SIEMENS

XHQ

Installation Guide

06/2019 V6.0.0.1

Legal information

Warning notice system

This manual contains notices you have to observe in order to ensure your personal safety, as well as to prevent damage to property. The notices referring to your personal safety are highlighted in the manual by a safety alert symbol, notices referring only to property damage have no safety alert symbol. These notices shown below are graded according to the degree of danger.

⚠ DANGER
Indicates that death or severe personal injury **will** result if proper precautions are not taken.

⚠ **WARNING**
Indicates that death or severe personal injury **may** result if proper precautions are not taken.

⚠ **CAUTION**
Indicates that minor personal injury can result if proper precautions are not taken.

NOTICE
Indicates that property damage can result if proper precautions are not taken.

If more than one degree of danger is present, the warning notice representing the highest degree of danger will be used. A notice warning of injury to persons with a safety alert symbol may also include a warning relating to property damage. See the topic, Visual Cues for Online Viewing, for additional XHQ-specific notices.

Qualified Personnel

The product/system described in this documentation may be operated only by personnel qualified for the specific task in accordance with the relevant documentation, in particular its warning notices and safety instructions. Qualified personnel are those who, based on their training and experience, are capable of identifying risks and avoiding potential hazards when working with these products/systems.

Proper use of Siemens products

Note the following:

⚠ **WARNING**
Siemens products may only be used for the applications described in the catalog and in the relevant technical documentation. If products and components from other manufacturers are used, these must be recommended or approved by Siemens. Proper transport, storage, installation, assembly, commissioning, operation and maintenance are required to ensure that the products operate safely and without any problems. The permissible ambient conditions must be complied with. The information in the relevant documentation must be observed.

Trademarks

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Disclaimer of Liability

We have reviewed the contents of this publication to ensure consistency with the hardware and software described. Since variance cannot be precluded entirely, we cannot guarantee full consistency. However, the information in this publication is reviewed regularly and any necessary corrections are included in subsequent editions.

Siemens Product Lifecycle Management Software, Inc.
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Aliso Viejo, CA 92656-5318, USA
siemens.com/xhq

Additionally, Siemens' guidance on appropriate security measures should be taken into account. For more information about industrial security, please visit https://www.siemens.com/industrialsecurity.

Siemens' products and solutions undergo continuous development to make them more secure. Siemens strongly recommends to apply product updates as soon as available and to always use the latest product versions. Use of product versions that are no longer supported, and failure to apply latest updates may increase customer's exposure to cyber threats.

For the Siemens Security Advisory, visit https://www.siemens.com/industrialsecurity.

To stay informed about product updates, subscribe to the Siemens Industrial Security RSS Feed under https://www.siemens.com/industrialsecurity.

While every effort is made to ensure the accuracy of content, the XHQ product documentation set (which includes online help) could contain inaccuracies or out-dated material (which includes product screenshots and images) due to the large number of product enhancements being added. As such, the documentation set is subject to change at any time without notice. Refer to the README for documentation corrections and addendum. Please note, updates to the documentation set are reflected in the next general availability major release of XHQ.

Table of Contents

About This Guide

Conventions Used in This Guide

The following formatting cues are designed to allow you to quickly locate and understand the information provided in this guide.

Formatting Conventions

Convention	Example
Acronyms are spelled out the first time they appear.	Alert Notification System (ANS)
Bold is used for menu names, command options, and dialog box names in primary task procedures.	From the **XHQ Workbench**, go to the **Add** menu and click **New Component**.
Italic is used for glossary terms.	The first step in building this model is to develop reusable software building blocks, called *components*.
A **`monospaced font`** is used for program and code examples.	The subdirectory `\log` is automatically created below the location you choose. All log files are written to this subdirectory. **`C:\XHQ`**
Key combinations appear in uppercase, bold. If joined with a plus sign (+), press and hold the first key while you press the remaining keys.	**CTRL+B**
The *.x* (in italics) is used to indicate release numbers of a product.	Enable (by checking) the **Use Java *x.x.x_xx* for <applet>** option.
In See Also notices, sub-chapter headings are in italics, chapter headings are in quotes, and guide titles are in bold.	For more information, go to the *About install.properties* topic located in the "Working with PROPERTIES Files" chapter of the **XHQ Administrator's Guide**.

Visual Cues for Online Viewing

This document uses the following styled paragraphs.

Notes are used to offer information that supplement important points of the main text. Tips suggest certain techniques and procedures that may help you achieve your task quickly.

Depending on your network configuration, include domain information only if the domains are different.

See Also notices provide you with additional references to similar topics and/or concepts within the documentation set. Sub-chapter headings are in italics, chapter headings are in quotes, and guide titles are in bold.

For more information, go to the About the Options Menu topic located in the "Working with PROPERTIES Files" chapter of the **XHQ Administrator's Guide**.

Web References point you to external web sites that give additional information on the given topic.

Refer to Microsoft support information with regards to the various server settings for application performance and network utilization.

`http://support.microsoft.com`

Tips provide additional hints to help you use the product more efficiently.

Use the `NavbarWestVerticalOffset` property to make fine adjustments in pixels. The upper, left-hand corner is the origin. The positive horizontal direction moves to the right and the positive vertical direction moves down.

Important notices provide information that are required to completing a given task.

XHQ must run as a domain user.

Warnings tell you that failure to take or avoid a certain action could result in loss of data or application malfunction.

WARNING

Do not modify the `shutdown.dat` template file.

Related XHQ Product Documentation

The XHQ documentation set includes the following titles.

XHQ Documentation Set

Title	Target Audience
XHQ Administrator's Guide Provides the steps required to begin administering XHQ. It also covers security and access, property settings, redundancy, and localization.	Administrators
XHQ ANS User's Guide Learn how to use and administer the XHQ Alert Notification System (XHQ ANS).	ANS Users, Administrators
XHQ Backup and Recovery Guide Learn how to properly backup XHQ.	Administrators
XHQ Connection Guide Provides information on injecting an XHQ-supported connector type and configuring the connection.	Connector Developers
XHQ Developer's Guide Introduces the XHQ Development Client (Workbench and Solution Builder) user interface and provides information on how to set-up XHQ, develop reusable components, create views, and build a solution hierarchy.	Content and Solution Developers
XHQ Getting Started Gives you step-by-step instruction on how to set up your model and solution.	Content, Connector, and Solution Developers
XHQ Installation Guide Provides the system requirements, installation instructions, and upgrade information for the current release of the XHQ System.	Administrators
XHQ Integrated Data Gateway Guide Includes information on the ADO.NET and the XHQ OPC UA Server.	Application Engineers, Integrators
XHQ Performance Analytics Guide Learn how to use the Engineering Environment to enable the generation of the processes necessary to extract and transform data for source systems, and populate the XHQ Data Store and Data Mart.	Solution Developers/Users, Analysts
XHQ Performance Management Guide Learn how to use Target Management to monitor performance indicators and eLogs to create shift reports.	Administrators, End Users
XHQ Reference Guide Lists the functions and methods used in XHQ, and provides examples,	Content and Solution Developers

Title	Target Audience
usage notes, and parameter descriptions.	
XHQ Reporting Services Guide Introduces the XHQ Reporting Services and provides instruction on how to connect to an XHQ data source.	Application Engineers, End Users
XHQ SDK Reference Guide Provides a set of development tools that allows you to create applications that extend XHQ. Includes information on the Client API and Web Services.	Application Engineers, Integrators
XHQ Solution Design and Architecture Provides best-practice examples for XHQ solution design. Includes information on tag synchronization.	Solution Architects
XHQ Solution Viewer User's Guide Gives you step-by-step instruction on how to access your solution through a browser client and set browser preferences.	All End Users
XHQ System Guide Contains information regarding secure handling of an XHQ implementation.	Administrators, Application Engineers, Integrators
XHQ Trend Viewer User's Guide Learn how to use the XHQ Trend Viewer to view both real-time and historical data.	All End Users
XHQ Visual Composer Guide Provides end-user information for the XHQ Visual Composer and associated programs, which are used in the development of presentation content.	Content Developers

Contacting Customer Support

For general XHQ product support or related questions, pre-registered customer or partner support staff with a valid XHQ customer support agreement may contact the XHQ Customer Support Team using any of the following means:

- **Web Portal**

  The support portal leverages a system called GTAC (Global Technical Access Center). GTAC provides one common support entry point for many Siemens products. It is available via this URL:

  https://www.siemens.com/gtac

  Customers must be pre-registered to be able to use the web portal. A log-in can be requested at any time by self-registering in the GTAC portal. Note, the end user "sold to" identifier is needed in order to register.

  Use of the support portal is the preferred means to report incidents to the XHQ Customer Support Team unless immediate interactive telephone assistance is required. The support portal is available twenty four hours per day/seven days per week ("24/7").

- **E-mail**

  support.xhq@siemens.com

- **Phone Support and Hours of Coverage**

  International: +1 (949) 448-7463

  U.S. only: +1 (877) 700-4639

  The following paid support levels are available:

  ### Bronze Support: 9/5

  9 x 5 hours support. 9 hours per day, 5 days per week. Monday to Friday. Daylight Saving Time is honored.

  Choice of one coverage zone out of the following options (default: Americas):

  - Americas (15-1 GMT)
  - Europe (8-17 GMT)
  - Asia (1-10 GMT)

  Excludes national holidays as defined by the following countries for the related coverage zone:

  - USA (Americas)
  - Germany (Europe)
  - Singapore (Asia)

  Example Americas: *Implies coverage from 7:00 AM to 5:00 PM, Pacific Time, Monday to Friday, excluding US national holidays.*

  ### Silver Support: 24/5

  24 x 5 hours support. 24 hours per day, 5 days per week. Monday to Friday. Daylight Saving Time is honored.

  Choice of one coverage zone out of the following options (default: Americas):

  - Americas
  - Europe
  - Asia

  The weekly start/end times of coverage follow the local times of the following countries in each coverage zone:

- California/USA (Americas)
- Germany (Europe)
- Singapore (Asia)

Example Americas: *Implies coverage from midnight on Sunday until midnight on Friday, Pacific Time, Monday to Friday.*

Gold Support: 24/7

24 x 7 hours support. 24 hours per day, 7 days per week.

- **Postal Mail**

  Siemens Product Lifecycle Management Software, Inc.

  XHQ Operations Intelligence

  Attn: XHQ Customer Support Department

  6 Journey, Suite 200

  Aliso Viejo, CA 92656, USA

General Feedback and Comments

Please send an e-mail to:

info.xhq@siemens.com

Siemens Product Lifecycle Management Software, Inc. and affiliated Siemens Industry Software companies (collectively referred to as "SISW") are committed to working with our customers. Your comments, suggestions, and ideas for improvements are very important to us. Thank you for taking the time to send us your feedback.

1 | Requirements and Pre-requisites

The supported Windows® Operating System releases are documented in this section. In general, changes in Windows version releases or Service Pack **require explicit approval for XHQ systems**. Windows fixes that are provided as part of a Windows update (such as security fixes) do not require explicit approval for XHQ systems.

When applying patches, a pre-validation using an XHQ development server is recommended. Although these patches may be acceptable for XHQ, they could still have issues in your IT environment.

System Requirements

You must verify that your system has at least the minimum software and hardware configuration necessary to support the installation of XHQ.

Windows Server Support

XHQ supports the following server operating systems:

- Windows Server 2016, Standard and Datacenter Editions
- Windows Server 2012 R2, Standard Edition
  Itanium (IA64) is not supported.

XHQ Solution Server

System Requirements for XHQ Solution Server

Requirement	Minimum	Recommended
Operating System	Windows Server 2016 Windows Server 2012 R2	Windows Server 2016 Windows Server 2012 R2
Processor (CPU)	One or two Xeon class processor(s), with 6 or more cores each	Two Xeon class processors, with 12 or more cores each
Memory (RAM)	16 GB -32 GB (Rule of thumb: minimum of 4 GB of memory per CPU core.) **Note:** Sixteen (16) GB of RAM is required as a minimum for small solutions. Thirty-two (32) GB is required if Reporting Services is in use on the Solution Platform Server. The installation of the Web Application Server on the Solution Platform Server (instead of on a separate server) is only supported if adequate memory and CPU resources are available. At a minimum, 4 GB memory and two CPU cores are required for this feature in addition to the base XHQ requirements. The customer specific solution architecture defines the minimum required memory. The above values are guidelines. For production system use, more than 32 GB is strongly recommended to best leverage the 64-bit XHQ architecture.	32 GB - 128 GB (Rule of thumb: minimum of 4 GB of memory per CPU core.) **Note:** Thirty-two (32) GB of RAM is required as a minimum for large solutions, or, more ideal, 64 GB if Reporting Services is in use on the Solution Platform Server. The installation of the Web Application Server on the Solution Platform Server instead of on a separate server is only supported if adequate memory and CPU resources are available. At a minimum, 4 GB memory and two CPU cores are required for this feature in addition to the base XHQ requirements. The customer specific solution architecture defines the minimum required memory. The above values are guidelines. For production system use, more than 32 GB is strongly recommended to best leverage the 64-bit XHQ architecture.
Network	100 Mbit LAN Interface	1 Gbit LAN Interface
Hard Drive Space*	100 GB free disk space for XHQ application data, including the XHQ Cache High-Performance Database. 60 GB free disk space is required if XHQ Reporting Services is used. **Note:** Additional disk space will be required for your XHQ solution as well as for data retained in the data recorder (for example, due to Performance Management) and free disk space is required for temporary use by the embedded database. A minimum of 100 GB of free disk space is recommended but the exact needs are solution dependent. A minimum of 10 GB free space on the system drive containing the system "temp" directory (which is typically C:) is required even if some of the XHQ subsystems will be installed on a different system drive (such as D:).	

System Requirements for XHQ Solution Server

Requirement	Minimum	Recommended
Hard Drive Space (cont)*	Disk space must be configured such that XHQ does not run out of disk space in normal operations, since that can result in incomplete database transactions leading to inconsistencies or file corruptions requiring restoration of the repos from a back-up.	

* The Minimum and Recommended requirements are the same.

XHQ Development Client

System Requirements for XHQ Development Client

Requirement	Minimum	Recommended
Operating System	Windows 10 (Professional, Enterprise; 64-bit) Windows 8.1 (Professional; 64-bit) Windows 7 (Professional, Ultimate; 64-bit)	Windows 10 (Professional, 64-bit)
Processor (CPU)	2 GHz processor (hyper-threading)	3+ GHz processor (quad-core)
Memory (RAM)	16 GB	32 GB
Screen Resolution	1024 x 768 SVGA display	1920 x 1080 full HD display
Hard Drive Space*	500 MB of free hard disk space	

* The Minimum and Recommended requirements are the same.

XHQ Solution Viewer

HTML5-based XHQ Solution Viewer

System Requirements for HTML5-based XHQ Solution Viewer

Requirement		
Browser	• Chrome 70.0.3538 (or higher) • MS Edge 42.17134.1.0 (or higher) • Safari 12.1 (or higher)	
Mobile Operating System	For **Android**: Android 7.x (or later)	For **Apple**: Apple iOS versions 11.0.3+
Mobile Browser	Google Chrome version 64 (or later)	Safari that accompanies the supported iOS versions

Java-based XHQ Solution Viewer [Applet]

System Requirements for Applet-based XHQ Solution Viewer

Requirement	Minimum	Recommended
Operating System*	Windows 10 (Professional, Enterprise; 32- or 64-bit) Windows 8.1 (Professional; 32- or 64-bit) Windows 7 (Professional, Ultimate; 32- or 64-bit)	
Processor (CPU)	2 GHz processor (hyper-threading)	3+ GHz processor (dual-core)
Memory (RAM)	8 GB	16 GB
Oracle JRE*	For Windows and Mac OS Oracle JRE 8 update 181 or 1.8.0_181 (recommended)/u162/u161/u152/u151/u144 (minimum) ****	
Browser	For Windows: • Microsoft Internet Explorer 11	For Windows: • Microsoft Internet Explorer 11
Screen Resolution	1024 x 768 SVGA display	1920 x 1080 full HD display
Hard Drive Space*	200 MB of free hard disk space	

* The Minimum and Recommended requirements are the same.

**About Java Support

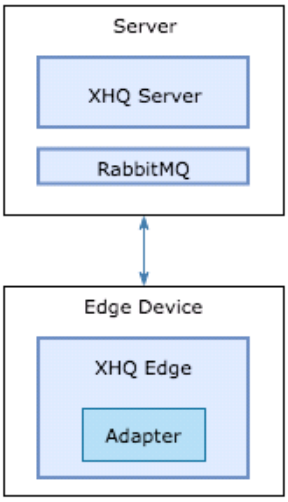
The XHQ Solution Viewer requires the supported JRE to be manually downloaded and installed.

Download Site:
http://www.oracle.com/technetwork/java/javase/downloads/index.html

If you have plans to deploy a JRE version that is newer than the one supported in the documentation or the README, check first with the XHQ Customer Support Team before deploying it. The XHQ Customer Support Team will need to validate if the newer JRE version is already supported or is planned to be supported.

XHQ Edge

XHQ Edge represents the combination of software on the XHQ Server and the XHQ Edge Device that collectively provide the ability to access data from remote data sources.



Basic Configuration

For the XHQ Edge Device

System Requirements for the XHQ Edge Device

Requirement	
Operating System	• Windows Server 2016 • Windows Server 2012 R2 • Windows 10
.NET Framework	.NET Framework 4.6.1

XHQ Edge must be installed on a dedicated machine, solely for XHQ Edge use. This machine, the XHQ Edge Device, must not have any XHQ Development Clients installed or any third-party applications that are not related to connecting to backend data sources.

For the XHQ Server

Download the following:

- **Erlang/OTP** from http://www.erlang.org/downloads.

  Supported Version: Erlang/OTP 20.3

  
  Check the supportability matrix for RabbitMQ at https://www.rabbitmq.com/which-erlang.html.

- **RabbitMQ** from https://www.rabbitmq.com/download.html.

  RabbitMQ is a stand-alone software that is installed only on the XHQ Server.

  Supported Versions: RabbitMQ 3.7.4


For information on how to install and configure XHQ Edge or RabbitMQ, refer to the "Getting Started" topic for XHQ Edge, located in the XHQ Connection Guide.

XHQ Performance Analytics

The **XHQ Engineering Environment** and **Runtime Environment** may be installed on the same machine, but runtime specification should be followed.

XHQ Performance Analytics SQL 2016 XHQ Engineering Environment

System Requirements for XHQ Engineering Environment

Requirement	Minimum	Recommended
Operating System*	Windows Server 2016 Windows Server 2012 R2	
SQL Server*	Microsoft SQL Server 2016 (64-bit) with SSIS option selected	
Memory (RAM)*	8 GB	
Hard Drive Space*	30 GB free disk space for application data	

XHQ Performance Analytics Runtime

System Requirements for XHQ Performance Analytics Runtime

Requirement	Minimum	Recommended
Operating System*	Windows Server2016 Windows Server2012 R2	
Processor (CPU)	Two Xeon class processors, with 6 cores each	Two Xeon class processors, with 12 cores each
Memory (RAM)	8 GB	16 GB
Hard Drive Space*	30 GB free disk space for application data **Note:** Additional disk space is required for the XHQ Performance Analytics solution.	
Other	Shared server	Dedicated server

* The Minimum and Recommended requirements are the same.

Additional Pre-requisites for XHQ Performance Analytics SQL 2016

- Microsoft **.NET Framework 4.6.1**
- **Reporting Services** for **Visual Studio 2015**
- **SQL Server Data Tools** (SSDT) for **Visual Studio 2015 v17.4**

  Download link:
  https://docs.microsoft.com/en-us/sql/ssdt/download-sql-server-data-tools-ssdt
- **SQL Server Management Studio** (SSMS) is recommended to manage and configure SQL Servers

  Download link:
  https://docs.microsoft.com/en-us/sql/ssms/download-sql-server-management-studio-ssms
- *OPTIONAL*
  Microsoft Access Database Engine 2016, 32-bit

Download link:

https://www.microsoft.com/en-us/download/details.aspx?id=54920

- *OPTIONAL*
  ODP 12c clients, both 32-bit and 64-bit

  Download link:

  http://www.oracle.com/technetwork/database/enterprise-edition/downloads/oracle12c-windows-3633015.html

- To use the **PostgreSQL Connection Type**
  Requires the `PSQLODBC.DLL` ODBC driver. Go to the following link and download **`psqlodbc_11_00_0000.zip`**.

  Download link:

  https://www.postgresql.org/ftp/odbc/versions/msi/

XHQ View Server - Memory Requirements

The XHQ View Server performs fine under default memory settings for a small load of 20 (or less) XHQ HTML5 Solution Viewer clients. For 50 client connections, the recommendation is a minimum of 4 GB; for 100 clients, 6 GB.

For heavier loads of 300 clients (or more), a minimum of 14 GB is needed. However, some performance impact may still be experienced, resulting in slow requests processing, an HTTP 502 error, the disconnection of the session, or the need to refresh the browser.

Summary: Memory Requirements

Number of XHQ HTML5 Solution Viewer Clients	Recommended Memory (GB)
20, or less	Default
50	4
100	6
300, or more	14

XHQ Reporting Services Server

The following are server requirements for the XHQ Reporting Services Server.

System Requirements for XHQ Reporting Services Server

Requirement	Minimum	Recommended
Operating System*	Windows Server 2016 Windows Server 2012 R2	
SQL Server*	Microsoft SQL Server 2016 (64-bit)	
Other*	XHQ Reporting Services requires the Microsoft Windows Installer (MSI) version 5.0 (at a minimum). The MSI is the application installation and configuration service for Windows. The MSI version 5.0 is released with Windows Server. Additionally, there's no redistributable for Windows Installer 5.0. For details, refer to http://support.microsoft.com/kb/942288.	

* The Minimum and Recommended requirements are the same.

Additional Pre-requisites for XHQ Reporting Services

- Microsoft **.NET Framework 4.6.1**
- XHQ Reporting Services can reside on a separate server. However, if it is installed on the XHQ Server, then XHQ Reporting Services must be the same version as the XHQ Server. To ensure this, use the XHQ Reporting Services install from the same media as the XHQ Server install.
- **Microsoft Visual Studio 2015** is required for custom report generation (or similar); optional for reading and/or using reports.

  Once installed, rights need to be given to Everyone for `C:\Windows\ServiceProfiles\NetworkService\AppData\Local\Temp\` on the server to avoid having to restart the service every day.

  If you do not have Visual Studio 2015
  SQL Server Data Tools (SSDT) installs both the Visual Studio 2015 Integrated shell and Visual Studio 2015 Isolated shell with limited feature support for SQL Server Database and BI Projects.

- **SQL Server Data Tools** (SSDT) for Visual Studio 2015, release 17.4

  Download at:
  https://docs.microsoft.com/en-us/sql/ssdt/download-sql-server-data-tools-ssdt

- **SQL Server Integration Services** and **Reporting Services** require certain ports to be open if firewall is turned on. Port definitions may change with newer versions of SQL Server or Reporting Services. In general, check related Microsoft product documentation for the current required ports.

  For **SQL Server 2016**, go to:
  https://docs.microsoft.com/en-us/sql/sql-server/install/configure-the-windows-firewall-to-allow-sql-server-access

XHQ Web Application Server

By default, the XHQ Visual Composer environment and the XhqWse web applications are installed together with XHQ and will run on the same server. If the server configuration is not adequate to support this additional load (see pre-requisites), it is possible to install the XHQ Visual Composer environment and/or XhqWse environment onto a separate server.

It is also possible to install the XHQ OPC UA Server onto this standalone server instead of the XHQ Server. This requires using a specific XHQ installer for XhqWse or the XHQ OPC UA Server.

Refer to the topic, *For the XHQ Web Services*, for instructions on how to install XhqWse on a separate server.

For XHQ Visual Composer, this requires using the XHQ installer to install and some additional steps to ensure XHQ itself is not running on the Web Application Server machine after the install. In a subsequent XHQ release, there will be a standalone XHQ Visual Composer installer for this specific use case.

If the standalone system for the Web Application Server is required, the following system requirements must be met.

System Requirements for XHQ Web Application Server

Requirement	Minimum	Recommended
Operating System	Windows Server 2016 Windows Server 2012 R2	Windows Server 2012 R2
Processor (CPU)	Two Xeon class processors, with 6 cores each	Two Xeon class processors, with 12 cores each
Memory (RAM)	8 GB	16 GB
Network	100 Mbit LAN Interface	1 Gbit LAN Interface
Hard Drive Space	5 GB free disk space for XHQ application files and data **Note:** Additional disk space will be required for your XHQ Visual Composer solution.	10 GB free disk space for XHQ application files and data **Note:** Additional disk space will be required for your XHQ Visual Composer solution.

Additional Pre-requisite for the Web Application Server

If the Web Application Server is being installed onto a **separate** server, then the following pre-requisite must be manually installed onto that server. Contact the XHQ Customer Support Team for complete instructions on how to manually install the XHQ Visual Composer.

- Microsoft **.NET Framework 4.6.1**
  Do not remove the existing .NET Framework version that is installed with the OS (for example, version 2.0/3.5.1).

Also refer to the topic, *Additional System Specifications and Restrictions*, for further recommendations.

Pre-requisites for XHQ System Components

For XHQ Performance Management

To use XHQ Performance Management, you must have these installed or set-up.

For Target Management

- XHQ Alert Notification System (XHQ ANS)

  XHQ ANS is automatically installed with the XHQ Server installation. In order to use it, you must have a valid ANS license.

- XHQ Data Recorder
  Make sure this feature is enabled. By default, it is.

For eLogs

- XHQ ANS

  Again, you must have a valid XHQ ANS license.

- A valid eLogs license.

For the XHQ Software Development Kit (SDK)

To use the XHQ SDK, you must have these installed or set-up:

- The XHQ .NET API requires that Microsoft **.NET Framework 4.6.1** be installed on any machine where it is used (at runtime or development).
- It is highly recommended that you use Microsoft **Visual Studio 2015** to create applications using the XHQ .NET API. Note, Microsoft Visual Studio 2013 is also supported. Later versions are not yet supported.

  The XHQ Client Data API requires explicit licensing for XHQ and is not included in the core XHQ license scope. If you are interested in obtaining a license, contact your Siemens XHQ sales representative.

- For an **XHQ Core SDK installation**, run the following executables, which can be found in the **`Setup\Prerequisites\Siemens`** folder of the XHQ installation media:
  - `AJAXControlToolkitForXHQ.exe`
  - `CalithaGoldParserForXHQ.exe`
  - `IKVMJavaDotNetBridgeForXHQ.exe`

  The `XHQ.NETAssemblies.exe` is automatically run with the XHQ Server. It can also be run on any non-XHQ Server machine.

  The `XHQ.NETAssemblies.exe` copies the XHQ ADO.NET provider and client API assemblies to the GAC (Global Assembly Cache).

- For a **Basic Developer SDK installation**, run **`XHQ-SDK.exe`**, which can be found in the **`Setup\SDK`** folder of the XHQ installation media.

  The Basic Developer SDK Installer copies the XHQ ADO.NET provider and client API assemblies to a Program Files directory and installs the help files.

- The XHQ SDK is supported on Windows Server 2016/2012 R2, Windows 10/8.1/7.

For the XHQ BI Data Provider

The XHQ BI Data Provider is automatically installed with the XHQ Server installation. In order to use it, you must have a valid BI Data Provider license.

For the XHQ OPC UA Server

The system requirements to install the XHQ OPC UA Server are the same as those for the XHQ Solution Server. The XHQ OPC UA Server may be installed on either the XHQ Server or the stand-alone server.

The XHQ OPC UA Server requires additional licensing for XHQ. If you are interested in obtaining a license, please contact your Siemens XHQ sales representative.

Additional Pre-requisites for the XHQ OPC UA Server

- Microsoft **.NET Framework 4.6.1**

Additional System Specifications and Restrictions

This section provides crucial information and recommendations you will need to know prior to installing the XHQ System.

Hardware, Network, and OS Settings

- The Windows Domain Controllers in the network must be, at the minimum, running Windows Server 2008. This is needed for XHQ to accurately query the group membership of a user.
- The use of a fast RAID system is required; preferably, a RAID 1+0 configuration, or alternatively, a RAID 0+1 configuration. A fast RAID subsystem with a large, battery-buffered write cache is strongly recommended.
- The connection between the XHQ Server and the associated backend data source systems (such as Historians, Databases, and so forth) must be a **high bandwidth, low latency connection** (for example, 100 Mbit LAN or better) in order to ensure adequate solution performance. The XHQ server(s) and connected Historian backend data sources need to be co-located to ensure minimal network latency between them and to ensure best performance. For configuration options where low bandwidth or high latency provides constraints, review the configurations described in the XHQ Sizing and Performance Tuning Guide and discuss with an XHQ Solution Architect.
- XHQ supports installation and use of virtual servers running in a virtual server environment. This is **for non-production use only** (for example, as a development server) unless explicit configuration and licensing approval is provided. See the topic "Supported Virtual Servers" for a list of supported versions. For more information, go to the topic, "Virtual Server Environments," located in the XHQ Administrator's Guide.
- Enabling Hyper-Threading Technology on the client can significantly improve system performance on the client. For more information, go to the topic, "About Hyper-Threading Technology and the XHQ System," which is located in the XHQ Administrator's Guide.
- The XHQ Platform does not support any operating system modes that would temporarily interrupt normal XHQ system operation (for example, power save modes such as Hibernate, Stand By, Sleep, or Suspend).
- Cluster configurations, such as Microsoft Cluster, are currently not supported. Supported High Availability or Disaster Recovery configurations and exclusively documented in the XHQ High Availability Configuration Guide.

Supported Backend Data Sources and Historians

XHQ currently supports the following **backend data sources**:

- Oracle Standard and Enterprise Editions 9i, 10g, 11g, 11g R2, and 12c
- Microsoft SQL Server 2016/2014/2012 (64-bit)
- Documentum 6.0, 6.5, 6.7, and 7.0

Supported Historians

AspenTech InfoPlus.21

- AspenTech InfoPlus.21 versions 8.5, 8.4, 7.3 (11.3.0.13)

Client libraries prior to version 7.3 (such as version 6.0.3) are supported but with limited functionality. Specifically, long names are not supported.

Honeywell Uniformance PHD

- Honeywell Uniformance PHD 201 until 215 using the PHD Connector
- Honeywell Uniformance PHD 215 until 321 using the PHDV or PHD CLR Connector

SIMATIC IT Historian

- SIMATIC IT Historian 6.5 SP3
  SIMATIC IT Historian 6.3 SP2 (and PPACOMCLI.DLL version 500.102.104.1)
  SIMATIC IT Historian 6.1 SP1 HF22

SIMATIC BATCH

- SIMATIC PCS7 BATCH version 8.2

OPC

- Supported versions of the DA and HDA standard: DA 2.05, HDA 1.2, HDA 1.1

For OPC UA (64-bit) connector:

- UA Client version 1.04.353

OSIsoft PI AF CLR / PI CLR / PI SDK / PI

For the PI AF (64-bit) and PI (64-bit) connectors:

- PI AF SDK 2017 SP1 (2.9.1.8106)
- PI AF SDK 2017 (2.9.0.8065)
- PI AF SDK 2016 R2 SP1(2.8.6.7801)
- PI AF SDK 2016 (2.8.0.7444)

Supports access to the PI AF server, version 2.3 (or later).

Supports access to PI Data Archive, version 3.4.380 (or later).

For PI SDK and PI connectors:

- PI API 2016 WIS (2.0.1.35)
- PI API 2016 (1.6.8.22)
- PI SDK 2016 (1.4.6.494)

Supports access to PI Data Archive, version 3.4.380.36 (or later).

For further details, consult the OSIsoft documentations on the supported servers for the OSIsoft client support.

SAP

- SAP ECC 6.0 and SAP R/3

Supported Virtual Servers

Siemens occasionally tests XHQ products in virtualized environments such as VMware and Microsoft Hyper-V, but Siemens does not certify XHQ products in virtualized environments. The XHQ Customer Support Team will assist customers running XHQ products in virtualized environments as follows: Siemens will only provide support for issues that either are known to occur on the native OS, or can be demonstrated not to be as a result of running in the virtualized environment.

Siemens has to date not observed any problems with XHQ and the following ESXi server versions:

- ESXi 6.0.0 (4192238)
- ESXi 5.5.0 (1892794 or 1623387)

Lastly, refer to the End User License Agreement (EULA) for terms and conditions for virtualization.

Currently, the following are not supported:

- Stand-alone version of Microsoft® Hyper-V™ Server 2012 R2
- Microsoft® Hyper-V™, as included with Windows Server 2012 R2
- Microsoft® Hyper-V™, as included with Windows 8 Pro

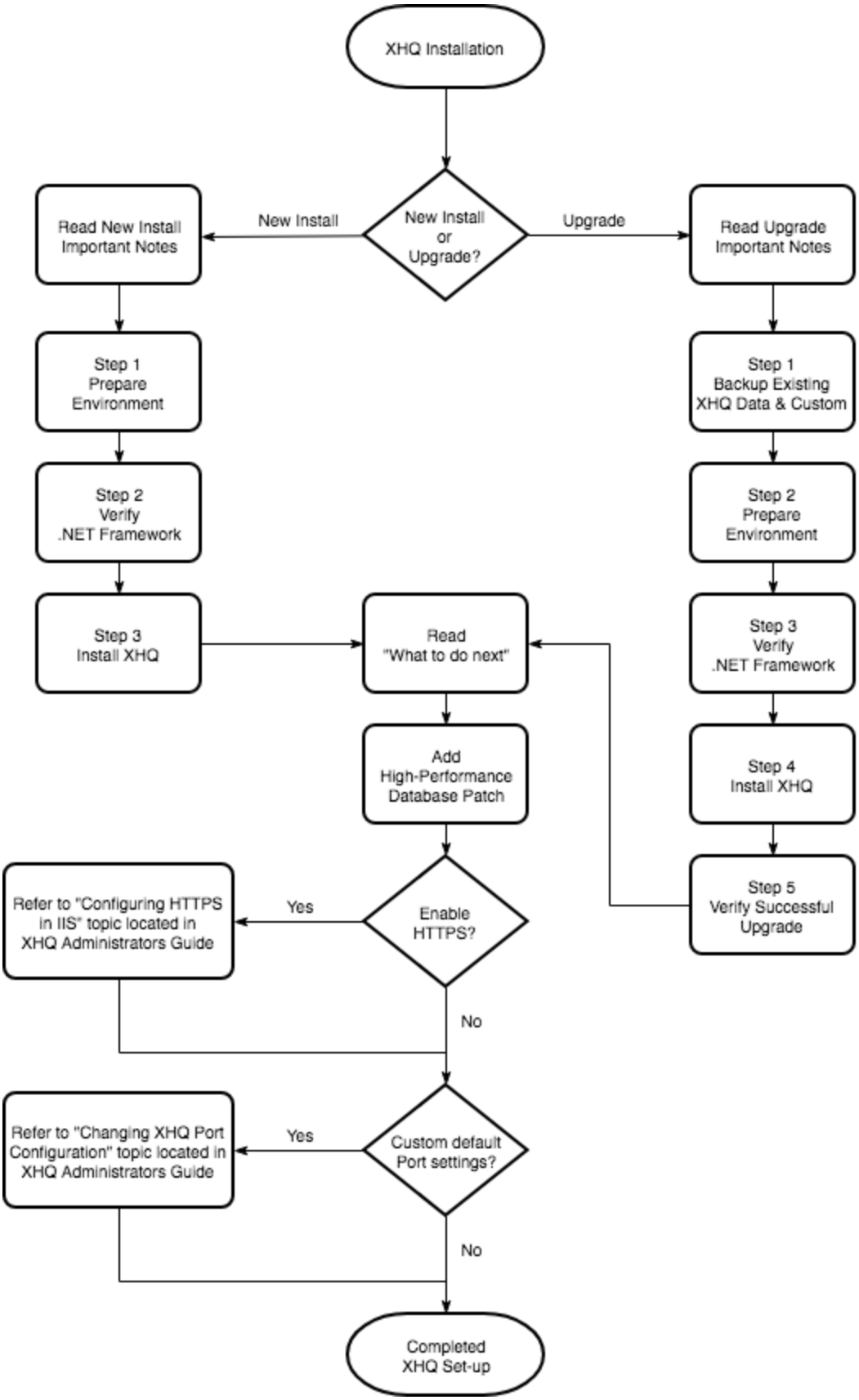
For additional information regarding technical and licensing requirements, go to the topic, "Virtual Server Environments," located in the XHQ Administrator's Guide.

2 | XHQ Installation

This section includes detailed instructions for completing the installation of the XHQ System.

Prior to installing XHQ, refer to the **README**, which is located at the root directory of the XHQ installation media, for a list of possible installation, upgrade, or migration issues.

Check the installation requirements and pre-requisites or upgrade information, depending on your need. Also check the **Appendix** of this guide, for additional installation information and procedures.


XHQ Installation
New Install or Upgrade?
New Install
Upgrade
Read New Install Important Notes
Read Upgrade Important Notes
Step 1 Prepare Environment
Step 2 Verify .NET Framework
Step 3 Install XHQ
Step 1 Backup Existing XHQ Data & Custom
Step 2 Prepare Environment
Step 3 Verify .NET Framework
Step 4 Install XHQ
Step 5 Verify Successful Upgrade
Read "What to do next"
Add High-Performance Database Patch
Enable HTTPS?
Yes
Refer to "Configuring HTTPS in IIS" topic located in XHQ Administrators Guide
No
Custom default Port settings?
Yes
Refer to "Changing XHQ Port Configuration" topic located in XHQ Administrators Guide
No
Completed XHQ Set-up

Checklist for a New XHQ Installation

Important Things to Note

- The XHQ server(s) should be placed in a network segment designed for the express use of IT critical back-end servers. This is typically a network segregated from the general client PC network, with suitable infrastructure (firewalls, and so forth) to improve security and reduce broadcast traffic or interference from the client network(s).
- The "XHQ_Service" service in Windows must be executed with credentials from a domain user.
- The "XHQ_Service" service in Windows must have local administrator rights.
- The XHQ Server must be installed on a **dedicated server**, exclusively for XHQ use only. The only third-party software to be installed on this server are XHQ pre-requisites (such as Java, .NET, etc.) and those documented in this guide (such as the PHD client, the PI client, SAP DLLs, the Oracle JAR, and so forth).

  In addition, installing XHQ on a Windows server that is a domain controller is not supported, mainly because a domain controller does not know local users and groups since it does not have a local context.

  Do not install other applications and/or databases (for example Microsoft SQL Server or an Oracle thick client) on this server because they can interfere with the operation of the XHQ system by competing for the CPU and memory usage or by installing conflicting versions of required system files or conflicting environment variables. Database monitoring tools may interfere with XHQ and violate the XHQ license. Backup software may also interfere with XHQ during runtime if the software locks file access when reading files.

  XHQ expects the Operating System (OS) and the Internet Information Server (IIS) configuration to be a pure Microsoft install (like a new, out-of-box install of Microsoft Windows). If the OS or IIS settings are modified before installing XHQ, then these changes can cause XHQ installations to fail or prevent XHQ from functioning correctly.

  Some examples of changes that would impact XHQ are:

  - Applying policies to the server, limiting capabilities of the administrative account being used to install or run XHQ;
  - Limiting the Windows registry access of the XHQ service account to XHQ-related registry keys;
  - Limiting file access of the XHQ service account to XHQ installed files;
  - Limiting the XHQ service account from starting/stopping services;
  - Blocking HTTP PUT/POST/DELETE in IIS filtering;
  - Disabling server admin shares, such as C$, and so forth.

- In a **new installation** on a **new server** where no existing customer solution (repository) resides, XHQ does not have security enabled for the out-of-the-box default solution. This allows the administrator initial access to XHQ to configure an initial solution and activate an initial security configuration that maps customer-specific active directory groups to default XHQ roles without having to do this at install time.

  It is strongly recommended you activate this initial security configuration on the master development server before promoting the XHQ content to the production system (that is, before placing the newly defined XHQ solution on any production network accessible to general end-users) to avoid any user being able to access the solution even if there is no customer data yet available as a general security-related precaution.

  After XHQ is initially configured and secured, future updates do not change the security configuration.
- The XHQ Development Client and the XHQ Visual Composer are automatically installed on the XHQ Server.
- You cannot install the XHQ Server on an XHQ Development Client operating system. Likewise, you cannot install the standalone XHQ Development Client on an XHQ Server operating system.
- Applications, such as IIS, that are either installed or used with the XHQ Platform are exclusive to XHQ and are not available for use by other third-party applications. In addition, such third-party applications are known in some cases to interfere with the XHQ Web Services and indirectly with the ability of the XHQ Server to shutdown and start-up automatically.
- Do not install XHQ using an account with non-English characters.
- For security reasons, the following are automatically disabled by the XHQ Installer:
  - MIME sniffing
  - ASP.NET Version Display in the Header
  - OPTIONS Verb
  - TRACE Verb

  The changes noted above will be seen on the IIS Manager User Interface.

Follow these procedures **sequentially** to ensure a proper **first-time installation** of the XHQ System.

- [ ] Step 1 - Preparing the Environment
- [ ] Step 2 - Verifying the Required NET Framework
- [ ] Step 3 - Installing XHQ
- [ ] What to do next after a new XHQ installation

Step 1 - Preparing the Environment

1. Ensure your system meets at least the minimum XHQ requirements.
2. The machine, to which you are installing XHQ, must be connected to a network. That is, XHQ must be configured and running on the network with a suitable active LAN connection.
3. Ensure your server is patched and updated with the latest Microsoft critical updates.
4. Make sure the WebDav IIS component is not installed on the XHQ Server. If it is, uninstall it.
5. Scan the XHQ installation media by a virus detection program before using. However, during installation, it is strongly recommended that you disable the anti-virus scan during an XHQ installation to avoid issues (virus detection programs sometimes incorrectly detect and block critical installation files). For example, these programs can prevent the `forcedel` file (which is solely used by XHQ for XHQ) from being installed.

Next, you will need to *verify .NET Framework*.

Step 2 - Verifying .NET Framework

1. First, use the Server Manager to make sure that the .NET Framework that comes standard with the supported Windows Server *is enabled*.
   - For Windows Server 2016 users, .NET Framework 4.6.2 comes standard.
   - For Windows Server 2012 R2 users, .NET Framework 4.5.1 comes standard.
2. Next, make sure the machine is current with all Microsoft Windows OS updates.

XHQ supports **.NET Framework 4.6.1 or higher**. The XHQ installer will not proceed unless .NET Framework 4.6.1, or higher, is already installed on the target machine.

To manually install .NET Framework, go to the following download sites:

Web Installer:

https://www.microsoft.com/en-us/download/details.aspx?id=49981

Offline Installer:

https://www.microsoft.com/en-us/download/details.aspx?id=49982

After a successful install of .NET Framework, a **reboot** of the Windows Server is required, to ensure a consistent baseline for the subsequent XHQ installer execution.

Now you are ready to *install XHQ*.

Step 3 - Installing XHQ

Important Things to Note

- Make sure that the path to the XHQ installation media contains **no spaces**. In addition, the path selected for the installation of the XHQ High-Performance Database software, as well as the path selected for the installation of the XHQ High-Performance Database data, should **not contain spaces**.
- All install directories must be local disks and not network shares. For example, the log file location must be a local drive.
- Run `setup.exe` as an **Administrator**.
  Note, the XHQ Installer automatically elevates to administrator privileges. So, right-clicking and selecting "Run as Administrator" is not necessary.
  You may create a local user on the server and add this user to the local Administrators Group. Log out; then login as this local user and continue with the installation. After a successful XHQ installation, you may delete this local user.

You can install the XHQ System on the following supported OS:

- Windows Server 2016
- Windows Server 2012 R2

Once XHQ has been successfully installed, *complete the XHQ set-up*.

For Windows Server 2016 and 2012 R2

To install XHQ

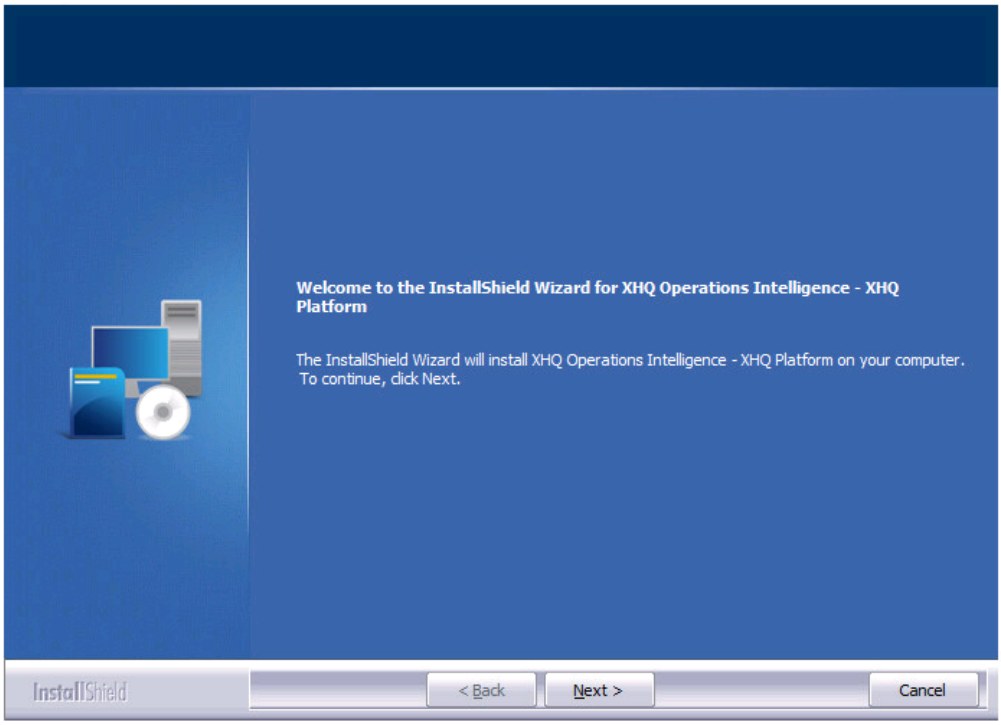
The **path** to the XHQ installation media must not contain spaces.

You may create a local user on the server and add this user to the local Administrators Group. Log out; then login as this local user and continue with the installation. Once the XHQ installation has successfully completed, you may delete this local user.

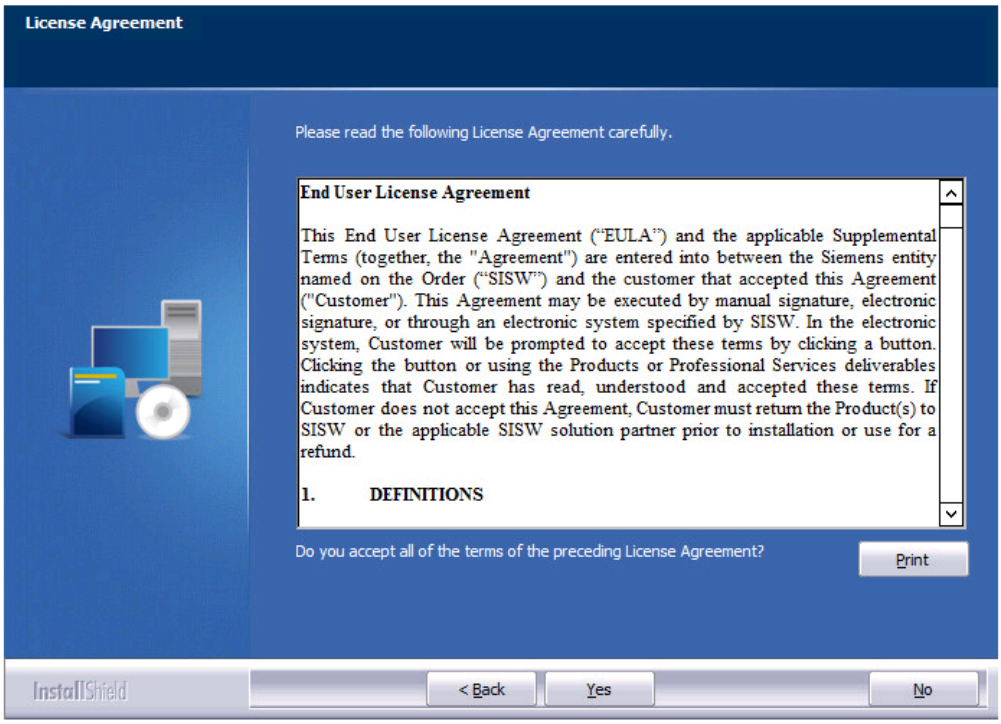
Refer to the topic, *The install.properties File*, for details on setting the **install.properties** file.

1. From the XHQ installation media, go to the **`Setup\Server\Setup`** folder and run **`setup.exe`**.
   The Siemens splash screen appears.

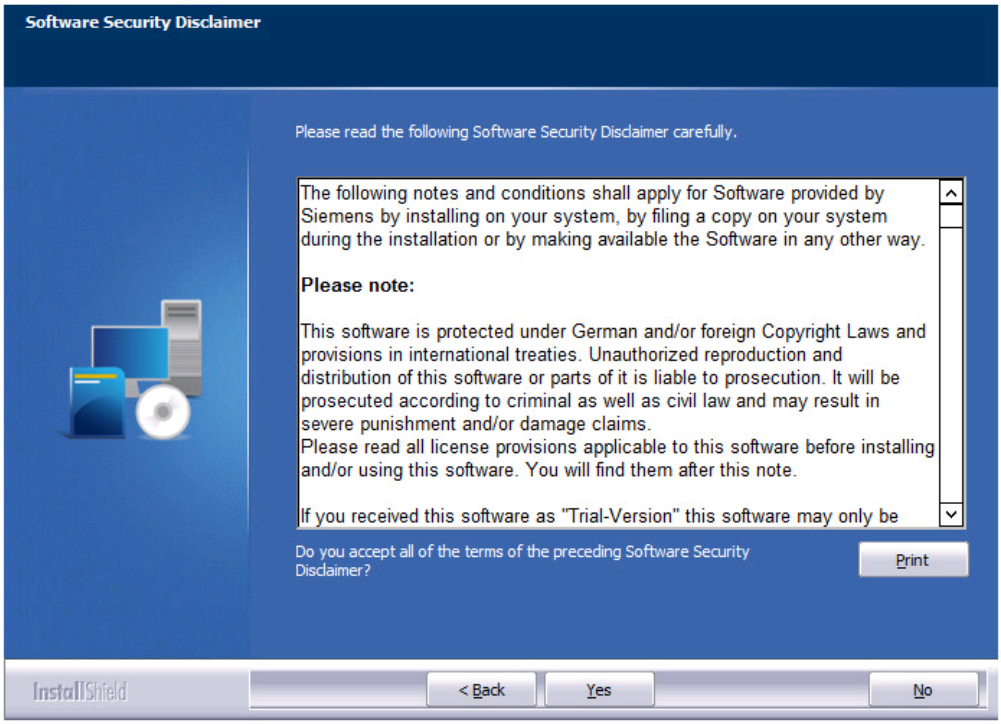
The "Welcome" dialog box appears.



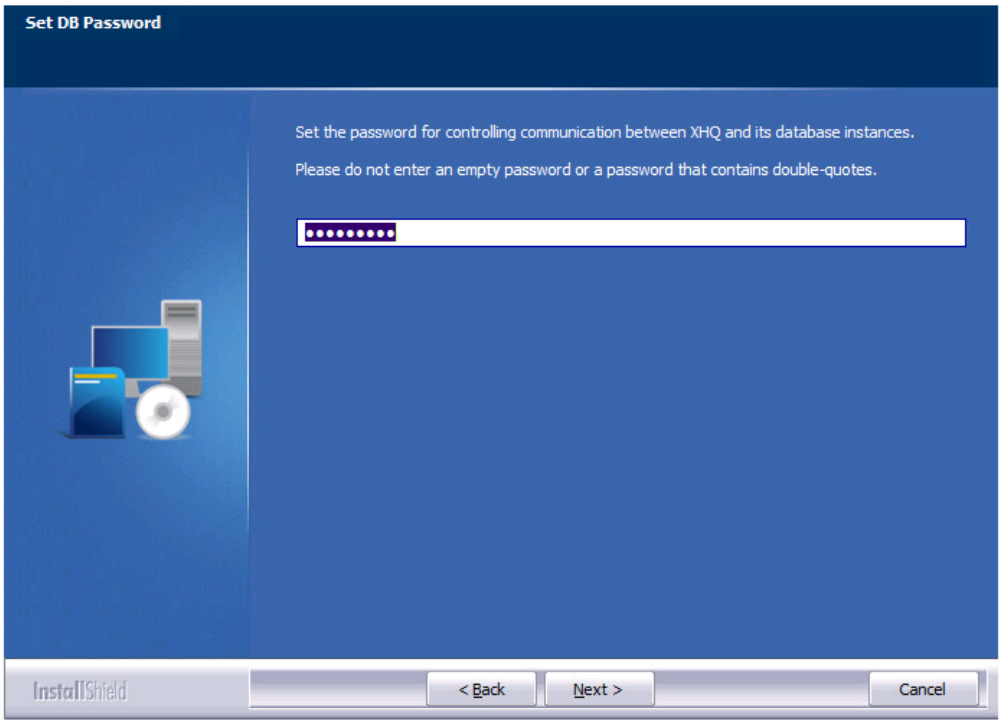
2. Click **Next**.
   A License Agreement appears. You have the option to print out the license agreement.



3. Read and click **Yes** to accept the terms of the license and continue with the installation.
   The Software Security Disclaimer appears. You have the option to print out this disclaimer.



4. Read and click **Yes** to accept the terms of the security disclaimer and continue with the installation.
   The "Set DB Password" dialog appears.



5. Enter a **valid password** and click **Next**.
   This password is used to enable communication between XHQ and its database instances.

   A **valid** password:

- Is a minimum of 8 ASCII printable characters;
- Is a maximum of 30 ASCII printable characters;
- Must contain at least one **uppercase** letter;
- Must contain at least one **lowercase** letter;
- Must contain at least one **number**;
- Must contain at least one of the following **special characters** (these are the only special characters allowed):

{ (open curly bracket)	- (dash)
} (close curly bracket)	+ (plus sign)
[(open straight bracket)	# (number sign)
] (close straight bracket)	? (question mark)
$ (dollar sign)	~ (tilde)
! (exclamation mark)	_ (underscore)

Again, all other characters (such as @, ^, &, >, <, |, ") are not allowed;

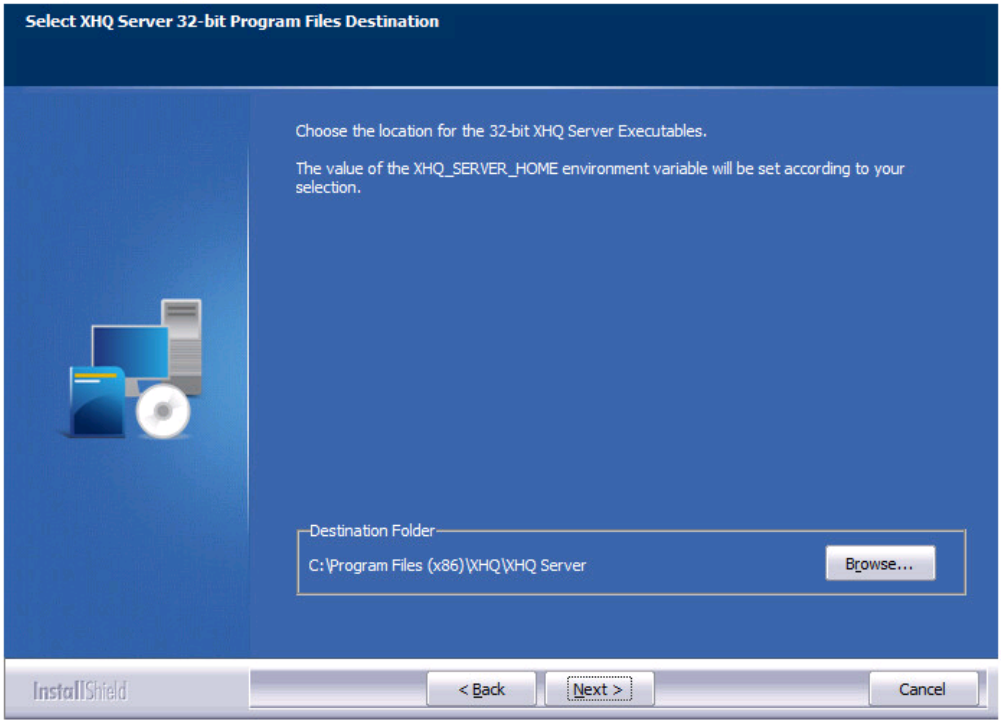
- Does not contain any spaces;
- Complies with the convention for selecting secure passwords at your company, or in accordance with reasonable industry practice.

The password is **case-sensitive**.

The "Confirm DB Password" dialog appears.

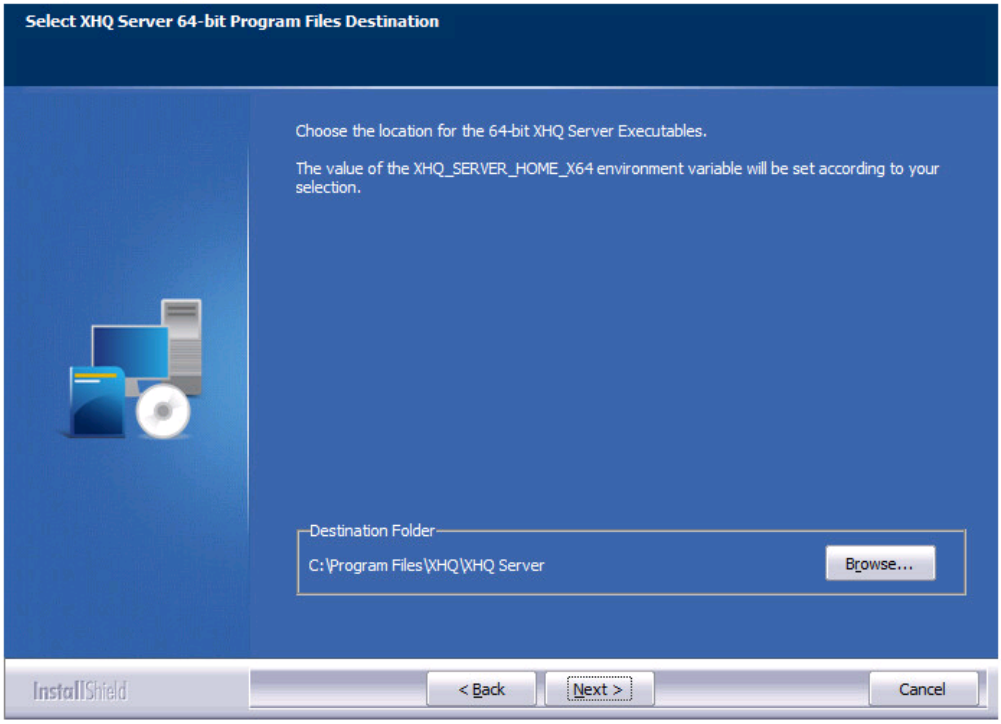
6. **Re-type** the password and click **Next**.

The "Select XHQ Server 32-bit Program Files Destination" dialog appears.



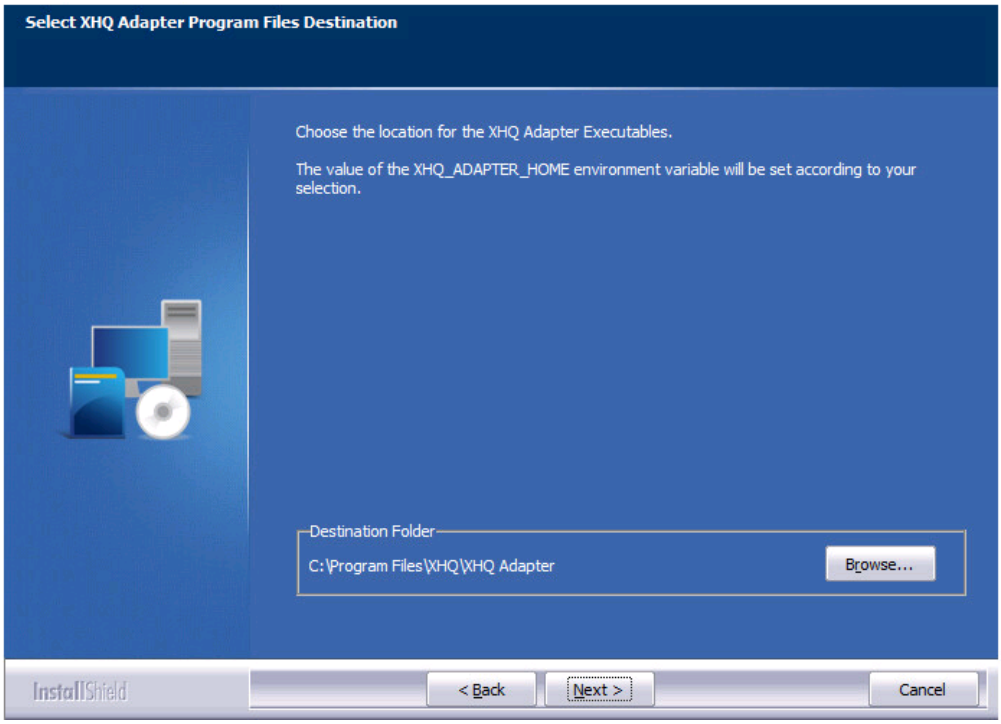
Program files are executables and fixed settings for XHQ.
The default destination folder is `C:\Program Files (x86)\XHQ\XHQ Server`.

7. Accept the default destination or click **Browse** to select a destination. Click **Next**.
   The "Select XHQ Server 64-bit Program Files Destination" dialog appears.



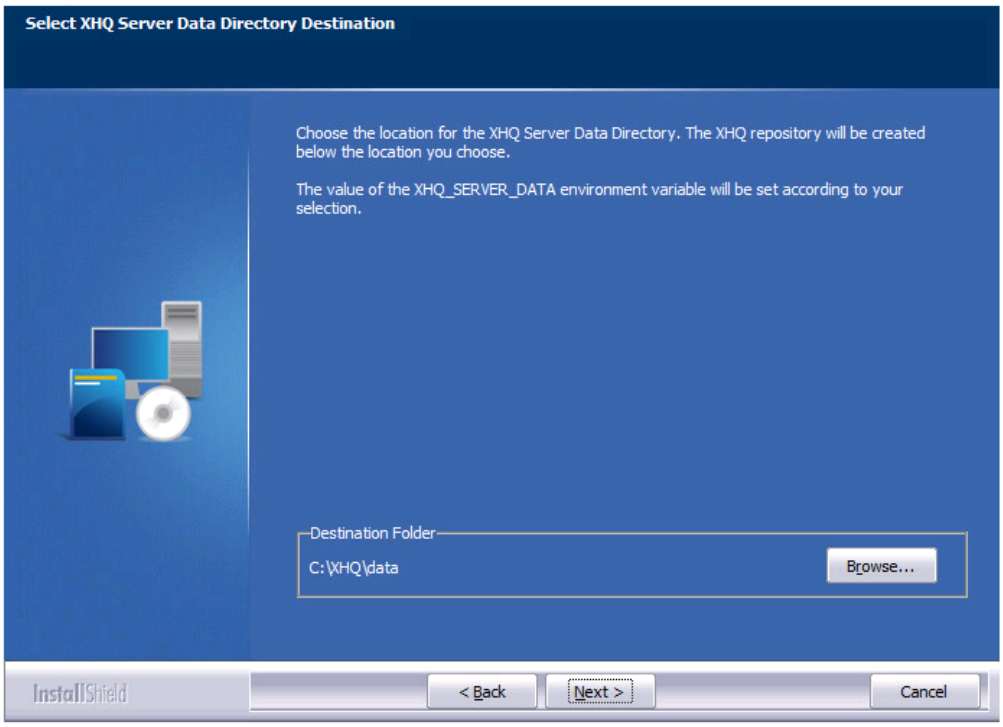
Program files are executables and fixed settings for XHQ.
The default destination folder is `C:\Program Files\XHQ\XHQ Server`.

8. Accept the default destination or click **Browse** to select a destination. Click **Next**.
   The "Select XHQ Adapter Program Files Destination" dialog appears.



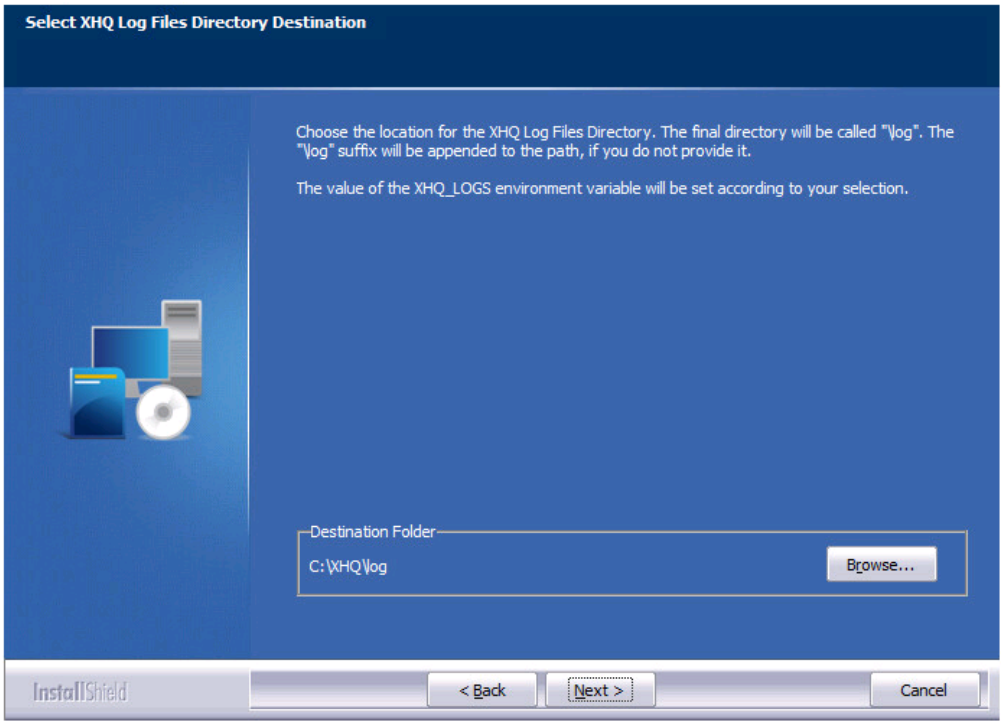
9. Accept the default destination or click **Browser** to select a destination. Click **Next**.

   The "Select XHQ Server Data Directory Destination" dialog appears.



> The subdirectory "**\repos**" is automatically created under the location you choose. The default destination folder is `C:\XHQ\data`.

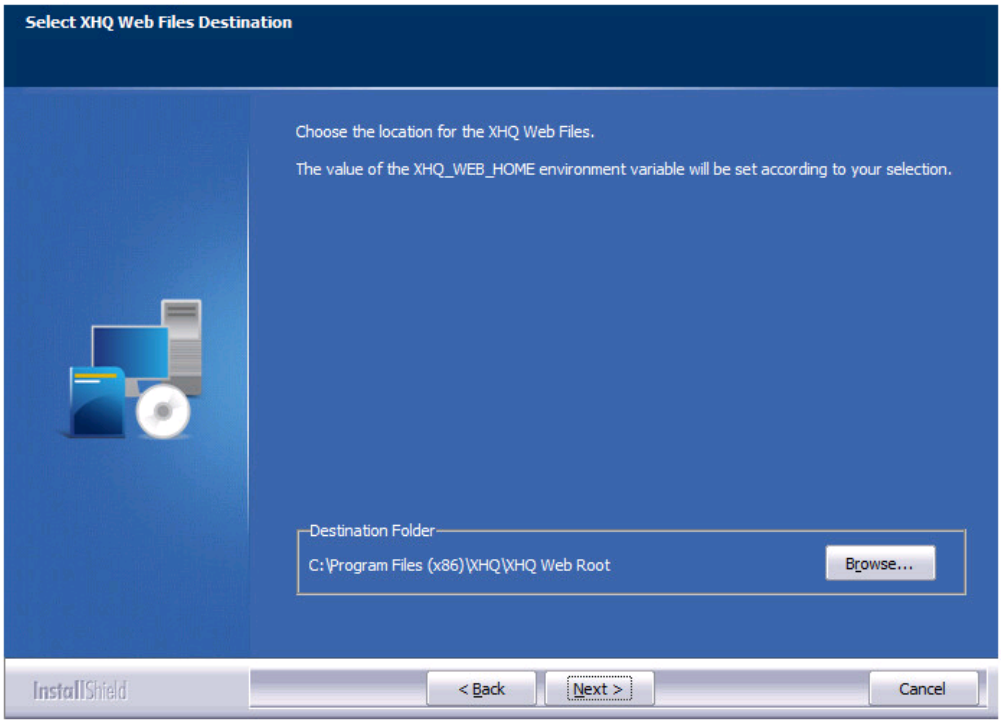
10. Accept the default destination or click **Browse** to select a destination. Click **Next**.
    The "Select XHQ Log Files Directory Destination" dialog appears.



The subdirectory "**\log**" is automatically created under the location you choose. All log files are written to this subdirectory.
The default destination folder is `C:\XHQ\log`.

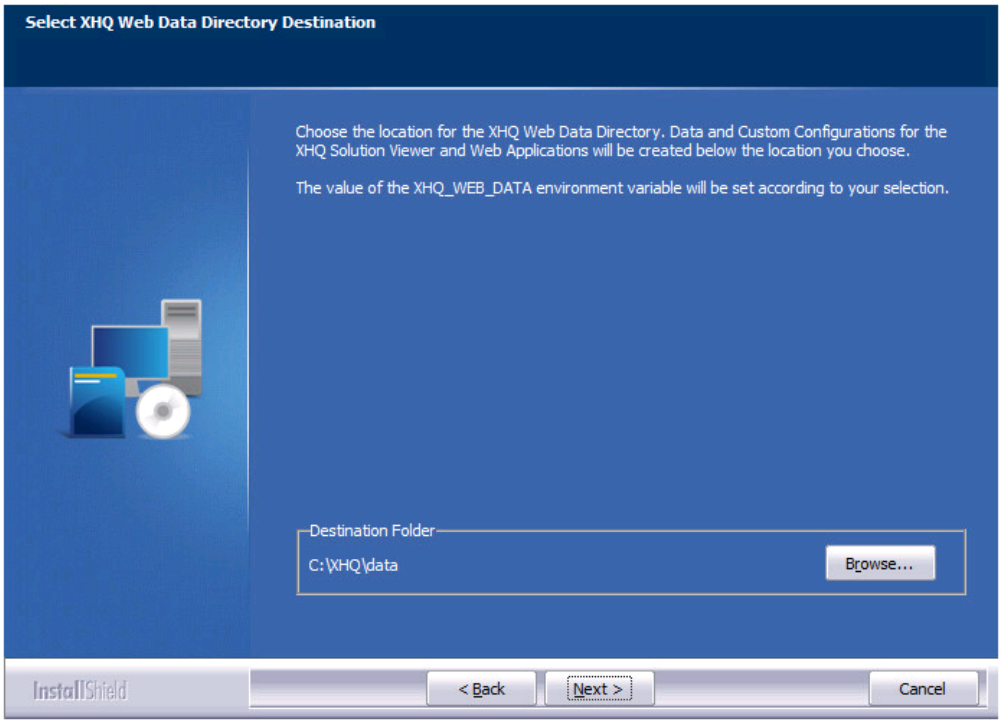
11. Accept the default destination or click **Browse** to select a destination. Click **Next**.

    The "Select XHQ Web Files Destination" dialog appears.



The default destination folder is `C:\Program Files (x86)\XHQ\XHQ Web Root`.

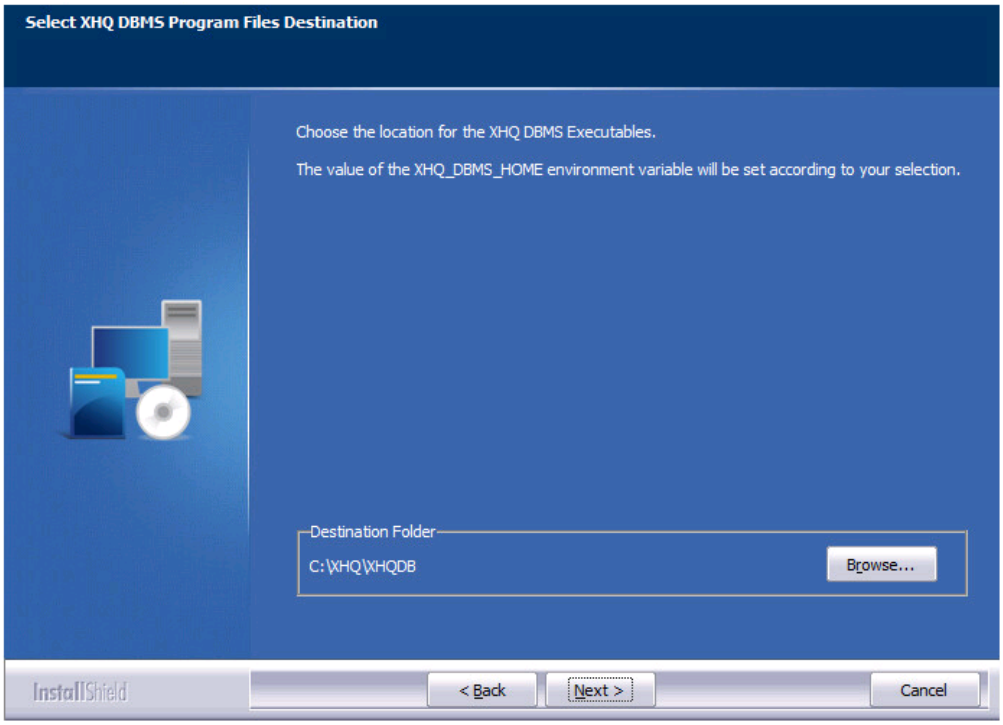
12. Accept the default destination or click **Browse** to select a destination. Click **Next**.
The "Select XHQ Web Data Directory Destination" dialog appears.



Folders for the XHQ Solution Viewer and XHQ Web Applications data and custom configurations are created under the location you choose. The default destination folder is `C:\XHQ\data`.

13. Accept the default destination or click **Browse** to select a destination. Click **Next**.

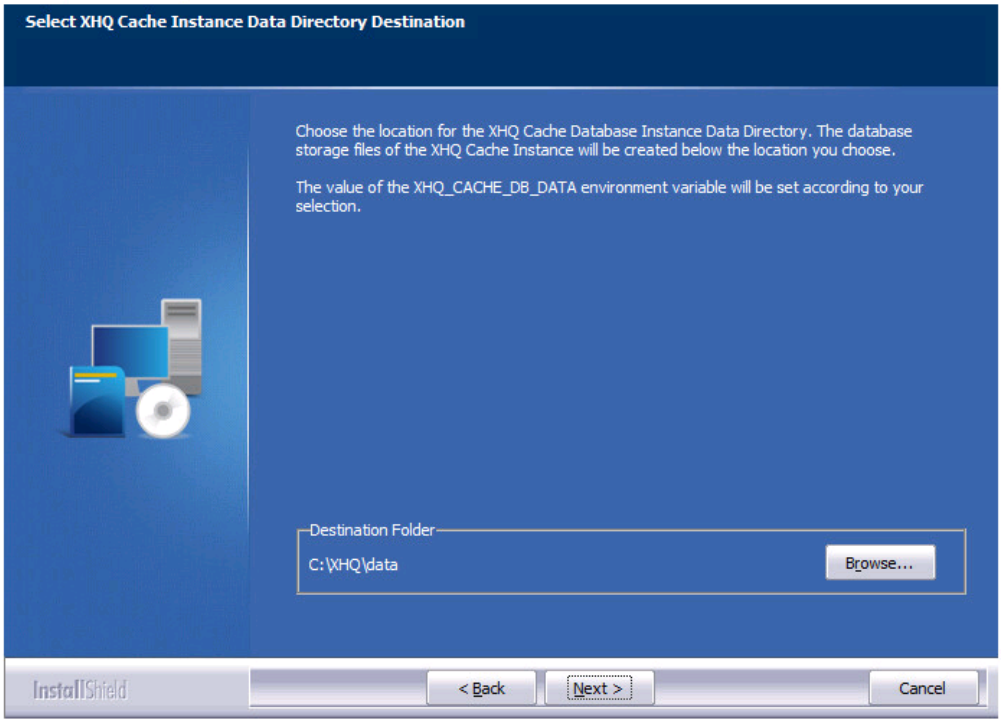
The "Select XHQ DBMS Program Files Destination" dialog appears.



The default destination folder is `C:\XHQ\XHQDB`.

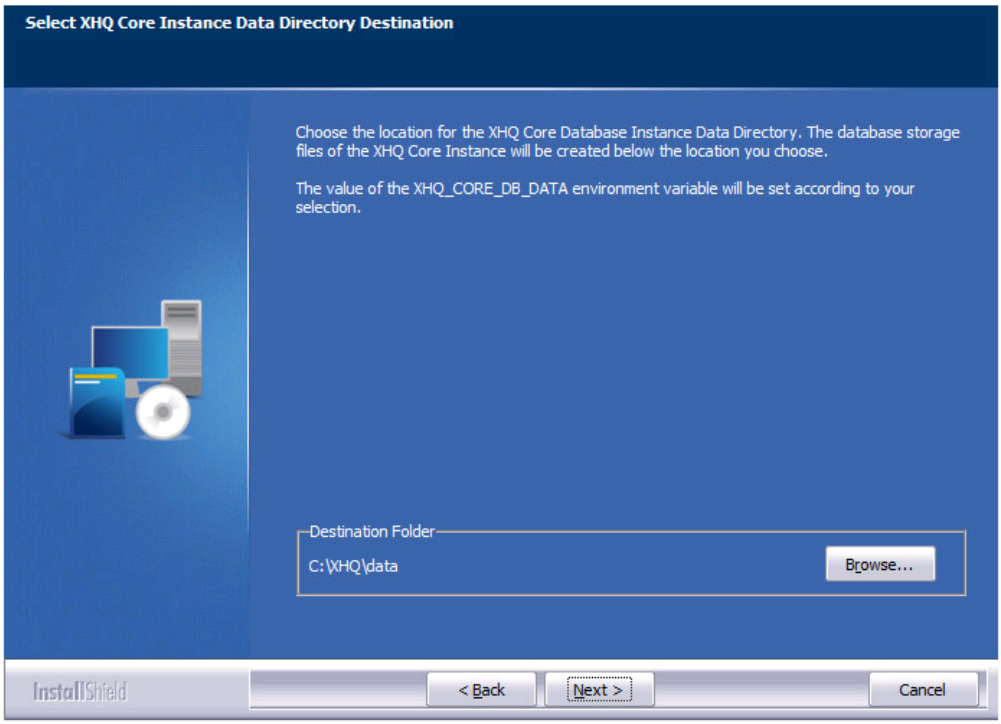
14. Accept the default destination or click **Browse** to select a destination. Click **Next**.

    The "Select XHQ Cache Instance Data Directory Destination" dialog appears.



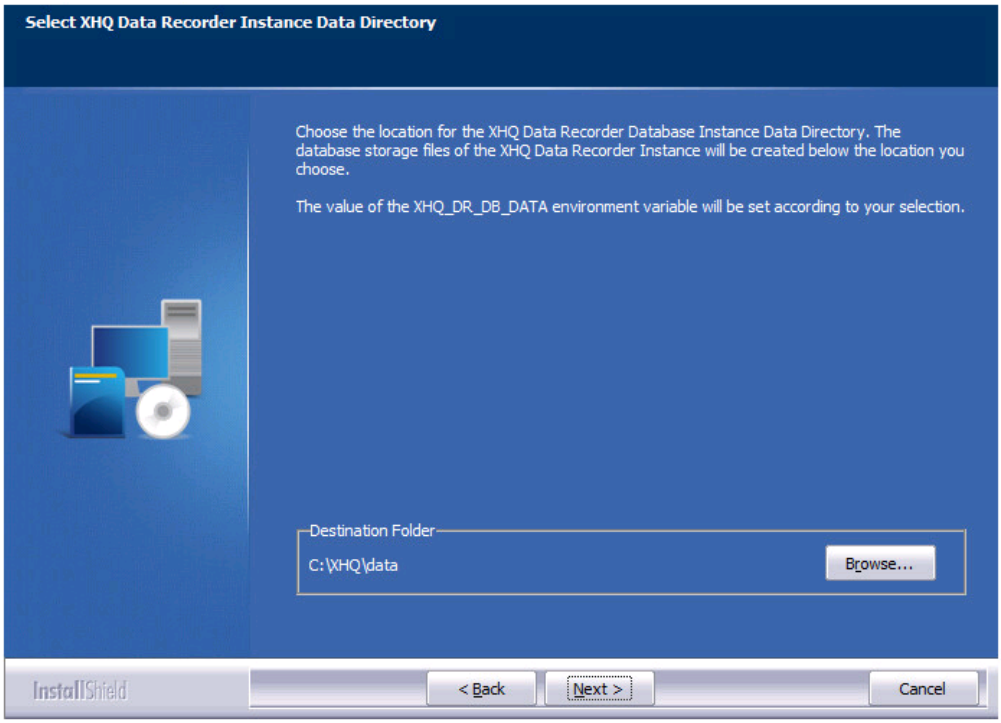
The default destination folder is `C:\XHQ\data`.

15. Accept the default destination or click **Browse** to select a destination. Click **Next**.
    The "Select XHQ Core Instance Data Directory Destination" dialog appears.



The default destination folder is `C:\XHQ\data`.

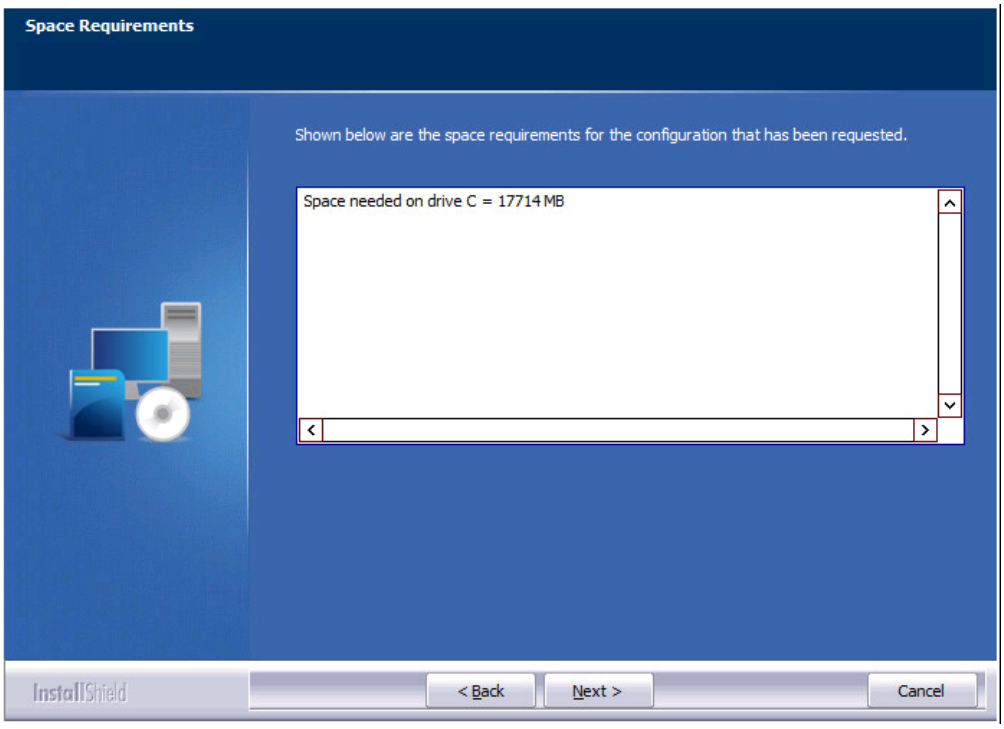
16. Accept the default destination or click **Browse** to select a destination. Click **Next**.
    The "Select XHQ Data Recorder Instance Data Directory" dialog appears.



The default destination folder is `C:\XHQ\data`.

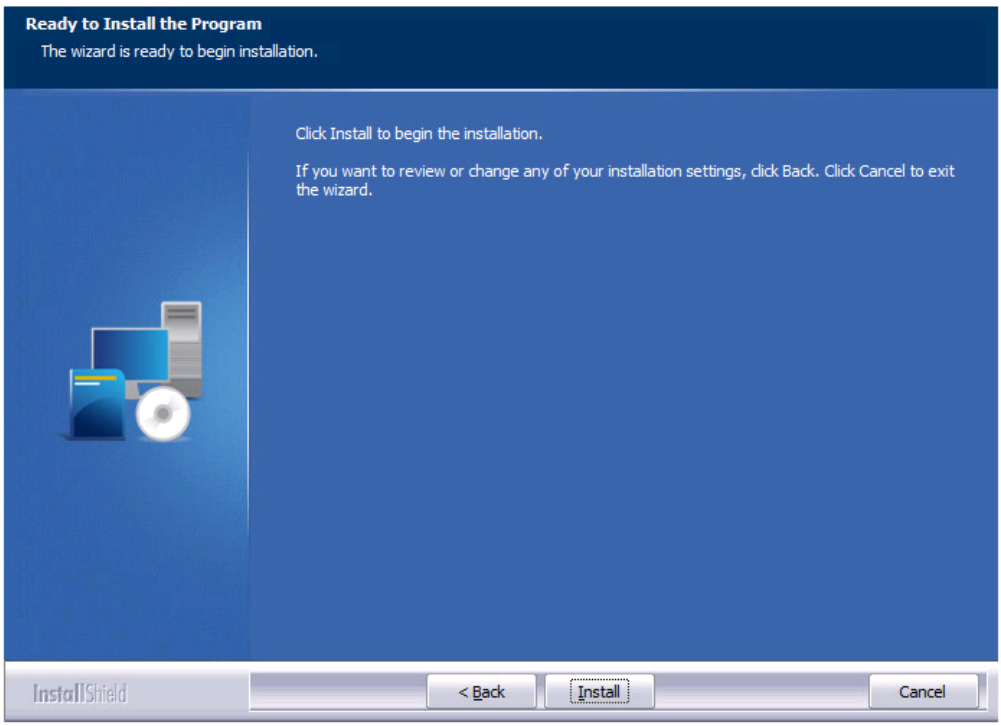
17. Accept the default destination or click **Browse** to select a destination. Click **Next**.

    The "Space Requirements" dialog appears, displaying the amount of space needed to install XHQ.



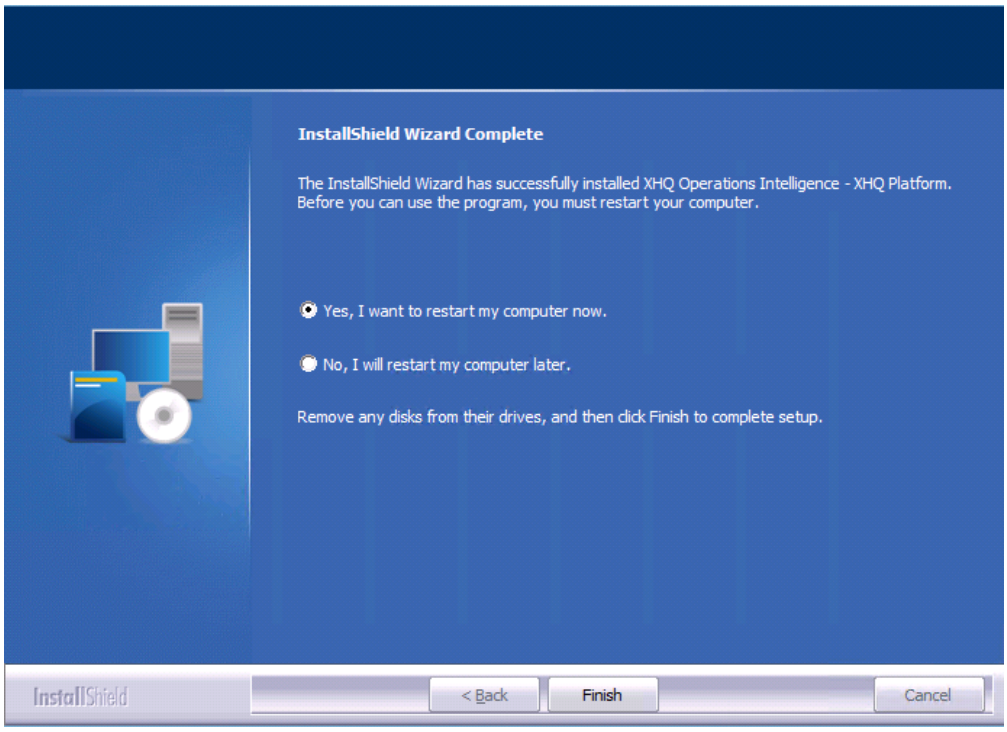
18. Click **Next**.

    The "Ready to Install the Program" dialog appears.



19. Click **Install**.

    Once complete, the "Wizard Complete" dialog box appears.



Before you can use XHQ, you must **restart your computer**.

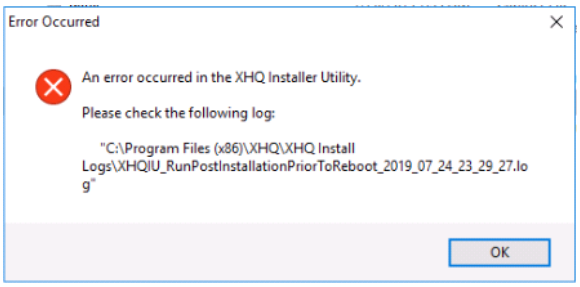
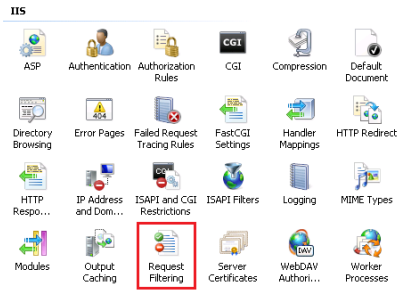
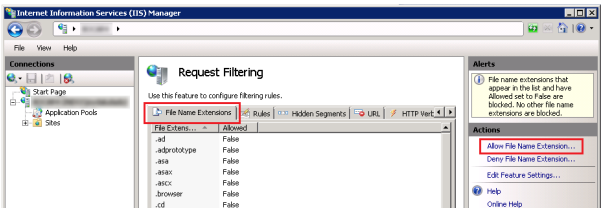
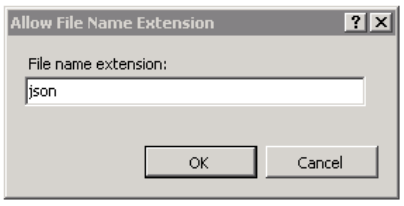
20. Then, click **Yes** to restart, and click **Finish**.
    The computer automatically restarts.

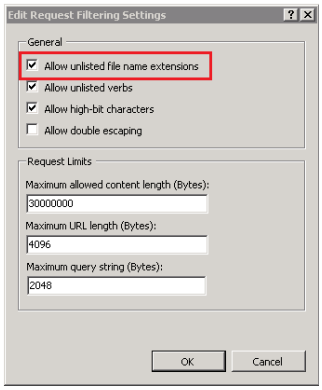
The **XHQ Install Utility** (`xhqiu`) automatically runs after an install, upgrade, or uninstall reboot.

21. Complete the XHQ set-up.

Troubleshooting XHQ Installation

Also check the **Known Issues** section of the README.

For this Error...	Do This...
 This error occurs when the IIS default web site does not allow for `.json` file types.	1. Open the **Internet Information Services (IIS) Manager**. 2. In the **Connections pane**, select (to highlight) the XHQ Server. 3. From the main **Workspace** >Features view, in the **IIS** group, click **Request Filtering**.  4. To allow for the `.json` file type, do <u>one</u> of the following two methods: **Method 1 - Allow the .json file extension** a. Click the **File Name Extensions tab** and, from the **Actions pane**, click **Allow File Name Extension**.  The "Allow File Name Extension" dialog appears.  b. Enter **`json`** and click **OK**. The `json` extension appears in the list of file extensions as True (Allowed). c. Exit the IIS Manager and continue to step 5.

For this Error...	Do This...
	Method 2 - Allow an unlisted file extension a. From the **Actions pane**, click **Edit Feature Settings**. The "Edit Request Filtering Settings" dialog appears. b. Make sure the **Allow unlisted file name extensions** option is **checked**.  c. Click **OK**, exit IIS Manager and continue to step 5. 5. Install XHQ.

What to do next after a new XHQ installation?

Once XHQ has been successfully installed or upgraded, do the following steps **in this given order** to complete the XHQ set-up.

1. Add the XHQ High-Performance Database patch.
2. By default, XHQ does not configure HTTPS. To enable HTTPS, refer to the topic, "Configuring SSL in IIS for HTTPS", located in chapter 2 of the XHQ Administrator's Guide.
3. By default, XHQ uses ports starting at 25100. To change the default port mapping, refer to the topic, "Changing XHQ Port Configuration", located in chapter 2 of the XHQ Administrator's Guide.

Uninstalling the XHQ System

There are two ways to properly uninstall the XHQ System:

- From **Control Panel** > Programs > Programs and Features > Uninstall option
- From the **XHQ installation media** > Installation Wizard > Remove option

The XHQ uninstall process only removes the XHQ core setup. It does not remove installed pre-requisites. Each must be uninstalled manually through the Control Panel > Programs > Programs and Features.

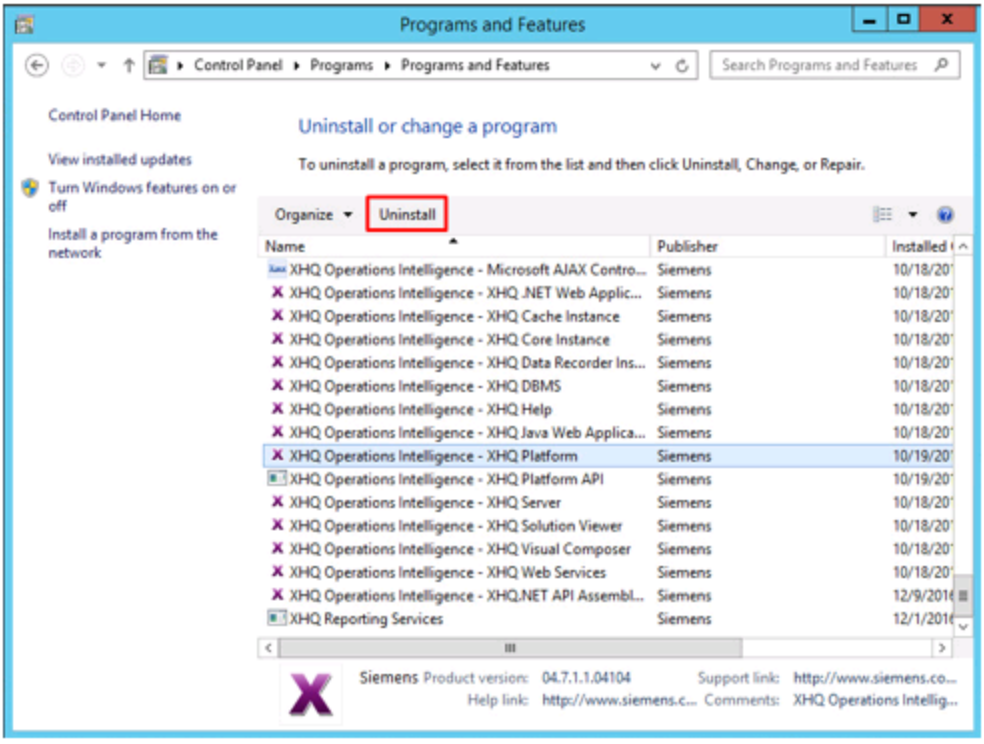
The **XHQ Install Utility** (`xhqiu`) automatically runs after an install, upgrade, or uninstall reboot.

To uninstall the XHQ System from the Control Panel

1. **Backup** your data accordingly.

   For more information, refer to the XHQ Backup and Recovery Guide.

2. Stop the XHQ Solution.
3. Launch the **Control Panel** and go to Programs > **Programs and Features**.
4. From the list of programs, find and select **XHQ Operations Intelligence - XHQ Platform**.



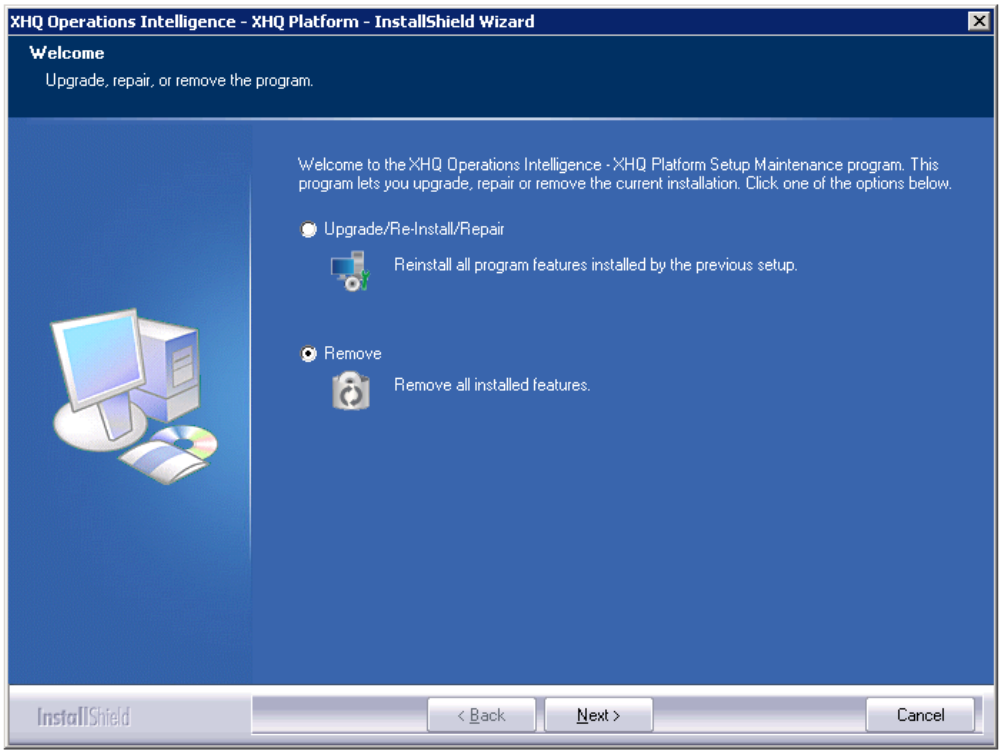
5. Click **Uninstall**.
   A message appears, asking you to confirm complete removal of the application and all of its features.
6. Click **Yes**.
   When uninstall is complete, the "Maintenance Complete" dialog box appears.
7. Click **Finish** and **restart** your computer.
8. Check the uninstall.

To uninstall the XHQ System from the XHQ installation media

1. **Backup** your data accordingly.

   For more information, refer to the XHQ Backup and Recovery Guide.

2. Stop the XHQ Solution.
3. From the XHQ installation media, in the **`Setup\Server\Setup`** folder, right-click **`setup.exe`** and select **Run as administrator**. Then, **run `setup.exe`**.
   The "Welcome" dialog box appears, with the Upgrade/Repair and Remove options.



4. Select **Remove** and click **Next**.
   When uninstall is complete, the "Maintenance Complete" dialog box appears.
5. Select **Yes, I want to restart my computer now** and click **Finish**.
6. Check the uninstall.

To check after the XHQ uninstall

To ensure a successful uninstall of XHQ, check the following.

What to check...	Where to check, expected results, and what to do...
XHQ-install programs	Go to Control Panel > Programs > Programs and Features. All XHQ-installed programs should be removed. You will need to **manually uninstall** the following programs prefixed with "XHQ Operations Intelligence": 
XHQ services	Go to the Start menu > search for **`Services.msc`**. All services that start with an "XHQ_" prefix should be removed.
XHQ environment variables	Open the Windows Command Prompt (`CMD`) as Administrator and run the **`SET`** command. This displays the current environment variables. All XHQ variables that start with an "XHQ_" prefix should be removed.
Registry Keys	Run **`regedit`** and check if the following keys exist. If they do, then remove or rename these keys. • HKLM\SOFTWARE\Oracle • HKLM\SOFTWARE\Wow6432\Oracle • HKLM\SOFTWAARE\Wow6432Node\Microsoft\Windows\CurrentVersion\Uninstall\{51EAAEA5-0058-0048-0051-A11001000000} • And any other keys under Uninstall that start with "{51EAAEA5-0058-0048-0051-"
XHQ folders	See if the following folders exist. If they do, delete them or, at the very least, make sure they are empty. **Note**: These paths are default installation locations. • `C:\XHQ` • `C:\Program Files\Oracle` • `C:\Program Files\XHQ` • `C:\Program Files (x86)\XHQ`

About Exclusions

Instead of requiring you to actively delete all XHQ installation directories, the XHQ installer has the ability to allow these directories to exist prior to installation. It even allows certain pre-defined subfolders and/or files to exist in these directories. (These are files/folders you want to keep at uninstall). These pre-defined subfolders/files are called ***exclusions***. For example, standard exclusions for the location to be defined by the `XHQ_SERVER_HOME` variable include `license.dat`, `bin\XhqAdministrationUtility.csv`, and `bin\xhq_service.properties`.

Exclusions are defined in the `C:\Program Files (x86)\XHQ\XHQ Install Files\exclusions.ini` file. An example file is located at `C:\Program Files (x86)\XHQ\XHQ Install Files\exclusions.ini.example`.

The actual exclusions found in this `exclusions.ini.example` file are also the default exclusions - even if the `exclusions.ini` file is not found.

Example: exclusions.ini.

```
[XHQ_ADAPTER_HOME]
bin\custom\
lib\custom\

[XHQ_CACHE_DB_DATA]

[XHQ_CORE_DB_DATA]

[XHQ_DBMS_HOME]

[XHQ_DR_DB_DATA]

[XHQ_LOGS]

[XHQ_SERVER_DATA]
mlc\
repos\

[XHQ_SERVER_HOME]
bin\xhq_service.properties
bin\XhqAdministrationUtility.csv
license.dat

[XHQ_SERVER_HOME_X64]

[XHQ_WEB_DATA]

[XHQ_WEB_HOME]
```

This enables you to add exclusion folders or files, using the following formats, respectively:

- An **excluded folder** ends with a backslash; for example, `repos\`.
- An **excluded file** does not have a backslash; for example, `license.dat`. Provide the relative path to the file; for example, `bin\xhq_service.properties`.

Wildcards are not supported.

Folders and files that should not be in the folders that are selected by the installer are called ***non-exclusions***. The presence of any non-exclusions prompts the installer to warn you that they exist. The installer then writes files ending with `_ExcludedItemsFound.txt` or `_NonExcludedItemsFound.txt` (so you can easily tell which are excluded and which are non-excluded). These text files are located in the `C:\Program Files (x86)\XHQ\XHQ Install Files` directory.

During an XHQ installation, the exclusions test only occurs after the installer has received valid values for all XHQ folders.

For GUI installation, it occurs after the folder associated with the `XHQ_DR_DB_DATA` (Data Recorder database) variable is set (which is the very last one processed).

3 | Installing the XHQ Development Client (Stand-alone)

This section includes detailed instructions for completing the installation of the XHQ Development Client (also known as the XHQ DevClient).

Prior to installing XHQ System, do the following:

- Check the installation *requirements and pre-requisites* information.
- To install the stand-alone XHQ Development Client for **all users**, you must:
  - Be an Administrator on the target machine;
  - Select "All Users" when prompted by the XHQ Installer.

  In addition, it's recommended you install the stand-alone XHQ Development Client in Administrator mode to ensure that the Symbol Factory (a third-party software) is properly installed, licensed, and made available to the XHQ Development Client user.
- It is also possible to install a stand-alone XHQ Development Client as a non-administrator, but only that user will have access to the installed XHQ Development Client.

  Should you install as a non-administrator, a warning message appears during installation that states the Symbol Factory will be unavailable. You will, however, be able to continue with the installation.
- Backup any previous installation, including existing XHQ data. Refer to the XHQ Backup and Recovery Guide.
- Refer to *Step 2 - Verifying the Required NET Framework* for detailed instructions regarding the .NET Framework.
- See the README, located at the root directory of the XHQ installation media, for a list of possible migration and/or installation issues.

System Requirements for the XHQ Development Client (Stand-alone)

- 32-bit and 64-bit Visual C++ 2017 Redistributables, version 14.11.25325
- .NET Framework 4.6.1, or higher

About the XHQ Development Client Environment Variables

With the XHQ Development Client stand-alone installation, the XHQ Development Client is launched and run **without** having to manually create XHQ environment variables. Instead, the directory from which the XHQ Development Client is launched is used as its context.

`%XHQ_DEV_HOME%` is the environment variable and **<XHQ_DEV_HOME>** is the location (path) to which the XHQ Development Client is installed. In short, `<XHQ_DEV_HOME>` (the path) is mapped to `%XHQ_DEV_HOME%` (the environment variable).

The `XHQ_DEV_REPOS` and the `XHQ_DEV_LOGS` environment variables are no longer used. The XHQ Development Client determines where to send logs and data relative to the **%APPDATA%**

environment variable. And so, `XHQ_DEV_REPOS` is replaced with `%APPDATA%\XHQ\XHQ devClient\repos` and `XHQ_DEV_LOGS` is replaced with `%APPDATA%\XHQ\XHQ devClient\log`.

The XHQ installation automatically sets `%XHQ_DEV_HOME%`. This is for the convenience of the end user for use, for example, in batch files. The install program also adds `<XHQ_DEV_HOME>\bin` to the `PATH` variable (system or user).

In general, only Administrators are able to set environment variables. For XHQ, you have to be an **elevated Admin** user if you:

- Install to a folder of your choice;
- Install for ALL users.

About XHQ Shell

The **XHQ Shell** command launches a command prompt window that automatically references the correct path to run `xhqci`. To run this command, go to the **START** menu, choose **XHQ Development**, then click XHQ Shell**XHQ Shell**.

XHQ Shell is offered as an alternative to launching `xhqci` in the Command Prompt window. It is offered in the event that the various environment variables could not be set as system or user variables. Any user, for whom the XHQ Shell command is available, can launch `xhqci` in any directory.

Access to the XHQ Shell varies, depending on how the `%XHQ_DEV_HOME%` environment variable is set.

If XHQ_DEV_HOME is a System Variable

The install program sets `%XHQ_DEV_HOME%` as a **system variable** and alters the system `PATH` variable to include `<XHQ_DEV_HOME>\bin`.

In this case, the XHQ Shell command is installed to the `ALLUSERS` profile. So, **any user** may use the XHQ Shell command to launch `xhqci` from the `<XHQ_DEV_HOME>` directory.

If XHQ_DEV_HOME is a User Variable

The install program sets `%XHQ_DEV_HOME%` as a **user variable** and alters the user `PATH` variable to include `<XHQ_DEV_HOME>\bin`.

In this case, the XHQ Shell command is installed only to the installing user's profile. So, only the installing user has access to the XHQ Shell menu command. All other users do not. Instead, they may use a Command Prompt window to run `xhqci` from the `<XHQ_DEV_HOME>` directory.

If XHQ_DEV_HOME is not set

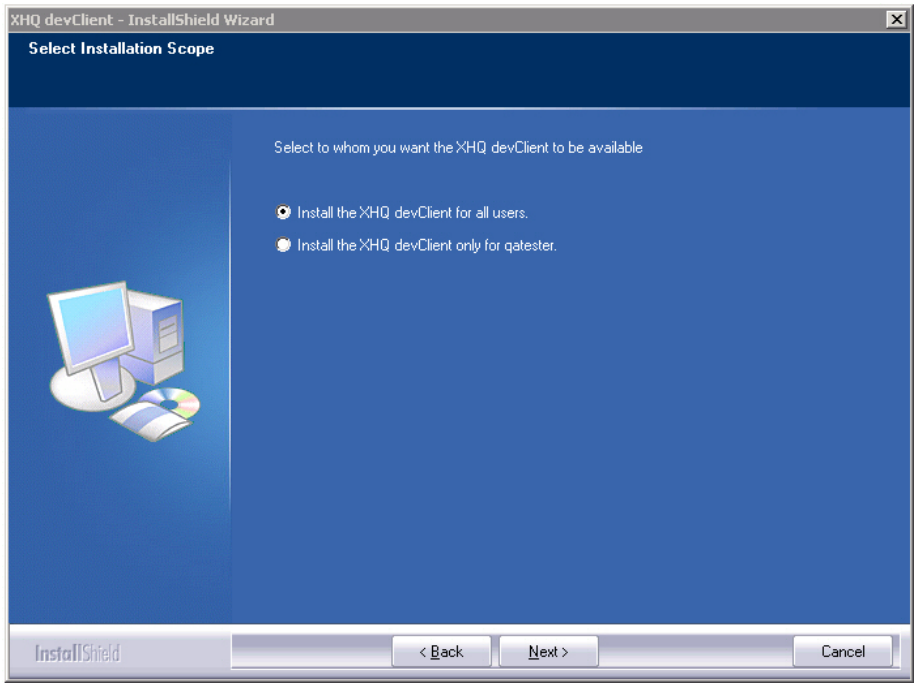
Because the installing user does not have sufficient privileges, the install program does not set `%XHQ_DEV_HOME%` as an environment variable and does not alter the system `PATH` variable to include `<XHQ_DEV_HOME>\bin`. In this scenario, only the installing user has access to the XHQ Shell menu command. All other users do not. Instead, they may use a Command Prompt window to run `xhqci` from the `<XHQ_DEV_HOME>` directory.

Installation Scenarios

Consider the following XHQ Development Client (XHQ DevClient) stand-alone installation scenarios.

Installing XHQ Development Client as an Administrator

In this case, during installation, you can choose to install for all users or only for yourself.



Selecting XHQ DevClient Availability to Users

If you select the **All Users** installation option, the following occur:

- The `%XHQ_DEV_HOME%` environment variable is set to the `<XHQ_DEV_HOME>` path as a system variable.
- The system PATH variable can be adjusted to include the `<XHQ_DEV_HOME>\bin` path.
- The default installation location is set to `%ProgramFiles%\XHQ\XHQ devClient`, but you may choose a different location.
- Shortcuts are installed to the `All Users` profile.

If you select the **Only for me** installation option, the following occur:

- If the `%XHQ_DEV_HOME%` environment variable can be set to the `<XHQ_DEV_HOME>` path as a user variable, it is.
- If the user PATH variable can be adjusted to include the `<XHQ_DEV_HOME>\bin` path, it is.
- The installation location is set under `%APPDATA%\XHQ\XHQ devClient`.
- Shortcuts are installed to your profile.

The shortcuts will work for you (the installing user) even if the `XHQ_DEV_HOME` environment variable cannot be set.

Installing XHQ Development Client as a Non-Admin

If you are installing the stand-alone XHQ Development Client and you are **not an administrator**, then the following occur:

- If the `%XHQ_DEV_HOME%` environment variable can be set to the `<XHQ_DEV_HOME>` path as a user variable, it is.
- If the user PATH variable can be adjusted to include the `<XHQ_DEV_HOME>\bin` path, it is.
- The installation location is set under `%APPDATA%\XHQ\XHQ devClient`.
- Shortcuts are installed to your profile.

The shortcuts will work for you (the installing user) even if the `%XHQ_DEV_HOME%` environment variable cannot be set.

To install XHQ Development Client

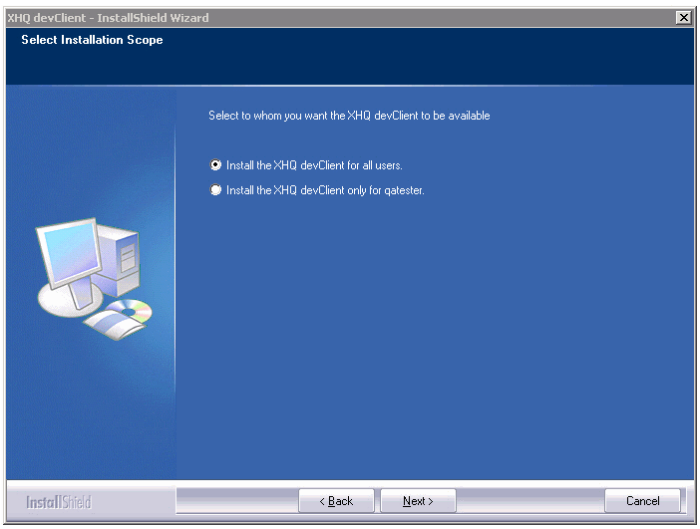
You do not need administrative privileges to install the stand-alone version of the XHQ Development Client. The following procedure, however, presumes that the installing user has administrative privileges.

1. From the XHQ installation media, under the `Setup\Development Client` folder, run **`devClient-setup.exe`**.
   - If this is your **first time** installing the XHQ Development Client, a "Welcome" dialog box appears. Click **Next**. A License Agreement appears. Please read the license agreement and click **Yes** to acknowledge the license contents and continue with the installation.

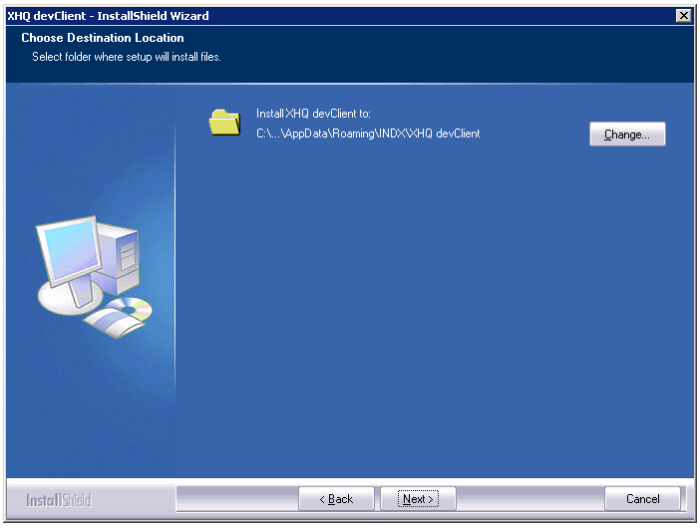
   or

   - If you have **installed XHQ before**, select **Modify/Repair/Upgrade**, click **Next**, and continue with the installation.

   The "Select Features Scope" dialog appears.



2. **Select an option** and click **Next**.
   The "Choose Destination Location" dialog appears.



   If you elected to make the XHQ Development Client available to **all** users, the default location is **`\Program Files\XHQ\XHQ devClient`**.

   If you elected to make the XHQ Development Client available to only the **single** user, the default location is under **`%APPDATA%`**.

3. **Verify** the destination location and click **Next**.
   The "Ready to Install the Program" dialog appears.
4. Click **Install**.
5. Once complete, click **Finish** to exit the install wizard.

Uninstalling the XHQ Development Client

Use the Programs and Features utility available from the Windows Control Panel to uninstall the XHQ Development Client.

To uninstall the XHQ Development Client

1. **Backup** your data accordingly.

   
   For more information, refer to the XHQ Backup and Recovery Guide.

2. Launch the **Control Panel** and go to Programs > **Programs and Features**.
3. From the list of programs, find and select **XHQ DevClient**.
4. Click **Uninstall**.
   A message appears, asking you to confirm complete removal of the application and all of its features.
5. Click **Yes**.
   When uninstall is complete, the "Maintenance Complete" dialog box appears.
6. Click **Finish** and **restart** your computer.

4 | Installing XHQ Components

XHQ Performance Analytics SQL 2016

Make sure that all pre-requisites have been met. For a complete list of requirements and pre-requisites, refer to the topic, *Requirements and Pre-requisites*.

The XHQ Performance Analytics (PA SQL 2016) installer and the XHQ ADO.NET Data Provider installer (SDK) have a security issue regarding DLL hijacking vulnerability. You must run these installers locally on the server from a secure location where the executable is ensured to be identical to the one provided by Siemens.

To install XHQ Performance Analytics SQL 2016

1. From the XHQ installation media, in the **`Setup\Performance Analytics\Setup`** folder, run the XHQ Performance Analytics **`.exe`** file.
   The "Welcome" dialog box of the setup wizard appears.
2. Click **Next**.
   The "License Agreement" dialog appears.
3. Accept the terms and click **Next**.
   The "Custom Setup" dialog appears.
4. OPTIONAL
   Click **Browse** to change the default install location.
5. Click **Next**.
   The "Service account" dialog appears.
6. Enter the log on **Account name** and **Password** for the XHQ Performance Analytics service.
7. Click **Next**.
   The "Ready to install XHQ Performance Analytics" dialog appears.
8. Click **Install**.
9. Once the installation is complete, click **Finish**.

XHQ Reporting Services

Make sure that all pre-requisites have been met. For a complete list of requirements and pre-requisites, refer to the topic, *Requirements and Pre-requisites*.

What does the XHQ Reporting Services installer do?

- It copies the XHQ ADO.NET Data Provider and Client API assemblies to the GAC (Global Assembly Cache). This is required for Visual Studio and/or SQL Server integration (SSRS, SSIS).
- It updates the .NET `machine.config` file with XHQ ADO.NET Data Provider. This is also required for Visual Studio and/or SQL Server integration.
- It installs any additional ADO.NET-related pre-requisites (for example, miscellaneous assemblies).
- It installs the Visual Studio integration component, which is required for the Visual Studio-based SQL Server components (for example, BIDS and SSRS Designer).
- It installs the SQL Server Reporting Services Client Designer extension, which is required for report design.
- It installs the SQL Server Reporting Services Server extension, which is required for report execution on the server side.

To **upgrade** XHQ Reporting Services, you must **uninstall** the previous release and then install the new version.

For **proper implementation**, you must have basic familiarity with SQL Server Reporting Services (SSRS). Refer to the following sites for details.

- For SSRS product documentation:
  `http://technet.microsoft.com/en-us/library/bb522728.aspx`
- For SSRS Security:
  `http://technet.microsoft.com/en-us/library/bb522728.aspx`

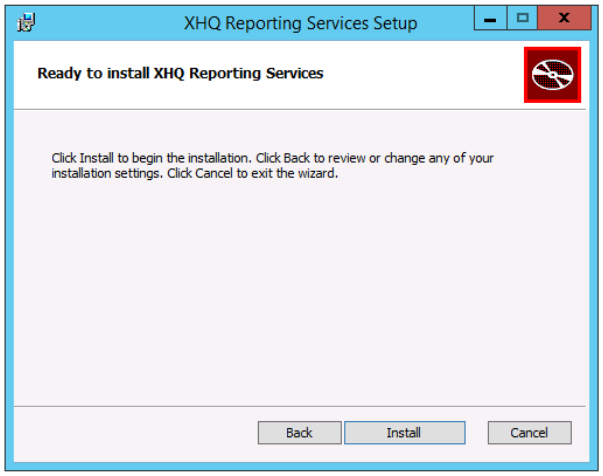
Refer to the Microsoft Visual Studio or SQL Server documentation for details on using the Report Builder or the Report Manager.

To install XHQ Reporting Services

1. From the XHQ installation media, in the `Setup\Reporting Services` folder, run the XHQ Reporting Services **`.exe`** set-up file.
   - For the 64-bit version, use **`XHQ-RS-x64-SQL20xx.exe`**.
   - For the 32-bit version, use **`XHQ-RS-x86-SQL20xx.exe`**.

   The "XHQ Reporting Services Setup" wizard appears.

2. Click **Next** to continue through the following dialogs until you get to the **Ready to install XHQ Reporting Services** dialog.



3. Click **Install**.

4. Once the installation is complete, click **Finish**.
5. **Restart** the XHQ Reporting Services server.

XHQ SDK

For the XHQ Client Data API

Make sure that all pre-requisites have been met. For a complete list of requirements and pre-requisites, refer to the topic, *Requirements and Pre-requisites*.

What does the SDK installer do?

- The **XHQ Core SDK Installer** copies the XHQ ADO.NET Data Provider and Client API assemblies to the GAC (Global Assembly Cache). The setup executable is **`XHQ.NETAssemblies.exe`**, which can be found in the XHQ installation media under the `Setup\Prerequisites\Siemens` folder. This is automatically installed together with an XHQ Server install.

  The `XHQ.NETAssemblies.exe` setup file can be run on any non-XHQ Server. In addition, the following executables, which can be found in the `Prerequisites\Siemens` folder, must be run:

  - MiscAssemblies.exe
  - IKVMForXHQ.exe

  Note, the XHQ Reporting Services Installer installs any additional ADO.NET-related pre-requisites (for example, miscellaneous assemblies).

- The **Basic Developer SDK Installer** copies the XHQ ADO.NET Data Provider and Client API assemblies to a Program Files directory and installs the help files. The setup executable is **`XHQ-SDK.exe`**, which can be found in the XHQ installation media under the `Setup\SDK\` folder.

To install the API support files (Basic Developer SDK)

You must **manually uninstall** the API before installing a newer API version.

1. From the XHQ installation media, in the **`Setup\SDK`** folder, run **XHQ-SDK.exe**.
2. Click **Next** to continue through the following dialogs and then click **Install**.
3. Once the installation is complete, click **Finish**.

Support Files for Mobile Application Development

Use the XHQ Web Interface to develop mobile applications for the Android and iOS platforms. Support files are available in the XHQ installation media.

For **Android** development, go to:

`<MEDIA>\Setup\Mobile\Android\XHQ_Mobile Source Code.zip`

For **iOS** development, the sample app is under:

`<MEDIA>\Setup\Mobile\iOS\XHQ_Mobile_iOS_src.zip`

Since Apple does not allow the unsigned executable for the mobile apps to be built or deployed, you have to build the code on an Apple machine and Xcode, and deploy it on an iPad device in order to test it.

XHQ OPC UA Server

Make sure that all pre-requisites have been met. For a complete list of requirements and pre-requisites, refer to the topic, *Requirements and Pre-requisites*.

To prepare the XHQ OPC UA Server install

From the XHQ installation media, go to **`Setup\OPC Server`**, and note the following directory structure:

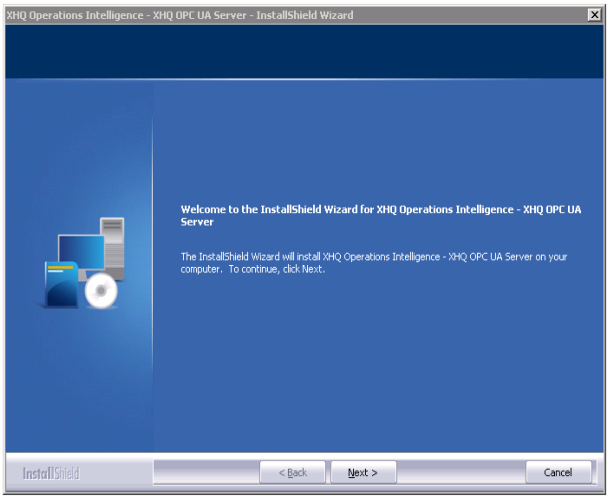
Folder	Contents	Description
Setup**OPC Server**	This directory contains the following **folders**: • `Server` • `Service` • `Test_Client`	
Setup\OPC Server**Server**	• `XhqOpcUaServer.exe`	This file is used in the topic, *To install the XHQ OPC UA server*.
Setup\OPC Server**Service**	• `XhqOpcUaService.exe`	**Important**: Install this Windows service only if the XHQ OPC UA Server is run on a machine without the XHQ Server. This file is used in the topic, *To install the XHQ OPC UA service*.
Setup\OPC Server**Test_Client**	• `XhqOpcUaTestClient.exe`	This file is used in the topic, *To install the XHQ OPC UA test client*.

If you perform a server re-install without erasing or moving the old application configuration file, the old file is left intact.

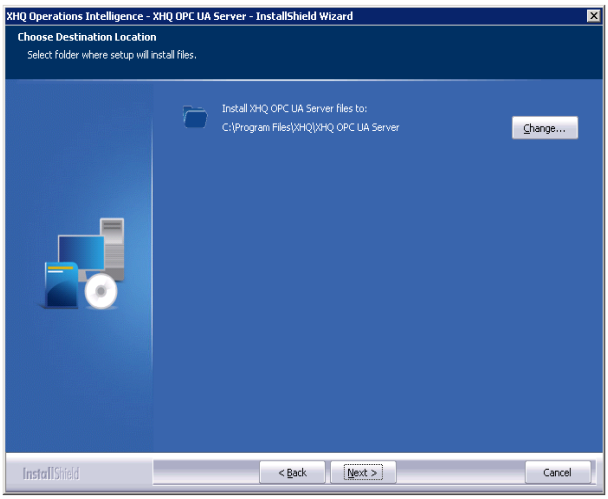
To install the XHQ OPC UA Server

For the location of the setup executable file, see the topic, *To prepare the XHQ OPC UA Server install*.

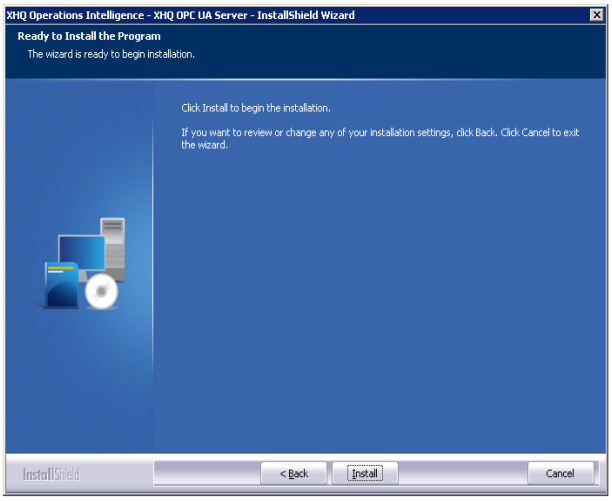
1. Run **`XhqOpcUaServer.exe`**.
   The "Welcome" dialog box appears.



2. Click **Next**.
3. **Accept** the License Agreement and Software Security Disclaimer.
   The "Choose Destination Location" dialog appears.



4. **Accept** the default location *or* **Browse** to an install location, then click **Next**.
   The "Ready to Install" dialog appears.



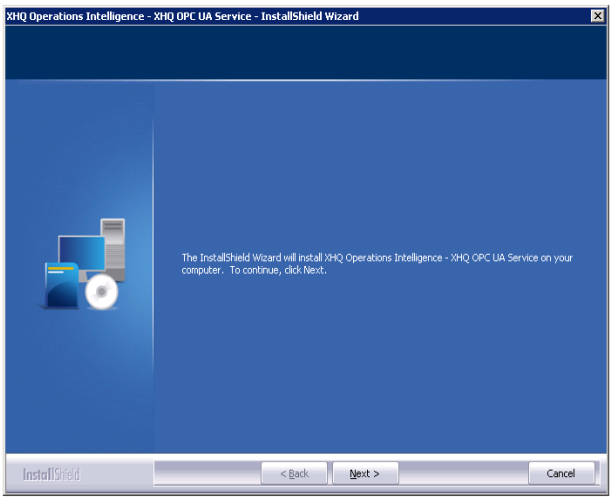
5. Click **Install**.
6. Once the server is installed successfully, click **Finish** to exit.
7. You must **restart** the server.

To install the XHQ OPC UA service

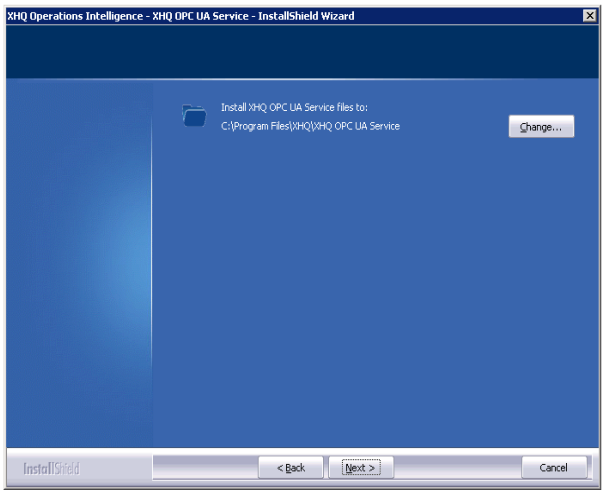
Install this Windows service only if the XHQ OPC UA Server is run on a machine without the XHQ Server.

For the location of the setup executable file, see the topic, *To prepare the XHQ OPC UA Server install.*

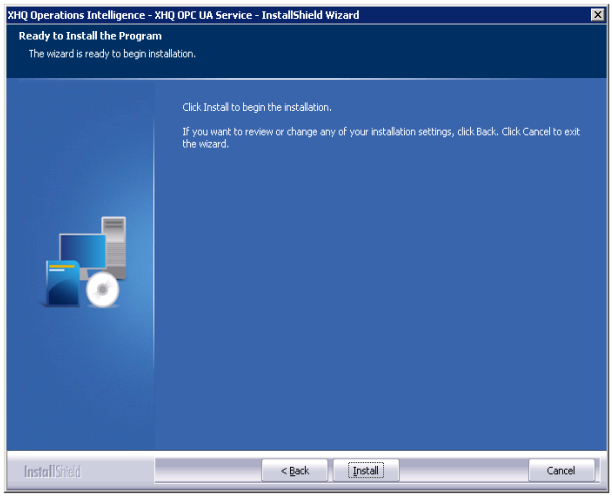
1. Run **`XhqOpcUaService.exe`**.
   The "Welcome" dialog box appears.



2. Click **Next**.
3. **Accept** the License Agreement *and* Software Security Disclaimer.
   The "Select Installation Folder" dialog appears.



4. **Accept** the default location *or* **Browse** to an install location, then click **Next**.
   The "Ready to Install" dialog appears.

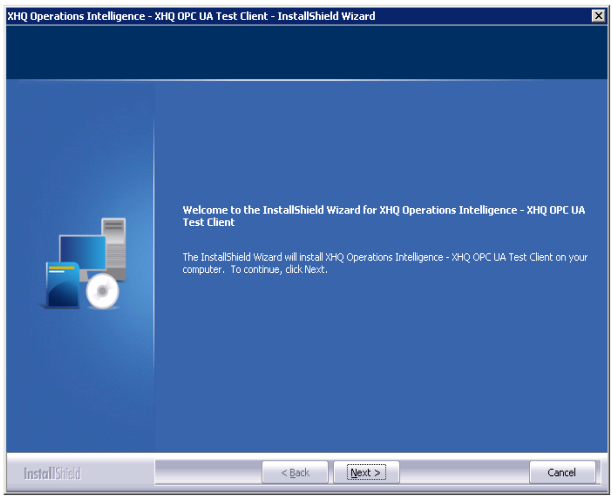


5. Click **Install**.
6. Once the service is installed successfully, click **Finish** to exit.

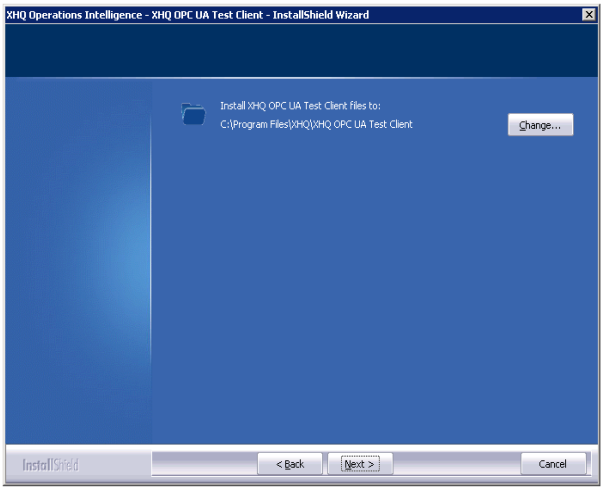
To install the XHQ OPC UA test client

For the location of the setup executable file, see the topic, *To prepare the XHQ OPC UA Server install*.

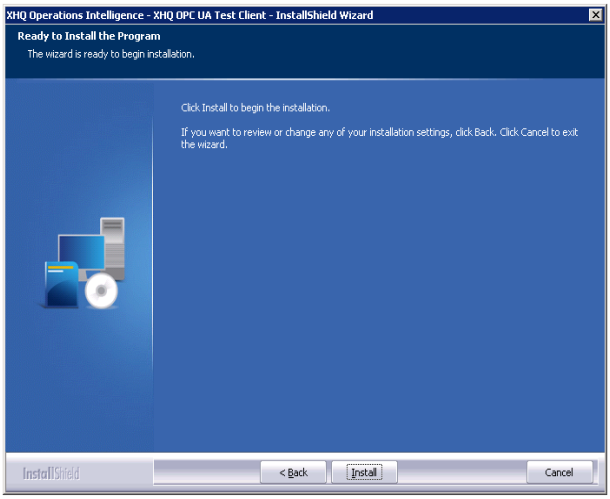
1. Run **`XhqOpcUaTestClient.exe`**.
   The "Welcome" dialog box appears.



2. Click **Next**.
3. **Accept** the License Agreement *and* Software Security Disclaimer
   The "Select Installation Folder" dialog appears.



3. **Accept** the default location *or* **Browse** to an install location, then click **Next**.
   The "Ready to Install" dialog appears.



4. Click **Install**.
5. Once the test client is installed successfully, click **Finish** to exit.

5 | XHQ Upgrade

Important Things to Know

- Check the requirements and pre-requisites.
- Refer to the XHQ README for a list of possible migration and installation issues.
- Check the migration scenarios for upgrading from an older version of XHQ.
- For security reasons, the following are automatically disabled by the XHQ Installer:
  - MIME sniffing
  - ASP.NET Version Display in the Header
  - OPTIONS Verb
  - TRACE Verb

  The changes noted above will be seen on the IIS Manager User Interface.

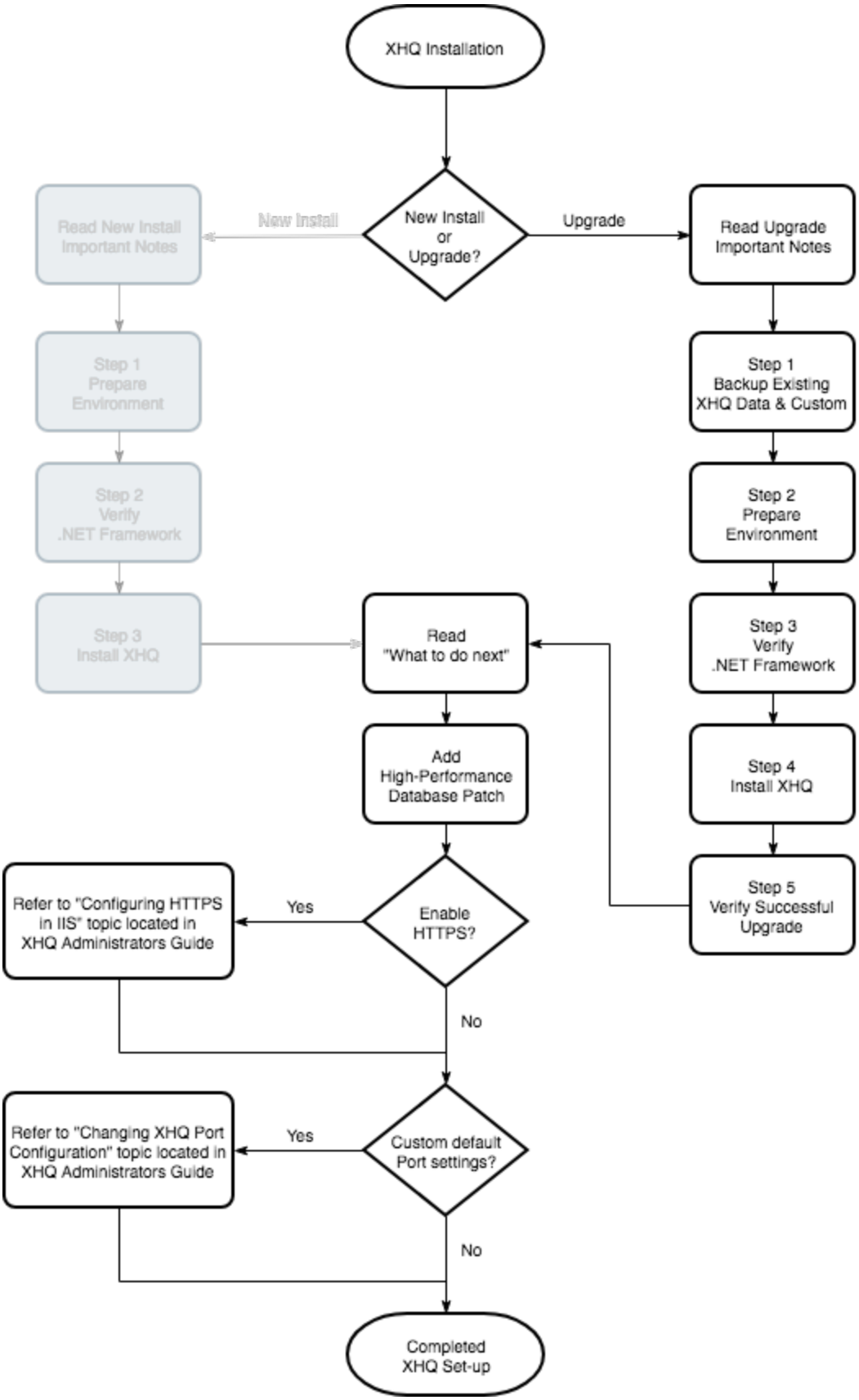
- Upgrades from earlier versions of XHQ are updated to use the new XHQ High-Performance Database. As a result, the installation of the XHQ High-Performance Database engine component of the XHQ Server takes a considerable amount of time. (It is possible that this install may take one or more hours.)
- During an XHQ installation, the updated embedded database (also known as the XHQ High-Performance Database) is installed unless the legacy embedded database is detected, in which case the legacy embedded database is installed and configured.
- You cannot upgrade the XHQ Development Client bundled with the XHQ Server using the Stand-alone Development Client installer. You must upgrade the XHQ Server in order to upgrade the XHQ Development Client that is bundled with it.

  If the XHQ Development Client was installed using the Stand-alone Development Client installer, you can also upgrade using the Stand-alone Development Client installer.
- The XHQ installer shuts down **and disables** the XHQ Service at the start of an upgrade. The XHQ installer then re-enables it at end of the upgrade.
- Make sure that the newest property files are used from the XHQ installation media. These are provided in the sample repos for each XHQ release. Settings that are explicitly needed should be moved one by one from the prior property files into the new ones. An automated property file upgrade is currently not available.

  WARNING: Usage of old property files can result in undesired results.

  In specific cases, messages will be added to the system log files on startup if invalid property settings are encountered. It is especially important to review and remove the following property settings from `storage.properties` unless explicit reasons are given by the XHQ Customer Support Team for retaining them with the current XHQ version. These explicit settings are no longer needed. System defaults exist and should be used by default which is accomplished by removing these lines.

  ```
  db.poolsize.solution=20
  db.poolsize.model=10
  db.poolsize.xans=10
  db.poolsize.cache=100
  ```


XHQ Installation
New Install or Upgrade?
New Install
Upgrade
Read New Install Important Notes
Step 1 Prepare Environment
Step 2 Verify .NET Framework
Step 3 Install XHQ
Read Upgrade Important Notes
Step 1 Backup Existing XHQ Data & Custom
Step 2 Prepare Environment
Step 3 Verify .NET Framework
Step 4 Install XHQ
Step 5 Verify Successful Upgrade
Read "What to do next"
Add High-Performance Database Patch
Enable HTTPS?
Yes
Refer to "Configuring HTTPS in IIS" topic located in XHQ Administrators Guide
No
Custom default Port settings?
Yes
Refer to "Changing XHQ Port Configuration" topic located in XHQ Administrators Guide
No
Completed XHQ Set-up

Migrating from an Older XHQ Version

Use one of the following scenarios to successfully migrate from an older XHQ version to the current release.

About the XHQ Version Format

An XHQ version uses a 4-field format (for example, XHQ 6.0.0.0). Subsequent XHQ Service Packs increment the 3rd digit, whereas patches within a Service Pack increment the 4th digit.

The version format is as follows:

```
<Major Version>.<Minor Version>.<Service Pack>.<Patch Level>
```

Scenario 1: In-place upgrade

This upgrade process consists of installing a newer XHQ version directly on top of an already-existing XHQ installation, without changing/upgrading the underlying server operating system. There could be manual steps that you need to perform in order to ensure that your existing server fulfills the hardware and software requirements for the XHQ version you are upgrading to. For further details on specific requirements, see the topic, *System Requirements*.

The following in-place upgrade combinations are supported:

Source XHQ Version	Windows Server OS	Upgrade to XHQ Version
XHQ 4.7.1.y	Windows Server 2016/2012 R2	XHQ 6.0.0.x
XHQ 4.7.0.y	Windows Server 2016/2012 R2	XHQ 6.0.0.x

The "x" and "y" digits represent patch levels.

In addition to the scenarios above, in-place upgrades from a source XHQ version to a new XHQ version of the same minor version or service pack levels are always supported.

Examples:

- Upgrading from XHQ 5.0.0.0 (also known as XHQ 5.0 initial release) to XHQ 5.0.0.3 > both are XHQ 5.0.0.
- Upgrading from XHQ 4.7.1.0 (also known as XHQ 4.7 SP1 initial release) to XHQ 4.7.1.5 (also known as XHQ 4.7 SP1 patch 5) > both are XHQ 4.7.1
- Upgrading from XHQ 4.6 build 90 to XHQ 4.6 build 307 > both are XHQ 4.6

Scenario 2: Upgrade involving changes in the underlying server operating system

This upgrade process consists of migrating an existing solution which runs an earlier XHQ version to new servers with a new server operating system. To successfully perform these upgrade scenarios, follow the steps outlined in the XHQ Backup and Recovery Guide, Chapter 4 - Solution Migration.

The following upgrade paths involving changes in the underlying server operating system are supported:

Source XHQ Version	Source Windows Server OS	Destination Windows Server OS	Upgrade to XHQ Version
XHQ 5.0.0.y	Windows Server 2008 R2 SP1	Windows Server 2016/2012 R2	XHQ 6.0.0.x
XHQ 4.7.1.y	Windows Server 2008 R2 SP1	Windows Server 2016/2012 R2	XHQ 6.0.0.x
XHQ 4.7.0.y	Windows Server 2008 R2 SP1	Windows Server 2016/2012 R2	XHQ 6.0.0.x

Source XHQ Version	Source Windows Server OS	Destination Windows Server OS	Upgrade to XHQ Version
XHQ 4.6 GA	Windows Server 2008 R2 SP1	Windows Server 2016/2012 R2	XHQ 6.0.0.x
XHQ 4.6 GA	Windows Server 2008 R1	Windows Server 2016/2012 R2	XHQ 6.0.0.x

If you have an upgrade scenario from an XHQ version that is older than XHQ 4.6 for Windows Server 2008 R1, contact the XHQ Customer Support Team for specific instructions.

Checklist for an XHQ Server Upgrade

Follow these procedures **sequentially** to ensure a proper **upgrade** of the XHQ System.

- [ ] Step 1 - Backing up Existing XHQ Solution and Custom Files
- [ ] Step 2 - Preparing the Environment
- [ ] Step 3 - Verifying the Required NET Framework
- [ ] Step 4 - Installing XHQ
- [ ] Step 5 - Verifying a successful upgrade
- [ ] What to do next after an XHQ upgrade

Step 1 - Backing up Existing XHQ Solution and Custom Files

Prior to upgrading your XHQ System, backup your existing XHQ data.

Refer to the XHQ Backup and Recovery Guide for information on how to properly backup the XHQ solution.

If you choose to rename the repos before upgrade installation, you must change the repository folder name back to the original name after upgrading and before starting the XHQ Server. This keeps the connection configuration and backend connectivity intact and ensures that you see the solution properly.

During an XHQ upgrade, all custom files (for use with `xhqbootmods.dat`) in the `XHQ_SERVER_HOME%\jre\bin` directory are **deleted**. Therefore, you must backup these custom files in this directory prior to the upgrade. Then after the upgrade, re-create those custom files.

Your next step is to *prepare the machine environment* for the upgrade.

Step 2 - Preparing the Environment for an Upgrade

Once you've backed up the XHQ data, your next step is to prepare the server environment.

1. Ensure your server is patched and updated with the latest Microsoft updates.
2. Check the possible migration scenarios.
3. If you have a non-default web site, update the `install.property` file.

   XHQ version 6.0.0.1 introduced a new Reverse Proxy web site. Refer to the XHQ Administrator's Guide for more information.

4. Make sure the WebDav IIS component is not installed on the XHQ Server. If it is, uninstall it.
5. All connections to XHQ (or indirectly to the XHQ embedded database) must be closed before an XHQ upgrade.

   Specifically, close the following Microsoft monitoring-related applications because these are often observed accessing (and locking) XHQ-owned files that XHQ may need to change or replace during an upgrade:

   - `MonitoringHost.exe`
   - `WmiPrvSE.exe`

   If this step is not done, the XHQ upgrade may fail with an error message stating that the XHQ Prerequisite check, `CheckActiveFilesAndExecutables`, failed.
6. Scan the XHQ installation media by a virus detection program before using. However, during installation, it is strongly recommended that you disable the anti-virus scan during an XHQ upgrade to avoid installation issues (virus detection programs sometimes incorrectly detect and block critical installation files). For example, these programs can prevent the `forcedel` file (which is solely used by XHQ for XHQ) from being installed.

Next, you will need to *verify .NET Framework*.

Step 3 - Verifying .NET Framework

1. First, use the Server Manager to make sure that the .NET Framework that comes standard with the supported Windows Server *is enabled*.
   - For Windows Server 2016 users, .NET Framework 4.6.2 comes standard.
   - For Windows Server 2012 R2 users, .NET Framework 4.5.1 comes standard.
2. Next, make sure the machine is current with all Microsoft Windows OS updates.

XHQ supports **.NET Framework 4.6.1 or higher**. The XHQ installer will not proceed unless .NET Framework 4.6.1, or higher, is already installed on the target machine.

To manually install .NET Framework, go to the following download sites:

Web Installer:

https://www.microsoft.com/en-us/download/details.aspx?id=49981

Offline Installer:

https://www.microsoft.com/en-us/download/details.aspx?id=49982

After a successful install of .NET Framework, a **reboot** of the Windows Server is required, to ensure a consistent baseline for the subsequent XHQ installer execution.

Once the .NET Framework is verified, you are ready to *install XHQ*.

Step 4 - Installing XHQ

Important Things to Note

- The installer must be run from the **same domain** to which XHQ is being installed. So, all install directories must be **local disks** and not network shares.
- Make sure that the path to the XHQ installation media contains **no spaces**. In addition, the path selected for the installation of the XHQ High-Performance Database software, as well as the path selected for the installation of the XHQ High-Performance Database data, should **not contain spaces**.
- All install directories must be local disks and not network shares. For example, the log file location must be a local drive.
- Run `setup.exe` as an **Administrator**.
  Note, the XHQ Installer automatically elevates to administrator privileges. So, right-clicking and selecting "Run as Administrator" is not necessary.
  You may create a local user on the server and add this user to the local Administrators Group. Log out; then login as this local user and continue with the installation. After a successful XHQ installation, you may delete this local user.

You can install the XHQ System on the following supported OS:

- Windows Server 2016
- Windows Server 2012 R2

When the XHQ upgrade installation is complete, go to *Step 5 - Verifying a successful upgrade*.

Step 5 - Verifying a successful upgrade

After the upgrade process, start the XHQ Server. Do the following to verify a successful upgrade:

- Compare the `cachesettings.properties`, `storage.properties`, and `xhqboot.properties` located in the current `repos` directory with the same files in your `repos` backup.
- Confirm that the XHQ solution is accessible from the XHQ Solution Viewer (browser client). The browser client should prompt to accept a new XHQ Solution Viewer download. Check that both the XHQ Workbench and the XHQ Solution Builder on the XHQ Server can also access the solution.

In addition, there is a set of properties in `%XHQ_SERVER_REPOS%\solutionsettings.properties` file that can be adjusted for better performance or memory usage. Changes to these parameters require XHQ Server restart. These parameters limit the number of elements stored in memory. The XHQ Server will maintain the specified maximum of elements by replacing previously loaded elements with newly loaded elements from persisted files. Here is a list of configurable properties with default values.

- **`net.indx.repository.solution.server.rollupcache.rollupcachesize=2000`**
  The rollup cache keeps processed rollup queries in memory for performance optimization.
- **`net.indx.repository.solution.server.activationthread.unsubscribedelay=5000`**
  This delays the unsubscription of a point from the connector. A deactivation delay optimizes performance as well as backend data source load. Each activation requests new data from the backend immediately. Setting the value to "0" results in no delay. There is no maximum limit.
- **`net.indx.util.gcinvoker.gcinterval=10000`**
  The interval, in milliseconds, at which GCInvoker checks whether it should start full garbage collection or not. It depends on the relative amount of free memory versus the configured threshold.
- **`net.indx.util.gcinvoker.gcminfreepct=10`**
  The minimum percent of total allocated memory that is free that does not require full garbage collection.

For more information on the properties file, go to the topic, "Using solutionsettings.properties," located in the XHQ Administrator's Guide.

Once XHQ has been successfully upgraded, *complete the XHQ set-up*.

What to do next after an XHQ upgrade?

Once XHQ has been successfully installed or upgraded, do the following steps **in this given order** to complete the XHQ set-up.

1. Add the XHQ High-Performance Database patch.
2. By default, XHQ does not configure HTTPS. To enable HTTPS, refer to the topic, "Configuring SSL in IIS for HTTPS", located in chapter 2 of the XHQ Administrator's Guide.
3. By default, XHQ uses ports starting at 25100. To change the default port mapping, refer to the topic, "Changing XHQ Port Configuration", located in chapter 2 of the XHQ Administrator's Guide.

XHQ Development Client Upgrade

Prior to upgrading the XHQ Development Client, please note the following:

- You cannot upgrade the XHQ Development Client** that is bundled with the XHQ Server using the Stand-alone XHQ Development Client installer. You must upgrade the XHQ Server in order to upgrade the XHQ Development Client that is bundled with it.

  **This is the XHQ Development Client that gets installed by default on the XHQ Server machine as part of the XHQ Server installation.

- If the XHQ Development Client was installed using the Stand-alone XHQ Development Client installer, you can also upgrade using the Stand-alone XHQ Development Client installer.

XHQ Development Client Upgrade Checklist

1. Check system requirements and pre-requisites.
2. Close any open XHQ Development Client interfaces.
2. Install the XHQ Development Client; refer to the topic, *Installing the XHQ Development Client Stand alone*.
3. The **`XHQ devClient\bin`** folder contains a **`.bat`** file named **`xhqci.bat`** that is used to perform import/exports from the command line. By default the heap size allocation in this file is 64MB. It may be necessary to increase this size to avoid "Out of Memory" errors during very large imports/exports.

   Running out of memory during an import may break the import and leave an inconsistent solution.

4. After finishing the installation of the XHQ Development Client, reboot the computer where it is being installed.
5. Launch the Server Access Utility on the XHQ Development Client and confirm that your XHQ Development Client is still pointed at the XHQ solution you wish to work on that there is no XHQ version mismatch between your XHQ Development Client and that server. Your server access settings should have been retained in the `%APPDATA%\XHQ\XHQ devClient\repos\clientsettings.properties` file unless that file had been modified or removed.
6. Confirm that you can access the desired XHQ solution using both the XHQ Workbench and the XHQ Solution Builder.

XHQ Visual Composer Upgrade

The upgrade tasks for the XHQ Visual Composer will depend on how it was installed.

The "old" installation of XHQ Visual Composer required you to manually install pre-requisites and various software components. Recently, the installation of Visual Composer was drastically simplified. It is now automatically installed with the XHQ Platform, pre-requisites and all.

Install Comparison

Old MANUAL Install	New AUTOMATIC Install
Pre-requisites were manually installed and deployed. • .NET Framework • Infragistics	Pre-requisites are automatically installed with the XHQ Platform.
XHQ Visual Composer was manually installed and deployed. • `PresentationComposer.zip`	XHQ Visual Composer is now automatically installed with the XHQ System.
The Application Pool was manually configured.	The Application Pool is automatically is set-up.

So, depending on how your current version of XHQ Visual Composer was installed, do one of the following to upgrade XHQ Visual Composer:

- If XHQ Visual Composer was installed AUTOMATICALLY with XHQ, then an upgrade of XHQ will automatically upgrade XHQ Visual Composer.
- *Else*, if XHQ Visual Composer was previously installed MANUALLY and you are now migrating to the new AUTOMATIC install, continue on to the following tasks to ensure files are properly moved:

To upgrade XHQ Visual Composer (after a manual install)

1. First, backup the **`PresentationComposer`** folder.
2. Then, install the current version of XHQ.
3. Copy the following files from the backup folder in step 1 to their **new locations** (which are typically under the **`%XHQ_SERVER_REPOS%`** environment variable).

From the backup contents of the:	Copy to this New Location:
`cab` folder	`repos\data\webapps\composer\cab`
`Images\Custom` folder	`repos\data\webapps\composer\Images\Custom`
`Views` folder	`repos\data\webapps\composer\Views`
Any custom content (for example, theme files)	See the task, *To move custom files*.

To move custom files

You will need to place all your custom content (for example, theme files) into a new theme directory that is NOT the `Mellow` directory. This new directory will be located under `repos\conf\webapps\composer\App_Themes`.

1. Create a new folder (for example, `CustomMellow`) under **`repos\conf\webapps\composer\App_Themes`**.

   Example: `C:\XHQ\data\repos\data\webapps\composer\App_Themes`

2. Into this new folder, place the following:
   - All custom theme files (which includes all .CSS and Skin files);

     See also the topic, *To upgrade existing custom skin files for Infragistics*.

   - All files from the old `Mellow` directory.
3. Go to the **root of the Composer web site** (typically, `XHQ\XHQ Web Root\webapps\composer`).
4. Locate the **`customAppSettings.config.Example`** file.
5. **Rename** this file to **customAppSettings.config** (by removing the `.Example` extension).
6. Open the file in a text editor.
   You will see the following:

```
<appSettings>
<add key="Theme" value="Mellow"/>
</appSettings>
```

7. Change the value of the `Theme` key to the name of the folder you created in step 1.

```
<appSettings>
<add key="Theme" value="<newfolder>"/>
</appSettings>
```

   Example:

```
<appSettings>
<add key="Theme" value="CustomMellow"/>
</appSettings>
```

8. Open the **Internet Information Services (IIS) Manager**.
9. Expand **Web Sites**, and the expand **Default Web Site**.
10. **Verify** that the **`composer`** web site is listed under Default Web Site.

    Your next step is to restart the Default Web Site.

11. Right-click **Default Web Site**, and from the shortcut menu, click **Stop**.
12. Repeat and click **Start**.
13. Exit IIS Manager.

To upgrade existing custom skin files (for Infragistics)

The following task is required due to the update of Infragistics from version 7.2 to 9.2+.
As such, only Infragistics references need to be changed.

1. Go to **repos\conf\webapps\composer\App_Themes** and open the folder that contains your custom content.
2. Open the SKIN file.
3. Locate the following text:

```
Assembly="Infragistics2.WebUI.UltraWebGrid.v7.2, Version=7.2.20072.61,
Culture=neutral, PublicKeyToken=7dd5c3163f2cd0cb"

Assembly="Infragistics2.WebUI.UltraWebTab.v7.2, Version=7.2.20072.61, Culture=neutral,
PublicKeyToken=7dd5c3163f2cd0cb"

Assembly="Infragistics2.WebUI.UltraWebNavigator.v7.2, Version=7.2.20072.61,
Culture=neutral, PublicKeyToken=7dd5c3163f2cd0cb"
```

4. **Replace** with the following text:

```
Assembly="Infragistics35.WebUI.UltraWebGrid.v9.2, Version=9.2.20092.1003,
Culture=neutral, PublicKeyToken=7dd5c3163f2cd0cb"

Assembly="Infragistics35.WebUI.UltraWebTab.v9.2, Version=9.2.20092.1003,
Culture=neutral, PublicKeyToken=7dd5c3163f2cd0cb"

Assembly="Infragistics35.WebUI.UltraWebNavigator.v9.2, Version=9.2.20092.1003,
Culture=neutral, PublicKeyToken=7dd5c3163f2cd0cb"
```

5. **Save** your changes.
6. If needed, **refresh** or **restart** the browser session to apply the changes.

XHQ Performance Analytics Upgrade

Go to the topic, "Upgrading SSIS Packages", located in the XHQ Performance Analytics Guide.

XHQ Client Data API Upgrade

You must **manually uninstall** the previous API before installing/upgrading to a newer API version.

6 | The License Manager

XHQ is shipped with license management software. A license key is required to activate the licensed software based on the product options purchased.

Things to Note

- The default licensing for newly installed software without a valid license key is a 2-day, 2-user license, valid for the first two days of use after installation.
- The software shuts down automatically at the end of this period.
- If a valid license was already installed, then no grace period is available if the license expires.

How To Receive a License Key

Customers must provide the XHQ Customer Support Team with the server and customer details (see table below) so that the XHQ Customer Support Team can create and send a license key file. The customer product options will be obtained from the software purchase order and license information.

The following information must be sent via email to `support.xhq@siemens.com` in a timely manner.

General Information to Provide
Customer Name
Customer Project
Customer Address

For each XHQ Server, provide the:	Example
Fully-qualified Host name	abc.def.ghi.com
IP Address	221.222.223.224
Ethernet (MAC) Address	01-02-03-04-05-06
Location	ABC, Country
Additional Comment(s)	Production Server

If **multiple** IP addresses are present, then all Host name/IP address/MAC address combinations must be provided.

If a server swap or a change in the IP address and/or hostname is needed, please submit **both the old and the new server information** in a timely manner before the intended swap date. If this submission is not possible (for example, due to hardware issues), XHQ will continue to run for the default grace period of two days, which gives enough time to obtain an updated license file.

The customer will receive a master license key file by return email within one business day (Monday - Friday, 7 AM - 5 PM, Pacific Standard Time, excluding public holidays). This master license file is named **`license.dat`** and contains the license information required for all licensed systems in use by the customer.

Placing the License File to Activate the Software

This **`license.dat`** file must be placed in the **`root`** of the **XHQ Server installation directory**.

Important Things to Consider

- If a prior **`license.dat`** file exists, copy and save it before replacing it with the updated **`license.dat`** file. The updated file can then be copied over the prior one.
- The updated license can be activated either by an XHQ restart or without requiring an XHQ restart (see the following task). If, however, the existing license has expired prior to updating to the new license, then an XHQ restart is required.

Updating a License while XHQ is Running

To activate the updated license without an XHQ restart, run `xhqci_s examinelicense`. Validate that the license information was accepted by reviewing the solution log.

If the existing license has expired prior to updating to the new license, then an XHQ restart is required.

To update the license of a system without restarting XHQ

1. On the solution server, copy the new license.dat file to the location specified by the environment variable `%XHQ_SERVER_HOME%`, which by default is `C:\Program Files (x86)\XHQ\XHQ Server`.
2. Open a command window.
3. At the command prompt, execute `xhqci_s examinelicense`.

   For more information on this command, go to the topic, "Using the xhqci Utility," located in the **XHQ Administrator's Guide**.
4. Open the **solution server log** file.
   The new license information specific to the host should be displayed and no error messages should be logged about the license.

7 | Patch Procedures

Installing an XHQ Platform Patch

The XHQ can be patched in two ways:

1. Using the XHQ installer from the install media and upgrading the server to the latest version;
2. Applying a number of updates manually to the server.

This document describes the latter procedure for the cases, where the patch can be applied by updating a small number of files on the server. In this case, the patch usually comprises of a small number of `.JAR` files and `.ZIP` files that can be used without running the product installer.

Updates or changes to the embedded database (or similar) require the XHQ installer or an embedded database-specific installation procedure. Refer to the topic, *Installing the High Performance Database Patch*, for steps to patch the embedded database.

When applying patches, a pre-validation using a non-production XHQ server is recommended.

Patch Files

The XHQ Customer Support Team provides one or more of the following **.JAR** and/or **.ZIP** files in addition to the **`buildInfo.js`** file.

The `buildInfo.js` file contains the XHQ version information.

- `buildInfo.js`
- `devClient.jar`
- `<connector name>.jar`
- `server.jar`
- `viewserver.jar`
- `xhq.jar`
- `admin.zip`
- `ans.zip`
- `audit.zip`
- `elogs.zip`
- `sv.zip`
- `tm.zip`
- `viewstats.zip`

Applying the XHQ Patch

The procedure to apply an XHQ Patch without running the installer is as follows for the relevant file if it was provided.

To apply the XHQ patch

1. **Stop** the **XHQ Server**.
2. Do one of the following:
   - **Navigate** to and open the existing **%XHQ_WEB_HOME%\indx\buildInfo.js** file. Locate the **XHQ_BUILD** setting and update to the new build number. **Save** the file.

   or

   - **Replace** the existing **%XHQ_WEB_HOME%\indx\buildInfo.js** file with the new **buildInfo.js** file provided with the XHQ Patch.

   If no updated file is provided, manually update `buildinfo.js` if required in the provided instructions.
3. *For server.jar*
   Save a copy of the `%XHQ_SERVER_HOME%\lib\server.jar` file, and then **overwrite** it with the new file.
4. *For devClient.jar*
   Save a copy of the `%XHQ_DEV_HOME%\lib\devClient.jar` file, and then **overwrite** it with the new file.
5. *For xhq.jar*
   Save a copy of the `%XHQ_WEB_HOME%\indx\lib\xhq.jar` file and then **overwrite** it with the new file.
6. *For viewserver.jar*
   Save a copy of the `%XHQ_SERVER_HOME%\lib\viewserver.jar` file and then **overwrite** it with the new file.
7. *For connector-specific jars*
   Save a copy of the `%XHQ_SERVER_HOME%\lib\<connector name>.jar` file and then **overwrite** it with the new file.
8. *For each web application ZIP file*
   Save a copy of the following folders:
   - `%XHQ_WEB_HOME%\webapps\admin`
   - `%XHQ_WEB_HOME%\webapps\ans`
   - `%XHQ_WEB_HOME%\webapps\audit`
   - `%XHQ_WEB_HOME%\webapps\elogs`
   - `%XHQ_WEB_HOME%\webapps\sv`
   - `%XHQ_WEB_HOME%\webapps\tm`
   - `%XHQ_WEB_HOME%\webapps\viewstats`

   Overwrite each folders, respectively, with the contents of the following new files:
   - `admin.zip`
   - `ans.zip`
   - `audit.zip`
   - `elogs.zip`
   - `sv.zip`
   - `tm.zip`
   - `viewstats.zip`
9. **Start** the **XHQ Server**.

Installing the XHQ High-Performance Database Patch

XHQ may include an XHQ High-Performance Database patch. Due to the XHQ High-Performance Database limitations, this patch is not automatically installed during an XHQ installation.

You must have administrative rights to install this patch.

To apply the database patch

Prior to installing this patch

- You must clear the CLASSPATH variable manually. From a DOS prompt, run `"SET CLASSPATH="`.
- In addition, all connections to XHQ (or indirectly to the XHQ embedded database) must be closed before an XHQ patch.

  Specifically, close the following Microsoft monitoring-related applications (if being used) because these are often observed accessing (and locking) XHQ-owned files that XHQ may need to change or replace during a patch:
  - `MonitoringHost.exe`
  - `WmiPrvSE.exe`

  If this step is not done, the XHQ patch may fail, resulting in this error message:
  `OPatch failed with error code = 73.`

1. Contact the XHQ Customer Support Team to obtain a copy of this patch. This patch is available as:
   - A zip file, which can be downloaded from the XHQ Customer Support ftp site.
   - A DVD.
2. Prior to applying this patch, make sure that the path to the XHQ installation media and the patch contain **no spaces**.
3. Do one of the following:
   - For zip file users, unzip the **`XHQ_v6.0.0.x_HighPerformance_DB_Patch.zip`** file.
   - For DVD users, continue to the next step.
4. Locate the **`DB_Patch`** folder and **copy** it to a local drive, again, making sure the path to the patch folder contains **no spaces**.
5. Open the **Windows Command Prompt** (`CMD`) as **Administrator**.
6. Run the change directory (`cd`) command and go to the copied `DB_Patch` folder.
7. Run **`db_patch.bat`**.

   You can run this in silent mode using the –silent switch, for example:
   `db_patch.bat -silent`

8 | The install.properties File

The **`install.properties`** file contains property settings that enable you to configure the XHQ installer.

Things to Note

- The property names are **case-sensitive** and must all be UPPERCASE; however, the **values** mapped to property names are not case-sensitive.

  The XHQ_STRING property is case-*preserving*.

- The `install.properties` file must be located in the `%ProgramFiles(x86)%\XHQ\XHQ Install Files` directory, regardless of where you install XHQ.

  Example: `C:\Program Files (x86)\XHQ\XHQ Install Files\install.properties`

- Log files are automatically written to the `%ProgramFiles(x86)%\XHQ\XHQ Install Logs` directory. The filenames are in the format: `XHQ_Install_<timestamp>.log`.

To create the install.properties file

1. Go to `%ProgramFiles(x86)%\XHQ\XHQ Install Files` directory.
2. Using a text editor, **create** the `install.properties` file.
3. **Save** this file.

Using the install.properties File

Although this file is not necessary for the XHQ installer to run, it is necessary to override some of the default values created by the XHQ installer.

Things to Note

- The **property names** are case-sensitive.
  The property "ACKNOWLEDGE_WELCOME" is known. The property "acknowledge_welcome" is not. No error will arise if an "acknowledge_welcome" property is set in `install.properties`, but neither will it have any bearing on install function. So far, all property names defined for the XHQ installer have been UPPERCASE with underscores. There is no guarantee that this will always be true.
- The **values** mapped to property names are not case-sensitive.
  In a Boolean property, "TRUE", "true", "True" and "tRuE" all override the default value of "FALSE".

Boolean Properties

By default, each of the Boolean settings are FALSE. They can be set to true by mapping the property to the value TRUE.

The following table lists the results ***if the property is set to TRUE***.

Property	Result when set to TRUE
QUIET_PREREQS	*This property is deprecated.* XHQ prerequisites are installed at the beginning of the XHQ installation or updated upon upgrade. Makes the XHQ prerequisites installer run immediately without requiring the user to select OK. All prerequisites behave as usual, showing status but not requiring (or allowing) user input.
ACKNOWLEDGE_WELCOME	Skips the "Welcome" screen on fresh installations.
CHOOSE_REINSTALL	Skips the "Welcome" screen on maintenance installations. The installation proceeds as if the "Upgrade/Re-Install/Repair" option were selected.
ACCEPT_LICENSE	Skips the "License Agreement" screen. The installation proceeds as if the "Yes" option were accepted.
ACCEPT_DISCLAIMER	Skips the "Software Security Disclaimer" screen. The installation proceeds as if the "Yes" option were accepted.
SIZE_ALERT_ONLY	Skips the "Space Requirements" screen. Only pop-up a fatal error dialog if insufficient space is detected.
APPROVE_COPY	Skips the "Start Copy" screen.
CONFIRM_REBOOT	Skips the "Wizard Complete" screen. The installation concludes as if the Reboot option was selected.
SKIP_DB_VALIDATION	Skips the screen that lists any errors in the DB. The validation sequence is not skipped, and the errors are logged. Even without this property, the report screen only shows if there is a problem with the DB.

Path Properties

These properties have the same names as some of the environment variables that the XHQ Installer configures on the target system.

Some paths have restrictions in their values as described under each property below. If a path is provided through `install.properties` and it satisfies the restrictions on the value, it will not be prompted for during installation. Not every path environment variable set by the XHQ installer is prompted. For example, XHQ_SERVER_REPOS is not prompted. That's because the value of XHQ_SERVER_REPOS is set to the result of expanding `%XHQ_SERVER_DATA%\repos`. However, XHQ_SERVER_DATA *is* prompted for, so there is no need to prompt for XHQ_SERVER_REPOS.

The only path properties that are recognized in `install.properties` are those that the installer would prompt for by default.

General Restrictions

These restrictions apply at initial install time, and the path settings are only then operative. During upgrades, the values of the paths are simply read from the System Environment.

The following restrictions always apply to the location specified for any **Path Property**:

- The location must refer to a new folder, or to an empty folder.

The selected folders do not need to be empty. The XHQ installer allows excluded items, but not non-excluded items.

For more information, go to the topic, "About Exclusions", located in the XHQ Administrator's Guide.

- The location cannot refer to the root of any drive.
- The location cannot be a UNC path.
- The location cannot be a sub-path of any location specified for another Path Property.
- The location cannot be a super-path of any location specified for another Path Property.

The following restrictions apply to the location specified for most Path Properties, but there may be **exceptions**:

- The location cannot be identical to or a sub-path of `%ProgramFiles%`.
- The location cannot be identical to or a sub-path of `%ProgramFiles(x86)%`.
- The location cannot be identical to the location specified for another Path Property.

The following table lists the paths that are prompted for if not preset in `install.properties`. Each section, describes a path property that may be set in `install.properties`.

Property	Description
XHQ_SERVER_HOME	Path to the 32-bit program files of XHQ. General Restrictions **Exceptions to General Restrictions:** • May be a sub-path of `%ProgramFiles(x86)%`. **Special Restrictions:** • None
XHQ_SERVER_HOME_X64	Path to the 64-bit program files of XHQ. General Restrictions

Property	Description
	Exceptions to General Restrictions: • May be a sub-path of `%ProgramFiles%`. **Special Restrictions:** • Cannot be installed under `C:\Program Files (x86)`
XHQ_WEB_HOME	Path to the XHQ Solution Viewer and Web Application files used by the Web Server. General Restrictions **Exceptions to General Restrictions:** • May be a sub-path of `%ProgramFiles(x86)%`. • May be a sub-path of `%ProgramFiles%`. **Special Restrictions:** • None
XHQ_DBMS_HOME	Path to the High-Performance Database Engine for XHQ software. The software itself is installed to an immediate sub-folder named after the fully-qualified version of the High-Performance Database Engine. Configuration and management files are also copied to an immediate sub-folder named "dbadmin". General Restrictions **Exceptions to General Restrictions:** • None **Special Restrictions:** • Cannot contain spaces.
XHQ_SERVER_DATA	Path to the data and configuration files of XHQ. The solution specific settings are stored in an immediate sub-folder named "repos". The XHQ machine specific settings are stored in an immediate sub-folder named "mlc". If the suffixes "\repos", "\mlc", "\dbdata", "\XHQ", "\XHQCACHE" or "\XHQHIST" are provided with this value, they are stripped off. General Restrictions **Exceptions to General Restrictions:** • May be identical to the path assigned to XHQ_WEB_DATA. • May be identical to the path assigned to XHQ_CACHE_DB_DATA. • May be identical to the assigned to XHQ_CORE_DB_DATA. • May be identical to the path assigned to XHQ_DR_DB_DATA. **Special Restrictions:** • None
XHQ_WEB_DATA	Path to the data and configuration files of the XHQ Solution Viewer and Web Applications and Services. The settings are stored in an immediate sub-folder named "repos". If the suffixes "\repos", "\mlc", "\dbdata", "\XHQ", "\XHQCACHE" or "\XHQHIST" are provided with this value, they are stripped

Property	Description
	off. General Restrictions **Exceptions to General Restrictions:** • May be identical to the path assigned to XHQ_SERVER_DATA. • May be identical to the path assigned to XHQ_CACHE_DB_DATA. • May be identical to the path assigned to XHQ_CORE_DB_DATA. • May be identical to the path assigned to XHQ_DR_DB_DATA. **Special Restrictions:** • None
XHQ_ADAPTER_HOME	Path to the folder containing Adapter executables. General Restrictions **Exceptions to General Restrictions:** • None **Special Restrictions:** • Can be installed under `C:\Program Files`, but not under `C:\Program Files (x86)`.
XHQ_CACHE_DB_DATA	Path to the data and configuration files for the Cache DB instance. The DB files are placed in a sub-folder at the sub-path "dbdata\XHQCACHE". If the suffixes "\repos", "\mlc", "\dbdata", "\XHQ", "\XHQCACHE" or "\XHQHIST" are provided with this value, they are stripped off. General Restrictions **Exceptions to General Restrictions:** • May be identical to the path assigned to XHQ_SERVER_DATA. • May be identical to the path assigned to XHQ_WEB_DATA. • May be identical to the path assigned to XHQ_CORE_DB_DATA. • May be identical to the path assigned to XHQ_DR_DB_DATA. **Special Restrictions:** • Cannot contain spaces.
XHQ_CORE_DB_DATA	Path to the data and configuration files for the Core DB instance. The DB files are placed in a sub-folder at the sub-path "dbdata\XHQ". If the suffixes "\repos", "\mlc", "\dbdata", "\XHQ", "\XHQCACHE" or "\XHQHIST" are provided with this value, they are stripped off. General Restrictions **Exceptions to General Restrictions:** • May be identical to the path assigned to XHQ_SERVER_DATA. • May be identical to the path assigned to XHQ_WEB_DATA. • May be identical to the path assigned to XHQ_CACHE_DB_DATA. • May be identical to the path assigned to XHQ_DR_DB_DATA.

Property	Description
	Special Restrictions: • Cannot contain spaces.
XHQ_DR_DB_DATA	Path to the data and configuration files for the Data Recorder DB instance. The DB files are placed in a sub-folder at the sub-path "dbdata\XHQHIST". If the suffixes "\repos", "\mlc", "\dbdata", "\XHQ", "\XHQCACHE" or "\XHQHIST" are provided with this value, they are stripped off. General Restrictions **Exceptions to General Restrictions:** • May be identical to the path assigned to XHQ_SERVER_DATA. • May be identical to the path assigned to XHQ_WEB_DATA. • May be identical to the path assigned to XHQ_CACHE_DB_DATA. • May be identical to the path assigned to XHQ_CORE_DB_DATA. **Special Restrictions:** • Cannot contain spaces.
XHQ_LOGS	Path to the XHQ log files. If the suffix "\log" is not provided, it is added. General Restrictions **Exceptions to General Restrictions:** • None **Special Restrictions:** • None

For an Unattended, Fresh Installation

```
ACKNOWLEDGE_WELCOME= true
ACCEPT_LICENSE= true
ACCEPT_DISCLAIMER= true
APPROVE_COPY= true
SKIP_DB_VALIDATION= true
CONFIRM_REBOOT= true
SIZE_ALERT_ONLY= true
CHOOSE_REINSTALL= true
XHQ_ADAPTER_HOME=C:\Program Files\XHQ\XHQ Adapter
XHQ_CACHE_DB_DATA=C:\XHQ\data
XHQ_CORE_DB_DATA=C:\XHQ\data
XHQ_DBMS_HOME=C:\XHQ\XHQDB
XHQ_DR_DB_DATA=C:\XHQ\data
XHQ_LOGS=C:\XHQ\log
XHQ_SERVER_DATA=C:\XHQ\data
XHQ_SERVER_HOME=C:\Program Files (x86)\XHQ\XHQ Server
XHQ_SERVER_HOME_X64=C:\Program Files\XHQ\XHQ Server
XHQ_WEB_DATA=C:\XHQ\data
XHQ_WEB_HOME=C:\Program Files (x86)\XHQ\XHQ Web Root
```

Miscellaneous Properties

These properties are additional configurations available through `install.properties`. Default values are assumed.

Property	Description
XHQ_STRING	The password used to communicate with the various XHQ DB instances. This value is ignored in maintenance installations. *This password must conform with XHQ restrictions.*
WEB_SITE_ID	The numeric ID of the web site to which XHQ web configurations are to be directed. The default web site in IIS always has the ID of 1. The value must be a numerical value that refers to a web site that exists in IIS. If not specified, or if the value specified does not refer to an existent web site in IIS, the default of 1 is used.

See the topic, *Retrieving an Encrypted Password for XHQ_STRING*, for more information.

Property	Default Value
REVERSE_PROXY_WEB_SITE_ID	REVERSE_PROXY_WEB_SITE_ID=2
REVERSE_PROXY_WEB_SITE_NAME	REVERSE_PROXY_WEB_SITE_NAME=XHQ Reverse Proxy
XHQ_IIS_HTTP_PORT	XHQ_IIS_HTTP_PORT=28886
XHQ_IIS_HTTPS_PORT	XHQ_IIS_HTTPS_PORTT=28887
XHQ_JETTY_HTTP_PORT	XHQ_JETTY_HTTP_PORTT=28888
XHQ_JETTY_HTTPS_PORT	XHQ_JETTY_HTTPS_PORTT=28889

Unattended Install Settings

Use the following `install.properties` configuration scenarios to set unattended installations.

For a FULL XHQ System Installation

Set the following properties to these values for an unattended full XHQ System installation.

Boolean Properties	Path Properties
• ACCEPT_DISCLAIMER = TRUE • ACCEPT_LICENSE = TRUE • ACKNOWLEDGE_WELCOME = TRUE • APPROVE_COPY = TRUE • CHOOSE_REINSTALL = TRUE • CONFIRM_REBOOT = TRUE • QUIET_PREREQS = TRUE • SIZE_ALERT_ONLY = TRUE • SKIP_DB_VALIDATION = TRUE	• XHQ_CACHE_DB_DATA = <valid path for XHQ_CACHE_DB_DATA> • XHQ_CORE_DB_DATA = <valid path for XHQ_CORE_DB_DATA> • XHQ_DBMS_HOME = <valid path for XHQ_DBMS_HOME> • XHQ_DR_DB_DATA = <valid path for XHQ_DR_DB_DATA> • XHQ_LOGS = <valid path for XHQ_LOGS> • XHQ_SERVER_DATA = <valid path for XHQ_SERVER_DATA> • XHQ_SERVER_HOME = <valid path for XHQ_SERVER_HOME> • XHQ_SERVER_HOME_X64 = <valid path for XHQ_SERVER_HOME_X64> • XHQ_STRING = <password> • XHQ_WEB_DATA = <valid path for XHQ_WEB_DATA> • XHQ_WEB_HOME = <valid path for XHQ_WEB_HOME>

Important Things to Note

- All the properties listed must be set to the given values. If at least one of these properties is set and at least one is not set, then the XHQ installer aborts.
- If any of the Path properties are invalid, then the XHQ installer aborts.

The XHQ installer takes an "all-or-nothing" approach to the properties listed.

If none of these properties are set, then the standard XHQ installation wizard proceeds.

If all of the listed properties (for the given XHQ installation scenario) are set and are valid, then the XHQ installer proceeds with the unattended installation.

Anything else is treated as an error.

Setting Log Levels

To set any of the following log levels from the `install.properties` file, you simply enter the line `LOG_LEVEL=<level>`.

Example: `LOG_LEVEL=INFORMATION`

Log level settings are **case-sensitive**. You must configure the log level before you run the XHQ installer.

XHQ Log Levels

Level	Description
SEVERE	Only severe errors are logged. This is the **default** level.
WARNING	Logs are more detailed than SEVERE level.
INFORMATION	Logs are even more detailed than WARNING level. **Note:** This level is recommended for debugging XHQ installation issues.
DEBUG	Logs are very verbose.

Using Logged Functions

You can limit logging to one or more functions. Typically, when logged functions are specified, DEBUG-level messages are only logged if they occurred during the execution of the given logged function(s). Other messages are logged as usual. This method is particularly helpful if you know that a problem in the installer is limited to the execution of certain IntallScript functions.

From the `install.properties` file, enter the line:

`LOGGED_FUNCTIONS=<comma-separated list of function names>`

Logging Function Entry and Exit

Every XHQ-designed InstallScript function includes code to **log the entry into** and **exit from** the given function. Knowing this information can help you determine where a problem is occurring.

To enable this feature, open the `install.properties` file and enter the line:

`LOG_FN_ENTRY_EXIT=TRUE`

In addition, set the following:

- **`LOG_LEVEL=DEBUG`**
  The log level must be set to `DEBUG` in order to log entries and exits.
- **`LOGGED_FUNCTIONS`**
  This limits the logging to only those that occur during the execution of the specified function(s).

Using a Non-default Web Site

By default, XHQ installs all the web files into the default web site. If a non-default web site is desired for the XHQ Server installation, then additional configuration steps are required before running the XHQ installation.

To install the XHQ web files in a non-default web site, first specify the number of the non-default web site in an installation configuration file named **`install.properties`**.

Also, the following **Reverse Proxy properties** (`install.properties`) must be defined:

- REVERSE_PROXY_WEB_SITE_ID
- REVERSE_PROXY_WEB_SITE_NAME

Finding the Web Site ID

Use the **`appcmd` utility** to determine the ID of your non-default web site.

- The 64-bit version of this utility is located in:
  `%SystemRoot%\system32\inetsrv`
- The 32-bit version is located in:
  `%SystemRoot%\sysWOW64\inetsrv`

You must have administrative privileges to run this utility.

To install the XHQ web files in a non-default web site

1. From a command prompt, go to the **`%SystemRoot%\system32\inetsrv`** directory and execute the following command:

   ```
   >appcmd list site
   ```

   The result is similar to the following example.

   Example:
   ```
   SITE "NON_DEFAULT Web Site"
   (id:123,bindings:http/*:80:,state:Started)
   ```

   In this example, the ID number is 123.

2. **Record** the **ID number** for the web site.
3. Do one of the following:
   - If this is a **first-time XHQ installation**, or if the `install.properties` configuration file does not exist, continue to **step 4**.
   - *Else*, skip to **step 6**.
4. Under **%Program Files (x86)%**, create the directory structure **`\XHQ\XHQ Install Files`**.
5. Using a text editor, create a file named **`install.properties`**.
6. **Add** the following line to **`install.properties`**:
   `WEB_SITE_ID=<ID Number>`

   Example: **`WEB_SITE_ID=123`**
7. **Save `install.properties`** into the directory you created in **step 3**

8. Launch the XHQ installer.

Showing the Console Window during the High-Performance Database Install

This property hides (or shows) the Console Window while the embedded database instances are configured. By default, the console is hidden (the property is set to false).

To **show** the console, open the `install.properties` file and enter the line:

```
Shows_Db_Console=True
```

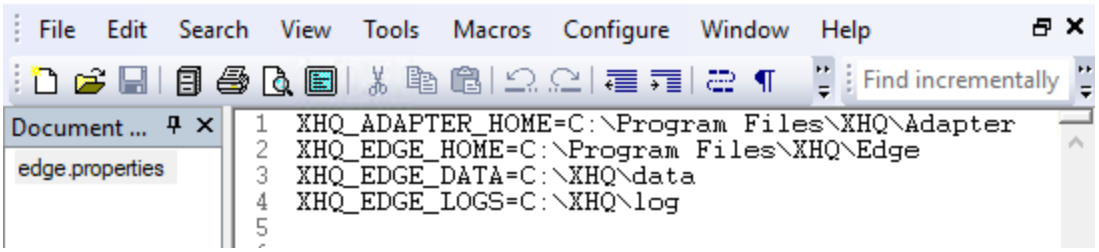
The **name** of the property is **case-sensitive**; however, the **value** is not. For example, the value can be TRUE or True or true.

About edge.properties

The `edge.properties` file contains property settings that enable you to configure the XHQ Edge Installer. It is the `install.properties` equivalent for XHQ Edge.

The same syntax rules apply:

- The **property names** are **case-sensitive**.
  So far, all property names defined for the XHQ installer have been UPPERCASE with underscores. There is no guarantee that this will always be true.
- On the other hand, the **values** mapped to property names are not case-sensitive.
  In a Boolean property, "TRUE", "true", "True" and "tRuE" all override the default value of "FALSE".



Example: edge.properties with default values

Create and save the `edge.properties` file in the same location as `install.properties`, which is the `%ProgramFiles(x86)%\XHQ\XHQ Install Files` directory.

By default, the following properties exist with the given values.

Property	Default Value
XHQ_ADAPTER_HOME	C:\Program Files\XHQ\Adapter
XHQ_EDGE_HOME	C:\Program Files\XHQ\Edge
XHQ_EDGE_DATA	C:\XHQ\data
XHQ_EDGE_LOGS	C:\XHQ\log

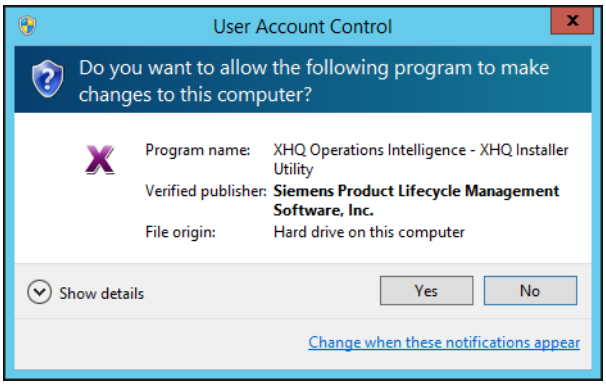
For steps on how to install XHQ Edge, go to the topic, "XHQ Edge Installation and Configuration," located in the XHQ Connection Guide.

To create the edge.properties file

1. Go to `%ProgramFiles(x86)%\XHQ\XHQ Install Files` directory.
2. Using a text editor, **create** the `edge.properties` file.
3. **Save** this file.

9 | The XHQ Install Utility

After the server is restarted for an install/upgrade/uninstall, the **XHQ Install Utility** (`xhqiu`) automatically runs to do post-reboot functions (like clean-up). The following message appears:



Click **Yes** and let it run to completion.

During an *XHQ uninstallation*, the XHQ Install Utility checks for and removes XHQ registry keys, deletes folders and system environment variables prefixed by `XHQ_`.

You can also use the XHQ Install Utility, **`xhqiu`**, to *retrieve an encrypted password for XHQ_STRING* or to *reconfigure post installation prior to reboot*. The `xhqiu` utility is located in the `%ProgramFiles(x86)%\XHQ\XHQ Install Files` directory.

Retrieving an Encrypted Password

From `install.properties`, the XHQ_STRING property defines the password used to communicate with the XHQ DB instances.

For more information, go to the topic, *The install.properties File*.

Do the following to retrieve an encrypted password for the XHQ_STRING property using the XHQ Install Utility, **`xhqiu`**.

Syntax: `xhqiu [-l <logFilePath>] -DisplayEncryptedPassword <dbPassword>`

Example: `xhqiu -DisplayEncryptedPassword d6Pa$$word`

Things to Note Regarding Syntax

- Parameters enclosed in **square brackets** "[ ]" are *optional*.
- Values enclosed in **angle brackets** "<>" must be substituted with literal value.

  Note the example given above. The value, `<dbPassword>`, is substituted with the actual password, `d6Pa$$word`.
- Parameters may not include spaces unless enclosed in **double quotes**.
- Running the utility without any flags shows command usage.

Flag	Description
`-DisplayEncryptedPassword`	The unencrypted password used to communicated with the XHQ DB instances.
`-l`	*Optional* The location of the log file.

To retrieve an encrypted password for the XHQ_STRING property

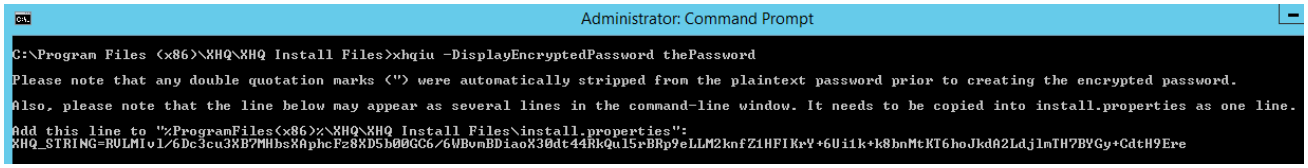
1. Go to the `%ProgramFiles(x86)%\XHQ\XHQ Install Files` directory.
2. Copy the `install.properties` file to the Desktop (to edit).
3. Next, do one of the following:
   - If you've already run `setup.exe`, go to the `C:\Program Files (x86)\XHQ\XHQ Install Files` directory.
   - Else, from the XHQ installation media, go to `\Setup\Server\Configurations`.
4. Locate `xhqiu.exe` and copy it into a **local folder**.
5. Open the **Windows Command Prompt** (`CMD`) as **Administrator**, run the change directory (`cd`) command and go to that local folder.
6. Type the following:

   `xhqiu -DisplayEncryptedPassword <dbPassword>`

   Where: <dbPassword> is the password used to communicate with the XHQ DB instances.

   This password must conform with *XHQ restrictions*.

Example output:




```
C:\Program Files (x86)\XHQ\XHQ Install Files>xhqiu -DisplayEncryptedPassword
d6Pa$$word
Please note that any double quotation marks (") were automatically stripped from the
plain text password prior to creating the encrypted password.
Also, please note that the line below may appear as several lines in the command-line
window. It needs to be copied into install.properties as one line.
Add this line to "%ProgramFiles(x86)%\XHQ\XHQ Install Files\install.properties":
XHQ_
STRING=RVLMIvl/6Dc3cu3XB7MHbsXAphcFz8XD5b00GC6/6WBvmBDiaoX30dt44RkQul5rBRp9eLLM2knfZ1H
FIKrY+6Ui1k+k8bnMtKT6hoJkdA2LdjlmTH7BYGy+CdtH9Ere
```

7. Copy the **entire, continuous line** starting with "`XHQ_STRING=...`"

   This must be copied and pasted as **one, continuous line**.

8. Open the `install.properties` file (you copied to the Desktop in step 2) and paste this entire line.
9. Save `install.properties` and **copy it back** into the `%ProgramFiles(x86)%\XHQ\XHQ Install Files` directory.

Reconfiguring Post Installation Prior to Reboot

The `xhqiu` utility is located in the `%ProgramFiles(x86)%\XHQ\XHQ Install Files` directory. You can use this utility to run post-installation clean-up before the reboot.

Syntax: `xhqiu -RunPostInstallationPriorToReboot`

Flag	Description
`-RunPostInstallationPriorToReboot`	This command enables XHQ Service, sets XHQ environment variables, and runs a prefsLinks backup. In general, it runs a post-install clean-up before the reboot.

Appendix

Section Topics

Server Pre-requisite Installation Order

During an XHQ installation, the pre-requisites installer automatically installs the following in the given order.

For Windows Server 2016/2012 R2

XHQ Pre-requisites Installation Order

Pre-requisite Order	Preparation Description
Microsoft Visual C++ Redistributables	Installs program (x64, x86) for each of the following: • Visual Studio 2015, version 12.0.30501 • Visual Studio 2017, version 14.16.27024
Prepare Windows Server for XHQ	Turns on the Application Server and Web Server Roles.
Prepare IIS Web Server for XHQ	Locks down a number of security vulnerabilities in IIS. Also ensures needed MIME types are present.
Microsoft AJAX Control Toolkit for XHQ	Places DLLs in the GAC.
Apache Log4Net Logging Framework for XHQ	Places DLLs in the GAC.
Calitha-Gold Parser Engine for XHQ	Places DLLs in the GAC.
IKVM Java-.NET Bridge for XHQ	Places DLLs in the GAC.
Infragistics Controls for XHQ	Places DLLs in the GAC.
PostgresODBC (psqlODBC_x64)	Installs program.
XHQ .NET API Assemblies	Places DLLs in the GAC.

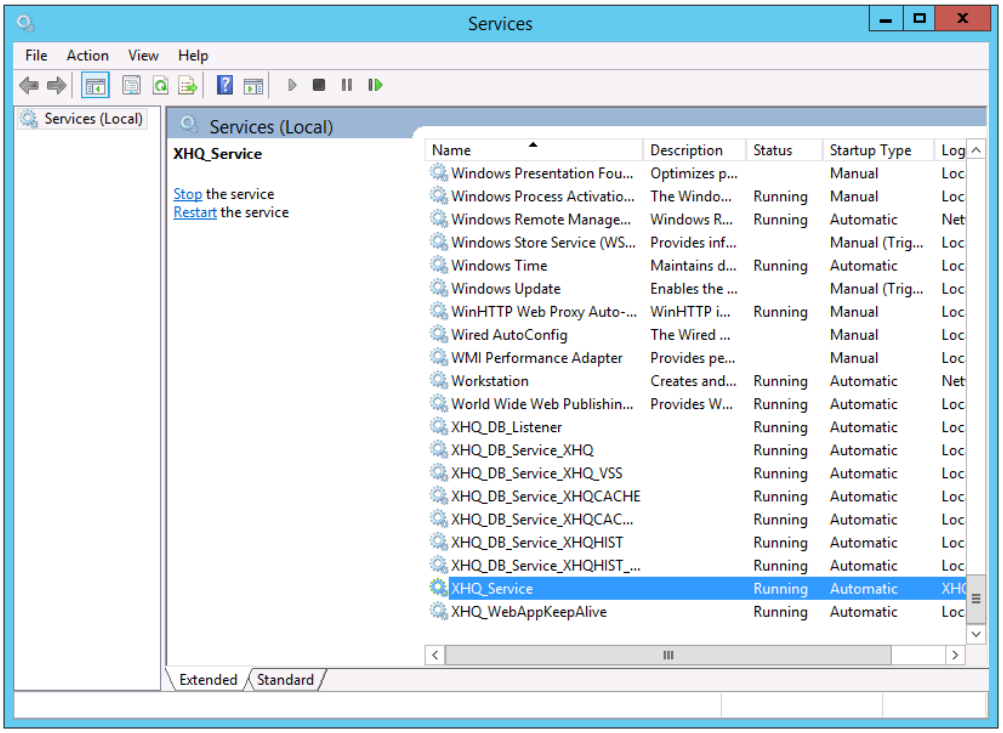
The *XHQ uninstall* process, however, only removes the XHQ core setup. It does not remove the pre-requisites. Each must be uninstalled manually.

Troubleshooting the XHQ Start-up

The following checklist will help you to properly set-up the system configuration and successfully start the XHQ solution.

Administrative rights are required on the server. In addition, XHQ must run as a domain user.

- [ ] From the **Services** window, make sure that `xhq_service` is set to AUTOMATIC. This sets `xhq_service` to start automatically when Windows starts.



- [ ] Also, verify that the **World Wide Web Publishing Service** is running. This service allows the user to view the solution from a web browser.
- [ ] Make sure the following services are also **Running**:
  - `XHQ_DB_Service_XHQ`
  - `XHQ_DB_Listener`
  - `XHQ_WebAppKeepAlive`

Do not start or stop the services directly. Use the `xhqboot` batch file to start and stop the services. Using `xhqboot` will also guarantee that the `XHQ_DB_Service_XHQ` service starts before the `XHQ_DB_Listener` service.

For more information on how to use `xhqboot`, go to the topic, "About the xhqboot Batch File", located in the XHQ Administrator's Guide.

- [ ] The virtual directory, **`/indx/resources`** (which points to `%XHQ_WEB_DATA%\conf\resources\public`), must have **Anonymous Access**, which is the default installation.
- [ ] If `xhq_tray` is running, shut it down and restart XHQ Service.

- If this warning appears in the log:

  `"WARNING: Module name VIEW SERVER always starts since 6.0. Environment XHQ_ALLOW_VIEWSERVER is ignored."`

  The `XHQ_ALLOW_VIEWSERVER` environment variable was defined (given a value). The View Server always starts, by default, regardless of whether this environment variable exists or not.

- From the **xhq_service.properties** file, make sure the **`XHQ_AUTOSTART`** property is set to **`true`** (which is the default). This automatically starts the XHQ Servers after you reboot your system or, if the server goes down or is restarted.

  Refer to the topic, "About xhq_service.properties", located in the XHQ Administrator's Guide

  Depending on the size and complexity of your solution, start-up times can vary from a few minutes to over an hour.

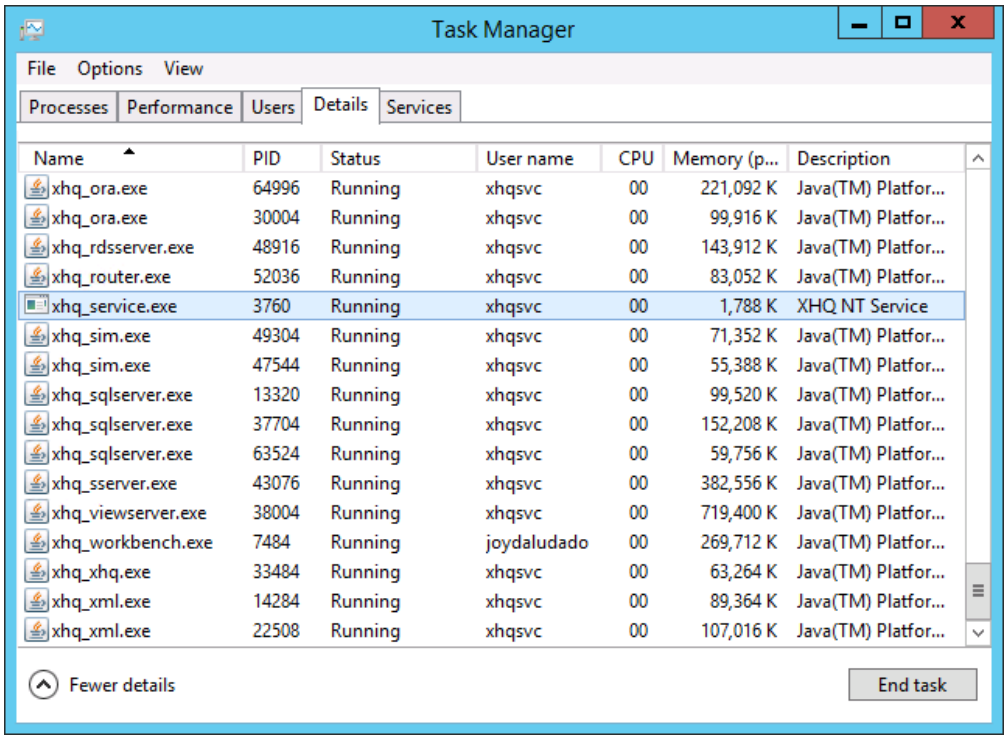
- Make sure you have a **valid repos**.

  Refer to the topics:

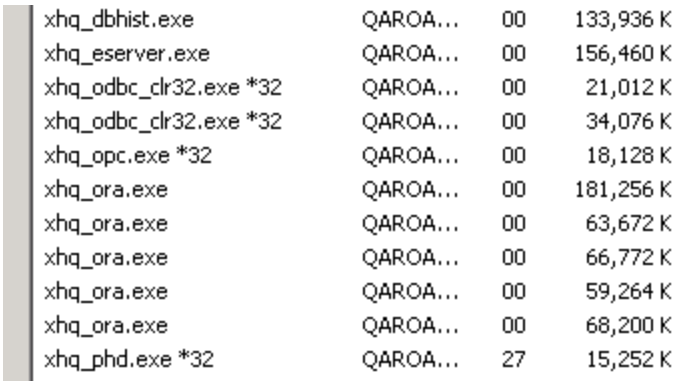
  - "Validating a Repos", located in the XHQ Administrator's Guide
  - "Repos Management", located in the XHQ Backup and Recovery Guide

- **Restart the server** where the XHQ solution is installed.
- Using the **Windows Task Manager**, verify that the following processes are running:

Process	Server
xhq_appserver.exe	Application
xhq_aserver.exe	Alert
xhq_auditserver.exe	Audit
xhq_cserver.exe	Cache
xhq_dbhist.exe	Data Recorder
xhq_eserver.exe	Enterprise
xhq_rdsserver.exe	RDSL
xhq_router.exe	DDS Router
xhq_sserver.exe	Solution



- Next, verify that your **connectors** are running (assuming your connector processes are running and are not stopped or have not been started automatically).

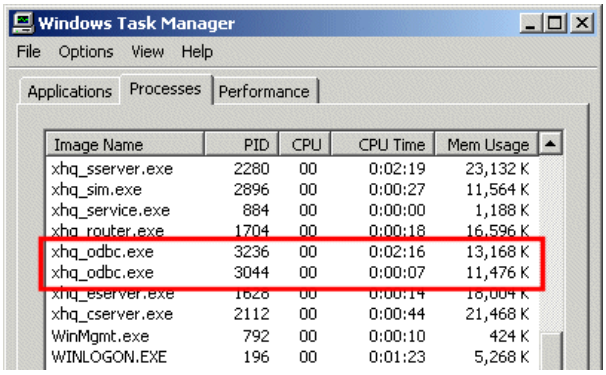


For example, you may see the following connector processes in the Task Manager:

Process	Connector Type
xhq_phd.exe	PHD historians (tags, history, and trends)
xhq_odbc_clr32.exe	ODBC type databases
xhq_opc.exe	OPC historians (tags, history, and trends)
xhq_sim.exe	XHQ Simulator
xhq_ora.exe	ORACLE databases
xhq_sqlserver.exe	SQL databases

Depending on how your solution is configured, it is possible to have two or more of the same processes running at the same time. Each one will have a different PID that can also

be viewed in the XHQ Solution Builder > Connection Process configuration.



If the connection process is not starting because it's using a different User ID for log-on, then refer to the subtopic, "Log On Options for the Connection Process" > "Troubleshooting the Connection Process Log On", located in the XHQ Connection Guide.

- For anti-virus software users (such as Norton AntiVirus):
  To avoid potential performance degradation due to virus scanning, a list of recommended directory exclusions and scanning practices (for both the XHQ Client and Server) are found in the topic, "XHQ Performance and Anti-virus Software", located in the XHQ Administrator's Guide.

Virtual Directories and Application Pools

The virtual directories and application pools for the XHQ System applications are automatically configured during the XHQ installation.

The default configuration for the application pool is as follows.

1. The Identity is `NETWORK SERVICE`.
2. The physical permissions on the **`www` folder** for **`NETWORK SERVICE`** are:
   - Read & Execute
   - List Folder Contents
   - Read
3. The physical permissions on the **`report.config`** file for **`Administrators`** is:
   - Full Control

For the XHQ Visual Composer

If the application pool identity is changed from the default of `NETWORK SERVICE` to another identity, make sure that the new identity is added to the **`repos`** folder with the permissions of:

- Read
- Write
- Modify

Distribution of XHQ Server and XHQ Development Client Files

The current version of XHQ supports customized distribution of executables, configuration data, log files, and repository data. Through the install, you can set specific locations within the file system to separate the static and dynamic components of XHQ.

For additional information on the XHQ environment variables, refer to:

- *Troubleshooting the XHQ Start-up*
- *Installing the XHQ Development Client Stand alone*

These components have been divided into three categories:

- System Files (Executables and Fixed Settings)
- Log Files
- User Files (Data and Configurable Settings)

Prior to installing XHQ, determine the location to store these files. For basic installation, simply accept the default file destinations.

After installation, should you want to change the file location, it is recommended that you first *uninstall XHQ* and then reinstall, using the correct file destination.

XHQ Server Environment Variables

In general, only **Administrators** are able to set environment variables.

To customize the default log file or repos location, go to the topic, "Customizing the Development Client Logs and Repos Directory Locations," located in the XHQ Administrator's Guide.

The XHQ installation automatically sets `XHQ_DEV_HOME`. This is for the convenience of the end user for use, for example, in batch files. The install program also adds `<XHQ_DEV_HOME>\bin` to the `PATH` variable (system or user).

To facilitate the distributed deployment of XHQ components, the following environment variables are used.

XHQ Environment Variables

Variable	Default Path (or Value)
`XHQ_DEV_HOME` (XHQ Development Client parent directory)	`%ProgramFiles(x86)%\XHQ\XHQ Server` On an XHQ Server machine, `XHQ_DEV_HOME` is identical to `XHQ_SERVER_HOME`.
`XHQ_SERVER_HOME` (XHQ Server directory)	`%ProgramFiles(x86)%\XHQ\XHQ Server`
`XHQ_SERVER_HOME_x64`	`%ProgramFiles%\XHQ\XHQ Server`
`XHQ_LOGS` (XHQ Server Log directory)	`%SystemDrive%\XHQ\log`
`XHQ_SERVER_DATA` (XHQ Server Data directory)	`%SystemDrive%\XHQ\data`
`XHQ_WEB_HOME`	`%ProgramFiles(x86)%\XHQ\XHQ Web Root`

To customize the default log file or repos location, go to the topic, "Customizing the Development Client Logs and Repos Directory Locations," located in the XHQ Administrator's Guide.

For information on **path variables**, go to the topic, *Path Properties*.

Using Mount Points

A **mount point** (which is also known as a mounted drive or a volume junction) is a separate file system that is *mounted* onto a host drive so that it appears to be a subdirectory of the host drive. Although it looks like a subdirectory to Windows, it is actually a whole different file system.

Permissions may need to be explicitly granted in this case. Because the mount point is a different file system, permissions are not inherited from the host system. So, when you grant permissions to the local file system and propagate them to child folders, they are NOT applied to the mount point.

The installation of XHQ on file systems with mount points (in lieu of drive letters, for example, due to SAN usage) is only supported if XHQ is able to determine enough free space in the local storage location in order to meet the installation pre-requisites and be able to install.

Installation of XHQ to a network share is not supported in any case.

Creating an SID Exclusion List

The SID exclusion list is configured by creating a text file **`%XHQ_SERVER_HOME%\sidlist.exclude`**.

Things to Note

- The file must contain formatted SID entries.
- The file is machine specific; by design, it is not located in the `repos` folder.
- The wildcard character, *, is supported on SID component boundaries.
- Whitespace before and after SID entries are automatically trimmed when the file is read by the system.

The following is an example of an `sidlist.exclude` file.

```
# This file contains the list of SID entries to be ignored when resolving
# a user's groups during the XHQ user validation sequence.
# A SID entry may have a wildcard character (*) at the end
# The list can be edited while XHQ is running and will be
# re-read in a timely manner (with a minute or so).
S-1-3-55
S-1-5-21-1957704384-1365774696-1373009395-5424
S-1-5-21-1957704384-1365774696-1373009395-513

# Wildcard entries to ignore sets of SID value from different authorities/subauthorities

# This excludes S-1-5-21-704384 and all SID with subauthorities (like S-1-5-21-704384-
12341-243)
S-1-5-21-704384*

# This includes S-1-4-57 and excludes any SID with subauthority components (like S-1-4-
57-63463-546456)
S-1-4-57-*
```

Installation of the XHQ Data Recorder

The XHQ Data Recorder is automatically installed with XHQ and is **enabled** by default. If the XHQ Data Recorder is not required, refer to the topic, "Disabling the Data Recorder," located in the XHQ Administrator's Guide for details on how to disable the service.

Disabling the XHQ Data Recorder reduces the required physical memory footprint on the XHQ server by about 300 MB.

Note, however, that the XHQ installer requires the XHQ Data Recorder service to be enabled. If it is disabled, the installation process is halted.