution	Minimum 1440 x 900 pixels

 **NOTE** Administrative privileges are required for installation. Internet connectivity is recommended for activation.

2.2 AQUARIUS Time-Series Server

AQUARIUS Time-Series Server must be run on Windows Server (64-bit).

! **IMPORTANT** The Microsoft Windows Server 2008 R2 Enterprise (64-bit) operating system is now deprecated and will not be supported in future releases. See the detailed system requirements below.

The requirements for the AQUARIUS Time-Series Server and Database Server computers will depend on a number of factors, including most significantly:

- The amount of data to be stored in the system, in particular the number of time-series.
- The frequency of automated data append.
- The number of derived signals configured in the system. (For example: *Composite*; *Rating Curve Derived*; *Statistical Derived*; and *Calculated Derived*.)

The tested configuration described below are a minimum for a typical installation such as the following:

- The total number of Basic time-series is less than 1000.
- Automated data append once per hour (or less frequent) for each time-series.
- On average, there is one (1) derived signal (or less) per Basic time-series.

Larger installations may require additional computing resources to achieve optimal performance. If likely to exceed the above described typical installation, please contact support@aquaticinformatics.com for system recommendations.

AQUARIUS Time-Series Server is not supported on a computer that is hosting other websites. In particular, other websites that use the Default Web Site are known to interfere with the operation of AQUARIUS Time-Series.

Support for AQUARIUS Time-Series is limited to running with English regional settings. This can be set in your Windows Control Panel under Region and Language.

The following table below summarizes the tested configurations for the AQUARIUS Time-Series Application Server.

Table 2 - Application Server-tested Configurations

Application Server-tested Configuration	
Processor	64-bit Quad-core (4 physical cores) or higher
Operating System	Microsoft Windows Server 2012 R2 Standard Edition (64-bit)
	Microsoft Windows Server 2008 R2 Enterprise (64-bit) (deprecated)

Application Server-tested Configuration

Memory	8 GB
Free Disk Space	10 GB with regular monitoring depending on log file growth
Server Configuration	Internet Information Services (IIS)
	Microsoft .NET Framework (4.7 and later)
	ASP.Net
	If database is Oracle, Oracle Data Access Components (ODAC) (64-bit 12c) Release 4 (12.1.0.2.4)
	Microsoft .NET Framework (4.7 and later)
Supported BLOB Storage Providers	Windows File System
	Amazon S3

i NOTE Administrative privileges are required for installation. Internet connectivity is recommended for activation.

Table 3 - Database Server Configurations

Database Server (separate hardware is optional)	
Processor	64-bit Quad-core
Operating System	Microsoft Windows Server 2012 R2 Standard Edition (64-bit)
	Microsoft Windows Server 2008 R2 (deprecated)
	Linux, Solaris (for Oracle Database)
Memory	4 GB
Database	Oracle 12c Standard Edition (non-container database only) Oracle 12c Enterprise Edition (non-container database only)
	Microsoft SQL Server 2014
	Microsoft SQL Server 2012
	Microsoft SQL Server 2012 Express

3 Recommended Server Configuration

For optimal performance, the AQUARIUS Time-Series Server product requires two servers, an Application Server and a Database Server.

- **Application Server.** The Application Server runs the AQUARIUS Time-Series Server software, which hosts the Springboard web interface, runs all automation tasks, and provides APIs for data acquisition, data publishing and reporting. If necessary, these services can be clustered using Windows load balancing configurations. This should be a Windows Server class computer.
- **Database Server.** The Database Server runs the database software (Oracle Database or Microsoft SQL Server). If using SQL Server then the Database Server operating system must be Windows Server. If using Oracle, the Database Server can be Windows Server or Linux.

AQUARIUS Time-Series can also be configured with the Application Server and Database Server co-resident on a single Windows Server computer.

WARNING The AQUARIUS Time-Series Application Server must not be directly accessible from the internet—even with HTTPS enabled.

Ensure Windows is configured to run with English Regional Settings. This is set in the Windows Control Panel under Region and Language.

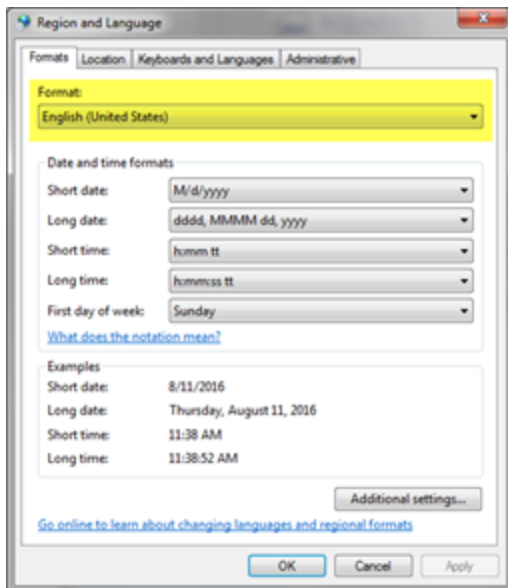


Figure 1 - Windows Control Panel: Region and Language Settings

4 Install the AQUARIUS Time-Series Application Server

Installing the AQUARIUS Time-Series Application Server involves:

- Satisfying prerequisites related to:
 - Internet Information Services (IIS)
 - Oracle Data Access Components (ODAC)
 - Microsoft Updates
 - Activating your AQUARIUS Time-Series Licence
- Establishing Windows Integrated Authentication for AQUARIUS Time-Series Users; and
- Performing installation steps on the Application Server machine.

4.1 Prerequisites for Application Server Installation

4.1.1 Prerequisite 1: Internet Information Services (IIS) Web Server Installation

If not already installed, IIS web server will be installed and configured during AQUARIUS setup. Ensure that no other web servers (for example, Apache) are installed and listening on port 80.

4.1.2 Prerequisite 2: Oracle Data Access Components (ODAC) - Oracle Installations Only

These steps are performed on the Application Server machine.

If you are using Oracle as your database, you will need to install the Oracle Data Access Components (ODAC) 64-bit 12c Release 4 (12.1.0.2.4). The one component that is required by AQUARIUS is the Oracle Data Provider for .NET; Oracle Instant Client comes bundled with this component. This component can be selected during the installation.

The ODAC can be downloaded directly from Aquatic Informatics at the following link:

- http://support.aquaticinformatics.com/AQUARIUS/Downloads/Misc/ODAC/ODAC121024_x64.zip

Or from Oracle's website:

- <http://www.oracle.com/technetwork/database/windows/downloads/index.html>

i **NOTE** If installing the AQUARIUS Time-Series Server on the same machine as the Oracle database, please see "Troubleshooting" on page 32 for more information about installing the ODAC.

After installation of the ODAC, reboot the AQUARIUS Time-Series Server even if the system does not prompt you to do so. This is required for the ODAC to fully install.

4.1.3 Prerequisite 3: Microsoft Updates

We strongly recommend installing all Microsoft Updates before proceeding with the installation or upgrade of the AQUARIUS Time-Series Server.

- **Microsoft Windows Universal C Runtime (CRT).** The CRT web installer is included in your installation package. When installing the CRT, internet connectivity is required to download the required files and run the install. If the CRT has not been installed, the AQUARIUS Time-Series Server installer will automatically download and install it. For more details on the CRT update, see: <https://support.microsoft.com/en-ca/kb/2999226>
- **Microsoft .NET Framework.** The .NET Framework web installer is included in your installation package. When installing the .NET Framework, internet connectivity is required to download the required files and run the install. If the .NET Framework has not been installed, the AQUARIUS Time-Series Server installer will automatically download and install it. For more details on the .NET Framework update, see: <https://www.microsoft.com/net/download/framework>

! **IMPORTANT** Depending on the .NET version you are upgrading from, you may be prompted to reboot your system. If prompted, ensure you reboot your system; otherwise the installation cannot proceed.

4.1.4 Prerequisite 4: Install AQUARIUS Licence Manager and Activate AQUARIUS Time-Series

AQUARIUS Time-Series is activated using AQUARIUS Licence Manager. For more information about installing the utility and activating AQUARIUS products, please refer to the *AQUARIUS Licence Manager Guide*.

4.2 Windows Integrated Authentication for AQUARIUS Time-Series Users

For first-time installations of AQUARIUS Time-Series, to enable Active Directory authentication, use the script and instructions provided in *Appendix A: Configuring Active Directory Users* of the *AQUARIUS Time-Series System Administration Guide*.

i **HINT** If you require assistance with scripts provided in the *AQUARIUS Time-Series System Administration Guide*, please contact your Support team at support@aquaticinformatics.com.

4.3 Install AQUARIUS Time-Series Server

These installation steps are performed on the Application Server machine.

- Before getting started, ensure you are logged on as an Administrator.
- Run the server setup file AQUARIUS Time-Series Server Installer.exe provided in the Server folder as part of the release package.

i **NOTE** By default, when installing or uninstalling the AQUARIUS Time-Series Server, all installation and uninstallation log files are placed in the Windows default temp folder [%TEMP%]. You can change the path of this temp folder by running:
`AQUARIUS Time-Series Installer.exe /log C:\AnotherLogPath.txt`

-
- If the Application Server does not have the Microsoft .NET Framework installed, it will attempt to download and install from Microsoft's website before continuing. If the Application Server does not have an Internet connection, it can be downloaded separately from Microsoft's download center at <https://www.microsoft.com/net/download/framework>.

5 AQUARIUS Time-Series Database Schema

The AQUARIUS Database Schema provides centralized storage and retrieval for the user-created data and meta-data assets of the AQUARIUS family of products.

The AQUARIUS Database Schema is part of the AQUARIUS Server product.

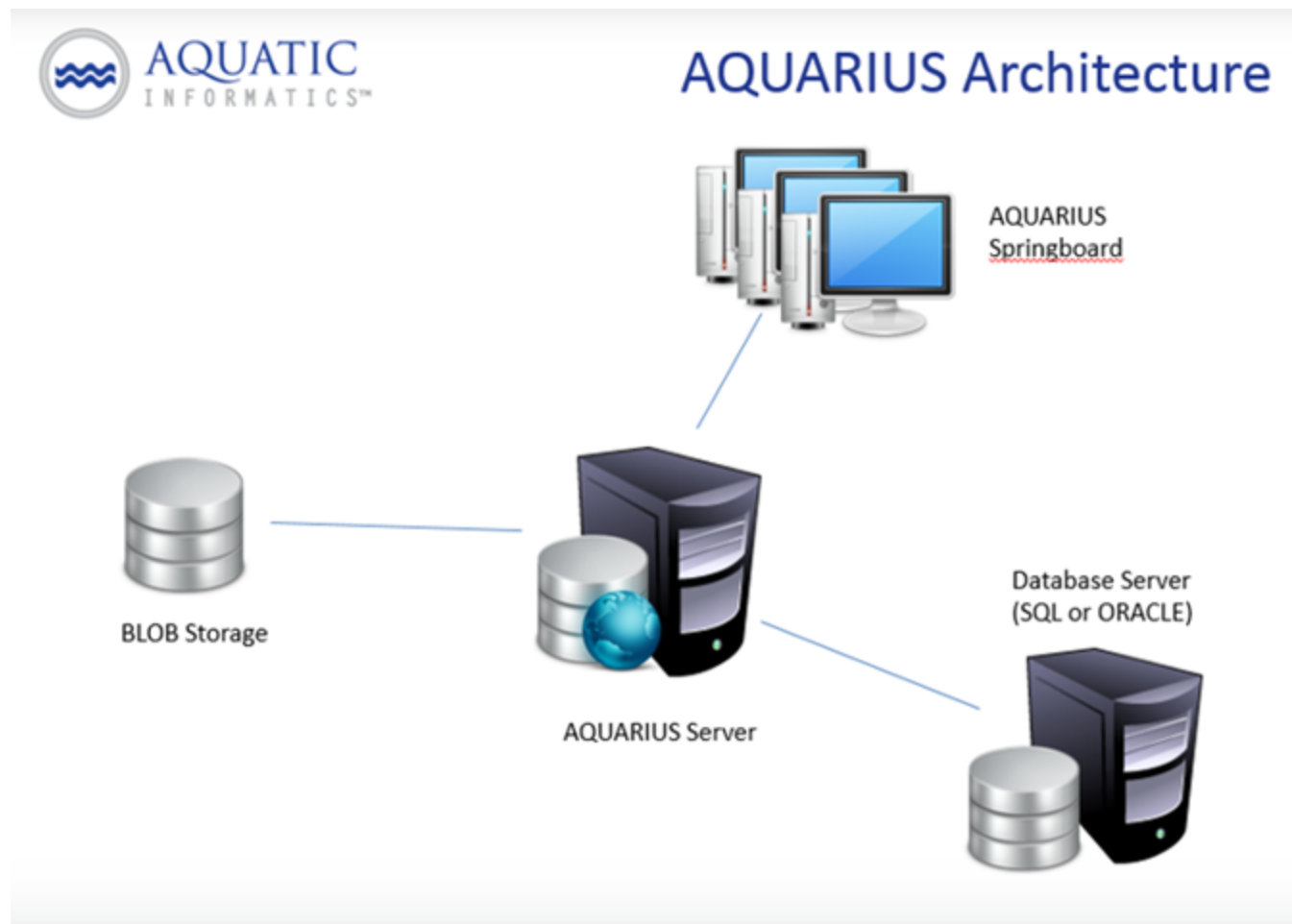


Figure 2 - AQUARIUS Architecture

6 Microsoft SQL Server Database Install


The following steps are performed on the Database Server machine.

1. Obtain and Install SQL Server
2. Create your SQL Server Database
3. Copy the Installation Files
4. Install the Schema Admin Objects
5. Install the Core Schema Tables
6. Configure the Database Server:
 - Set the SQL Server Authentication Mode;
 - Enable the TCP/IP Connection Protocol;
 - Configure TempDB (Database); and
 - Configure Firewall.


The AQUARIUS Database requires Microsoft SQL Server 2012 or 2014 to be installed on a server that is accessible by the AQUARIUS Time-Series Application Server.

6.1 Obtain and Install SQL Server

If you do not yet have SQL Server, you should visit Microsoft's SQL Server Editions web page for information on how to select an appropriate version.


 **NOTE** For the supported versions of SQL Server, see "System Requirements" on page 7 of this installation guide.

If you determine that SQL Server Express is suitable, this web page also includes information on how to obtain the free downloadable version. We strongly recommend that you also download and install SQL Server Management Studio Express, which is available on the same page where you will find the download of SQL Server Express.

 **IMPORTANT** SQL Server must be installed with SQL Server and Windows Authentication mode.

6.2 Create your SQL Server Database

Prior to running the scripts provided by Aquatic Informatics that install objects and create tables, a SQL Server database needs to be created.

 **IMPORTANT** When creating your SQL Server Database, ensure its collation is case insensitive, as some of the AQUARIUS APIs perform case-insensitive searches for important data such as Location Name and Location Identifier.

To create your SQL Server Database using Microsoft SQL Server Management Studio:

1. Right-click on the **Database** node and select **New Database...**
2. Enter the desired name of the database; for example, **AQUARIUS**.

3. Click **OK**.

! **IMPORTANT** The database name must not contain any hyphens ("-").

6.3 Copy the Installation Files

The database installation scripts are found in the release package in the folder: ...**Database_Setup**\SQL Server**Install**\

Copy the entire **Database_Setup** folder—including all subfolders—to the Database Server.

i **NOTE** These files can also be found on the Application Server as part of the AQUARIUS install process:

```
<install directory>\Aquatic Informatics\AQUARIUS Server\Database_Setup\
```

The folder structure for this installation package, partially expanded, is shown in the following figure:

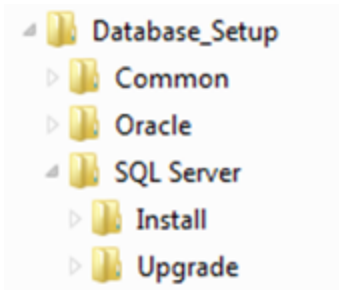


Figure 3 - Installation Package-Folder Structure

All scripts are designed to be run from the command line in the appropriate directory.

6.4 Install the Schema Admin Objects

After creating your SQL Server database, the scripts required to install objects and create tables can be run. Open a Command Prompt (as an Administrator), then navigate to the SQL Server Install folder and run the Install Admin Objects batch file: **<Database_Setup folder>\SQL Server\Install>install_admin_objects.bat**

You will first be prompted for the following:

- **Name of your database.** This must be the Database Name as entered when you created your database. If you do not provide a name, the default of *aquarius* will be used.
- **Name of the server on which SQL Server is running.** This defaults to localhost but you might require something different. The general form of this value is *server_name\instance_name* where the instance name is only needed if you have named instances of SQL Server installed.
- **SQL Server user name and password.** This user will be given the *aquarius_admin* role and will be used by AQUARIUS for database access.

HINT For more information about the various AQUARIUS Time-Series roles and their associated privileges, see the *AQUARIUS Time-Series User Guide*.

To verify the AQUARIUS Schema Admin Objects creation, check the log file `install_log.txt`.

6.5 Install the Core Schema Tables

The DDL and DML statements needed to create and pre-populate the AQUARIUS Database core schema tables are placed in a SQL script called `install_core_schema.sql`.

To create the core schema tables:

1. Use the provided `install_core_schema.bat` file.
2. From a command window, navigate to the **SQL Server Install** folder and run the **Install Core Schema batch file**: `<Database_Setup folder>\SQL Server\Install >install_core_schema.bat`

IMPORTANT DO NOT RUN this script more than once. If an error occurs during this installation, the database will need to be dropped and recreated prior to re-running the scripts.

3. Please check all resulting `.log` files in the install directory to verify the AQUARIUS Schema install.

6.6 Configure Database Server

The AQUARIUS Database requires some specific SQL Server features to be configured for its successful operation.

NOTE If you change these settings on the Database Server, you need to restart the DB before AQUARIUS Time-Series can successfully connect.

6.6.1 Set the SQL Server Authentication Mode

AQUARIUS requires that the authentication mode be set to allow both SQL Server and Windows authentication (i.e., mixed-mode authentication).


6.6.2 Enable the TCP/IP Connection Protocol

By default, some versions of SQL Server do not enable connections using TCP/IP which is required by the AQUARIUS Database.

To check that TCP/IP is enabled and to find the port that it listens on:

1. Run **SQL Server Configuration Manager** from the **Windows Start Menu**: Microsoft SQL Server > Configuration Tools > SQL Server Configuration Manager
2. Select **Protocols** for **MSSQLSERVER** in the left-hand window.
3. Then right click on **TCP/IP** and select **Properties**.
4. In the **TCP/IP Properties** dialog, make sure that **Enabled** is set to **Yes**.

-
5. Then select the **IP Addresses** tab and note the value of the **TCP Port** for the IP address that the AQUARIUS Application Server will connect on.

 **NOTE** Dynamic ports are not supported.

6.6.3 Configure TempDB

The AQUARIUS Database uses SQL Servers Read Committed Snapshot isolation mode. This places higher demands on the tempdb database. For optimal stability and performance, we recommend reconfiguring the tempdb database to use the following settings:

- Increase the number of tempdb database files to match the number of logical processors that are available to SQL Server or 8 whichever is lower.
- All tempdb database files should be equal in size and should be sized such that they do not need to grow during normal operation. Typically, 200MB should be sufficient for AQUARIUS usage, but other activity on the Database Server may dictate that larger files are needed.
- All tempdb files, including the log file, should be configured to autogrow by size not percentage. 10 MB is typically a reasonable growth size for AQUARIUS usage. In practice this setting should not come into effect as long as the database files are correctly sized.

6.6.4 Configure Firewall

Your firewall may need to be configured to allow connections over TCP/IP. Microsoft has prepared an article that describes how this is done: *Configure the Windows Firewall to Allow SQL Server Access* (<http://technet.microsoft.com/en-us/library/cc646023.aspx>).

7 Oracle Server Database Install

These steps are performed on the Database Server machine.

7.1 About the AQUARIUS Schema

The AQUARIUS Database application must be installed in its own schema (herein referred to as the AQUARIUS Schema).

! **IMPORTANT** We are unable to support the creation of any other objects in the AQUARIUS Schema.

The installation includes a script which is used to create the AQUARIUS Schema. It includes minimal grants needed by the AQUARIUS application. The privileges granted to AQUARIUS are:

- CREATE SESSION
- CREATE TABLE
- SELECT on these views:
 - v\$transaction
 - v\$session
 - \$lock

7.1.1 Tablespace Considerations

The installation process allows for specifying the AQUARIUS Schema's default tablespaces. When none is specified, the database's default tablespaces are used. It can be advantageous to create and specify a separate tablespace as the default tablespace for the AQUARIUS Schema. For example, the Schema can be restored from backup without affecting other applications if a separate tablespace is used. Also, there might be storage considerations for creating a dedicated tablespace.

7.2 About Installing Oracle Software

The AQUARIUS Database requires Oracle 12c to be installed on a server that is accessible by the AQUARIUS Application Server.

When installing Oracle, ensure that the following Standard Database Components are installed:

- ORACLE Multimedia
- ORACLE JVM
- ORACLE XML DB

7.3 Summary of Steps

The following installation steps are performed on the Database Server machine.

1. Create your **Oracle Server Instance**.
2. Create the **AQUARIUS Schema**.
3. Deploy either a **local** or **remote** install.
 - a. Deploy locally from the Database Server using OS authentication.
 - b. Deploy from a client against a remote Oracle instance.

7.4 Create your Oracle Instance

Prior to running the scripts provided by Aquatic Informatics, an Oracle database needs to be created. This can be done from the Oracle Database Configuration Assistant. Ensure that Unicode (AL32UTF8) is selected as the Character Set.

7.5 Create the AQUARIUS Schema

AQUARIUS Schema install and upgrade scripts can be run against a local Oracle instance, or against an Oracle instance on a remote server, including Amazon's RDS platform. The scripts can be run by an Oracle user with or without sysdba privilege. For details about the required privileges, refer to *Appendix A: "Oracle User Privileges Required to Perform an AQUARIUS Install or Upgrade"* on page 36 of this installation guide.

The folder structure for the installation package, partially expanded, is shown in the following figure.

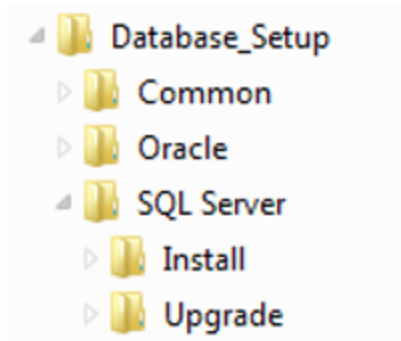


Figure 4 - Installation Package: Folder Structure

The folders under Oracle contain the following:

- **install**. Contains scripts for creating the AQUARIUS Schema.
- **Upgrade**. Contains scripts for upgrading the AQUARIUS Schema.

i NOTE UNIX/Linux, after copying the Database_Setup, ensure that the upgrade_aquarius.sh file does not contain Windows carriage returns or byte order marks. For example, if using FTP, set transfer mode to ASCII (or text) for all files with .sh and .sql extensions and all other file types (such as DLLs) transfer as binary.

All scripts are designed to be run from the command line in the appropriate directory.

If using the shell (UNIX/Linux) scripts, you may need to first set the execution bit on the script:

-
- `>chmod u+x install_aquarius_linux.sh`

The shell scripts use bash and assume default location of `/bin/bash`. Please verify that bash is available on your client, verify its location, and create `symlink /bin/bash` if necessary. These scripts also rely on POSIX compliant utilities.

7.6 Deploy Locally from the Database Server using OS Authentication

The following are the steps required to perform a local install.

7.6.1 STEP 1: Place the Database Setup Folder

Copy the **Database_Setup** folder to the Database Server.

From the Database Server, perform the following steps.

The following environment variables need to be set in order to perform an install using local OS authentication:

- `ORACLE_HOME` (Optional on Windows with single Oracle home)
- `ORACLE_SID`

For Windows

- `>set ORACLE_HOME=<location where Oracle is installed>`
- `>set ORACLE_SID=<SidOfYourDb>`

For UNIX/Linux

- `>export ORACLE_HOME=<location where Oracle is installed>`
- `>export ORACLE_SID=<SidOfYourDb>`

In **UNIX/Linux**, to ensure that `sqlplus` picks up the correct character encoding scheme:

- `>export NLS_LANG=AMERICAN_AMERICA.UTF8`

From a command window, set the environment variables as described above.

7.6.2 STEP 2: Run the Install Scripts

After setting the variables as per STEP 1, navigate to the Oracle install directory and execute the following:

Windows

- `AQUARIUS_HOME\Database_Setup\Oracle\install>install_aquarius_windows.bat`

UNIX/Linux

- `AQUARIUS_HOME/Database_Setup/Oracle/install>./install_aquarius_linux.sh`

! **IMPORTANT** DO NOT RUN this install script more than once. If an error occurs during this installation, the AQUARIUS user, schema, and roles will need to be dropped prior to re-running the scripts.

The install script prompts for the information provided in the following table.

Table 4 - Install Script Prompts

Script Prompt	Description
Enter the Oracle username/password to perform the AQUARIUS Schema install:	Enter the Oracle user with the required privileges listed in Appendix A. ("Oracle User Privileges Required to Perform an AQUARIUS Install or Upgrade" on page 36)
Enter the connection string (SQL*Plus connect_identifier) to the target Oracle instance:	Enter the connection information to your Oracle instance. The information must be in valid SQL*Plus connect_identifier format (see SQL*Plus documentation, or run sqlplus -h for information on valid connect_identifier format).
Connect as SYSDBA? (y/n):	Indicate whether the user entered in the first prompt should connect as sysdba.
Please enter a name for the new AQUARIUS user [aquarius]:	Enter the name for the new AQUARIUS Schema to be installed; defaults to value in [] if not entered.
User's default tablespace [database default]:	Enter an existing tablespace to assign to the AQUARIUS Schema; defaults to value in [] if not entered.
User's default temp tablespace [database default]:	Enter an existing temp tablespace to assign the AQUARIUS Schema; defaults to value in [] if not entered.
New password:	Enter a new password for the AQUARIUS Schema.

7.6.3 STEP 3: Check the Log Files

Check all resulting .log files in the install directory to verify the AQUARIUS Schema install.

7.7 Deploy from a Client against a Remote Oracle Instance

The following are the steps required to perform a remote install.

7.7.1 STEP 1: Install the Database Setup Folder

The **Database_Setup** folder can be placed on any machine that has an Oracle client which includes SQL*Plus.

The client version must be compatible to the version of the target server. (See Oracle support's Client/Server Interoperability matrix.)

7.7.2 STEP 2: Run the Install Scripts


From a command window navigate to the Oracle install directory and execute the following:

For Windows

- `AQUARIUS_HOME\Database_Setup\Oracle\install>install_aquarius_windows.bat`

For UNIX/Linux

- `AQUARIUS_HOME/Database_Setup/Oracle/install>./install_aquarius_linux.sh`

 **IMPORTANT** DO NOT RUN this install script more than once. If an error occurs during this installation, the AQUARIUS User, Schema, and Roles will need to be dropped prior to re-running the scripts.

7.7.3 STEP 3: Check the Log Files

Check all resulting .log files in the install directory to verify the AQUARIUS Schema install.

8 Configure and License AQUARIUS Time-Series

The following steps are performed on the Application Server machine.

8.1 Connect the AQUARIUS Server to the AQUARIUS Database

1. Open **AQUARIUS Manager**.
2. From the **System** tab, enter your **Database Connection** information.

8.2 Start the AQUARIUS Server

1. Open **AQUARIUS Manager**.
2. From the **System** tab, click the **START** button to start the **AQUARIUS Services**.
3. Wait until the **Status** is *Started*. (This may take a few minutes.)

8.3 Test the AQUARIUS Server

1. To test the **AQUARIUS Server** from **AQUARIUS Manager**, verify the existence of data from the selectable tabs on the left.
2. To further test the configuration, launch AQUARIUS Springboard by opening a browser window and enter the following URL:

http://<server name>/AQUARIUS

3. Log in using the built-in default administrator username/password: **admin/admin**.

8.4 Additional Configuration and Resources

See also the "Install Client Software " on page 26 topic of this installation guide.

To configure users and roles using AQUARIUS Manager, please refer to the *AQUARIUS Time-Series User Guide*.

9 Customize your AQUARIUS Installation (if applicable)

If Aquatic Informatics provided your organization with any custom development or configuration, please refer to the separate instructions we have provided.

10 Install Client Software

The AQUARIUS Time-Series Client Installer is used to install the following tools on a user's computer:

- Append Logger Data Toolbox (ALDT);
- Rating Development Toolbox (RDT);
- Data Correction Toolbox (DCT); as well as
- the software the toolboxes require to communicate with the AQUARIUS Time-Series Server.

The Client Installer version must match the AQUARIUS Time-Series Server version.

10.1 Install Microsoft .NET Framework

By default, the Microsoft .NET Framework is included in Windows 10.


If you do not have Windows 10 and need to install the .NET Framework, you can either:

- execute the **dotNetFx47_Full_web_setup.exe** file included in your installation package;
- OR
- download the same file from the Microsoft Download Center at: <https://www.microsoft.com/net/download/framework>

10.2 Install the AQUARIUS Client software

The Installer is part of the release package provided by Aquatic Informatics.

The client install version must match the AQUARIUS Time-Series Server version.

 **IMPORTANT** Running a Client that does not match the Server version is an unsupported configuration that could lead to issues.

10.3 Launch AQUARIUS Springboard

AQUARIUS Springboard is the web interface for AQUARIUS Time-Series.

To launch AQUARIUS Springboard:

1. Open a browser window from the client machine.
2. Enter the following URL:
 - **http://<your server name>/AQUARIUS**

11 Upgrading AQUARIUS Time-Series


To upgrade your AQUARIUS Time-Series system, refer to the following topics and instructions:

- "Before Upgrading" below
- "Upgrading from AQUARIUS Time-Series Server 2015.3 or Later" on the next page
- "Upgrading AQUARIUS Time-Series Client Software" on page 31

11.1 Before Upgrading

11.1.1 Resolve any Failed Events

Before starting your AQUARIUS Time-Series upgrade, check your Events Processor for any failed events. For further details, please refer to the *Troubleshooting Event Processor Issues* section of the *AQUARIUS Time-Series System Administration Guide*.

 **WARNING** Do not proceed with your update until all events in the queue have been processed.

If unprocessed events remain in your event queue, please log on to the AQUARIUS 360 Support Portal and contact your Support team at support@aquaticinformatics.com for assistance with your upgrade.

11.1.2 Upgrade to AQUARIUS 2017.2 Update 1, If Required

If upgrading from AQUARIUS Time-Series 2017.1 or earlier, you must first upgrade your server to AQUARIUS Time-Series 2017.2 Update 1 (2017.2.208).

Please download the installation package from the [AQUARIUS 360 Support Portal](#) under the **Archived Releases** section of the **AQUARIUS Downloads** page.

11.1.3 Run the AQUARIUS 2017.2 Upgrade Tool, If Required

If AQUARIUS Time-Series 2017.2 Update 1 (2017.2.208) is installed AND it was installed at any time with version 2017.1 or earlier, a separate Upgrade Tool must be run.

This command-line tool strengthens data integrity for existing time-series and rating models to ensure consistency with improvements that were delivered as part of AQUARIUS Time-Series 2017.1 AND 2017.2. This tool is located in the installation package in the folder: **AQTS172UpgradeTool**. Open this folder and follow the directions in the PDF document: *AQTS 17.2 Upgrade Tool Readme*.

11.1.4 Windows Integrated Authentication for AQUARIUS Time-Series Users

If you are upgrading from AQUARIUS Time-Series 2015.4 AND using Windows integrated authentication for your AQUARIUS Time-Series users, any user that has been configured to authenticate using Active Directory needs to be modified after the upgrade before they can log on to AQUARIUS Time-Series.

HINT For more information about Windows integrated authentication, please refer to *Appendix A: Configuring Users of the AQUARIUS Time-Series System Administration Guide*.

11.2 Upgrading from AQUARIUS Time-Series Server 2015.3 or Later

If you are upgrading from AQUARIUS Server 2015.3 or later subsequent versions, please follow the sequence of steps below.

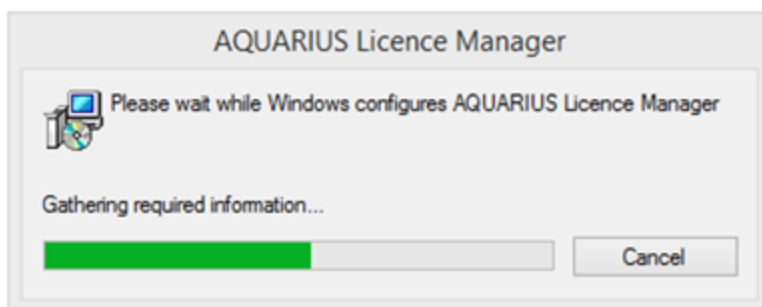
- **Step 1.** Stop all AQUARIUS Servers.
- **Step 2.** Upgrade AQUARIUS Licence Manager and Licence Keys.
- **Step 3.** Back up and Upgrade AQUARIUS Database.
- **Step 4.** Install .NET, if necessary (and restart machine).
- **Step 5.** Upgrade AQUARIUS Licence Manager and Activate Licence Key(s).
- **Step 6.** Upgrade Oracle Data Access Components (ODAC), if necessary.
- **Step 7.** Upgrade AQUARIUS Time-Series Server.

11.2.1 Step 1: Stop all AQUARIUS Servers

11.2.2 Step 2: Upgrade AQUARIUS Licence Manager and Licence Keys

To upgrade AQUARIUS Licence Manager and reactivate licence keys:

1. Open **Control Panel > Programs and Features**.
2. From the Programs list, double-click **AQUARIUS Licence Manager** and run through the uninstall process.
3. Accept any **User Access Control** to allow Windows to complete the uninstall process.



4. Refresh the Programs list to confirm **AQUARIUS Licence Manager** is not listed/has been uninstalled.
5. Install the new version of **AQUARIUS Licence Manager** by running the **AQLicenceManager.msi** installer on the appropriate server—that is, on the server where AQUARIUS Time-Series, AQUARIUS WebPortal, AQUARIUS DAS (Data Acquisition System), or AQUARIUS Forecast are installed.
6. Open **AQUARIUS Licence Manager**.
7. Click on each Licence Key associated with the AQUARIUS Time-Series upgrade—that is, those Licence Keys with the prefix **AQ-TS** such as *Server*, *Users*, *RDT*, and so on—and then click **Release**. Confirm each one is released. If you are unable to release a Licence Key, **DO NOT PROCEED WITH THE UPGRADE**. We recommend you open a support case specifying each Licence Key and serial number in plain text. Additionally, be sure to include a screenshot that helps explain the issue to your AQUARIUS Support Team.
8. If each key is released successfully, click on each Licence Key and then click **Activate**. Confirm each one is

activated with the version to which you are upgrading. For example, 2018.x to 2018.x+1)

9. Close **AQUARIUS Licence Manager**.

Once Licence Manager has been updated and the licence key has been activated, you will be able to verify the software you are updating to confirm the newly activated key has been linked. For AQUARIUS Time-Series, navigate to the System tab of AQUARIUS Manager to do this.

11.2.3 Step 3: Back up, then Upgrade the AQUARIUS Database

11.2.3.1 Before Upgrading the Database

- There must be no activity on the AQUARIUS Time-Series Database while upgrading.
- Ensure all AQUARIUS Time-Series services are stopped and all instances of AQUARIUS Manager are closed.
- Close all connections.
- Manually back up the database. We recommend making a backup of the AQUARIUS Database prior to executing the database upgrade scripts below. If problems are encountered during the upgrade, the backup can be restored.

11.2.3.2 Begin your Upgrade

The AQUARIUS Schema upgrade scripts are best run on the Database Server from the **Database_Setup** folder provided by Aquatic Informatics as part of the release package. These scripts have the same deployment options and requirements as the schema install scripts.

For an overview of the Oracle or SQL Server database/schema install scripts, see the "Create the AQUARIUS Schema" on page 20 topic in this installation guide.

For a SQL Server database, the upgrade scripts are found in the folder:

```
...\Database_Setup\SQL Server\Upgrade\
```

For an Oracle database on Windows, the upgrade scripts are found in the folder:

```
...\Database_Setup\Oracle\Upgrade\
```

i NOTE When placing the Database_Setup folder, copy the entire folder—including all subfolders.

There are several sub-folders under the **Upgrade** folder that correspond to the version of the database that you are upgrading to. Starting with the version you are upgrading from, you must run the script **upgrade_aquarius.bat** in each of these folders, in sequential order, up to the version you are upgrading to.

For example, if you are currently running 2016.3 and are upgrading to the latest version, you would first run the 2016.3 **upgrade_aquarius.bat** from the 2016.3 folder. Then you would run the **upgrade_aquarius.bat** file again from each additional version folder, up to and including the final upgrade version folder.

i NOTE The upgrade script will perform a number of consistency checks. If a conflict is detected that can't be automatically resolved, you will be prompted to take additional manual steps before the upgrade can proceed.

The AQUARIUS Database schema install/upgrade process will check the compatibility level of the target database before executing. This check is on compatibility level setting of the database software rather than the AQUARIUS Database. This means for a database that has undergone Oracle or SQL Server software upgrade, you will need to ensure that the compatibility level for the database has been properly set post upgrade.

11.2.4 Step 4: Install Microsoft .NET Framework

If necessary, install the .NET Framework and restart the machine.

11.2.5 Step 5: Upgrade AQUARIUS Licence Manager and Activate Licence Key(s)

Please refer to the AQUARIUS Licence Manager Guide included in your release package.

11.2.6 Step 6: Upgrade Oracle Data Access Components (ODAC)


If necessary, install ODAC.

11.2.7 Step 7: Upgrade the AQUARIUS Time-Series Server

Prior to beginning any upgrade:

1. Ensure that all AQUARIUS Springboard browser connections and instances of AQUARIUS Manager are closed.
2. If you have AQUARIUS Client software installed on the AQUARIUS Server computer, first uninstall the AQUARIUS Client software (formerly known as the AQUARIUS Workstation) from the **Windows Control Panel**. If prompted to restart the AQUARIUS Server, select **Yes**.
3. Before installing the new version of AQUARIUS Server software, make sure you first uninstall the previous version of AQUARIUS Server.

Install the new version of AQUARIUS Server software by running AQUARIUS Time-Series Server Installer.exe from the installation package. You may be prompted to uninstall the previous version.

 **NOTE** If you do not install as an Administrator, it is possible that the installer experiences a silent failure.

If the Application Server does not have the Microsoft .NET Framework installed, it will attempt to download and install from Microsoft's website before continuing. If the Application Server does not have an Internet connection, it can be downloaded separately from Microsoft's download center at <https://www.microsoft.com/net/download/framework>.

 **NOTE** The following configuration file will be overwritten during the upgrade:

```
%ProgramFiles%/Aquatic Informatics/AQUARIUS Server/WebServices/web.config
```

Previous versions will be backed up in the same directory with the file extension **backup**.

If you are using Oracle as your database, see "Prerequisites for Application Server Installation" on page 11 of this installation guide for the supported version of the required ODAC drivers and to determine whether an ODAC update is required.

After the AQUARIUS Server upgrade has been installed, the following steps must be performed in order to configure the file attachment BLOB storage system:

1. When starting the Windows command console; right-click the console icon and select the **Run As Administrator** option.
2. From the Windows command console, change to the directory where **StorageTool.exe** is located (typically: **C:\Program Files\Aquatic Informatics\AQUARIUS Server\bin**) and execute the following command:

```
StorageTool IIS /y
```

3. From the Internet Information Services (IIS) Manager, navigate to **Sites >Default Web Site >AQUARIUS >Static** and open the **Advanced Settings** (on the right-side panel) and set the **Physical Path Credentials Logon Type** to *Interactive*.

11.2.7.1 Start the AQUARIUS Server

1. Open **AQUARIUS Manager**.
2. From the **System** tab, click on the **START** button to start the AQUARIUS Services.
3. Wait until the **Status** is *Started*. (This may take a few minutes.)

11.2.7.2 Verify the Server Upgrade

Launch AQUARIUS Springboard to verify the upgrade. To do this, open a browser window, then enter the following URL:

- **http://<server name>/AQUARIUS**


If your time-series do not appear after an upgrade, please refer to the "Troubleshooting" on page 32 section in this installation guide.

11.3 Upgrading AQUARIUS Time-Series Client Software

Once the AQUARIUS Time-Series Server software has been upgraded and verified, you must upgrade the AQUARIUS Time-Series client software—and clear the browser cache—on all client computers.

If you plan to run your **AQUARIUS Time-Series Client** on the same machine as your **AQUARIUS Time-Series Server**, you can now install the new version of the Client.


For more information about installing Client software, see the "Install Client Software" on page 26 topic in this installation guide.

 **HINT** If you experience any issues while upgrading, refer to "Troubleshooting" on page 32 of this installation guide or contact support@aquaticinformatics.com.

12 Troubleshooting

Use this section of the installation guide to troubleshoot any issues related to:

- Upgrading;
- Licences and Licensing;
- AQUARIUS Server and Database;
- Database Connections;
- AQUARIUS Data Connectors and Data Synchronization; and
- AQUARIUS Manager

 **HINT** If after troubleshooting you are still experiencing issues, please contact support@aquaticinformatics.com

12.1 Issues Related to Upgrading

12.1.1 AQUARIUS Server Does Not Start

For both initial installs and upgrades, Windows servers require the latest Microsoft Updates.

For further details about installing the VC 2015 re-distributables on your server, visit Microsoft Support:

- <https://support.microsoft.com/en-ca/kb/2999226>

12.1.2 After an Upgrade My Time-Series Do Not Display

If you have recently upgraded your Time-Series Client or Server, try opening the browser Developer Tools. For example, using Chrome, press <F12> and right-click on the browser refresh button.

Of the options available (normal reload (**Ctrl+R**), hard reload (**Ctrl+Shift+R**), and empty cache and hard reload), try the hard reload option; this will preserve your locations favourite list.

If it still does not work, you may need to clear your browser cache, including browsing history, cookies, and cached images and files. This involves a different process for each browser.

For more information about clearing your browser cache, please visit the [AQUARIUS 360 Support Portal](#).

After clearing your browsing data, refresh your AQUARIUS Springboard session and try again. Your locations and time-series should now display properly.

12.1.3 After an Upgrade AQUARIUS Time-Series Pages Do Not Display Properly

If you have recently upgraded your AQUARIUS Time-Series Client or Server and notice one or more pages not working or displaying as expected, it may be necessary to force a hard reload to clear out your cached browser data.

To perform a hard reload, use the keyboard shortcut applicable to your browser.

Table 5 - Browsers and their Keyboard Shortcuts

Browser	Keyboard Shortcut
Chrome / Firefox / Internet Explorer for Windows or Linux	<Ctrl+F5>
Chrome or Firefox	<Ctrl+Shift+R>
Chrome or Firefox for Mac	<Command+Shift+R>

12.2 Issues Related to Licences and Licensing

12.2.1 Licensing Issues

If you experience issues with licence keys, see the *Troubleshooting* section of the *AQUARIUS Licence Manager Guide*.

If you have re-activated your licence key and it does not match (or is NOT equal to or greater than) the version to which you are upgrading, please contact support@aquaticinformatics.com.

12.3 Issues Related to AQUARIUS Server and Database

12.3.1 ODAC Installation when AQUARIUS Server and Database are Co-resident (Oracle Database Only)

After installing ODAC, the following steps need to be performed.

1. Remove the Oracle Client location from the Path Environment Variables.
2. Either using `lsnrctl` or Services control, restart the Oracle TNSListener.

12.4 Issues Related to Database Connections

12.4.1 Database Connection Issues

If you are using SQL Server and are getting a *Connection being refused* error when testing your connection, verify the following settings in the SQL Server Configuration Manager:

- TCP/IP is enabled
- The TCP/IP port is set to 1433

12.5 Issues Related to AQUARIUS Data Connectors and Data Synchronization

12.5.1 AQUARIUS Samples and your AQUARIUS Samples Connector

After upgrading your AQUARIUS Time-Series system, ensure you install the latest version of the AQUARIUS Samples Connector.

For more information about your configured and activated Data Connector, refer to the *AQUARIUS Time-Series System Administration Guide*.

12.6 Issues Related to AQUARIUS Manager

12.6.1 Presentation Framework Error

If, on opening AQUARIUS Manager you may see a presentation framework error similar to the one shown below.

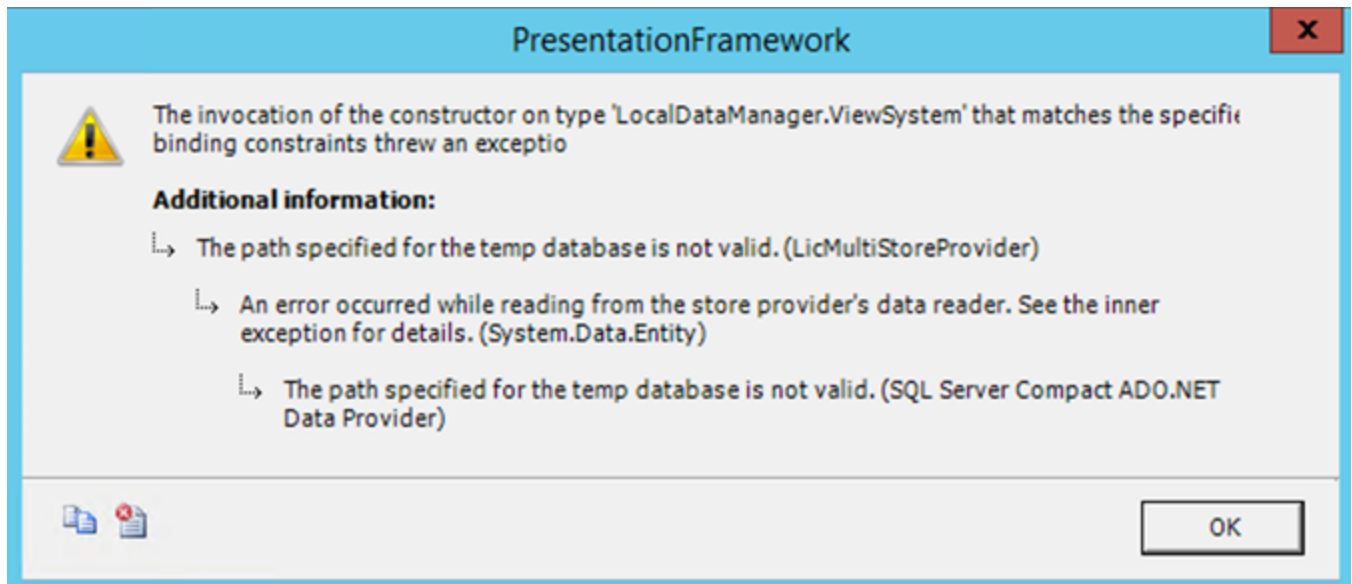


Figure 5 - Presentation Framework Error

If you encounter this error, please try the following:

1. Check the properties of the original .zip file for the Installation Package.
2. If there is a Security warning that the file is blocked, delete the original extraction of the Installation Kit and re-extract the .zip file.
3. Uninstall AQUARIUS Time-Series Server and re-install it from the newly unblocked package.

13 Support Contact

We hope that you enjoy using AQUARIUS Time-Series.

We welcome your thoughts on the [AQUARIUS 360 Support Portal](#).

For all your AQUARIUS product support needs please email support@aquaticinformatics.com or contact your local Aquatic Informatics support representative.

13.1 Vancouver, CANADA

support@aquaticinformatics.com

Toll free 1.877.870.AQUA (2782)

Phone 1.604.873.AQUA (2782)

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Vancouver, BC V6E 4M3

13.2 Hobart, AUSTRALIA

support@aquaticinformatics.com

Phone +613.6272.2229

Level 5 / 18 Elizabeth Street

Hobart, Tasmania 7000

Appendix A: Oracle User Privileges Required to Perform an AQUARIUS Install or Upgrade

At a minimum, the following privileges are required:

- alter any table
- create session with admin option
- create user
- create table with admin option
- create any table
- create any index
- create any trigger
- create any view
- create any sequence
- create any procedure
- comment any table
- delete any table
- drop any table
- drop any index
- execute any procedure
- execute on SYS.DBMS_SHARED_POOL insert any table
- select on dba_users select on dba_registry
- select on v\$instance
- select on v\$sqlarea
- select on v\$transaction with grant option
- select on v\$session with grant option
- select on v\$lock with grant option
- select any table
- update any table

i **NOTE** The script will prompt for the connection string to the target Oracle instance. This should be in the form of a valid `SQL*Plus connect_identifier`. As of the writing of this document, using the RDS stored procedure `rdsadmin.rdsadmin_util.grant_sys_object` does not confer the "with grant option", and could not be used to grant those privileges. But the following did work:

```
GRANT SELECT_CATALOG_ROLE TO &admin_user WITH ADMIN OPTION;
```