

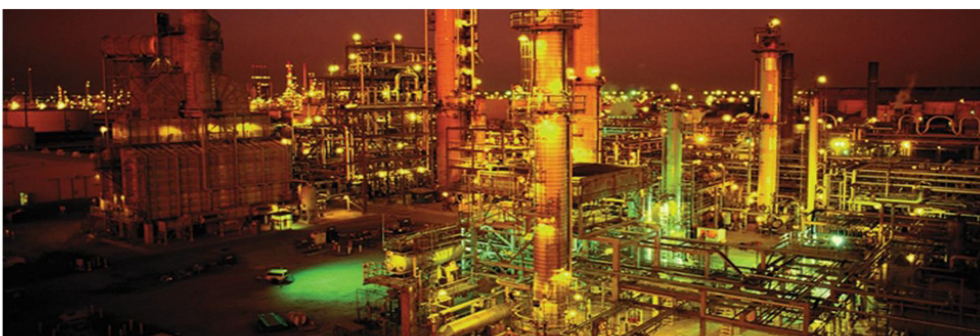
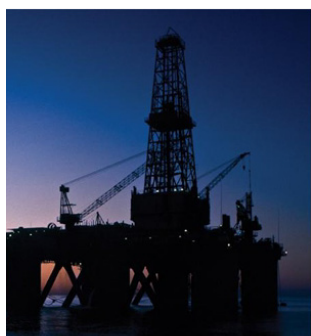
User Manual

Original Instructions

**PlantPax**  
Distributed Control System

# PlantPax Virtualization

Version 4.5



# Important User Information

Read this document and the documents listed in the additional resources section about installation, configuration, and operation of this equipment before you install, configure, operate, or maintain this product. Users are required to familiarize themselves with installation and wiring instructions in addition to requirements of all applicable codes, laws, and standards.

Activities including installation, adjustments, putting into service, use, assembly, disassembly, and maintenance are required to be carried out by suitably trained personnel in accordance with applicable code of practice.

If this equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

In no event will Rockwell Automation, Inc. be responsible or liable for indirect or consequential damages resulting from the use or application of this equipment.

The examples and diagrams in this manual are included solely for illustrative purposes. Because of the many variables and requirements associated with any particular installation, Rockwell Automation, Inc. cannot assume responsibility or liability for actual use based on the examples and diagrams.

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Throughout this manual, when necessary, we use notes to make you aware of safety considerations.



**WARNING:** Identifies information about practices or circumstances that can cause an explosion in a hazardous environment, which may lead to personal injury or death, property damage, or economic loss.



**ATTENTION:** Identifies information about practices or circumstances that can lead to personal injury or death, property damage, or economic loss. Attentions help you identify a hazard, avoid a hazard, and recognize the consequence.

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**IMPORTANT** Identifies information that is critical for successful application and understanding of the product.

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Labels may also be on or inside the equipment to provide specific precautions.



**SHOCK HAZARD:** Labels may be on or inside the equipment, for example, a drive or motor, to alert people that dangerous voltage may be present.



**BURN HAZARD:** Labels may be on or inside the equipment, for example, a drive or motor, to alert people that surfaces may reach dangerous temperatures.



**ARC FLASH HAZARD:** Labels may be on or inside the equipment, for example, a motor control center, to alert people to potential Arc Flash. Arc Flash will cause severe injury or death. Wear proper Personal Protective Equipment (PPE). Follow ALL Regulatory requirements for safe work practices and for Personal Protective Equipment (PPE).

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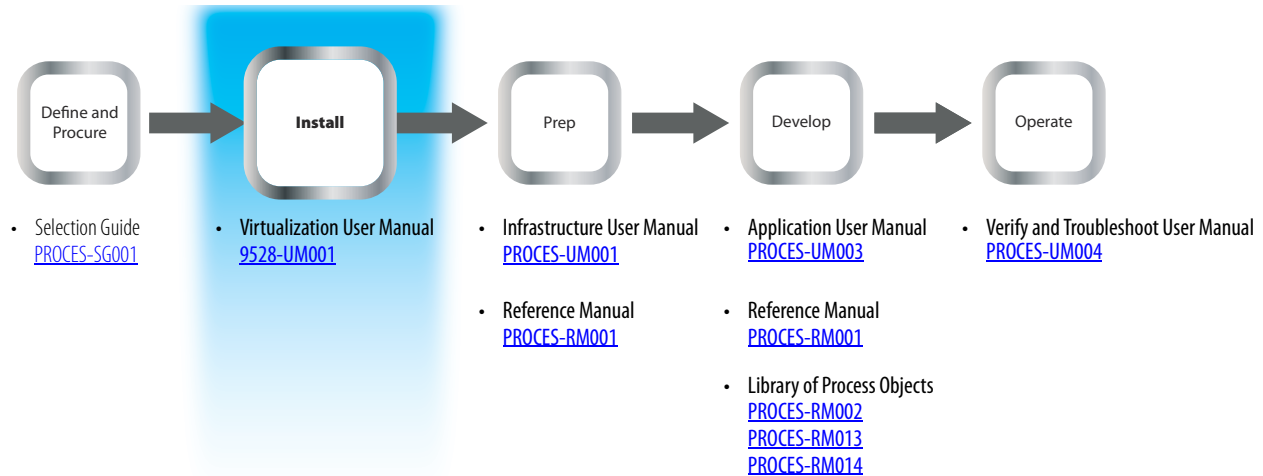
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Notes:

This virtualization user manual describes how to leverage virtual image templates, version 4.5, when deploying a virtualized PlantPAx® Distributed Control System (DCS). PlantPAx virtual image templates are pre-configured, virtual system elements of your PlantPAx system.

This manual also describes how to manage and configure templates as individual virtual system elements, and how to configure them to work together.

**Figure 1 -- PlantPAx System Implementation and Documentation Strategy**



- **Define and Procure** - Helps you understand the elements of the PlantPAx system to make sure that you buy the proper components.
- **Install** - Provides direction on how to implement the PlantPAx system architecture to help develop your application.
- **Prep** - Provides guidance on how to get started and learn the best practices for developing your application.
- **Develop** - Contains the application-specific libraries and objects that are used to construct your application that resides on the PlantPAx architecture.
- **Operate** - Provides guidance on how to verify and maintain your systems for operation of your plant.

## Summary of Changes

This manual contains new and updated information as indicated in the following table.

Topic	Page
Changes to licensing	8-10
New template catalog numbers	10
Deploy Additional Virtual Images From a Local Template updated	64
Added Chapter 5- Configure PASS-C Single Server	203

## Purpose of This Manual

Virtualization is the abstracting of the operating system from the hardware to enable running multiple virtual machines on one piece of hardware. This manual shows how to use templates to configure virtualized system elements.

Virtual image templates are provided for the following PlantPAx system elements:

- Process Automation System Server (PASS)
- Engineering Workstation (EWS)
- Operator Workstation (OWS)
- SQL Server - AppServ-Info (SQL)
- Process Automation Domain Controller (PADC)
- Historian Server - AppServ-Info (Historian)
- Batch Management Server - AppServ-Batch
- Asset Management Server - AppServ-Asset
- Operator Workstation Application Server - AppServ-OWS
- Engineer Workstation Application Server - AppServ-EWS
- VantagePoint Server - AppServ-Info (VantagePoint)

In addition to these virtual templates, this manual has deployment instructions for the consolidated PASS (PASS-C) and associated OWS (OWS ISO). The PASS-C and OWS ISO are designed to deploy on a physical machine.

**TIP** Skip to [Chapter 5](#) if you are deploying a PASS-C or OWS ISO.

## Before You Begin

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**IMPORTANT** Our templates can be used with any virtualization software. We use VMware for the procedures in this document.

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- PlantPAx virtual image templates, PASS-C, and OWS ISO USB devices are obtained by the following methods:
  - **Media** - Order a physical copy of the virtual image template and receive a Microsoft license.
  - **Electronic Software Delivery (ESD)** - You must purchase licensed media before downloading an electronic copy of the virtual image template from the Product Compatibility and Download Center (PCDC) website. When you download the PASS-C or OWS ISO, you receive an ISO file which you can use to create a bootable device.
- Microsoft Operating System (OS) License keys provided with virtual image template purchases:
  - Virtual servers require Microsoft OS License Keys for Windows Server 2012 R2 Standard operating systems.
  - Virtual workstations require a Microsoft OS License Key for Windows 10 operating systems.

**TIP** Remote Desktop Services uses its own method of licensing clients that log on to Remote Desktop Services servers. This method is separate from licensing for the Windows Server 2012 R2 family of operating systems. Therefore, AppServ-OWS and AppServ-EWS Remote Desktop Connections must receive a valid license. This license is issued by a Remote Desktop Licensing Server before they can log on to a Remote Desktop Session Host or Connection Broker.

For licensing of these components, contact your Microsoft distributor.

- FactoryTalk® Activation Certificates contain serial numbers and product keys for the Rockwell Automation® products that correspond to the templates.

See [PlantPAx Virtual Image Template Catalog Numbers on page 10](#)

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**IMPORTANT** If you already own individual product activations, these activations can also be used to activate the virtual image templates.

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- A domain controller must be configured and accessible on the network.
- vSphere Web Client is used to deploy virtual machines.
- vCenter server is optional and enables you to create your own virtual image templates and increase your ability to manage a virtualized control system.



## Microsoft Operating System Software Licensing

Each server or workstation instance that is deployed from a template, bootable device, or ISO needs its own Microsoft operating system license and Rockwell Automation software licenses.

Volume licenses are used to activate Microsoft products and services across multiple users within an organization. One OS license is included with each template purchase. Additional volume licenses can be purchased from your Microsoft distributor.

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**IMPORTANT** To distribute PlantPAx virtual image templates, Rockwell Automation must meet Microsoft distribution requirements for Windows OS. To meet these requirements, Rockwell Automation includes Volume License products with each virtual template purchase via Microsoft email instructions. See <https://www.microsoft.com/en-us/licensing/default.aspx> for more license information.

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## PlantPAx Virtual Image Template Catalog Numbers

[Table 1](#) lists the catalog numbers for PlantPAx virtual image templates.

**Table 1 - Virtual Image Templates on USB Devices**

Virtual Template	Cat. No.	Description
PASS	9528-PASSVTENM	USB device contains the virtual image template for the PASS and a Microsoft® Windows® license for the Server 2012 R2 Standard. All required Rockwell Automation software is pre-installed but not activated.
EWS	9528-EWSVTENM	USB device contains the virtual image template for the EWS and a Microsoft Windows license for the Windows 10 operating system. All required Rockwell Automation software is pre-installed but not activated.
OWS	9528-OWSVTENM	USB device contains the virtual image template for the OWS and a Microsoft Windows license for the Windows 10 operating system. All required Rockwell Automation software is pre-installed but not activated.
AppServ-OWS, AppServ-EWS	9528-APPXWSENM	USB device contains the virtual image template for AppServ-OWS and AppServ-EWS. USB device contains a Microsoft Windows license for the Server 2012 R2 Standard operating systems. All required Rockwell Automation software is pre-installed but not activated. You must also purchase the appropriate RDS CAL license from a Microsoft distributor.
AppServ-Info (Historian)	9528-APPHISENM	USB device contains the virtual image template for AppServ-Info (Historian) and a Microsoft Windows license for the Server 2012 R2 Standard operating system. All required Rockwell Automation software is pre-installed but not activated.
AppServ-Asset	9528-APPASMENM	USB device contains the virtual image template for AppServ-Asset and a Microsoft Windows license for the Server 2012 R2 Standard operating system. All required Rockwell Automation software is pre-installed but not activated.
AppServ-Info (SQL)	9528-APPSQLENM	USB device contains the virtual image template for AppServ-Info (SQL) and a Microsoft Windows license for the Server 2012 R2 Standard operating system. All required Microsoft software is pre-installed but not activated.
AppServ-Info (VantagePoint)	9528-APPVTPENM	USB device contains the virtual image template for AppServ-Info (VantagePoint) and a Microsoft Windows license for the Server 2012 R2 Standard operating system. Most required Rockwell Automation software is pre-installed but not activated. The FactoryTalk VantagePoint software is not pre-installed.
AppServ-Batch	9528-APPBATENM	USB device contains the virtual image template for AppServ-Batch and a Microsoft Windows license for the Server 2012 R2 Standard operating system. Most required Rockwell Automation software is pre-installed but not activated. The FactoryTalk Batch software is not pre-installed.
Domain controller	9528-PADCVTENM	USB device contains the virtual image template for a Domain controller and a Microsoft Windows license for the Server 2012 R2 Standard operating system. You must also purchase the appropriate Windows CAL from a Microsoft distributor.

[Table 2](#) lists the catalog numbers for PlantPAx USB devices.

**Table 2 - Installation File on USB Devices**

System Element	Cat. No.	Description
PASS - C (Consolidated)	9528-PASSCENM	USB device contains a bootable image to install a consolidated PASS on a physical machine. The consolidated PASS includes Historian, VantagePoint, Asset Management, OWS, and EWS. PASS-C purchase includes a Microsoft license for the Server 2012 R2 Standard. A Rockwell Automation license is required for software activation.
OWS ISO	9528-OWSISOENM	USB device contains a bootable image to install an operator workstation on a physical machine. The device contains a Microsoft license for the Windows 10 operating system. A Rockwell Automation license is required for software activation.

## Build Details

[Table 3](#) lists the system build details for each PlantPAx virtual image template.

**Table 3 - Build Details for Virtual Templates**

Element	Category	Description
Process Automation System Server (PASS)	Operating system	Microsoft Windows Server 2012 R2 Standard
	Rockwell Automation software	<ul style="list-style-type: none"> <li>FactoryTalk Services Platform               <ul style="list-style-type: none"> <li>FactoryTalk Services platform software, version 3.00.00</li> <li>FactoryTalk Activation Manager software, version 4.02.00</li> <li>FactoryTalk Linx software, version 6.00.00</li> </ul> </li> <li>FactoryTalk View Site Edition Client software, version 10.00.00</li> <li>FactoryTalk View Site Edition Server software, version 10.00.00</li> <li>FactoryTalk View Studio Enterprise software, version 10.00.00</li> <li>FactoryTalk Alarm and Event software, version 3.00.00</li> <li>FactoryTalk Diagnostics software, version 3.00.00</li> <li>FactoryTalk Historian SE 5.01.00 Live Data Interface</li> <li>Rockwell Automation Windows Firewall Configuration Utility, version 1.00.10</li> </ul>
Engineering Workstation (EWS)	Operating system	Microsoft Windows 10
	Rockwell Automation software	<ul style="list-style-type: none"> <li>FactoryTalk Services Platform               <ul style="list-style-type: none"> <li>FactoryTalk Services Platform software, version 3.00.00</li> <li>FactoryTalk Linx software, version 6.00.00</li> <li>RSLinx® Classic software, version 4.00.00</li> <li>FactoryTalk Activation Manager software, version 4.02.00</li> </ul> </li> <li>FactoryTalk View Site Edition Client software, version 10.00.00</li> <li>FactoryTalk View Site Edition Server software, version 10.00.00</li> <li>FactoryTalk View Studio Enterprise software, version 10.00.00</li> <li>FactoryTalk View ViewPoint SE software, version 10.00.00</li> <li>FactoryTalk View ViewPoint ME software, version 10.00.00</li> <li>FactoryTalk Alarm and Event software, version 3.00.00</li> <li>FactoryTalk Diagnostics software, version 3.00.00</li> <li>Studio 5000 Architect® application software, version 3.00.00</li> <li>RSLogix 5000® Professional software, versions 20.04.01</li> <li>Studio 5000® Logix Designer® application, versions 31.00.00, 24.02.00</li> <li>Studio 5000 Architect software, version 3.00.00</li> <li>RSNetWorx™               <ul style="list-style-type: none"> <li>RSNetWorx for EtherNet/IP software, version 27.00.00</li> <li>RSNetWorx for ControlNet software, version 27.00.00</li> <li>RSNetWorx for DeviceNet software, version 27.00.00</li> </ul> </li> <li>FactoryTalk AssetCentre               <ul style="list-style-type: none"> <li>FactoryTalk AssetCentre Client software, version 8.00.00</li> </ul> </li> <li>FactoryTalk Historian SE 5.01.00 Live Data Interface</li> <li>Studio 5000® Logix Emulate™, version 30.01.00</li> <li>ControlFLASH Plus™ software, version 1.00.01</li> <li>Rockwell Automation Windows Firewall Configuration Utility, version 1.00.10</li> </ul>
	Additional third-party software	<ul style="list-style-type: none"> <li>LOOP-PRO TUNER (Rockwell Automation Edition) software, version 1.9</li> <li>SQL Server 2012SP3</li> <li>SQL Server 2012SP3 Client Connectivity</li> </ul>

**Table 3 - Build Details for Virtual Templates**

Element	Category	Description
Operator Workstation (OWS)	Operating system	Microsoft Windows 10
	Rockwell Automation software	<ul style="list-style-type: none"> <li>• FactoryTalk Services Platform <ul style="list-style-type: none"> <li>– FactoryTalk Services Platform software, version 3.00.00</li> <li>– FactoryTalk Linx software, version 6.00.00</li> <li>– RSLinx Classic software, version 4.00.00</li> <li>– FactoryTalk Activation Manager software, version 4.02.00</li> </ul> </li> <li>• FactoryTalk Diagnostics software, version 3.00.00</li> <li>• FactoryTalk View Site Edition Client software, version 10.00.00</li> <li>• FactoryTalk Alarm and Event software, version 3.00.00</li> <li>• FactoryTalk AssetCentre Client software, version 8.00.000</li> <li>• Rockwell Automation Windows Firewall Configuration Utility, version 1.00.10</li> </ul>
Process Automation Domain Controller (PADC)	Operating system	Microsoft Windows Server 2012 R2 Standard
Application Server OWS (AppServ-OWS)	Operating system	Microsoft Windows Server 2012 R2 Standard
	Rockwell Automation software	<ul style="list-style-type: none"> <li>• FactoryTalk Services Platform <ul style="list-style-type: none"> <li>– FactoryTalk Services Platform software, version 3.00.00</li> <li>– FactoryTalk Linx software, version 6.00.00</li> <li>– RSLinx Classic software, version 4.00.00</li> <li>– FactoryTalk Activation Manager software, version 4.02.00</li> </ul> </li> <li>• FactoryTalk View Site Edition Client software, version 10.00.00</li> <li>• FactoryTalk Diagnostics software, version 3.00.00</li> <li>• FactoryTalk Alarm and Event software, version 3.00.00</li> <li>• FactoryTalk AssetCentre Client software, version 8.00.00</li> <li>• Rockwell Automation Windows Firewall Configuration Utility, version 1.00.10</li> </ul>
Application Server EWS (AppServ-EWS)	Operating system	Microsoft Windows Server 2012 R2 Standard
	Rockwell Automation software	<ul style="list-style-type: none"> <li>• FactoryTalk Services Platform <ul style="list-style-type: none"> <li>– FactoryTalk Services Platform software, version 3.00.00</li> <li>– FactoryTalk Linx software, version 6.00.00</li> <li>– RSLinx Classic software, version 4.00.00</li> <li>– FactoryTalk Activation Manager software, version 4.02.00</li> </ul> </li> <li>• FactoryTalk View Site Edition Client software, version 10.00.00</li> <li>• FactoryTalk View Site Edition Server software, version 10.00.00</li> <li>• FactoryTalk View Studio Enterprise software, version 10.00.00</li> <li>• FactoryTalk View ViewPoint SE software, version 10.00.00</li> <li>• FactoryTalk View ViewPoint ME software, version 10.00.00</li> <li>• FactoryTalk Alarm and Event software, version 3.00.00</li> <li>• FactoryTalk Diagnostics software, version 3.00.00</li> <li>• Studio 5000 Architect application software, version 3.00.00</li> <li>• RSLogix 5000 Professional software, versions 20.04.01</li> <li>• Studio5000 Logix Designer application, versions 31.00.00. 24.02.00</li> <li>• RSLogix™ Emulate 5000 software, version 30.01.00</li> <li>• RSNetWorx <ul style="list-style-type: none"> <li>– RSNetWorx for EtherNet/IP software, version 27.00.00</li> <li>– RSNetWorx for ControlNet software, version 27.00.00</li> <li>– RSNetWorx for DeviceNet software, version 27.00.00</li> </ul> </li> <li>• FactoryTalk AssetCentre <ul style="list-style-type: none"> <li>– FactoryTalk AssetCentre Client software, version 8.00.00</li> </ul> </li> <li>• FactoryTalk Historian SE 5.01.00 Live Data Interface software</li> <li>• ControlFLASH Plus software, version 1.00.01</li> <li>• Rockwell Automation Windows Firewall Configuration Utility, version 1.00.10</li> </ul>
	Additional third-party software	<ul style="list-style-type: none"> <li>• LOOP-PRO TUNER (Rockwell Automation Edition) software, version 1.9</li> <li>• SQL Server 2012SP3</li> <li>• SQL Server 2012SP3 Client Connectivity</li> </ul>

**Table 3 - Build Details for Virtual Templates**

Element	Category	Description
Application Server Historian (AppServ-Info Historian)	Operating system	Microsoft Windows Server 2012 R2 Standard
	Rockwell Automation software	<ul style="list-style-type: none"> <li>• FactoryTalk Services Platform               <ul style="list-style-type: none"> <li>– FactoryTalk Services Platform software, version 2.90.00</li> <li>– FactoryTalk Activation Manager software, version 4.00.02</li> <li>– FactoryTalk Diagnostics software, version 2.90.00</li> </ul> </li> <li>• FactoryTalk Alarm and Event software, version 2.90.00</li> <li>• FactoryTalk Historian Site Edition Server, version 5.01.00</li> <li>• FactoryTalk Historian ActiveView software, version 3.20.02</li> <li>• FactoryTalk Historian DataLink software, version 4.20.01</li> <li>• FactoryTalk Historian Management software, version 2.20</li> <li>• FactoryTalk Historian ProcessBook software, version 3.20.01</li> <li>• FactoryTalk Historian SE 5.01.00 Live Data Interface</li> <li>• Rockwell Automation Windows Firewall Configuration Utility, version 1.00.08</li> <li>• RSLinx Enterprise, version 5.90.00</li> </ul>
Application Server Asset Management (AppServ-Asset)	Operating system	Microsoft Windows Server 2012 R2 Standard
	Rockwell Automation software	<ul style="list-style-type: none"> <li>• FactoryTalk Services Platform               <ul style="list-style-type: none"> <li>– FactoryTalk Services Platform software, version 3.00.00</li> <li>– FactoryTalk Diagnostics software, version 3.00.00</li> <li>– FactoryTalk Linux software, version 6.00.00</li> <li>– RSLinx Classic software, version 4.00.00</li> <li>– FactoryTalk Activation Manager software, version 4.02.00</li> </ul> </li> <li>• FactoryTalk AssetCentre               <ul style="list-style-type: none"> <li>– FactoryTalk AssetCentre Server software, version 8.00.00</li> <li>– FactoryTalk Asset Centre Client software, version 8.00.00</li> </ul> </li> <li>• Rockwell Automation Windows Firewall Configuration Utility, version 1.00.10</li> </ul>
	Additional third-party software	<ul style="list-style-type: none"> <li>• Microsoft SQL Server Express 2012 SP3 Advanced (includes Management Studio)</li> </ul>
Application Server Information SQL (AppServ-Info-SQL)	Operating system	Microsoft Windows Server 2012 R2 Standard
	Microsoft software	<ul style="list-style-type: none"> <li>• Microsoft SQL Server Standard 2012 SP3 (includes Management Studio)</li> </ul>
Application Server Information VantagePoint® (AppServ-Info-VantagePoint)	Operating system	Microsoft Windows Server 2012 R2 Standard
	Rockwell Automation software	<ul style="list-style-type: none"> <li>• FactoryTalk Services Platform               <ul style="list-style-type: none"> <li>– FactoryTalk Services Platform software, version 3.00.00</li> <li>– FactoryTalk Activation Manager software, version 4.02.00</li> <li>– FactoryTalk Diagnostics software, version 3.00.00</li> </ul> </li> <li>• FactoryTalk VantagePointSystem Server software, version 8.00.00</li> <li>• Rockwell Automation Windows Firewall Configuration Utility, version 1.00.10</li> </ul>
Application Server Batch Management (AppServ-Batch)	Operating system	Microsoft Windows Server 2012 R2 Standard
	Rockwell Automation software	<ul style="list-style-type: none"> <li>• FactoryTalk Services Platform               <ul style="list-style-type: none"> <li>– FactoryTalk Activation Manager software, version 4.00.01</li> <li>– FactoryTalk Diagnostics software, version 2.81.00</li> <li>– FactoryTalk Services Platform, version 2.81.00</li> <li>– RSLinx Classic software, version 3.81.00</li> </ul> </li> <li>• FactoryTalk BatchView software, version 1.02.19</li> <li>• FactoryTalk eProcedure® software, version 13.00.00</li> <li>• Rockwell Automation Windows Firewall Configuration Utility, version 1.00.07</li> </ul>

[Table 4](#) lists the system build details for PlantPAx USB devices.

**Table 4 - Build Details for USB Devices**

Element	Category	Description
PASS - C (consolidated)	Operating system	Microsoft Windows Server 2012 R2 Standard
	Rockwell Automation software	<ul style="list-style-type: none"> <li>• FactoryTalk Services Platform <ul style="list-style-type: none"> <li>– FactoryTalk Services platform software, version 3.00.00</li> <li>– FactoryTalk Activation Manager software, version 4.02.00</li> <li>– FactoryTalk Linx software, version 6.00.00</li> </ul> </li> <li>• FactoryTalk View Site Edition Client software, version 10.00.00</li> <li>• FactoryTalk View Site Edition Server software, version 10.00.00</li> <li>• FactoryTalk View Studio Enterprise software, version 10.00.00</li> <li>• FactoryTalk Alarm and Event software, version 3.00.00</li> <li>• FactoryTalk Diagnostics software, version 3.00.00</li> <li>• FactoryTalk Historian SE 5.01.00 Live Data Interface</li> <li>• Rockwell Automation Windows Firewall Configuration Utility, version 1.00.10</li> <li>• FactoryTalk Hist SE 5.01, version 5.01.00</li> <li>• FactoryTalk AssetCentre Server, version 8.00.00</li> <li>• FactoryTalk AssetCentre Client, version 8.00.00</li> <li>• Studio 5000 Logix Designer, version 31.00.00</li> <li>• Studio 5000 Logix Designer, version 24.02.00</li> <li>• RSLogix 5000, version 20.04.01</li> <li>• VantagePoint System Server, version 8.00.00</li> </ul>
Operator Workstation (OWS ISO)	Operating system	Microsoft Windows 10
	Rockwell Automation software	<ul style="list-style-type: none"> <li>• FactoryTalk Services Platform <ul style="list-style-type: none"> <li>– FactoryTalk Services Platform software, version 3.00.00</li> <li>– FactoryTalk Linx software, version 6.00.00</li> <li>– RSLinx Classic software, version 4.00.00</li> <li>– FactoryTalk Activation Manager software, version 4.02.00</li> </ul> </li> <li>• FactoryTalk Diagnostics software, version 3.00.00</li> <li>• FactoryTalk View Site Edition Client software, version 10.00.00</li> <li>• FactoryTalk Alarm and Event software, version 3.00.00</li> <li>• FactoryTalk AssetCentre Client software, version 8.00.000</li> <li>• Rockwell Automation Windows Firewall Configuration Utility, version 1.00.10</li> </ul>



## Additional Resources

These documents contain information about related products from Rockwell Automation that can provide additional guidance when deploying the virtual image templates.

Resource	Description
PlantPAx Distributed Control System Reference Manual, publication <a href="#">PROCES-RM001</a>	Details the application rules for implementing a PlantPAx system.
PlantPAx Distributed Control System Selection Guide, publication <a href="#">PROCES-SG001</a>	Provides procurement information for a PlantPAx system.
Product Certifications website, <a href="http://www.ab.com">http://www.ab.com</a>	Provides declarations of conformity, certificates, and other certification details.
FactoryTalk Historian SE Installation and Configuration Guide, publication <a href="#">HSE-IN025</a>	Provides information on how to install, secure, configure, use, and troubleshoot FactoryTalk Historian SE.
PlantPAx Distributed Control System Infrastructure Configuration, publication <a href="#">PROCES-UM001</a>	Provides screen facsimiles and step-by-step procedures to configure infrastructure components for your system requirements.
PlantPAx Distributed Control System Application Configuration, publication <a href="#">PROCES-UM003</a>	Provides the steps necessary to start development of your PlantPAx Distributed Control System.
Knowledgebase Answer ID 32715 - Cannot add/change pens in trend from SE client on Terminal Server at <a href="https://rockwellautomation.custhelp.com">https://rockwellautomation.custhelp.com</a>  You must have a TechConnect <sup>SM</sup> license to view this document.	Provides details about the problem of adding/ changing pens in trend from SE client on Terminal Services.
Knowledgebase Answer ID 496679 - FAQ: FactoryTalk Historian SE: MDB to AF Preparation Wizard at <a href="https://rockwellautomation.custhelp.com">https://rockwellautomation.custhelp.com</a>  You must have a TechConnect license to view this document.	Provides information on how to use the FactoryTalk Historian SE MDB to AF Preparation wizard.
Knowledgebase Answer ID 567658 - Using FactoryTalk View SE with Windows 2008 R2 Remote Desktop Services - Getting Started white paper at <a href="https://rockwellautomation.custhelp.com">https://rockwellautomation.custhelp.com</a>  You must have a TechConnect license to view this document.	Provides information on how to use FactoryTalk View SE with Microsoft Windows 2008 R2 Remote Desktop Services.
Knowledgebase Answer ID 60585 - FactoryTalk Historian SE Collective Manager Error - Error Writing Server at <a href="https://rockwellautomation.custhelp.com">https://rockwellautomation.custhelp.com</a>  You must have a TechConnect license to view this document.	Provides information on how to implement a collective for FactoryTalk SE Historian.

You can view or download publications at <http://www.rockwellautomation.com/global/literature-library/overview.page>.

To order paper copies of technical documentation, contact your local Allen-Bradley distributor or Rockwell Automation sales representative.

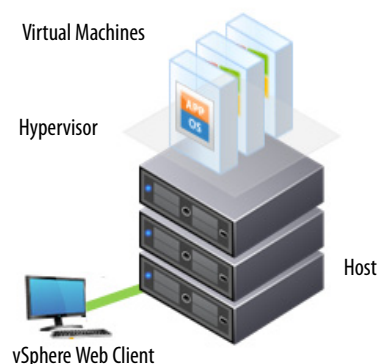
## Notes:

## Basics of Virtualization

### The 'What' and 'Why' for Virtualization

Computer virtualization continues to grow in popularity in the industrial sector. Virtual machines (VMs) provide easier access to remote process applications, save on resources, and extend system life. These benefits are important when new and tighter regulations, being able to empower/leverage your IT organization, and demands for faster time to market are factored into the bottom-line equation.

What appears to be the latest technological trend is actually half a century in the making. Bell Labs, International Business Machines (IBM), and General Electric (GE) developed the earliest forms of virtualization. In the early 1960s, IBM had numerous systems but they could handle only one task at a time. A decade of research later, IBM unveiled a time-sharing computer with HMI capabilities. These early virtual machines shared system resources from the mainframe, and foreshadowed better reliability and security because one user could not shut down an entire system.



Today, Virtual Desktop Infrastructures (VDI) that use VMware software, have broken the dependency between operating systems and physical hardware. These virtualization software packages enable multiple VMs to run different operating systems and applications from different locations on the same server.

This versatility helps to reduce physical footprint, consolidate hardware, and increase server utilization. You can also upgrade hardware without replacing or shutting down the operating system (OS) on server or workstation system elements, thus reducing downtime and maintenance costs.

A VM behaves exactly like a physical computer. The VM contains its own 'virtual' CPU, RAM, hard disk drive, and network interface card. The VM runs as an isolated guest operating system installation via a hypervisor. A hypervisor is a software program that manages the host physical server and allocates resources to each virtual machine that runs on the host. The terms 'host' and 'guest' help distinguish the software operating system that is running on the physical server (host) and the software that is running on the VM (guest).

When you consider virtualization, there is no need to purchase specific server or workstation hardware for each system element being virtualized. System elements can be deployed on new or existing servers, storage, and network hardware. Your system elements are unchanged.

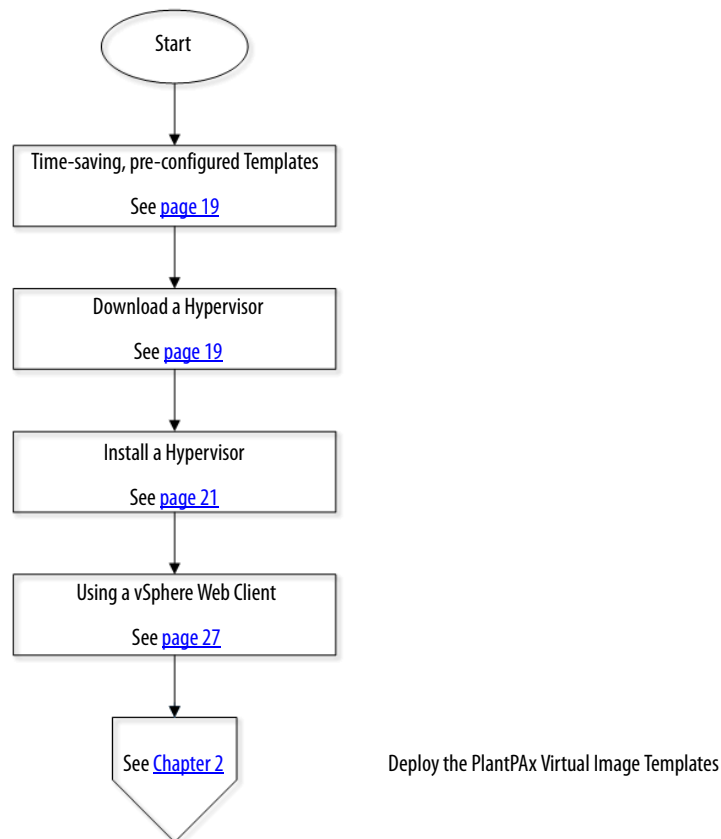
Some of the benefits of a virtualized PlantPAx® system include the following:

- Increased energy savings
- Extended system life
- Reduced system footprint and hardware cost
- Increased up time and availability
- Self-contained simulation and engineering
- Faster server provisioning
- Improved disaster recovery

Flexibility and ease of deployment are key when designing a virtual infrastructure. Both intangibles are a part of the PlantPAx system.

[Figure 1](#) contains the topics that are described in this chapter. See the page number or click the links for quick access to specific information.

**Figure 1 - Basic Virtualization Workflow**



## Time-saving, Pre-configured Templates

Rockwell Automation® offers virtual image templates as an option to deploy a virtualized PlantPAx system. The PlantPAx Virtual Image Templates deliver all system elements as pre-configured, drop-in virtual machines. The industry also refers to virtualized system elements as virtual appliances. However, in this manual, virtual system elements are referred to as virtual image templates because you can use them to deploy as many virtual appliances as you want.

The virtual image templates are delivered as an Open Virtual Appliance (OVA) file on USB devices or via the Web. With OVA files, you can use any virtualization platform for deployment. The guidelines that are contained in this manual are for setup and deployment of the templates in a VMware vSphere environment.

The virtual image templates help to reduce validation costs and initial engineering time, enhance scalability, simplify upgrades, and patch management. Only one copy of the virtual image templates is needed for a project.

The first step before realizing a virtual architecture system is to install a hypervisor on the server whose resources you can use.

**TIP** The following procedures apply only to virtual templates. Skip to [Chapter 5](#) if you are deploying a PASS-C or OWS ISO.

## Download a Hypervisor

This chapter describes how to install a hypervisor. A hypervisor is a software program that manages the host physical server and allocates resources to each virtual machine that runs in the host. Multiple virtual machines can share one physical host. However, each virtual machine has its own memory, storage, and CPU allocation on the host.

**TIP** We are using VMware vSphere as an example, you can use other hypervisors for this procedure.

Complete these steps.

1. To download the files, go to the VMware website at <http://www.vmware.com>.
2. From the main menu, click Downloads and select vSphere Hypervisor in the Free Product Downloads pane.



A Download Center login page for the vSphere Hypervisor appears.

3. Do one of the following:

- For an existing account, type an email address or customer number, a password, and click 'Log in'.
- For a new account, Type your first name, last name, and Email Address. Click Continue and follow the prompts to register.

After creating your free account, in an email from VMware, there is a link to verify that your information is correct. When you click this link, your browser navigates to the VMware website and asks you to enter your recently created user name and password.

4. Click Log in.

The Downloads Packages page appears.

## Download Packages

5. Download the VMware vSphere Hypervisor.

---

**IMPORTANT** For a production environment, we recommend a minimum of a VMware vSphere Essentials Kit. The vSphere Essentials Kit provides access to key virtual components. For more information, contact your Allen-Bradley® distributor.

---

## Install a Hypervisor

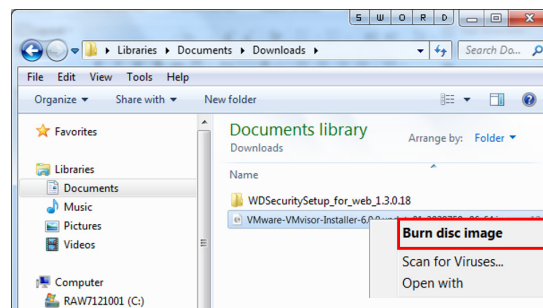
This section describes how to install the VMware vSphere hypervisor to a host server. The hypervisor, which is also known as ESXi, is used to manage the resources of your server to enable deployment of virtual images. To install the hypervisor on your server, we recommend that you copy the installer image (.iso) to a DVD. If desired, you can also copy the installer image (.iso) to a USB drive (at least 1 GB).

**TIP** We are using VMware vSphere Hypervisor as an example, but you can use other hypervisors with this procedure.

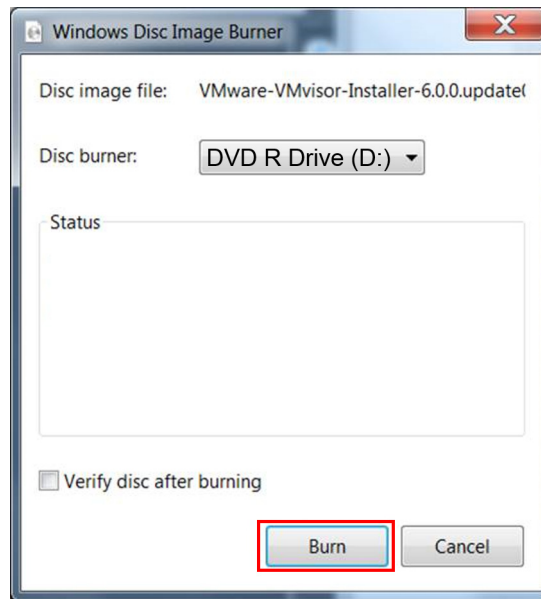
### Copy Installer Image to DVD

Complete these steps to copy the hypervisor installer image (.iso) to a DVD.

1. Right-click the downloaded installer image and choose Burn disk image.



2. Select the DVD drive to write the data, and click Burn.



3. When the DVD is completed, click Close.

## Copy Installer Image to USB Drive

---

**IMPORTANT** Before starting this procedure, make sure that the USB drive has enough space on it to hold the 'ISO' file.

---

Complete these steps to copy the hypervisor installer image (.iso) to a USB drive.

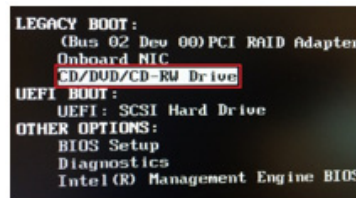
1. Right-click the downloaded installer image and choose copy.
2. Select a location on the USB drive, right-click, and choose paste.
3. When the file copy is completed, you can remove the USB drive.

## Use a DVD or USB Drive to Start Server

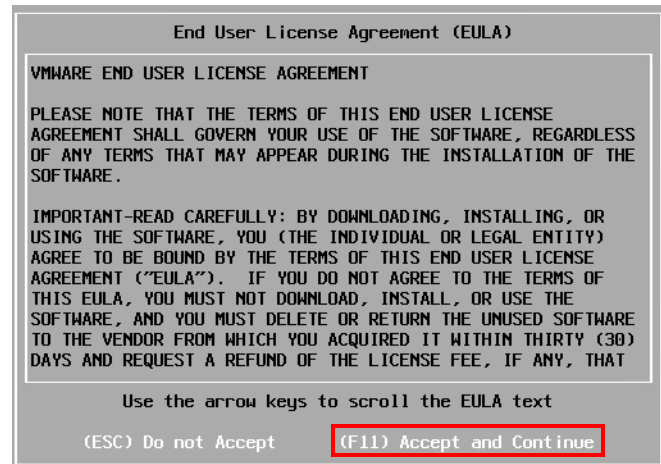
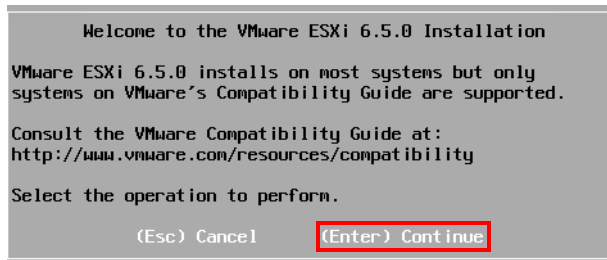
When you start the server, make sure to choose the DVD or USB drive that contains the installer image as the booting address. Complete these steps to install the ESXi (hypervisor).

1. Insert the DVD or USB drive into the host physical server.

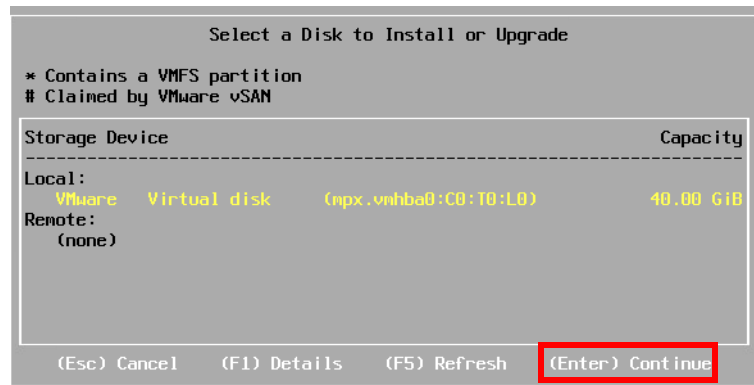
2. Choose the optional booting address during the server startup.



3. Press Enter to continue.
4. On the End User License Agreement (EULA) page, read the EULA, and press F11 to accept the terms of the EULA and continue.



5. Select the disk to install the vSphere Hypervisor and press Enter to continue.



6. Select the desired keyboard and press Enter to continue.

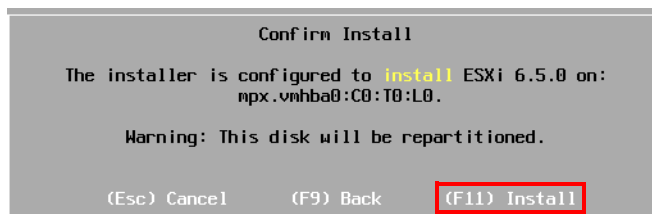


7. Type a root password, retype the password, and press Enter to continue.

**TIP** Remember this password; you use it again in future steps.

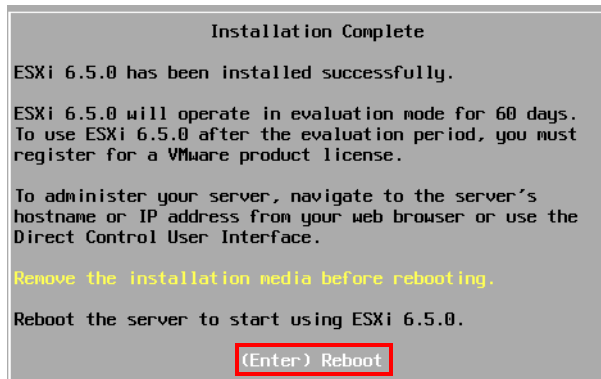
A message appears when the system scans for information. This scan can take a few minutes.

8. Press F11 to Install.



The Installation Complete dialog box appears.

9. Remove the DVD or USB device and press Enter to shut down and restart.



The server shutdown and restart can take a few minutes.



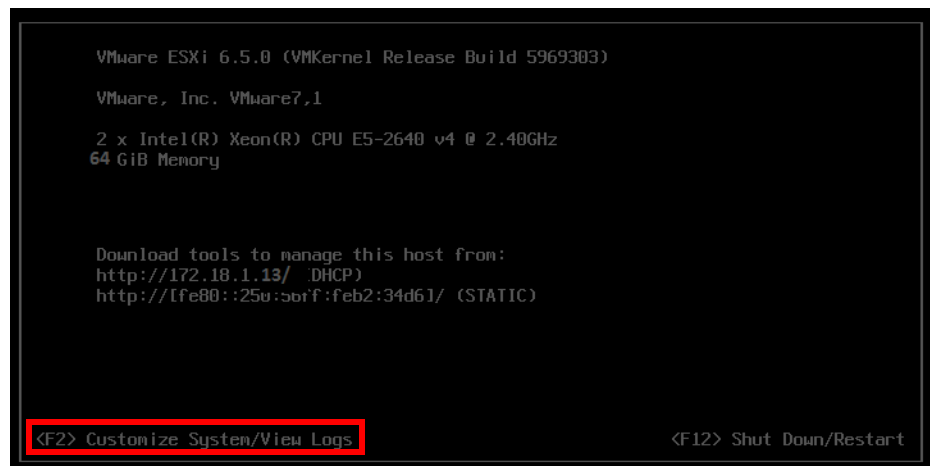
## Assign an IP Address to the Host

You must assign an IP address to the host so that it is on the desired network and can communicate with the client workstations. For example, you can deploy a virtual image template in this server remotely from another workstation on the same network.

**TIP** For the screens in this section, use the arrow keys on your keyboard to move between the fields on the pages.

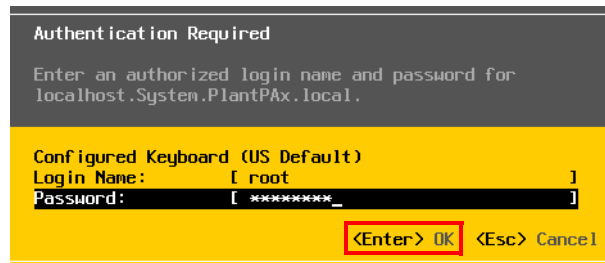
Complete these steps.

1. After the system restarts, press F2 to Customize System/View Logs.



2. Type the Login name and password.

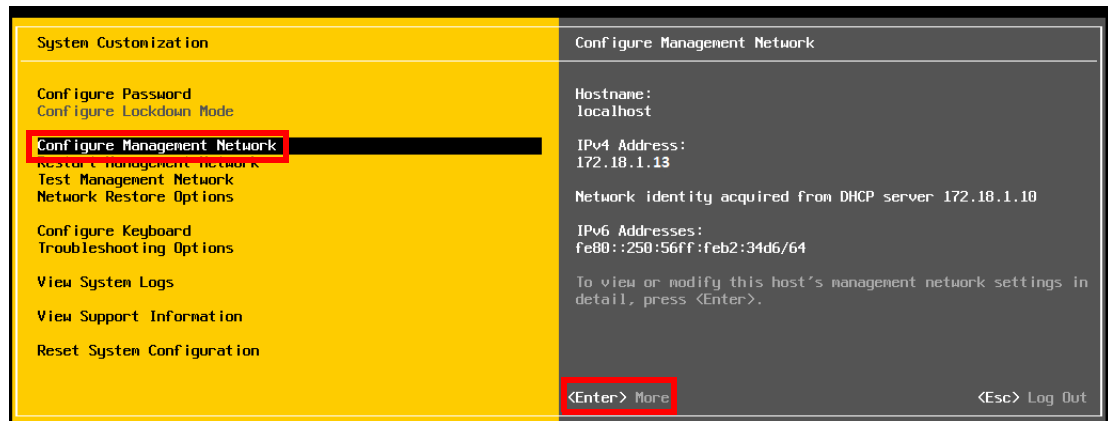
Use the Login name and password that you created in [step 7 on page 24](#).



3. Press Enter to OK.

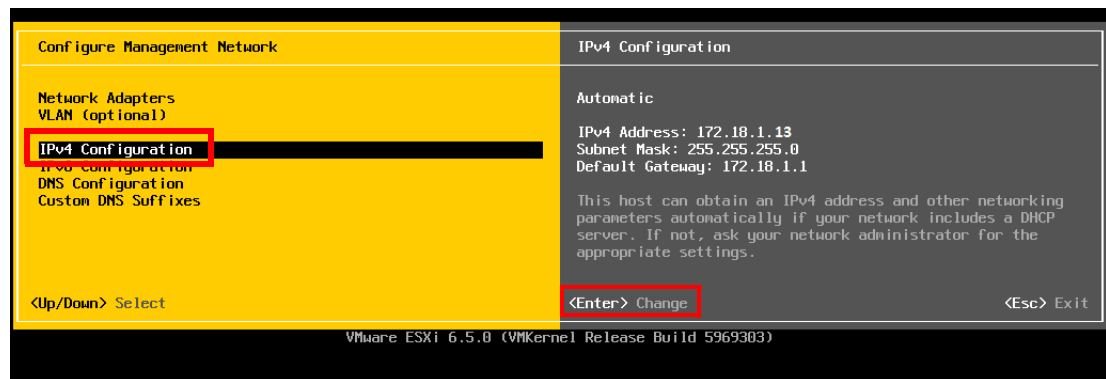
The System Customization page appears.

4. Use the arrow keys to move to 'Configure Management: Network' and press Enter.



The Configure Management Network page appears.

5. Move to 'IPv4 Configuration' and press Enter to change.

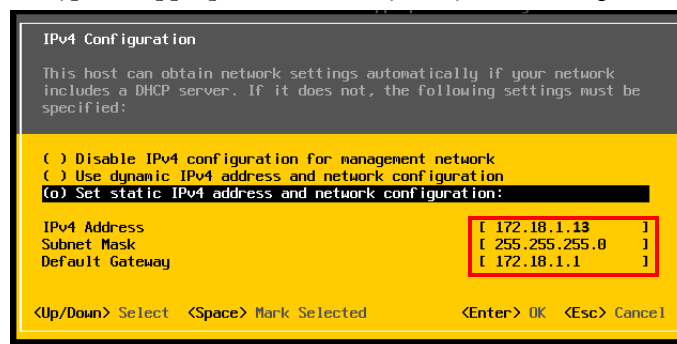


The IPv4 Configuration page appears.

6. Move to 'Set static IP Address and network configuration' and press the Space bar.

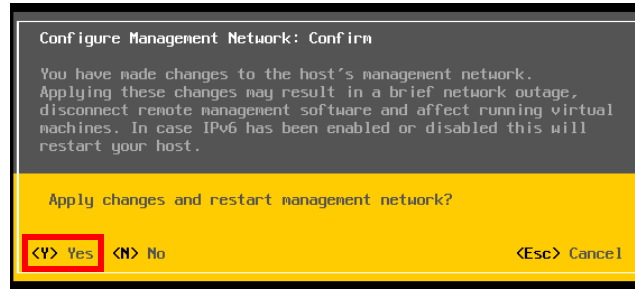
The presence of a small circle between the parentheses indicates that this option is selected.

7. In turn, move to the IP address, Subnet Mask, and default gateway address and type the appropriate values for your system and organization.



8. After you have typed the addresses, press <Enter> to OK.
9. On the Configuration Management Network page, press <Esc> to Exit.

A message appears to confirm that you want to change the management network of the host.



10. Press 'Y' for Yes.
11. On the System Customization screen, press <Esc> to log out.

You have assigned an IP address to the host server.

## Using a vSphere Web Client

After the ESXi (hypervisor) is installed, the simplest way to connect directly to one host server is with a vSphere Web Client. If you have multiple ESXi hosts, we recommend that you configure a vCenter Server that offers additional functionality. Through the vSphere Web Client, you can add, delete, and manage the virtual machines on your infrastructure.

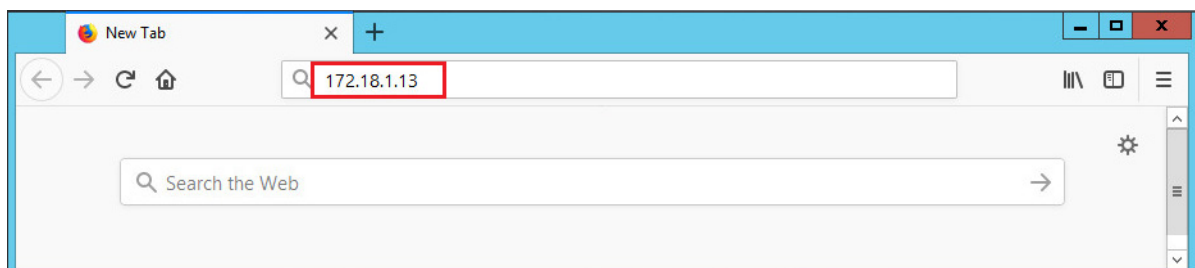
**TIP** This section describes how to use a web browser for vSphere software, version 6.0 or later. The following steps are similar for the vSphere Client application, which you use to interface ESXi 6.0 or earlier.

This section explains how to activate your vSphere license. The vSphere Web Client resides on a computer that is being used to connect to the server where the virtual templates are deployed. You can use any web browser with these steps. A Firefox browser is shown with our examples.

To use a vSphere Web Client, for the first time, complete these steps.

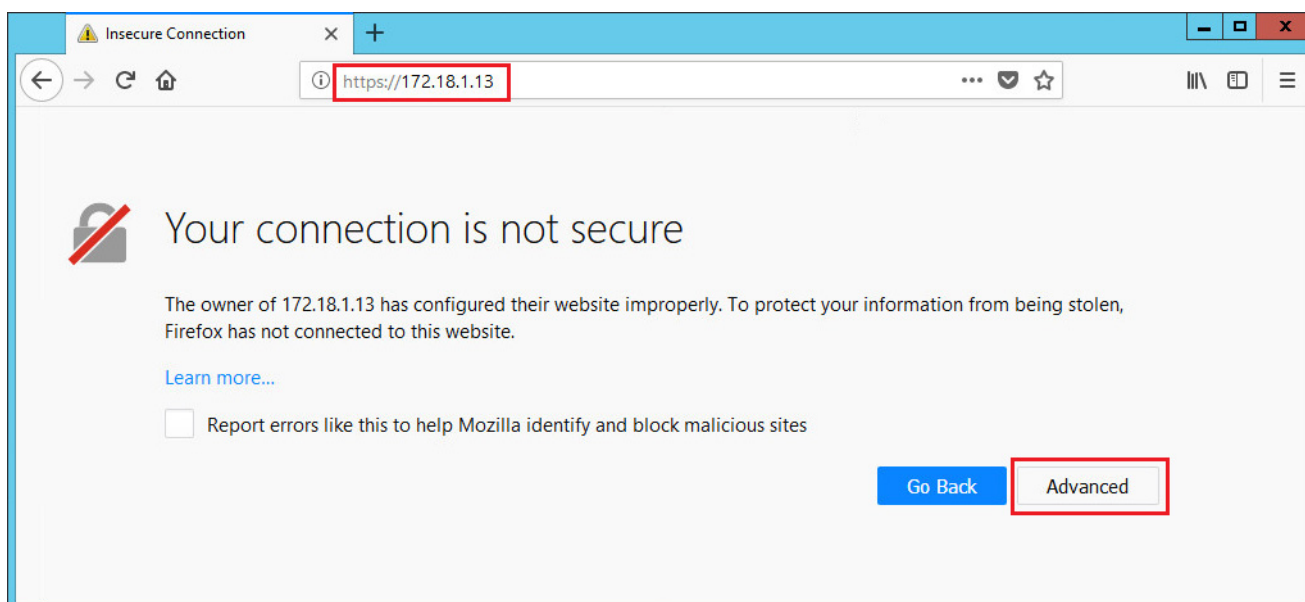
1. Open a web browser and type the IP address that you created for the hypervisor host.

Use the IP address that you entered for [step 7 on page 26](#).



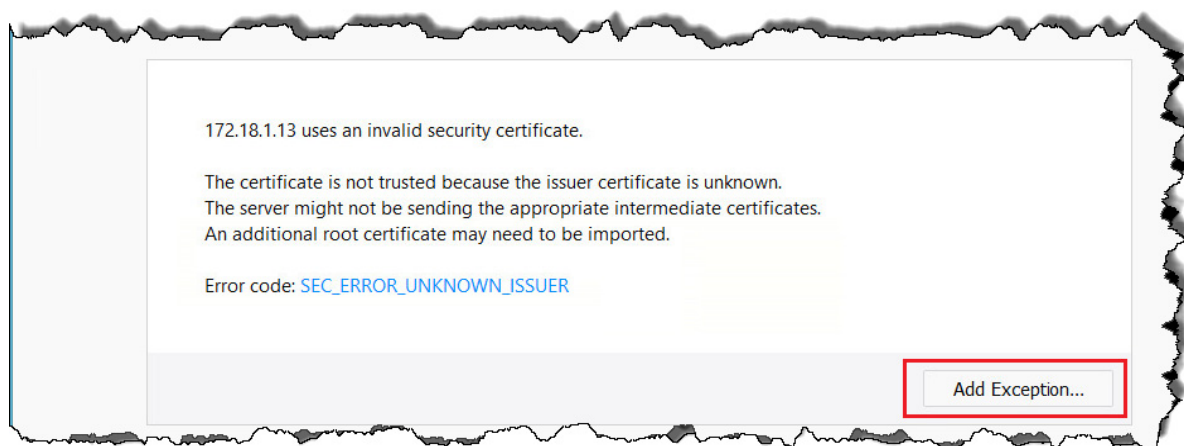
A security warning appears the first time that you connect to the ESXi host server.

2. Click Advanced.



The security warning expands with an invalid certificate message.

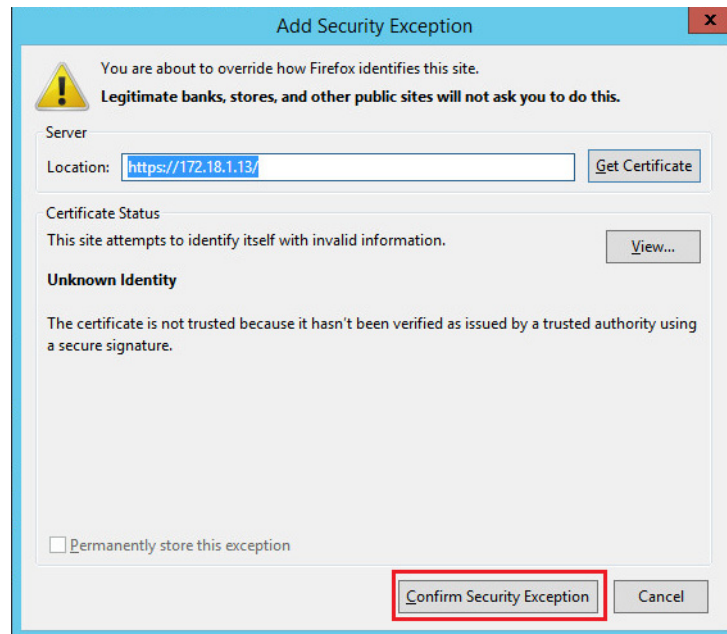
3. Click Add Exception.



The Add Security Exception dialog box appears.

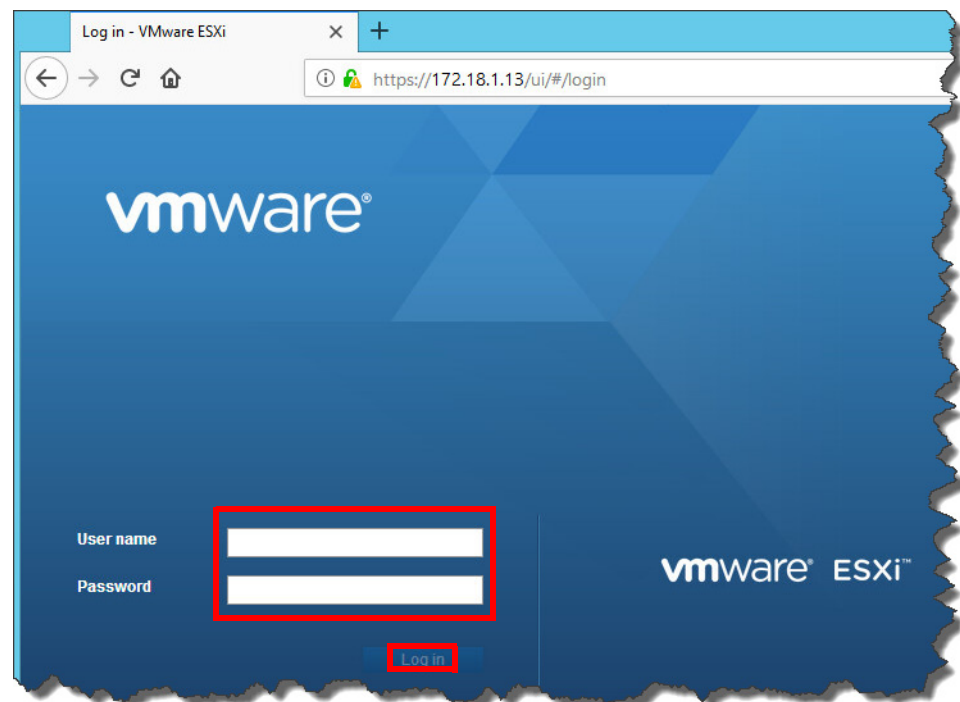
4. To ignore the warning, click Confirm Security Exception.

Contact your IT department if you want a security certificate for your ESXi host server.



The VMware ESXi Host login dialog box appears.

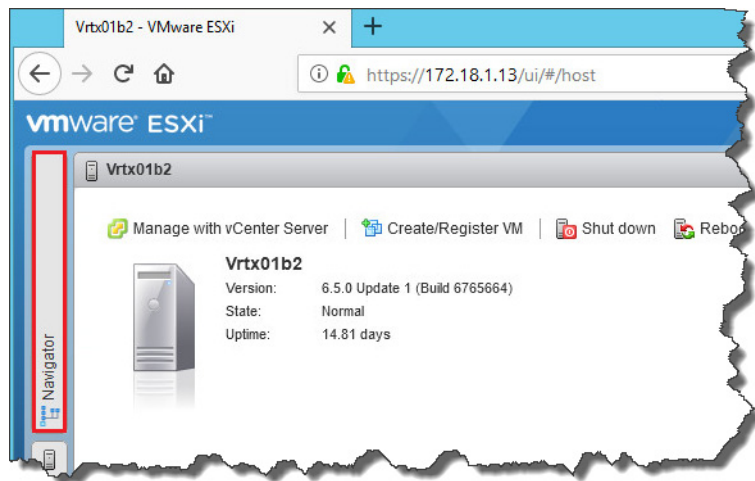
5. Type the user name and password that you created in [step 7 on page 24](#).



6. Click Log in.

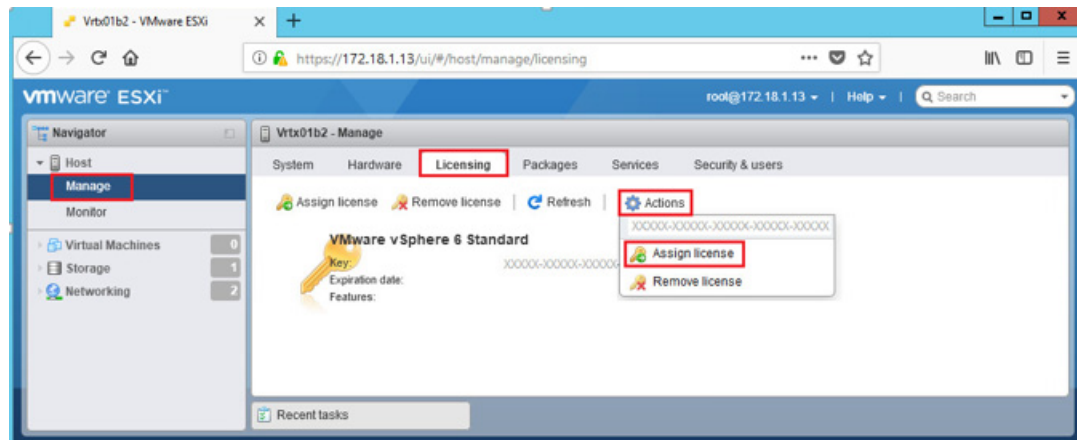
The ESXi Web Client window appears.

7. To open the Navigator, click the Navigator button.

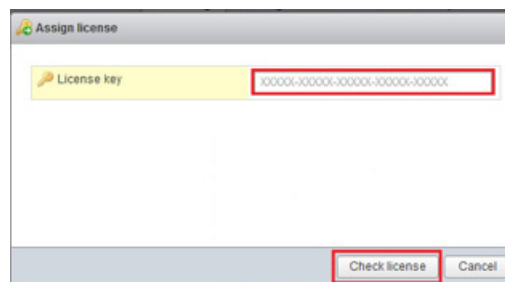


The Navigator Window opens in the left pane.

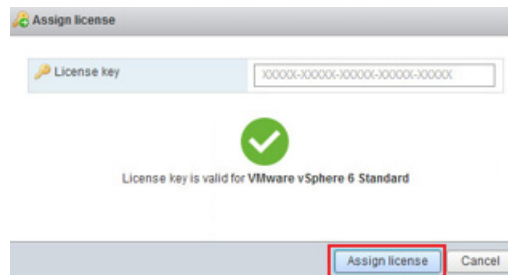
8. Click Manage.



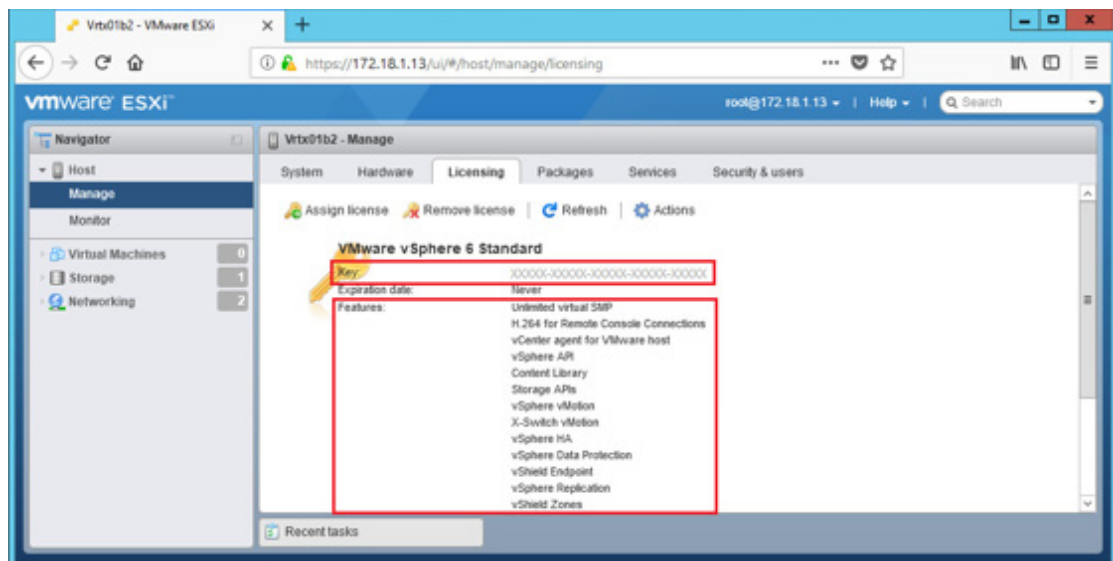
9. Click the Licensing tab, then choose Assign license under Actions.
10. Type your license key and click Check license.



11. When the license is validated, click Assign license.



Features that are associated with the license key appear.



Proceed to [Chapter 2](#) for instructions on how to deploy PlantPAx virtual image templates to create virtual machines within your system.

## **Notes:**



# Deploy the PlantPAx Virtual Image Templates

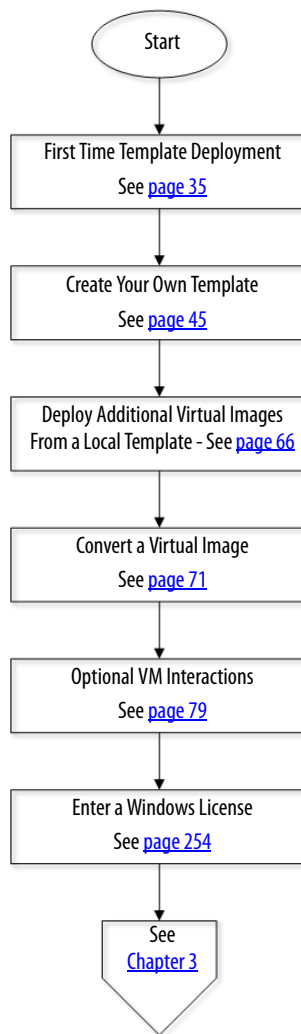
Distributed control systems are composed of several industry-accepted system elements. Virtual Image Templates are virtualized system elements, which contain the software and tools that comprise a specific system element. The templates are a framework to deploy the necessary system elements for a PlantPAx® system in a virtual environment conveniently and consistently.

This chapter describes different types of deployments for Virtual Image Templates. A template is a master copy of a virtual machine. Once deployed, the templates provide pre-configured settings for each virtual machine.

A virtual machine acts independently and has its own resource allocation from the host. You interact with virtual machines as if they are on a dedicated workstation with their own physical resources.

[Figure 2](#) contains the topics that are described in this chapter. See the page number or click the links for quick access to specific information.

**Figure 2 - Virtual Template Deployment Workflow**



## Deploy a Virtual Image Template for the First Time

This section describes how to deploy a virtual image for the first time. The virtual image can be deployed from the USB drive that is shipped or from a storage location on a workstation. This workstation is the computer that you are using to connect to the server you plan to use as the host server. The deployment procedure is applicable to all PlantPAx virtual templates.

This procedure must be followed every time a virtual image template is deployed for the **first** time into your system.

---

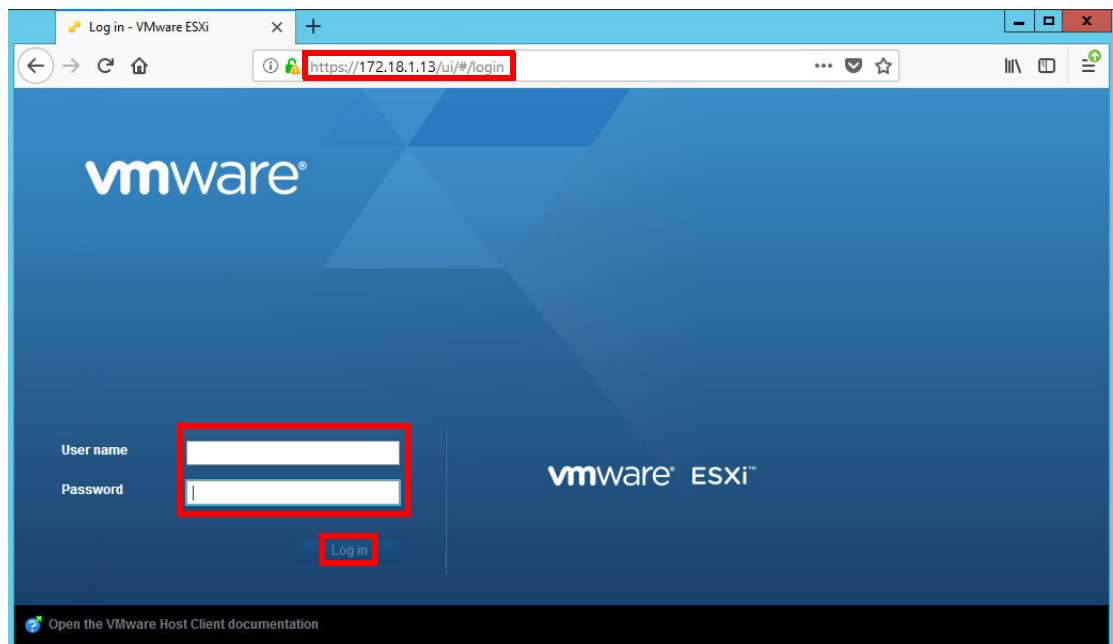
**IMPORTANT** If you plan to deploy a domain controller, we suggest you start with this template. The PADC template facilitates future activities, such as creating your own virtual image templates and deploying virtual images to your system at your convenience.

---

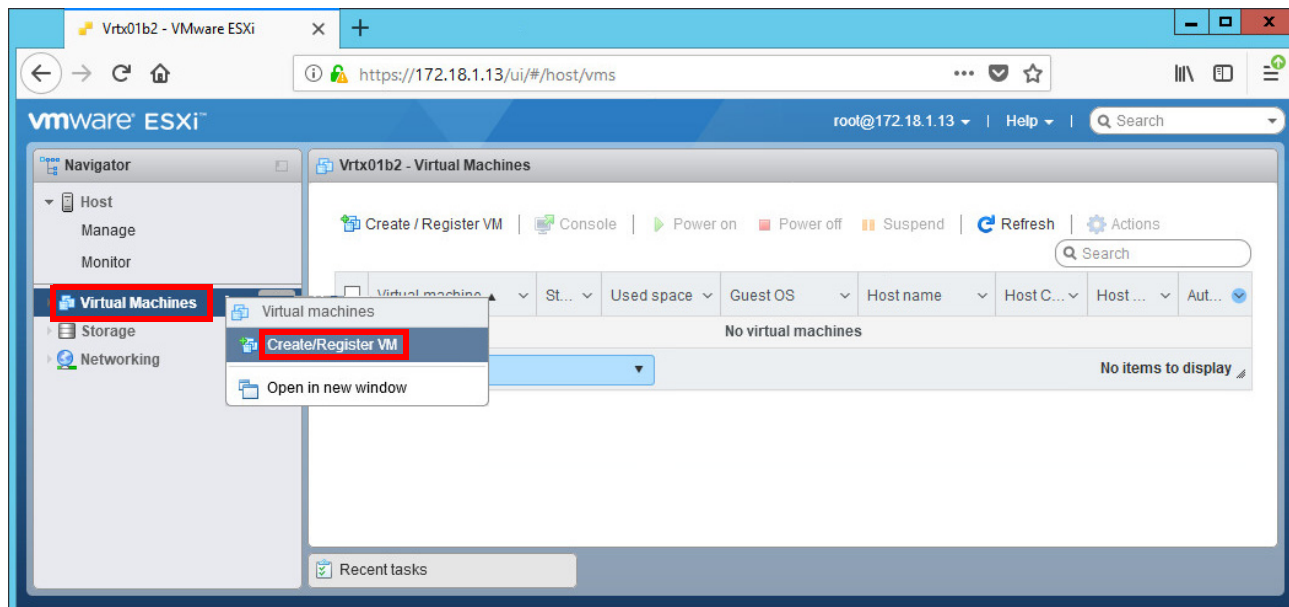
To deploy a virtual image template for the first time, complete these steps.

**TIP** Before deploying a virtual image from a virtual image template, we advise you to copy the virtual image template to your local hard disk drive. Copy the template to save time during the deployment process.

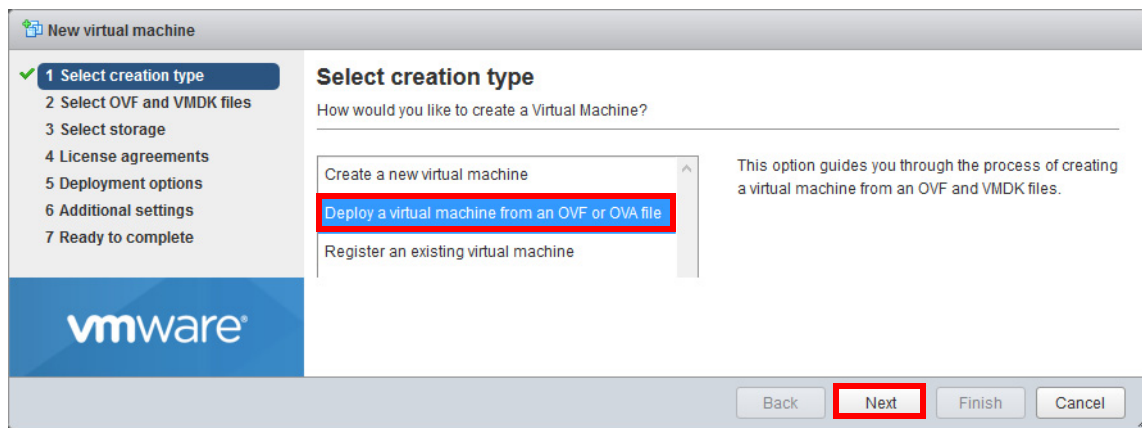
1. Open a web browser and type the IP address that you created for the host server.
2. Type the user name and password for the EXSi host, and click Log in.



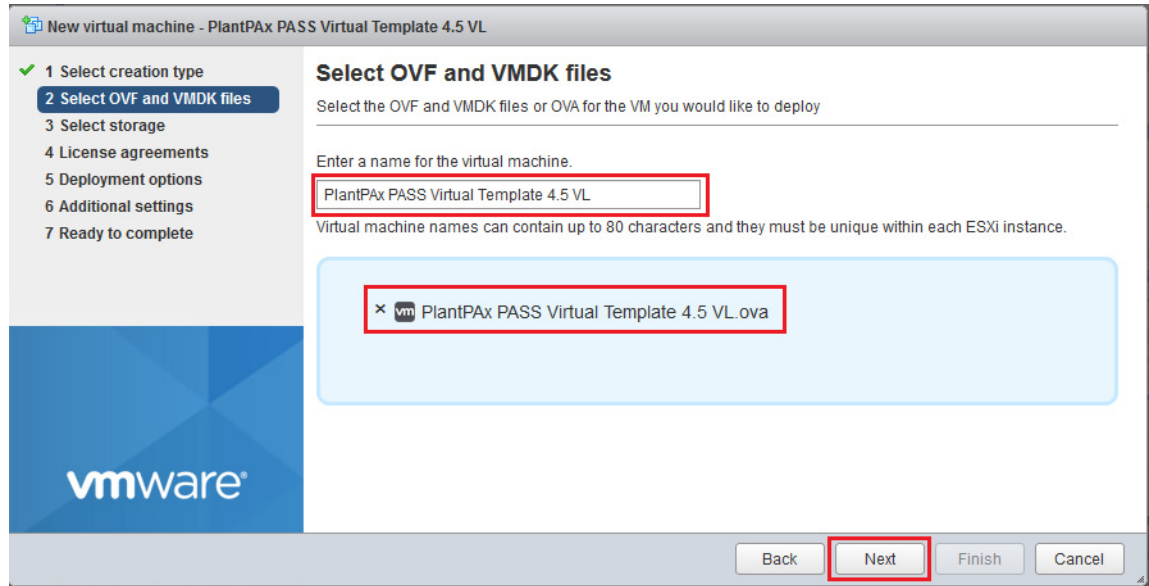
3. In the Navigator pane, click Virtual Machines and choose Create/Register VM.



4. Click 'Deploy a virtual machine from an OVF or OVA file' and click Next.

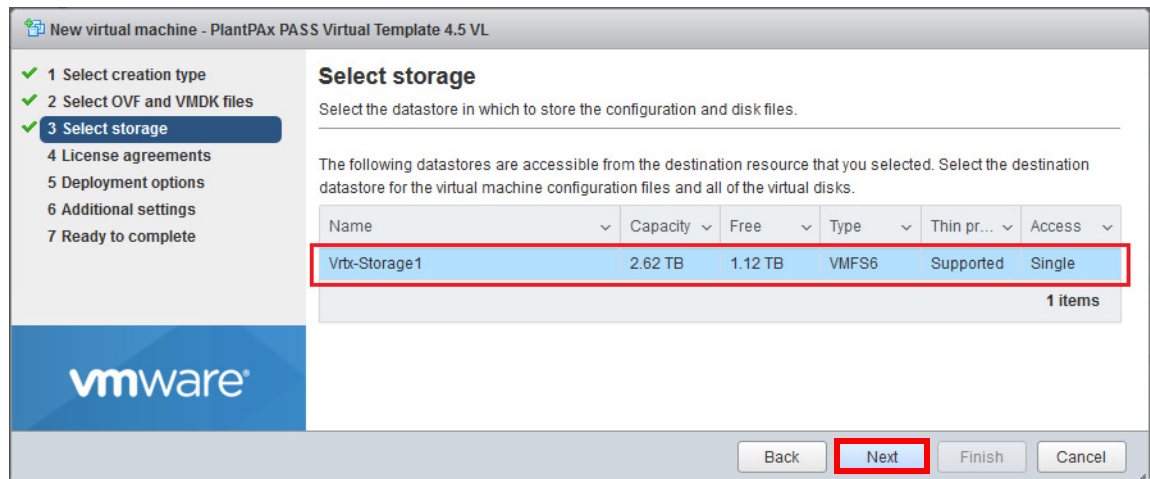


5. Type a name for the virtual machine.  
Click in the shaded area and select the .ova file to be used and click Next.  
The virtual file displays with the name.



6. Select the datastore for your configuration and disk files storage.

7. Click Next.



### IMPORTANT

There are two main formats for storing virtual images: OVF (open virtual format) and OVA (open virtual appliance). Our templates are for appliances, which are self-contained virtual system elements. VMware software labels the wizard 'OVF Template' but ignore because your PlantPax Virtual Image Templates in the OVA format are suitable for this procedure.

8. Use defaults for network mapping and disk provisioning, and click 'Power on automatically.'

9. Click Next.

The screenshot shows the 'Deployment options' step of the VMware Workstation wizard. On the left, a progress bar indicates the steps: 1 Select creation type, 2 Select OVF and VMDK files, 3 Select storage, 4 Deployment options (current), and 5 Ready to complete. The main area is titled 'Deployment options' with the subtitle 'Select deployment options'. It contains three sections: 'Network mappings' with a dropdown menu set to 'VM Network', 'Disk provisioning' with radio buttons for 'Thin' (selected) and 'Thick', and 'Power on automatically' with an unchecked checkbox. At the bottom right, there are four buttons: 'Back', 'Next' (highlighted with a red box), 'Finish', and 'Cancel'.

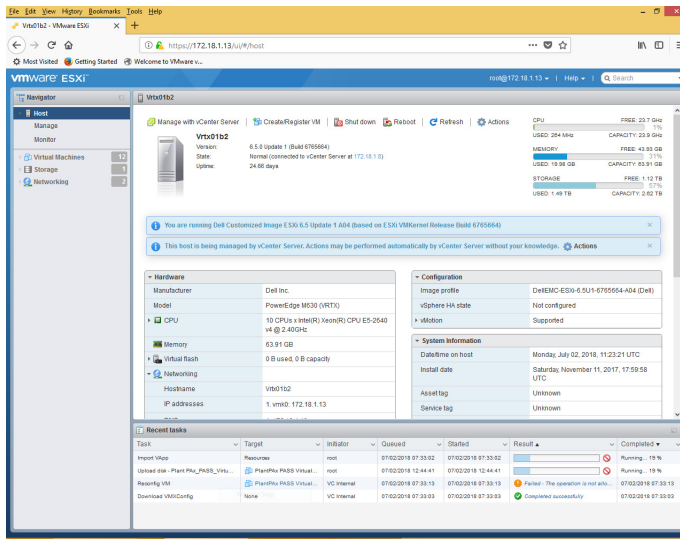
10. Click Finish.

The screenshot shows the 'Ready to complete' step of the VMware Workstation wizard. On the left, the progress bar now highlights step 5 'Ready to complete'. The main area is titled 'Ready to complete' with the subtitle 'Review your settings selection before finishing the wizard'. It contains a table summarizing the configuration:

Product	PlantPAx PASS Virtual Template 4.5 VL
VM Name	PlantPAx PASS Virtual Template 4.5 VL
Disks	PlantPAx_PASS_Virtual_Template_4.5_VL-disk1.vmdk
Datastore	Vrbx-Storage1
Provisioning type	Thin
Network mappings	VM Network: VM Network
Guest OS Name	Microsoft Windows Server 2012 (64-bit)

Below the table, there is a yellow warning icon and the text: 'Do not refresh your browser while this VM is being deployed.' At the bottom right, there are four buttons: 'Back', 'Next', 'Finish' (highlighted with a red box), and 'Cancel'.

The virtual template uploads.



The completion percentage of the upload is shown at the bottom of the dialog box.

Task	Target	Initiator	Queued	Started	Result	Completed
Import VApp	Resources	root	07/02/2018 07:33:02	07/02/2018 07:33:02	Running... 7 %	
Upload disk - Plant Pax_PASS_Virtu...	PlantPax PASS Virtual...	root	07/02/2018 12:44:41	07/02/2018 12:44:41	Running... 7 %	

The Result column shows 'Completed successfully' when the template upload finishes.

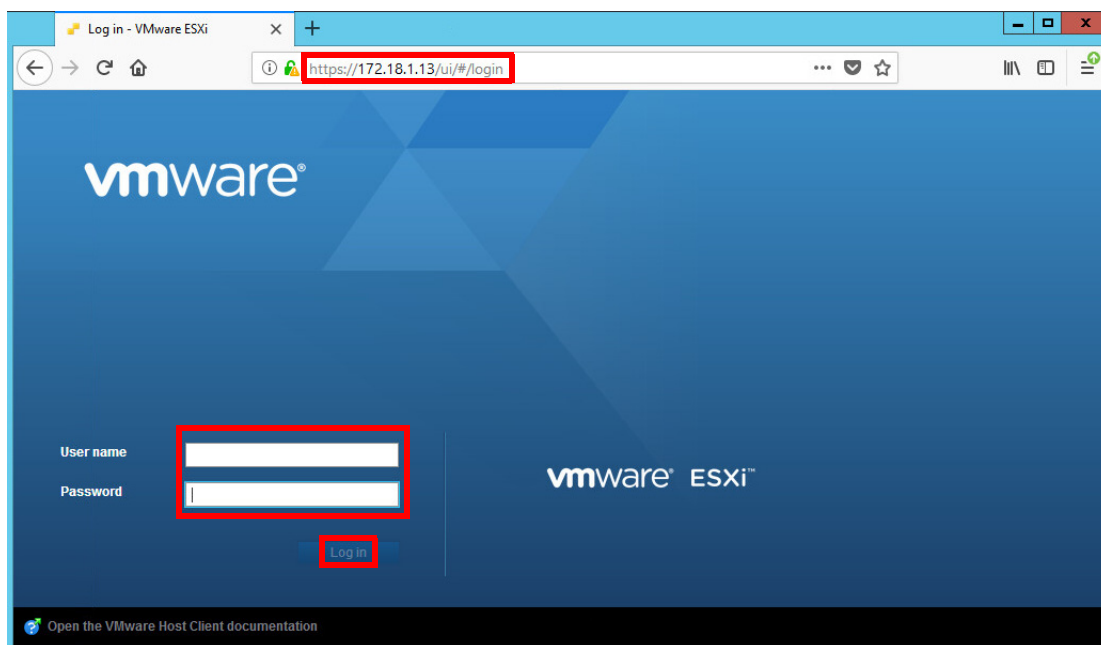
Target	Task	Initiator	Queued	Started	Result	Completed
PlantPax PASS Virtual Te...	Upload disk - Plant Pax_PASS_Virtu...	root	07/02/2018 12:44:41	07/02/2018 12:44:41	Completed successfully	07/02/2018 12:50:27
None	Download VMXConfig	VC Internal	07/02/2018 07:39:13	07/02/2018 07:39:13	Completed successfully	07/02/2018 07:39:13
PlantPax PASS Virtual Te...	Reconfig VM	VC Internal	07/02/2018 07:39:13	07/02/2018 07:39:13	Completed successfully	07/02/2018 07:39:13
None	Download VMXConfig	VC Internal	07/02/2018 07:39:03	07/02/2018 07:39:03	Completed successfully	07/02/2018 07:39:03
Resources	Import VApp	root	07/02/2018 07:33:02	07/02/2018 07:33:02	Completed successfully	07/02/2018 07:38:54

## Power Up the Virtual Machine

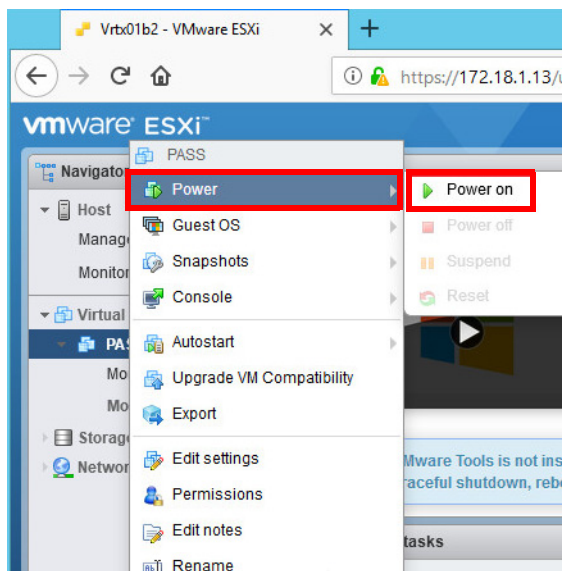
To power up a virtual image template for the first time, complete these steps.

**TIP** Before powering up a virtual machine, consider creating a template of it for future deployments.

1. Open a web browser and type the IP address that you created for the host server.
2. Type the user name and password for the local host, and click Log in.



3. Right-click the Virtual Machine and choose Power>Power on.





---

**IMPORTANT** When powering up the virtual machine for the first time, the screen can remain black for several minutes.

---

After powering up the virtual machine, do the following:

- If you are deploying a virtual workstation, see [Configure Microsoft Windows 10 on page 91](#)
- If you are deploying a virtual server, see [Configure Microsoft Windows Server 2012 on page 107](#)

## Install VMware Tools

The VMware vSphere Client software has better graphic performance with the VMware Tools SVGA driver installed. The VMware Tools package also supports required shared folders and drag and drop features.

Other tools in the package support synchronization of time in the guest operating system, copy and paste between guest and host, and improved mouse performance in some guest operating systems.

Complete these steps to install or upgrade VMware tools on the VMware Virtual Machine.

---

**IMPORTANT** Images that are shown in this section are VMware vSphere software, version 6.5.

---

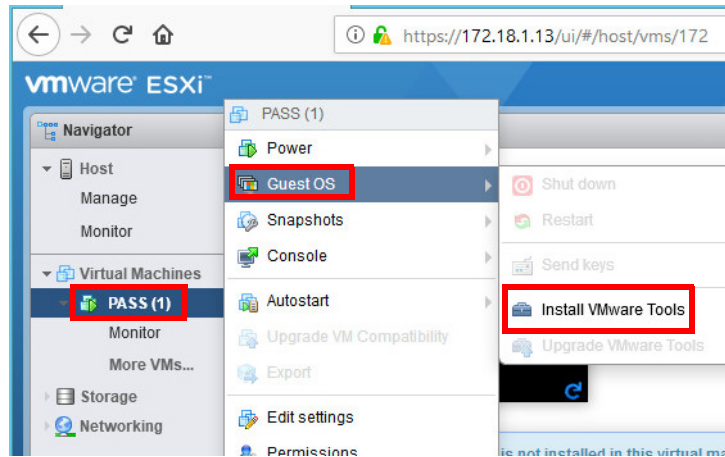
1. Open a web browser and type the IP address that you created for the host server.
2. Type the user name and password for the local host, and click Log in.  
The VMware ESXi window appears.
3. From the Navigator in the left pane, right-click the virtual machine in which you want to update or install VMware Tools.

4. Click Guest OS and choose Install VMware Tools.

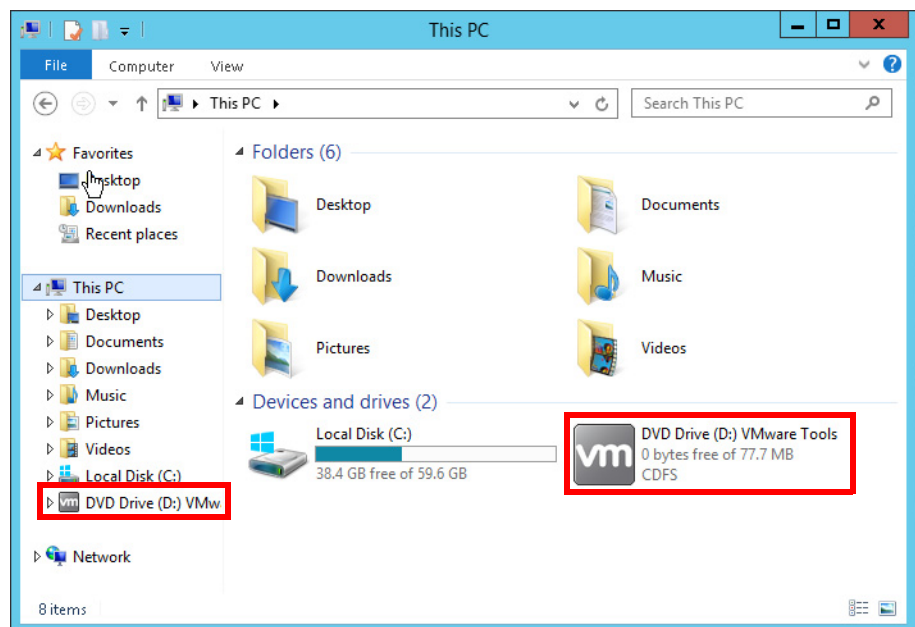
---

**IMPORTANT** The guest OS of the virtual machine must be running.

---

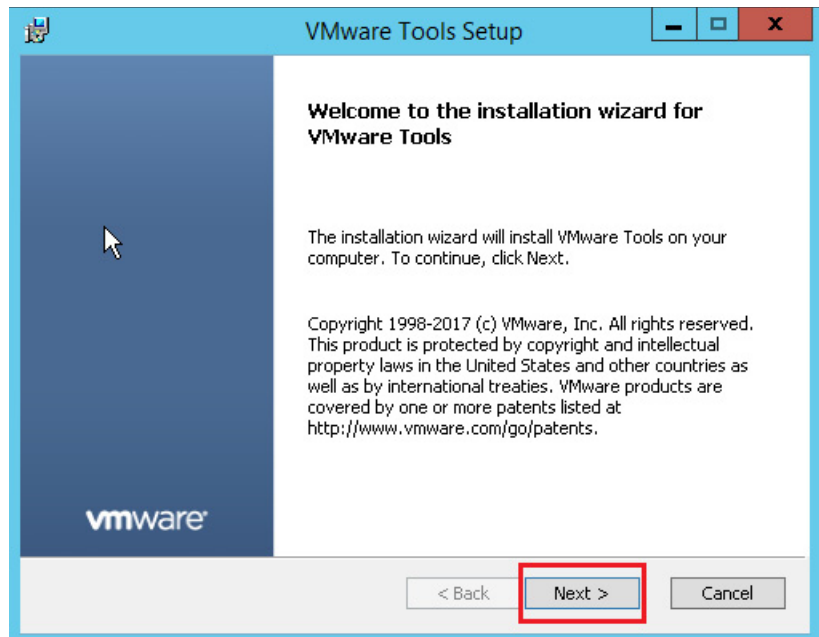


5. Open Windows Explorer on the virtual machine image that you want to install VMware Tools.
6. Click 'This PC' to view the tools to install on Drive D.

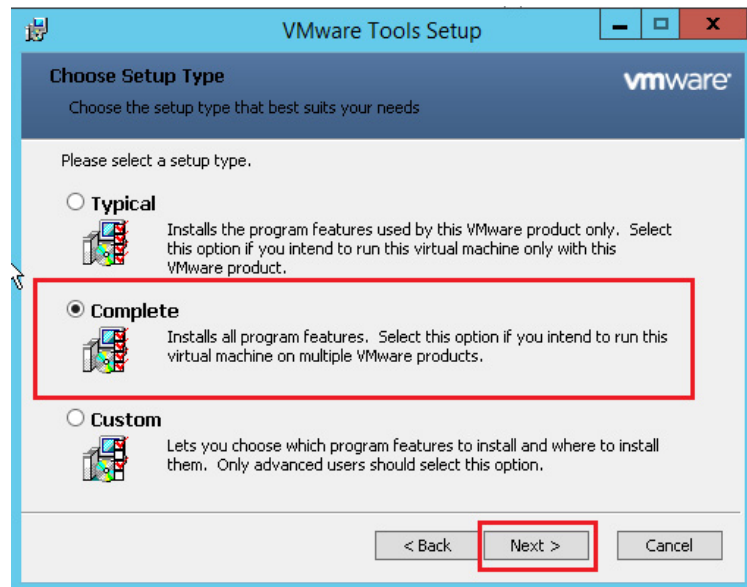


7. Double-click the DVD drive to initiate the install.

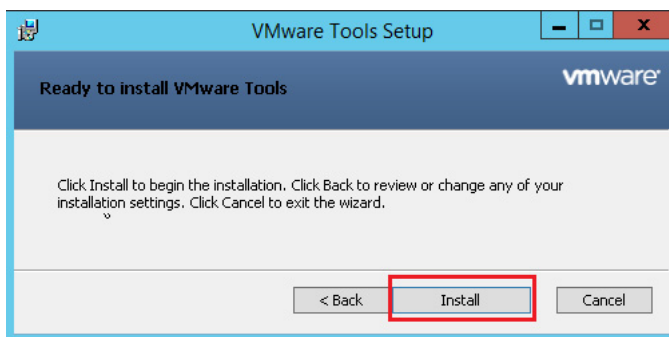
8. When the VMware Tools Setup Welcome window appears, click Next to continue.



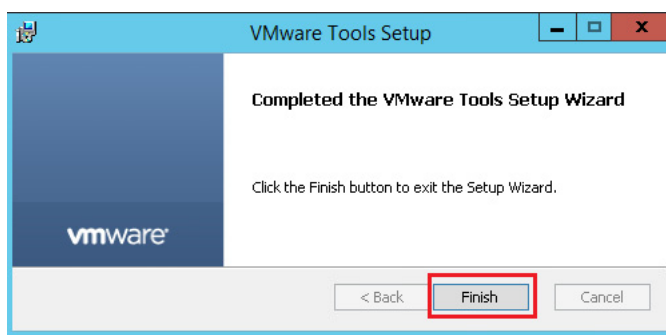
9. On the setup screen, click Complete and then click Next to continue.



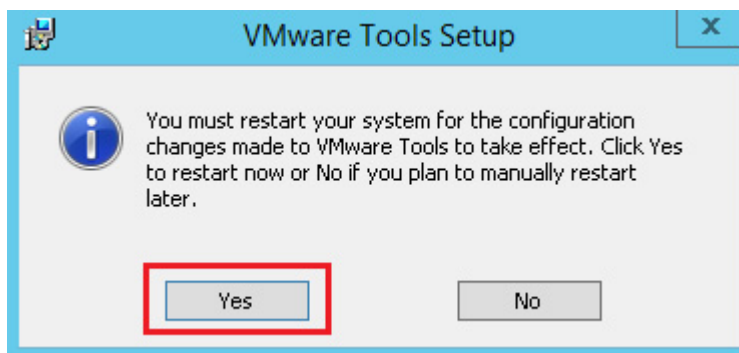
10. To start the installation process, click Install.



11. When the VMware Tools Setup popup window appears, click Finish.



12. To restart your virtual image and complete the VMware Tools Install Process, click Yes.



## Create a Template for Future Virtual Machine Deployments

This section shows how to create a template within a datacenter by using a previously deployed virtual image. A virtual machine is cloned, and the clone becomes a template. This template can be used to deploy other images. You can store the original template for safekeeping in case you modify your templates.

---

**IMPORTANT**

A datacenter is the primary container of inventory objects such as hosts and virtual machines. From the datacenter, you can add and organize inventory objects. Typically you add hosts, folders, and clusters to a datacenter.

A vCenter server can contain multiple datacenters. Larger organizations can use multiple datacenters to represent organizational units in their enterprise. Inventory objects can interact within datacenters, but interaction across datacenters is limited. For example, you can move a virtual machine with vMotion technology across hosts within a datacenter but not to a host in another datacenter.

---

### Create a vCenter Server

Before cloning the virtual image, configure a vCenter server. A vCenter server provides centralized management of virtualized hosts and virtual machines from one console. It gives administrators visibility into the configuration of the critical components of a virtual infrastructure—all from one place.

---

**IMPORTANT**

The workstation that you use to connect to and configure your host server can act as your vCenter server.

---

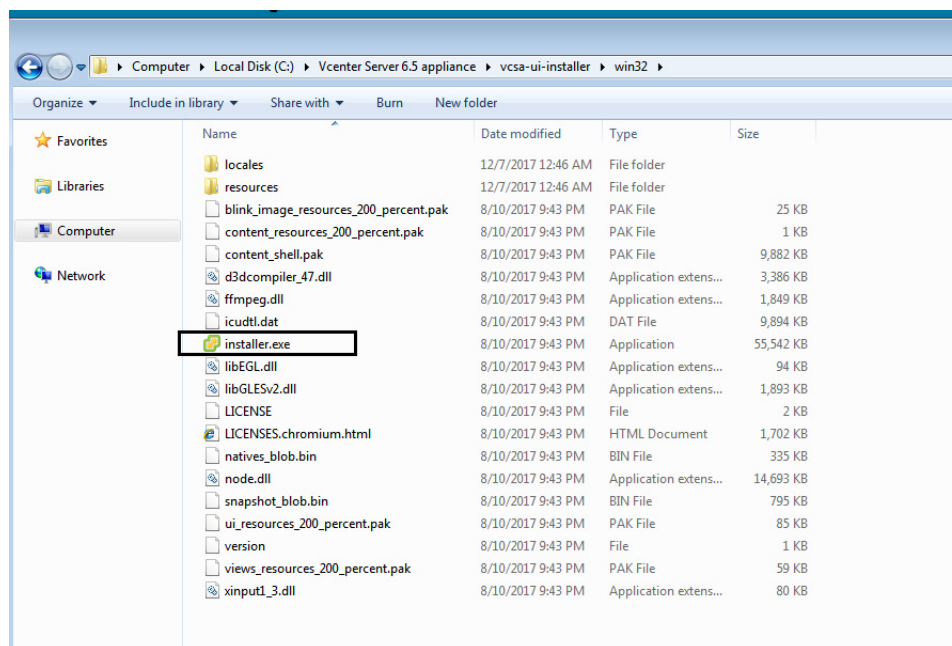
On the workstation you use to manage your virtual appliances (templates and machines), complete these steps.

1. On the VMware website, download the vCenter Server Appliance 6.5 software and mount the .iso image.

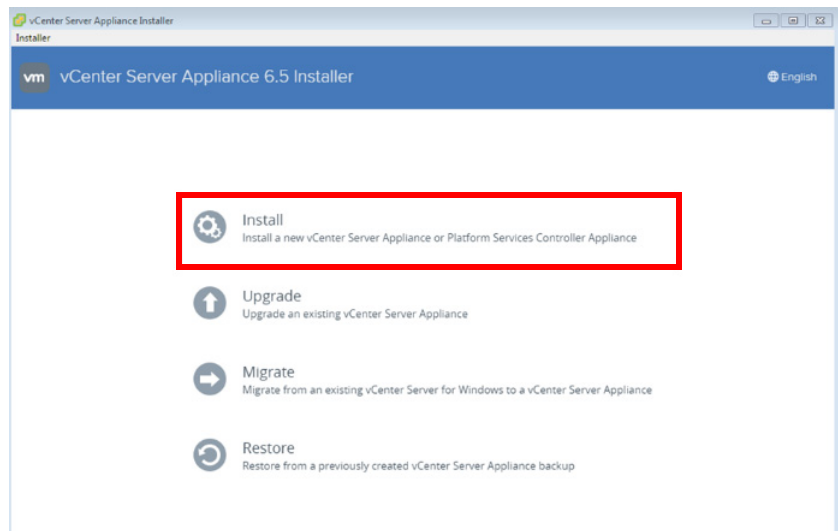
**TIP**

The steps to download the vCenter server software are similar to the steps used to download Hypervisor starting with [step 1 on page 19](#).

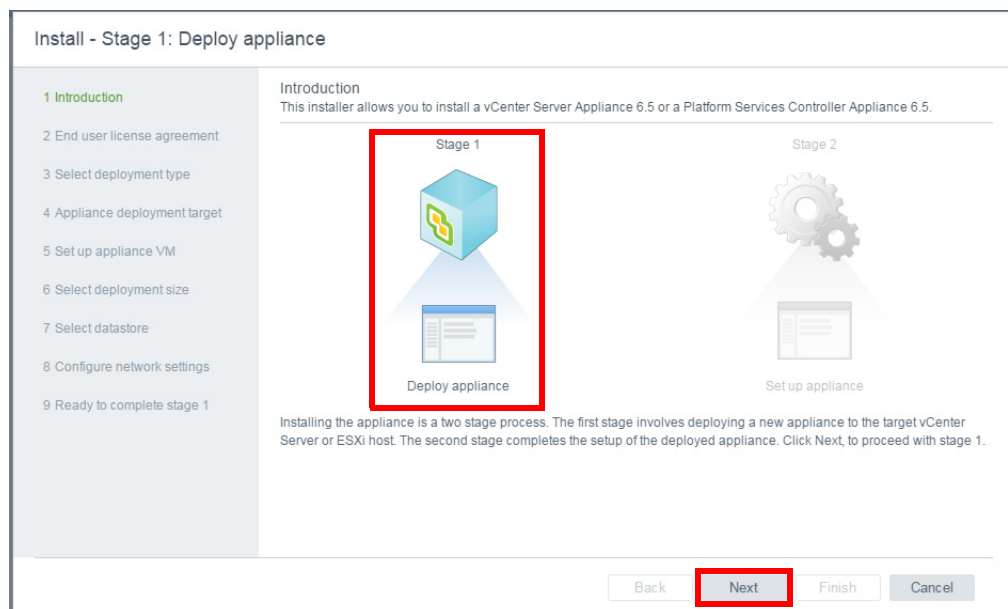
2. Start the vCenter Server Appliance 6.5 installer. Choose vCenter Server 6.5 appliance>vcsa-ui-installer>win32>installer.exe.



3. To install a new vCenter Server Appliance, click Install.



4. Click Deploy Appliance for Stage 1 and then click Next.



5. Check I accept the terms of the license agreement and then click Next.

**Install - Stage 1: Deploy appliance**

✓ 1 Introduction

2 End user license agreement

3 Select deployment type

4 Appliance deployment target

5 Set up appliance VM

6 Select deployment size

7 Select datastore

8 Configure network settings

9 Ready to complete stage 1

End user license agreement

Read and accept the following license agreement.

**VMWARE END USER LICENSE AGREEMENT**

PLEASE NOTE THAT THE TERMS OF THIS END USER LICENSE AGREEMENT SHALL GOVERN YOUR USE OF THE SOFTWARE, REGARDLESS OF ANY TERMS THAT MAY APPEAR DURING THE INSTALLATION OF THE SOFTWARE.

**IMPORTANT-READ CAREFULLY:** BY DOWNLOADING, INSTALLING, OR USING THE SOFTWARE, YOU (THE INDIVIDUAL OR LEGAL ENTITY) AGREE TO BE BOUND BY THE TERMS OF THIS END USER LICENSE AGREEMENT ("EULA"). IF YOU DO NOT AGREE TO THE TERMS OF THIS EULA, YOU MUST NOT DOWNLOAD, INSTALL, OR USE THE SOFTWARE, AND YOU MUST DELETE OR RETURN THE UNUSED SOFTWARE TO THE VENDOR FROM WHICH YOU ACQUIRED IT WITHIN THIRTY (30) DAYS AND REQUEST A REFUND OF THE LICENSE FEE, IF ANY, THAT YOU PAID FOR THE SOFTWARE.

**EVALUATION LICENSE.** If You are licensing the Software for evaluation purposes, Your use of the Software is only permitted in a non-production environment and for the period limited by the License Key. Notwithstanding any other provision in this EULA, an Evaluation License of the Software is provided "AS-IS" without indemnification, support or warranty of any kind, expressed or implied.

**1. DEFINITIONS.**

☒ I accept the terms of the license agreement

Back

**Next**

Finish

Cancel

6. Click vCenter Server with an Embedded Platform Services Controller and then click Next.

**Install - Stage 1: Deploy appliance**

✓ 1 Introduction

✓ 2 End user license agreement

3 Select deployment type

4 Appliance deployment target

5 Set up appliance VM

6 Select deployment size

7 Select datastore

8 Configure network settings

9 Ready to complete stage 1

Select deployment type

Select the deployment type you want to configure on the appliance.

For more information on deployment types, refer to the vSphere 6.5 documentation.

**Embedded Platform Services Controller**

☒ vCenter Server with an Embedded Platform Services Controller

**External Platform Services Controller**

☐ Platform Services Controller

☐ vCenter Server (Requires External Platform Services Controller)

Back

**Next**

Finish

Cancel



7. Enter the ESXi host information of the location where the vCenter server appliance is deployed, and enter the host credentials. Click Next to continue.

Install - Stage 1: Deploy vCenter Server with an Embedded Platform Services Controller

✓ 1 Introduction  
✓ 2 End user license agreement  
✓ 3 Select deployment type  
4 Appliance deployment target  
5 Set up appliance VM  
6 Select deployment size  
7 Select datastore  
8 Configure network settings  
9 Ready to complete stage 1

Appliance deployment target  
Specify the appliance deployment target settings. The target is the ESXi host or vCenter Server instance on which the appliance will be deployed.

ESXi host or vCenter Server name  ⓘ  
HTTPS port   
User name  ⓘ  
Password

Back Next Finish Cancel

8. Click Yes to accept the Certificate Warning.

**Certificate Warning**

If an untrusted SSL certificate is installed on 172.18.1.12, secure communication cannot be guaranteed. Depending on your security policy, this issue might not represent a security concern.

The SHA1 thumbprint of the certificate is:  
E9:03:84:4C:D6:B6:9C:37:C2:68:9B:54:C5:B1:BD:1F:95:E4:C0:4A

To accept and continue, click Yes

Yes No

9. Enter the name for the appliance and set the root password. Click Next to continue.

Install - Stage 1: Deploy vCenter Server with an Embedded Platform Services Controller

1 Introduction  
2 End user license agreement  
3 Select deployment type  
4 Appliance deployment target  
5 Set up appliance VM  
6 Select deployment size  
7 Select datastore  
8 Configure network settings  
9 Ready to complete stage 1

Set up appliance VM  
Specify the VM settings for the appliance to be deployed.

VM name  ⓘ  
Root password  ⓘ  
Confirm root password

Back Next Finish Cancel

10. Select the deployment size for your environment. Click Next to continue.

Install - Stage 1: Deploy vCenter Server with an Embedded Platform Services Controller

1 Introduction  
2 End user license agreement  
3 Select deployment type  
4 Appliance deployment target  
5 Set up appliance VM  
6 Select deployment size  
7 Select datastore  
8 Configure network settings  
9 Ready to complete stage 1

Select deployment size  
Select the deployment size for this vCenter Server with an Embedded Platform Services Controller.

For more information on deployment sizes, refer to the vSphere 6.5 documentation.

Deployment size  ⓘ  
Storage size

Resources required for different deployment sizes

Deployment Size	vCPUs	Memory (GB)	Storage (GB)	Hosts (up to)	VMs (up to)
Tiny	2	10	250	10	100
Small	4	16	290	100	1000
Medium	8	24	425	400	4000
Large	16	32	640	1000	10000
X-Large	24	48	980	2000	35000

Back Next Finish Cancel

11. Select the datastore where the VCSA appliance will be stored. Click Next to continue.

Install - Stage 1: Deploy vCenter Server with an Embedded Platform Services Controller

1 Introduction  
2 End user license agreement  
3 Select deployment type  
4 Appliance deployment target  
5 Set up appliance VM  
6 Select deployment size  
7 **Select datastore**  
8 Configure network settings  
9 Ready to complete stage 1

Select datastore  
Select the storage location for this vCenter Server with an Embedded Platform Services Controller.

☒ Install on an existing datastore accessible from the target host

Name	Type	Capacity	Free	Provisi...	Thin Provisioni...
datastore1	VMFS	32.5 GB	31.55 GB	972 MB	true

1 items

☒ Enable Thin Disk Mode ⓘ

☐ Install on a new Virtual SAN cluster containing the target host ⓘ

Back Next Finish Cancel

12. Configure the networking for the VCSA appliance. Click Next to continue.

**IMPORTANT** Put the IP address that is used in both the DNS forward and reverse lookup zones.

Install - Stage 1: Deploy vCenter Server with an Embedded Platform Services Controller

1 Introduction  
2 End user license agreement  
3 Select deployment type  
4 Appliance deployment target  
5 Set up appliance VM  
6 Select deployment size  
7 Select datastore  
8 **Configure network settings**  
9 Ready to complete stage 1

Configure network settings  
Configure network settings for this vCenter Server with an Embedded Platform Services Controller.

Network: VM Network ⓘ

IP version: IPv4

IP assignment: static

System name: VRTXvCenter system plantpax.local ⓘ

IP address: 172.18.1.8

Subnet mask or prefix length: 255.255.255.0 ⓘ

Default gateway: 172.18.1.1

DNS servers: 172.18.1.10

Back **Next** Finish Cancel

13. Verify the configuration is correct on the summary dialog box and then click Finish.

Install - Stage 1: Deploy vCenter Server with an Embedded Platform Services Controller

✓ 1 Introduction

✓ 2 End user license agreement

✓ 3 Select deployment type

✓ 4 Appliance deployment target

✓ 5 Set up appliance VM

✓ 6 Select deployment size

✓ 7 Select datastore

✓ 8 Configure network settings

9 Ready to complete stage 1

Ready to complete stage 1

Review your settings before starting the appliance deployment.

Deployment Details

Target ESXi host	172.18.1.12
VM name	VRTXvCenter
Deployment type	vCenter Server with an Embedded Platform Services Controller
Deployment size	Tiny

Datastore Details

Datastore, Disk mode	datastore1, thin
----------------------	------------------

Network Details

Network	VM Network
IP settings	IPv4 , static
IP address	172.18.1.8
System name	vcenter65.system.plantpax.local
Subnet mask or prefix length	255.255.255.0
Default gateway	172.18.1.1
DNS servers	172.18.1.10

Back

Next

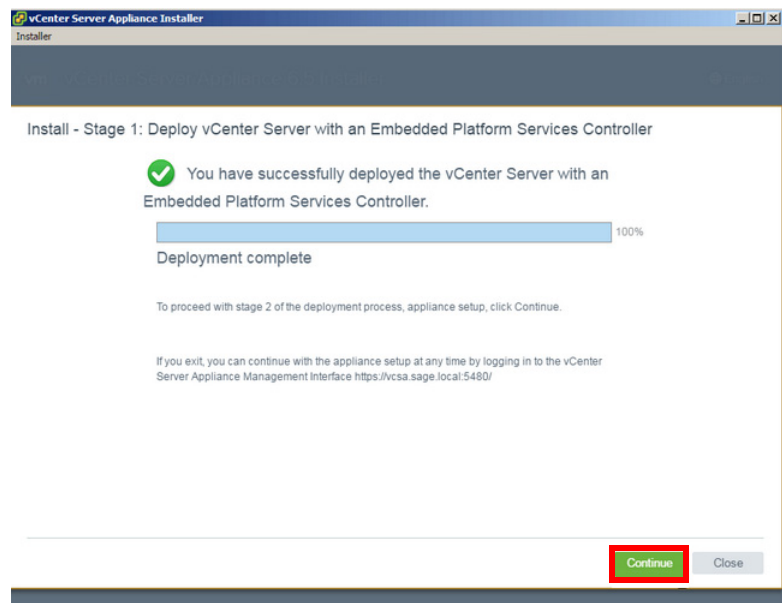
Finish

Cancel

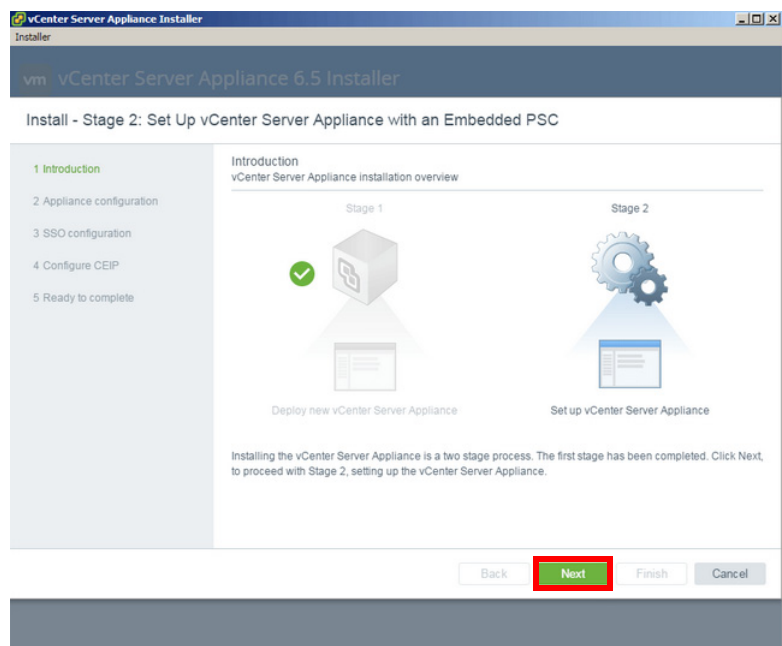
52

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14. Click Continue to proceed to the stage two setup process.



15. From the Stage 2 introduction dialog box, click Next.



16. Select the Time synchronization mode and enable SSH access.

17. Click Next.

vCenter Server Appliance 6.5 Installer

vm vCenter Server Appliance 6.5 Installer

Install - Stage 2: Set Up vCenter Server Appliance with an Embedded PSC

1 Introduction  
2 Appliance configuration  
3 SSO configuration  
4 Configure CEIP  
5 Ready to complete

Appliance configuration

Time synchronization mode: Synchronize time with NTP servers

NTP servers (comma-separated list):

SSH access: Enabled

Back Next Finish Cancel

18. Configure Single Sign On (SSO) by typing a domain name, password and site name. Click Next to continue.

vCenter Server Appliance 6.5 Installer

vm vCenter Server Appliance 6.5 Installer

Install - Stage 2: Set Up vCenter Server Appliance with an Embedded PSC

1 Introduction  
2 Appliance configuration  
3 SSO configuration  
4 Configure CEIP  
5 Ready to complete

SSO configuration

SSO domain name: system.plantpax.local

SSO user name: administrator

SSO password: \*\*\*\*\*

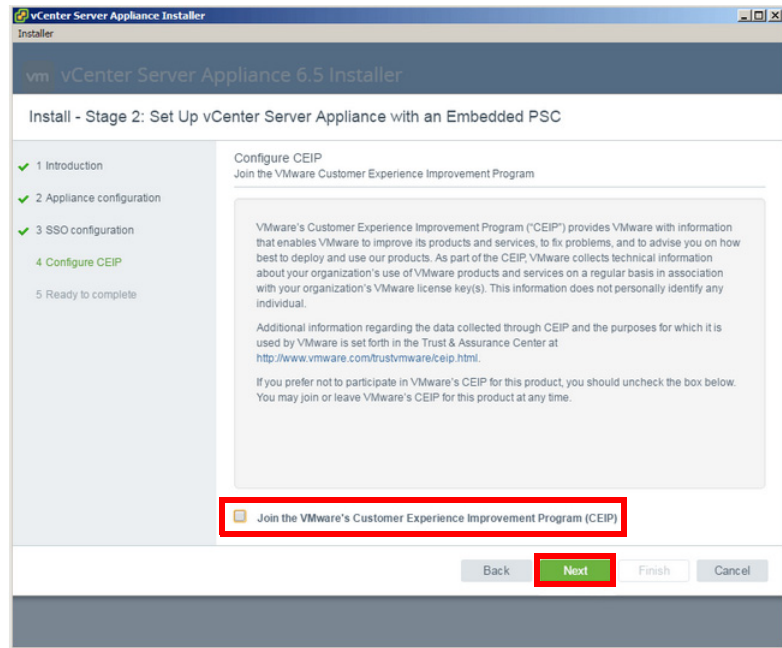
Confirm password: \*\*\*\*\*

Site name:

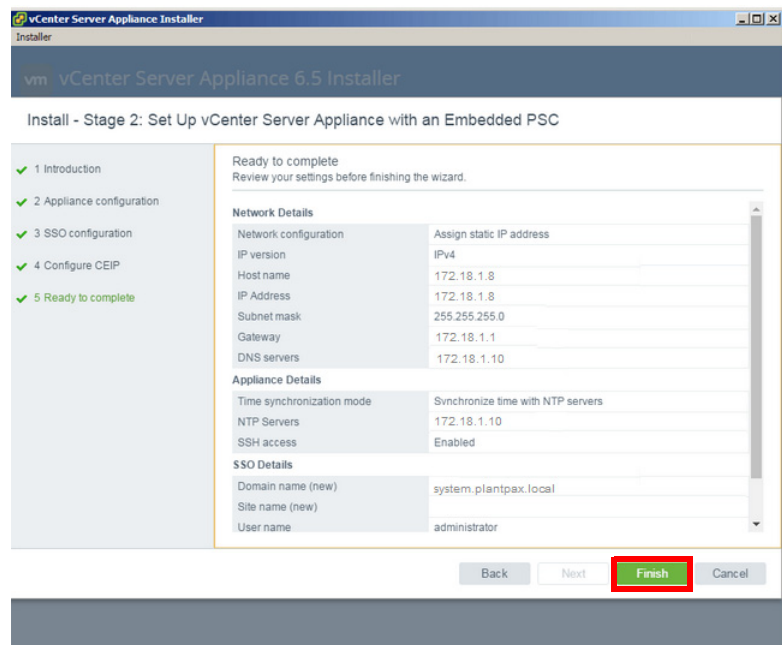
In vCenter 6.5, joining a vCenter with embedded PSC to an external PSC is not supported. For more information on recommended vCenter and PSC topologies, refer to the vCenter Server documentation.

Back Next Finish Cancel

19. Check to participate in the Customer Experience Improvement Program (CEIP) if interested, click Next to continue.



20. Verify the configuration is correct on the summary dialog box and then click Finish.



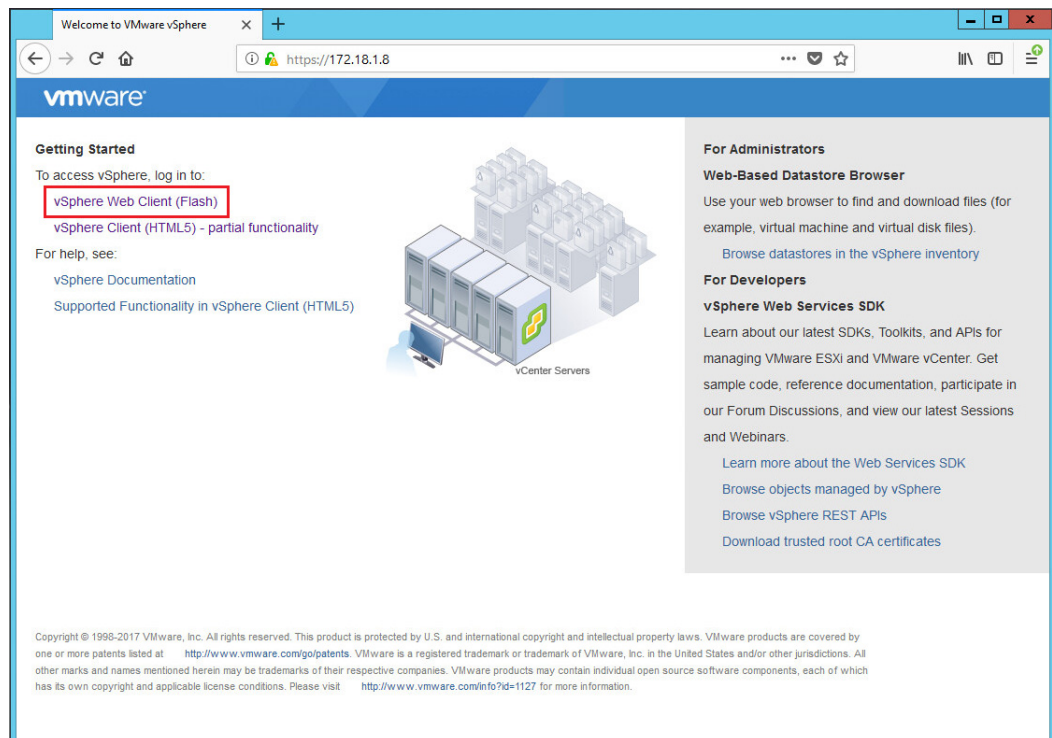
## Create a Template from an Existing Virtual Image

This procedure shows you how to make a copy of a virtual image and turn it into a template for future deployments.

**TIP** Consider this process when you back up virtual images.

**IMPORTANT** The images that are shown in this section are VMware vSphere Client software, version 6.5.

1. In a Web Browser, enter the IP address of the computer where your vCenter Server is installed.
2. Click vSphere Web Client (Flash).





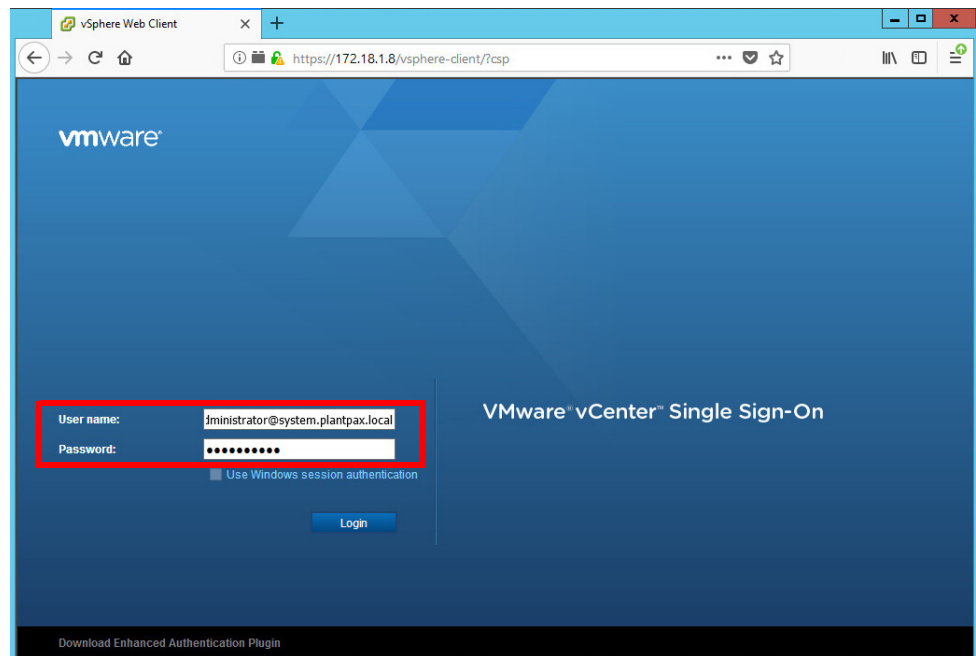
3. Enter the Username and Password. Use the User name and password that you created for the vCenter Server in [step 18 on page 54](#). Click Login.

---

**IMPORTANT** The user name consists of the vCenter Single Sign-On user name plus '@' plus the Domain name.

In our example, the user name is 'administrator@system.plantpax.local'.

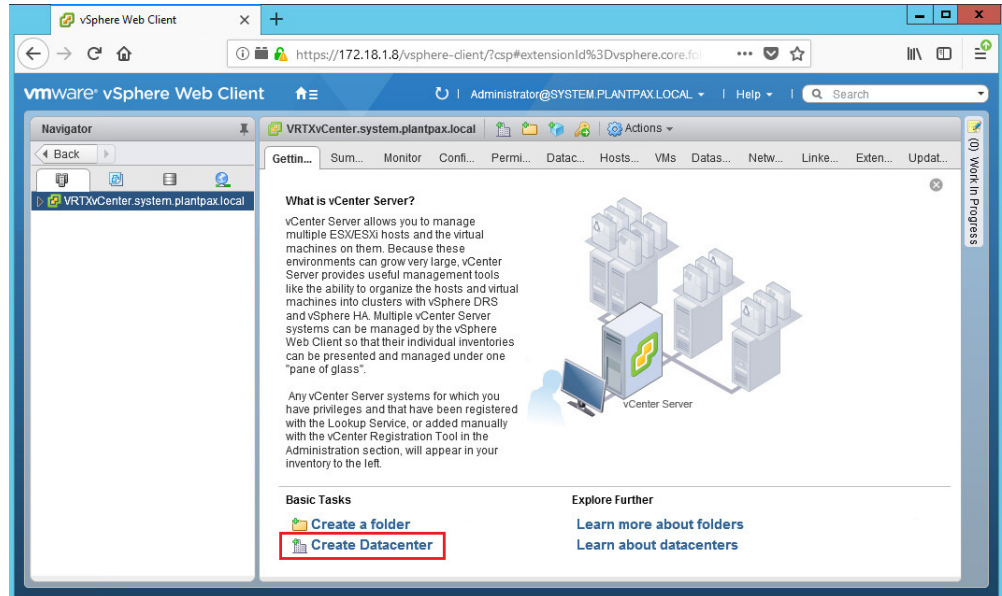
---



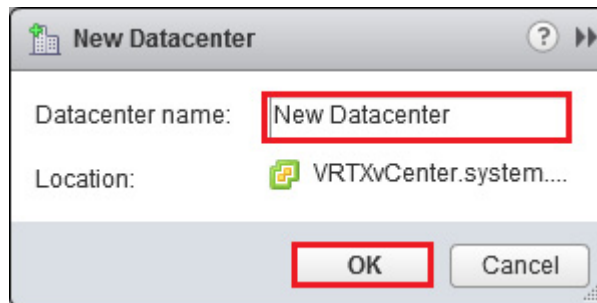
### Create a Datacenter

The Datacenter is the primary container of inventory objects such as hosts and virtual machines.

1. From The VMware vSphere Web Client dialog box, highlight your vCenter Server, and click 'Create Datacenter'.



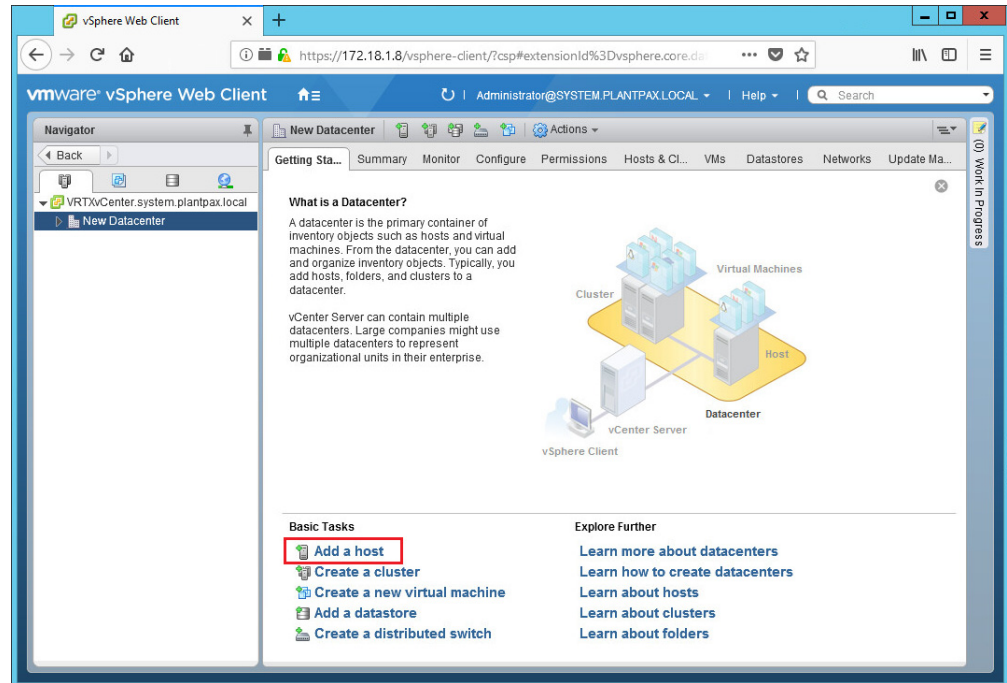
2. When prompted, type a name for the new datacenter ('New Datacenter' in our example) and click OK.



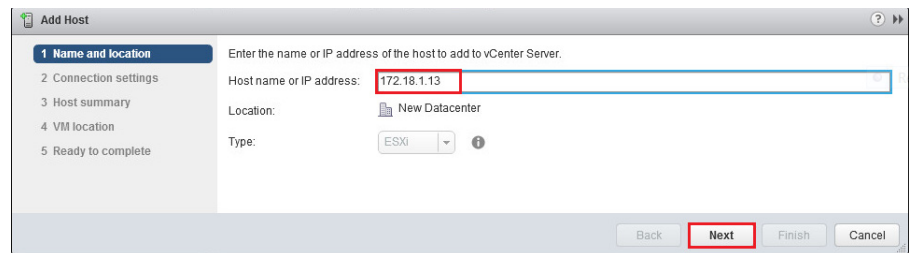
## Add a Host

The host is the virtual machine where the virtual image is deployed.

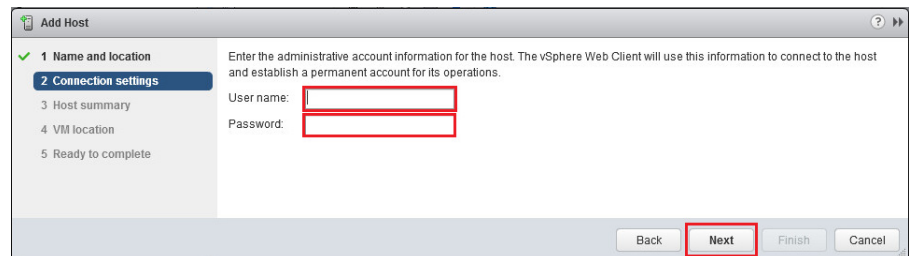
1. The New Datacenter is added under the vCenter Server. Highlight the New Datacenter and click 'Add a Host' to add a host server.



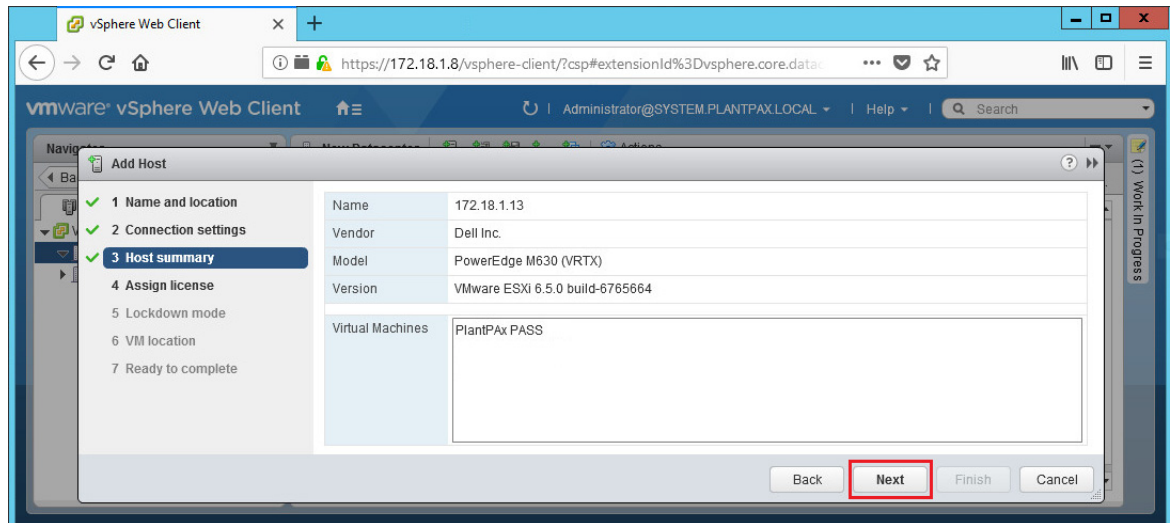
2. The 'Add Host' window appears. In the Name and location step, type the host IP address, and click 'Next'. See [step 7 on page 49](#).



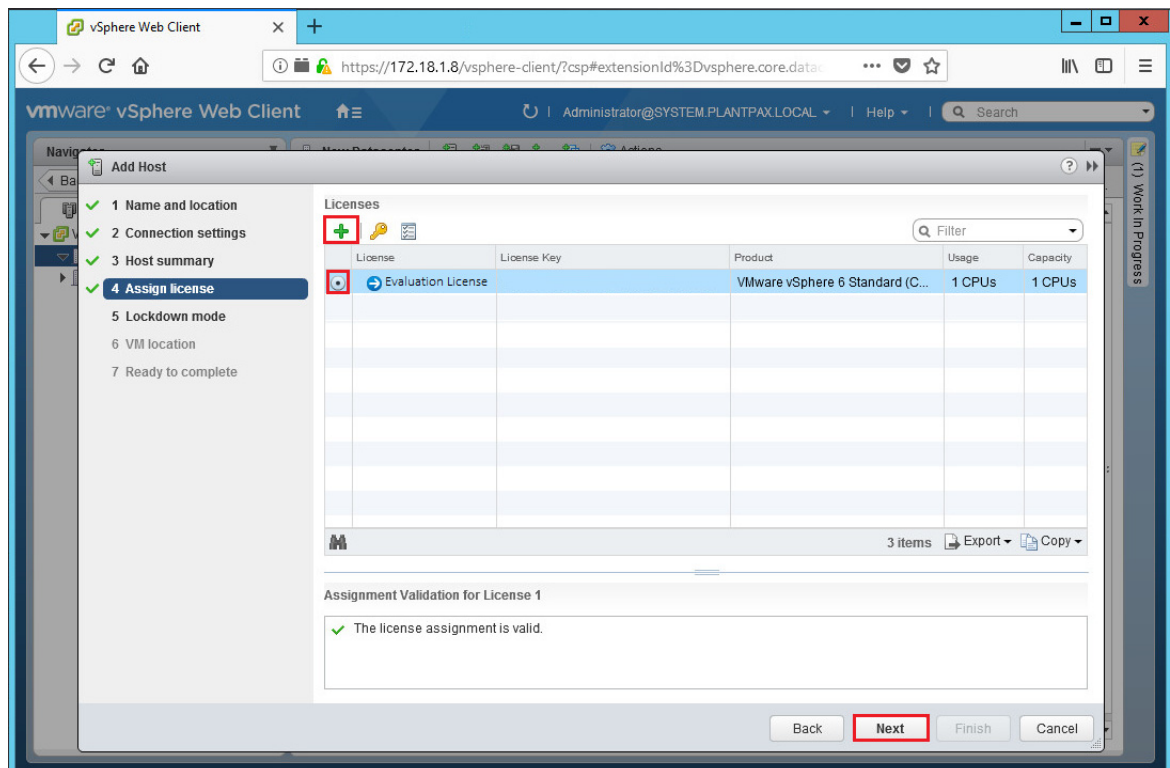
3. In the 'Connection Settings' step, type the User name and Password. The Username and Password were created in [step 7 on page 49](#). Click 'Next'.



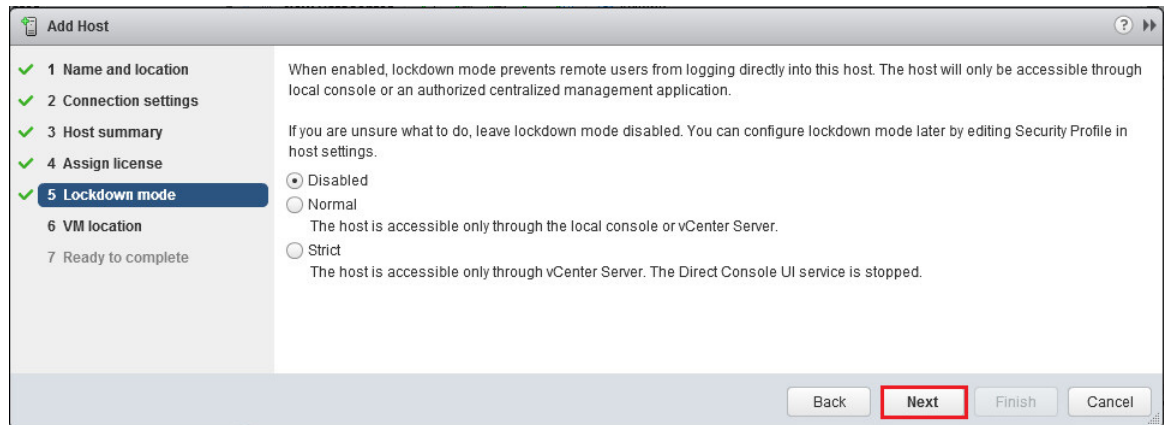
4. Verify the settings are correct on the Host summary dialog box and then click Next.



5. Assign a License.
  - a. If using the trial license that came with the VMware vSphere Hypervisor, click the default Evaluation License and click next.
  - b. If you have purchased a permanent license, Click the + (Plus Sign) to assign a new license key to this host. Type in the license key. click Next, then click Finish.



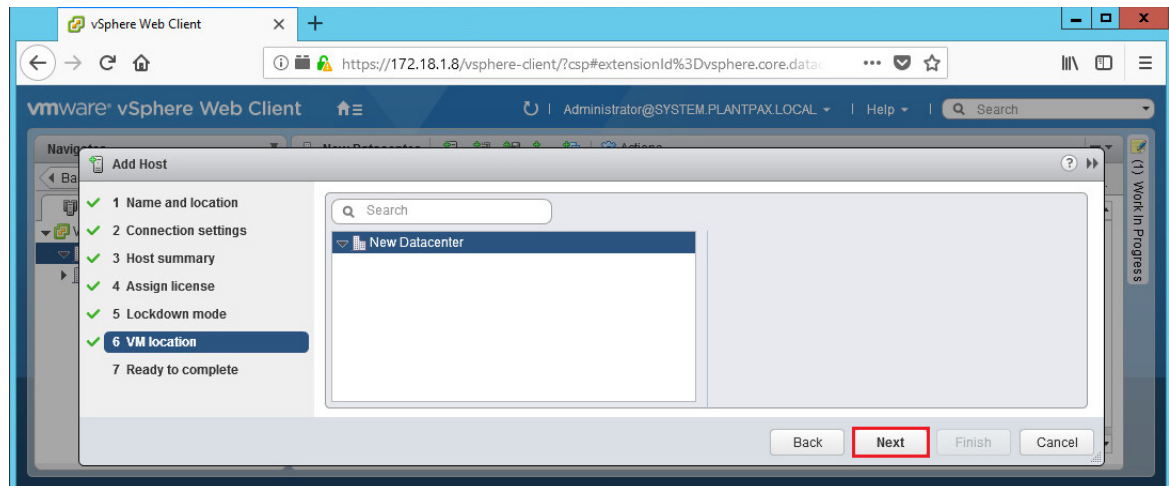
6. In the Lockdown mode step, click Disabled, and click Next.



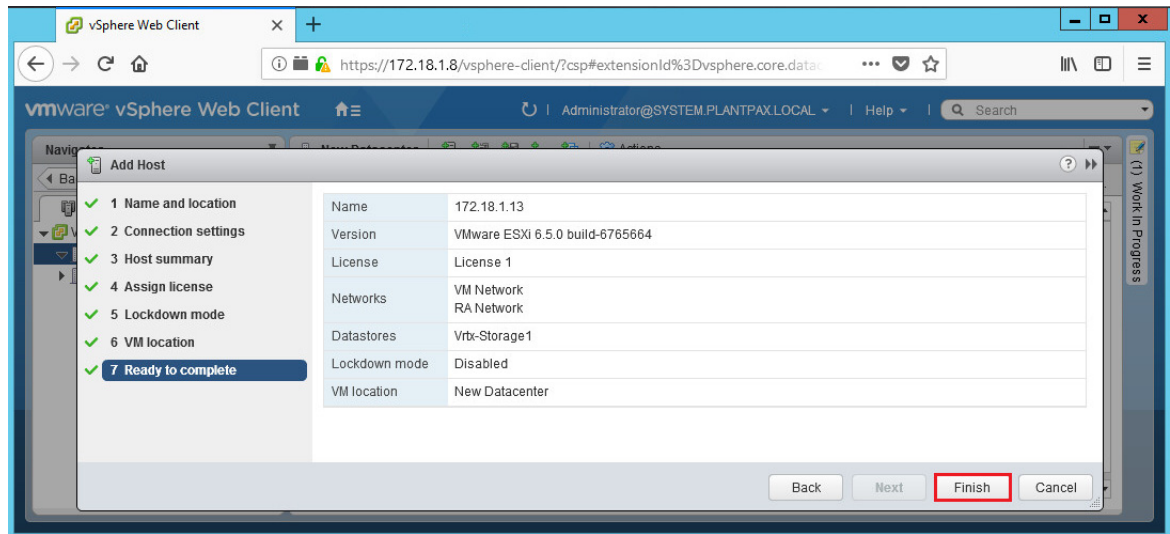
7. In the VM location step, select the Datacenter that you just created, and click Next.

**IMPORTANT** Because a vCenter server can manage multiple host servers, make sure to create/select the proper datacenter and host server where the virtual machines reside.

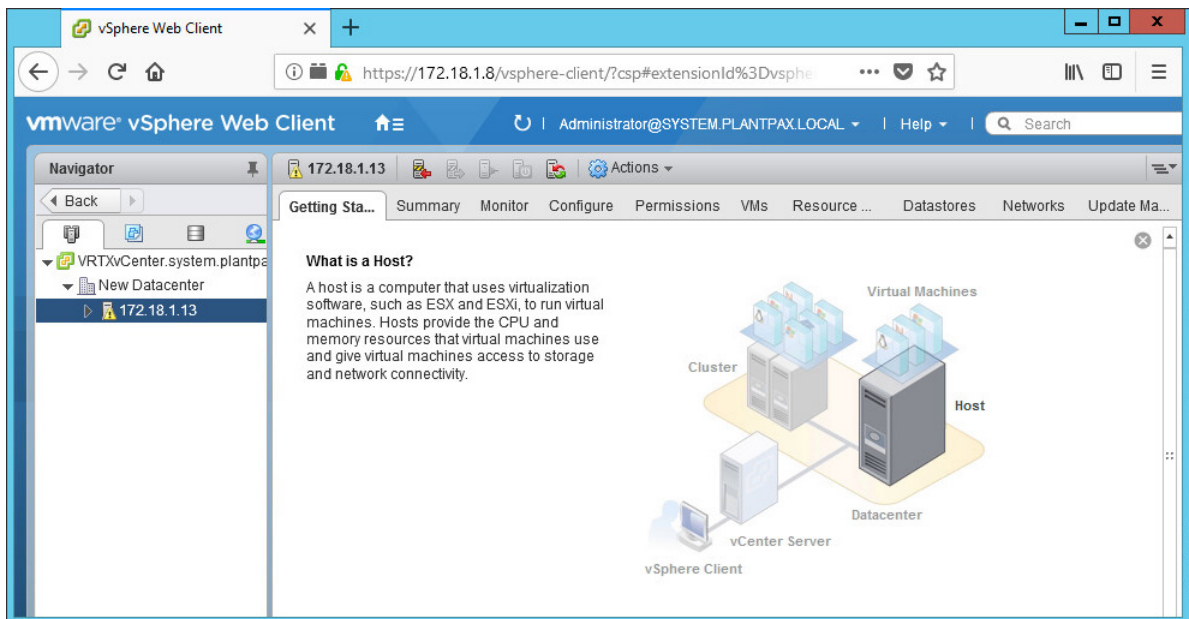
These organizational features help improve your understanding of your infrastructure and help with the management of servers.



8. Verify the configuration is correct in the Ready to complete dialog box and then click Finish.

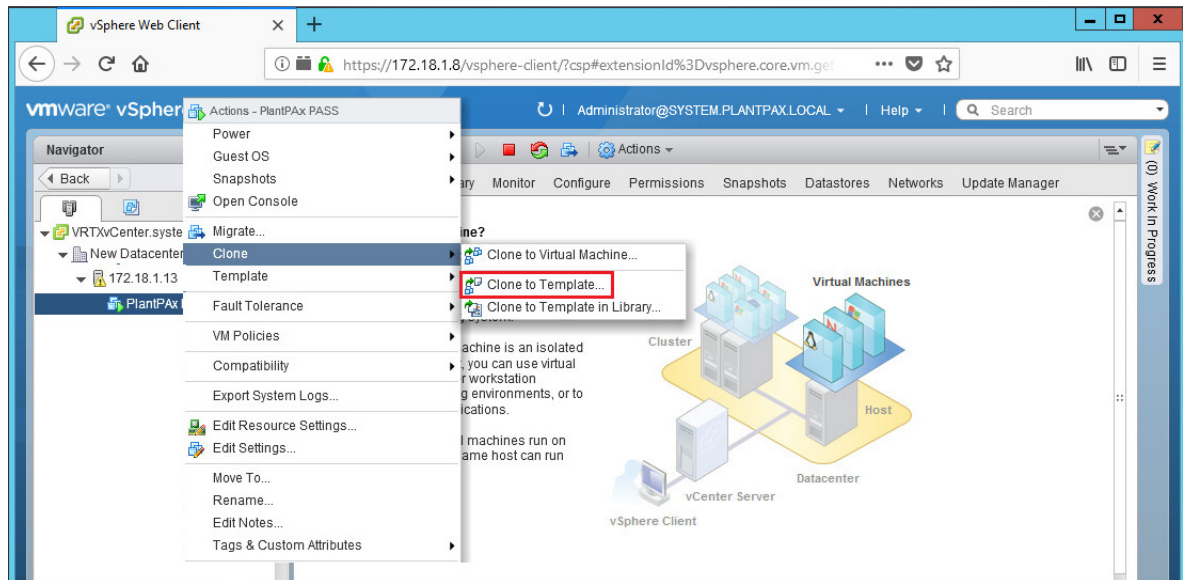


9. The Host is added under the datacenter. The Navigator section of the vSphere Web Client window now includes the vCenter server (VRTXvCenter), the Datacenter (New Datacenter), and the Host (172.18.1.13) as shown in the following image.

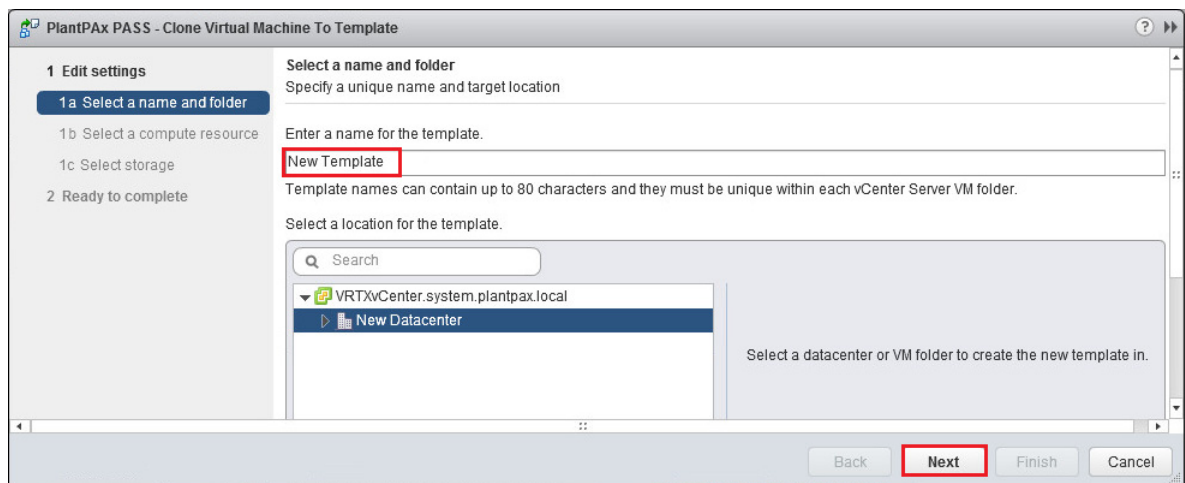


### *Clone the Image to Template*

1. Right-click the virtual image that you want to clone and choose Clone>Clone to Template.

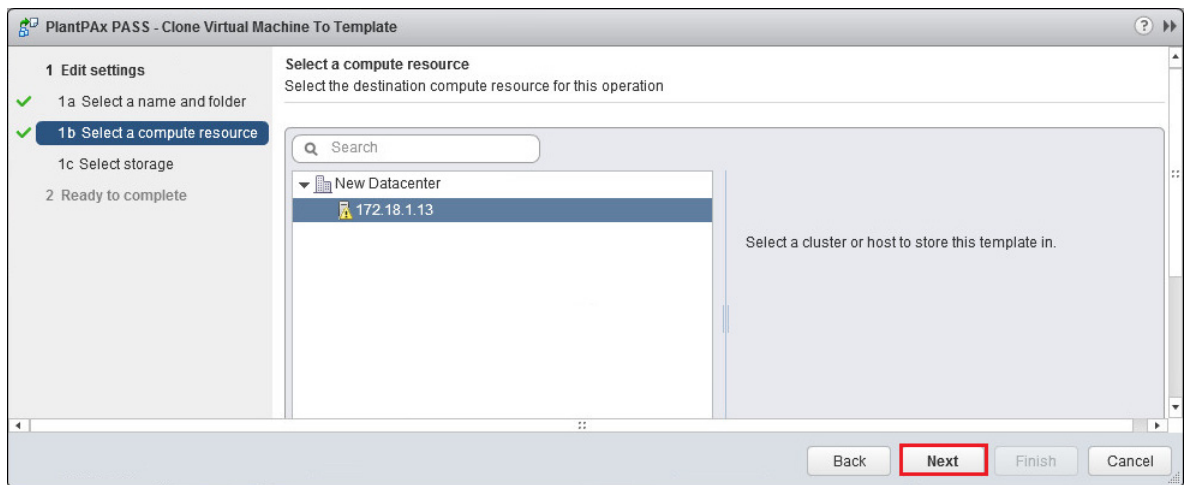


2. Type a name for the new template, select a location, and click Next.

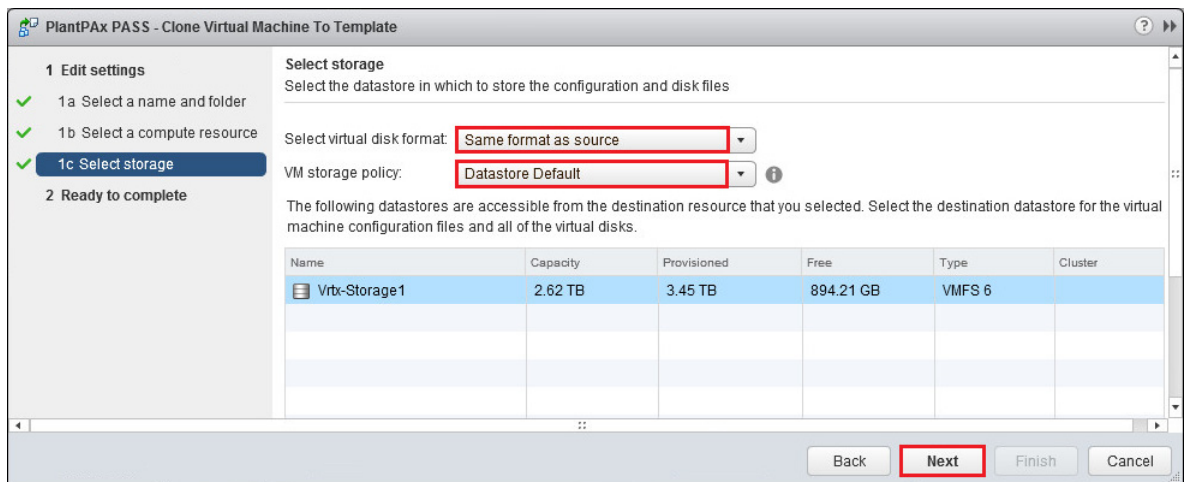




3. Select a host location to store the new template and click Next.



4. Select the disk format, storage policy, and the hypervisor that manages the resources of the server that hosts this template. See [Table 5](#) for disk format options. Click Next.



**Table 5 - Disk Format Options**

Format	Description
Same format as source	Use the same format as the original disks.
Thick Provision Lazy Zeroed	Disk storage is allocated immediately in a default thick format. Blocks containing older data on the storage device are cleared only when the virtual machine writes new data to the disk for the first time.
Thick Provision Eager Zeroed	Disk storage is allocated immediately in a default thick format where blocks on the physical storage device are formatted with zeros to overwrite any older data.
Thin Provision	Disk storage is allocated on demand as data is written to virtual disks.

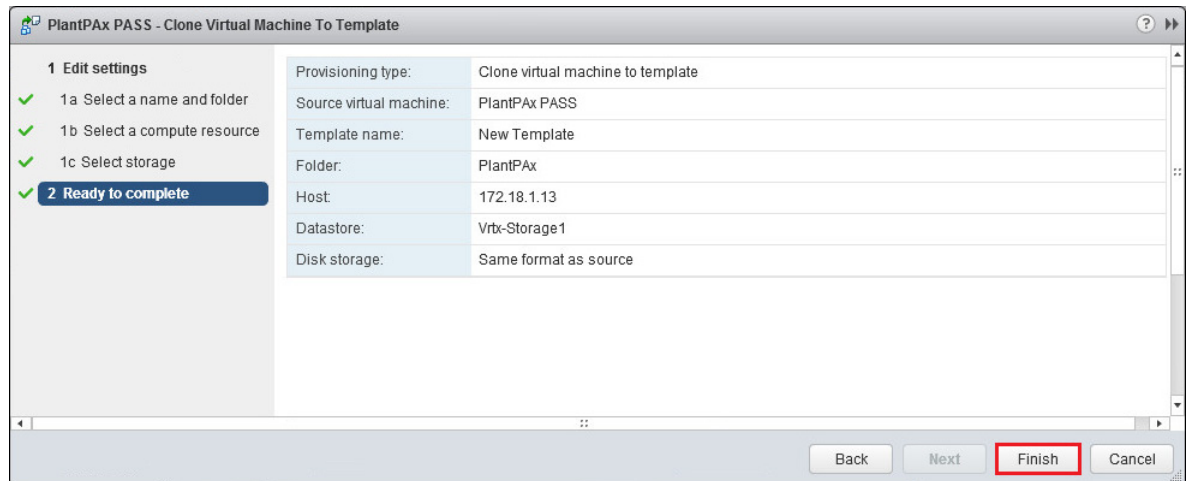


5. Verify the configuration is correct on the Ready to Complete dialog box.
  - If the information is incorrect, click Back to correct the information.
  - If the information is correct, click Finish.

---

**IMPORTANT** The process of cloning a virtual machine to a template can take up to 30 minutes. This time is largely dependent on the size of the hard disk drive of the virtual machine you are making a template from.

---

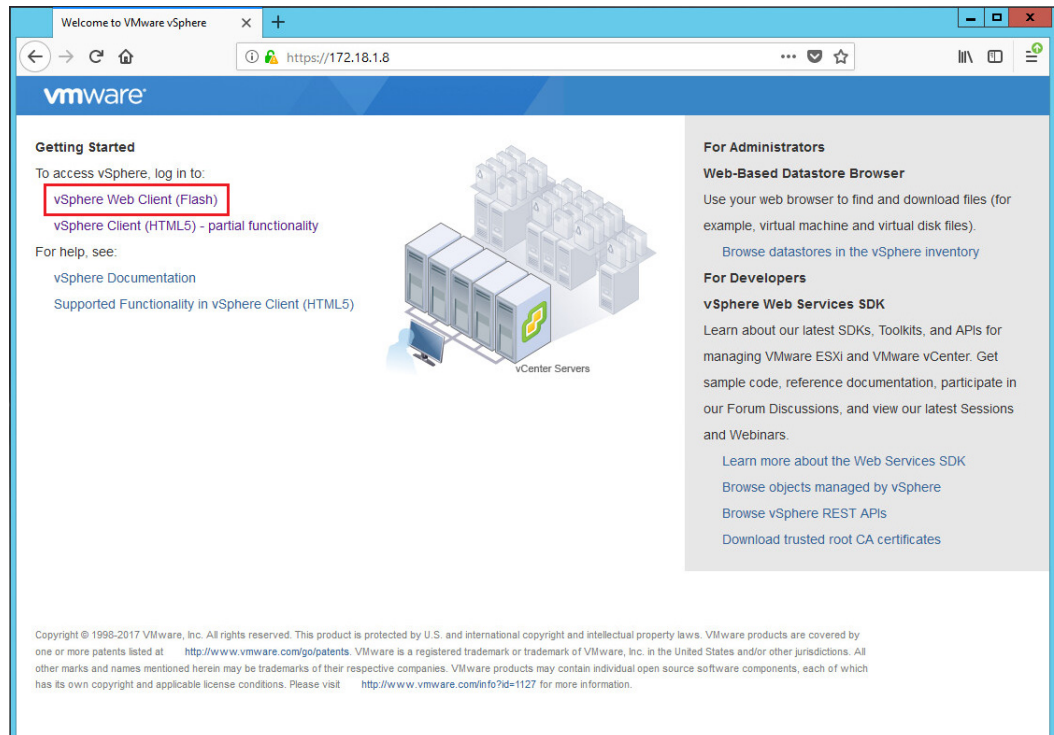


## Deploy Additional Virtual Images From a Local Template

When you have virtual image templates loaded into your datacenter, you can deploy any number of virtual images from those templates. Additional deployments can be performed from these new templates.

Complete these steps to deploy additional virtual images.

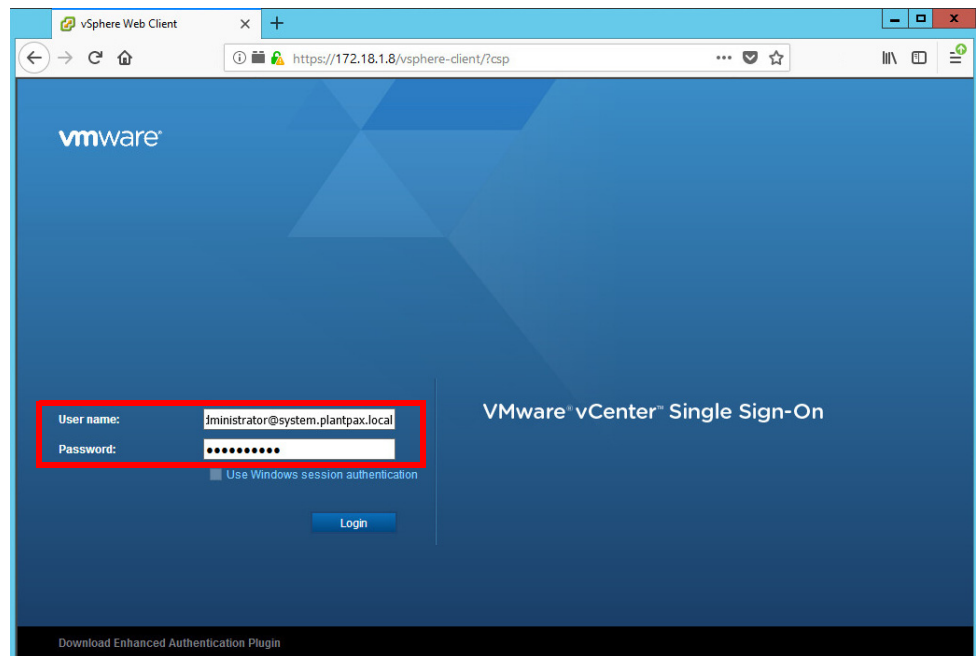
1. In a Web Browser, enter the IP address of the computer where your vCenter Server is installed.
2. Click vSphere Web Client (Flash).



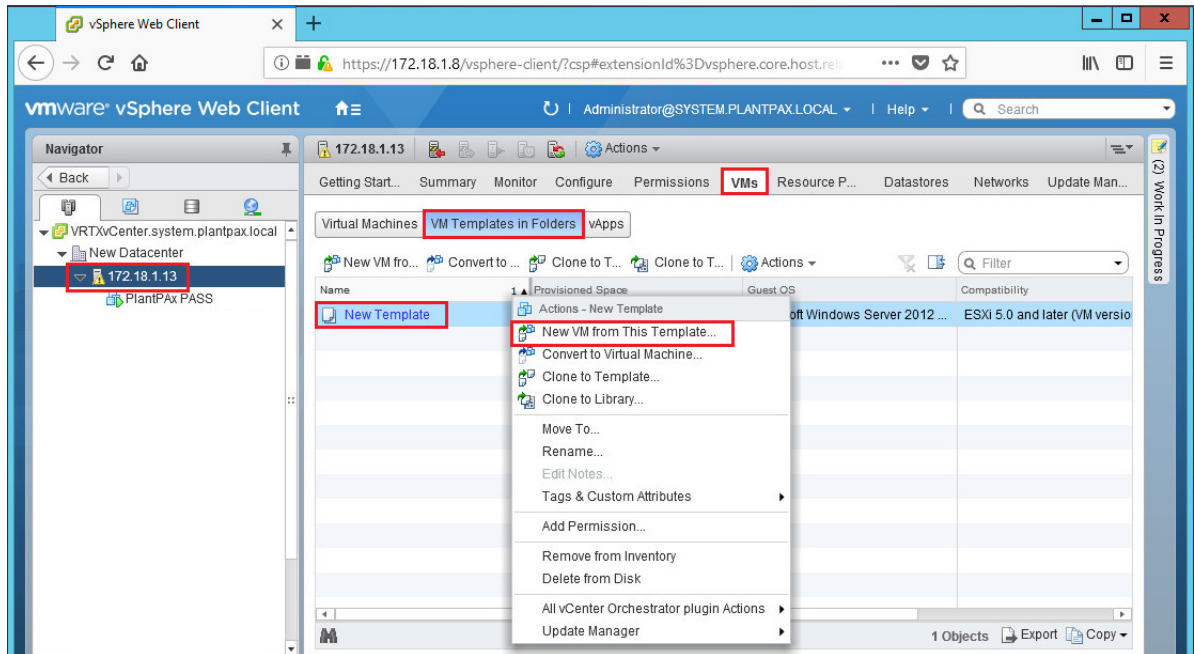
3. Enter the Username and Password. Use the User name and password that you created for the vCenter Server in [step 18 on page 54](#). Click Login.

**IMPORTANT** The user name consists of the vCenter Single Sign-On user name plus '@' plus the Domain name.

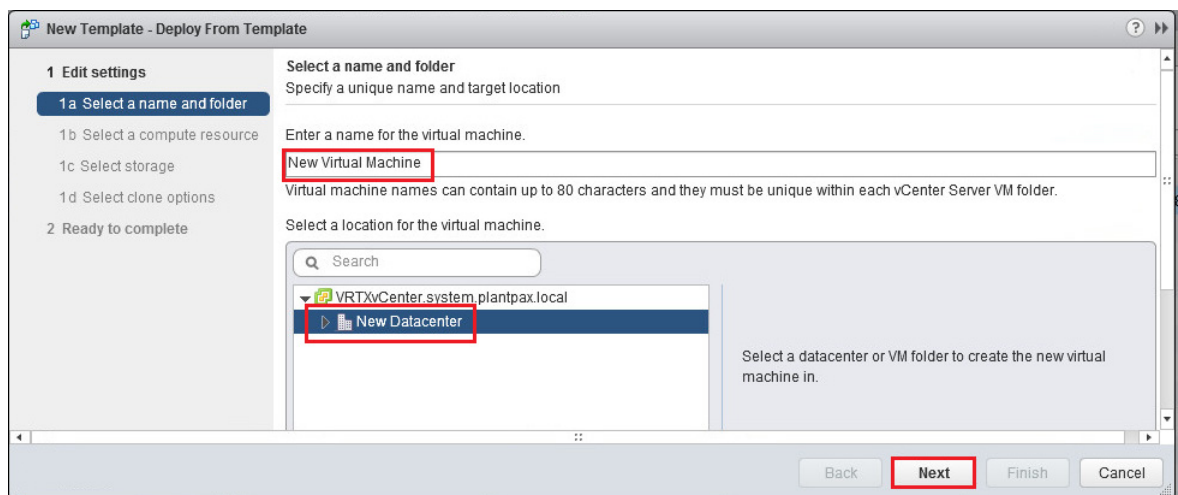
In our example, the user name is 'administrator@system.plantpax.local'.



4. From the left side of the vSphere Web Client window, highlight your vCenter Server, then select the 'VMs' tab.
5. Select the 'VM Templates in Folders' tab, then right-click the template that you plan to deploy to a New Virtual Image.
6. Select 'New VM from This Template'.



7. In the Name box, type a name for the virtual machine.
8. In the Inventory Location box, select a location to store the new virtual machine and click Next.



9. The 'Select storage' step appears.

- In the 'Select virtual disk format' box, select 'Thin Provision'.
- In the 'VM storage policy' box, select 'Datastore Default'.
- Select the Datastore to host the cloned template.
- Click Next.

**New Template - Deploy From Template**

**1 Edit settings**

- 1a Select a name and folder
- 1b Select a compute resource
- 1c Select storage**
- 1d Select clone options
- 2 Ready to complete

**Select storage**  
Select the datastore in which to store the configuration and disk files

Select virtual disk format: **Thin Provision**

VM storage policy: **Datastore Default**

The following datastores are accessible from the destination resource that you selected. Select the destination datastore for the virtual machine configuration files and all of the virtual disks.

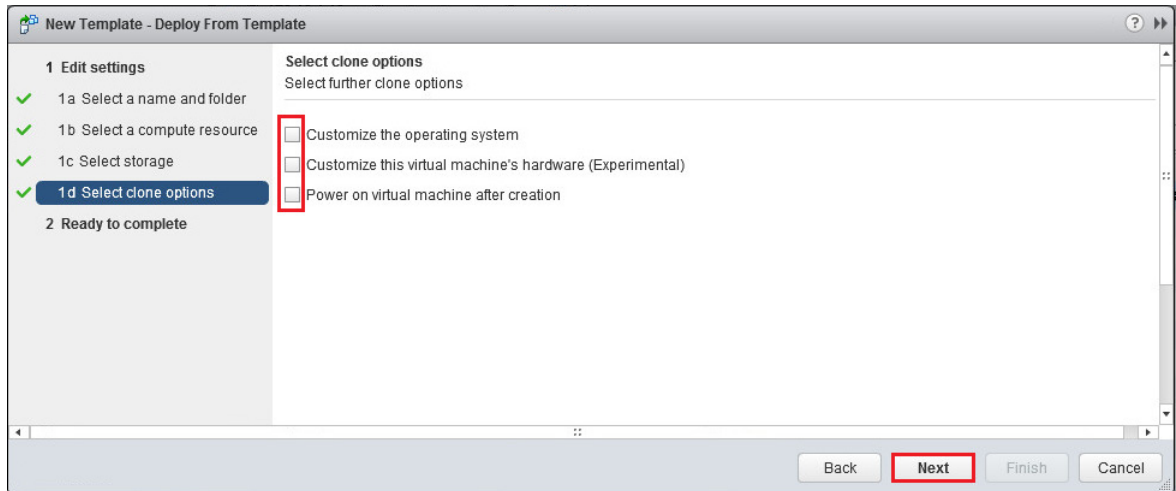
Name	Capacity	Provisioned	Free	Type	Cluster
<b>Vrbx-Storage1</b>	2.62 TB	3.58 TB	851.17 GB	VMFS 6	

Back **Next** Finish Cancel

**Table 6 - Disk Format Description**

Format	Description
Same format as source	Use the same format as the original disks.
Thick Provision Lazy Zeroed	Disk storage is allocated immediately in a default thick format. Blocks containing older data on the storage device are cleared only when the virtual machine writes new data to the disk for the first time.
Thick Provision Eager Zeroed	Disk storage is allocated immediately in a default thick format where blocks on the physical storage device are formatted with zeros to overwrite any older data.
Thin Provision	Disk storage is allocated on demand as data is written to virtual disks.

10. The 'Select clone options' step appears.
  - Clear 'Customize the operating system'. We recommend that no Customization is done at this stage.
  - Clear 'Customize this virtual machine's hardware (Experimental)'.
  - Clear 'Power on virtual machine after creation'.
  - Click Next.




---

**IMPORTANT** When you clone a virtual machine or deploy a virtual machine from a template, you can customize the guest operating system of the virtual machine. Customizing guest operating systems can help prevent conflicts if virtual machines with identical settings are deployed. You can specify the customization settings when you launch the Guest Customization wizard during the cloning or deployment process

---

11. The 'Ready to Complete' step appears. Select one of the following to verify settings:
  - If there is incorrect information, click Back to correct the information.
  - If the information is correct, click Finish.

---

**IMPORTANT** The process of deploying a virtual machine from a template can take up to 30 minutes. The time that is required is largely dependent on the size of the hard disk drive of the template you are using to deploy a virtual machine.

---

12. You can view the status of the task by finding 'Clone virtual machine' in Recent Tasks at the bottom of the window. When the status = Completed, the cloning is finished.

## Convert a Virtual Image

This section describes how to use the vCenter Converter Standalone tool as an alternative to deploy a virtual machine into your host server. The tool is not required for this procedure but it is a free tool that lets you deploy virtual machines into your host server.

The vCenter Converter Standalone tool has important capabilities such as converting physical machines, virtual machines, and system images. These capabilities are used in VMware hosted and managed products, which are key for system migrations or upgrades.

You can use vCenter Converter Standalone software to perform important conversion tasks, including the following:

- Import running remote physical and virtual machines as virtual machines to a simple host server with ESXi hypervisor or to a host server with ESXi managed by a vCenter server.
- Import virtual machines that are hosted by VMware Workstation or Microsoft Hyper-V server to a host server with ESXi managed by a vCenter server.
- Import third-party backup or disk images to a host server with ESXi managed by a vCenter server.

## Download the vCenter Converter Standalone Software

On the VMware website, download the vCenter Converter Standalone software.

**TIP** The steps to download the vCenter Converter Standalone software are similar to the steps used to download Hypervisor starting with [step 1 on page 19](#).

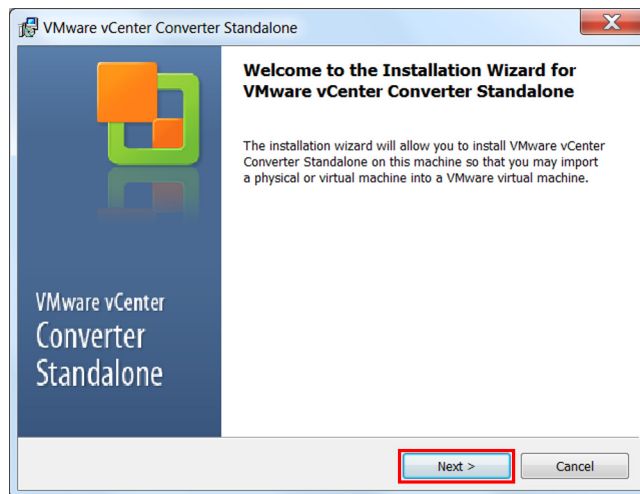
## Install the Converter Standalone Software

If you do not own a copy of VMware Workstation or vSphere Client and you wish to deploy a virtual machine into your host server, you must install the vCenter Converter Standalone software. Install the software on the workstation you use to connect to and configure your host server. If you intend to use vCenter Converter Standalone software to create a virtual image of a physical computer, you must install the tool on the machine that you are virtualizing. For more information on how to use the tool for different procedures, see <http://www.vmware.com/products/converter>.

To install the software, complete these steps.

1. On the workstation to install the vCenter Converter Standalone tool, navigate to the installation files and double-click the VMWare-converter.exe file.

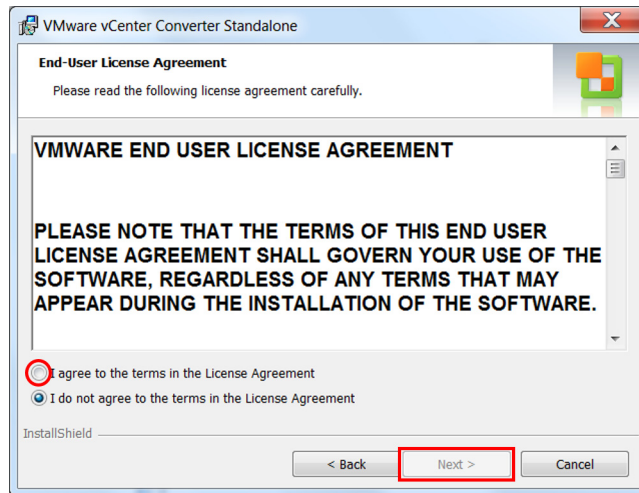
The vCenter Converter Standalone program opens and starts an Install Shield wizard.



2. Click Next.



3. Click 'I agree to the terms in the License Agreement', and click Next.



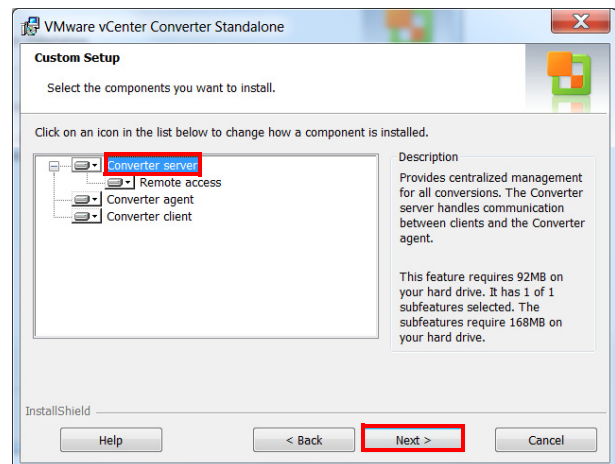
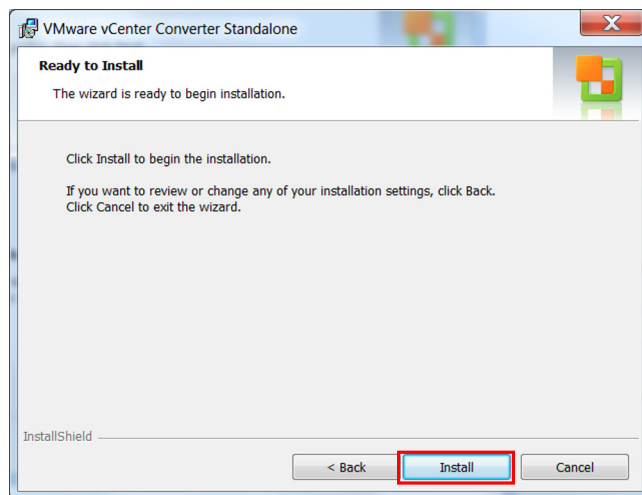
4. On the Destination Folder page, click Next.

5. On the Setup Type page, select one of the following:

- Local installation (recommended).
- Client-server installation (see [http://www.vmware.com/pdf/convsa\\_50\\_guide.pdf](http://www.vmware.com/pdf/convsa_50_guide.pdf) for more information).

For simplicity, our example is a local installation.

6. Click Install, select Converter server, and click Next.



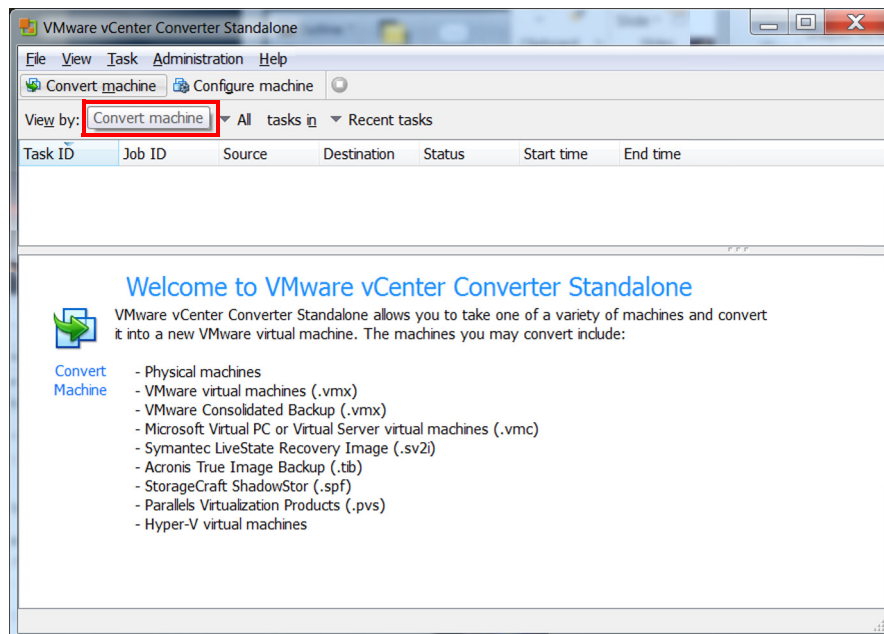
7. Click Finish when the installation is complete.

## Convert a Virtual Machine

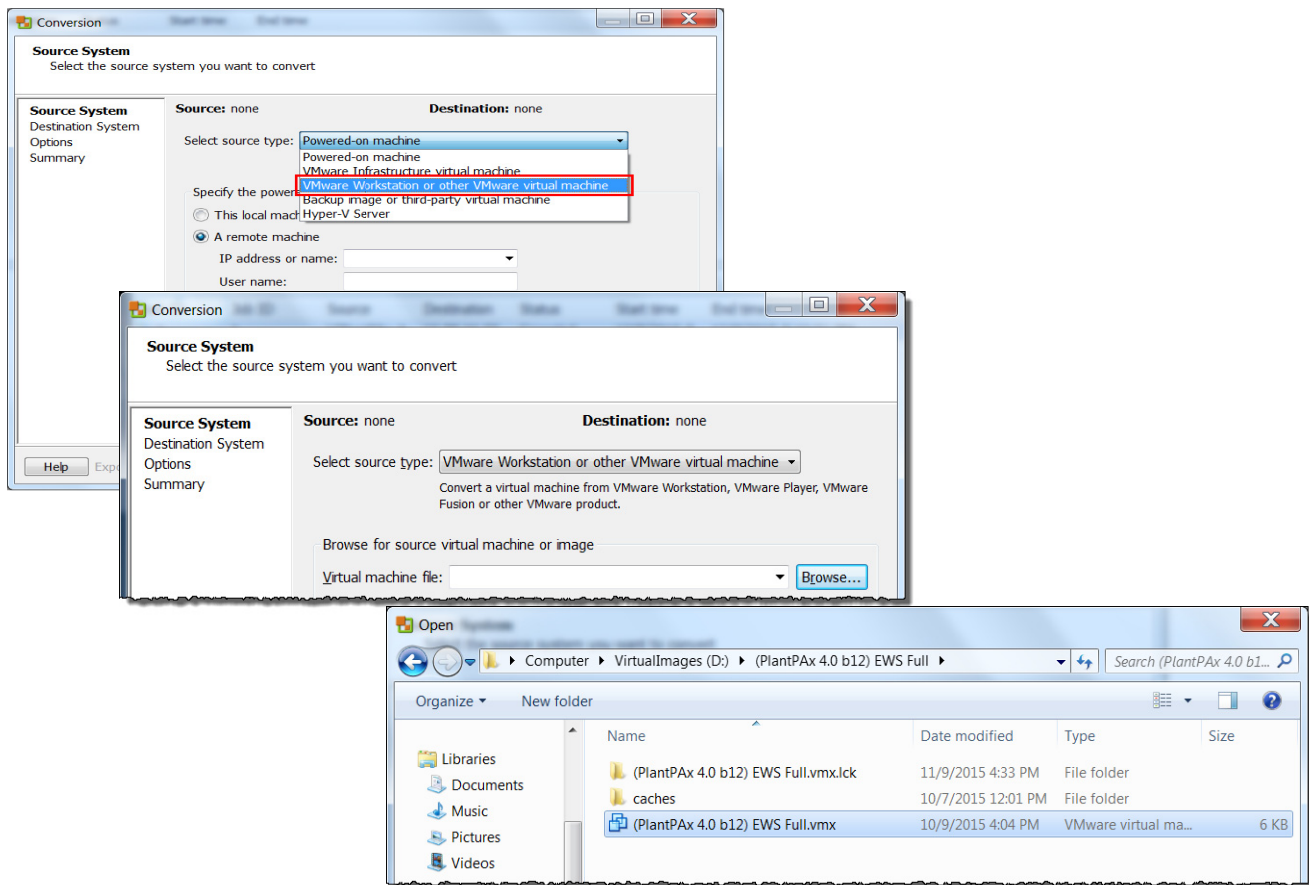
The vCenter Converter Standalone software installs VMware Tools to let you customize the guest operating system. For example, you can change the host name or network settings.

To change the host name, complete these steps.

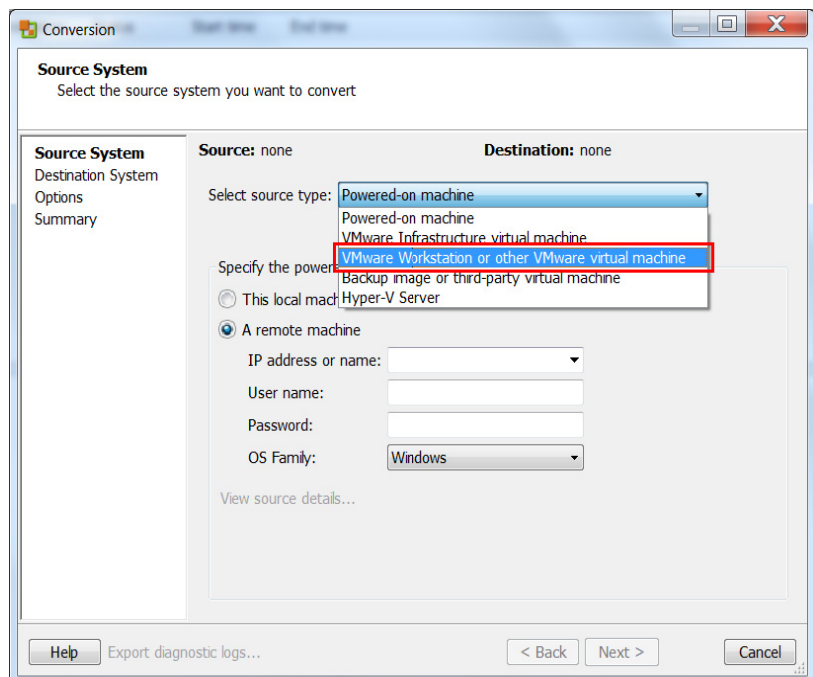
1. Open the VMware vCenter Converter Standalone software and click Convert Machine.



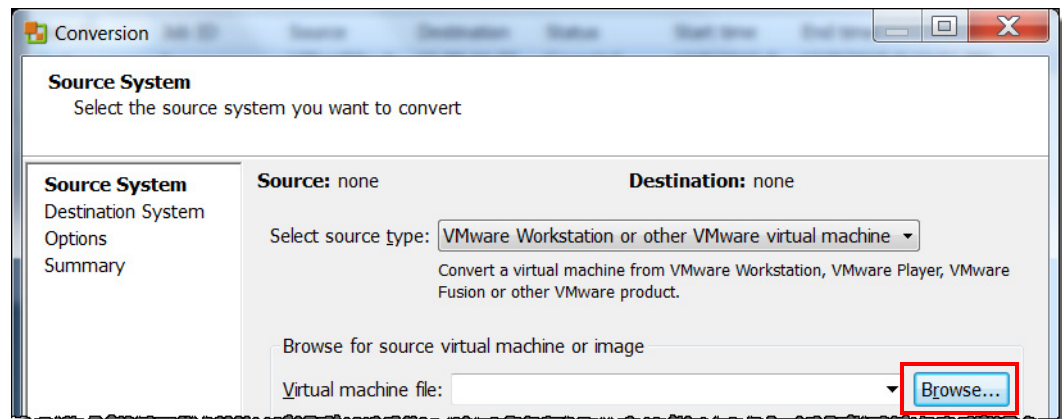
The Conversion dialog box appears.



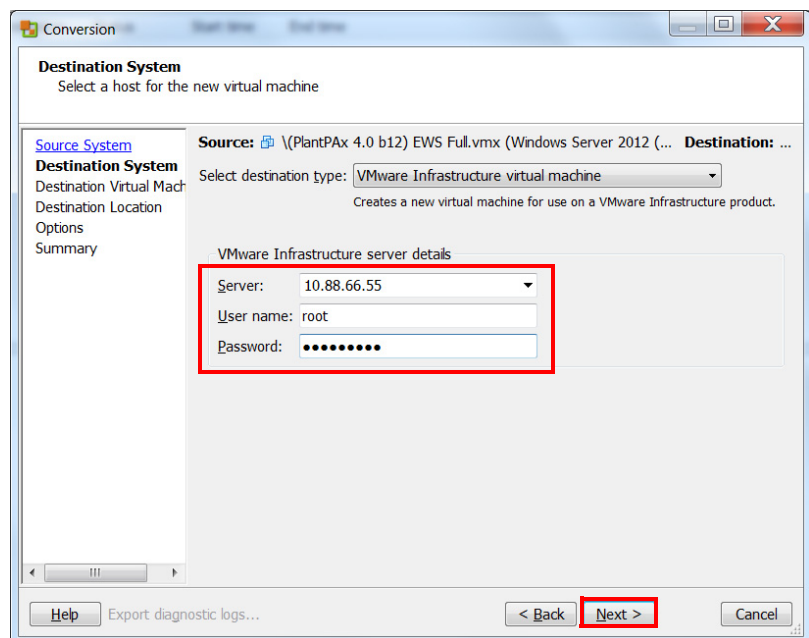
2. Select 'VMware Workstation or other VMware virtual machine' from the 'Select source type' pull-down.



- Click browse to navigate to the location of the virtual image that you want to convert, choose the file, and click Next.

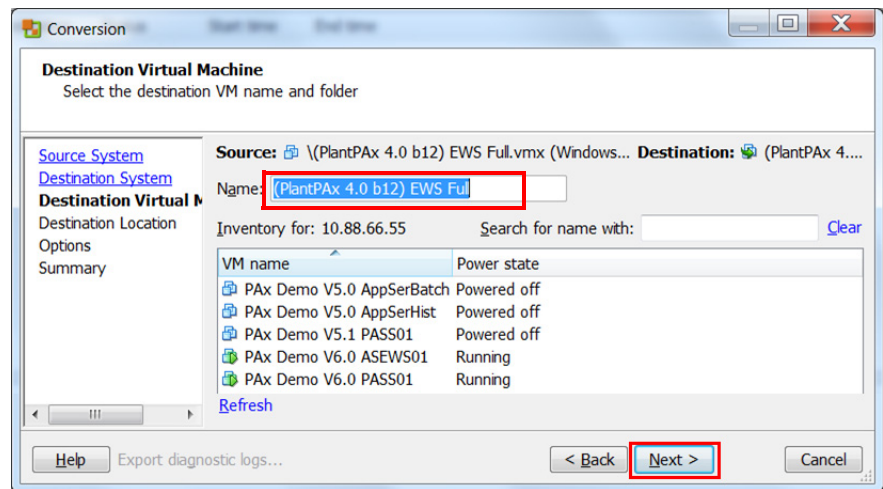


- On the Destination System window, type the IP address, User name, and Password of the server where the virtual machine is being deployed to after conversion.



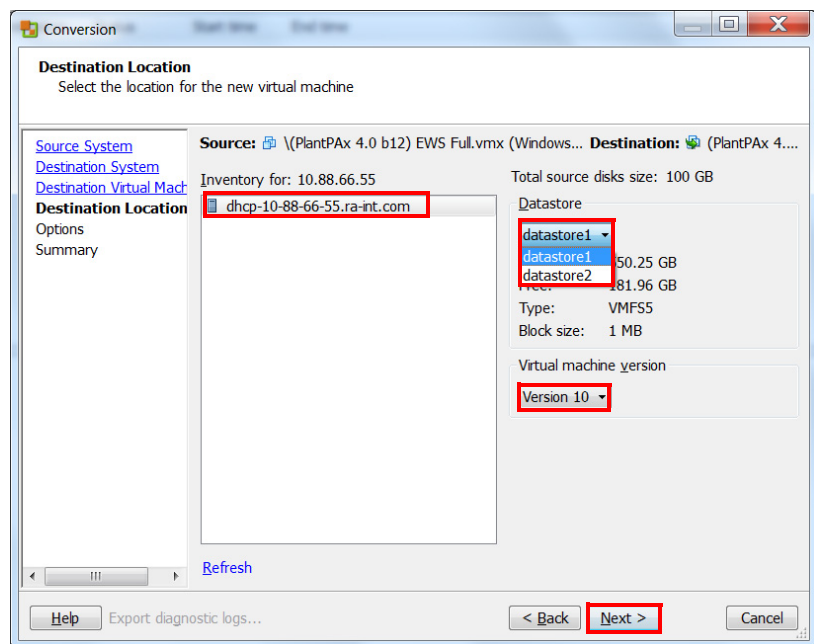
- Click Next.
- Click Ignore for now on the certificate window.  
Talk to your system manager about SSL certificates for this application.

7. Type the name that you want for this virtual machine and click Next.



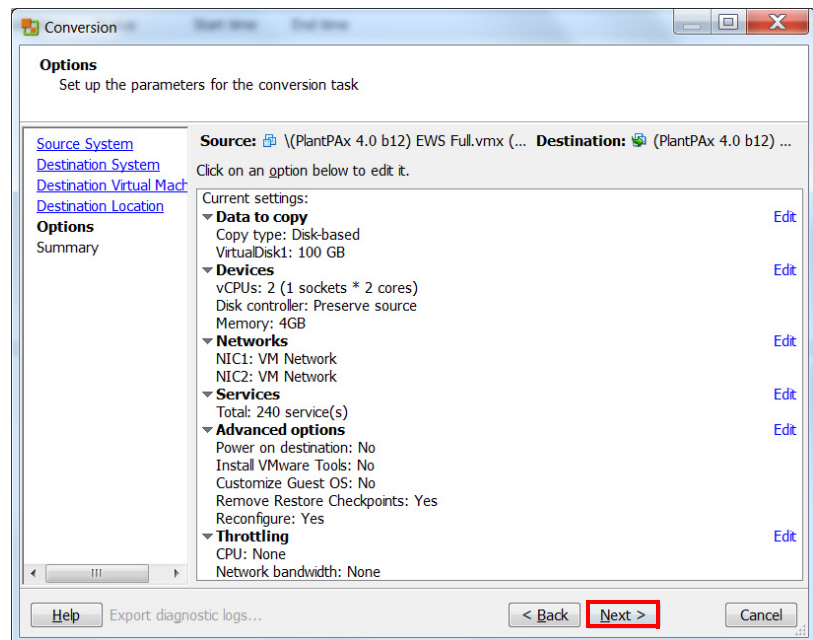
8. Select the location where you store the virtual machine.

In the Inventory section, you can have multiple suitable hosts depending on your system configuration in the Datastore section. More locations to store the files for your virtual machine show up depending on your system configuration.



9. Select the virtual machine version from the pull-down, and click Next.

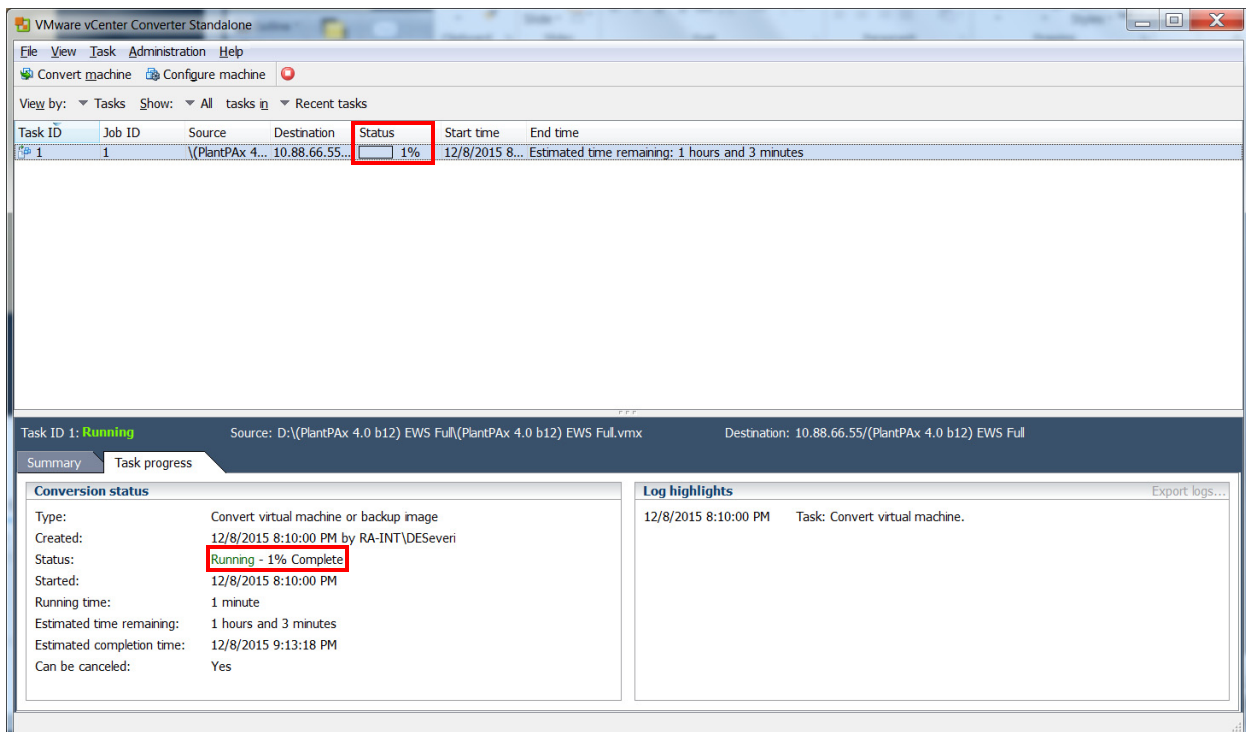
A Conversion window with parameter options for the conversion task appears. This window is where you can make permanent changes according to your needs.



10. After making your choices, click Next.

11. Confirm your settings and click Finish.

The vCenter Converter Standalone window appears to show the progress of the conversion.





The conversion time depends on the following:

- Network connection between the host server (where the converted machine is hosted) and the workstation (where the machine that you are converting currently resides)
- Size of the image

## Optional Virtual Machine Interactions

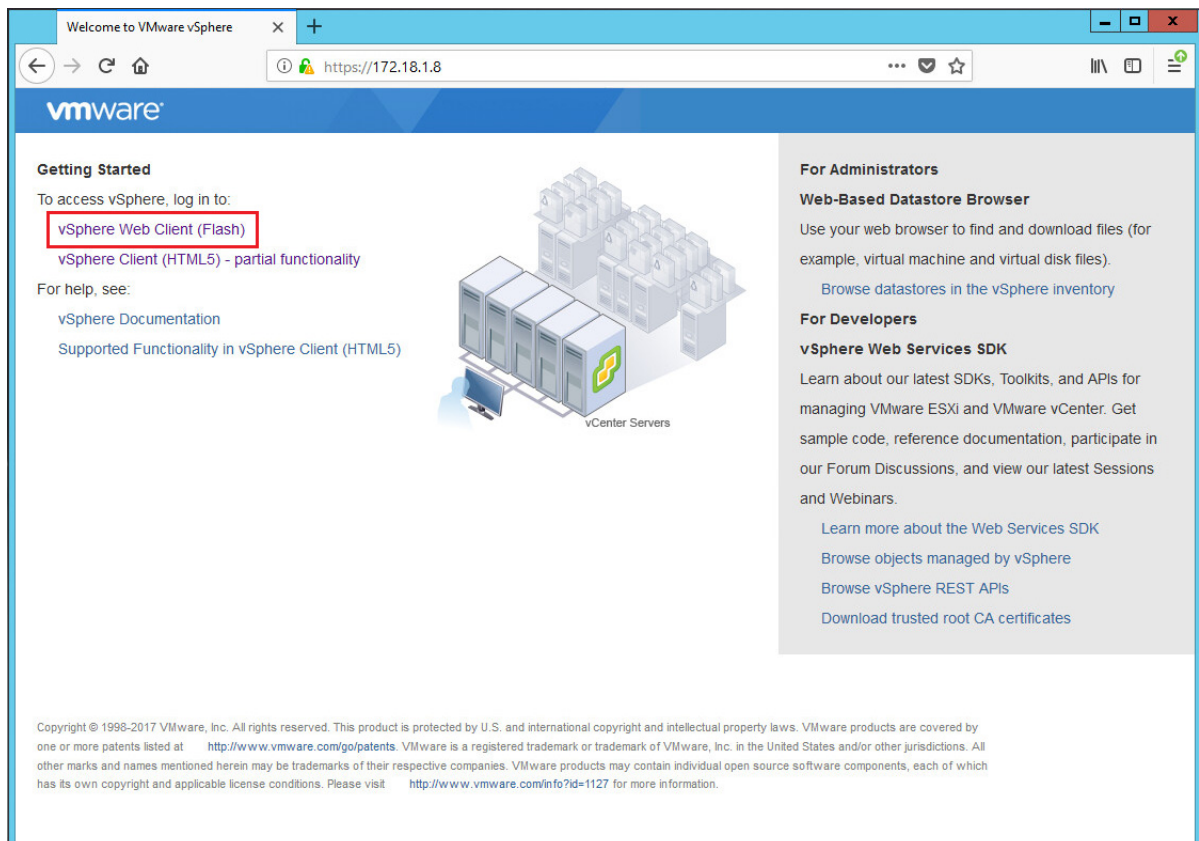
To help expedite the use of your virtual machines, consider the following options:

- [Initiate Automatic Startup on page 79](#)
- [Set Resource Pool Priority on page 85](#)

## Initiate Automatic Startup

To program the host server to start your virtual machines automatically, complete these steps.

1. In a Web Browser, enter the IP address of the computer where your vCenter Server is installed. This IP address was created in [step 7 on page 26](#).
2. On the Welcome to VMware vSphere screen, click vSphere Web Client (Flash).

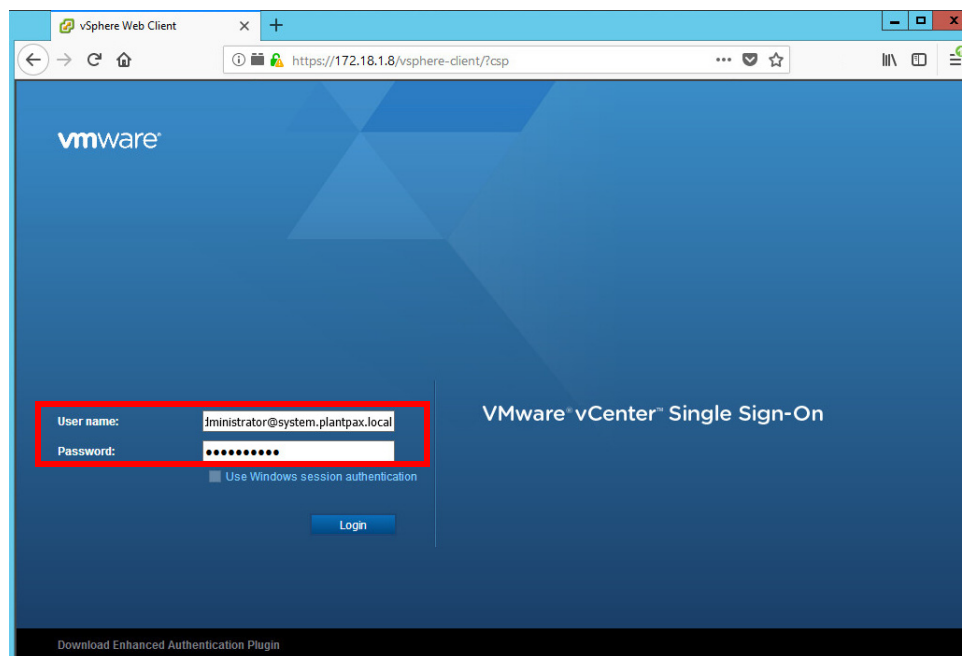


3. Enter the Username and Password. Use the User name and password that you created for the vCenter Server in [step 18 on page 54](#). Click Login.

---

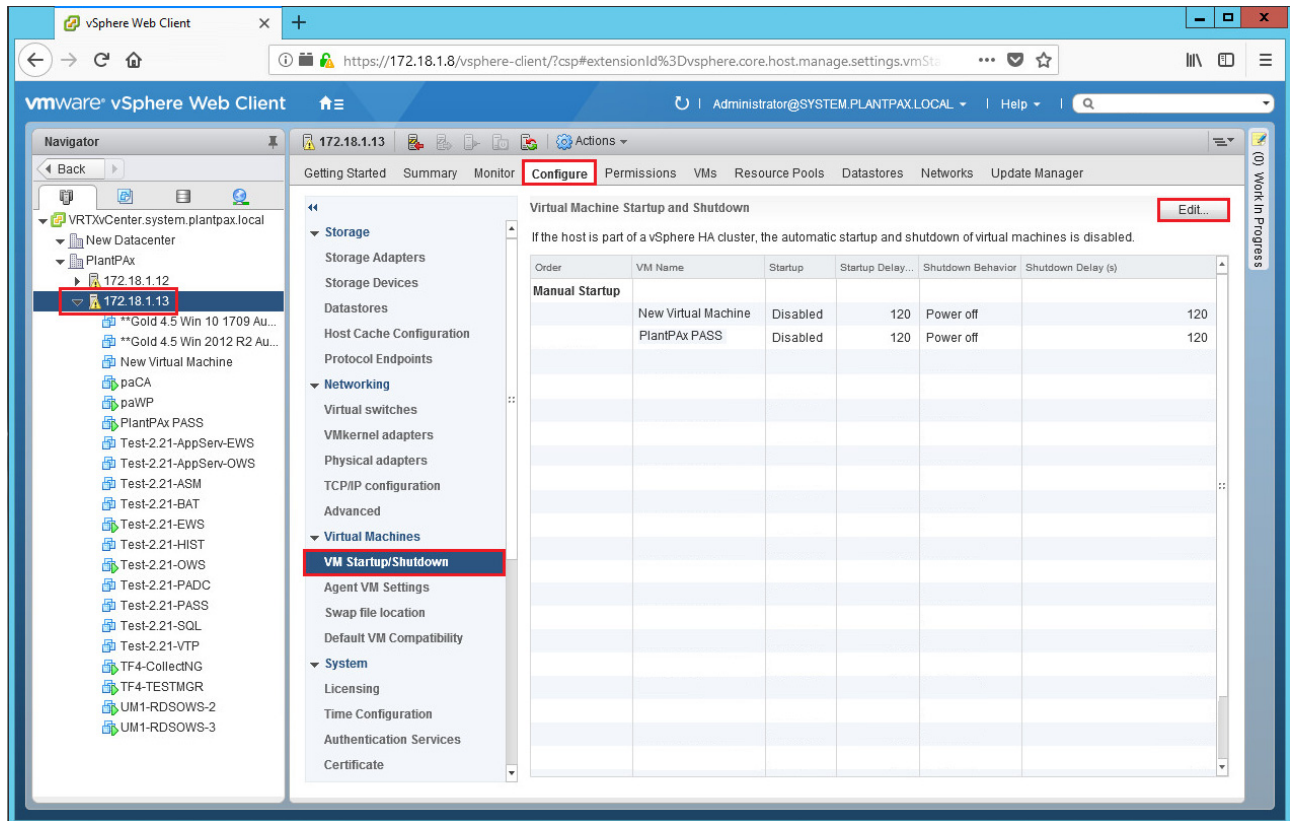
**IMPORTANT** The user name consists of the vCenter Single Sign-On user name plus '@' plus the Domain name.  
In our example, the user name is 'administrator@system.plantpax.local'.


---



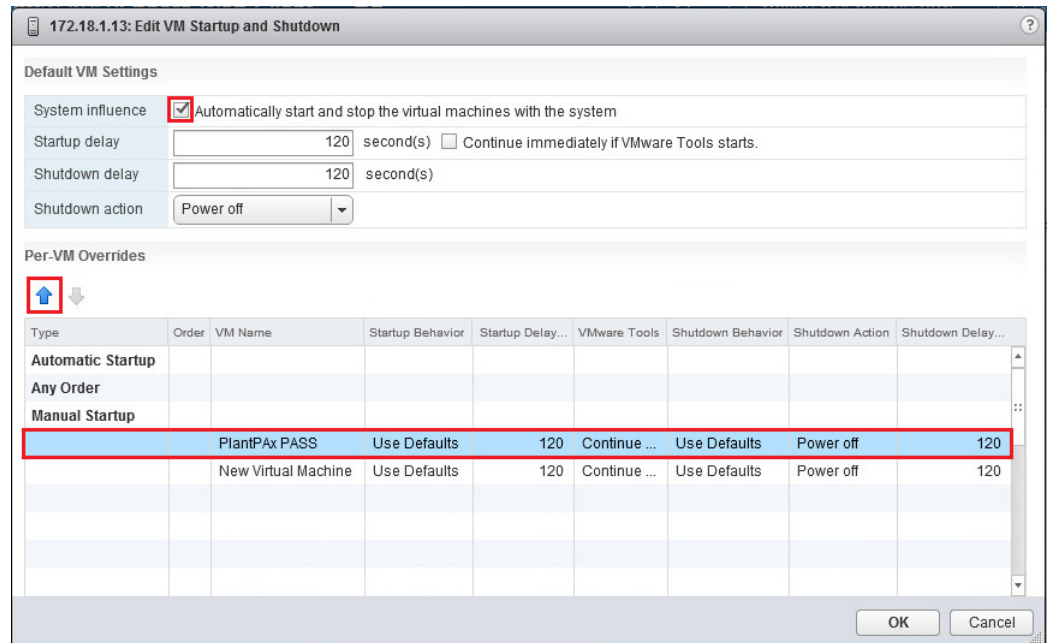


4. Select the Host Server, then select the Configure Tab, then select VM Startup/Shutdown. On the VM Startup/Shutdown window, click 'Edit'.



- Check 'Automatically start and stop virtual machines with the system'.  
Click the  (Up Arrow) to move the desired Virtual Machine host server from the Manual Startup category up to the Automatic Startup category.

You can select additional images and click the Up Arrow or Down Arrow to determine the startup order as shown in the following image. A sequential number order appears.



172.18.1.13: Edit VM Startup and Shutdown

Default VM Settings



System influence ☒ Automatically start and stop the virtual machines with the system

Startup delay 120 second(s) ☐ Continue immediately if VMware Tools starts.

Shutdown delay 120 second(s)

Shutdown action Power off

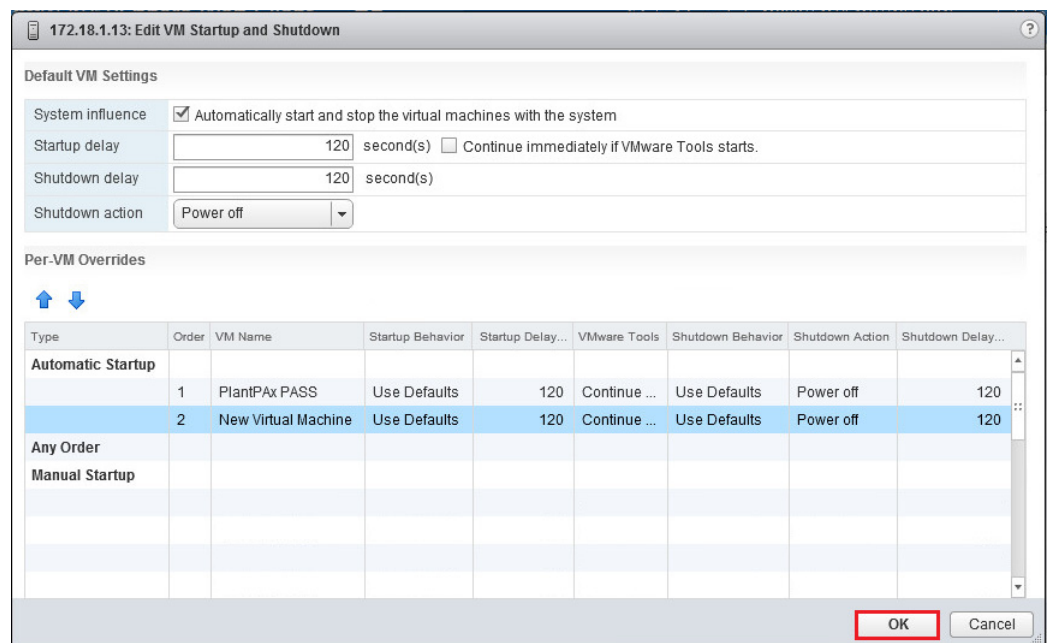
Per-VM Overrides

Type	Order	VM Name	Startup Behavior	Startup Delay...	VMware Tools	Shutdown Behavior	Shutdown Action	Shutdown Delay...
Automatic Startup								
Any Order								
Manual Startup								
		PlantPAx PASS	Use Defaults	120	Continue ...	Use Defaults	Power off	120
		New Virtual Machine	Use Defaults	120	Continue ...	Use Defaults	Power off	120

OK Cancel

- When you are satisfied with the Startup order, click OK.



172.18.1.13: Edit VM Startup and Shutdown

Default VM Settings



System influence ☒ Automatically start and stop the virtual machines with the system

Startup delay 120 second(s) ☐ Continue immediately if VMware Tools starts.

Shutdown delay 120 second(s)

Shutdown action Power off

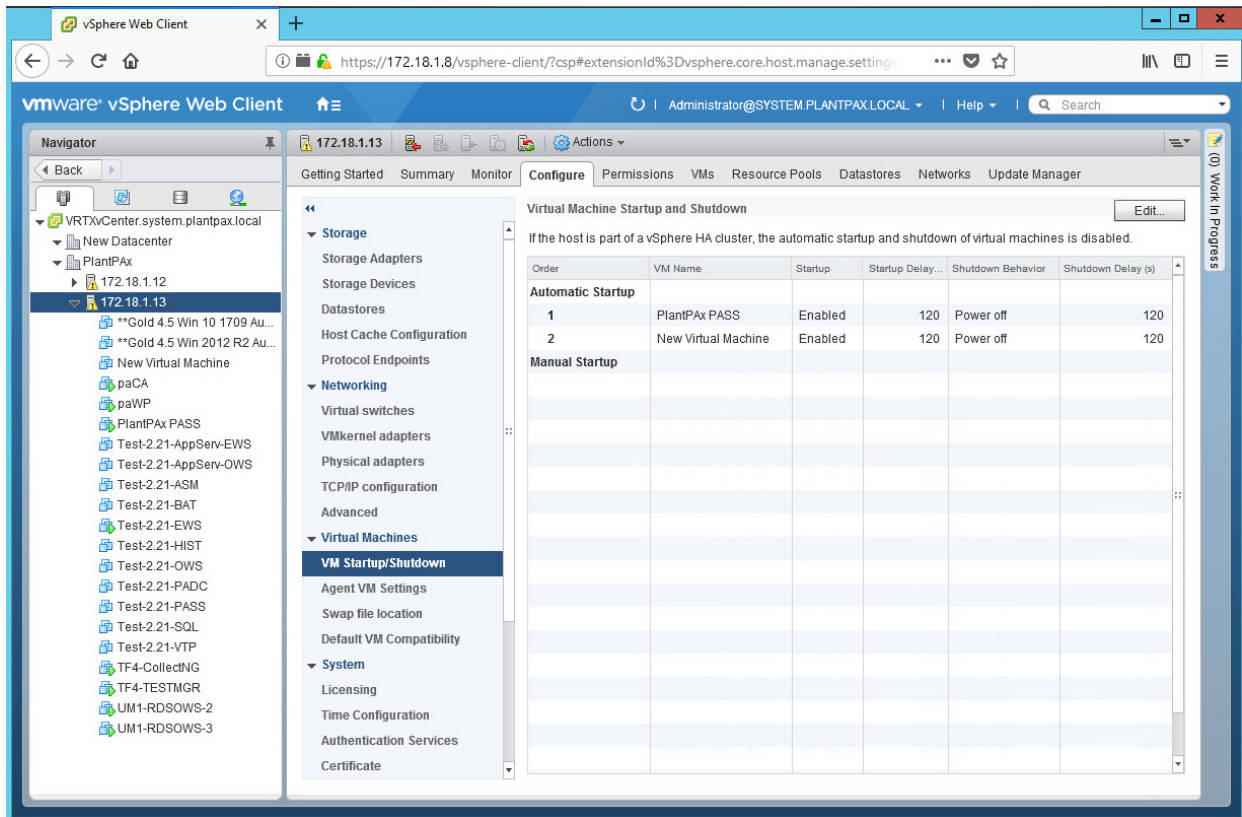
Per-VM Overrides

Type	Order	VM Name	Startup Behavior	Startup Delay...	VMware Tools	Shutdown Behavior	Shutdown Action	Shutdown Delay...
Automatic Startup								
	1	PlantPAx PASS	Use Defaults	120	Continue ...	Use Defaults	Power off	120
	2	New Virtual Machine	Use Defaults	120	Continue ...	Use Defaults	Power off	120
Any Order								
Manual Startup								

OK Cancel

7. The Virtual Machines are now configured for Automatic Startup as shown in the following screen capture.



### IMPORTANT

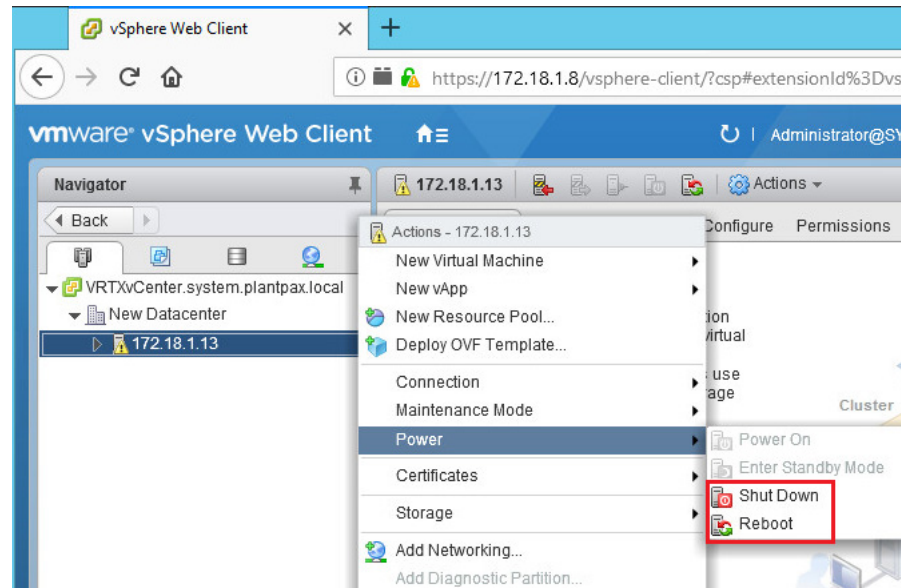
Following is the recommended start-up order for the typical system elements of a virtual PlantPax system.

1. Process Automation Domain Controller - PADC
2. SQL server - AppServ-Info (SQL)
3. Process Automation System Server - PASS
4. Engineering Workstation Application Server (AppServ-EWS)
5. Redundant Process Automation System Server - PASS
6. Batch Management Server (AppServ-Batch)
7. Operator Workstation Application Server (AppServ-OWS)
8. Historian server - AppServ-Info (Historian)
9. VantagePoint server - AppServ-Info (VantagePoint)
10. Asset Management server (AppServ-Asset)
11. Level 3 devices and computers

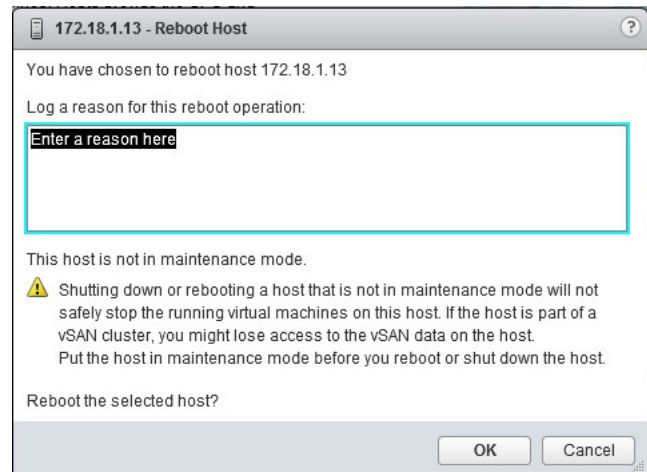
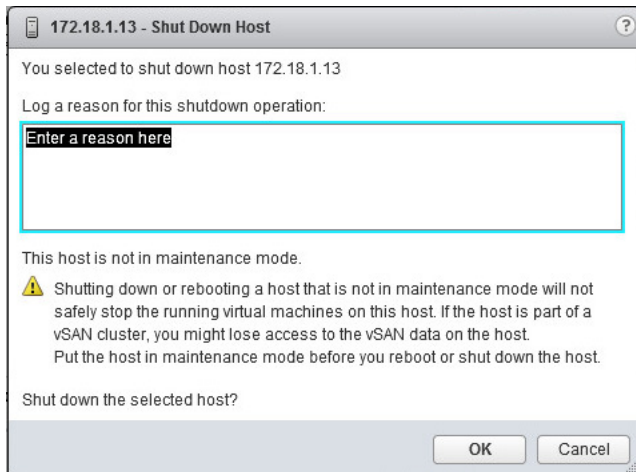
## Send Commands to Host Server

You can also send shutdown and restart commands directly to the host server via the vSphere Web Client.

1. On the vSphere Web Client window, right-click a host server and choose either Shut Down or Reboot.



2. In the confirmation window, type a reason for the Shut Down or Reboot and click OK or Cancel.



## Set Resource Pool Priority

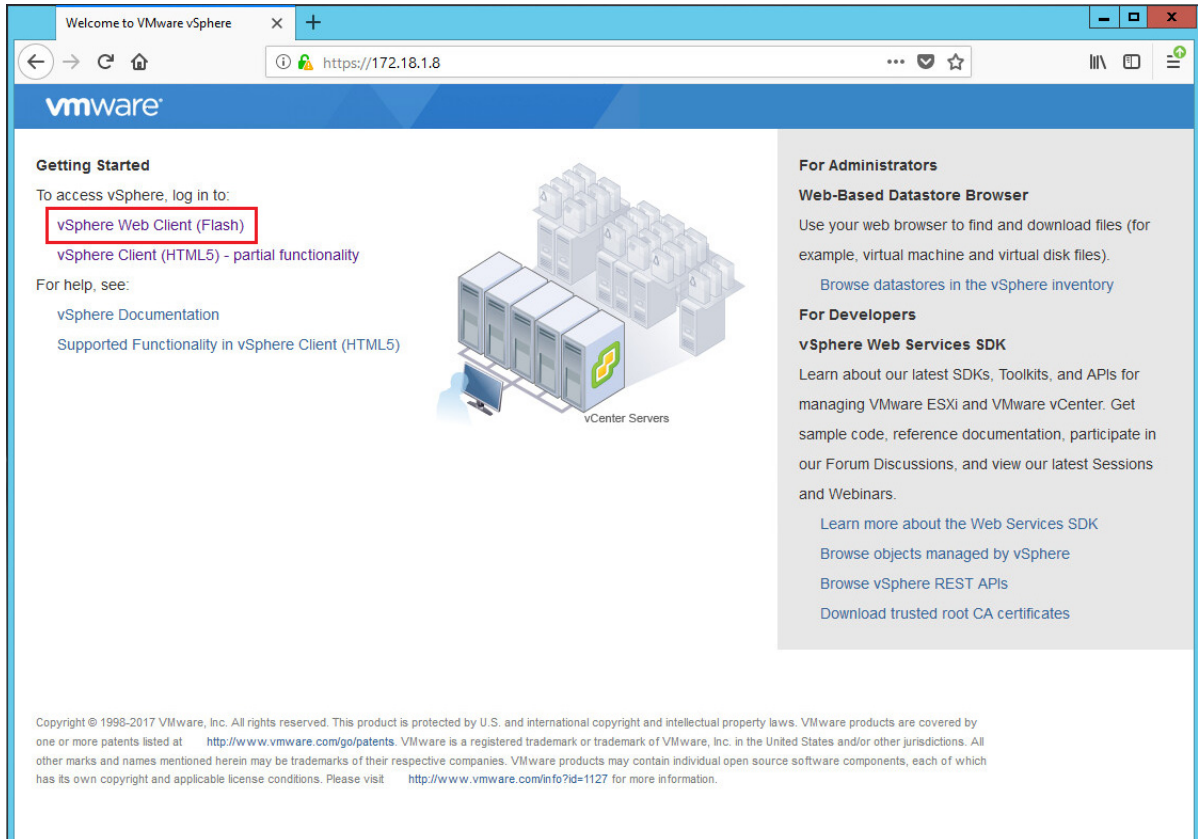
You can set the priority of the resource allocation that your virtual machine requires from the host server. The allocation of CPU and memory resources depends on performance needs. A virtual machine can be grouped for High Performance, Normal Performance, or Low Performance depending on its performance needs.

---

**IMPORTANT** For more information and resource pool priority recommendations for servers and workstation, see Resource Pool Allocation in the PlantPax System Reference Manual, publication [PROCES-RM001](#).

---

1. In a Web Browser, enter the IP address of the computer where your vCenter Server is installed.
2. On the Welcome to VMware vSphere screen, click vSphere Web Client (Flash).

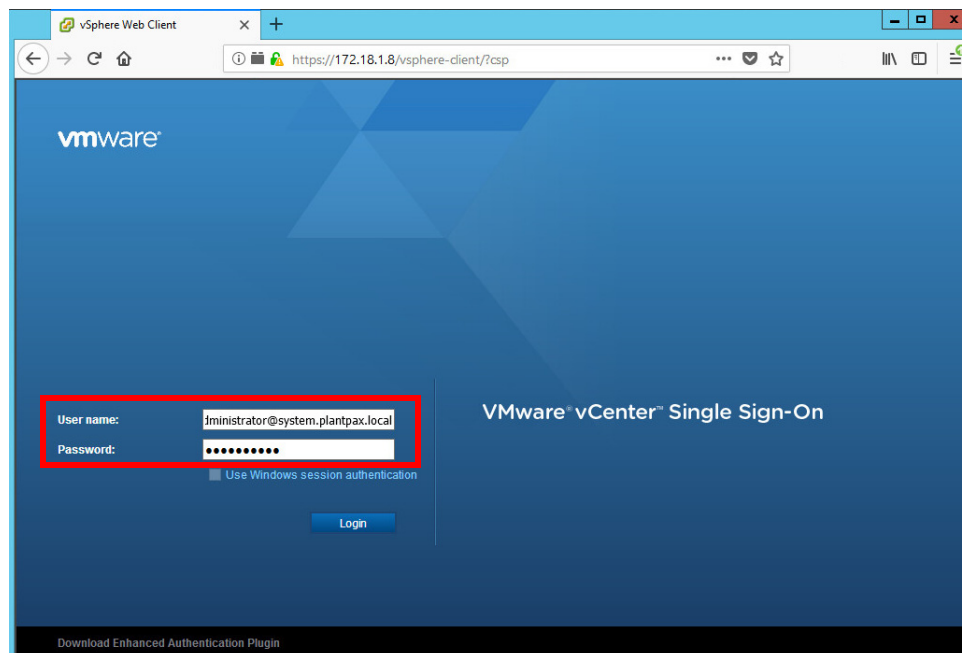


3. Type the User name and Password. Use the User name and password that you created for the vCenter Server.
4. Click Login.

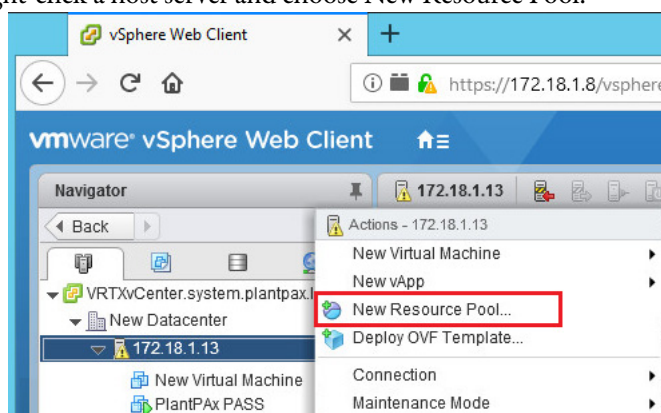
---

**IMPORTANT** The user name consists of the vCenter Single Sign-On user name plus '@' plus the Domain name.  
In our example, the user name is 'administrator@system.plantpax.local'.

---

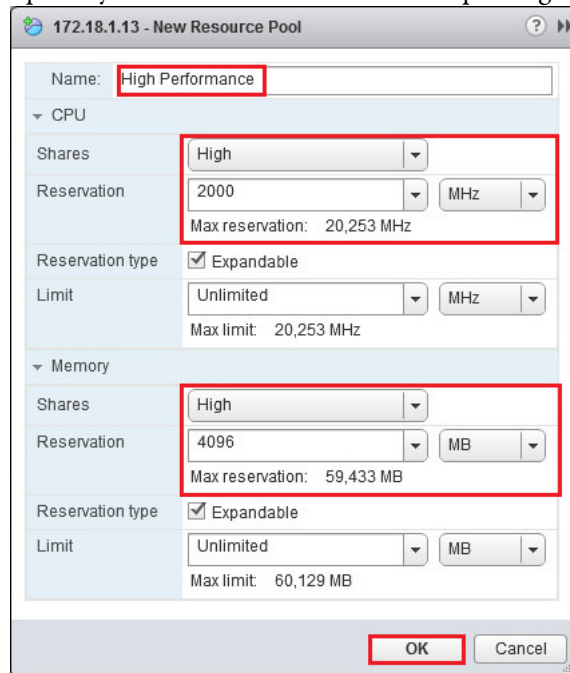


5. Right-click a host server and choose New Resource Pool.





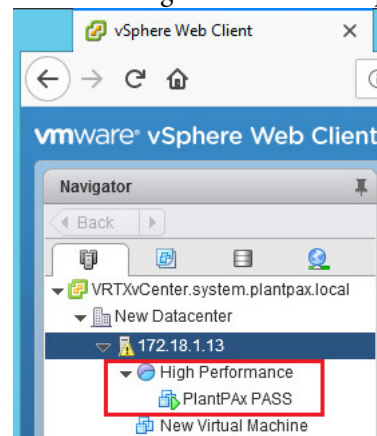
6. Type the priority in the Name text box. For example, High Performance.



7. Click the Shares pull-down menu and select 'High' for the CPU and Memory Resources categories.
8. Click OK.
9. Repeat step 1 through step 7 for each virtual machine depending if the priority is High Performance, Normal Performance, or Low Performance.

The priority types appear in the tree for the host server.

10. Drag and drop virtual machines to the Resource Pool that matches the needs and intended use. Settings for that resource pool are assigned.



## **Notes:**



# Configure the Workstations

This chapter describes how to configure the Engineering Workstation (EWS) and Operator Workstation (OWS) for your virtualized PlantPAx® system.

---

**IMPORTANT** The configuration procedures for the Engineering Workstation (EWS) and Operator Workstation (OWS) are similar even though these PlantPAx system elements operate differently.

---

This chapter describes the following configuration procedures:

- Microsoft Windows software
- Network adapter settings
- FactoryTalk® Directory location

The EWS supports system configuration, application development, and maintenance functions of the PlantPAx system. The EWS is the central location to monitor and maintain system operations.

The OWS supports operator interaction and control of the process through a human machine interface (HMI).

The required Rockwell Automation® software for each virtual server is included and pre-installed in the virtual image templates, **but not activated**. See [Activations on page 251](#) for activation procedures.

---

**IMPORTANT** If you own individual product activations, these activations can be used to activate the virtual image templates.

During the configuration of EWS and OWS stations, you can encounter a User Account Control window that asks if you want to allow a program to make computer changes. Click Yes to continue.

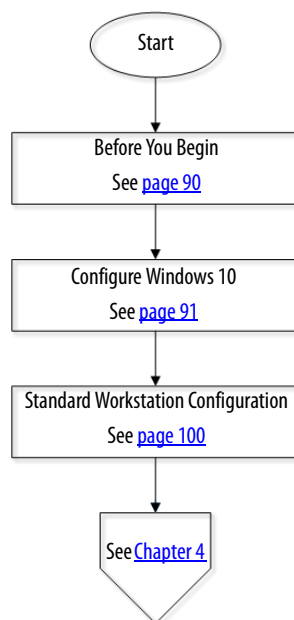
---

## Before You Begin

You must have deployed your template from a USB drive or from a local template before performing the following procedures. If you deploy a virtual image template into your system, see [Chapter 2 on page 33](#) for details.

[Figure 3](#) contains the topics that are described in this chapter. See the page number or click the links for quick access to specific information.

**Figure 3 - OWS and EWS Workflow**



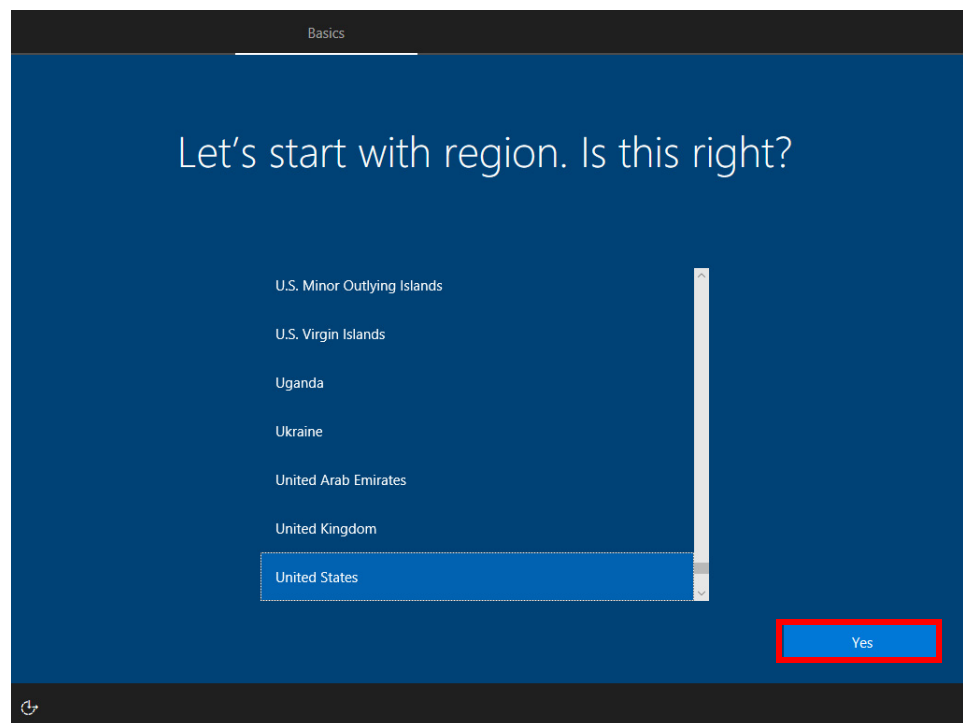
## Configure Microsoft Windows 10

Complete these steps to configure Microsoft Windows 10 settings for the EWS and OWS workstations.

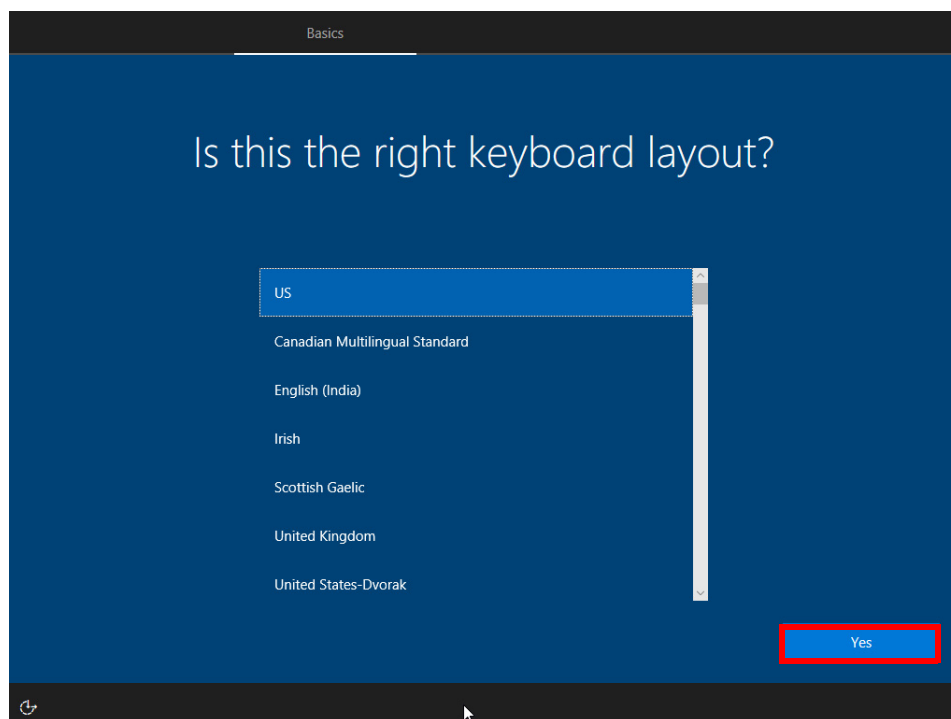
1. From a web browser, enter the IP address of the computer where your host server is installed.
2. Type the user name and password for the host server, and click Login.

The VMWare ESXi window appears.

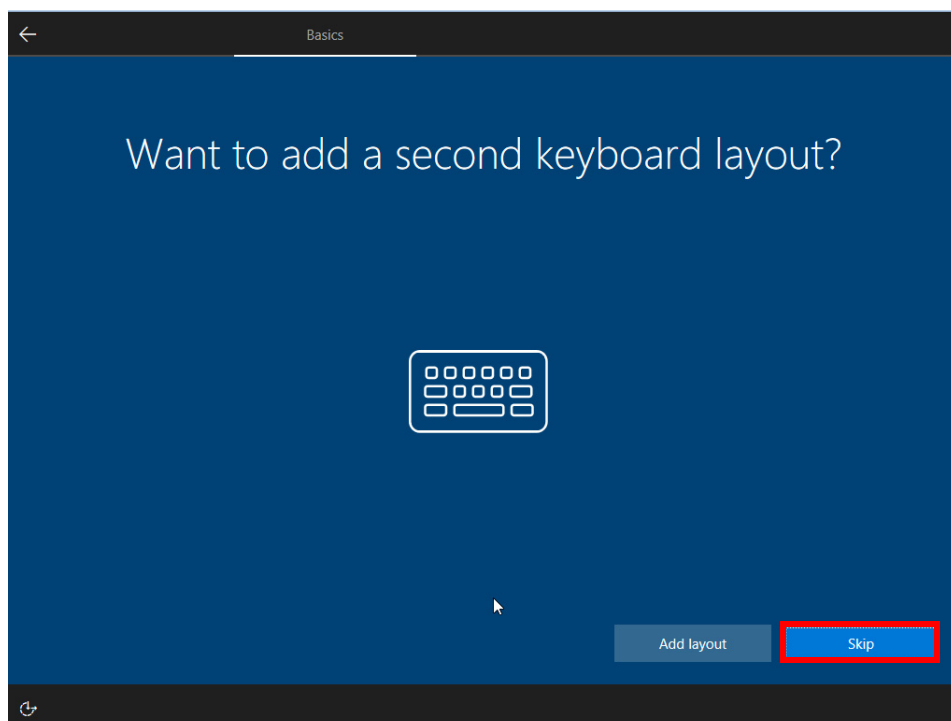
3. From the Navigator in the left pane, right-click the virtual machine that you want to configure, and select Power>Power On.
4. Right-click the virtual machine again, and select Console>Launch Remote Console.
5. Select the appropriate region and click Yes.



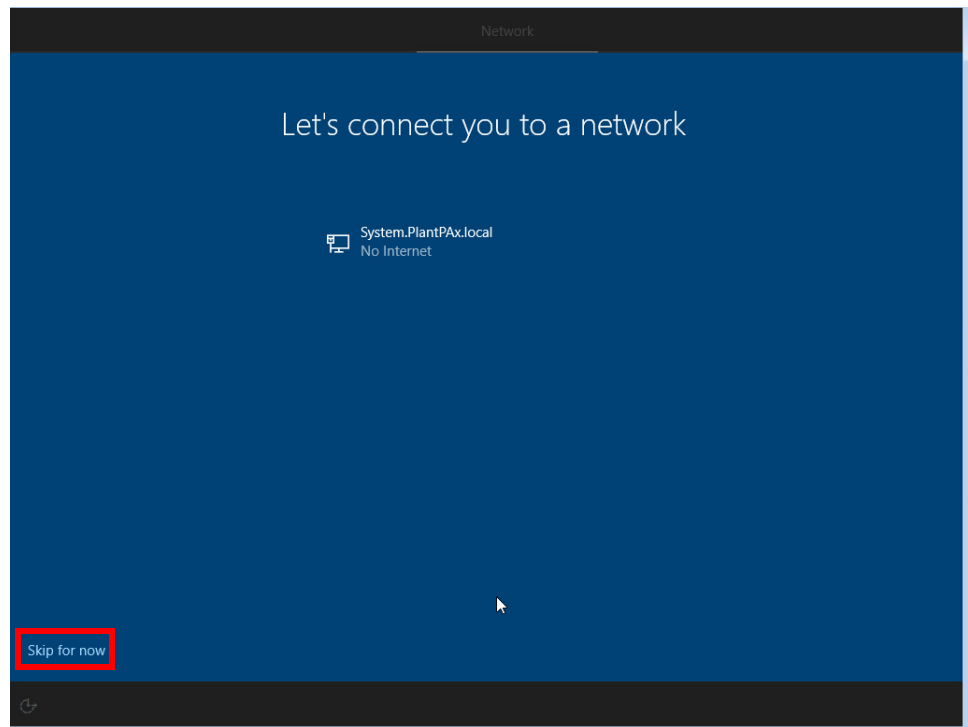
6. Select a keyboard for the appropriate language and click Yes.



7. Choose 'Add layout' if you want a second keyboard layout. Otherwise, click 'Skip'.

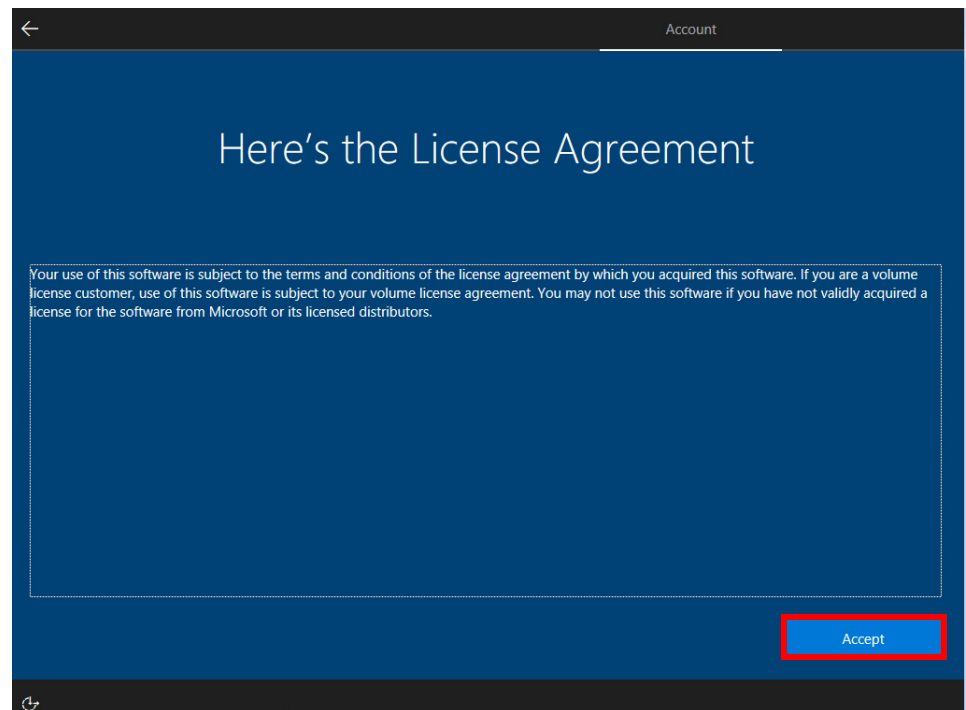


8. Click 'Skip for now' for an internet connection.

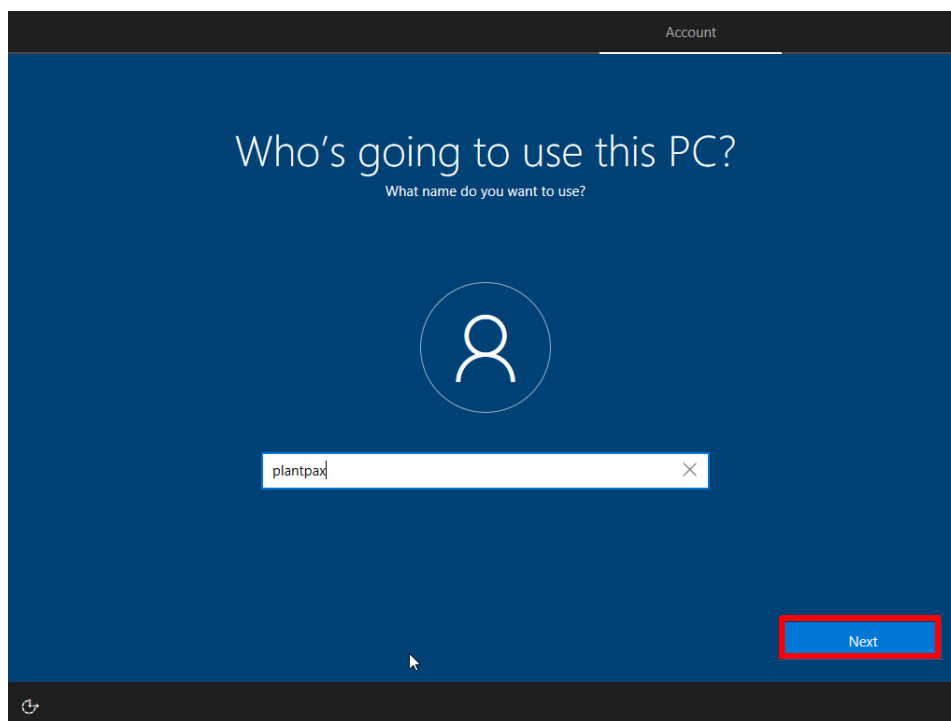


9. Click Accept for the license agreement.

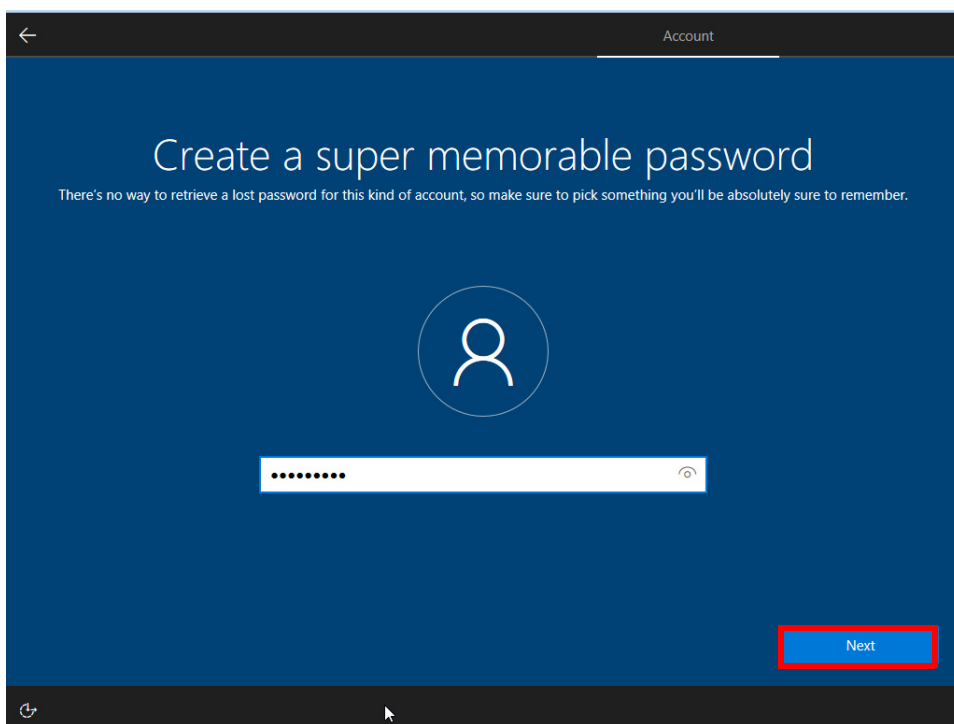
If installing the OWS ISO from Chapter 5, please skip to the next step.



10. Type a user name and click Next.



11. Create a password and click Next.



12. Retype the password to confirm your entry.

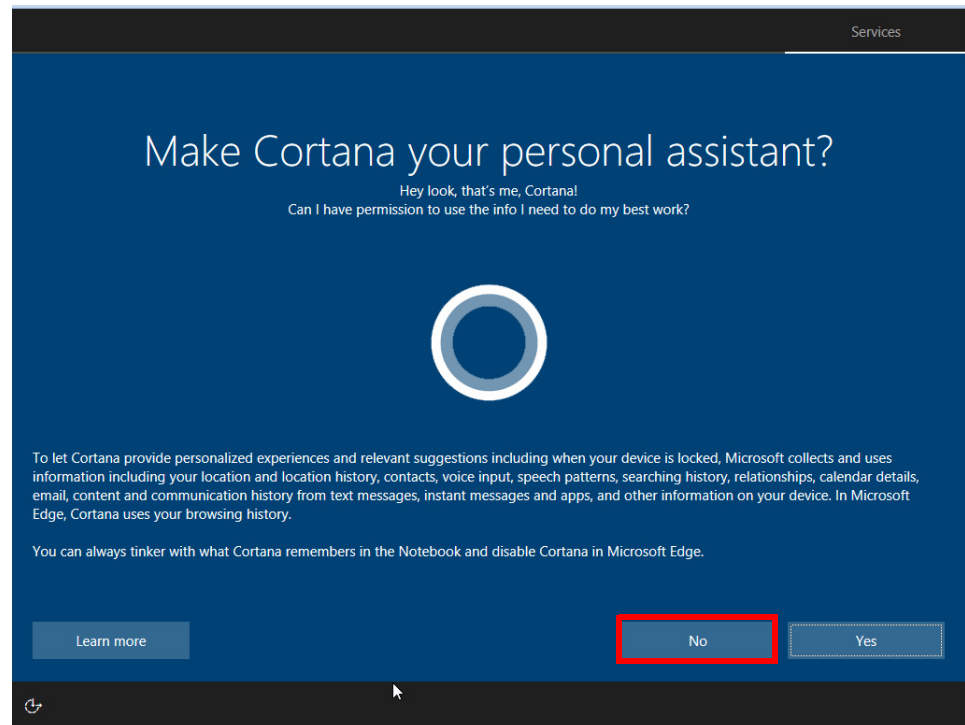
The screenshot shows the 'Confirm your password' screen in the Account setup wizard. The title 'Confirm your password' is centered, with the subtitle 'Now, confirm that password' below it. A user icon is centered above a password input field. The input field contains a series of dots, indicating a masked password. A 'Next' button is located in the bottom right corner, highlighted with a red rectangle. The top bar shows a back arrow and the word 'Account'. The bottom bar shows a refresh icon.

13. Click Next.

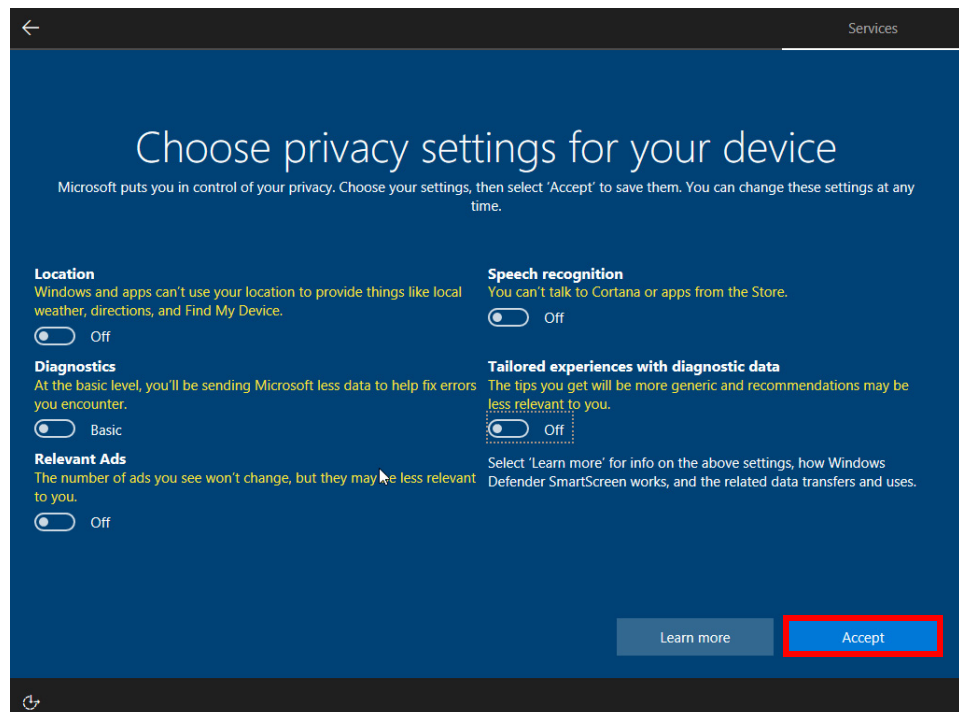
14. Type a clue to remind you of your password, and click Next.

The screenshot shows the 'Add a hint for your password' screen in the Account setup wizard. The title 'Add a hint for your password' is centered, with the subtitle 'Just in case you forget. Again, make it as unforgettable as you can.' below it. A user icon is centered above a text input field. The input field contains the placeholder text 'password hint'. A 'Next' button is located in the bottom right corner, highlighted with a red rectangle. The top bar shows a back arrow and the word 'Account'. The bottom bar shows a refresh icon and a mouse cursor.

15. Click No.





16. Turn Off the privacy options and click Accept.





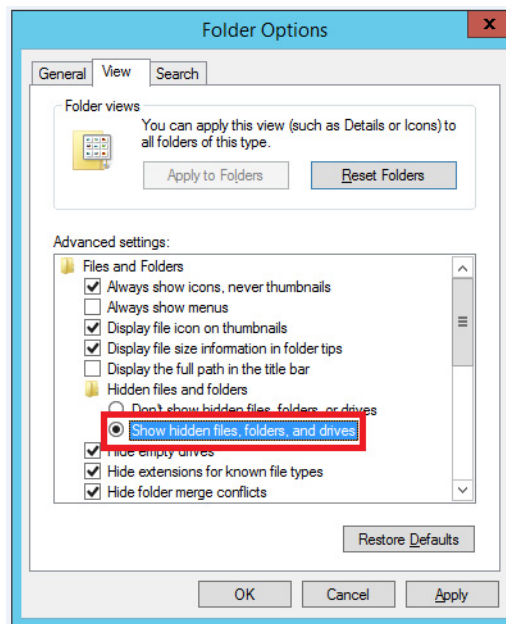
## Configure Programs Menu

Complete the steps on the system computers to group folders under 'Programs' on the taskbar. When complete, you can access Windows and Rockwell Software® folders by clicking the Programs  symbol.

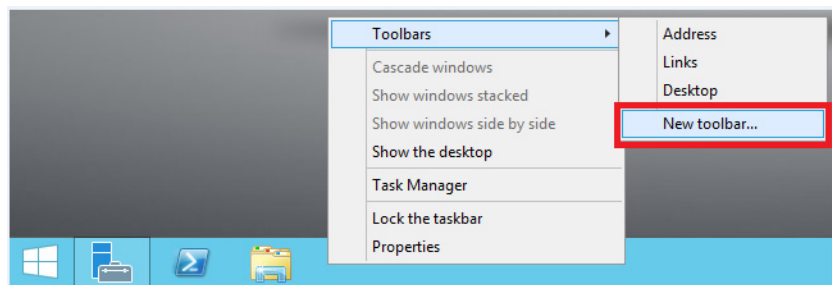
1. Click the Windows  symbol on the left side of the taskbar.
2. Click Control Panel and choose File Explorer Options.

A dialog box appears.

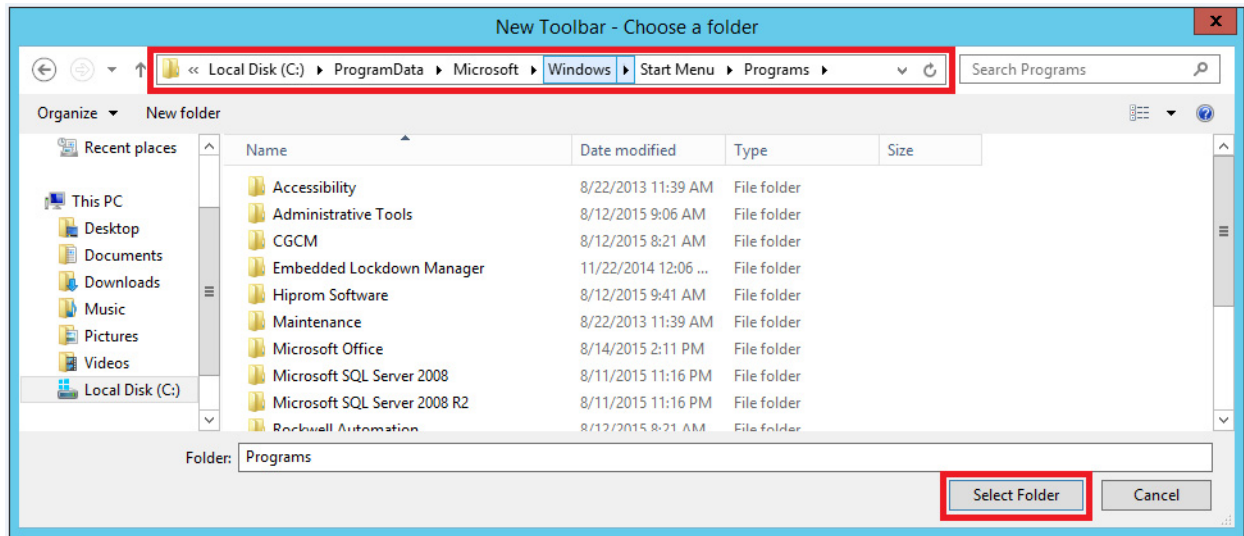
3. On the View Tab, select 'Show hidden files, folders, and drives' and click OK.



4. Right-click in the taskbar, choose Toolbars>New toolbar.

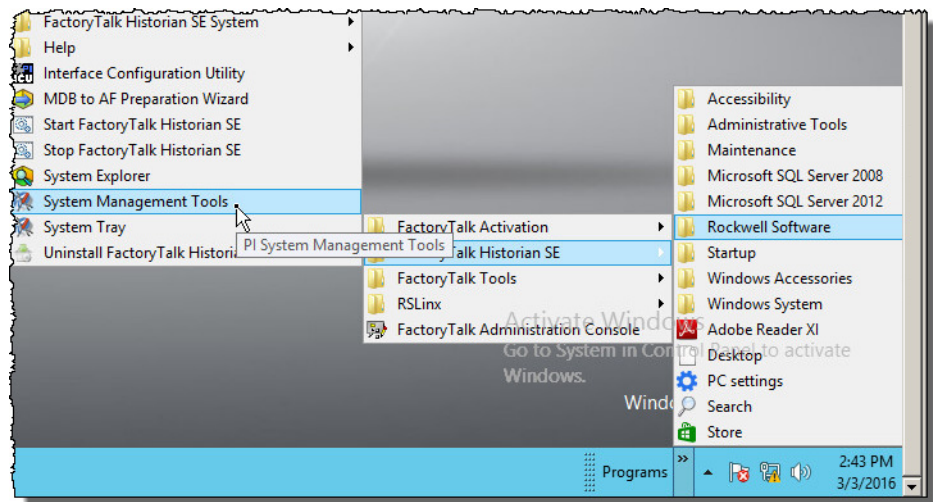


5. On the New Toolbar window, navigate to your Programs folder. For example: C:\ProgramData\Microsoft\Windows\StartMenu\Programs.



6. Click Select Folder.

The result is a custom menu with easy access to Rockwell Software.




7. Before proceeding, click the Date/Time in the lower right-hand corner of the desktop. Verify that the Date and Time settings are correct.
8. Check the Internet Time Tab and make sure to clear the Synchronize with a Time Server checkbox.

## Standard Workstation Configuration

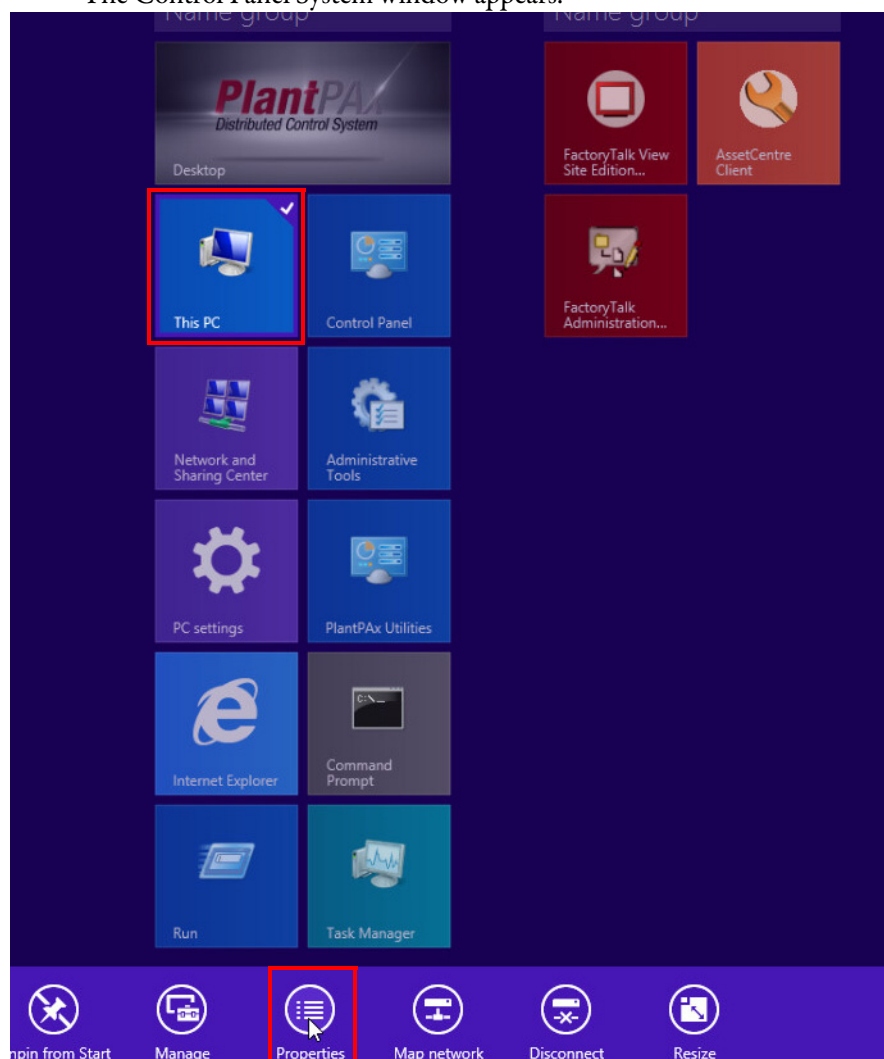
The following procedures apply to EWS and OWS workstations.

### Rename the Computer

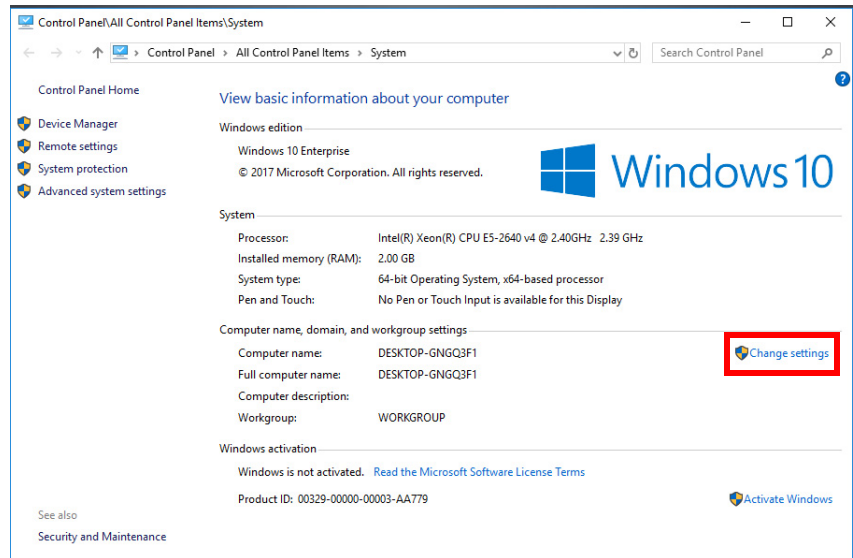
You have the option of giving the computer another name than the one assigned during configuration of the Windows settings. Or, you can add the workstation to a domain by performing these steps.

1. On the desktop of the workstation, click the Windows  icon.
2. On the Windows Start page, right-click This PC and choose Properties at the bottom of the window.

The Control Panel System window appears.



3. In the Computer name, domain, and workgroup settings area, click Change Settings.

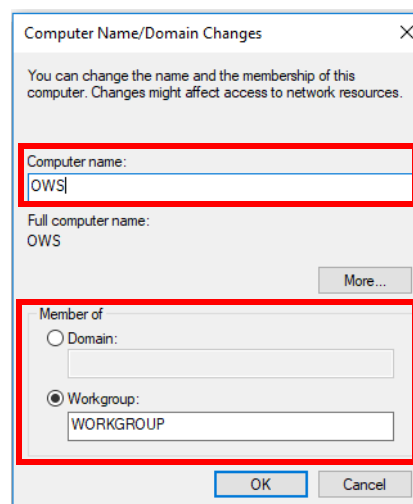


4. On the System Properties window, on the Computer Name tab, click Change.
5. On the Computer Name/Domain changes window, in the Computer Name box, type a computer name.

---

**IMPORTANT** Do not use spaces, hyphens, or any special character symbols.

---



6. Select Domain and type a domain name or Workgroup (default) and type a workgroup name.

---

**IMPORTANT** We recommend that PlantPAx servers and workstations be members of a Windows domain for systems with 10 or more computers. The domain centralizes administration of the users, groups, and security settings.

You must have an appropriate domain user account and proper credentials to add the computer to a domain.

---

7. Click OK.
8. When prompted, restart the workstation so the changes to the settings take effect.
9. Log in by using your domain credentials or the local user administration account.

## Configure Ethernet Network Adapter Settings

Complete these steps to set the speed, duplex, and power management settings for the Ethernet adapter.

1. Click Start and choose Control Panel.
2. Click Network and Sharing Center.  
The Network and Sharing Center dialog box appears.
3. Click Change Adapter Settings.
4. Right-click Local Area Connection and choose Properties. The Network Properties dialog box appears.
5. Click Configure.
6. Click the Advanced tab.
7. From the Property window, choose Link Speed and Duplex.
8. From the Value menu, choose Auto Negotiation.
9. Click the Power Management tab.
10. Clear the 'Allow the computer to turn off this device to save power' checkbox.
11. Click OK.

## Configure Remote Settings

Complete these steps to configure remote settings for a workstation to allow remote connections to this computer.

1. Right-click the Windows Start icon and choose System.
2. Click Remote settings.
3. In the Remote Assistance Section, verify that the 'Checkbox to Allow Remote Assistance connections to this computer' is not checked.
4. In the Remote Desktop Section, click the 'Allow remote connections to this computer' box.
5. Click OK.

## Adjust the Processor Scheduling Setting

Complete these steps to adjust processor scheduling for best performance in the Windows 10 operating system.

1. Right-click the Windows Start icon and choose System.
2. Click the Advanced system settings.
3. From the Advanced tab, click the Settings button under Performance.
4. On the Performance Options, choose the Advanced tab.
5. Under the Processor Scheduling section, click the Programs button to adjust best performance.
6. Click OK.


## Use PI Builder Excel Add-in

If you plan to use PI Builder with Microsoft Excel software, first install Excel. See the AppServ-EWS section in [Chapter 4 on page 105](#) for how to install PI Builder.

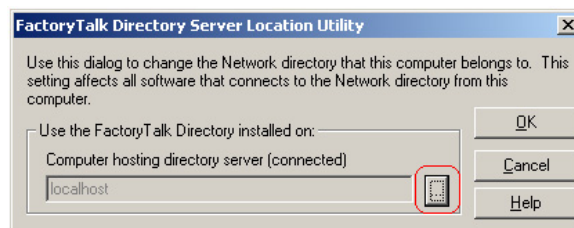
## Specify the FactoryTalk Directory Location

**IMPORTANT** To complete this procedure, a PASS server must be configured on your system. The workstation being configured must have an established connection with the PASS server.

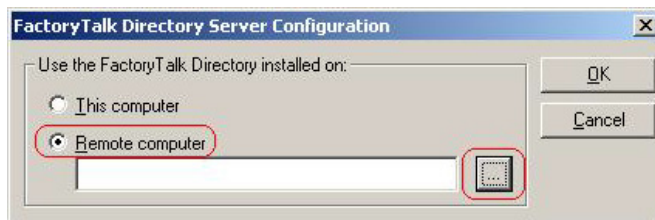
Complete these steps to specify the network FactoryTalk Directory location for EWS and OWS workstations.

1. Click the Programs icon  and choose Rockwell Software>FactoryTalk Tools>Specify FactoryTalk Directory Location.

The FactoryTalk Directory Server Location Utility dialog box appears.



2. Click Browse (ellipsis '..').
3. Type your FactoryTalk Directory Administration Console credentials into the login screen and click OK.
4. Click Remote computer.



**IMPORTANT** Browse can be inactive if Network Discovery and File Share are not enabled.

5. Click Browse (ellipsis '..') to navigate the network to find the computer name of the PASS server. This computer is hosting the FactoryTalk Directory services.
6. Choose the appropriate PASS server name and click OK. The network FactoryTalk Directory location has now been specified.

**IMPORTANT** Repeat all steps for each workstation.

7. When prompted, enter your credentials and click OK.
8. Restart the workstation after changes to the FactoryTalk Directory.



## Configure the Servers

PlantPAx® system servers (whether physical or virtual machines) share a collection of data to clients. This chapter describes how to configure virtual server templates.

If you plan to deploy a domain controller, we recommend that you configure the domain controller before any other system element.

Virtual templates are available for the following PlantPAx server system elements:

- Process Automation Domain Controller - PADC
- Process Automation System Server - PASS
- SQL Server - AppServ-Info (SQL)
- FactoryTalk® Historian Server - AppServ-Info (Historian)
- FactoryTalk Batch Management Server - AppServ-Batch
- FactoryTalk Asset Management Server - AppServ-Asset
- Operator Workstation Application Server - AppServ-OWS
- Engineer Workstation Application Server - AppServ-EWS
- FactoryTalk VantagePoint® Server - AppServ-Info (VantagePoint)

The required Rockwell Automation® software for each virtual server is included and pre-installed in the virtual image templates, **but not activated**. See [Activations on page 251](#) for activation procedures.

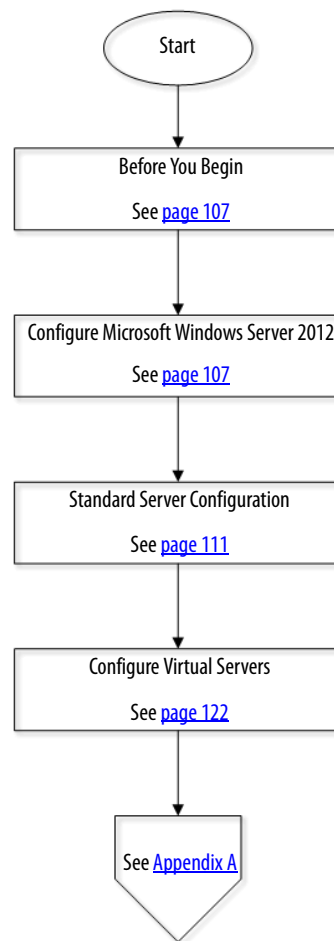
---

<b>IMPORTANT</b>	We recommend that VantagePoint, Batch, and Historian servers be installed <b>after</b> the host computer name is assigned. If you already own individual product activations, these activations can also be used to activate the virtual image templates.
------------------	--

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[Figure 4](#) contains the topics that are described in this chapter. Click the page number or the links for quick access to specific information in each subsection.

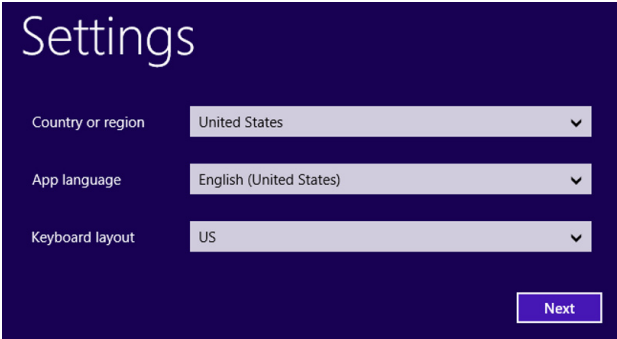
**Figure 4 - PlantPAx Server Initiation**



# Configure Microsoft Windows Server 2012

Complete these steps to configure Microsoft Windows Server 2012 settings for your virtual servers.

- 1. Complete steps 1...4 on [page 91](#).
- 2. Choose the appropriate option from the following pull-down menus

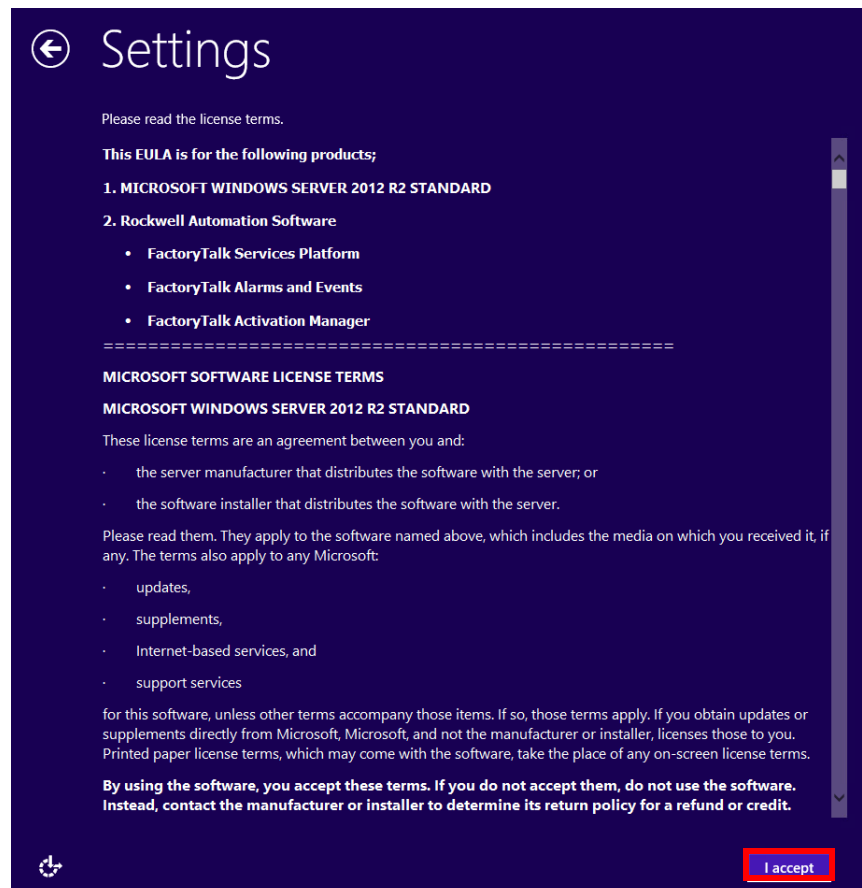


**Table 7 - Location Server Settings**

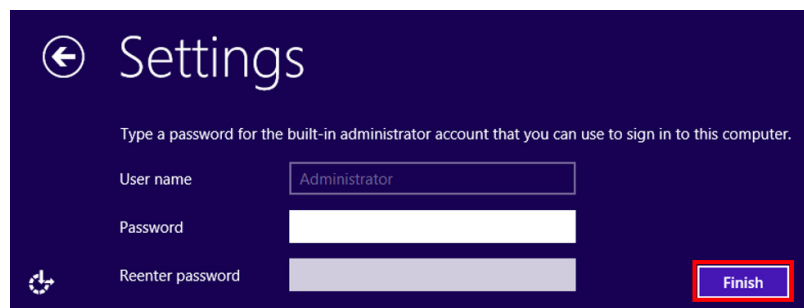
Menu	Description
Country or region	Choose your country or region. For example, United States.
Applicable language	Choose your language. For example, English (United States).
Keyboard layout	Choose your keyboard layout. For example, US.

- 3. Click Next.

4. On the EULA dialog box, read the license terms and click 'I accept'.



5. Type a password and then retype the password to verify.



**IMPORTANT** Passwords must meet the following minimum requirements:

- Cannot contain the user's account name or parts of the user's full name that exceed two consecutive characters
- Must be at least six characters in length
- Must contain characters from three of these four categories:
  - English uppercase characters (A...Z)
  - English lowercase characters (a...z)
  - Base 10 digits (0...9)
  - Non-alphabetic characters (for example, !, \$, #, %)

6. Click Finish.  
A logon message appears: 'Press Ctrl + Alt + Delete to sign in'.

7. Press Ctrl+Alt+Insert.

---

**IMPORTANT** Even though 'Press Ctrl + Alt + Delete ...' is displayed on the screen, you must press Ctrl + Alt + Insert to access the virtual machine. The sequence 'Ctrl + Alt + Del' is reserved for the terminal from where you connect to the server that hosts the virtual machine.

---

8. Click the Administrator icon, type the Administrator password that you created.

9. Press Enter.

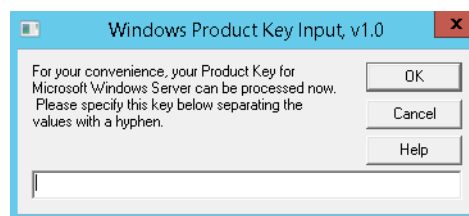
If you see the Other-User logon, type 'Administrator', type the administrator password that you just created.

10. Press Enter.



The Product Key window appears

11. In the Product Key window, type a valid Windows Server 2012 Product Key and click OK.



---

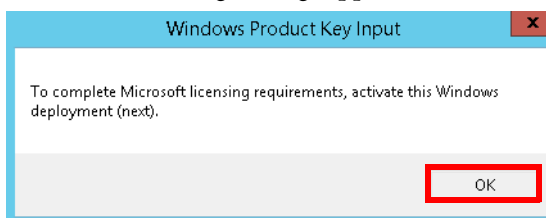
**IMPORTANT** To purchase Microsoft licenses, contact your Allen-Bradley® or Microsoft distributors. See [Use Windows License Keys on page 254](#) for more information.

---

A message appears to verify the product key.

12. Click Yes.

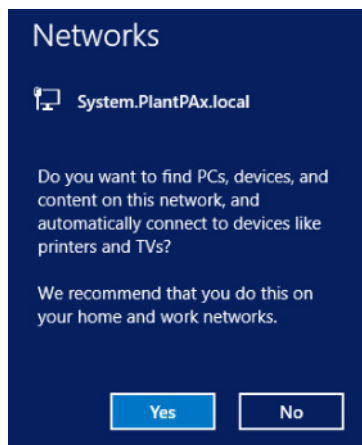
13. When the following message appears, click OK.



The virtual image desktop appears.



14. Click Yes to find devices on this network.



The Windows Server 2012 is now ready to use. Proceed to [Standard Server Configuration on page 111](#).

## Standard Server Configuration

The following procedures can help manage who has access to the server and login privileges. Complete these procedures on all virtual servers that you are deploying.

### Create an Administrator User Account

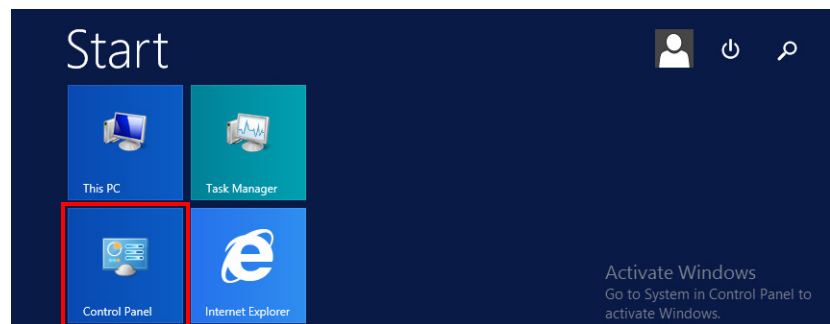
We suggest that you create an Administrator user account for each user that requires administrative privileges. This best practice safeguards server corruption by restricting access to the default administrative account, and creates a backup of critical system information. Each user can be delegated a separate user account with password protection.

Complete these steps.

1. On the virtual image, click the Windows  icon.

The Start window appears.

2. Click Control Panel.

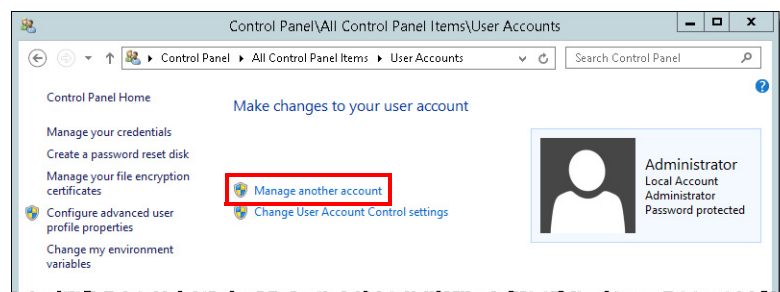


The Control Panel Items window appears.

3. Click User Accounts.

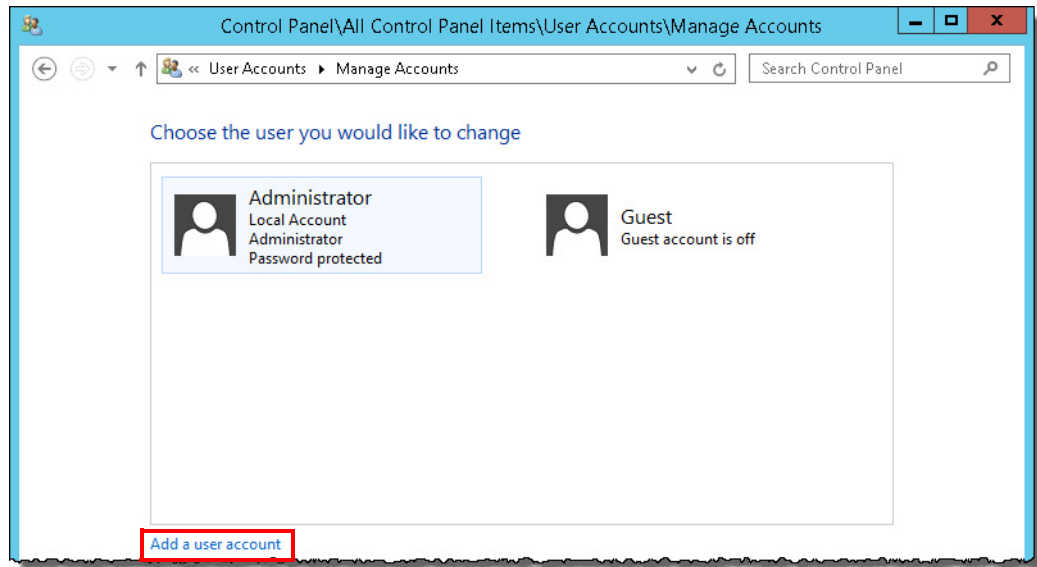
The User Accounts window appears.

4. Click Manage Another account.



The Manage Accounts window appears.

5. Click 'Add a user account' below the Administrator icon.

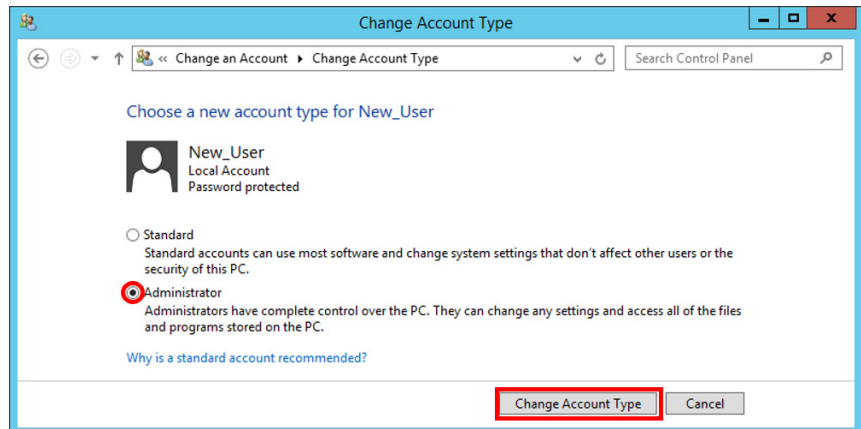


6. Type a name for the user that is being added, a password, retype the password for verification, and a hint to remind you of the password.

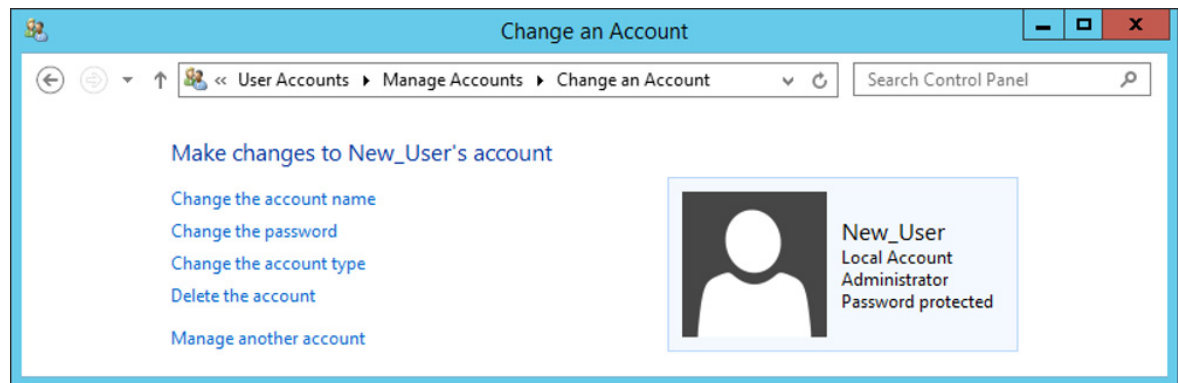
7. Click Next, and then Finish on the next dialog box.
8. If the user icons appear, click the user that you just created.  
The Change Account window appears.
9. Click 'Change the account type'.



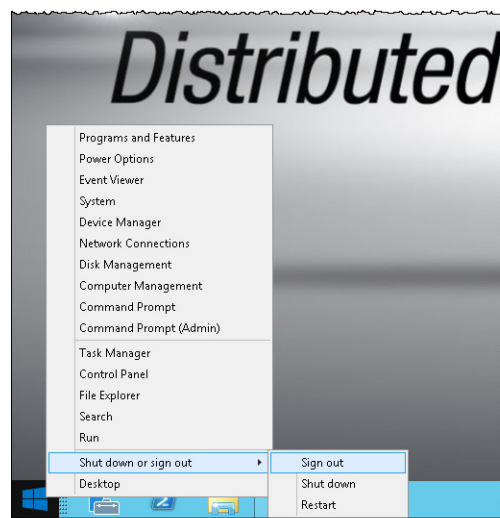
10. On the next window, select Administrator and click 'Change Account Type'.



11. On the next window, you can see the account information for the new user. To close the window, click the red 'X' in the upper-right corner.



12. Right-click Start and choose Shut down or Sign out>Sign out.



## Log on to New User Account

After you sign out, a logon message appears: 'Press Ctrl + Alt + Delete to sign in'.

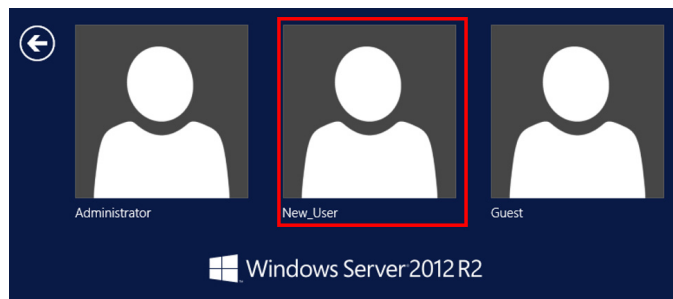
1. Press Ctrl+Alt+Insert.

---

**IMPORTANT** Even though 'Press Ctrl + Alt + Delete ...' is displayed on the screen, you must press Ctrl + Alt + Insert to access the virtual machine. The sequence 'Ctrl + Alt + Del' is reserved for the terminal from where you are connecting to the server that hosts the virtual machine.

---


Click New\_User or if you see the user icons, type the name of your new user.



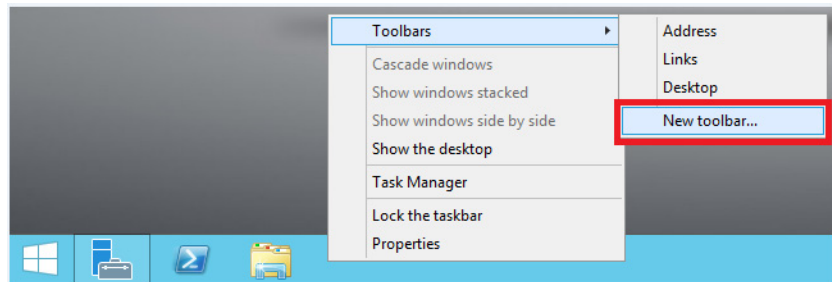
2. Type the password that you created for the new user in [step 6 on page 112](#) and press Enter. The Windows virtual image desktop appears.



## Configure Programs Menu

Complete these steps on the system computers to group folders under 'Programs' on the taskbar. When complete, you can access Windows and software folders by clicking the Programs  symbol.

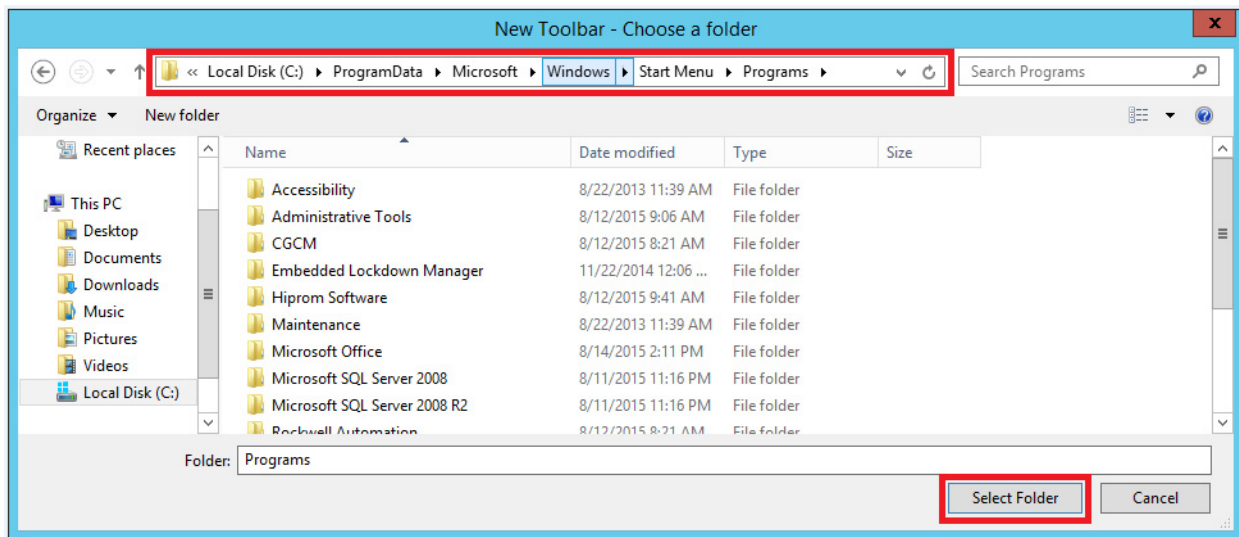
1. Right-click in the taskbar, click Toolbars, and choose New toolbar.



2. On the New Toolbar window, navigate to your Programs folder.

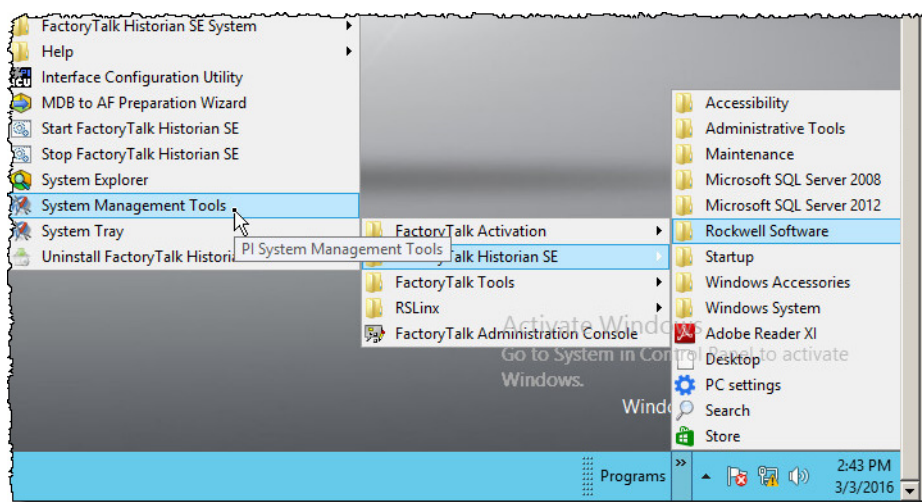
For example:

C:\ProgramData\Microsoft\Windows\StartMenu\Programs.



3. Click Select Folder.


This creates a custom menu with easy access to Rockwell Software®

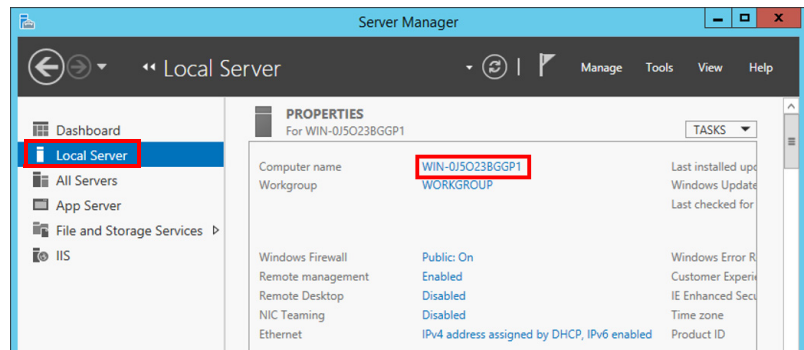


4. Before proceeding, click the Date/Time in the lower right-hand corner of the desktop. Verify that the Date and Time settings are correct.
5. Check the Internet Time Tab and make sure the checkbox for Synchronize with a Time Server is unchecked.

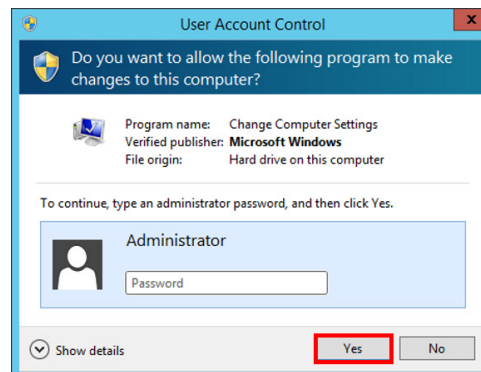
## Rename the Computer

Complete these steps to rename the computer.

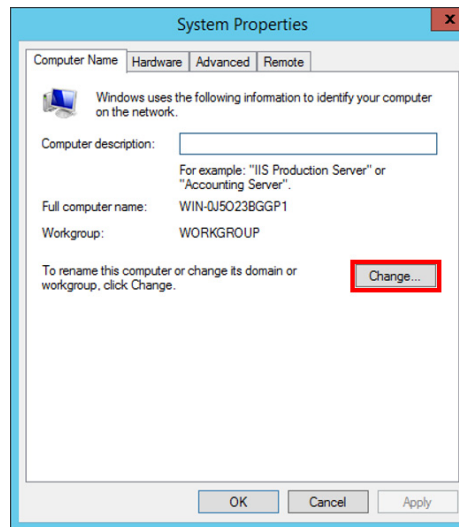
1. From the Windows Server 2012 desktop, click  to open the Server Manager.
2. On the Server Manager window, click Local Server and then click the computer name.



3. If the User Account Control dialog box appears, type your password and click Yes.



4. Click Change on the System Properties dialog box.



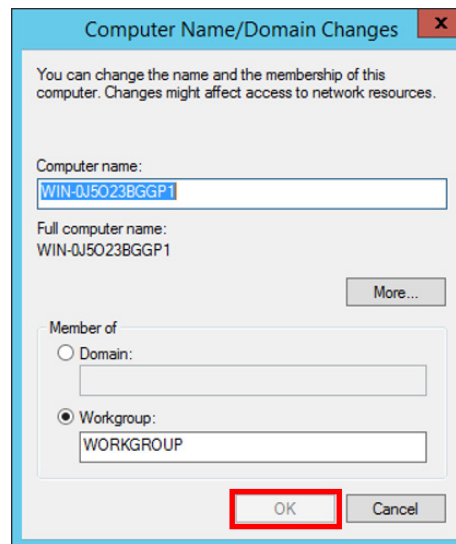
5. Type a new computer name.

---

**IMPORTANT** Do not use spaces, hyphens, or any special character symbols.

---

6. Click Domain, type the name of your domain, and click OK.




---


**IMPORTANT** We recommend that you restart your computer so that these changes take effect.

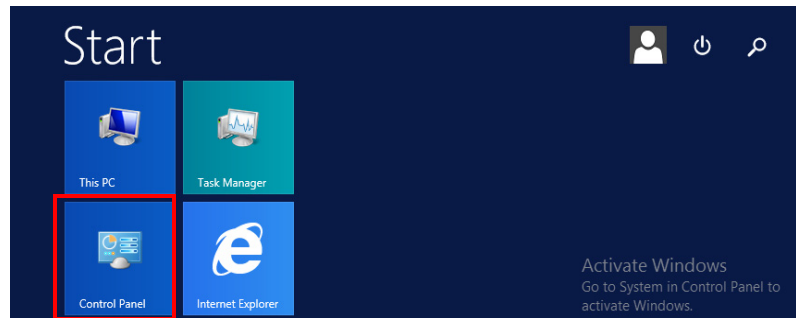
---

7. Restart the virtual machine for the changes to the settings to take effect.
8. Log in by using your domain credentials or the local user administration account previously created.

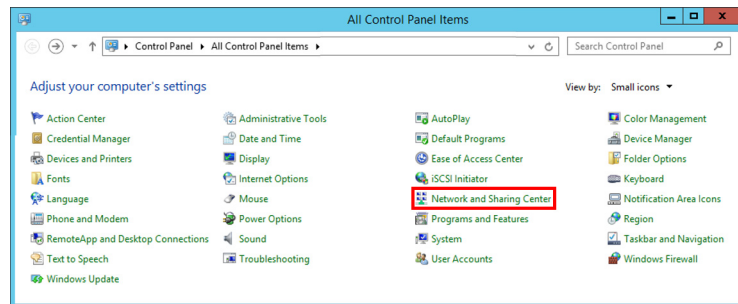
## Configure Ethernet Network Adapter Settings

Complete these steps to set the speed, duplex, and power management settings for the Ethernet adapter.

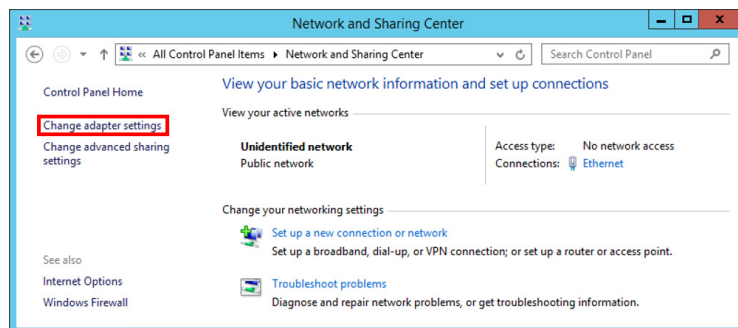
1. On the virtual image, click the Windows  icon.
2. In the Start window, click Control Panel.



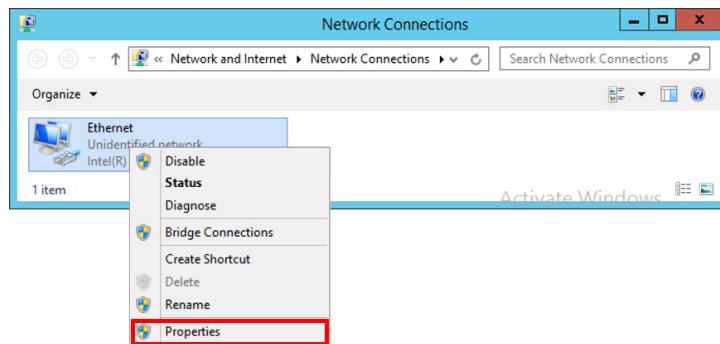
3. On the All Control Panel Items window, click Network and Sharing Center.



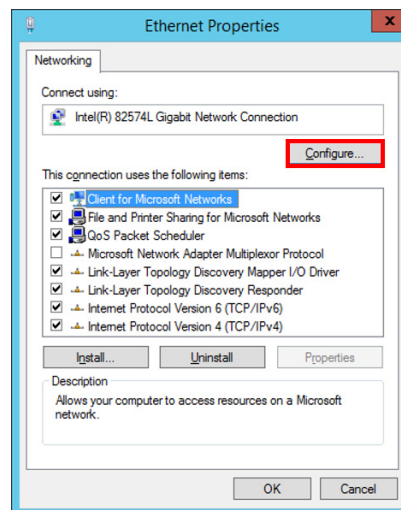
4. In the Network and Sharing Center window, click Change Adapter Settings.



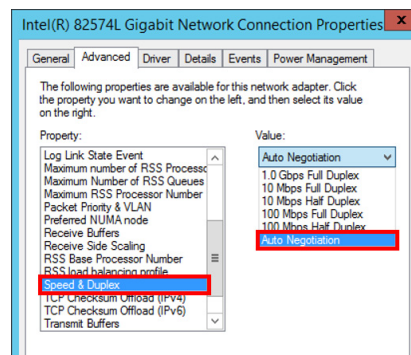
5. Right-click the Ethernet network connection and choose Properties.



6. If asked, type your password and click Yes.
7. In the Ethernet Properties dialog box, click Configure.



8. Click the Advanced tab.
9. From the Property window, choose Speed and Duplex.
10. From the Value pull-down menu, choose Auto Negotiation.



11. Click the Power Management tab.
12. Clear the 'Allow the computer to turn off this device to save power' checkbox.
13. Click OK.



## Configure Remote Settings

Complete these steps to configure remote settings for a virtual image to allow remote connections to this computer.

1. Right-click the Windows Start icon and choose System.
2. Click Remote settings.
3. In the Remote Assistance Section, verify that the 'Checkbox to Allow Remote Assistance connections to this computer' is not checked.
4. In the Remote Desktop Section, click the 'Allow remote connections to this computer' box.
5. Click OK.

## Adjust the Processor Scheduling Setting

Complete these steps to adjust processor scheduling for best performance in the Windows Server 2012 operating system.

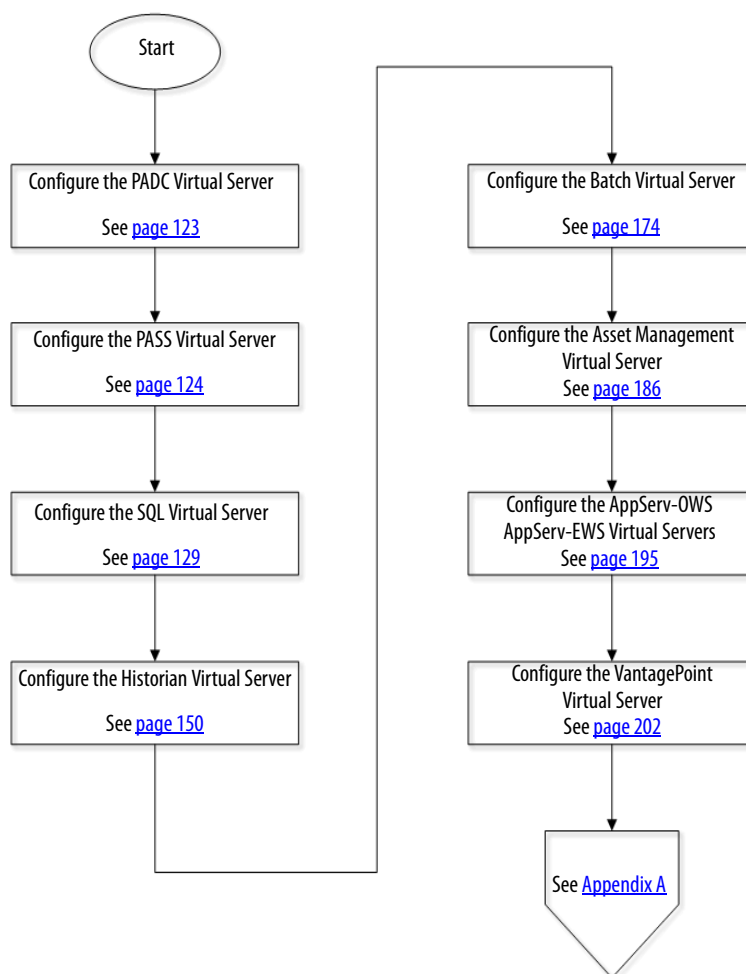
1. Right-click the Windows Start icon and choose System.
2. Click the Advanced system settings.
3. From the Advanced tab, click the Settings button under Performance.
4. On the Performance Options, choose the Advanced tab.
5. Under the Processor Scheduling section, click the Background services button to adjust for the best performance.
6. Click OK twice.

## Configure Server Templates

[Figure 5](#) contains the topics for the virtual servers that are described in this section. The PADC server must be deployed first.

See the page number or click the links for quick access to specific information.

**Figure 5 - PlantPAx Virtual Servers**



## Configure the PADC Virtual Server

A domain controller is a server that responds to security authentication requests (logging in, checking permissions, and so forth) within the Windows server domain. A domain grants you access to a number of network resources (such as applications and printers) with the use of a single user name and password combination.

The PlantPAx system uses a domain controller to store user account information, authenticate users, enforce security policies and best networking practices such as automatic network address assignment. Domain authentication is recommended, whether it's an existing domain or a new one.

Before configuring the domain controller, complete the following tasks:

- Verify the PADC template has been deployed.  
See [Deploy the PlantPAx Virtual Image Templates on page 33](#).
- Verify the Microsoft Window Server 2012 has been configured.  
See [Configure Microsoft Windows Server 2012 on page 107](#).

Once you have completed these tasks, see the PlantPAx Distributed Control System Infrastructure Configuration User Manual, publication [PROCES-UM001](#), for domain controller configuration procedures.

## Configure the PASS Virtual Server

The Process Automation System Server (PASS) hosts essential software components to run your system. The data, human-interface (HMI), and alarm servers reside in the PASS.

You must designate a PASS server for the FactoryTalk Directory. The directory centralizes the settings and administration of Rockwell Automation software components across multiple virtual machines.

The required Rockwell Automation software for the PASS system element is included and pre-installed in the PASS virtual image template, **but not activated**. To activate each PASS image, purchase an activation license. See [Table 1 on page 10](#) for catalog numbers.

### Configure the FactoryTalk Directory on the PASS

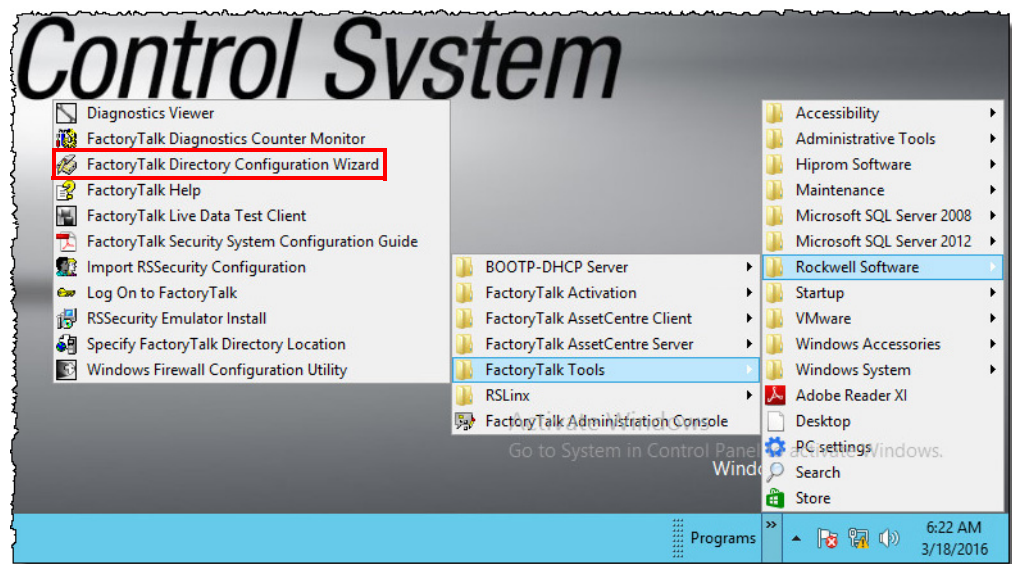
The following procedure describes how to designate the PASS server as the host of the FactoryTalk Directory. The directory server manages applications that can exist on multiple clients and servers on separate virtual machines on the PlantPAx system.

---

**IMPORTANT** You must have a user name and password with Administrator privileges to specify the FactoryTalk Directory location. Use the same user name and password for all FactoryTalk installations on the PlantPAx system.

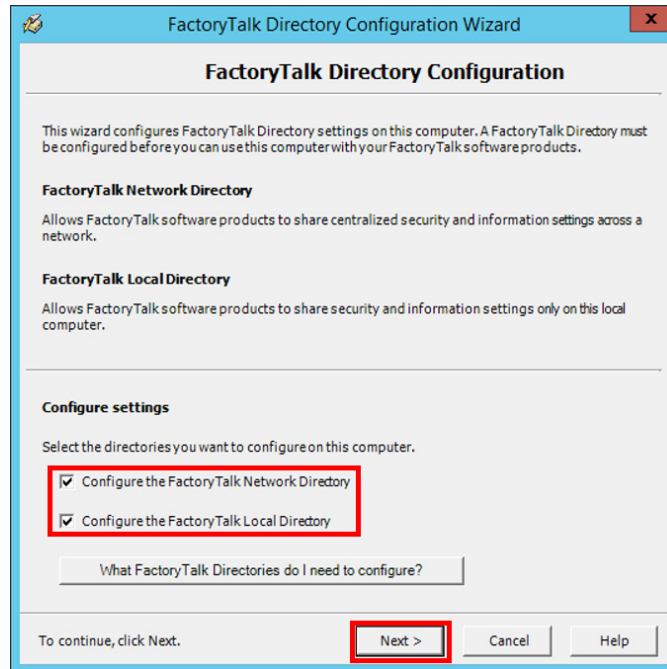
---

1. On the virtual image desktop, click the Programs icon and choose Rockwell Software>FactoryTalk Tools>FactoryTalk Directory Configuration Wizard.



2. Type your password and click Next.

3. In the FactoryTalk Directory Configuration Wizard page, check the following:
  - Configure the FactoryTalk Network Directory
  - Configure the FactoryTalk Local Directory



4. Click Next.

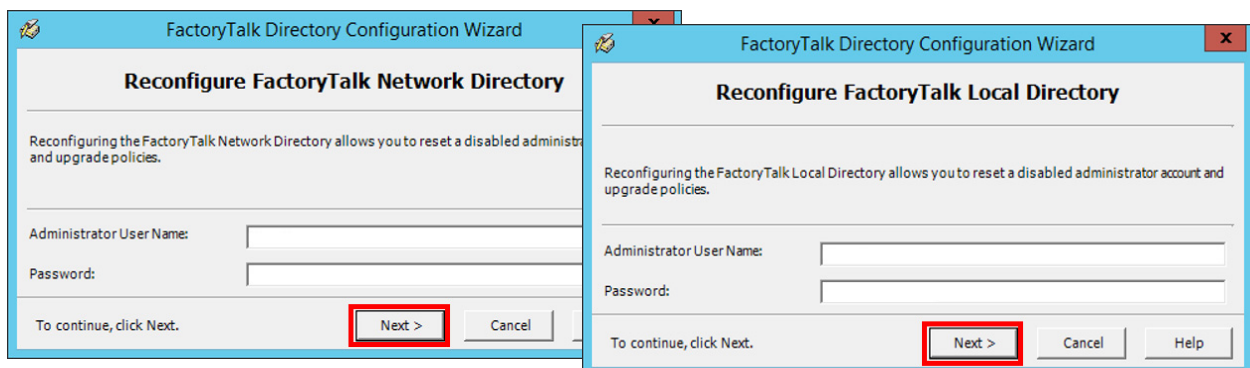
Configuring the local and network FactoryTalk Directories can take up to 30 seconds to process the request.

---

**IMPORTANT** In the next step, you are creating the credentials as you type them in. Remember these credentials for later use.

---

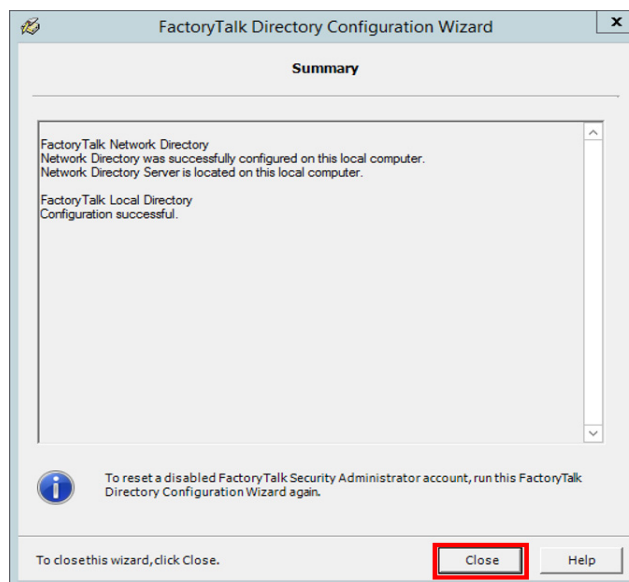
5. Type the FactoryTalk Network Directory credentials for the network directory configuration and click Next.
6. Type the credentials for the local directory configuration and click Next.



The password verification occurs twice because you checked both Network and Local Directory on the FactoryTalk Directory Configuration Wizard.

The network and local directory are successfully configured.

You see two of the following images, one for local and one for network.



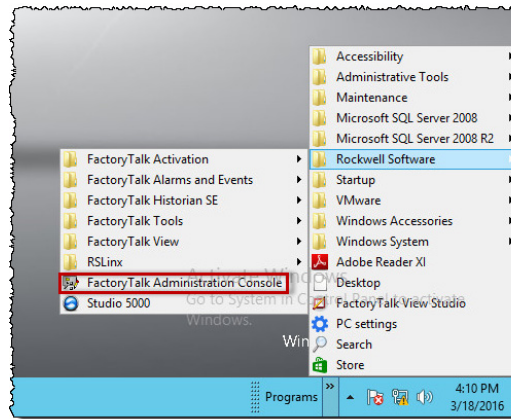
7. Click Close on each.

### *Delete the Old Computer Name*

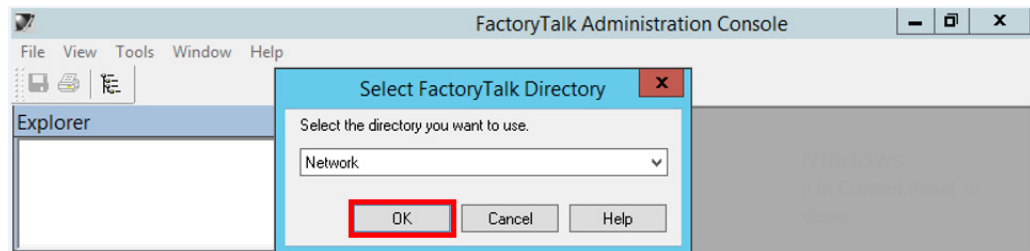
The old computer name is embedded in the sample applications. Therefore, if you want to use the sample applications, complete these steps to rehost the applications on the new computer name. You delete the old computer name from the FactoryTalk Directory by using the Administration Console.

Deleting the old computer name keeps the FactoryTalk Directory up to date with current computer names. This deletion also makes sure that applications do not attempt to communicate with computers that are no longer in the FactoryTalk Directory.

1. On the virtual image, click the Programs icon and choose Rockwell Software>FactoryTalk Administrator Console.

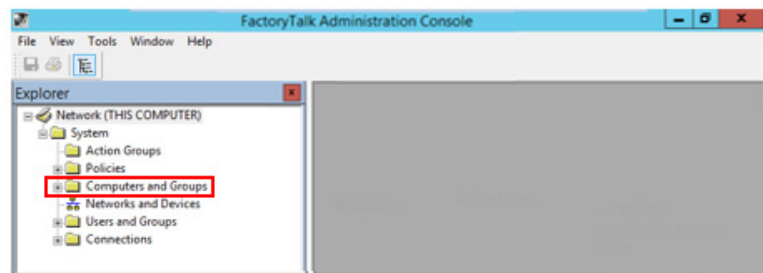


2. Use Network (default directory) and click OK.

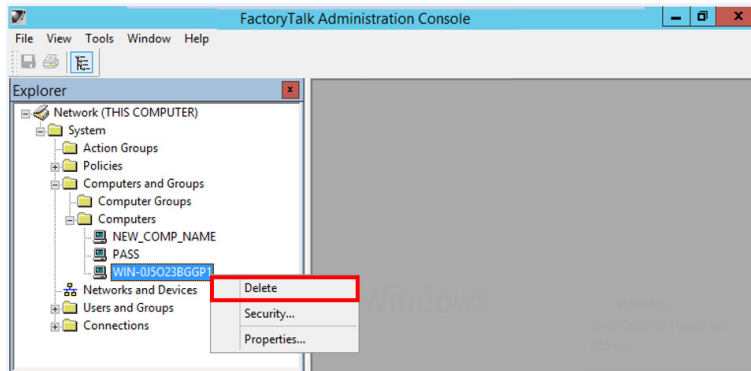


You can be asked for a password.

3. In the Project Explorer pane, click to expand the Computers and Groups folder and click to expand the Computers group.



4. Right-click all computer names except the one you just created and choose Delete.



5. Click Yes when a message appears and asks you to verify that you want to delete the computer name.
6. If you use the Local Directory, repeat [step 1](#) through [step 5](#) and make sure to select Local in step 4.
7. When finished, exit the FactoryTalk Administrator console.
8. Restart your computer.

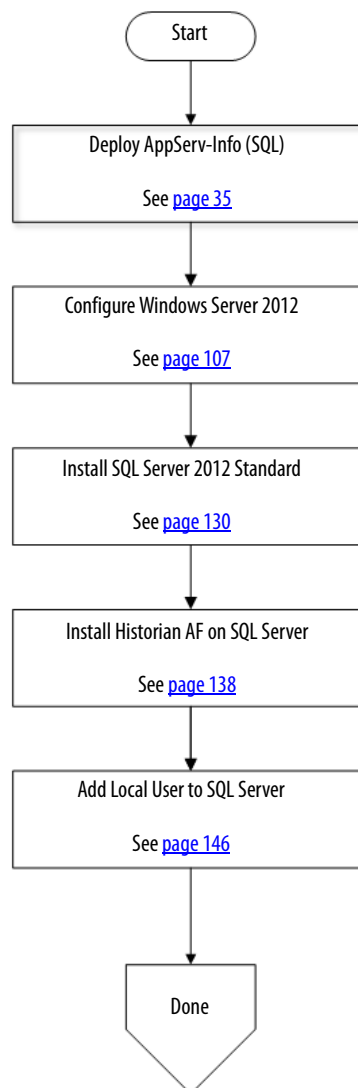


## Configure the SQL Virtual Server

The AppServ-Info (SQL) server is a database that is used to store Process data for FactoryTalk AssetCentre, FactoryTalk VantagePoint, and FactoryTalk Batch software programs. The FactoryTalk Alarm and Event server also uses the SQL database.

[Figure 6](#) lists the topics that are described in this section. Click a link or see the page number to access a topic.

**Figure 6 - AppServ-Info (SQL) Configuration Workflow**



---

**IMPORTANT** If you have not deployed the template or configured the Windows Server 2012, you must do the first two sections in [Figure 6](#).


---

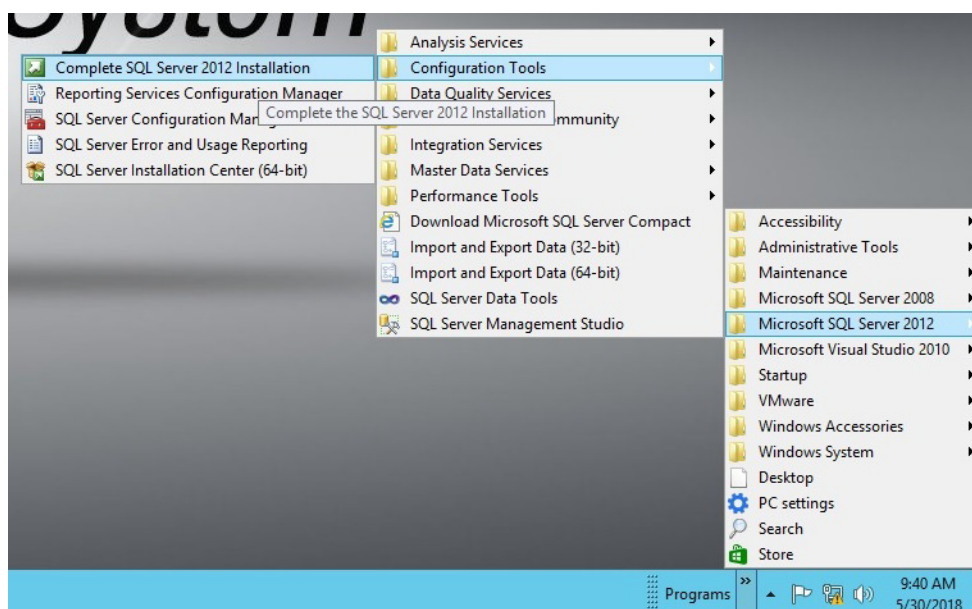
**IMPORTANT** If you are using FactoryTalk Historian, we recommend installing Historian Asset Framework software on the AppServ-Info (SQL). See the Historian server ([page 150](#)) for additional considerations on placement of Asset Framework software.

If you do plan to install Asset Framework software on the AppServ-Info (SQL), then deploy your FactoryTalk Historian server first before continuing.

## Install SQL Server 2012 Standard

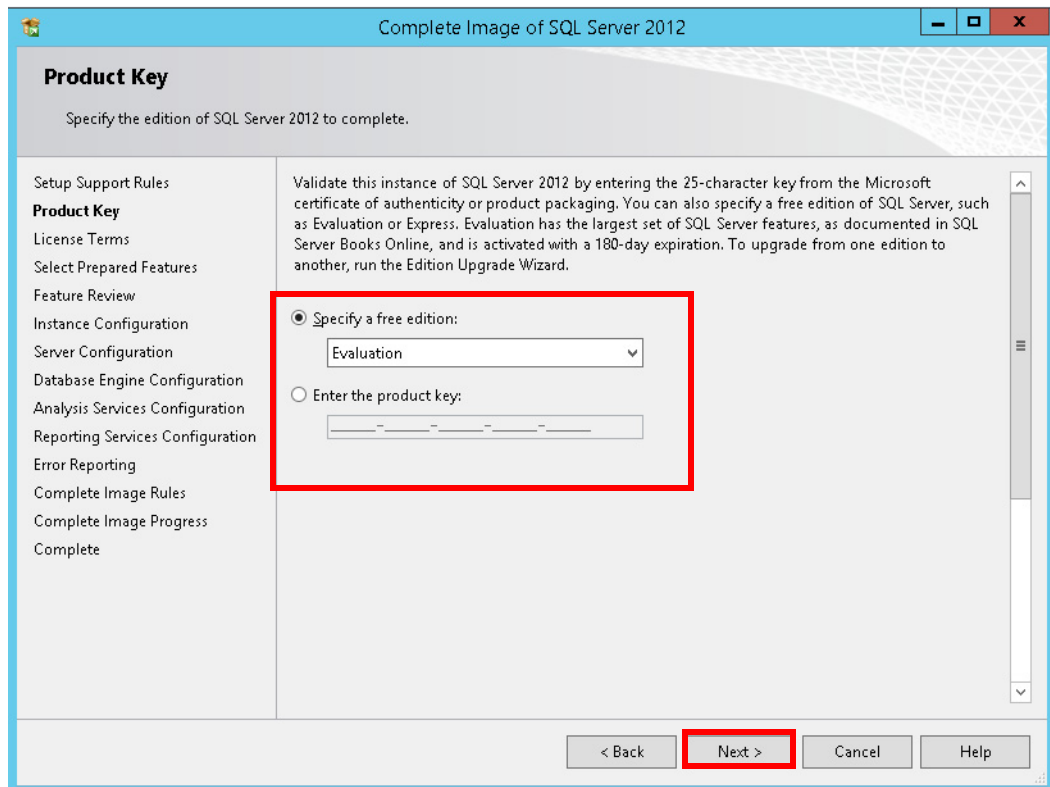
Complete this section.

1. On the virtual image desktop, click the Programs  icon and choose Microsoft SQL Server 2012>Configuration Tools>Complete SQL Server 2012 Installation.

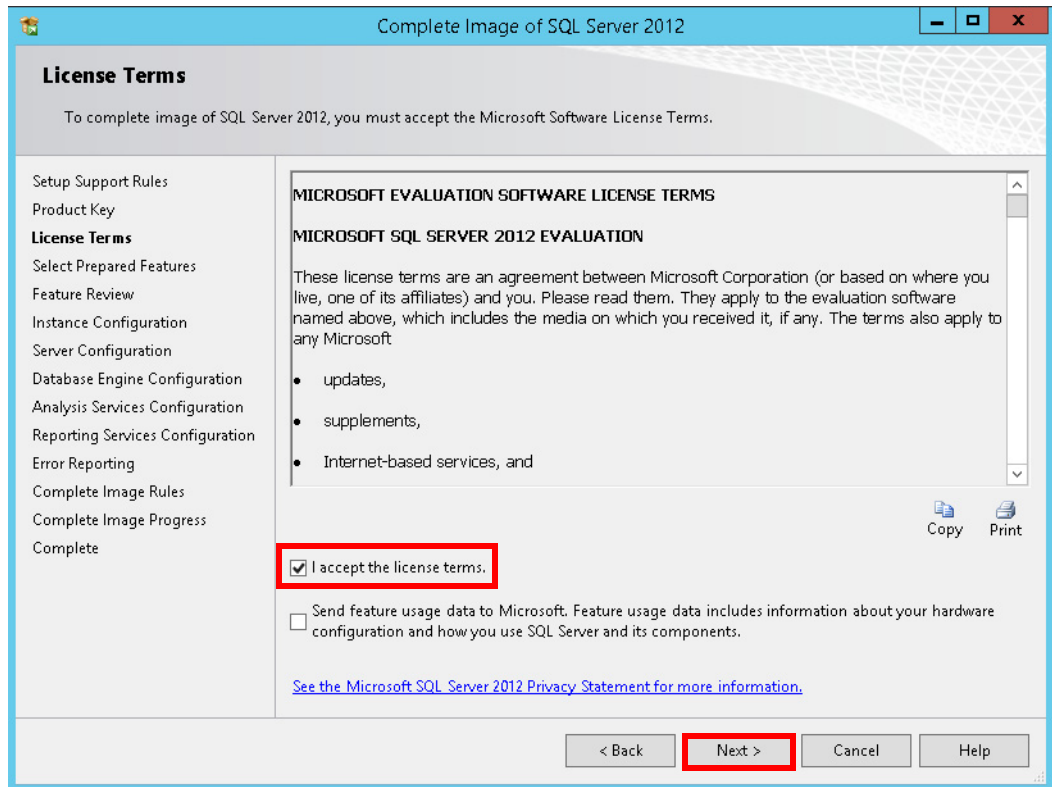


**2. Do one of the following:**

- Select Specify a free edition and then select Evaluation from the pull-down menu for a 90-day trial.
- Select Enter the product key and type your key to license your software.

**3. Click Next.**

4. Read the license terms, and click 'I accept the license terms.'
5. Click Next.



**IMPORTANT** For the remainder of the installation, default selections are shown and we do not recommend any changes. Some PlantPAx configurations require these default selections. Best practice is to accept the defaults, prove the system, and make changes later. Corresponding notice is provided where exceptions to this configuration are considered for changing now. Otherwise, simply click Next on the following screen captures to complete the process.

6. Use the default name of your SQL server instance and click Next.

**TIP** Change the server name only if you're planning another SQL instance on this machine. Observe the SQL instances are addressed by their <MachineName>\<InstanceName> combination.

**Complete Image of SQL Server 2012**

**Select Prepared Features**

Select prepared features of SQL Server to configure and complete.

Setup Support Rules  
Product Key  
License Terms  
**Select Prepared Features**  
Feature Review  
Instance Configuration  
Server Configuration  
Database Engine Configuration  
Analysis Services Configuration  
Reporting Services Configuration  
Error Reporting  
Complete Image Rules  
Complete Image Progress  
Complete

☐ Complete prepared shared components only  
Select this option if you want to complete installation of prepared shared components such as SQL Server Management Studio or Integration Services.

☒ Complete a prepared instance of SQL Server 2012  
MSSQLSERVER

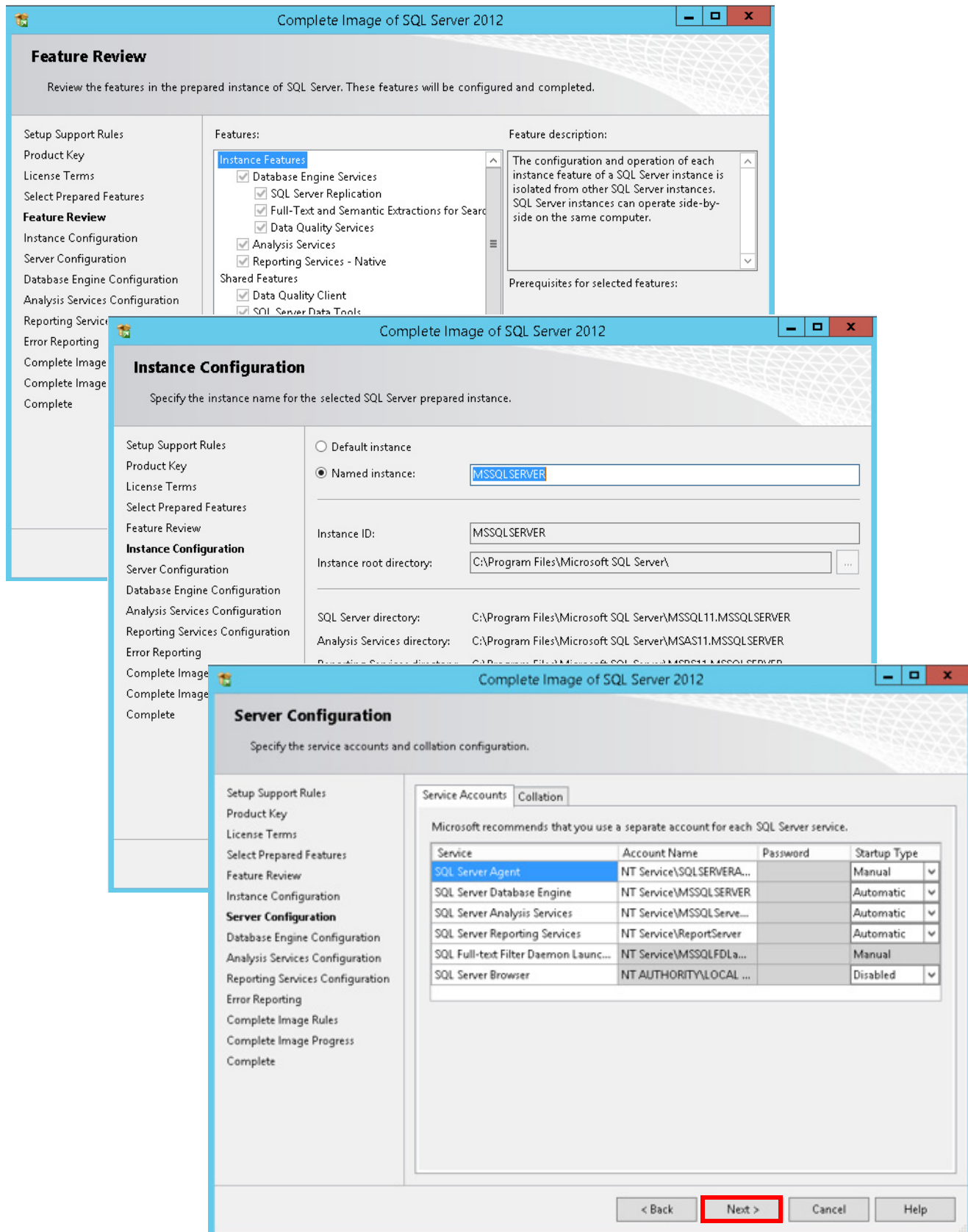
Select this option if you would like to complete a previously prepared instance of SQL Server along with any prepared shared components such as SQL Server Management Studio or Integration Services.

Installed instances:

Instance Name	Instance ID	Features	Edition	Version
<Unconfigured>	MSSQLSERVER	SQLEngine,SQLEn...	Evaluation	11.3.6020.0
<Shared Compone...		SSMS, Adv_SSMS, ...		11.3.6020.0

< Back **Next >** Cancel Help

## 7. Use defaults and click Next on each dialog box.



8. Select Mixed mode and type a password (twice).
9. Click Next.

**Complete Image of SQL Server 2012**

**Database Engine Configuration**

Specify Database Engine authentication security mode, administrators and data directories.

Setup Support Rules  
Product Key  
License Terms  
Select Prepared Features  
Feature Review  
Instance Configuration  
Server Configuration  
**Database Engine Configuration**  
Analysis Services Configuration  
Reporting Services Configuration  
Error Reporting  
Complete Image Rules  
Complete Image Progress  
Complete

Server Configuration | Data Directories | FILESTREAM

Specify the authentication mode and administrators for the Database Engine.

Authentication Mode

☐ Windows authentication mode

☒ Mixed Mode (SQL Server authentication and Windows authentication)

Specify the password for the SQL Server system administrator (sa) account.

Enter password: .....

Confirm password: .....

Specify SQL Server administrators

Administrator

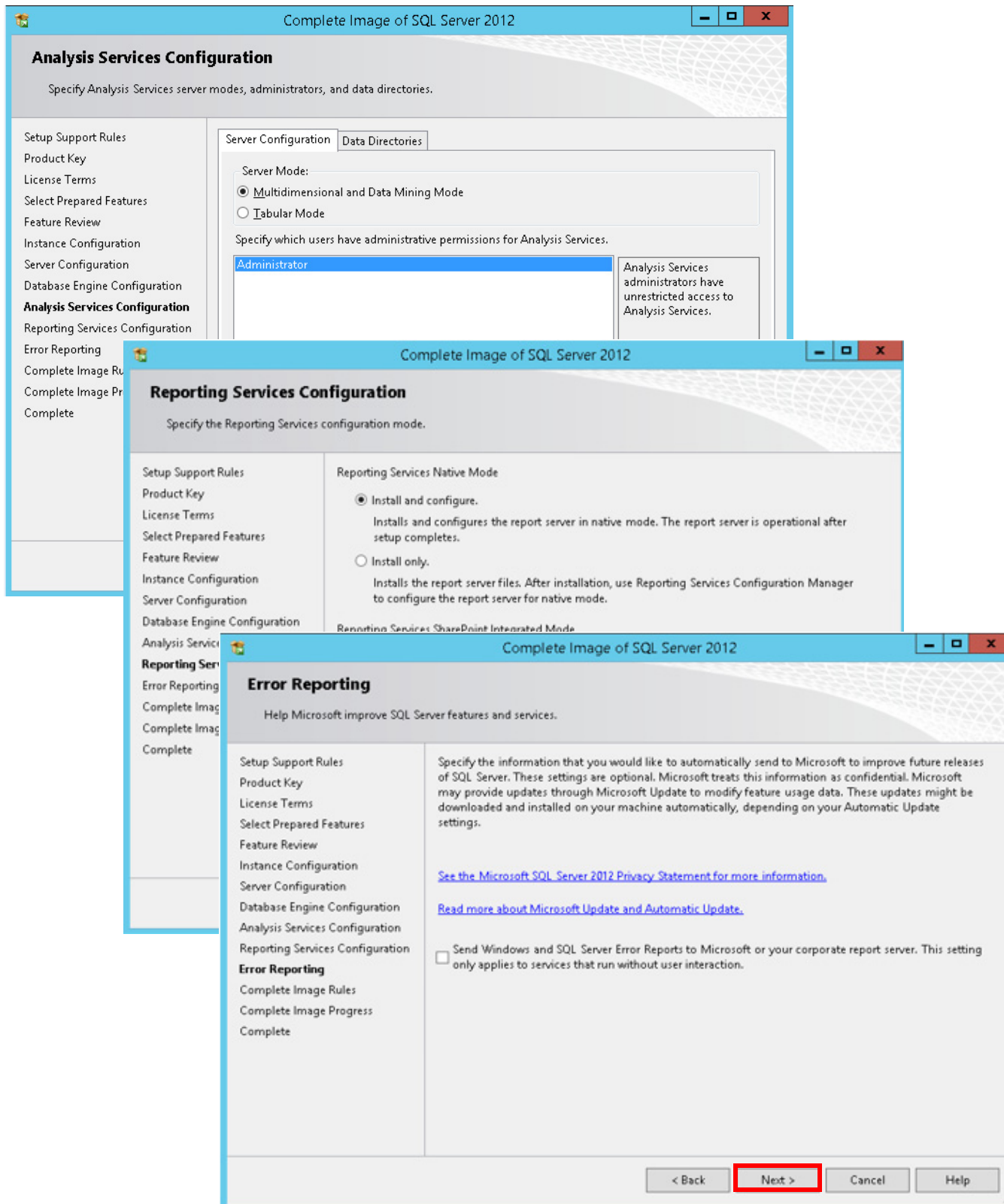
SQL Server administrators have unrestricted access to the Database Engine.

Add Current User Add... Remove

< Back **Next >** Cancel Help

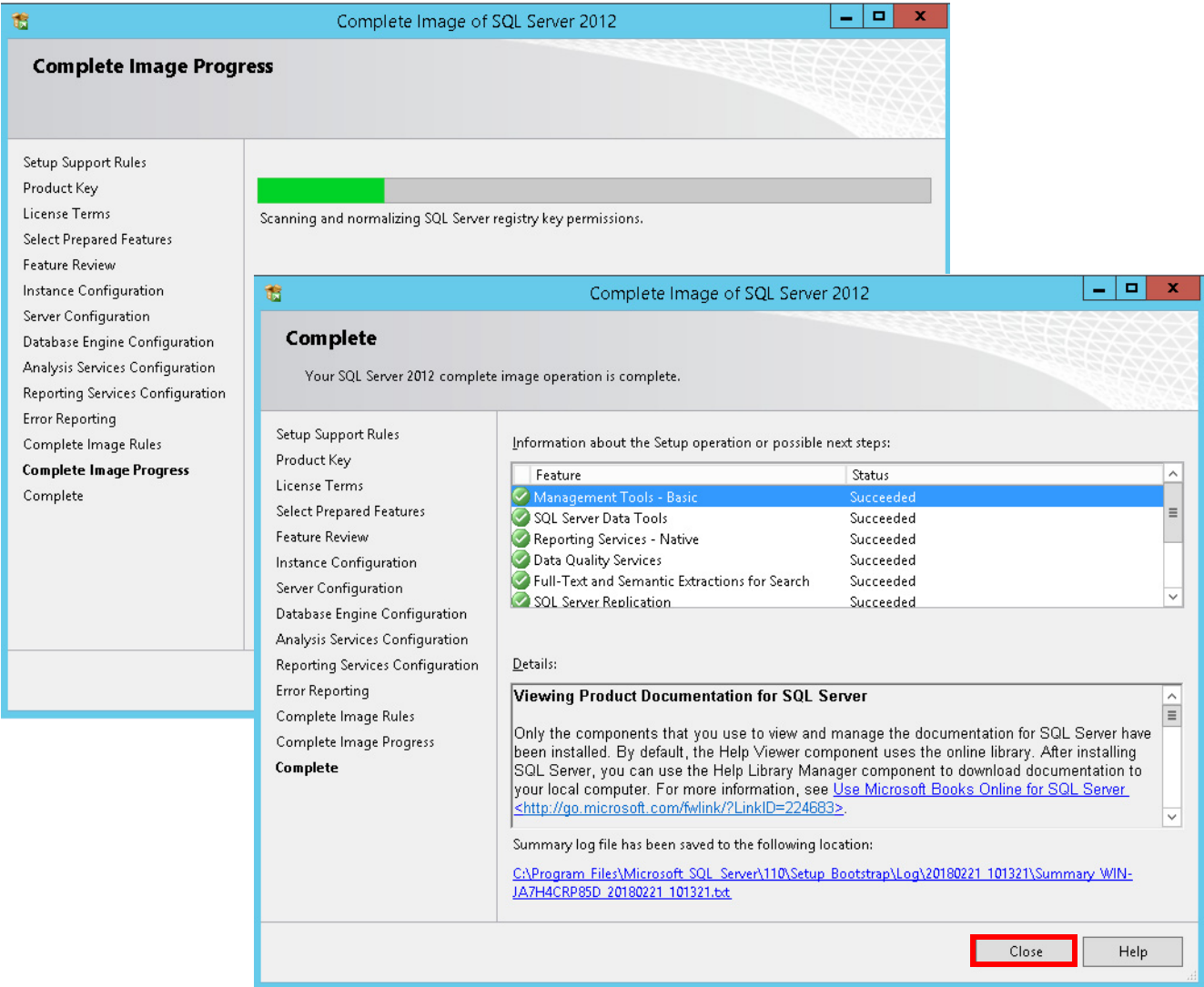
**TIP** Additional SQL administrators can be added, if necessary. Click Help for clarifications.

## 10. Use defaults and click Next on each dialog box.





11. The installation scan of the registry commences ... and shows ‘Succeeded’ for features.



12. Click Close.

**IMPORTANT** If you were directed to this procedure from Chapter 5, return to [Install Historian Asset Framework on page 230](#) to complete the PASS-C Server installation. Otherwise, continue with the next procedure.

## Install Historian Asset Framework on SQL Server

The procedures in this section apply only if you plan to do the following:

- Use FactoryTalk Historian Asset Framework in your PlantPAx system
- Install Asset Framework Server on the SQL Server

You must complete the following subsections:

- [Install FactoryTalk Services Platform on page 138](#)
- [Specify the FactoryTalk Directory Location on page 142](#)
- [Install Historian Asset Framework on page 144](#)

---

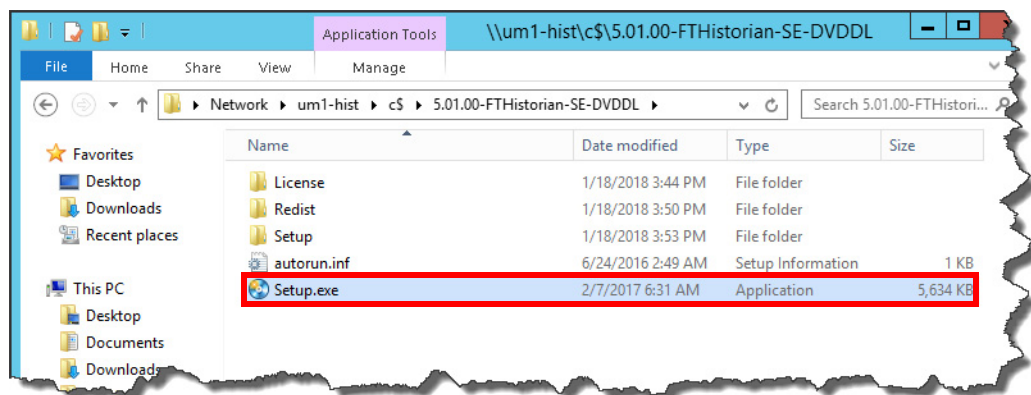
**IMPORTANT** If you are not installing Asset Framework on the SQL Server, you can skip this section. Proceed to [Add Local User to the SQL Server on page 146](#).

---

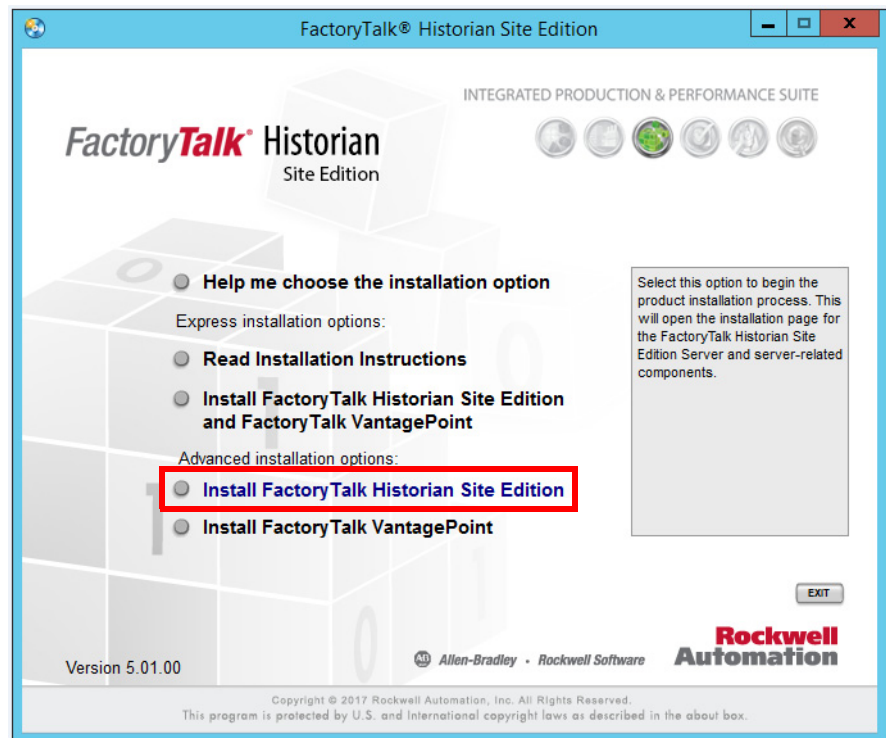
### *Install FactoryTalk Services Platform*

From the AppServ-Info (SQL), perform these steps to access the installation files on the AppServ-Info (Historian) to install FactoryTalk Services Platform on the AppServ-Info (SQL).

1. In the virtual machine taskbar, click the File Explorer icon.
2. Navigate to c\$\Install Files\5.01.00\FTHistorian\SE-DVDDL.
3. Click Setup.exe.



4. Click 'Install FactoryTalk Historian Site Edition'.



5. Click 'Install FactoryTalk Historian Site Edition'.



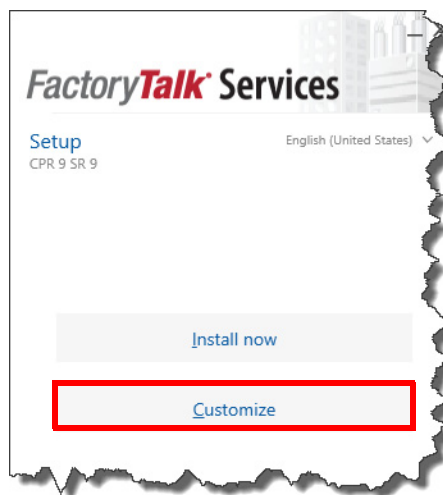
6. Click 'Install FactoryTalk Services'.



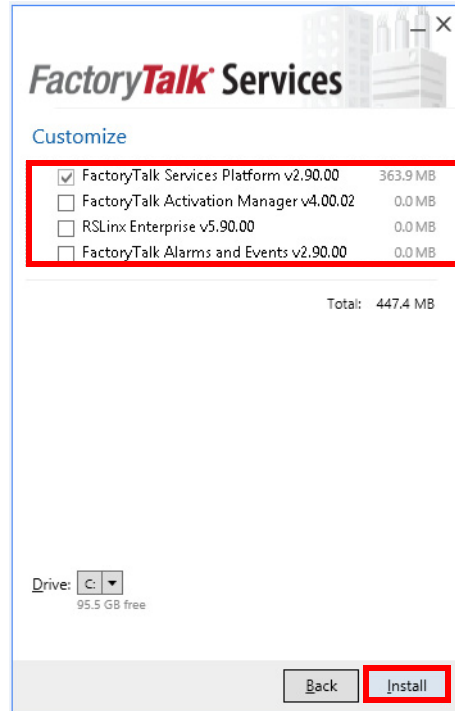
7. Click 'Install FactoryTalk Services'.



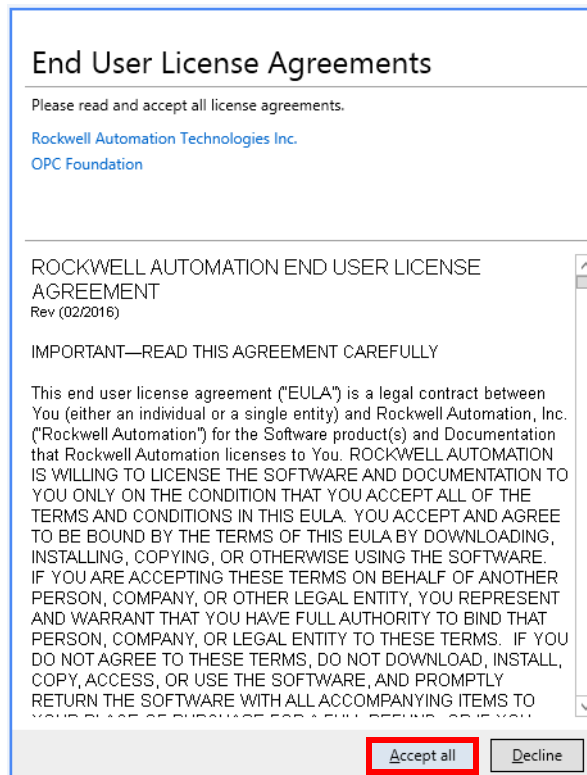
8. Click 'Customize'.



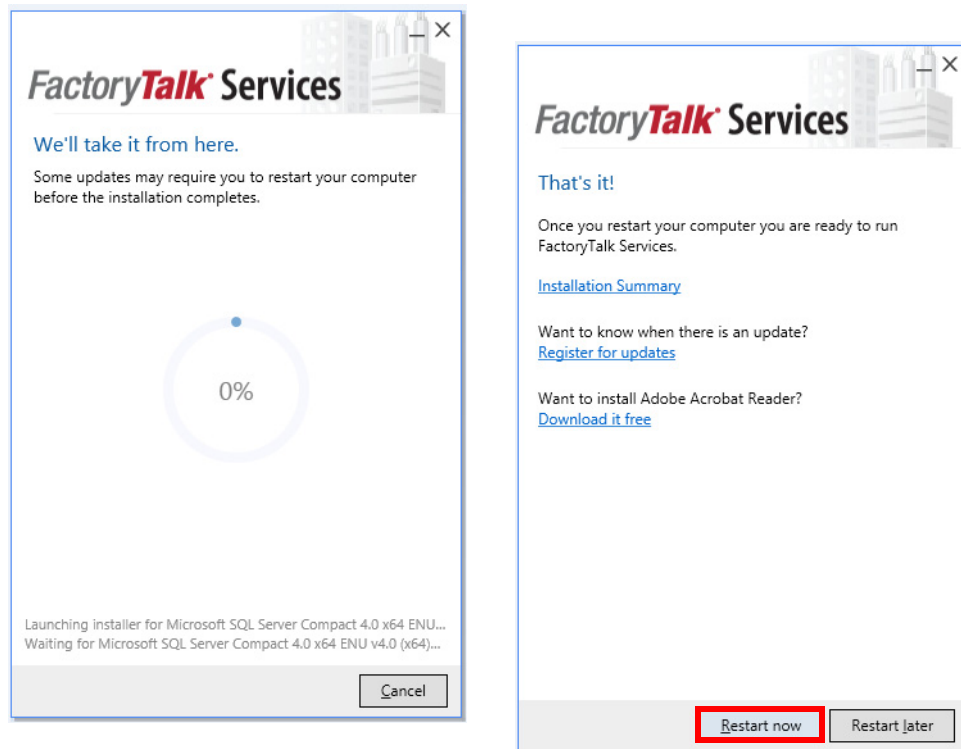
9. Clear all software products except for FactoryTalk Services Platform and click Install.



10. Read the EULA, and click Accept all.




11. Be patient while the installation runs.

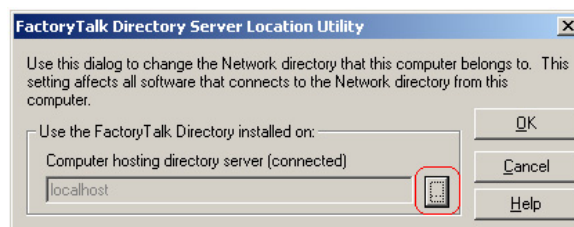


12. When the installation is finished, click Restart now.

### *Specify the FactoryTalk Directory Location*

Complete these steps on the SQL server to specify the network FactoryTalk Directory location.

1. Click the Programs icon  and choose Rockwell Software>FactoryTalk Tools>Specify FactoryTalk Directory Location.



2. In the FactoryTalk Directory Server Location Utility dialog box, click Browse (ellipsis '...').
3. Type your FactoryTalk Directory Administration Console credentials into the login screen and click OK.

4. Click Remote computer.



---

**IMPORTANT** Browse can be inactive if Network Discovery & File Share is not turned on.

---

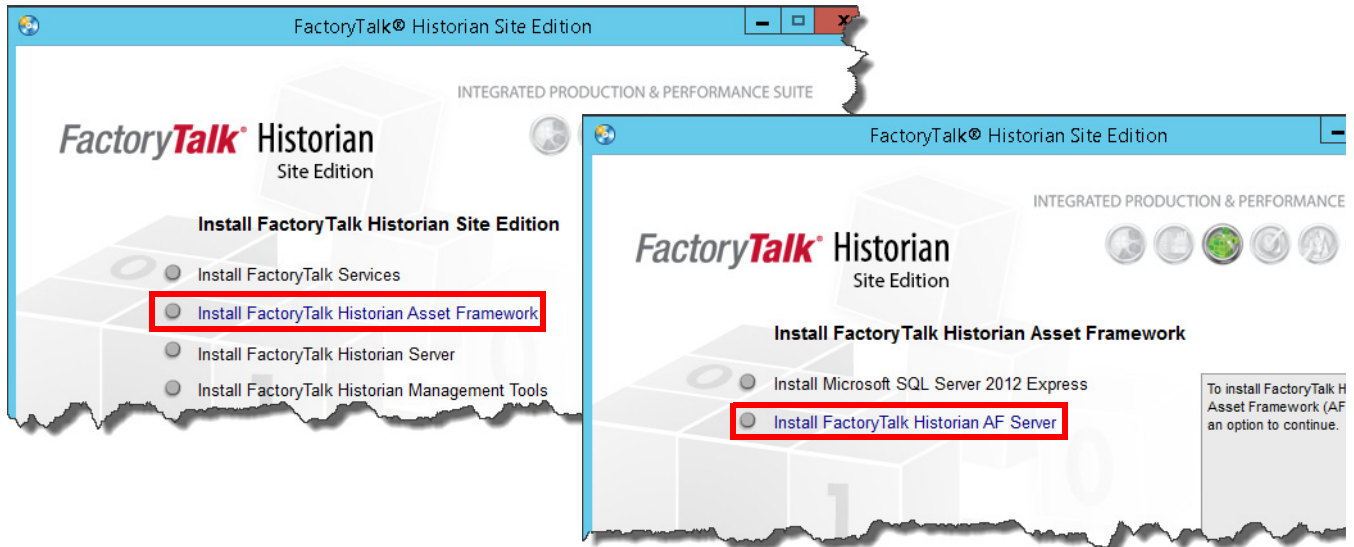
5. Click Browse (ellipsis '...') and navigate the network to find the computer name of the server (typically PASS) that is hosting the FactoryTalk Directory services.
6. Choose the appropriate server name and click OK.

The Network FactoryTalk Directory location has now been specified.
7. If Browse is inactive, type the computer name of the virtual machine that is hosting the FactoryTalk Directory.
8. When prompted, type your credentials and click OK.
9. Restart AppServ-Info (SQL) after you make this change.

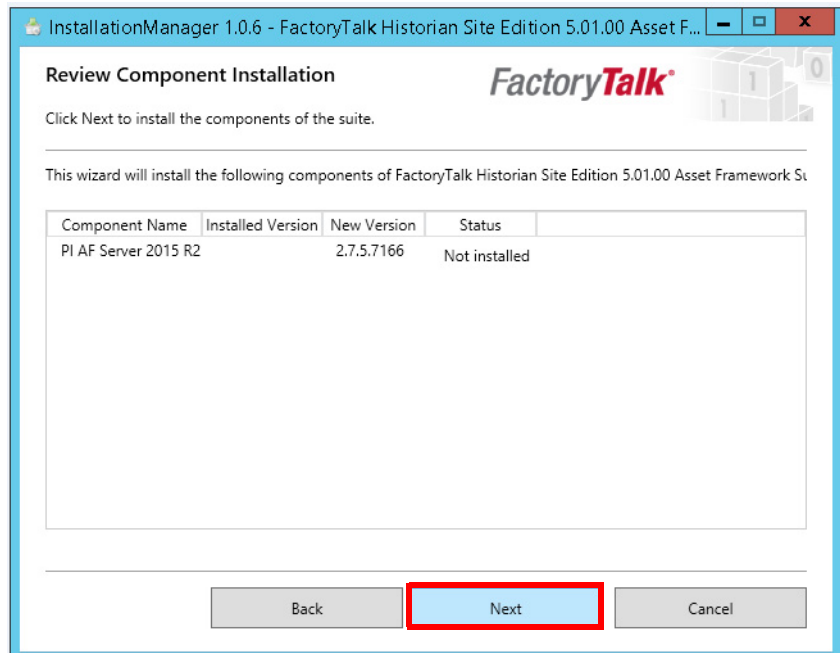
### Install Historian Asset Framework

Perform this section to install Historian Asset Framework on the SQL server.

1. Repeat [step 1 on page 138](#) through [step 5 on page 139](#).
2. Click 'Install FactoryTalk Historian Asset Framework'.

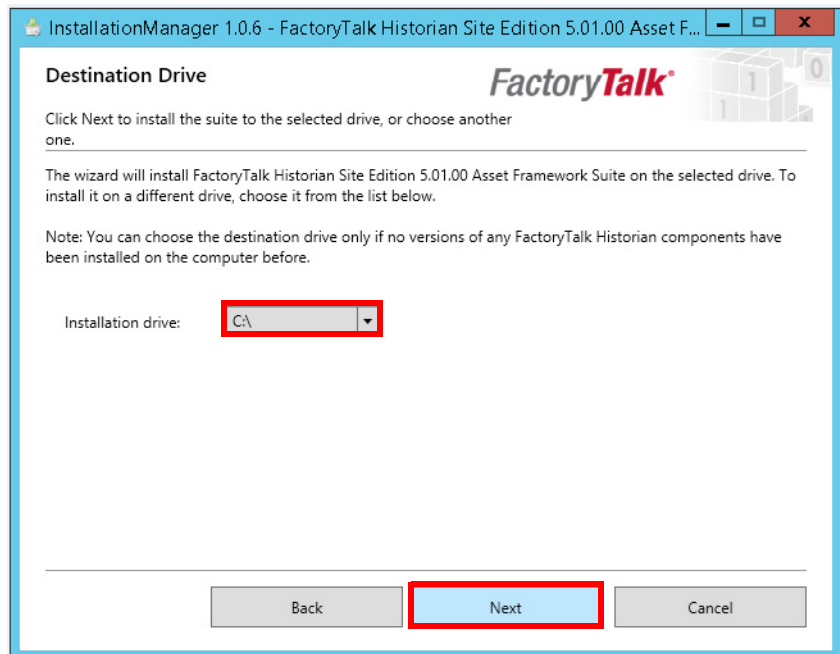


3. Click 'Install FactoryTalk Historian AF Server'.
4. Click Next on the 'Welcome' window.
5. On the License Agreement window, click 'I accept the terms in the license agreement' and click Next.
6. Click Next on the Review Component Installation window.

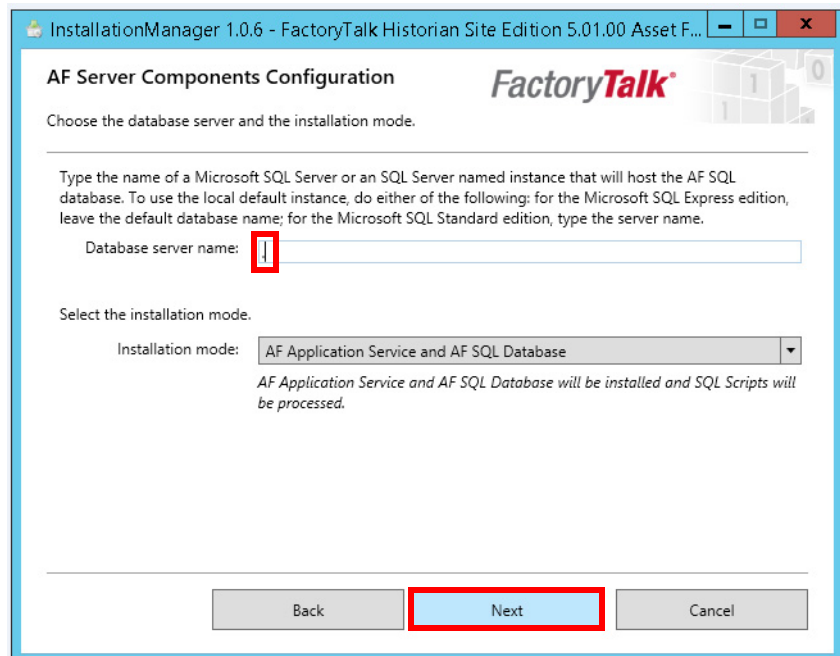




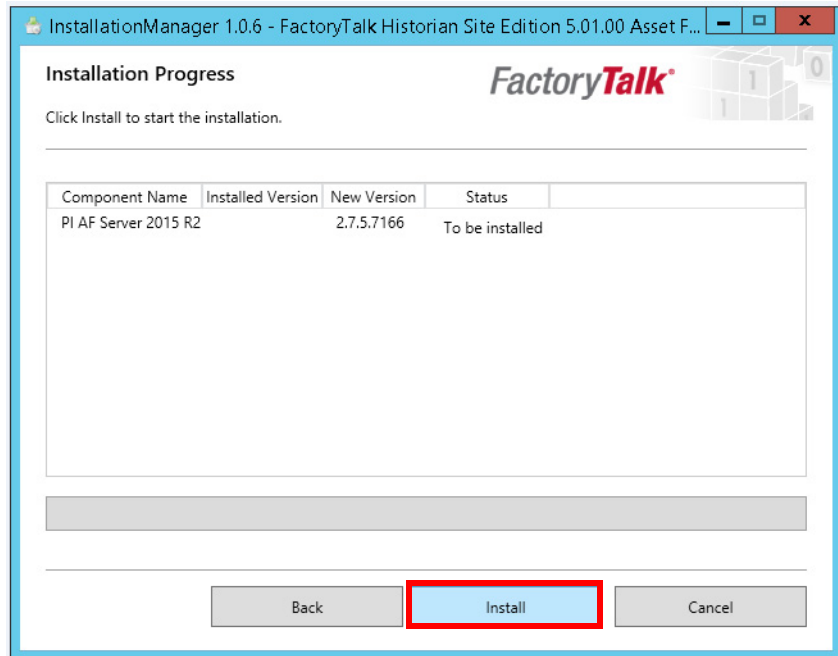
7. Select the destination drive and click Next.



8. Type a period (.) for the 'Database Server name' if using SQL standard. If you are using SQL Express, type .\sqlexpress and click Next



9. Click Install to start the installation process.




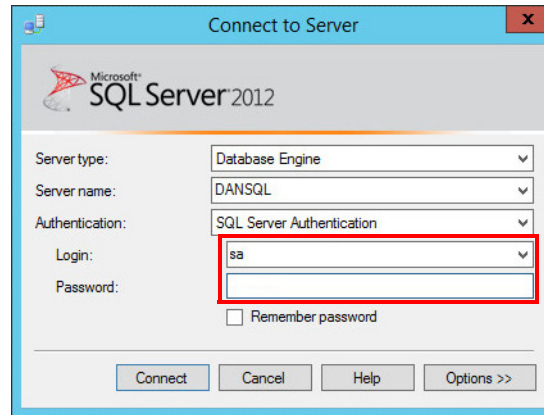
**IMPORTANT** During the installation process, the Release Notes display in a separate window. The installation process is not complete until you close the Release Notes window.

10. Close the Release Notes, then click Finish to close the wizard.

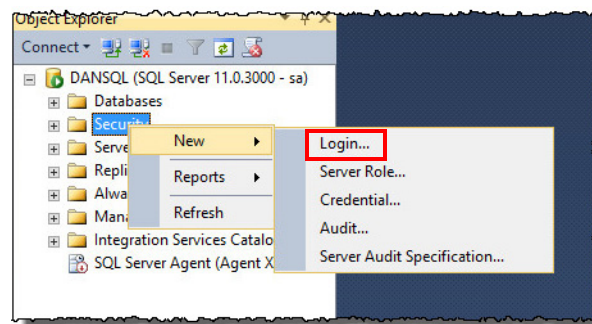
## Add Local User to the SQL Server

The installers for Rockwell Automation software use Windows Authentication instead of SQL Server Authentication. To complete the installation of Rockwell Automation software in system elements that connect to the SQL server, add a local administrator account to the SQL server login. These steps are to be performed regardless if you use a Historian server collective.

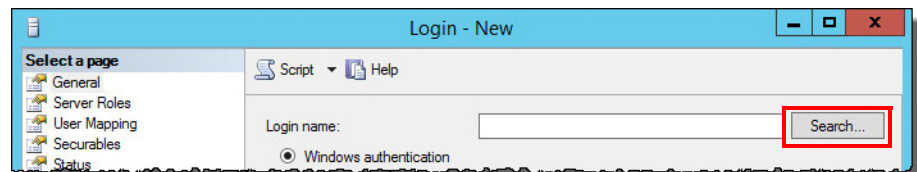
1. On the virtual image desktop, click the Windows  icon.
2. On the Start Window, double-click SQL Server Management Studio.
3. On the Connect to Server dialog box, log in to the 'sa' account with SQL Server Authentication.
4. Type the password that you created during the SQL installation (see [page 135](#)).
5. Click Connect.



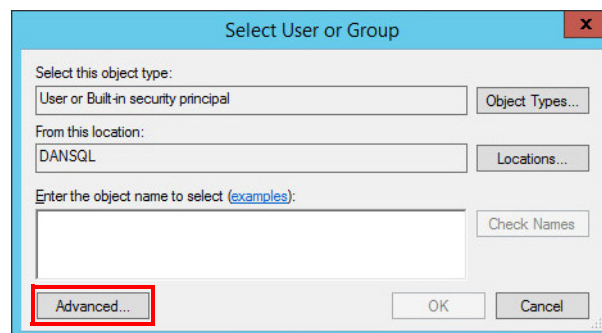
6. In the Object Explorer, right-click Security and choose New>Login.



7. On the Login - New window, click Search.

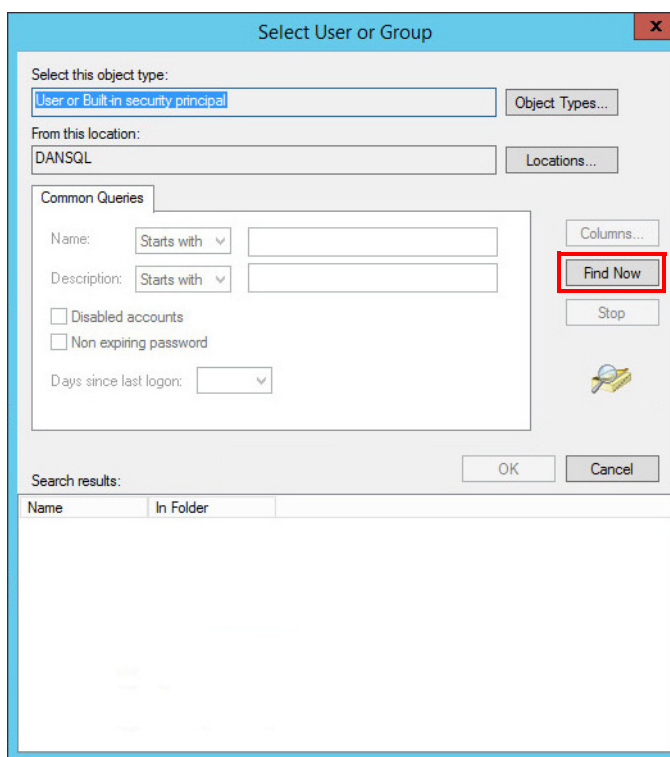


8. On the Select User or Group dialog page, click Advanced.

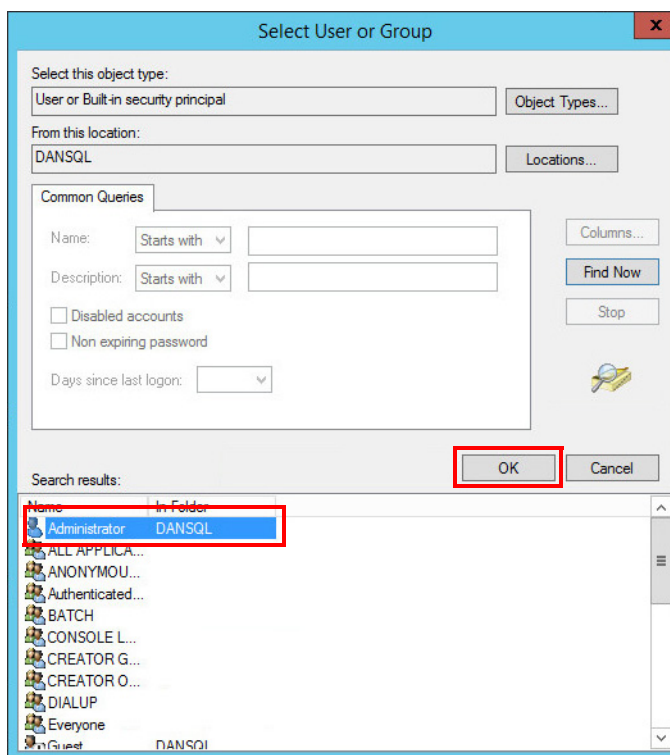


9. In the Select User or Group dialog box, click Find Now.

The Search Results are populated.

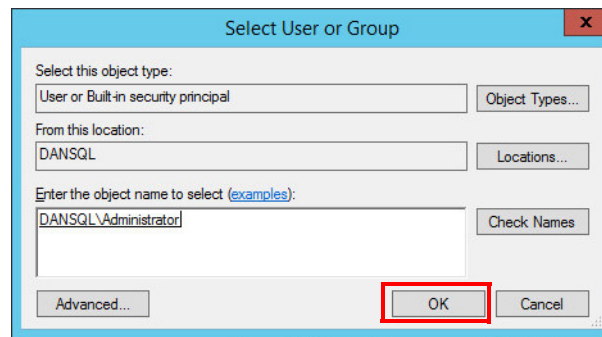


10. In the Search Results area, select the local administrator account that is logged in and click OK.



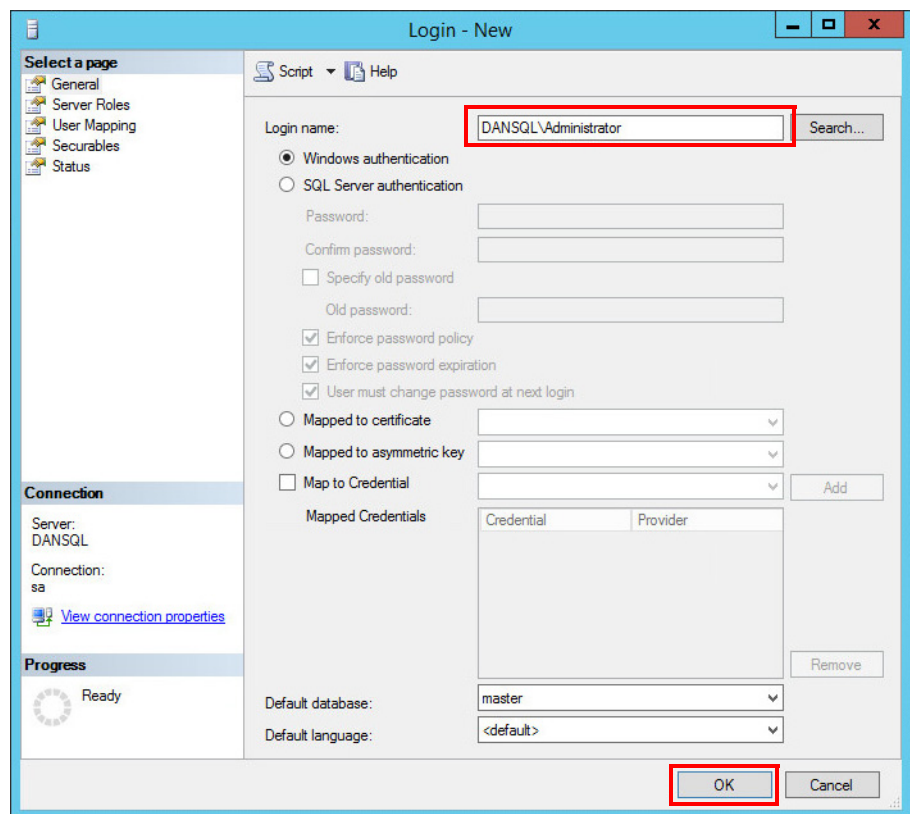
The 'object name' area on the Select User or Group dialog box is populated.

11. Click OK.



The Login name is populated on the Login - New window.

12. Click OK.



Proceed to [page 159](#) to synchronize the module database to the AF databases.

## Configure the Historian Virtual Server

This template represents a base installation of a FactoryTalk Historian server. The template excludes optional features, such as Advanced Server or Datalink.

We recommend that you install Asset Framework (AF) software on the SQL server. Instructions are included in the SQL server section (see [page 130](#)).

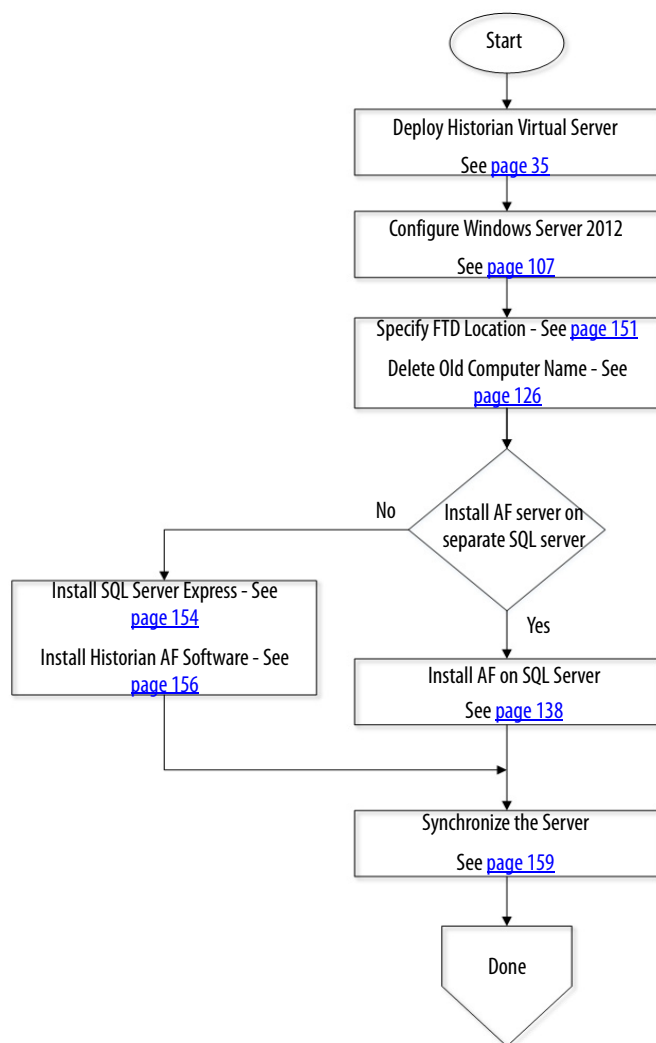
If the AF software cannot be installed on the SQL server, see the FactoryTalk Historian SE Installation and Configuration Guide for more information on locating your Asset Framework Server. The guide is available on the Historian server at C:\Program Files (x86)\Common Files\Rockwell\Help.

---

**IMPORTANT** You must install an AF server to complete Historian installation.

---

**Figure 7 - Historian Server Workflow**



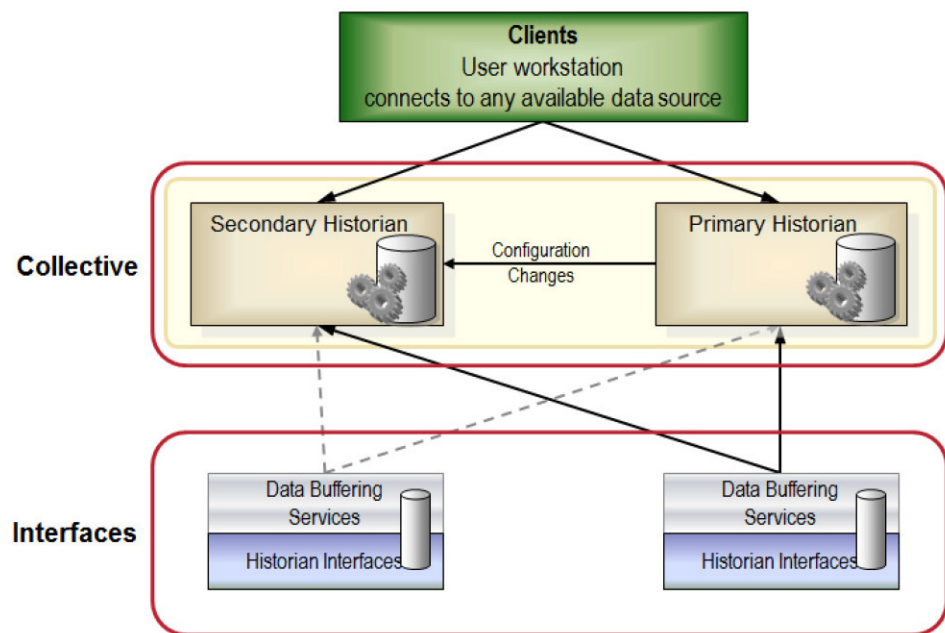
### Use Collective For Historian

For high availability of your Historian server, install two FactoryTalk Historian servers and configure the FactoryTalk Historian SE system to store and write identical data on each server. Together, this set of servers is called a FactoryTalk Historian Server Collective.

The server collective receives data from one or more interfaces and responds to requests for data from one or more clients. When one server becomes unavailable, another server that contains the same data responds to requests for that data.

If you are implementing a collective, you **must** deploy two Historian servers. Complete all sections of this manual for each Historian server. For more information on a server collective, see the PlantPAx Distributed Control System Infrastructure User Manual, [PROCES-UM001](#).

If you choose to use a Historian Collective, you cannot install AF software on either of the Historian computers. We recommend you install AF server on the SQL Server computer.



### Specify the FactoryTalk Directory Location

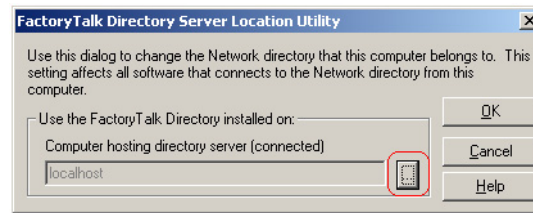
To specify the network FactoryTalk Directory location, complete these steps on the Historian server.

---

**IMPORTANT** During the configuration of the Historian server, a User Account Control window asks if you want to allow a program to make changes to the computer. Click Yes.

---

1. Click the Programs icon  and choose Rockwell Software> FactoryTalk Tools>Specify FactoryTalk Directory Location.




---

**IMPORTANT** Browse can be inactive if Network Discovery & File Share is not active.

---

2. In the FactoryTalk Directory Server Location Utility dialog box, click Browse (ellipsis '...').
3. Type your FactoryTalk Directory Administration Console credentials into the Login screen and click OK.
4. Click Remote computer.




5. Click Browse (ellipsis '...') and navigate the network to find the computer name of the server (typically PASS) that is hosting the FactoryTalk Directory services.
6. Choose the appropriate server name and click OK.  
The Network FactoryTalk Directory location has now been specified.
7. If Browse is inactive, type the computer name of the virtual machine that is hosting the FactoryTalk Directory.
8. When prompted, enter your credentials and click OK.
9. Restart AppServ-Info (Historian) after making this change.



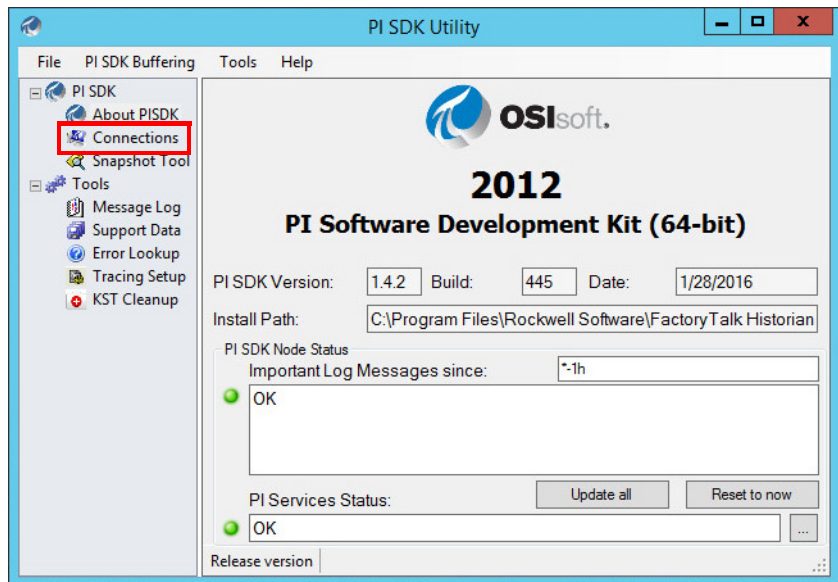
*Delete Old Computer Name*

Delete the old Historian server name to keep the PI SDK up to date with current computer names. Complete these steps.

1. Click the Programs icon  and choose Rockwell Software> FactoryTalk Historian SE>FactoryTalk Historian SE System> PISDK Utility.

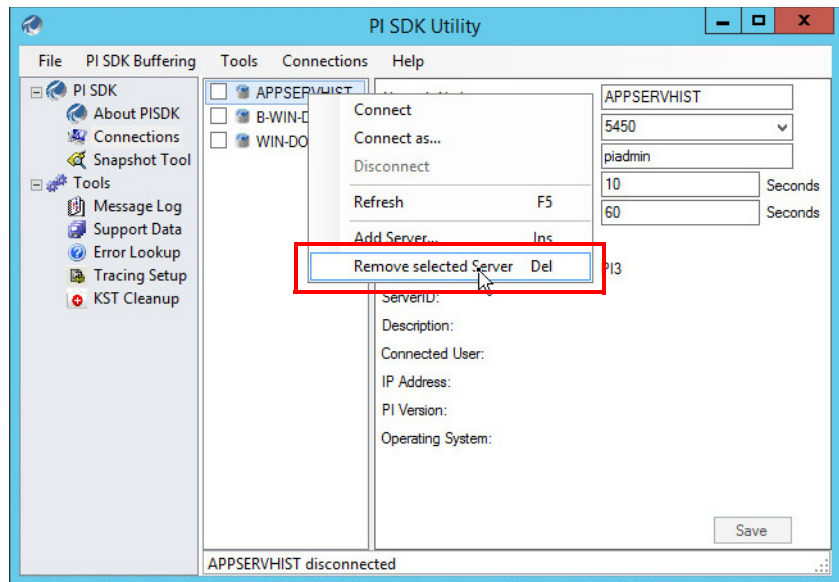
The PI Software Development Kit window opens.

2. In the Explorer pane on the left side of the window, select **Connections**.



**TIP** The first time the PI SDK is run, it can take several minutes to complete the startup and show a display.

3. In the server pane, right-click any old Historian server name (other than your recently created computer) and choose 'Remove selected Server'.



4. Click Yes.
5. Close the utility.

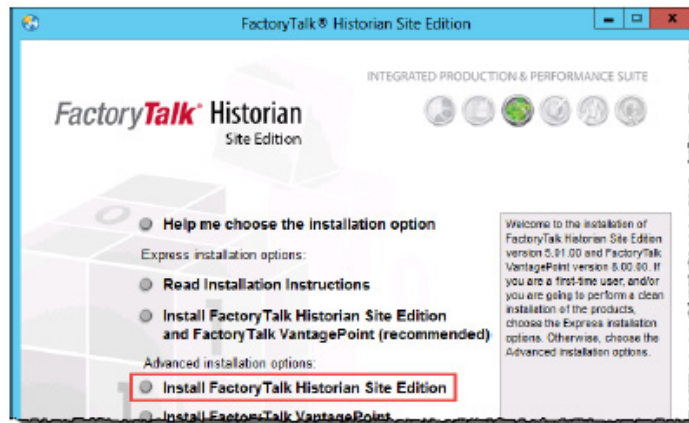
## Install SQL Server Express

**IMPORTANT** Proceed with this section only if you plan to implement a standalone Historian server.

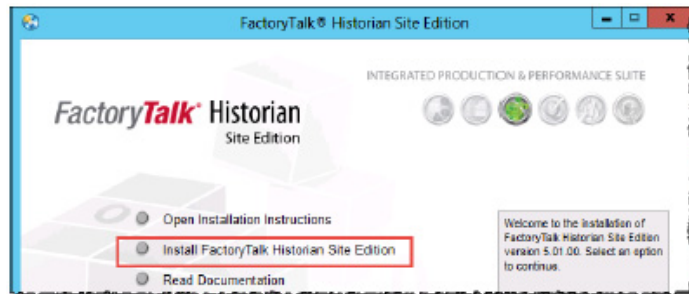
We recommend that you install FactoryTalk Historian AF software (a component of Historian software) on the SQL server. If you cannot install AF software on the SQL Server or another computer, and want to install on the Historian computer, then you are creating a stand alone Historian server. You will need to install an SQL Server Express and then Asset Framework software.

1. In Windows Explorer, navigate to the install files in the C: directory.
2. Double-click setup.exe.

3. Run the FactoryTalk Historian SE installation wizard.



4. Click 'Install FactoryTalk Historian Site Edition'.



5. Click 'Install FactoryTalk Historian Asset Framework'.



6. Click 'Install Microsoft SQL Server 2012 Express'.



7. Follow the on-screen instructions to complete the process.

---

**IMPORTANT** For more information on installing Microsoft SQL Server 2012 Express, refer to the FactoryTalk Historian Installation and Configuration Guide. We recommend that you use the default settings during the installation of Microsoft SQL Server Express.

---

8. Restart the computer, if prompted.

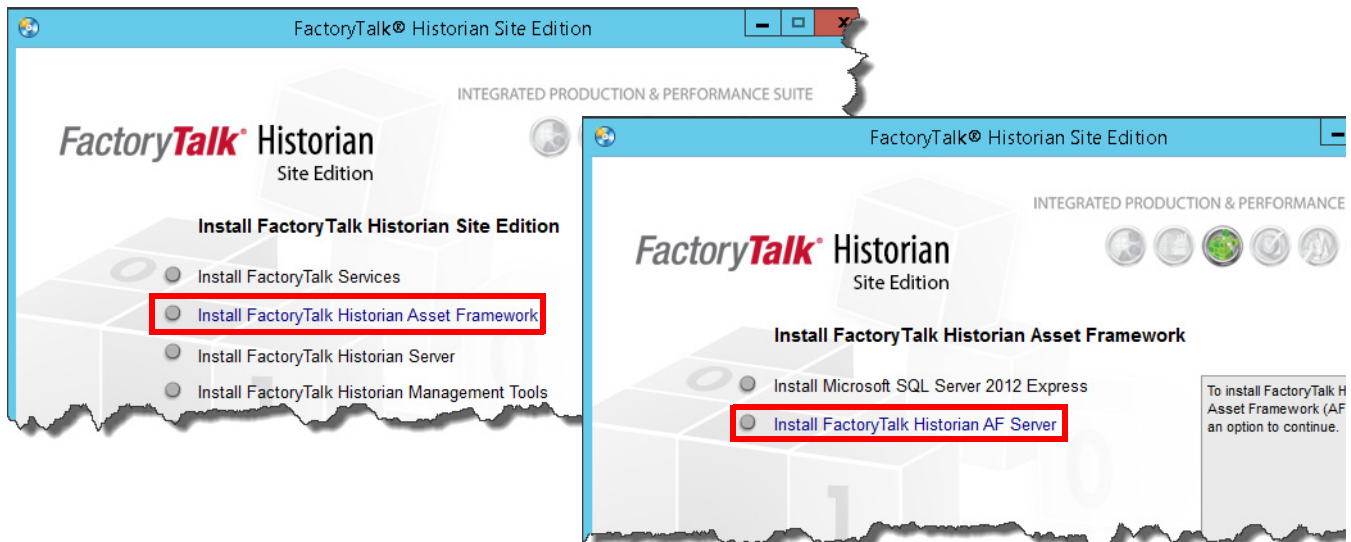
#### *Install Historian Asset Framework (AF)*

---

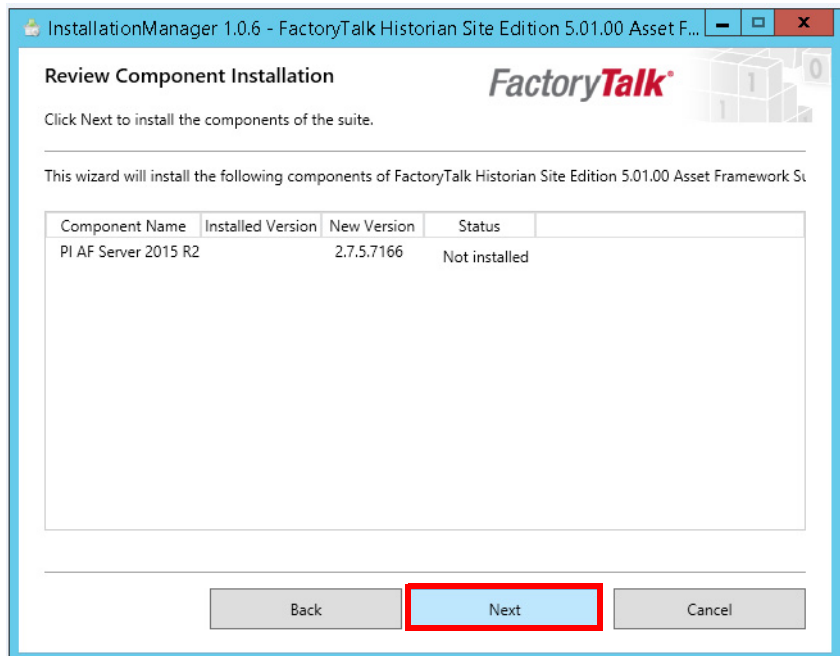
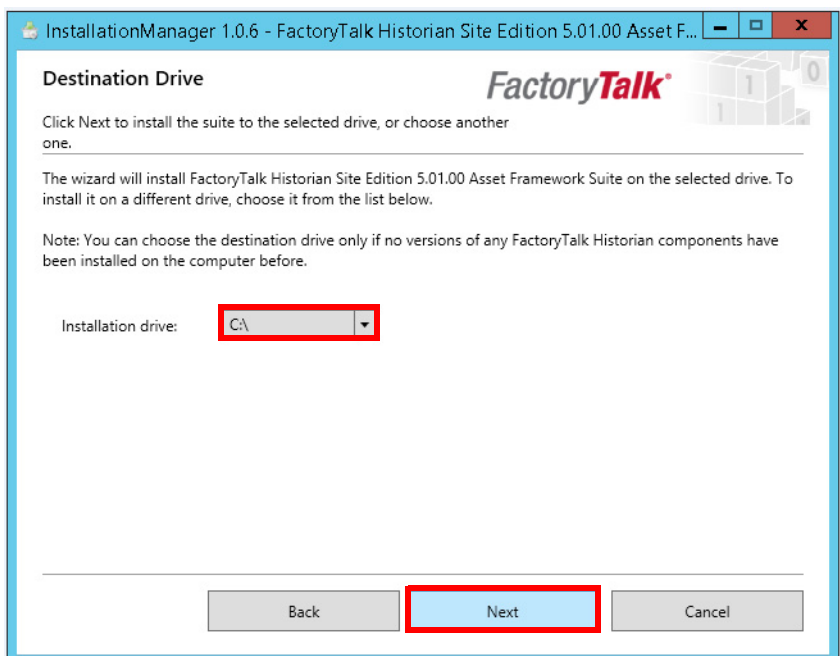
**IMPORTANT** Proceed with this section only if you plan to implement a stand alone Historian server.

---

1. Repeat step 1...3 on [page 154](#).
2. Click 'Install FactoryTalk Historian Asset Framework'.



3. Click 'Install FactoryTalk Historian AF Server'.
4. Click Next on the 'Welcome' window.
5. On the License Agreement window, click 'I accept the terms in the license agreement' and click Next.

**6.** Click Next on the Review Component Installation window.**7.** Select the destination drive and click Next.

8. Type .\sqlexpress for the 'Database Server name'.
9. Click Next

InstallationManager 1.0.6 - FactoryTalk Historian Site Edition 5.01.00 Asset F...

### AF Server Components Configuration

Choose the database server and the installation mode.

Type the name of a Microsoft SQL Server or an SQL Server named instance that will host the AF SQL database. To use the local default instance, do either of the following: for the Microsoft SQL Express edition, leave the default database name; for the Microsoft SQL Standard edition, type the server name.

Database server name:

Select the installation mode.

Installation mode: AF Application Service and AF SQL Database

*AF Application Service and AF SQL Database will be installed and SQL Scripts will be processed.*

Back Next Cancel

10. Click Install to start the installation process.

InstallationManager 1.0.6 - FactoryTalk Historian Site Edition 5.01.00 Asset F...

### Installation Progress

Click Install to start the installation.

Component Name	Installed Version	New Version	Status
PI AF Server 2015 R2		2.7.5.7166	To be installed

Back Install Cancel

---

**IMPORTANT** During the installation process, the Release Notes display in a separate window. The installation process is not complete until you close the Release Notes window.

---

11. Close the Release Notes, and click Finish to close the wizard.

### *Synchronize the Historian Virtual Server*

Once you have the FactoryTalk Historian Asset Framework installed, you need to set up synchronization between the Historian server's module database (MDB) and the AF server.

---

**IMPORTANT** Before proceeding, sign out of the computer and log in to the Historian computer as the user or administrator with the highest access.

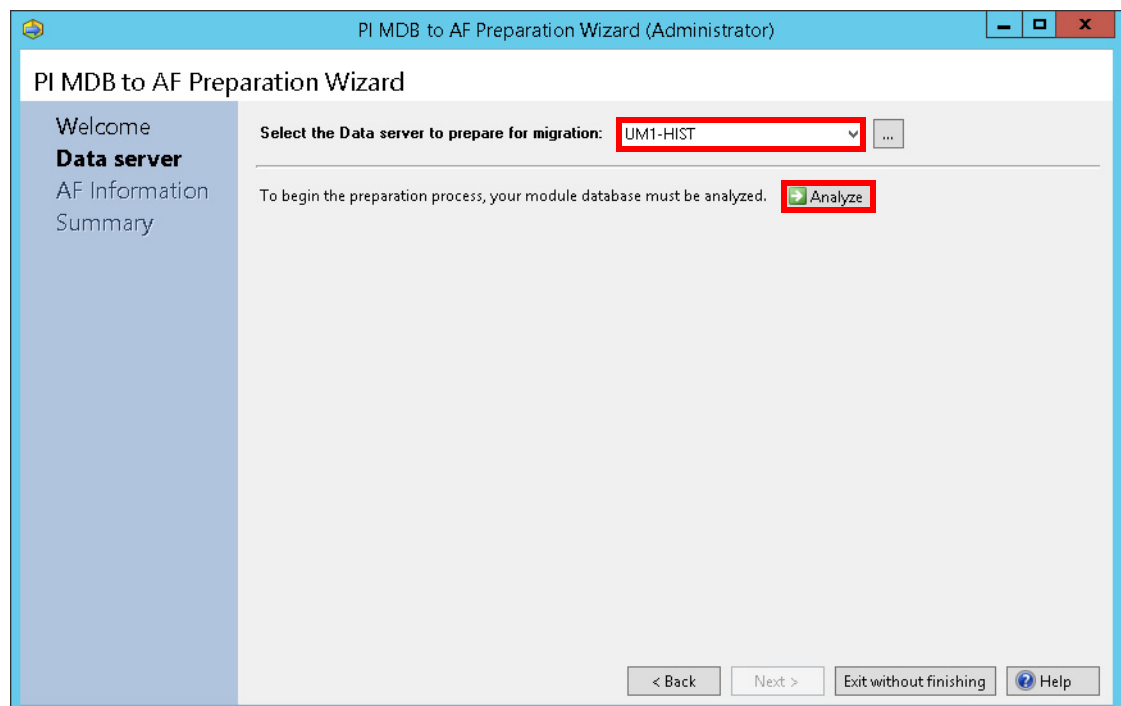
---

1. Run the MDB to AF Preparation Wizard by clicking the Programs icon and choosing Rockwell Software>FactoryTalk Historian SE>MDB to AF Preparation Wizard.

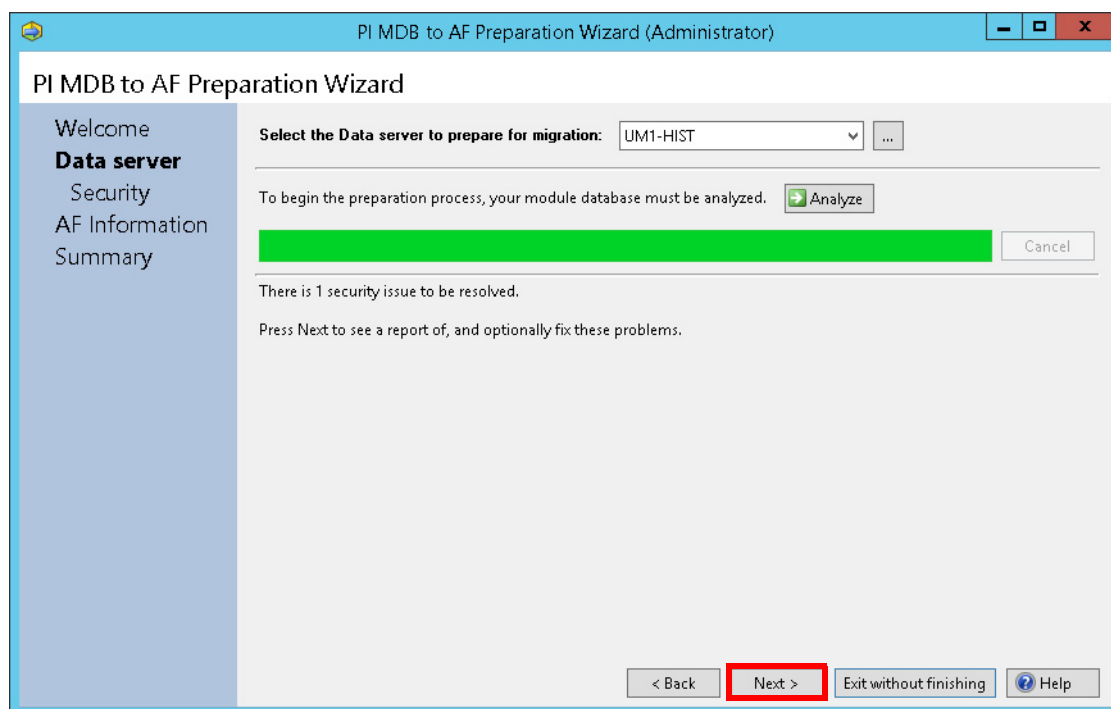
The wizard Welcome screen appears.

**TIP** It can take a few minutes for the wizard to open.

2. Click Next.
3. On the Data server step, if the Historian server is not selected in 'Select the Data server to prepare for migration', use the pull-down list or browse (ellipsis '...') to find and select it.
4. Click Analyze.



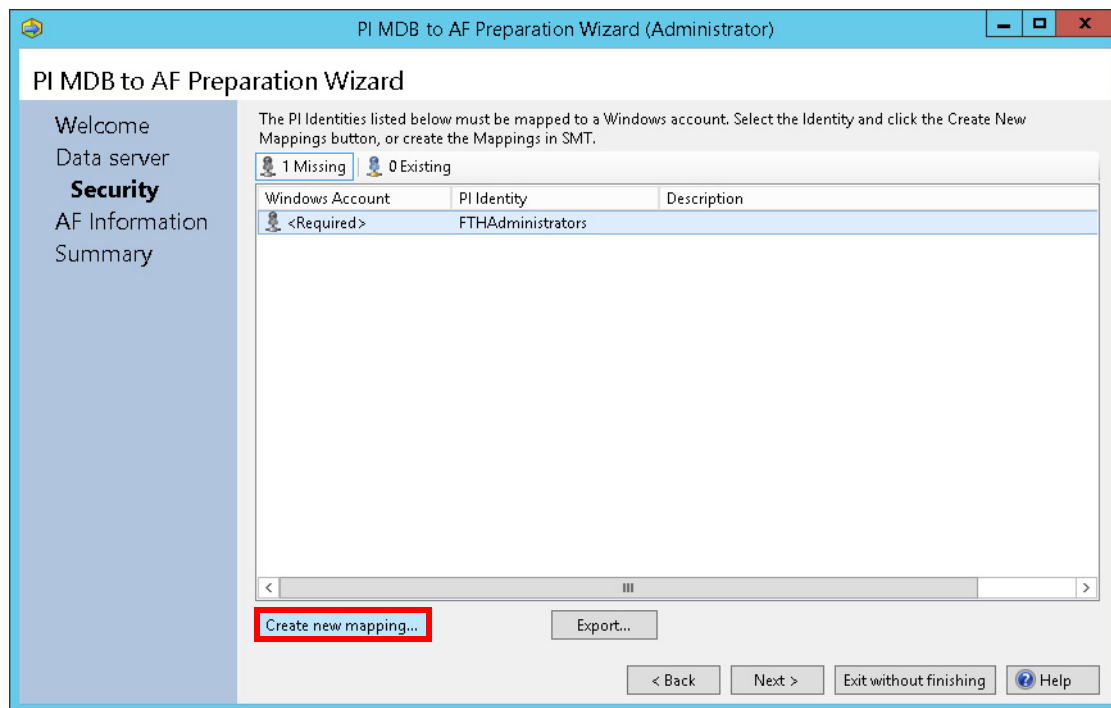
5. Click Next to see a report of any problems.



### Resolve Security Issues

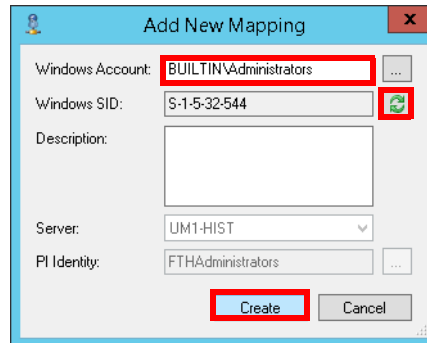
Complete these steps to resolve a security issue.

1. In the PI Server - Security step, click 'Create new mapping'.

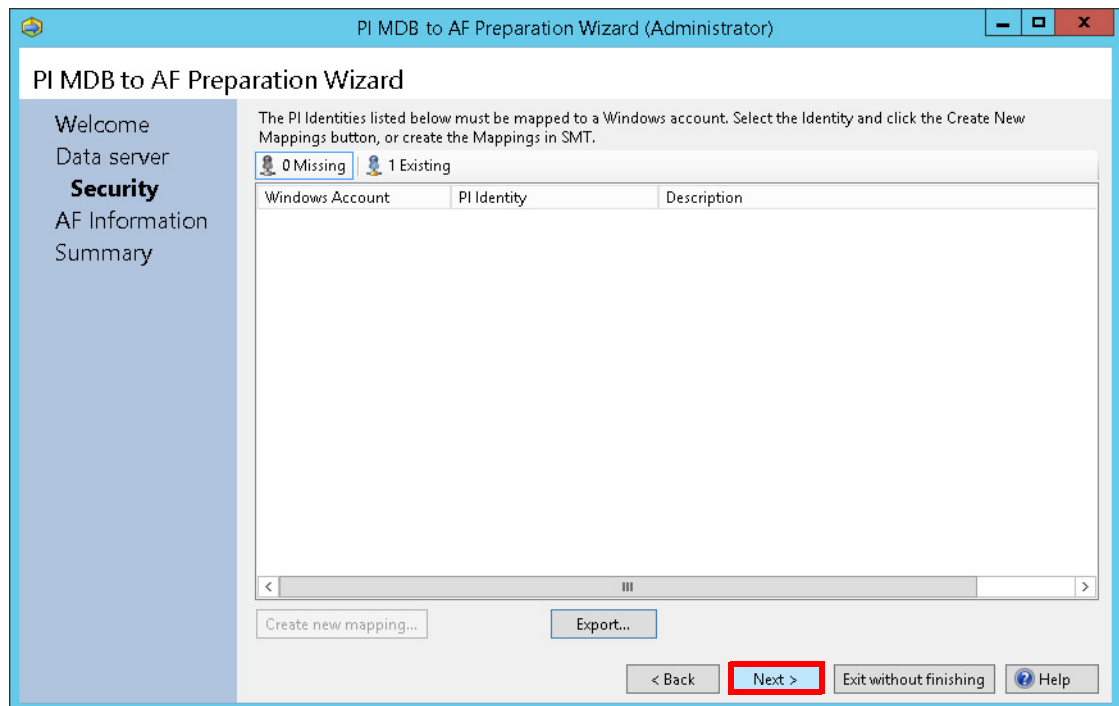




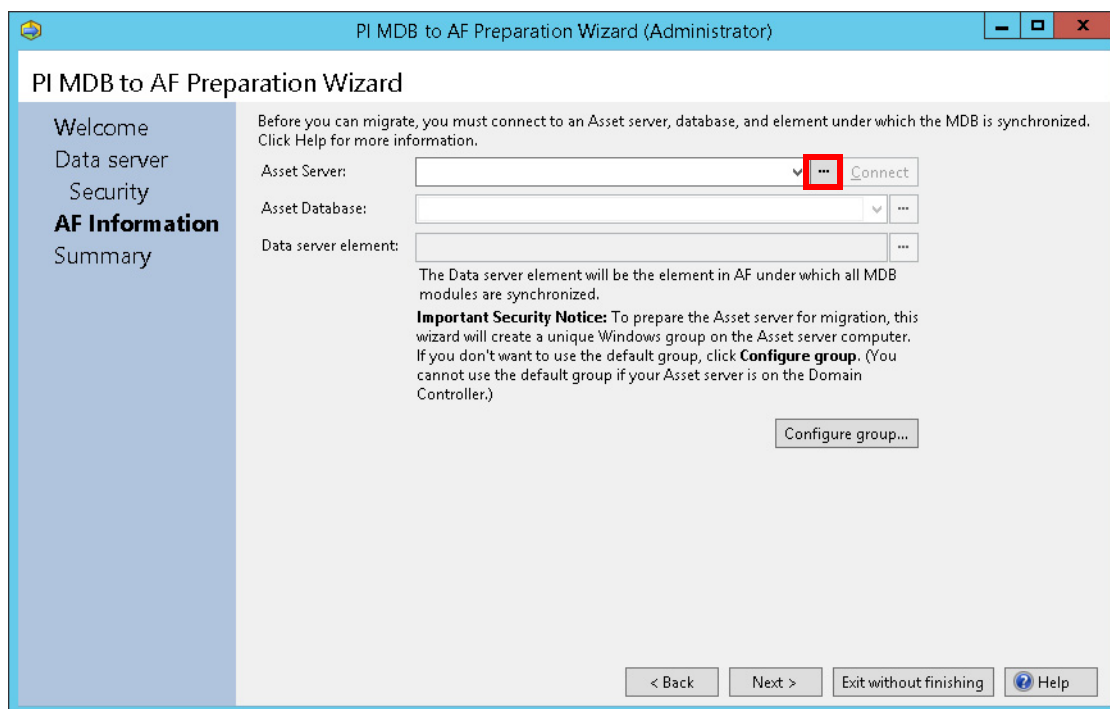
2. In the Add New Mapping dialog box, type 'BUILTIN\Administrators' in the Windows Account text box and click Refresh.



3. On the Add New Mapping dialog box, click Create.
4. On the PI MDB to AF Preparation Wizard, Security step, click Next.



The AF Information window appears.

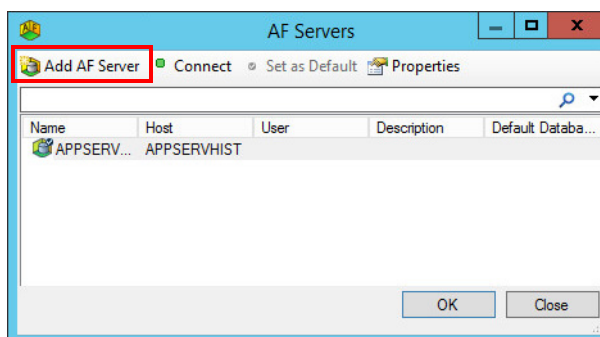


5. Click the Asset Server Browse (ellipsis '...').

### *Specify Asset Framework Server*

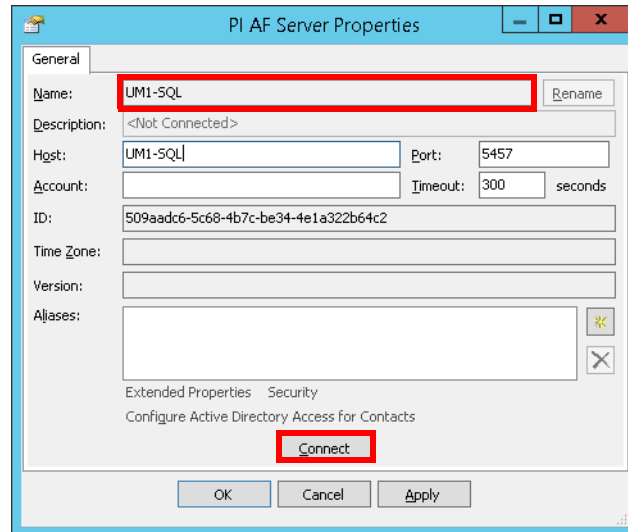
Complete these steps.

1. Click Add AF Server in the upper left of the window.

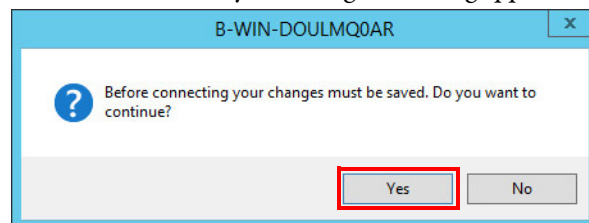


2. In the PI AF Server Properties window, if you installed AF server software on the SQL computer, type the SQL server computer name in the Name text box, and click Connect.

If you installed AF software on the Historian computer, type the Historian server computer name in the Name text box, and click Connect.



3. Click Yes if the 'save your changes' warning appears.



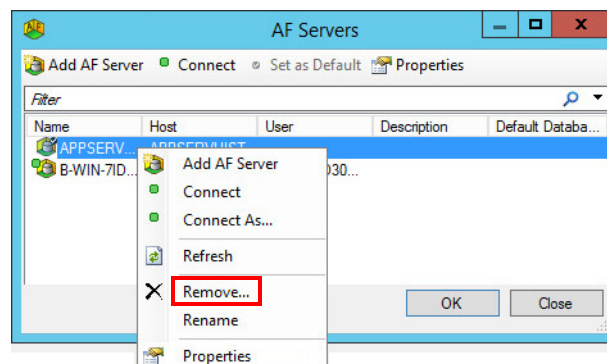
4. In the AF Server Properties window, click OK.

The computer name is listed in the AF Servers window.

### *Remove Unnecessary Servers*

Complete these steps to remove servers.

1. Right-click the name of any server other than the server you specified in the previous step and choose Remove.

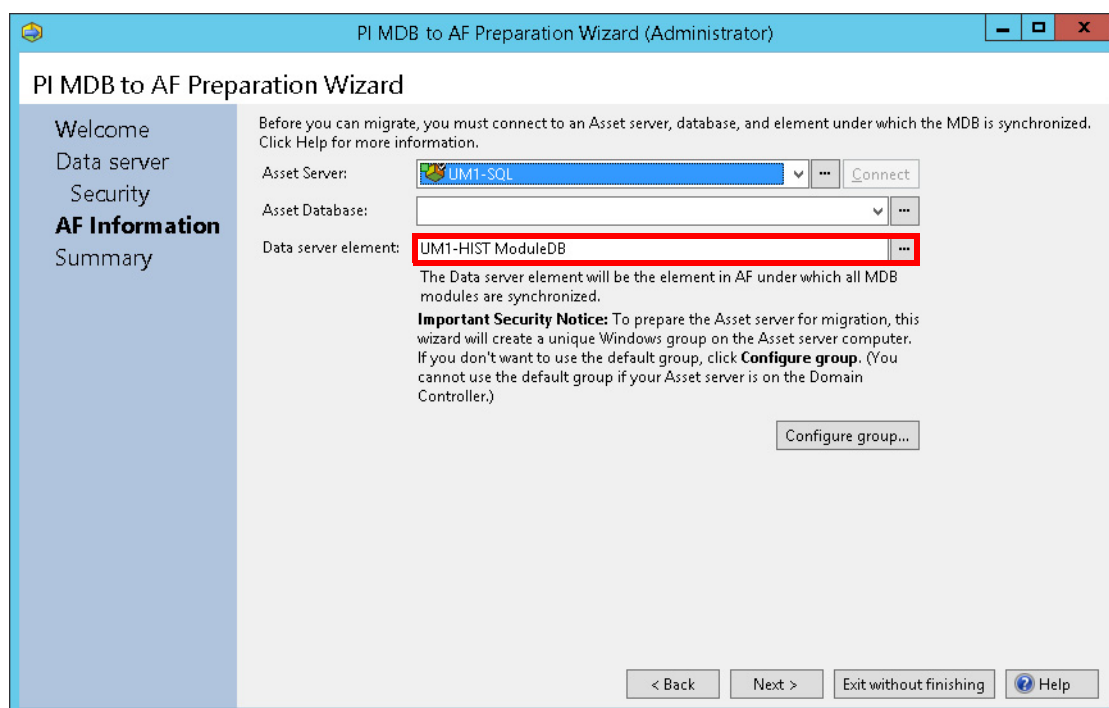


2. When asked 'are you sure', click Yes.
3. After the server is removed, click OK.

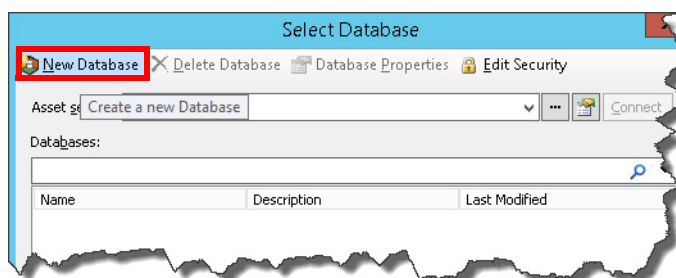
### Connect AF Server, Database, and Element

Complete these steps to connect the AF server, database, and element.

1. From the Asset server pull-down list, choose the server you specified in the Specify AF Server section to populate Asset server.
2. Click the Asset Database Browse (ellipsis '...').



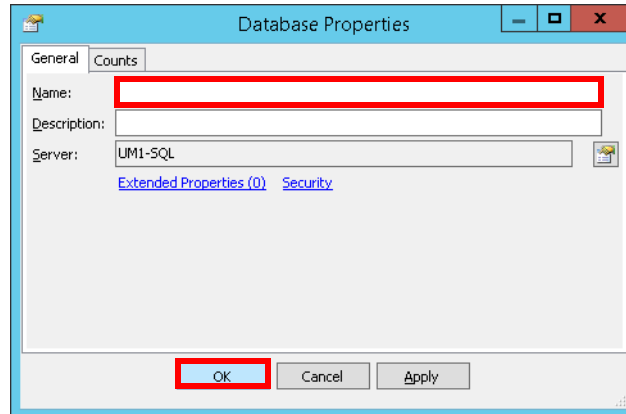
3. In the Select Database dialog box, click New Database.



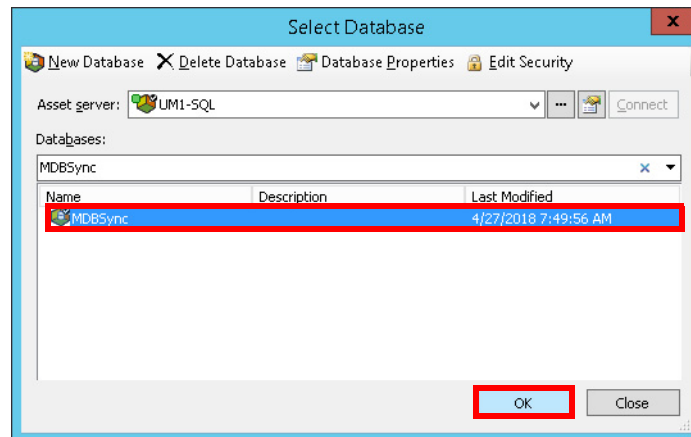
4. In the General tab of the Database Properties dialog box, type the name of the database.

The name can be any name you desire. We recommend 'MDBSync'.

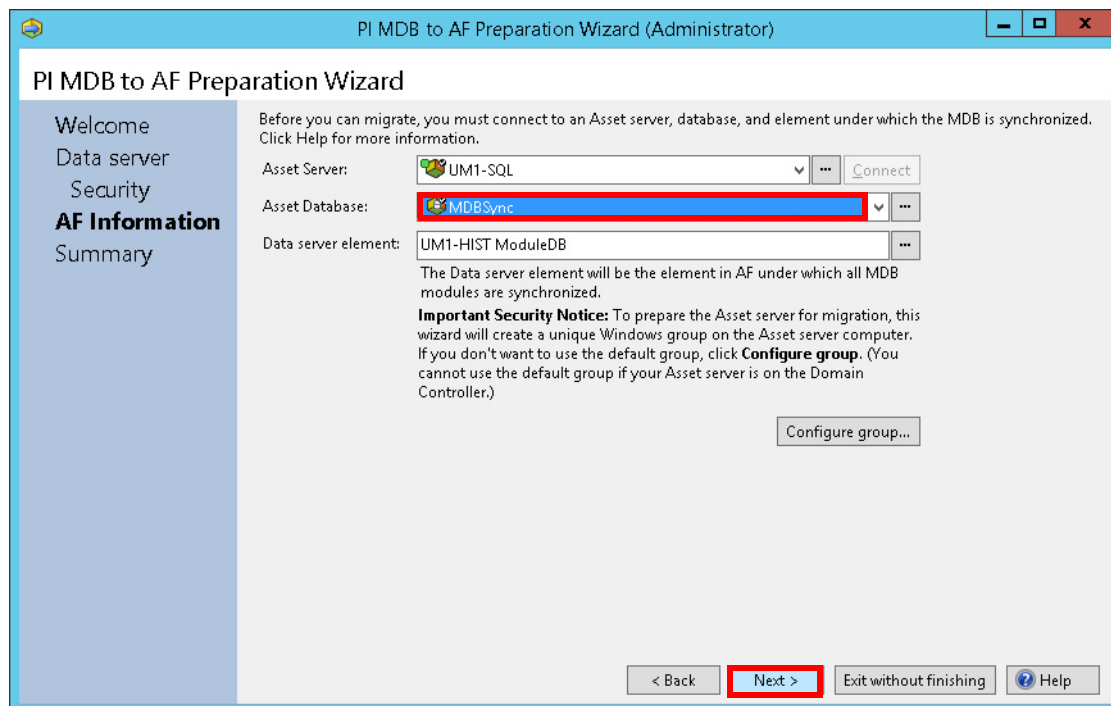
5. Click OK.



6. In the Select Database dialog box, select the database that you just typed and click OK.

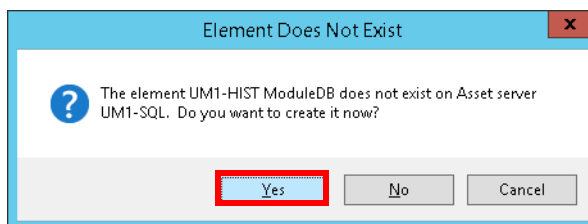


7. In the AF Information window, the database you created is shown in the Asset Database field. Click Next.



The Element Does Not Exist dialog box appears.


8. Click Yes.

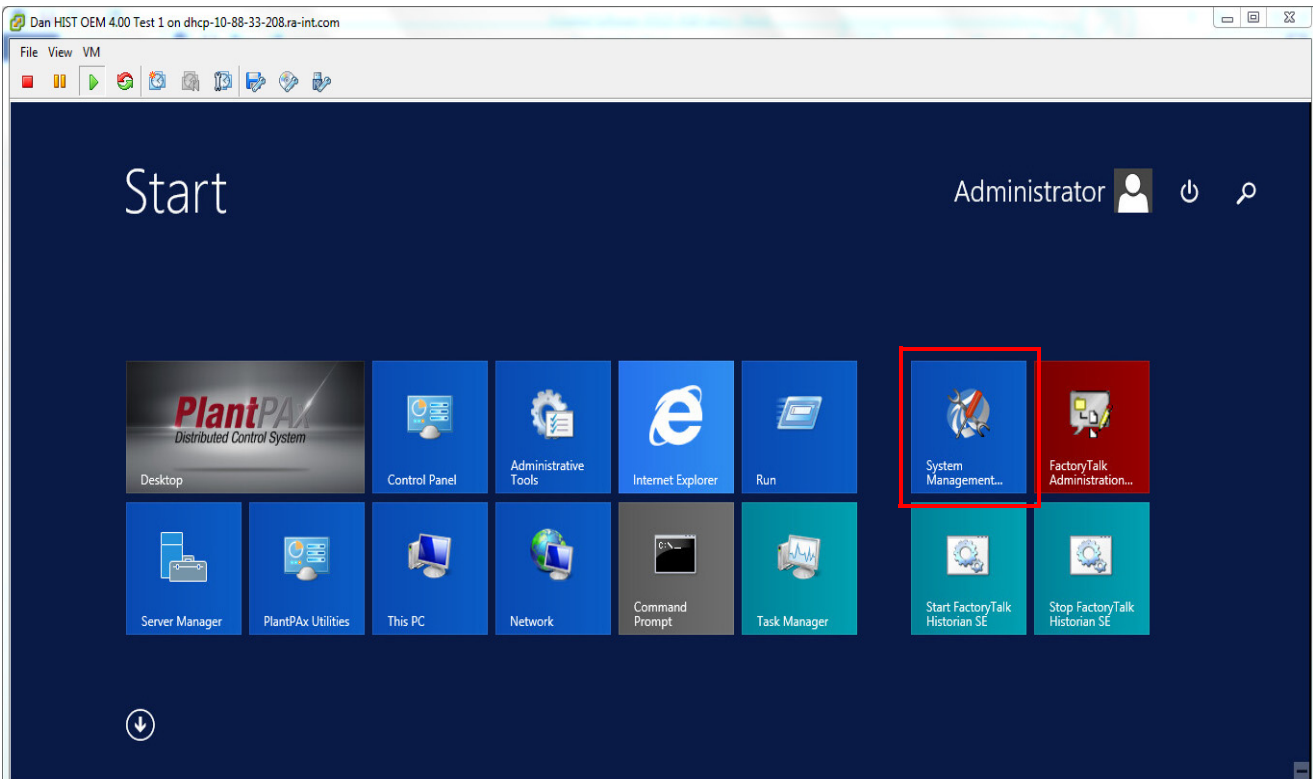


9. In the PI MDB to AF Preparation Wizard Summary window, click Finish.

### Add New Mapping

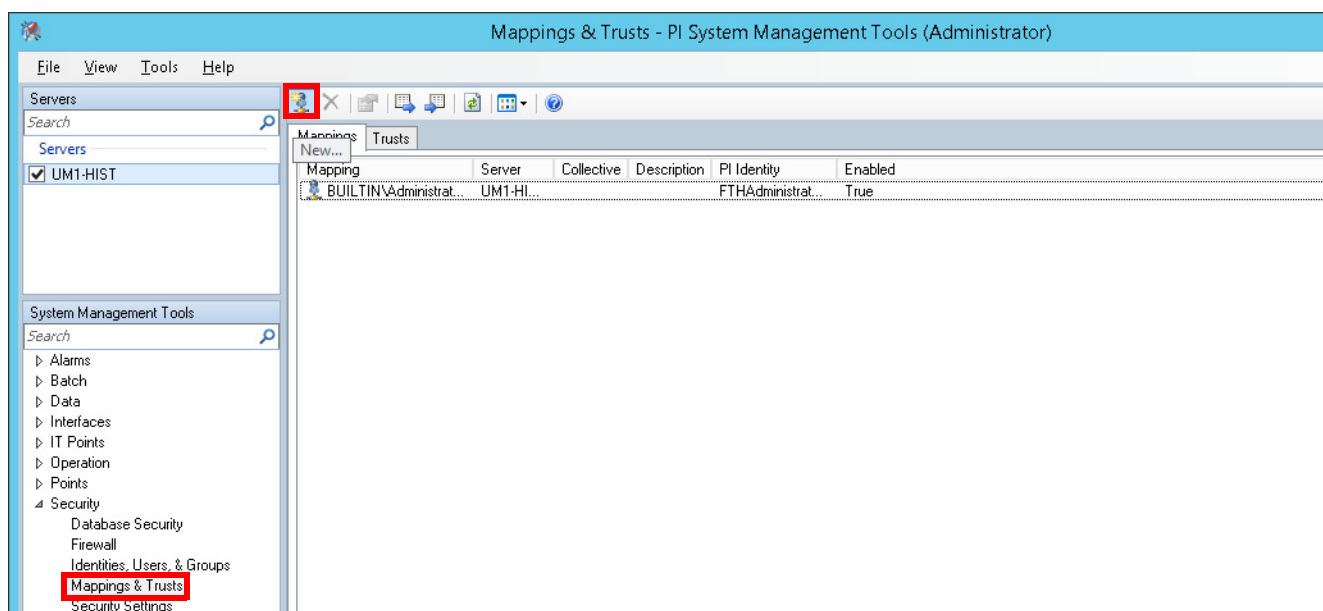
Complete these steps to create a link between system users and the Historian server.

1. On the virtual image desktop, click the Windows  icon and click the System Management tile.

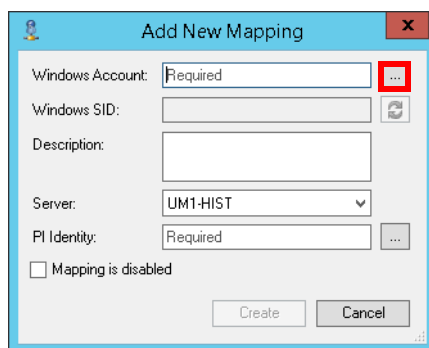


2. On the PI System Management Tools (Administrator) window, expand the Security menu and choose Mappings and Trusts.

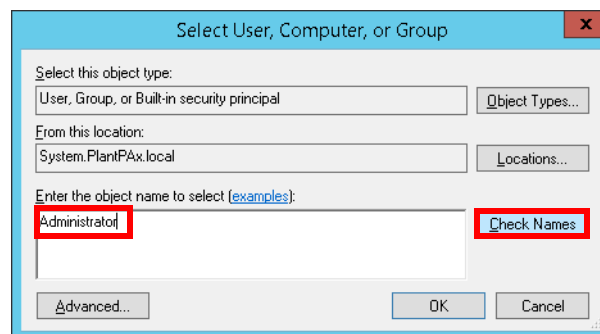
3. Click the New Mapping icon.



4. On the Add New Mapping dialog box, click the Windows Account Browse (ellipsis '...').



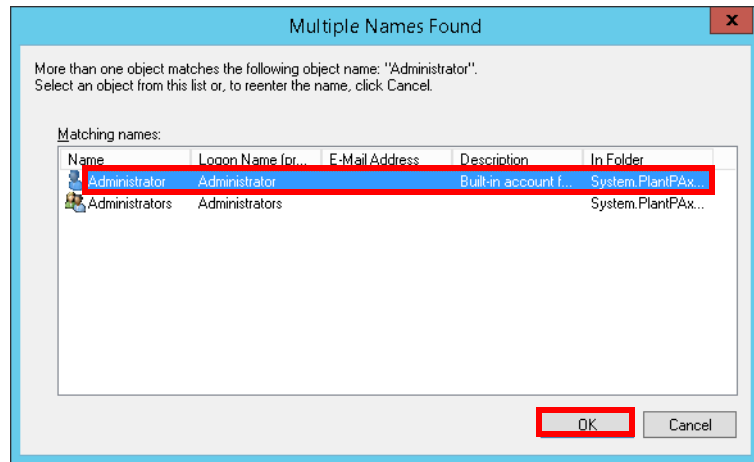
5. Type 'Administrator' for the object name and click Check Names.



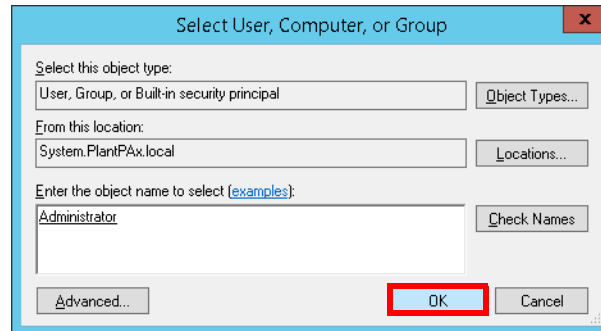
6. Type network credentials, if prompted.



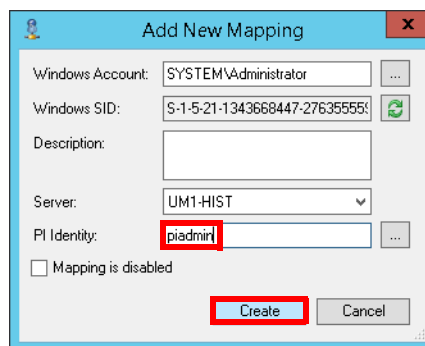
7. On the Multiple Names Found dialog box, select the 'Administrator' account and click OK.



8. On the Select User, Computer, or Group dialog box, click OK.



9. On the Add New Mapping dialog box, type 'piadmin' in the PI Identity text box, and click Create.



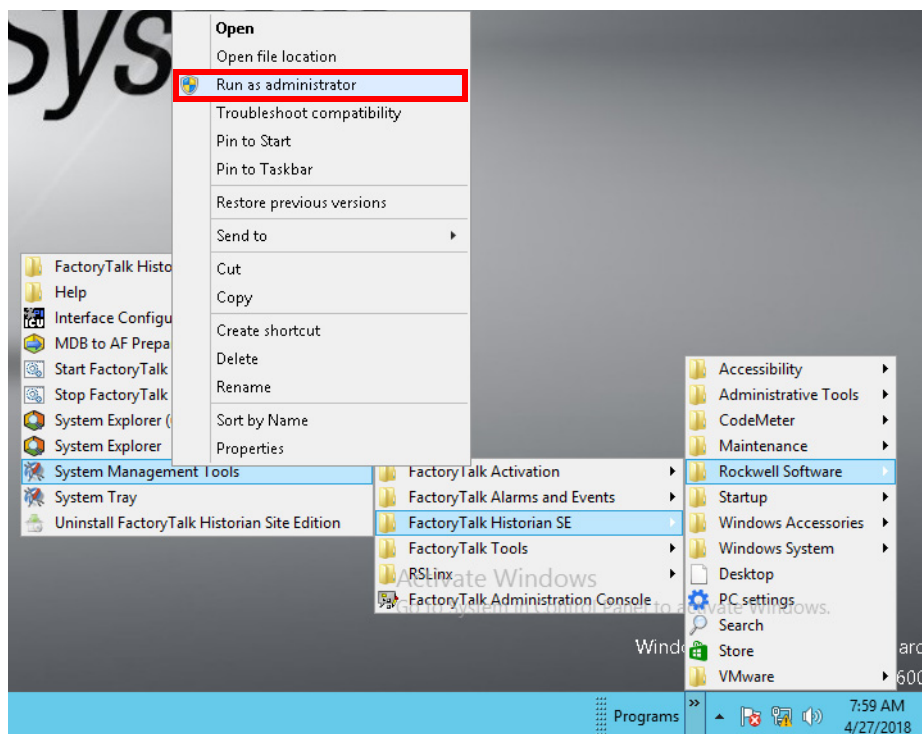
10. In the Mappings window of the Mappings tab, you see the following two identities.

Mappings					
Trusts					
Mapping	Server	Collective	Description	PI Identity	Enabled
BUILTIN\Administrat...	UM1-HI...			FTHAdministrat...	True
SYSTEM\Administrator	UM1-HI...			piadmin	True

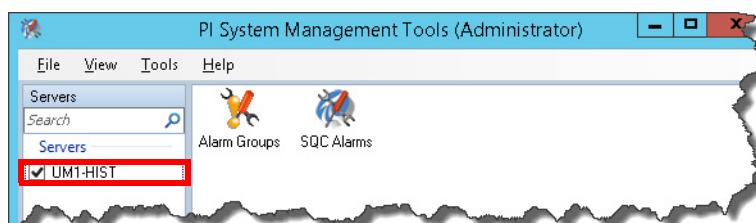
## Restart Services

Complete these steps to restart the PI AF Link Subsystem service.

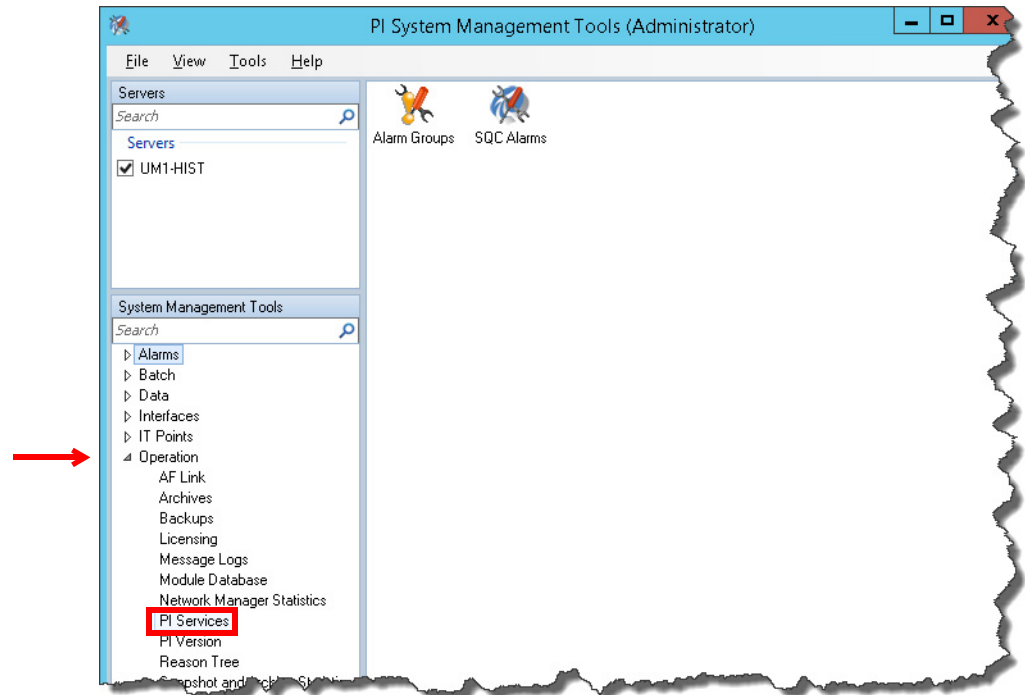
1. On the desktop, click the Programs icon and choose Rockwell Software>FactoryTalk Historian SE, right-click System Management Tools, and choose 'Run as administrator'.



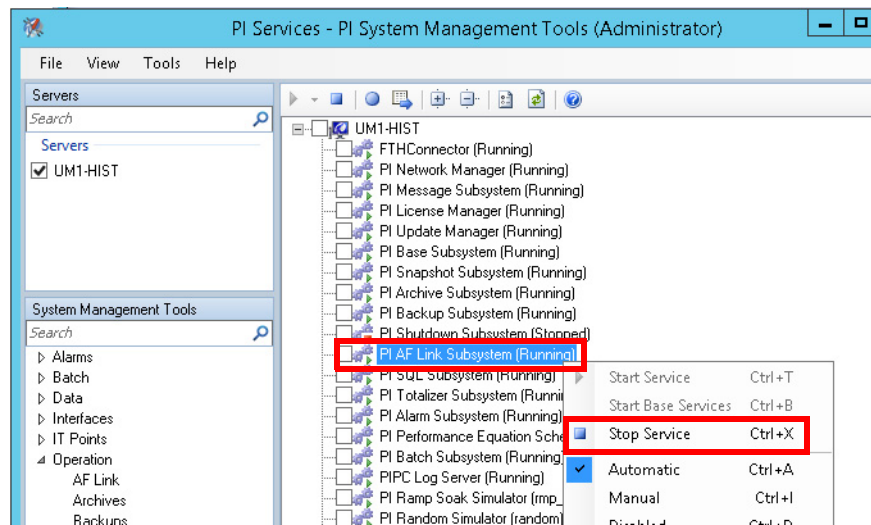
2. In the PI System Management Tools dialog box, under Servers, select the Historian Server by checking the box for your server.



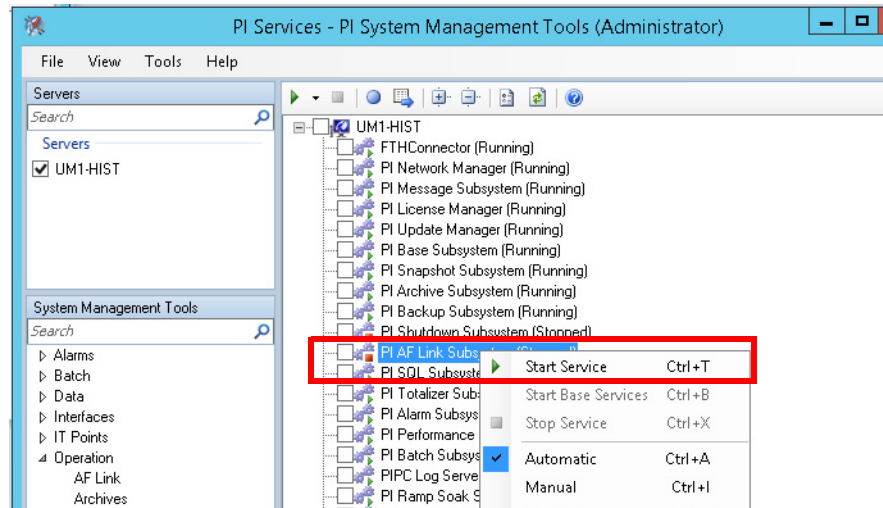
- On the left side of the window, in System Management Tools, click the arrow to expand the Operation menu entry and choose PI Services.



- In the right-hand panel, right-click 'PI AF Link Subsystem (Running)' and click Stop Service.



- Wait until the service shows 'PI AF Link Subsystem (Stopped)', right-click and select Start Service.



The restart is successful if 'PI AF Link Subsystem (Running)' service shows.

- Repeat [step 4](#) and [step 5](#) for PI Base Subsystem.

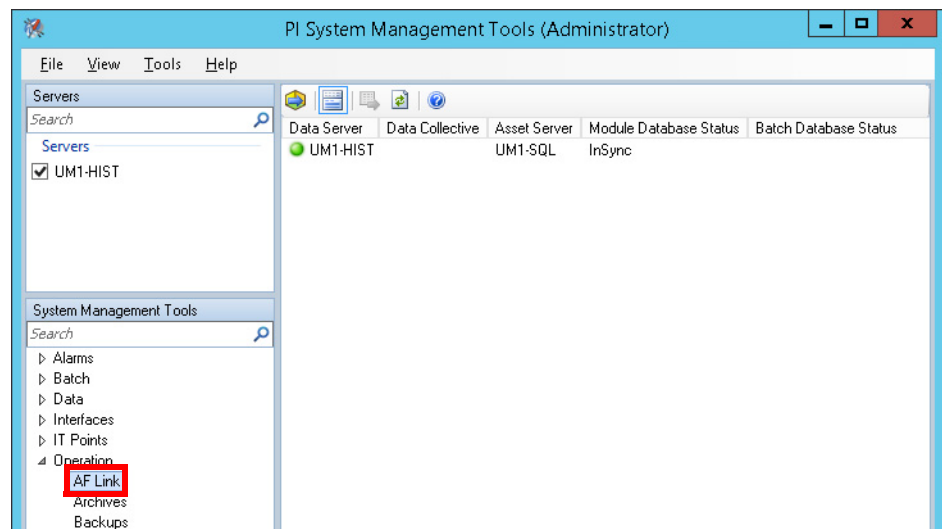
### Verify Synchronization

Complete these steps to verify the MDB to AF synchronization.

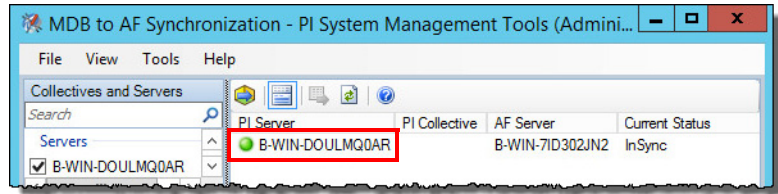
- Start PI System Management Tools by clicking the Programs icon and choosing Rockwell Software>FactoryTalk Historian, right-click System Management Tools, and choose Run as administrator.

The PI System Management Tools dialog box appears.

- On the left side of the window, in the System Management Tools pane, click the arrow to expand the Operation menu entry and choose AF Link.



3. Select the Historian server for which you want to verify the synchronization:
  - If the synchronization is operating correctly, a green icon appears next to the name of the server.



- If synchronization cannot be completed, a red icon appears. Click in the System Management Tools dialog box for information on how to diagnose and solve the problem.

---

**IMPORTANT** To continue with the setup process, log off the computer and log on as the new (administrator) user you created (see [Create an Administrator User Account on page 111](#)).

---

### *Complete Historian Configuration*

When the template is installed, we recommend that you review a FactoryTalk publication at <http://literature.rockwellautomation.com/idc/groups/literature/documents/in/hse-in025.pdf>).

---

**IMPORTANT** See the pages referenced in the FactoryTalk Historian SE Installation and Configuration Guide, publication [HSE-IN025A](#):

- Verify that Historian Services are Running (page 53)
- Verify that Historian Server is Updating Data for Default Tags (page 55)
- Create Security Mappings (page 71)
- Adding the Server to the FactoryTalk Directory Connection (page 78)
- Assigning License Activations to the Historian Server (page 88)

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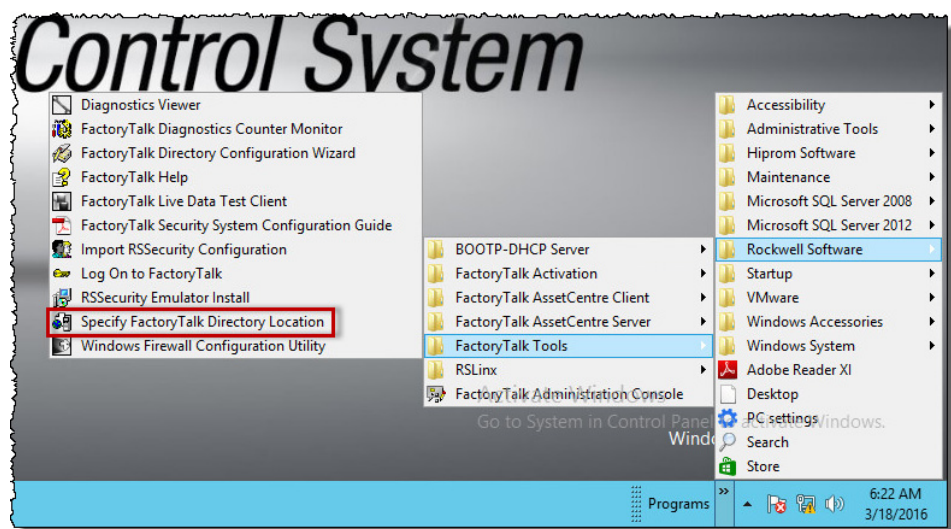
## Configure the Batch Virtual Server

This section provides two options: install FactoryTalk Batch independently or with FactoryTalk eProcedure.

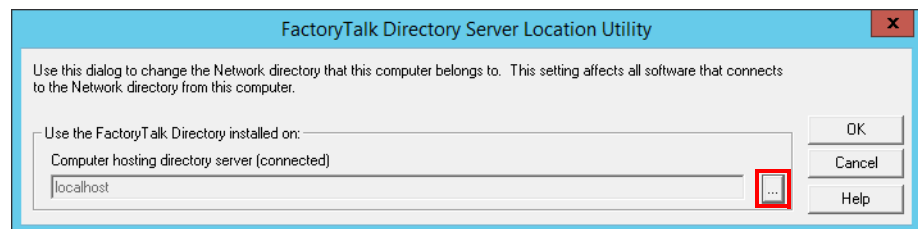
### Specify FactoryTalk Directory Location

Complete these steps to specify the FactoryTalk Directory location.

1. On the virtual image desktop, click the Programs icon and choose Rockwell Software>FactoryTalk Tools>Specify FactoryTalk Directory Location.



2. In the FactoryTalk Directory Server Location Utility dialog box, click Browse (ellipsis '...').

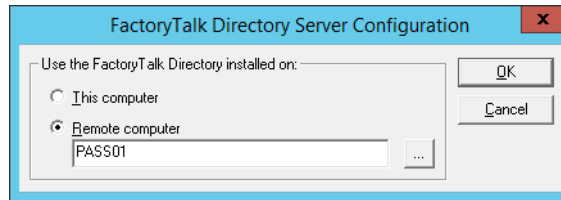


**IMPORTANT** Browse can be inactive if Network Discovery and File Share are not enabled.

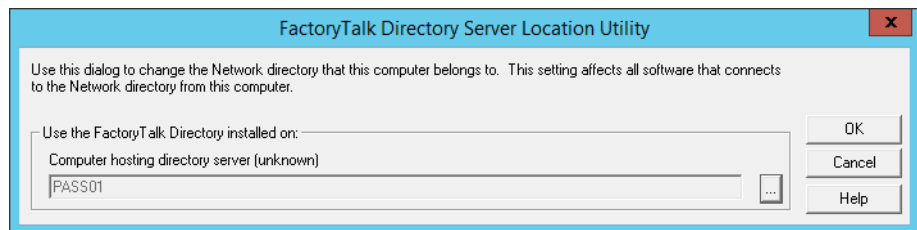
3. In the Login User dialog box, type your User name and Password and click OK.

**TIP** Use the User name and Password you created for your local ([step 6 on page 125](#)) and network ([step 5 on page 125](#)) FactoryTalk Directory.

4. In the FactoryTalk Directory Server Configuration dialog box, click Remote Computer.
5. Type the name of your PASS server, or click Browse (ellipsis '...'), search for, and select your PASS server.



6. Click OK
7. On the FactoryTalk Directory Server Location Utility dialog box, click OK to accept the changes.

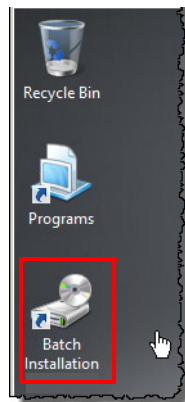


8. Restart the AppServ-Asset virtual machine.

### *Install FactoryTalk Batch*

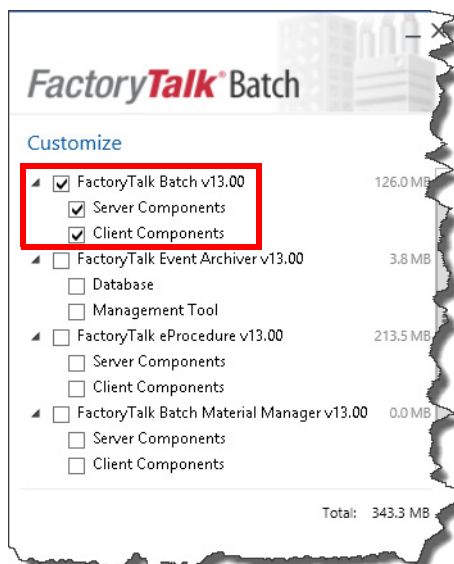
The Batch virtual server provides efficient, consistent predictable batch processing and supports the reuse of code, recipes, phases, and logic. FactoryTalk Batch combines the ISA S88 standard with proven technology that provides the flexibility you need to supply your product to market faster.

1. On the desktop, double-click the Batch Installation icon.

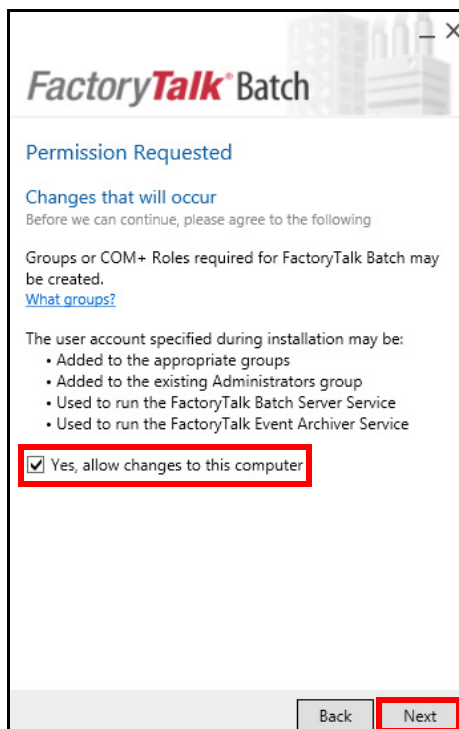


2. When the Setup window displays, click Next.

3. In the FactoryTalk Batch Customize window, click FactoryTalk Batch v13.00, Server Components, and Client Components.
4. Uncheck FactoryTalk Event Archiver.
5. Click Next.

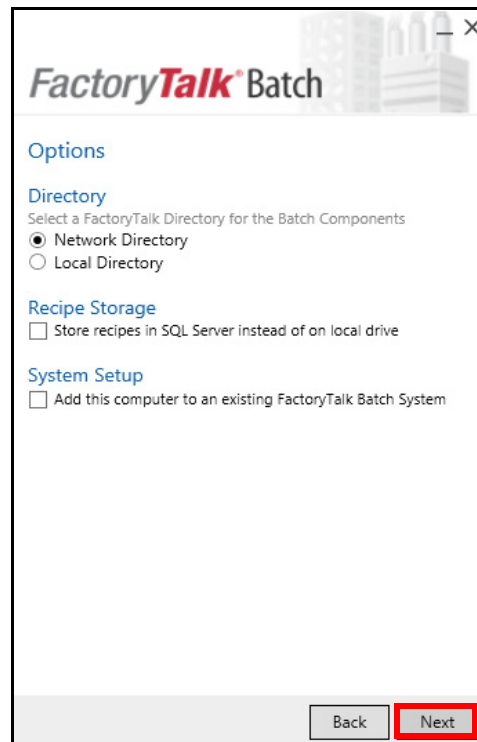


6. Click 'Yes, allow changes to this computer' and click Next.

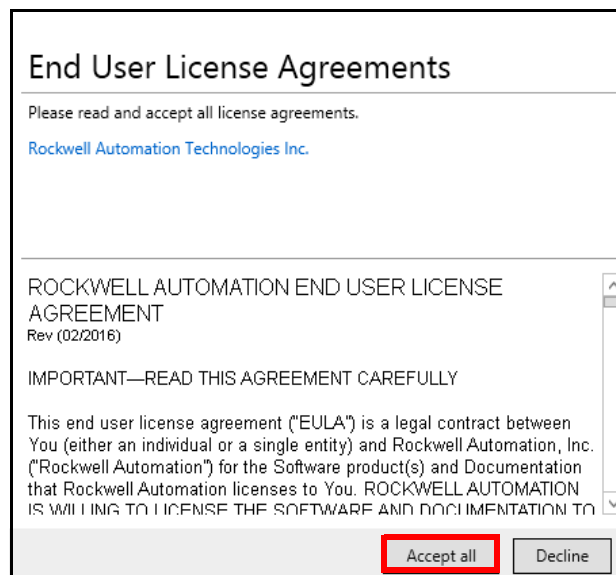




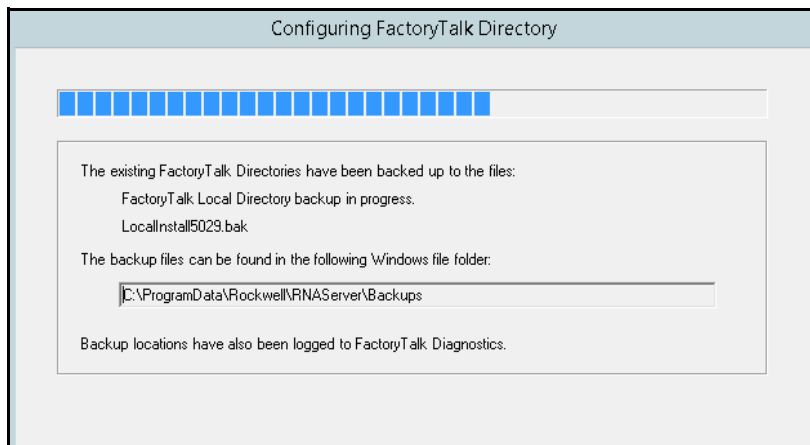
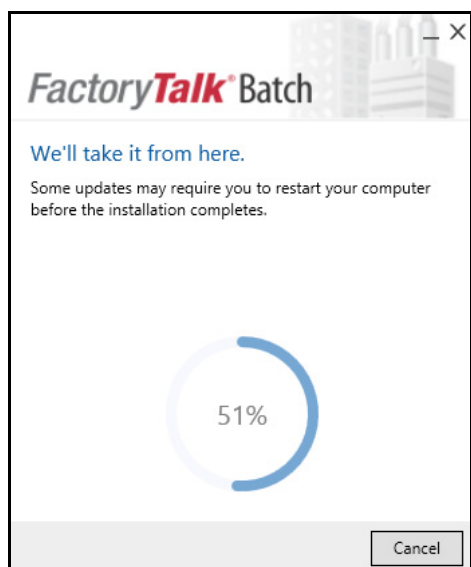
7. Click Network Directory and click Next.



8. Type a user name and password for the batch server.
9. Click Install.
10. On the EULA page, read the license agreement and click 'Accept all'.



The installation starts. Be patient.



11. The installation completes.



12. Click Close.

### Install FactoryTalk eProcedure

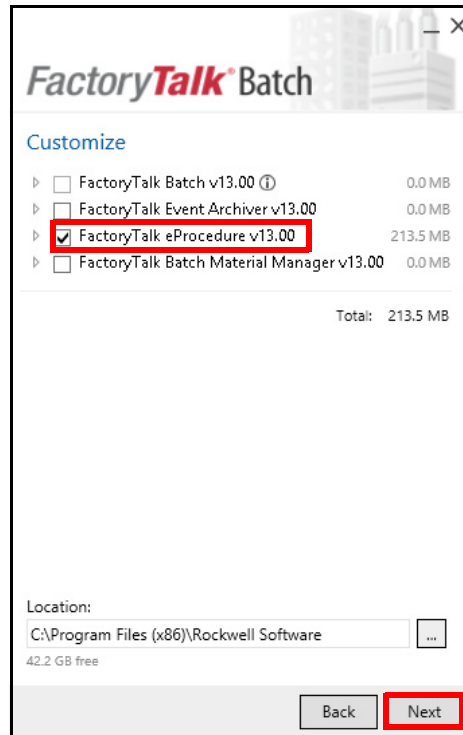
The eProcedure template lets you step through the process of creating and commanding a batch. You can view equipment or procedures for batches running within the plant.

---

**IMPORTANT** You must have FactoryTalk Batch installed on the server to complete the following procedure.

---

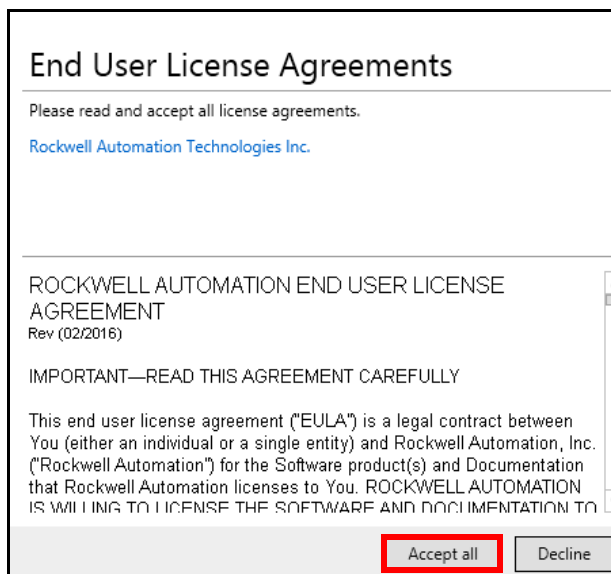
1. Repeat [step 1](#) through [step 4](#) for [Install FactoryTalk Batch on page 175](#).
2. In the FactoryTalk Batch window, click FactoryTalk eProcedure v13.00.



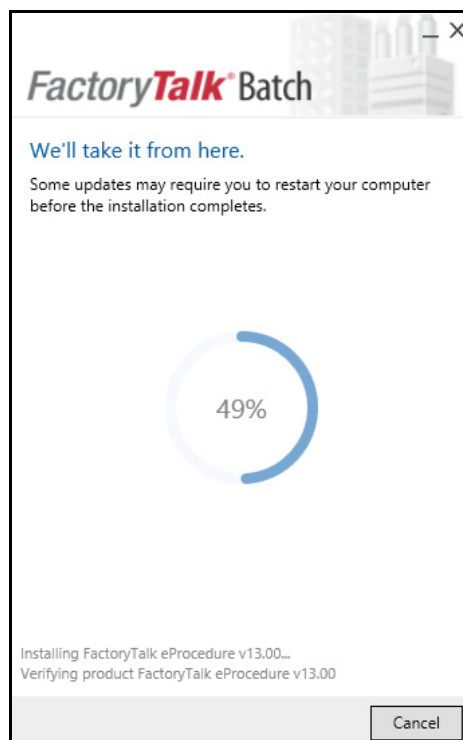
3. Click Next.
4. Click Network Directory and click Next.



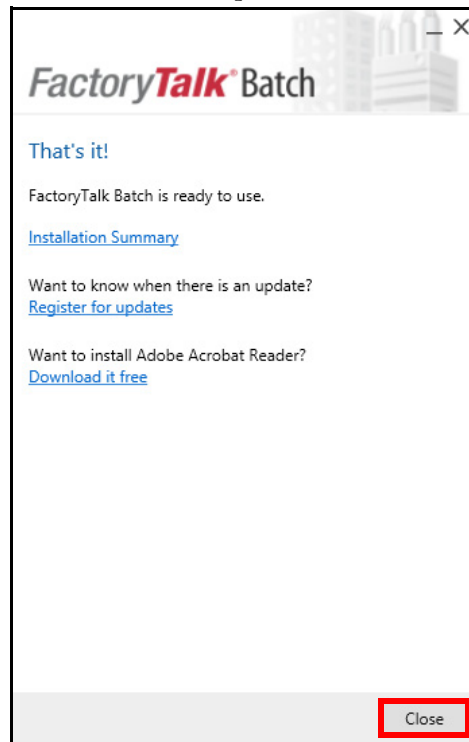
5. Type a user name and password for the batch server.
6. Click Install.
7. On the EULA page, read the license agreement and click 'Accept all'.



The installation starts. Be patient.



The installation completes.



8. Click Close.

### Install FactoryTalk Event Archiver

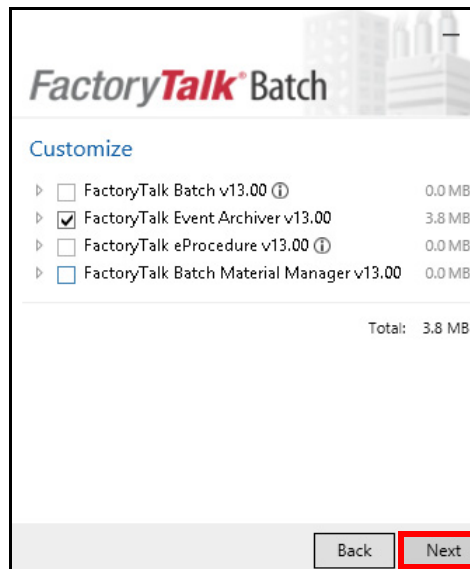
Complete these steps to install the FactoryTalk Event Archiver to insert batch record data.

---

**IMPORTANT** You must have FactoryTalk Batch installed on the server to complete the following procedure.

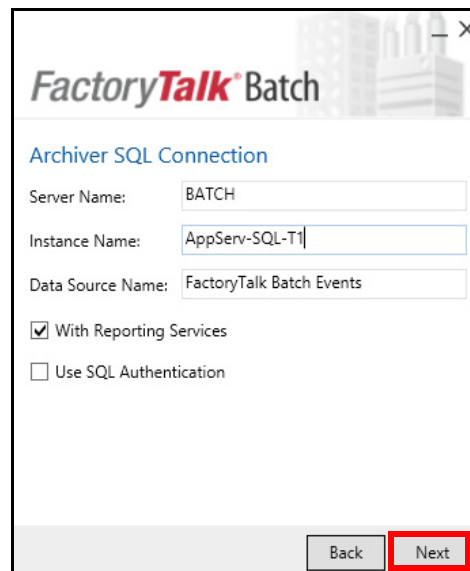
---

1. Repeat [step 1](#) through [step 3](#) for [Install FactoryTalk Batch on page 175](#).
2. In the FactoryTalk Batch window, click FactoryTalk Event Archiver v13.00.



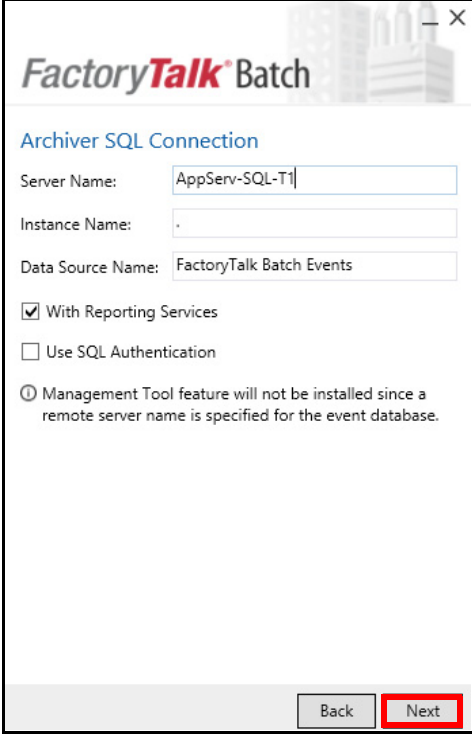
3. Click Next.
4. Type your SQL server name.

Use defaults for FactoryTalk Batch Events and 'With Reporting Services'.



5. Click Next.
6. Type the instance name as your server.
7. Type a period (.) for the instance to denote server.

Use defaults for FactoryTalk Batch Events and 'With Reporting Services'.



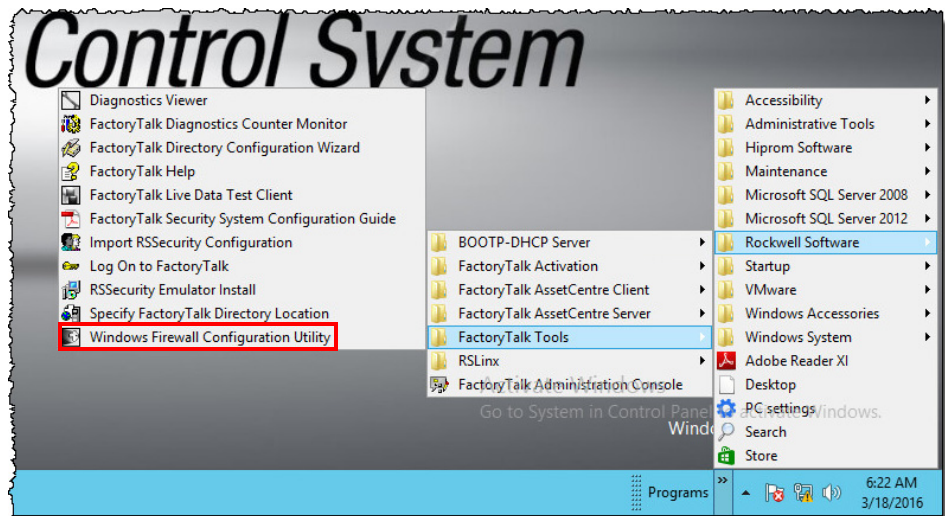
The image shows a screenshot of the 'FactoryTalk Batch' Archiver SQL Connection dialog box. The dialog has a title bar with a close button (X). The main content area is titled 'Archiver SQL Connection' in blue. It contains three text input fields: 'Server Name' with the value 'AppServ-SQL-T1', 'Instance Name' with a single period '.', and 'Data Source Name' with the value 'FactoryTalk Batch Events'. Below these fields are two checkboxes: 'With Reporting Services' (checked) and 'Use SQL Authentication' (unchecked). A message icon (i) is followed by the text: 'Management Tool feature will not be installed since a remote server name is specified for the event database.' At the bottom right, there are two buttons: 'Back' and 'Next'. The 'Next' button is highlighted with a red rectangular border.

8. Click Next.

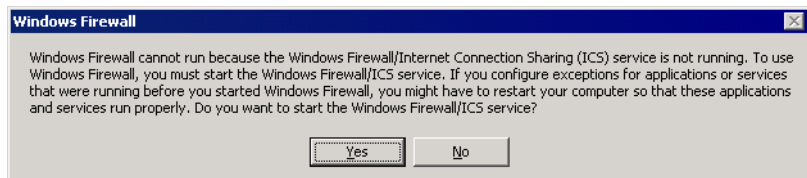
### Configure the Windows Firewall (Optional)

To configure the Windows firewall, complete these steps.

1. On the virtual image desktop, click the Programs icon and choose Rockwell Software>FactoryTalk Tools>Windows Firewall Configuration Utility.

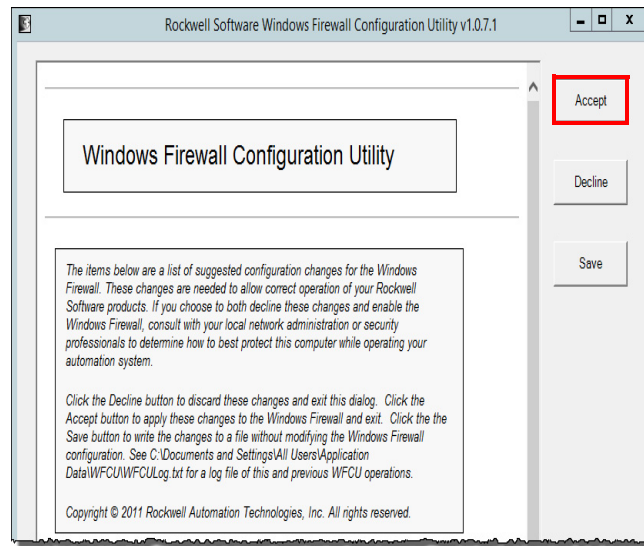


2. If the firewall has not been enabled, the following dialog box can open. Click Yes to enable the fire wall and continue.





3. In the Rockwell Software Windows Firewall Configuration Utility window, click Accept.



4. Click OK on the Confirm Windows Firewall Changes dialog box.

The utility configures the Windows firewall and the firewall is set to a new state (if different).

### *Complete Batch Installation*

At this point, the FactoryTalk Batch virtual server is ready for use. Review the Installation Guide for FactoryTalk Batch, publication [BATCH-IN002](#).

We recommend that you use a domain. If the Batch server is in a workgroup, complete these additional tasks:

- Add an incoming firewall rule
- Disable Administrative Approval Mode

For these procedures, see the Batch Installation Guide ('Configure Batch Server to run in a Workgroup') and the eProcedure manual.

- The FactoryTalk Batch Installation Guide is in your template at c:\Batch Installation Software\13.01.00-FTBatch-ePro-DVD\Docs.
- The FactoryTalk Batch Administrator's Guide is in your template at c:\Program Files (x86)\Common Files\Rockwell\Help.

## Configure the Asset Management Virtual Server

An asset management server (AppServ-Asset) helps to manage and maintain plant operations. The AppServ-Asset server provides controller data backup for disaster recovery, diagnostics, calibration, and real-time monitoring. The server also audits equipment and network health to improve overall resource availability.

### Configure a Firewall


This section describes how to enable a firewall.

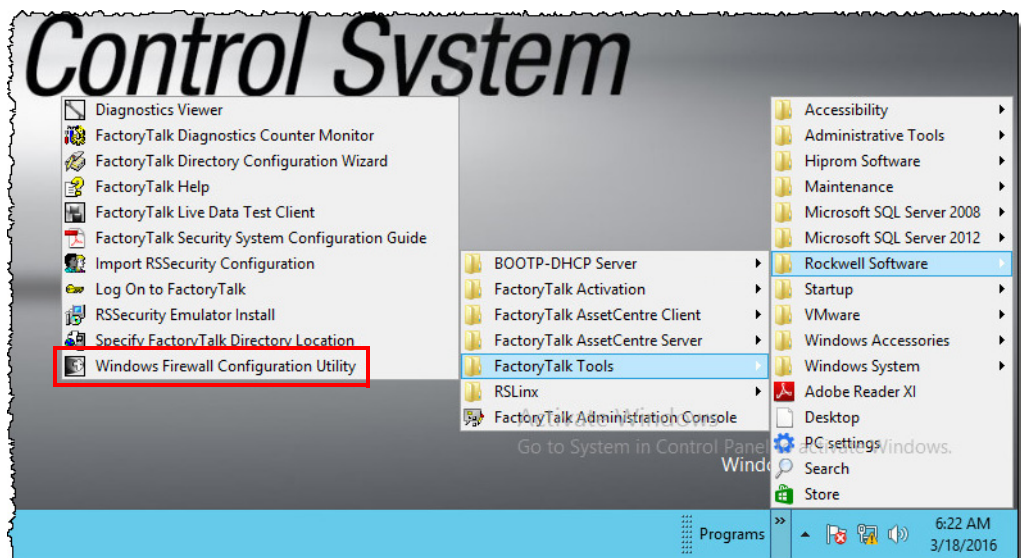
---

**IMPORTANT** Before proceeding, there must be a connection between this computer and the computer where the FactoryTalk Directory resides. There must also be a connection between this computer and the SQL server.

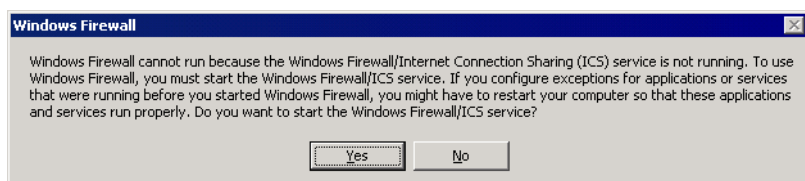
---

Complete these steps.

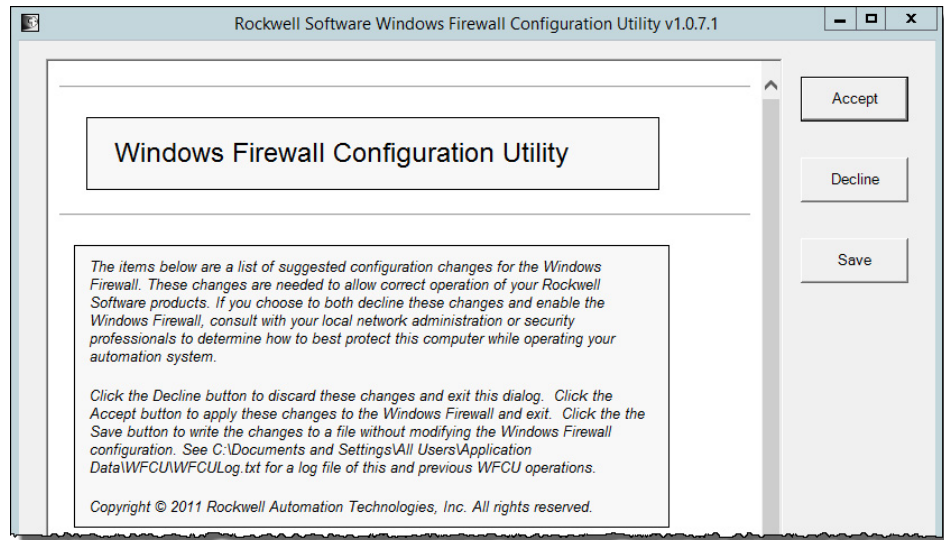
1. On the virtual image desktop, click the Programs  icon and choose RockwellSoftware>FactoryTalk Tools>Windows Firewall Configuration Utility.



2. If the firewall has not been enabled, the following dialog box can open. Click Yes to enable the firewall and continue.



3. In the Rockwell Software Windows Firewall Configuration Utility window, click Accept.



4. Click OK on the Confirm Windows Firewall Changes dialog box.

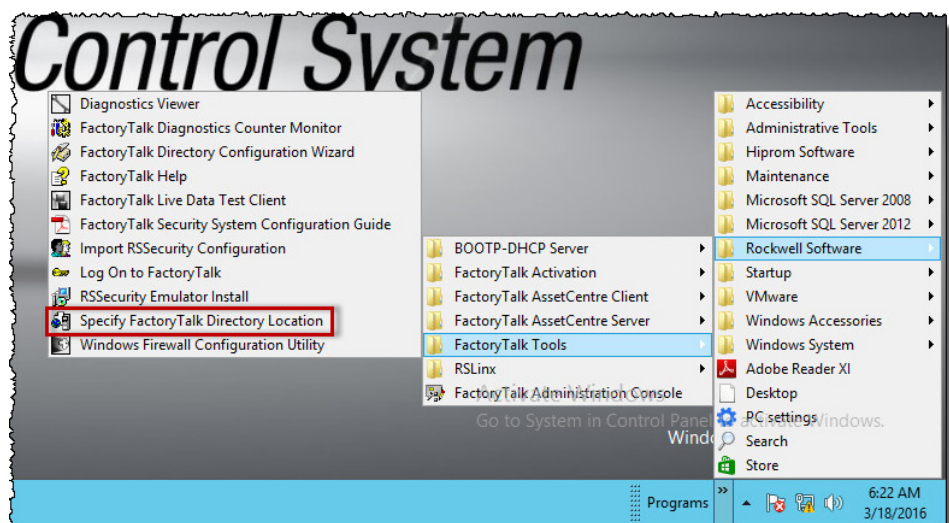
The utility configures the Windows firewall and the firewall is set to a new state (if different).

### *Specify FactoryTalk Directory Location*

In this section, you specify the location of the FactoryTalk Directory.

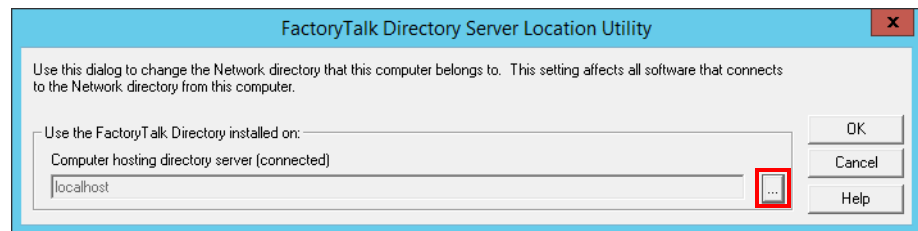
Complete these steps.

1. On the virtual image desktop, click the Programs icon and choose Rockwell Software>FactoryTalk Tools>Specify FactoryTalk Directory Location.



**IMPORTANT** Browse can be inactive if Network Discovery and File Share are not enabled.

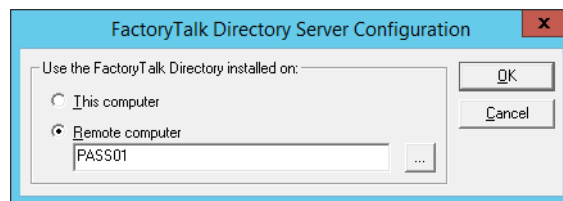
2. In the FactoryTalk Directory Server Location Utility dialog box, click Browse (ellipsis '...').



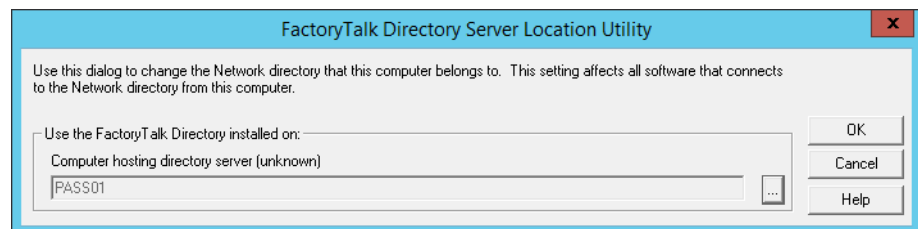
3. In the Login User dialog box, type your User name and Password and click OK.

**TIP** Use the User name and Password you created for your local and network FactoryTalk Directory. See [step 5 on page 125](#) for the network directory and [step 6 on page 125](#) for the local directory.

4. In the FactoryTalk Directory Server Configuration dialog box, click Remote Computer.
5. Type the name of your PASS server, or click Browse (ellipsis '...'), search for, and select your PASS server.




6. Click OK
7. On the FactoryTalk Directory Server Location Utility dialog box, click OK to accept the changes.

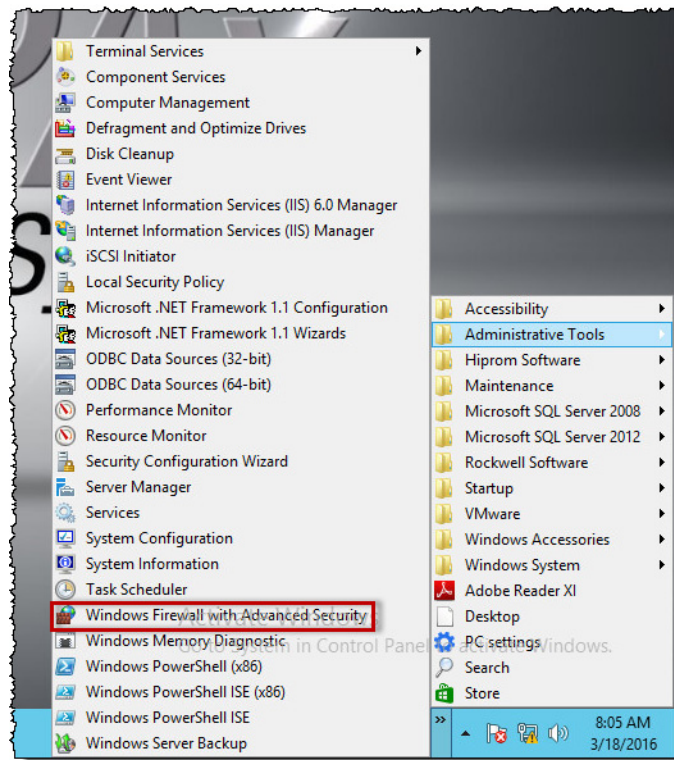


8. Restart the AppServ-Asset virtual machine.

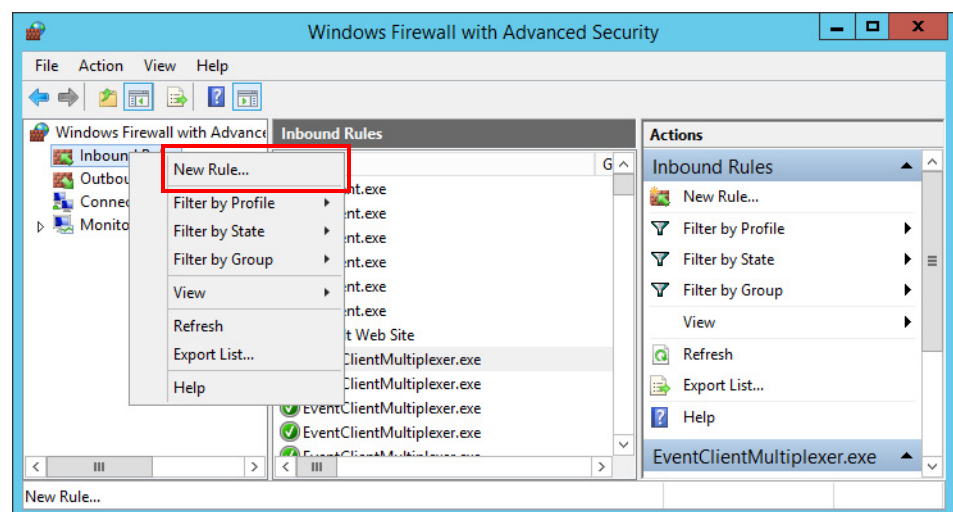
### Create a New Inbound Rule

There must be an inbound rule that allows a connection through the firewall to the AppServ-Info (SQL) server.

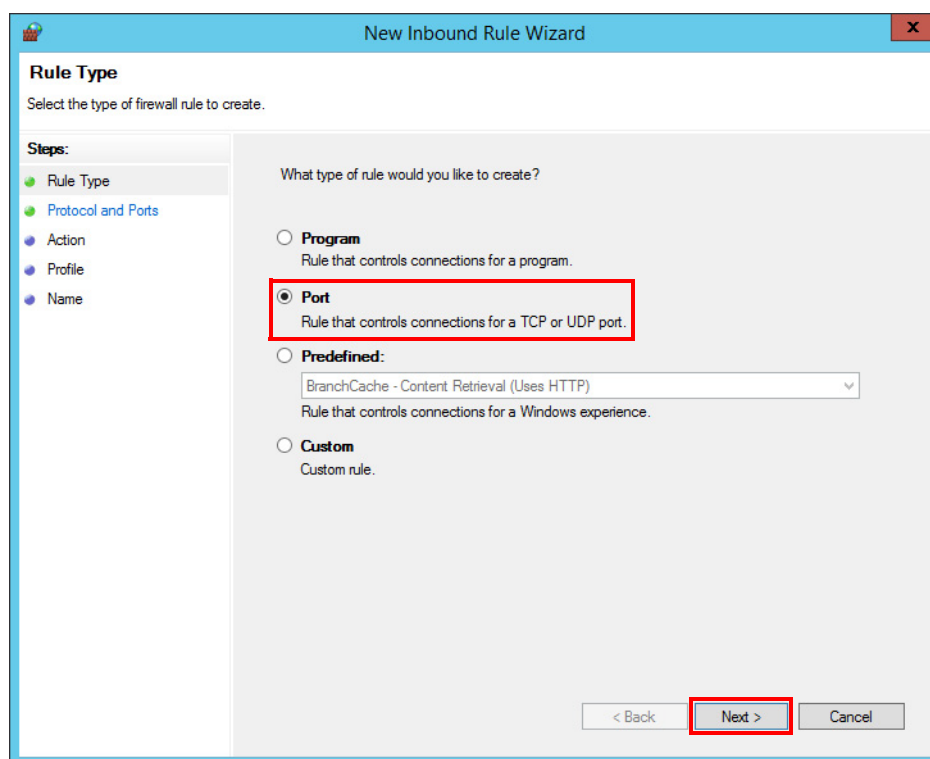
1. On the virtual image desktop, click the Programs  icon and choose Administrative Tools>Windows Firewall with Advanced Security.



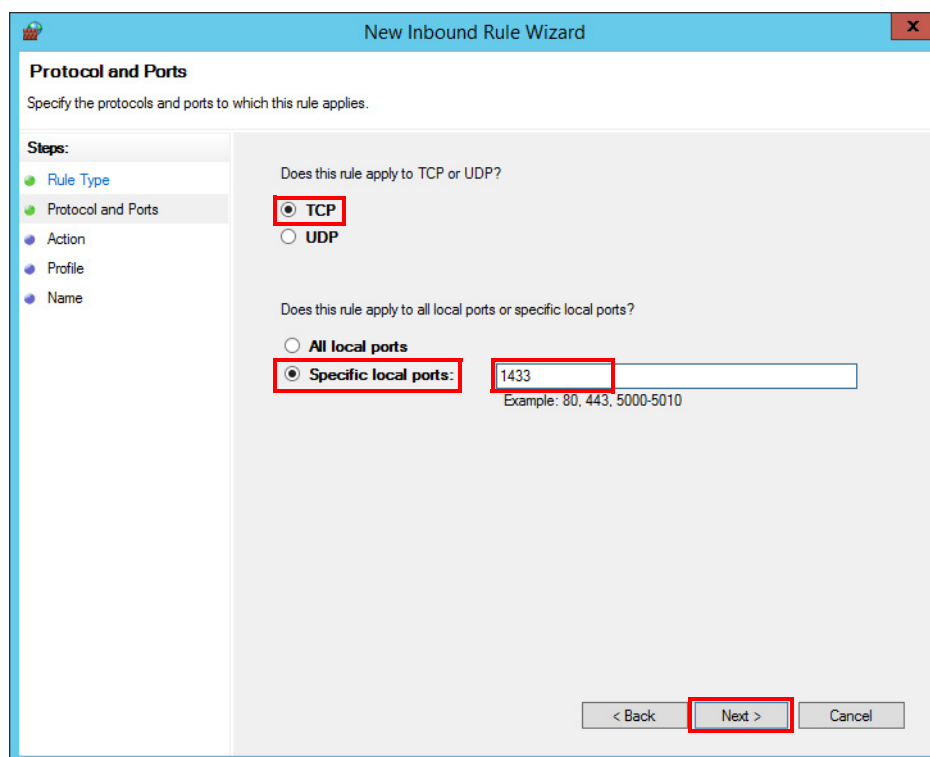
2. In the Windows Firewall with Advanced Security, click Inbound Rules.
3. Right-click Inbound rules and select New Rule.



4. In the Rule Type dialog box, click Port and then click Next.

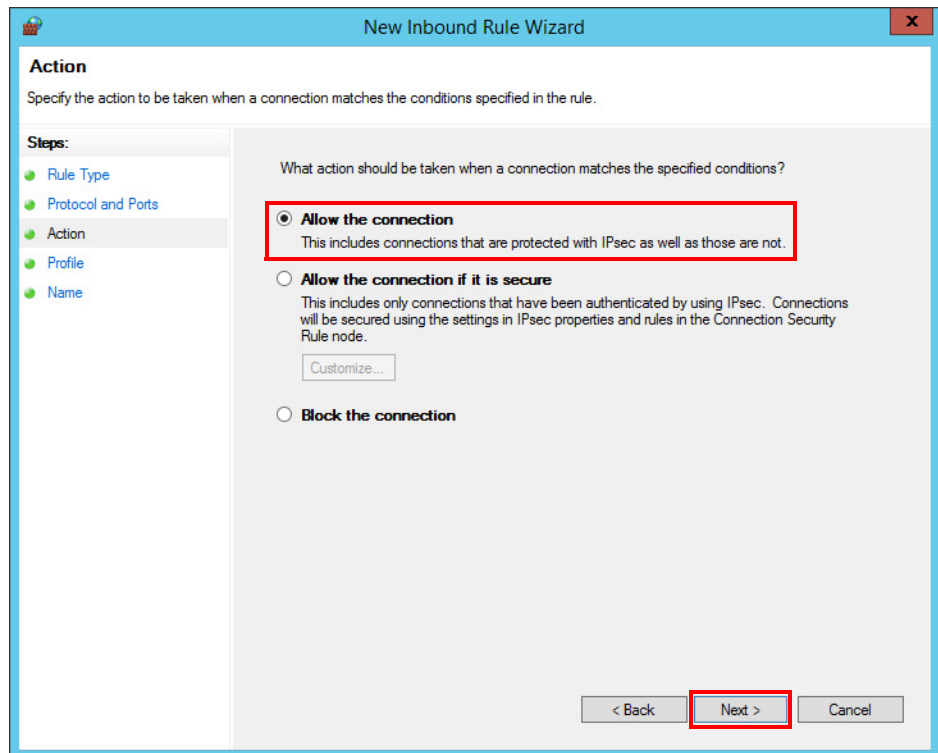


5. In the Protocol and Ports dialog box, click TCP and Specify local ports.  
6. Type '1433' as the specific local port. This port is the one affected by the new rule.

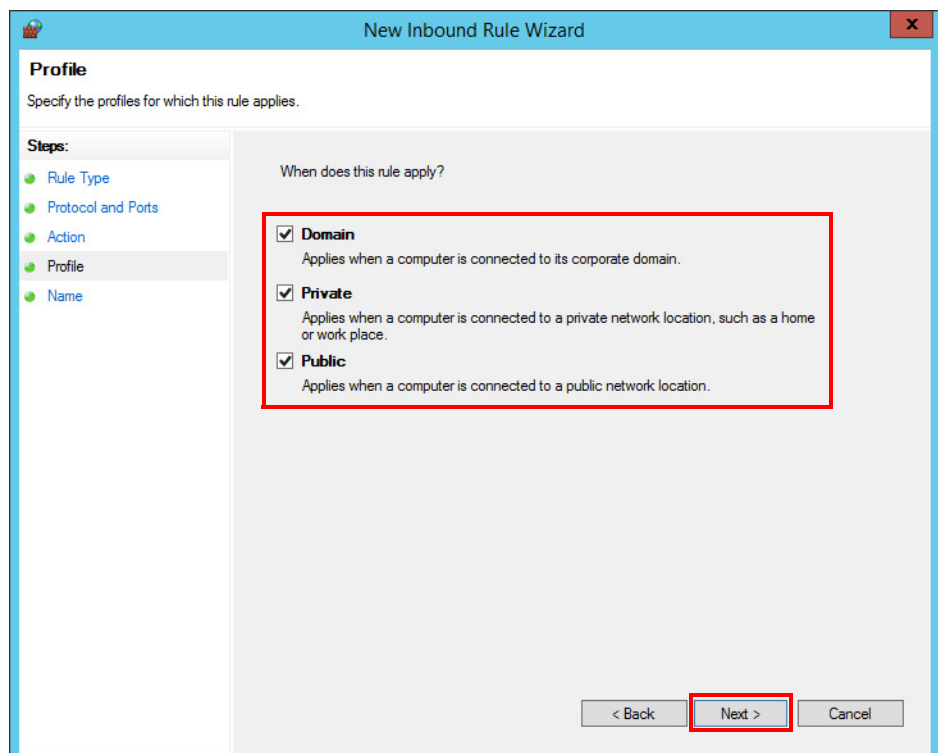




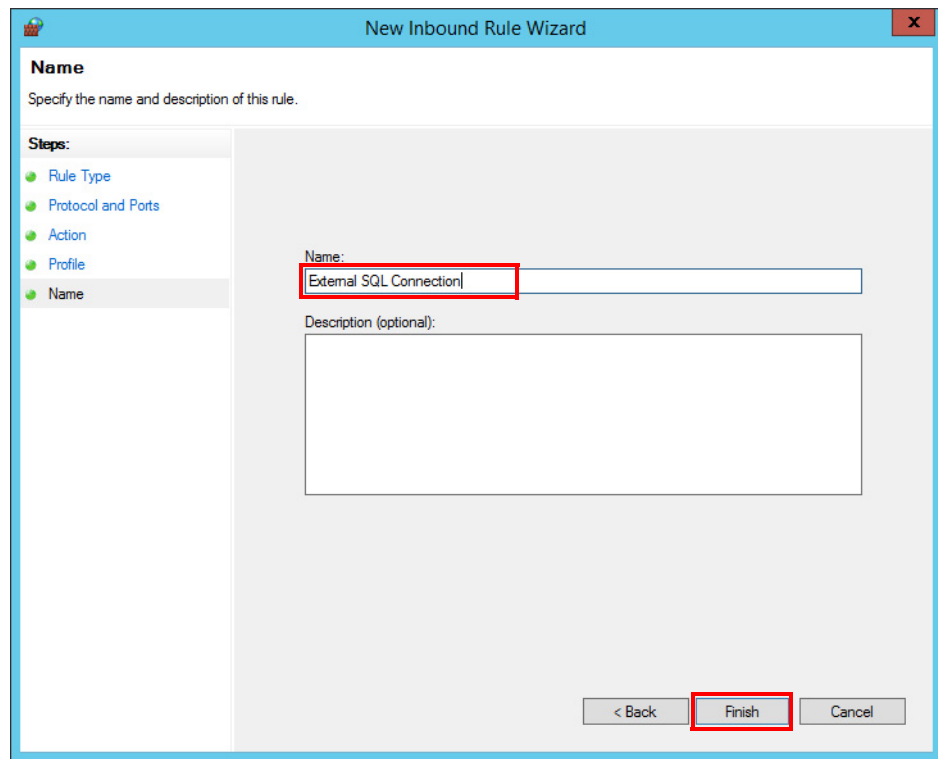
7. Click Next.
8. In the Action dialog box, click 'Allow the connection' and then click Next.



In the Profile dialog box, make sure that all boxes are checked and click Next.



9. In the Name dialog box, type a name for this rule and click Finish.



The firewall now permits connections to the external SQL server in a secure manner.

### *Configure FactoryTalk AssetCentre Software*

AssetCentre must be configured to account for changes in computer name, FactoryTalk Directory, and SQL location.

---

**IMPORTANT** Before proceeding, there must be a connection between this computer and the computer where the FactoryTalk Directory resides. There must also be a connection between this computer and the SQL server.

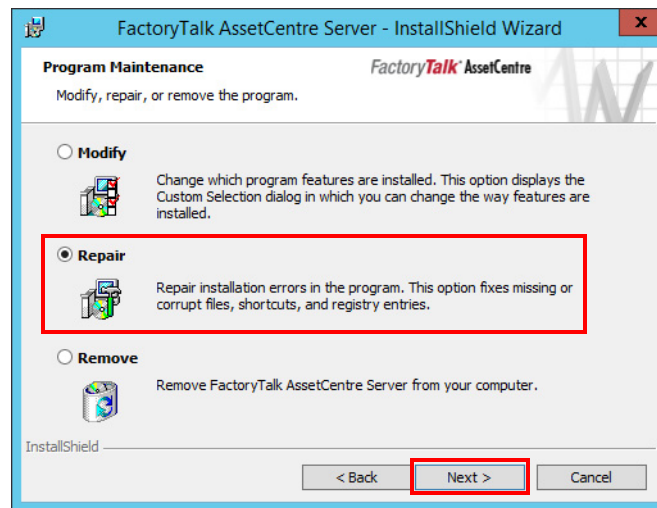
---

Complete these steps.

1. On the desktop, double-click the FTAC Server Repair icon.  
The Welcome window for the FactoryTalk AssetCentre Server - InstallShield Wizard appears.
2. Click Next on the Welcome window.

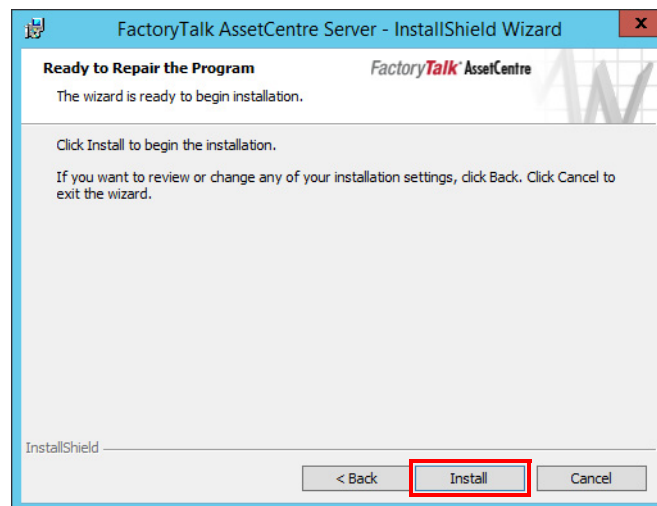


3. In the Program Maintenance dialog box, click Repair and then click Next.



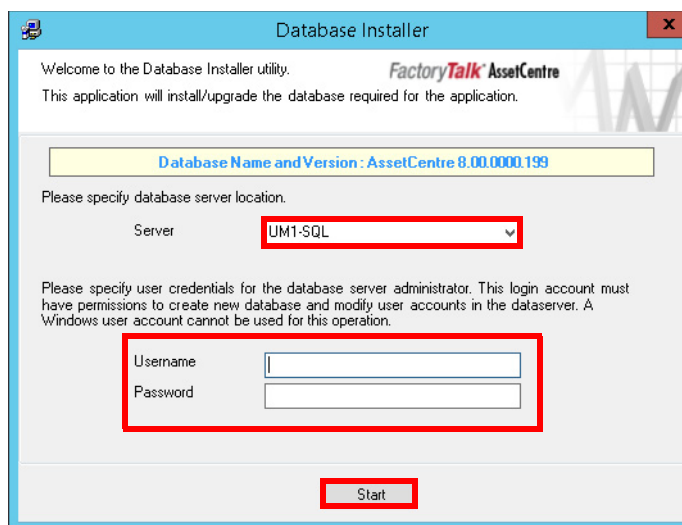
The 'Ready to Repair the Program' dialog box appears.

4. Click Install to begin.



5. In the Database Installer dialog box, select the name of your SQL server from the Server pull-down menu. On the single server image, if the server does not appear in the pull-down menu, type a dot for the server name if using standard SQL, or type .sqlexpress if using SQL express.

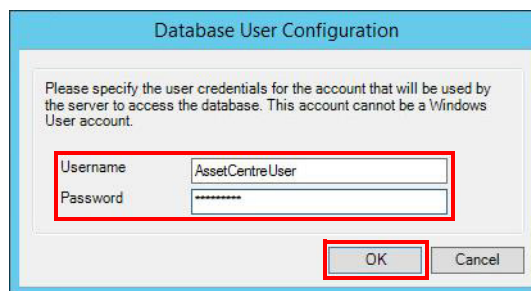
6. Log in by using the Username and Password for the AppServ-Info (SQL) or your SQL server and click Start.



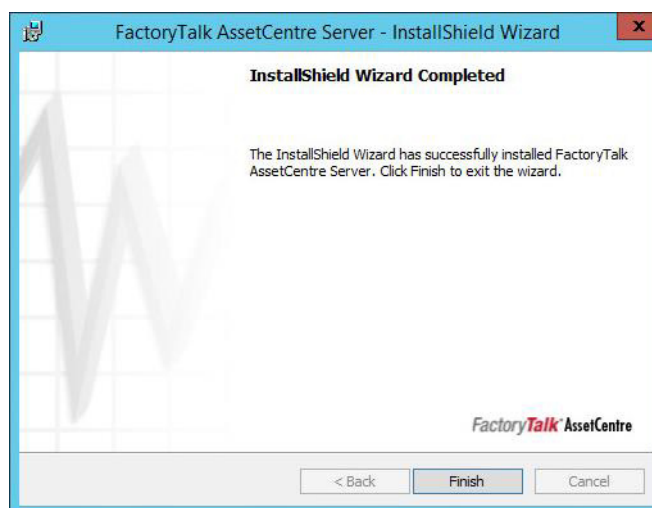
The Database User Configuration dialog box appears.

7. Type your Username, Password, and click OK.

The InstallShield Wizard Completed dialog box appears.



8. Click Finish.



## Configure the AppServ-OWS/AppServ-EWS Virtual Servers

This section describes procedures for configuring an AppServ-OWS and AppServ-EWS. The procedure is the same for both servers.

Application servers for EWS and OWS allow multiple instances of EWS and OWS workstations to be deployed by using Microsoft Remote Desktop Services (RDS).

The Rockwell Automation software for the AppServ-OWS and AppServ-EWS virtual templates is included and pre-installed in the virtual image templates, **but not activated**. See [Activations on page 251](#) for activation procedures. See [page 10](#) for product catalog numbers.

---

**IMPORTANT** If you already own individual product activations, these activations also can be used to activate the instances of these virtual image templates you deploy. Each instance requires its own Rockwell Automation license and Microsoft license.

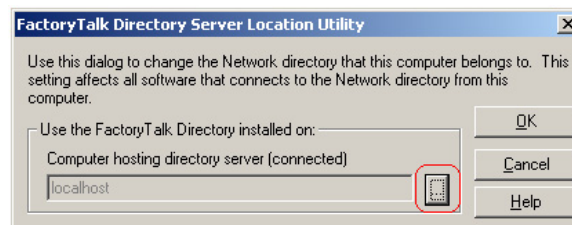
---

### *Specify the FactoryTalk Directory Location*

Complete these steps to specify the network FactoryTalk Directory location for AppServ-OWS and AppServ-EWS.

1. Click the Programs icon  and choose Rockwell Software> FactoryTalk Tools>Specify FactoryTalk Directory Location.

The FactoryTalk Directory Server Location Utility appears.



2. Click Browse (ellipsis '...').
3. Type your FactoryTalk Directory Administration Console credentials into the login screen and click OK.
4. Click Remote computer.



Click Browse (ellipsis '...') to navigate the network to find the computer name of the PASS server that is hosting the FactoryTalk Directory services.

5. Choose the appropriate PASS server name and click OK.

The Network FactoryTalk Directory location has now been specified.

6. When prompted, enter your credentials and click OK.
7. Restart the server after making this change.

#### *Install PI Builder Excel Add-in*

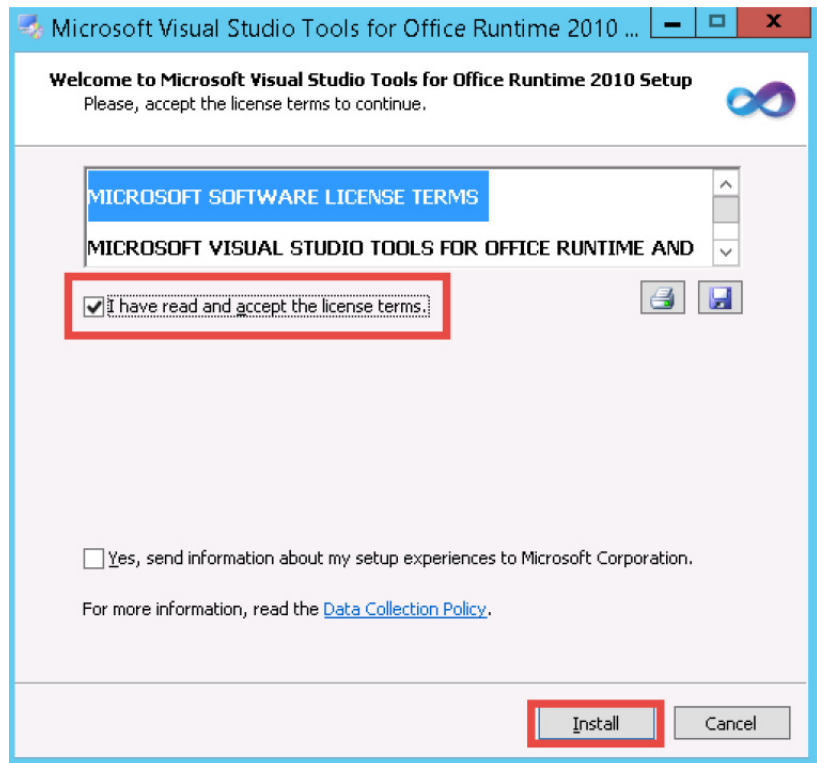
In the EWS, complete these steps to install the PI Builder Excel Add-in. The Excel spreadsheet configures bulk Historian points.

1. On the single server image, click the VS Office Resources shortcut on the desktop.



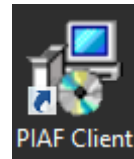
The license terms appears.

2. Read the license, accept, and then click Install.

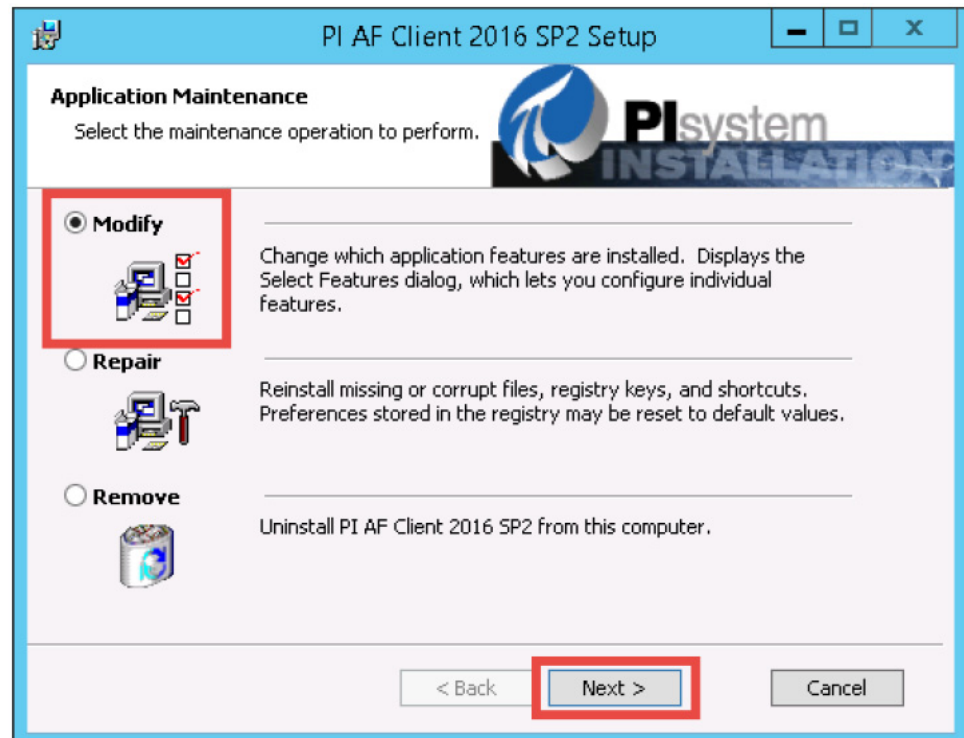


3. If prompted that files are 'in use', click Ignore.

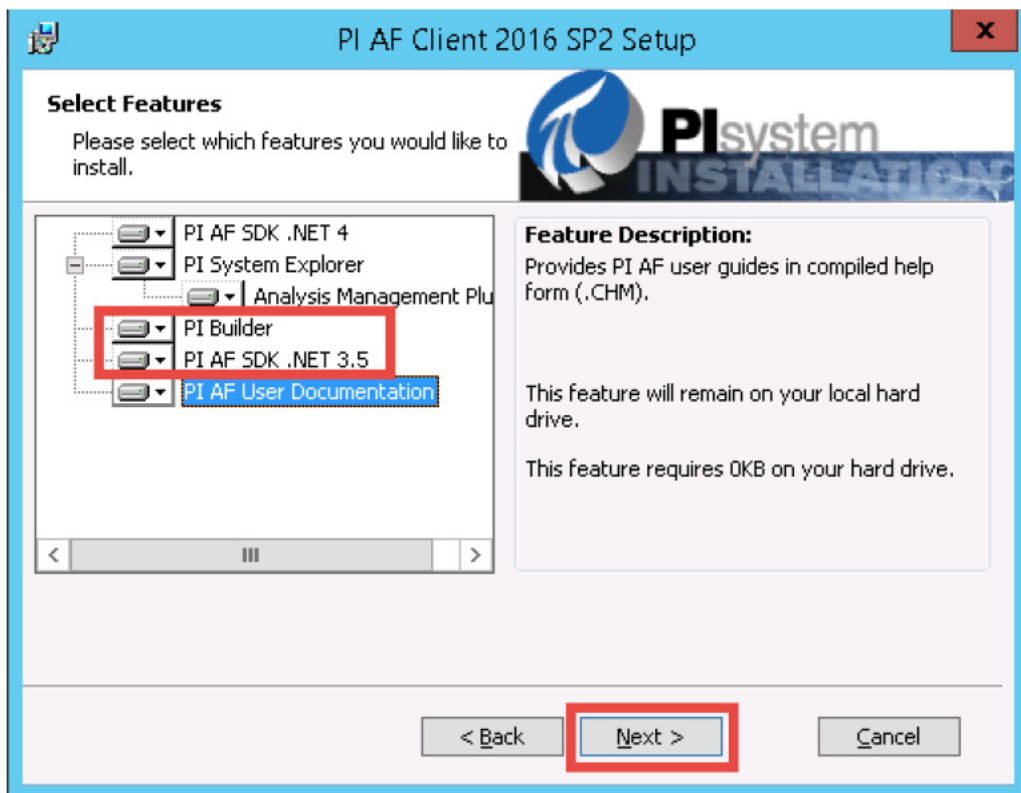
4. When the installation completes, choose restart later.
5. To install the PIBuilder Excel add-in, double-click the PIAFClient shortcut on the desktop.



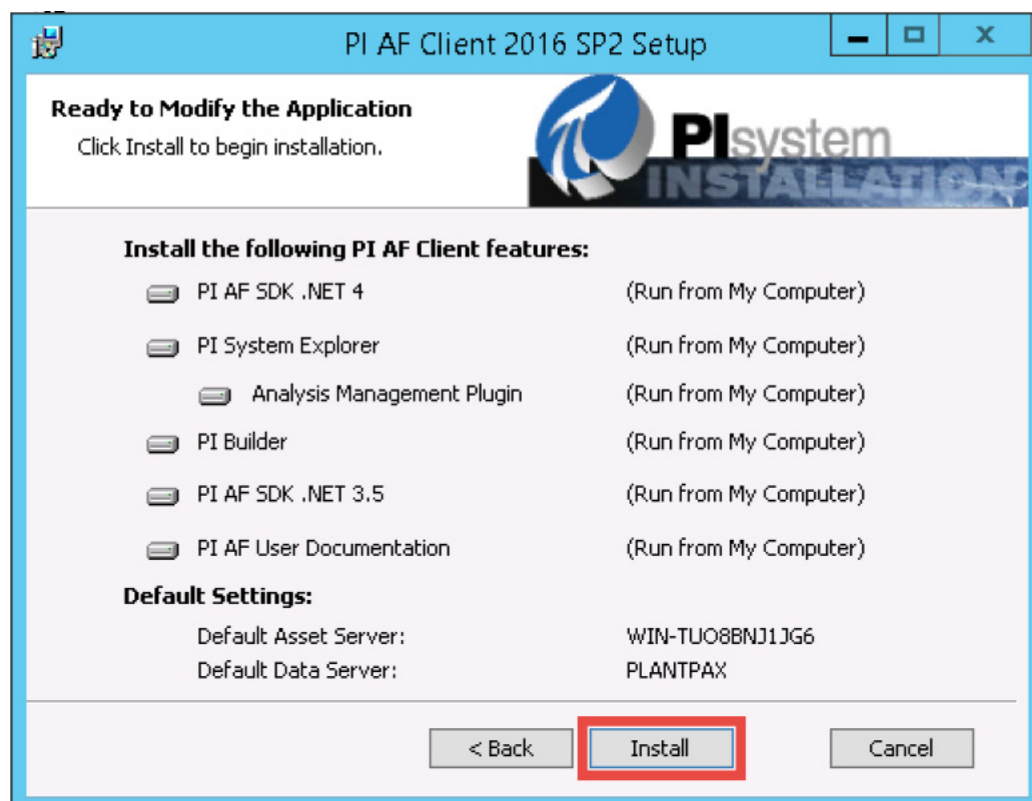
6. Click Modify and then Next.



7. Make sure that PIBuilder and PI AF SDK.NET 3.5 are set to be installed, and click Next.



8. Click Install.



### Configure Remote Desktop Services

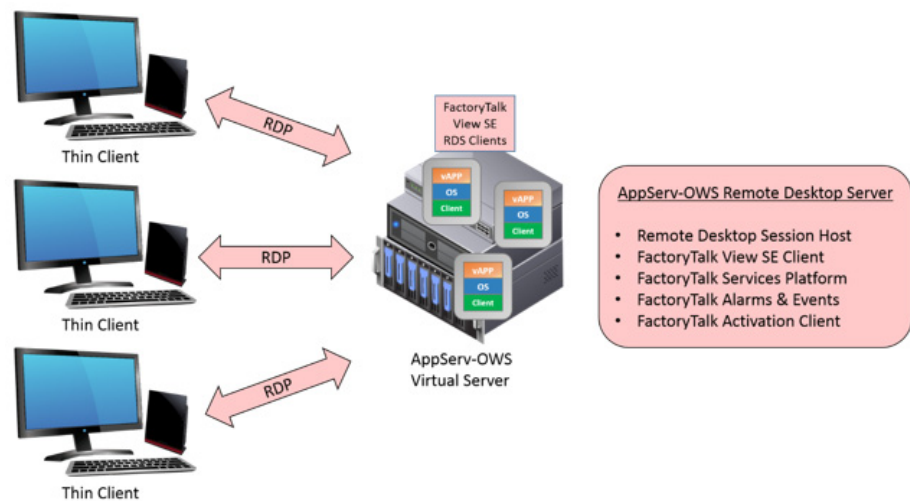
The AppServ-OWS and AppServ-EWS provide PlantPAx users with an alternative to the standard OWS and EWS client machine (physical or virtual). Both application servers use Microsoft Remote Desktop Services (RDS). RDS technology allows multiple instances of the OWS and EWS from a single virtual server.

This architecture is ideal for PlantPAx users that use thin clients as Operator and Engineering workstations.

---

**IMPORTANT** A valid FactoryTalk activation is still required for each instance of the OWS and EWS that is in use.

---



Microsoft RDS (formerly known as Terminal Services) is a standard role built into the Windows server family of operating systems. RDS provides remote access to applications and data on a remote computer over a network. This solution minimizes the amount of information traveling across your network.

RDS can be used as an administrative tool to connect to a remote machine and perform maintenance tasks. RDS can also be used as a thin client solution to let remote clients execute applications or even access the entire desktop of the host server.

The thin client solution is a transparent system that runs applications and performs data processing and storage functions on a remote computer. This solution minimizes the amount of information traveling across your network. While multiple sessions can run on a single server, each user can see only their individual session. Only the user interface is shown on client, user input from client is redirected over the network to the remote desktop session. User's desktops are transmitted to clients for display by using terminal emulation software. Similarly, the software sends command functions such as keyboard inputs and mouse clicks across the network between the client and the server.

The PlantPax AppServ-OWS and AppServ-EWS are pre-configured with the RDS server role. This configuration provides a thin client solution for FactoryTalk View SE clients.

Users, with the proper credentials, can log in into the AppServ-OWS and AppServ-EWS and run the desired application.

One Rockwell Automation software activation key is required for each remote desktop session.

### *Remote Desktop Services with FactoryTalk View SE*

RDS features the following benefits with FactoryTalk View SE software:

- **Increased network flexibility:** RDS lets you deploy thin and ultrathin clients on the plant floor or out in the field. The minimal requirements of RDS clients allow for various thin products that are designed to handle most environmental conditions. These conditions include radical temperatures, extreme vibrations, or areas where mobility is key.

Users can gain access to an RDS over any Transmission Control Protocol/Internet Protocol (TCP/IP) connection, including the following:

- Remote access
  - Ethernet
  - Internet
  - Wireless
  - Wide area network (WAN)
  - Virtual private network (VPN)
- **Lower cost of ownership:** A thin client typically consists only of the operating system and the Remote Desktop Connection software. RDS delivers a virtual Windows Server 2012 R2 experience from server to clients, regardless of what operating system the client uses.
  - **Minimize downtime:** Upgrade your entire FactoryTalk View SE installation with a single operation. Because FactoryTalk View SE products install only on the server side, any future software upgrades are limited to the server, making software upgrades on clients a thing of the past.
  - **Improve data security:** A FactoryTalk View SE architecture that uses RDS is less vulnerable to security threats. RDS lets you focus your security measures on the server because all data is processed on the server, which you can manage in a secure location.

RDS has the following limitations with FactoryTalk View SE software:

- The Microsoft RDS protocol does not transfer the physical display aspect ratio (height/width proportion) from the server to its clients. Clients need to specify the display properties (resolution, aspect ratio, color depth, and so forth) for each session they create. Verify the appearance of the application visually on the Remote Desktop clients before placing the system in a production environment, modifying graphics as necessary.



- If your FactoryTalk View SE client configuration (.cli) enables 'Show Diagnostics List', the list shows all activity from all clients that run on the same Remote Desktop session host. Although each instance of the FactoryTalk View SE client runs in a separate session, they are all hosted on the same computer. And, they share common log resources. This amount of activity can be confusing for HMI operators because they see diagnostic activity on their client that they did not initiate.

### *Additional Services*

---

<b>IMPORTANT</b>	You can add additional role services to your server depending on your specific deployment of RDS and connectivity needs. These added services can add additional configuration beyond which this base RDS has been configured for.
------------------	--

---

<b>TIP</b>	Remote Desktop Services uses its own method of licensing clients that log on to Remote Desktop Services servers. This method is separate from licensing for the Windows Server 2012 R2 family of operating systems. Therefore, AppServ-OWS and AppServ-EWS Remote Desktop Connections must receive a valid license. This license must be issued by a Remote Desktop Licensing Server before they can log on to a Remote Desktop Session Host or Connection Broker. For volume licensing of these components please contact your Microsoft distributor.
------------	--

## Configure the VantagePoint Virtual Server

AppServ-Info can be configured as a decision support tool by using FactoryTalk® VantagePoint EMI software. VantagePoint EMI is a powerful web-based business intelligence solution designed specifically for industrial environments with premier Logix integration. VantagePoint EMI integrates all data into a single information management and decision support system by connecting to your Logix controllers, OPC data sources, Historians, and SQL/Oracle Databases. With an AppServ-Info (VantagePoint) system element in your PlantPAx DCS you can access your production data from anywhere including your shop floor devices, PC, or your mobile phone or tablet.

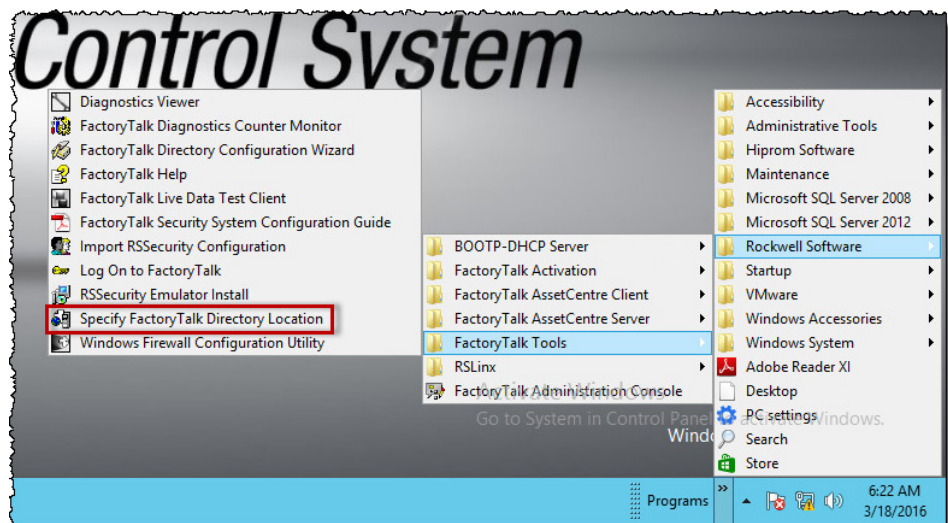
For the creation of the virtual image template for the VantagePoint server all pre-requisite software and services have been installed and configured. However to give you the choice of selecting a computer name, the FactoryTalk VantagePoint software has not been installed. After changing the computer name follow the procedures below to install FactoryTalk VantagePoint and complete other configuration steps.

### *Specify FactoryTalk Directory Location*

In this section, you specify the location of the FactoryTalk Directory.

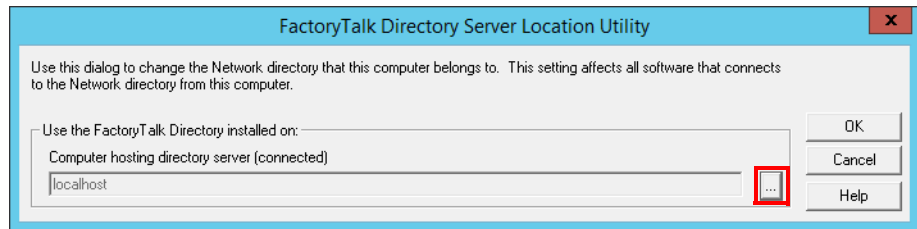
Complete these steps.

1. On the virtual image desktop, click the Programs icon and choose Rockwell Software>FactoryTalk Tools>Specify FactoryTalk Directory Location.



**IMPORTANT** Browse can be inactive if Network Discovery & File Share is not turned on.

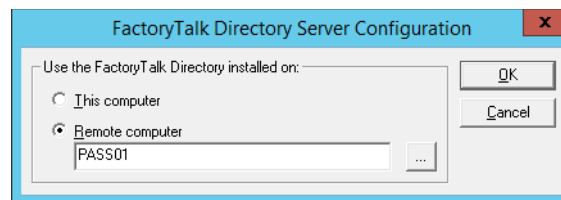
2. In the FactoryTalk Directory Server Location Utility dialog box, click Browse (ellipsis '...').



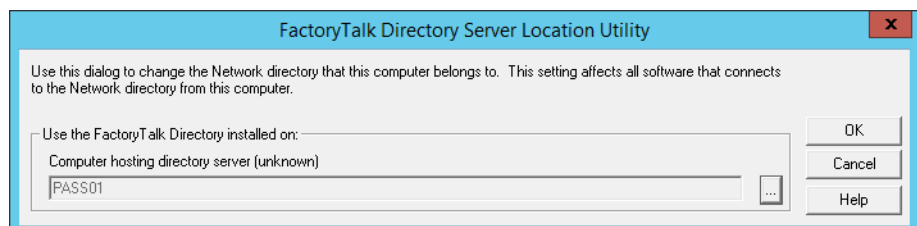
3. In the Login User dialog box, type your User name and Password and click OK.

**TIP** Use the User name and Password you created for your local and network FactoryTalk Directory. See [step 5 on page 125](#) for the network directory and [step 6 on page 125](#) for the local directory.

4. In the FactoryTalk Directory Server Configuration dialog box, click Remote Computer.
5. Type the name of your PASS server, or click Browse (ellipsis '...'), search for, and select your PASS server.



6. Click OK
7. On the FactoryTalk Directory Server Location Utility dialog box, click OK to accept the changes.

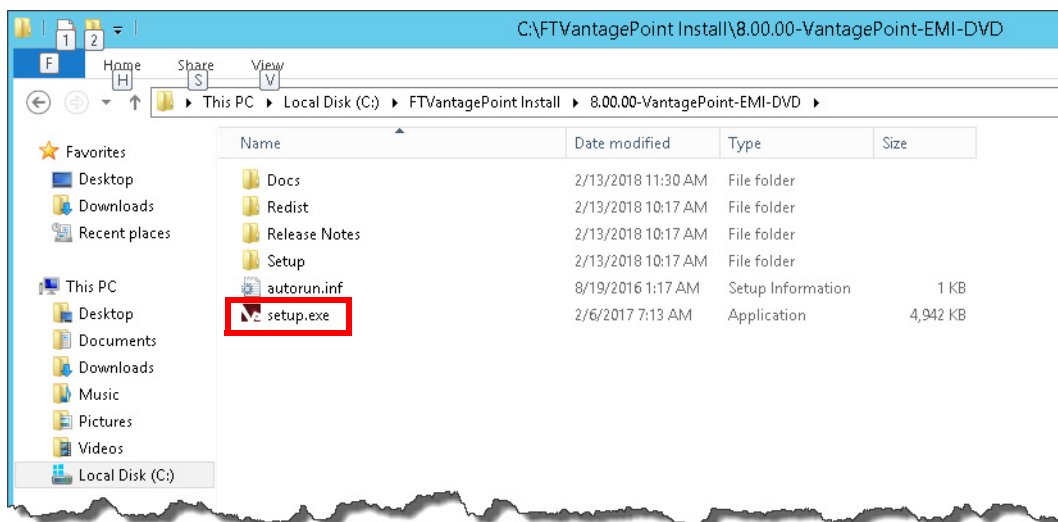


8. Restart the AppServ-Asset virtual machine.

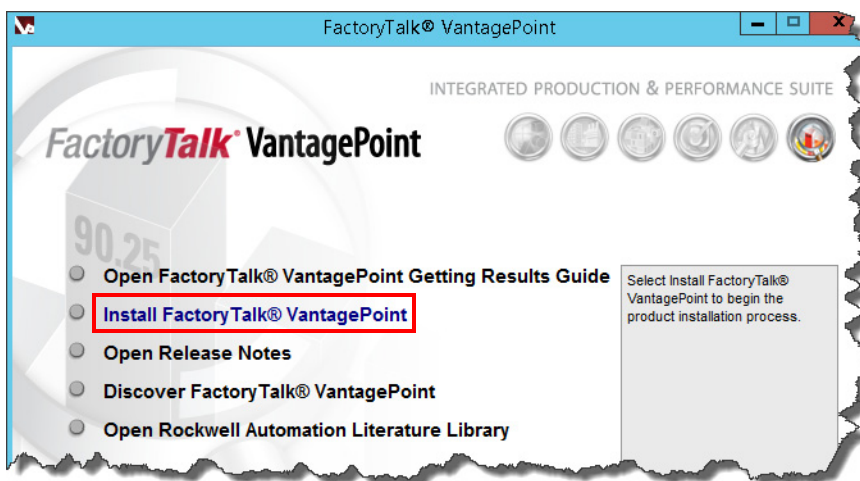
### Install VantagePoint Server Software

Complete these steps to install FactoryTalk VantagePoint software.

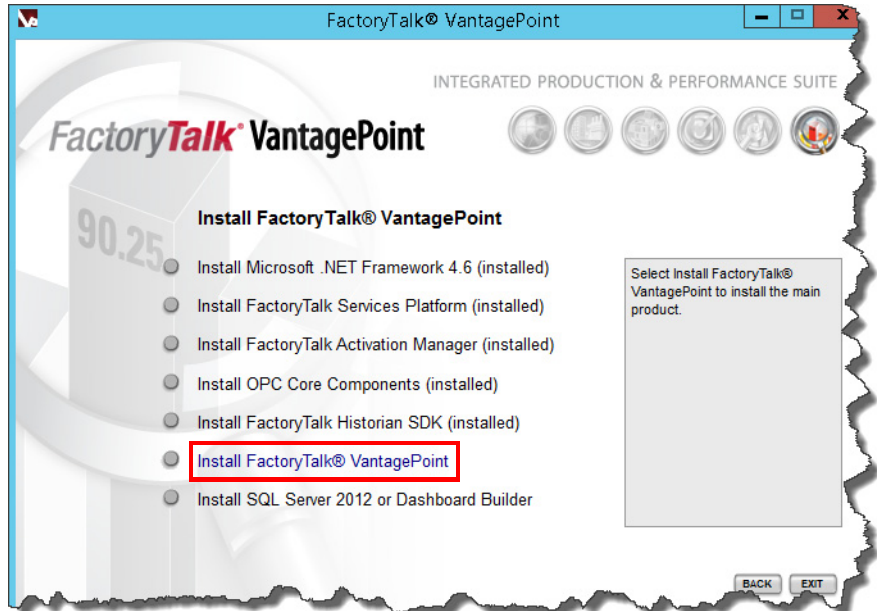
1. Navigate to the DVD folder (c:\FTVantagePoint Install\8.00.00 VantagePoint EMI DVD) and double-click setup.exe.



2. In the FactoryTalk VantagePoint main menu, click Install FactoryTalk VantagePoint.

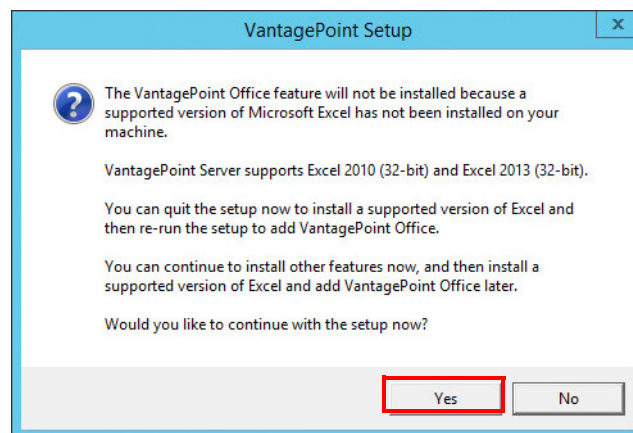


3. In the Install FactoryTalk VantagePoint menu, click Install FactoryTalk VantagePoint.



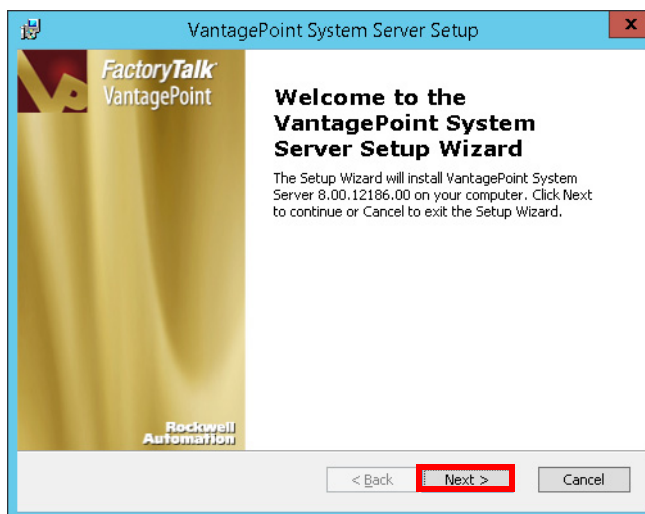
4. If you have not installed Microsoft Excel, you see this warning. Read the warning and, according to your needs, click Yes or No.

In our example, we click Yes to show the installation of FactoryTalk VantagePoint when Microsoft Excel is not installed in the VantagePoint Server.

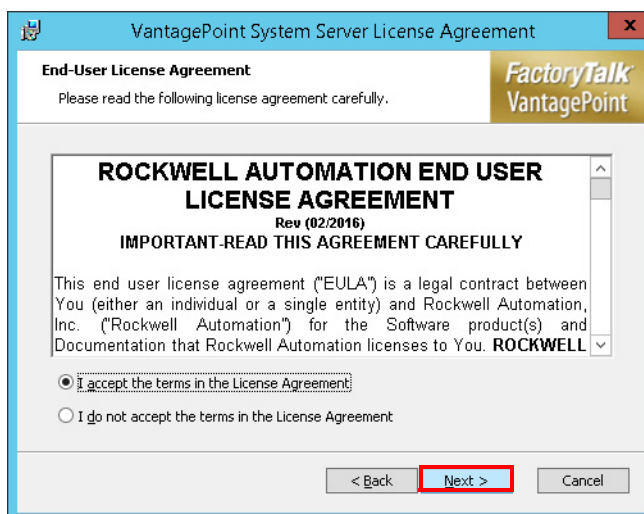


**TIP** See [Install Microsoft Excel Add-In on page 209](#) for details on installing Microsoft Excel add-in.

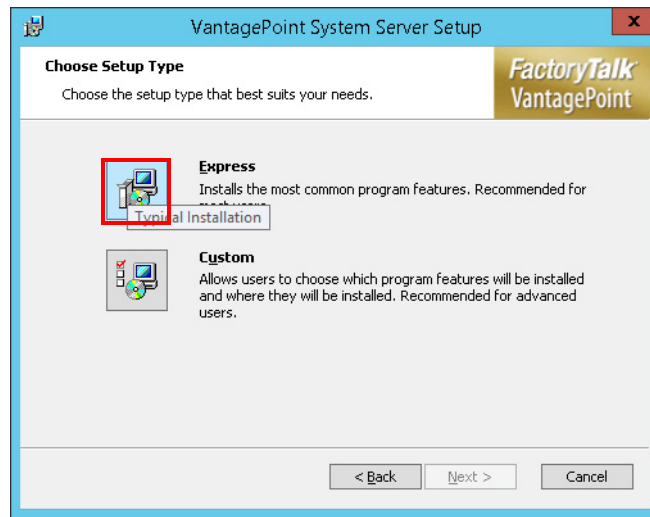
5. In the VantagePoint System Server Setup Wizard Welcome page, click Next.



6. In the EULA page, read the EULA, click 'I accept the terms in the License Agreement', and click Next.

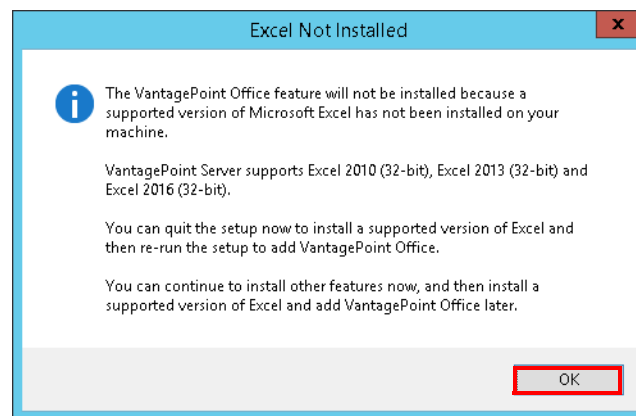


7. In the 'Choose Setup Type' page, click Express.



A warning appears if you have not installed Microsoft Excel.

8. Click OK.



**TIP** See [Install Microsoft Excel Add-In on page 209](#) for details on installing Microsoft Excel add-in.

9. In the Database Connection Information page, type the name of the SQL server, click SQL Server, and type credentials for the database.

**IMPORTANT** Type the password that you created when completing the SQL Server installation when deploying the SQL Server template.

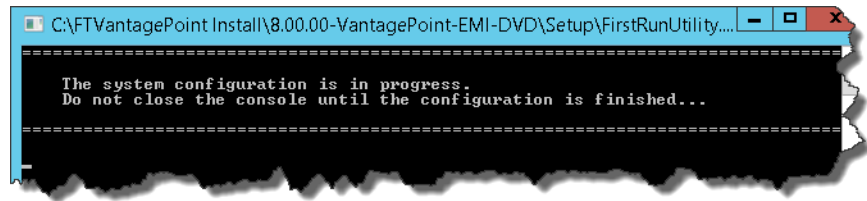
10. Click Next.
11. In the System/Office User page, type the Domain name, user name for the Domain controller, and password for the Domain controller.

12. Click Next.



A DOS window appears.

13. This window closes automatically after a few minutes.



### *Install Microsoft Excel Add-In*

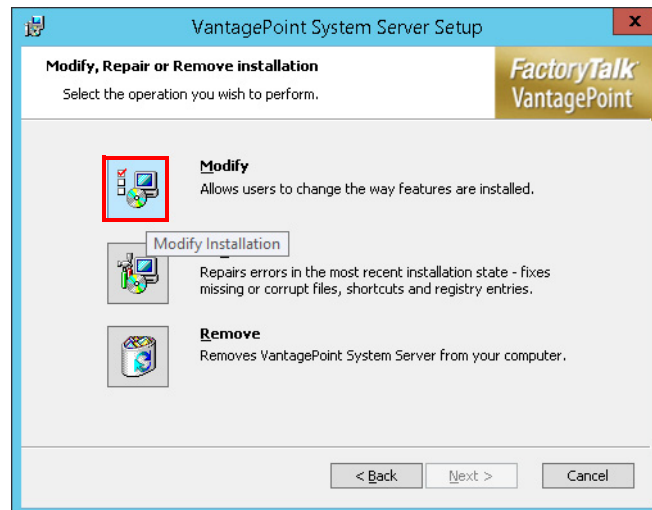
---

**IMPORTANT** If you are installing FactoryTalk VantagePoint in a VantagePoint server with Microsoft Excel installed on it, you may install the Microsoft Excel Add-In for FactoryTalk VantagePoint during the FactoryTalk VantagePoint installation.

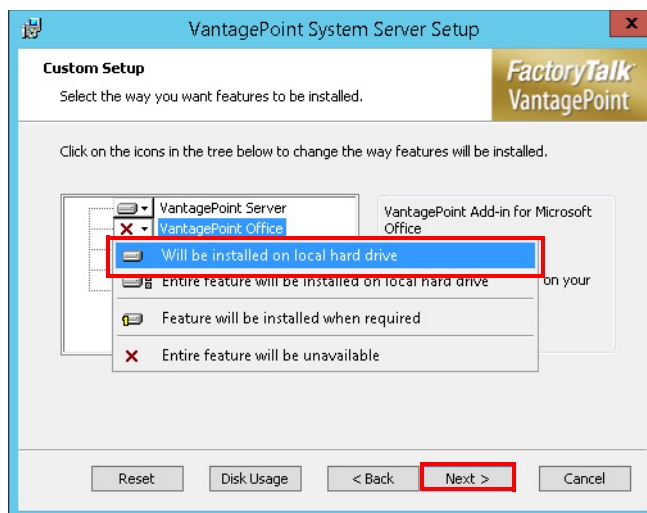
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The Microsoft Excel add-in enables FactoryTalk VantagePoint to generate Excel spreadsheet reports. Complete these steps to install the Excel add-on software.

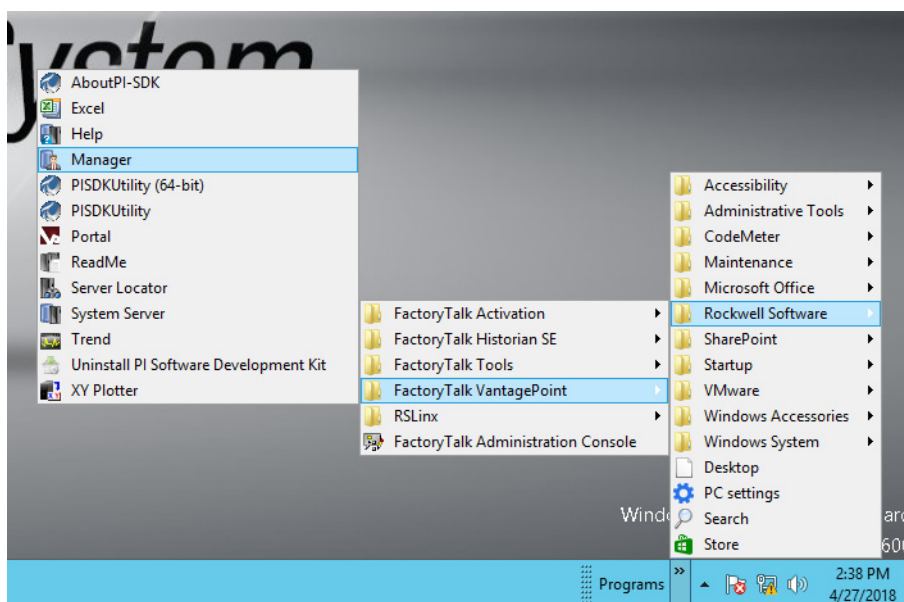
1. Repeat [step 1](#) through [step 3](#) for [Install VantagePoint Server Software on page 204](#).
2. On the Modify, Repair, or Remove installation page, click Modify.



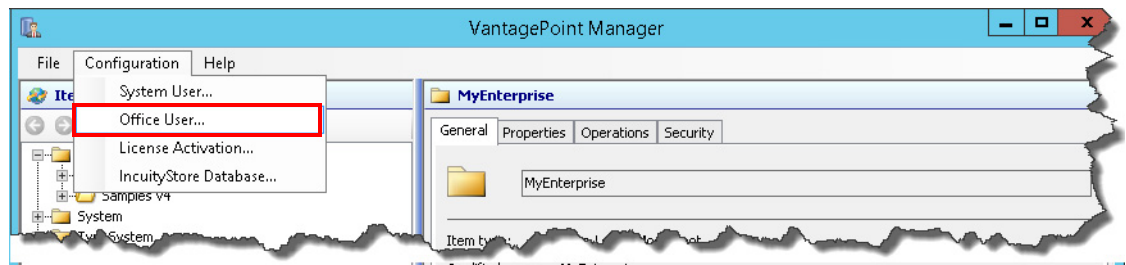
- On the Custom Setup page, select 'Entire feature will be installed on local hard drive' from the FactoryTalk VantagePoint Office feature and click Next.



- On the ready to Install page, click Next.
- On the PlantPAx desktop, click the Programs icon, and select Rockwell Software>FactoryTalk VantagePoint>Manager.

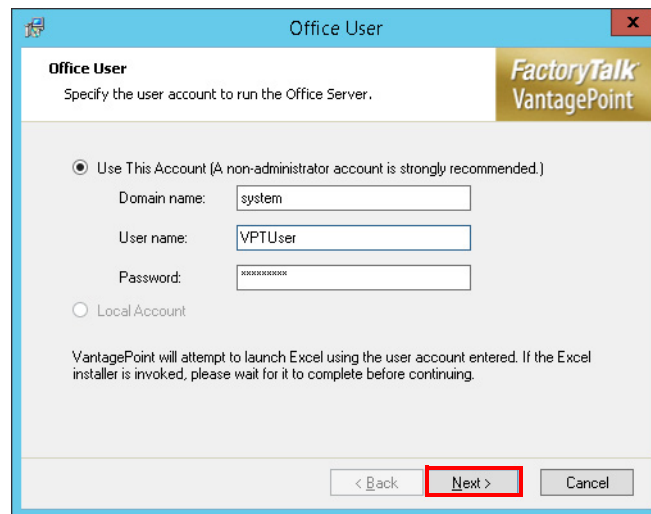


6. In the VantagePoint Manager window, select Office User from the Configuration menu.



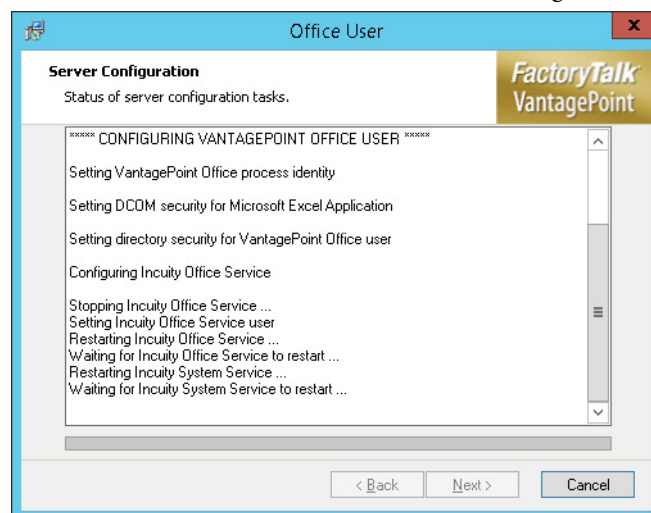
The Office User logon page appears with system-populated entry fields.

7. Click Next.



The Microsoft Excel software program starts and a VantagePoint Configuration warning appears.

8. Close Microsoft Excel and click OK in the warning.



A series of VantagePoint server configurations are performed. You return to the VantagePoint Manager window when the configurations are done.

## **Notes:**

## Configure PASS-C

---

**IMPORTANT** This chapter explains how to configure a physical computer as a PASS-C server or as an OWS workstation. A template is not used with these procedures as is the case with other servers that are described in [Chapter 4](#).

---

For small and medium systems, this option provides for multiple system elements to be on the same physical server. Thus the elements are consolidated on the PASS, which is referred to as PASS-C to differentiate from a traditional PASS server. We suggest that your system not have more than 2000 I/O points for this consolidated server.

USB device is a bootable device that contains an installable consolidated PASS for a physical machine. The device has pre-installed applications that are required on the PASS-C, including the following:

- FactoryTalk® Directory
- Data server
- HMI server (one server license only is required)
- Alarm server
- FactoryTalk Historian
- FactoryTalk VantagePoint®
- FactoryTalk AssetCentre
- SQL server

---

**IMPORTANT** The USB device contains a bootable installation of a PASS-C server or OWS workstation.

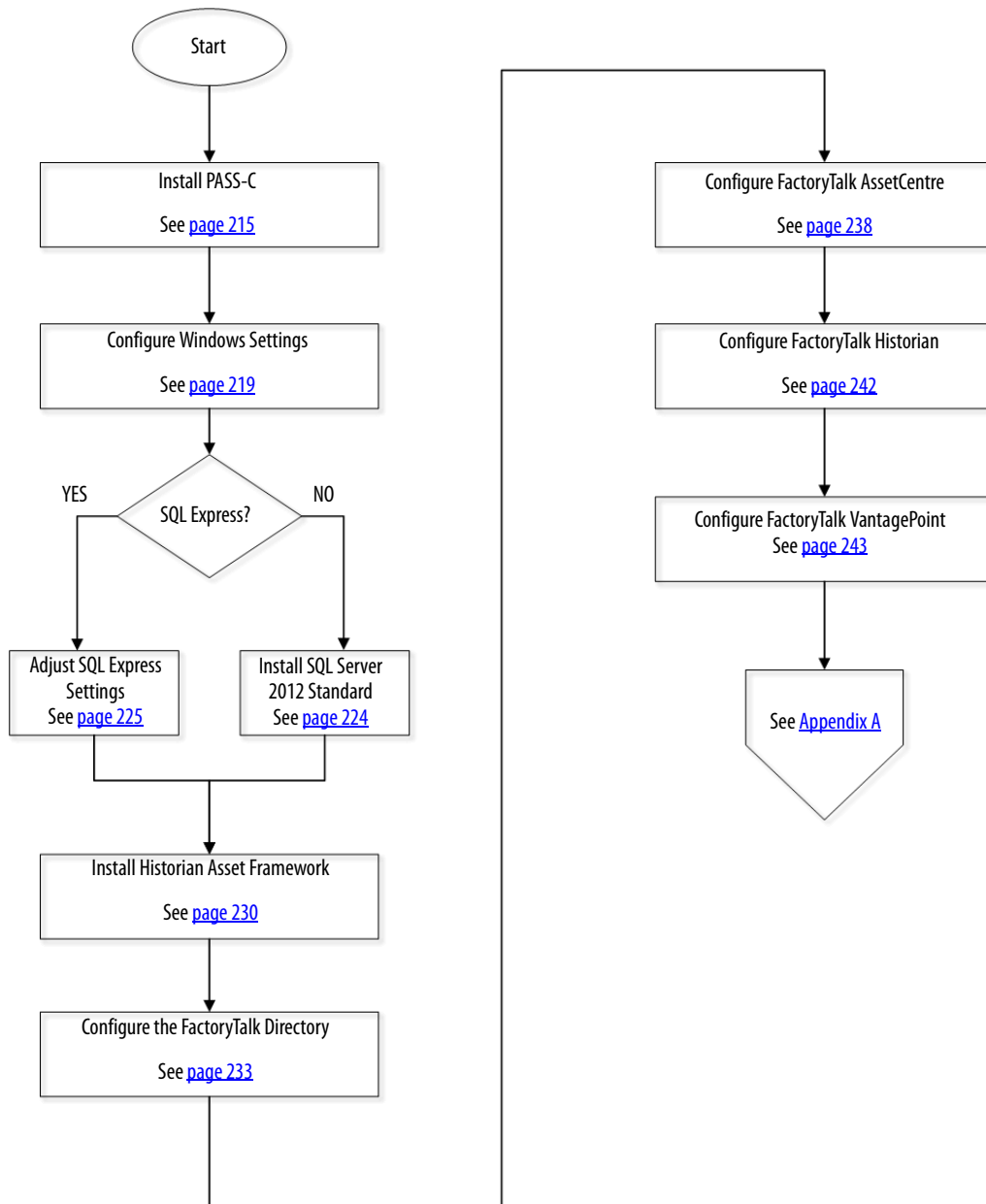
A purchase of a PASS-C or OWS ISO includes an Electronic Software Delivery (ESD) version available for download from the Product Compatibility and Download Center. The ESD is a single file (.ISO type) which can be used to create your own bootable device. Typical bootable devices you can create are DVDs and USB storage devices. We do not provide procedures for creating bootable devices. Several third-party resources are available (for example, PowerISO, RUFUS, and so on) for purchase.

---

[Figure 8](#) lists the topics to configure a PASS-C server. You must complete the tasks in the order listed.

See the page number or click the links for quick access to specific information.

**Figure 8 - PASS-C Server Workflow**



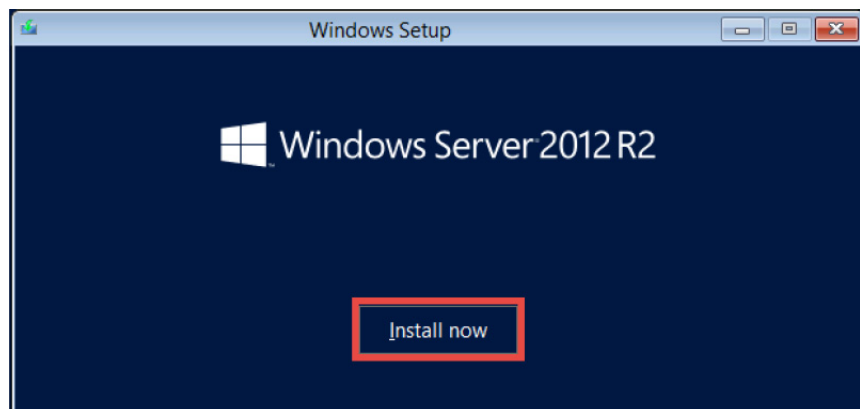
## Install PASS-C

Complete these steps to install the PASS-C.

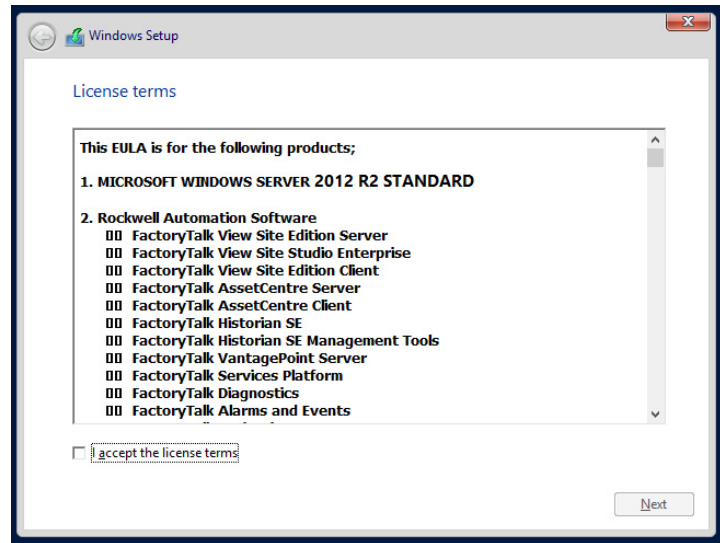
1. Make sure your computer is capable of booting from a USB drive. Enter the BIOS Setup as the computer is powering on (typically by hitting the F2 key). Make sure that the Boot options include booting from a USB device.
2. Shutdown the computer and connect the USB drive.
3. Turn the computer on. While the computer is powering on, strike the F12 key to open the boot options screen.
4. Select the USB device containing the PASS-C installation.
5. On the Windows Setup dialog box, select your options from the pull-down menus.



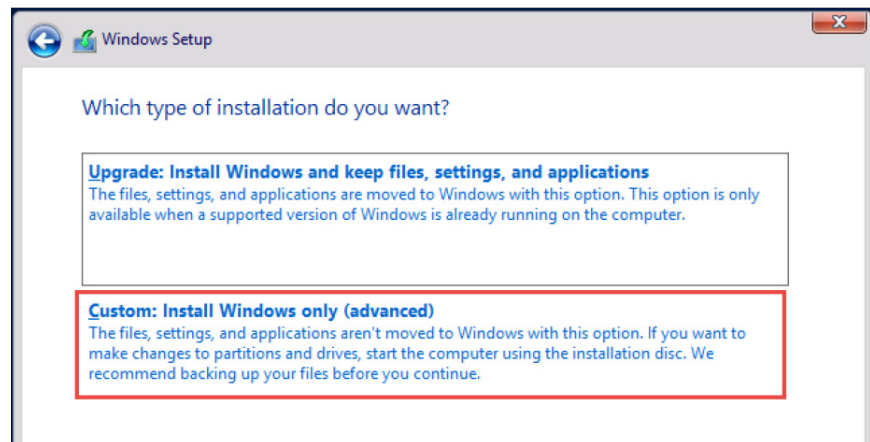
6. Click Next.
7. Click Install Now.



8. Click “I accept the license terms”, and click Next.



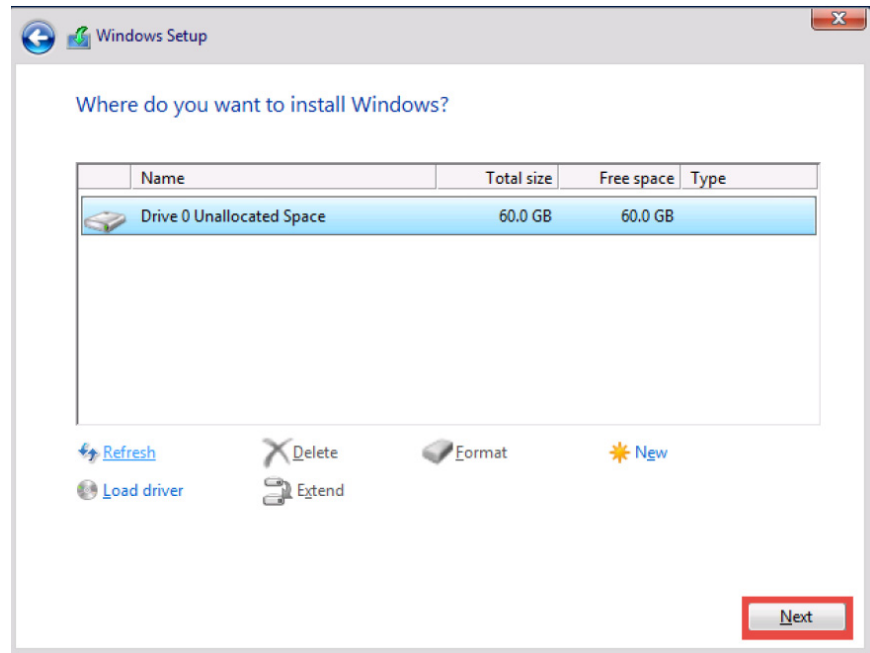
9. Click Custom (installation).





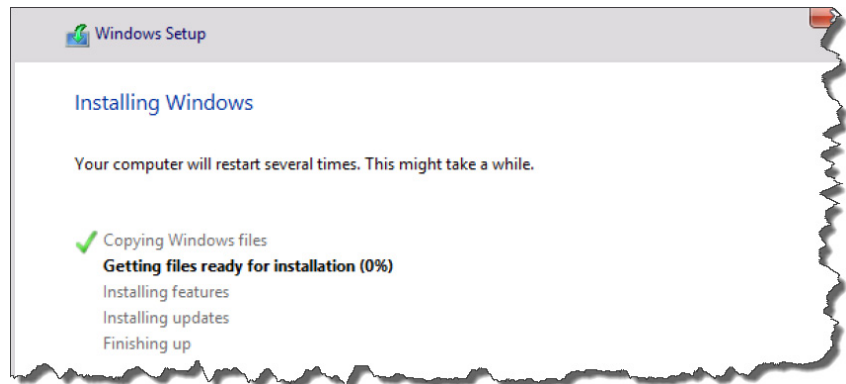
10. To store the installation, select the hard disk drive.

If necessary, delete any existing drive partitions and format the drive location.



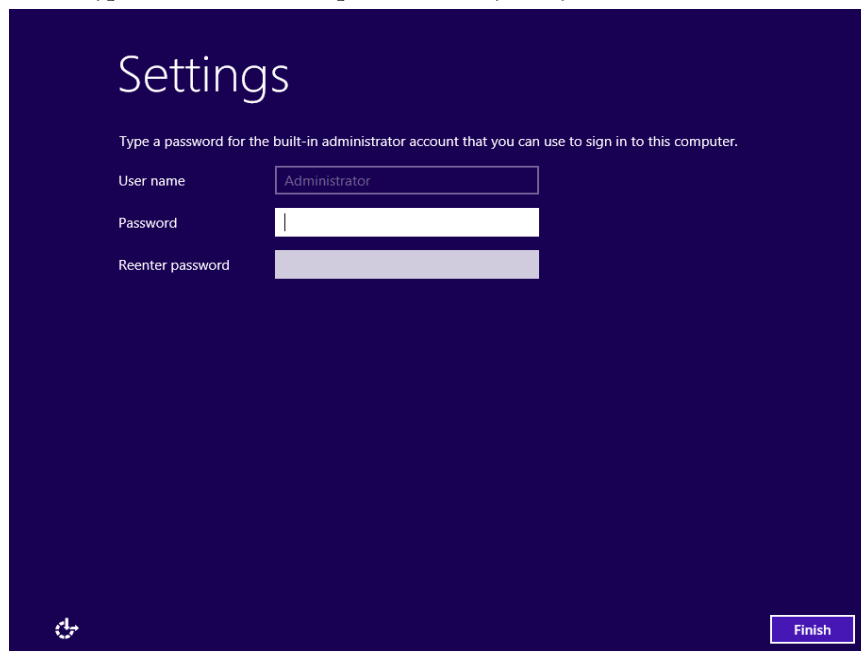
11. Click Next.

The installation typically takes about an hour.



The computer automatically restarts. You must log on to complete the installation.

12. Type an Administrator password (for your system).



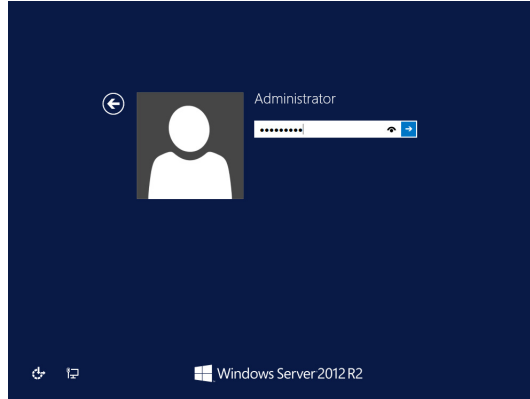
The image shows a Windows-style 'Settings' window with a dark blue background. The title 'Settings' is at the top in white. Below it, a message reads: 'Type a password for the built-in administrator account that you can use to sign in to this computer.' There are three input fields: 'User name' with 'Administrator' entered, 'Password' (empty), and 'Reenter password' (empty). A 'Finish' button is in the bottom right corner. A small icon is in the bottom left corner.

13. Type a confirmation password and click Finish.  
The installation is complete.

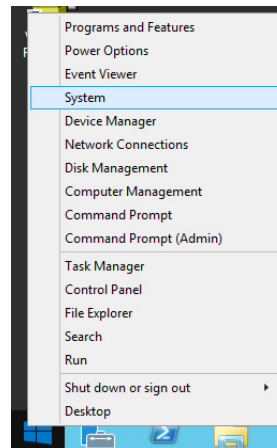
## Configure Windows Settings

This section describes how to configure the Windows server to enhance system performance.

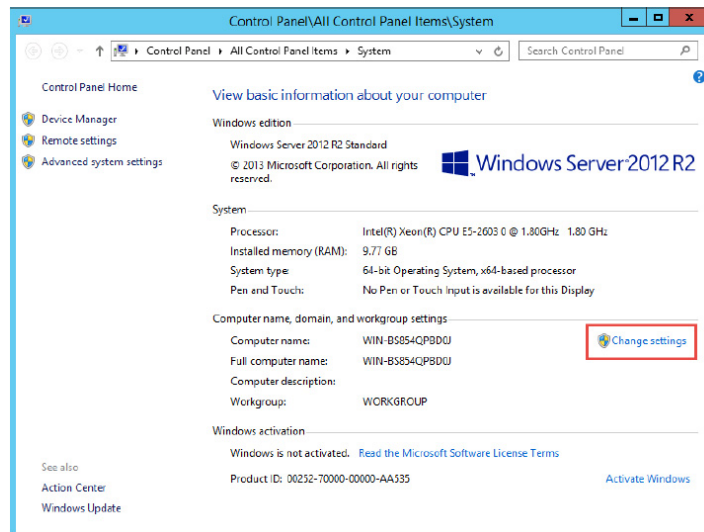
1. Login using the administrator account and password that was created in the previous step.



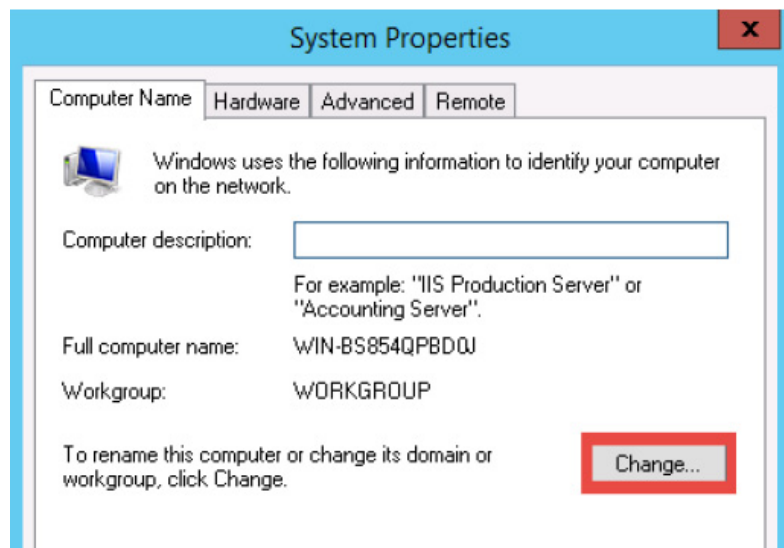
2. Install any required drivers for your hardware (graphics, Ethernet, chipset, and so on).
3. Right click the windows start icon and select 'System'.



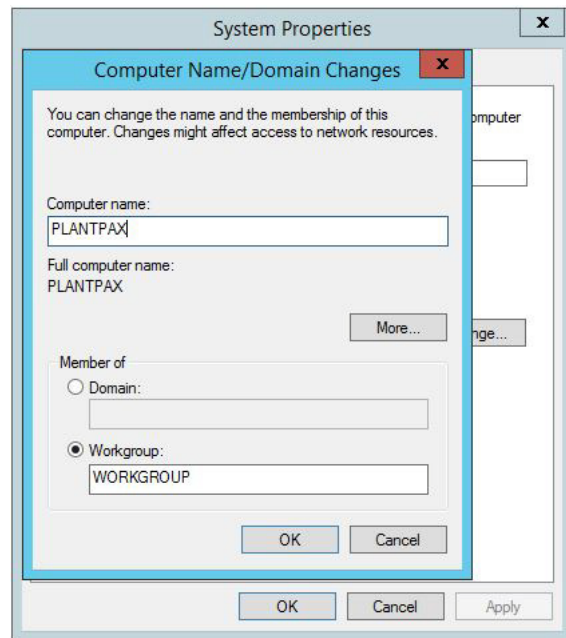
4. Click 'Change Settings'.



5. Click Change to rename the computer.



6. Enter the new computer name. Click OK.



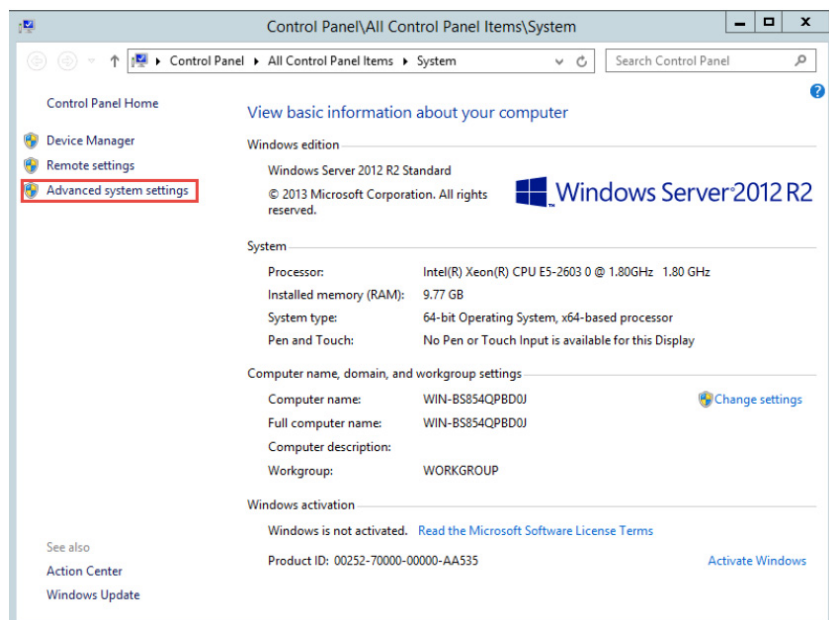
7. Acknowledge any prompts that indicate that a restart is required.

---

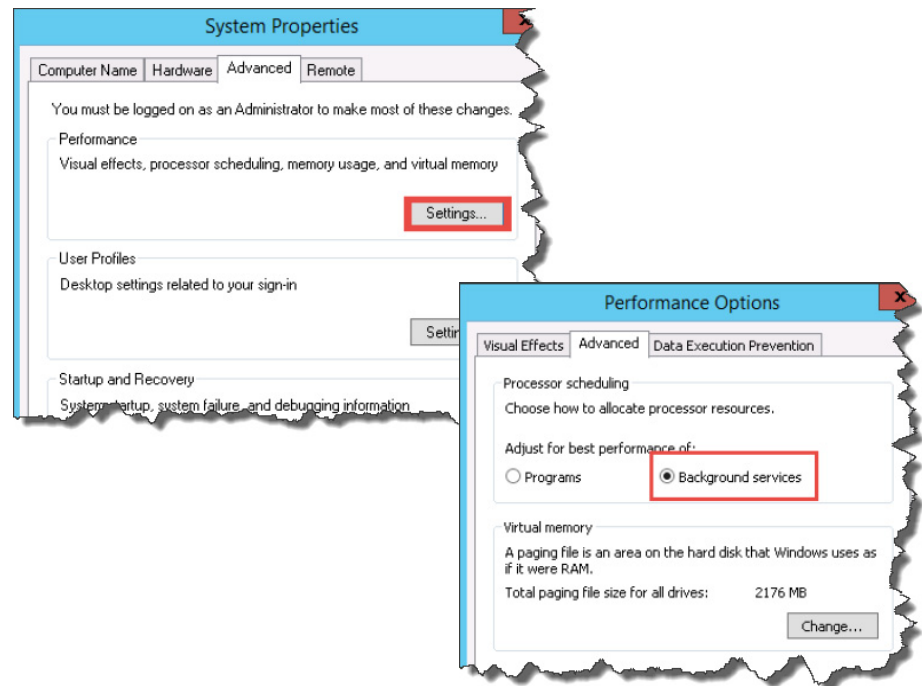
**IMPORTANT** Do not restart your computer now.

---

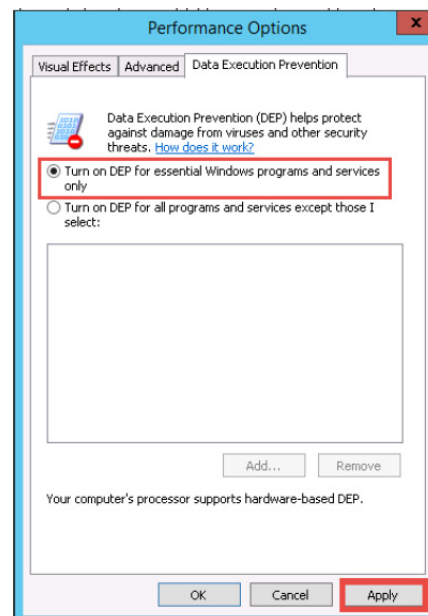
8. Click “Advanced system settings”.



9. On the Advanced tab, click Settings and then Background Services.



10. To help protect against viruses and security threats, click the Data Execution Prevention tab.
11. Select 'Turn on DEP for essential Windows programs and services only' and click Apply.



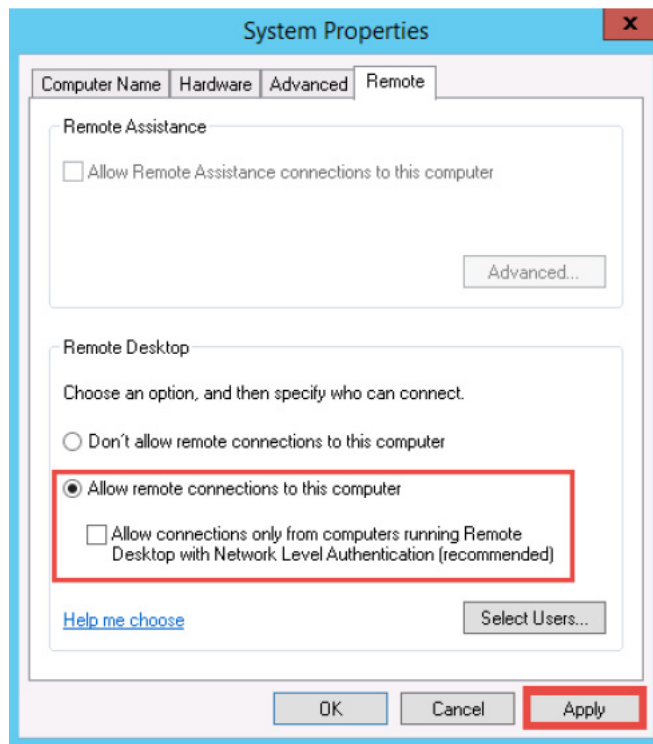
12. Acknowledge the prompt that changes will take effect on restart.

---

**IMPORTANT** Do not restart the computer at this time.

---

13. On the Remote tab, click 'Allow remote connections to this computer'.



14. Remove the check mark from the 'Allow connections only from computers ...' box and click Apply.
15. See [page 119](#) for procedures to configure your Ethernet settings.
16. Restart your computer.

## Configure System Software

---

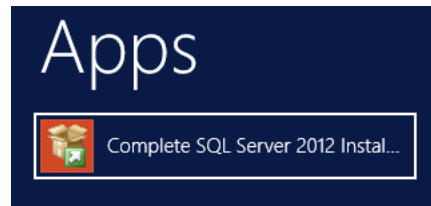
**IMPORTANT** SQL Server Express has already been installed on this machine. If you plan to use SQL Express, skip to [Adjust SQL Server Express Settings on page 225](#). If you plan to use SQL Server 2012 Standard, continue with the next procedure.

---

### Install SQL Server 2012 Standard

Complete these steps.

1. Do the following based on the server that is being used:
  - a. If using SQL Server Express, skip to [Adjust SQL Server Express Settings on page 225](#).
  - b. If using SQL Server 2012 Standard, click Start and open the Complete SQL Server 2012 Installation tool.

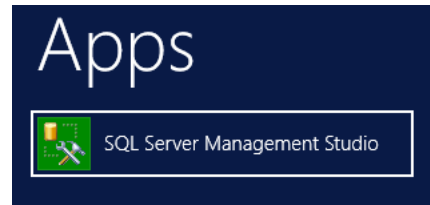


2. Complete the instructions for Install SQL Server starting on [step 2 on page 131](#) to complete this section.
3. Skip to [Install Historian Asset Framework on page 230](#).

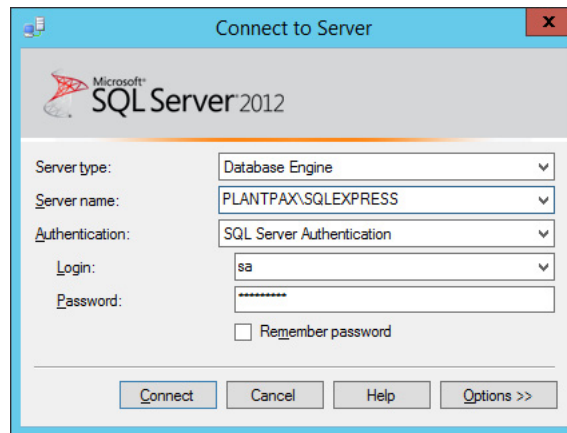


## Adjust SQL Server Express Settings

1. To adjust SQL Server Express settings, click Start and open the SQL Server Management Studio.



2. Enter the server name. The Server name is ComputerName\SQLEXPRESS.
3. Log on by using the 'sa' account and Rockwell1 as the password.



---

**IMPORTANT** After you complete the initial settings, change your login and password settings under Options.

---

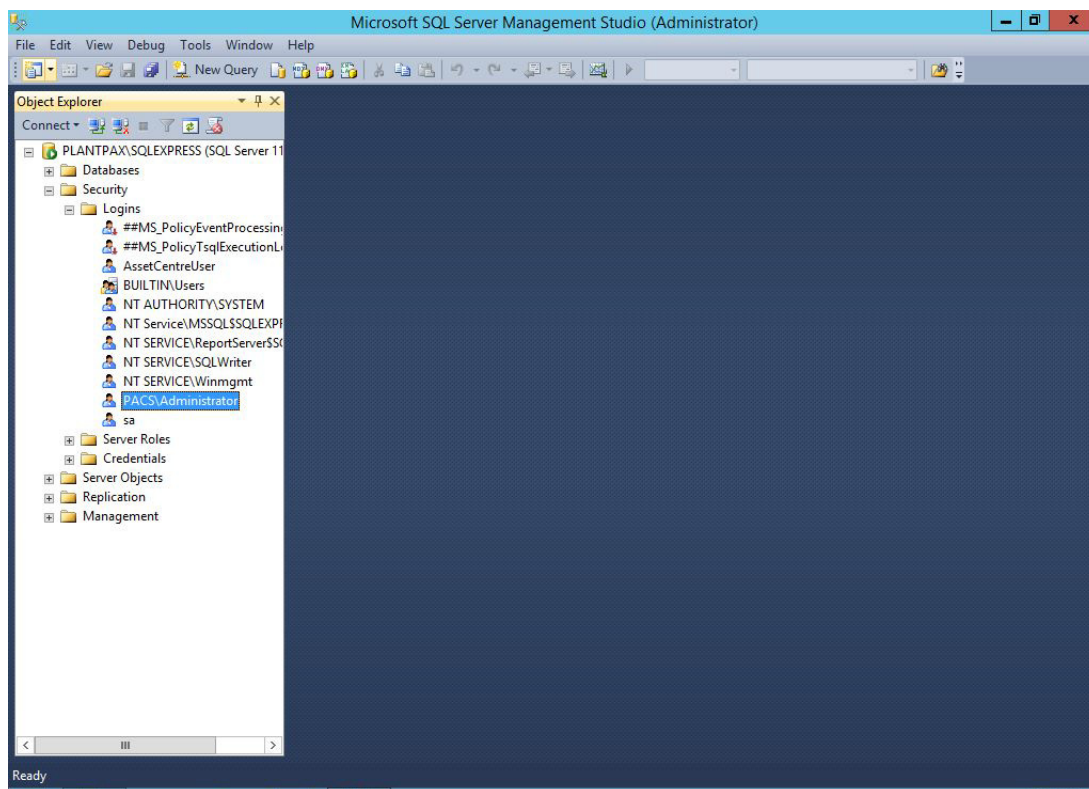
4. Click Connect.

---

**IMPORTANT** The old Administrator account contains the old computer name and must be deleted. Perform the following steps to delete the existing account and create a new account.

---

- From the SQL Server Management Studio configuration tree, click Security>Logins and select the Administrator account as illustrated.

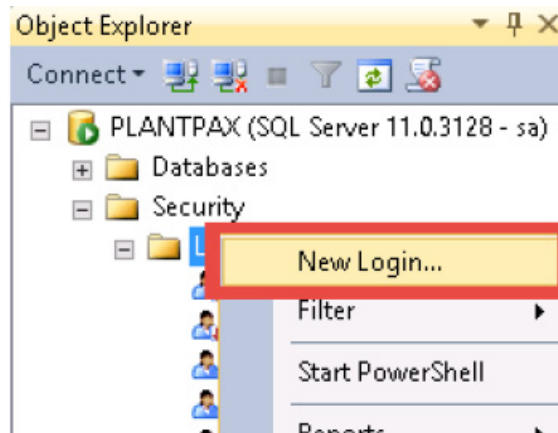


6. Right-click the Administrator account and choose Delete.
7. Click OK and accept any prompts.

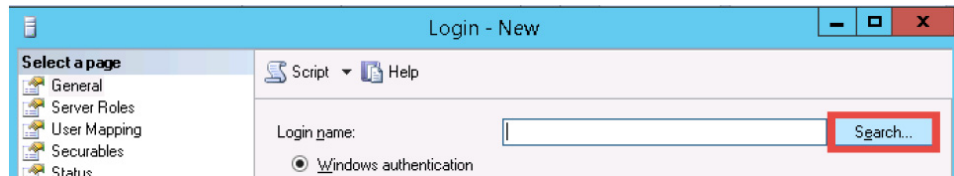
### Add Administrator Account to Computer

We must add the Administrator account by using the new computer name.

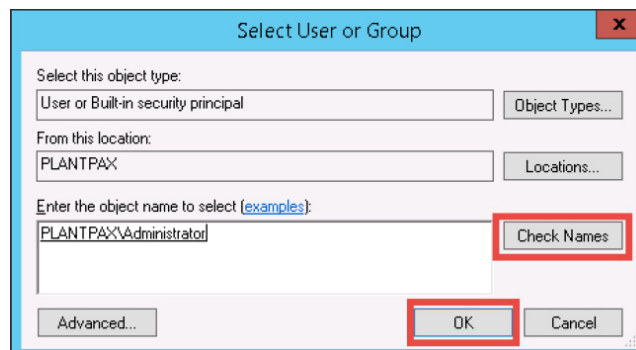
1. From the SQL Server Management Studio configuration tree, right-click the Logins folder and choose New Login.



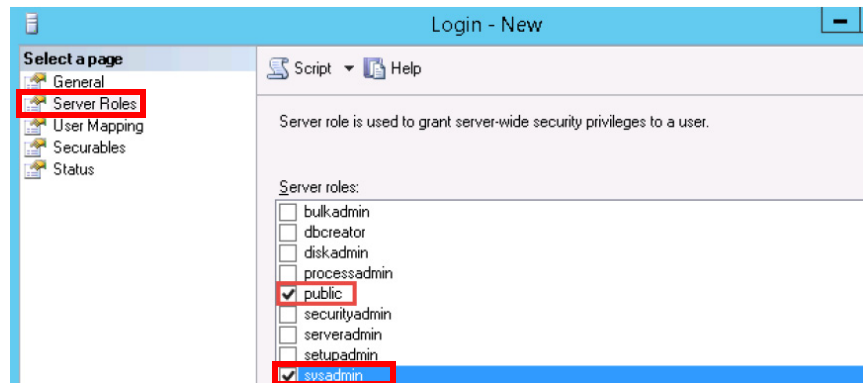
2. To create the Administrator login, click Search.



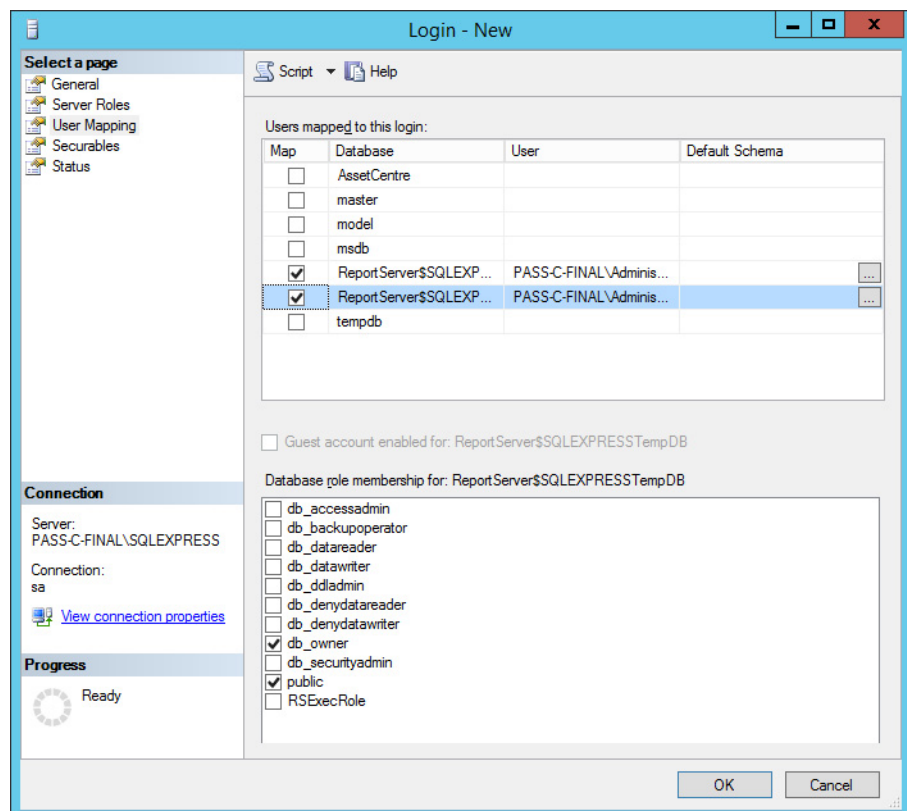
3. Type the administrator user name and click Check Names.
4. Verify the user is successfully verified, and click OK.



- Click Server Roles and check boxes for public and sysadmin.

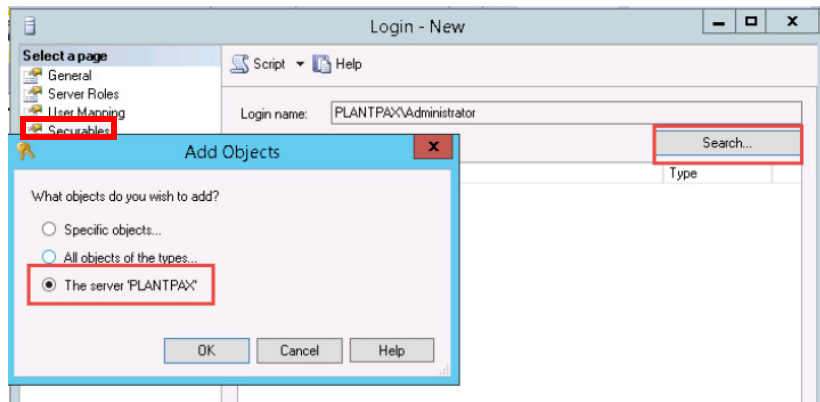


- Click User Mapping and check boxes for ReportServer\$SQLEXPRESS and ReportServerTempDB\$SQLEXPRESS.
- Verify that boxes are checked for db\_owner and public.



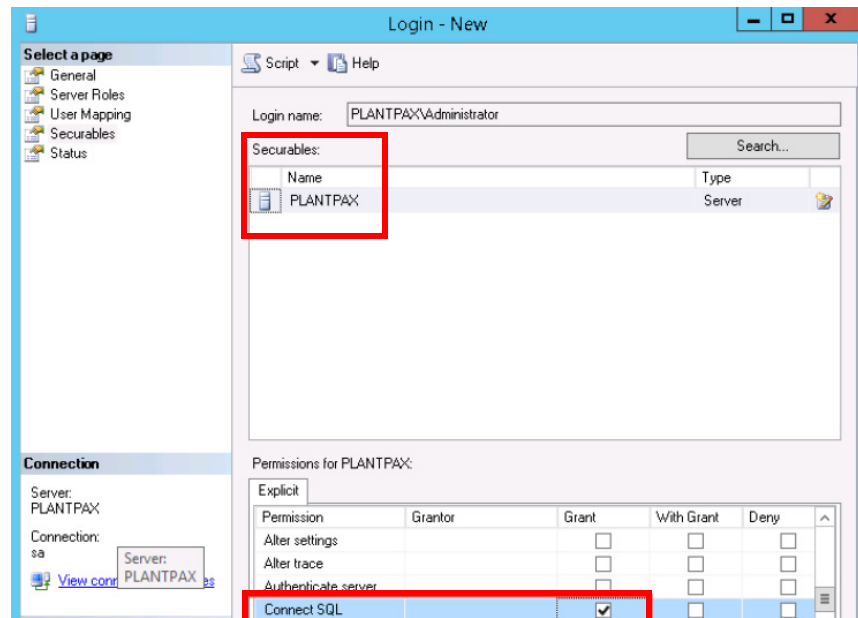
- Click Securables and then click Search.
- To retrieve the server name, click the last option.

The example is PLANTPAX.



The server name appears under Securables.

10. In the Permission section, click Grant to enable the Connect SQL option.

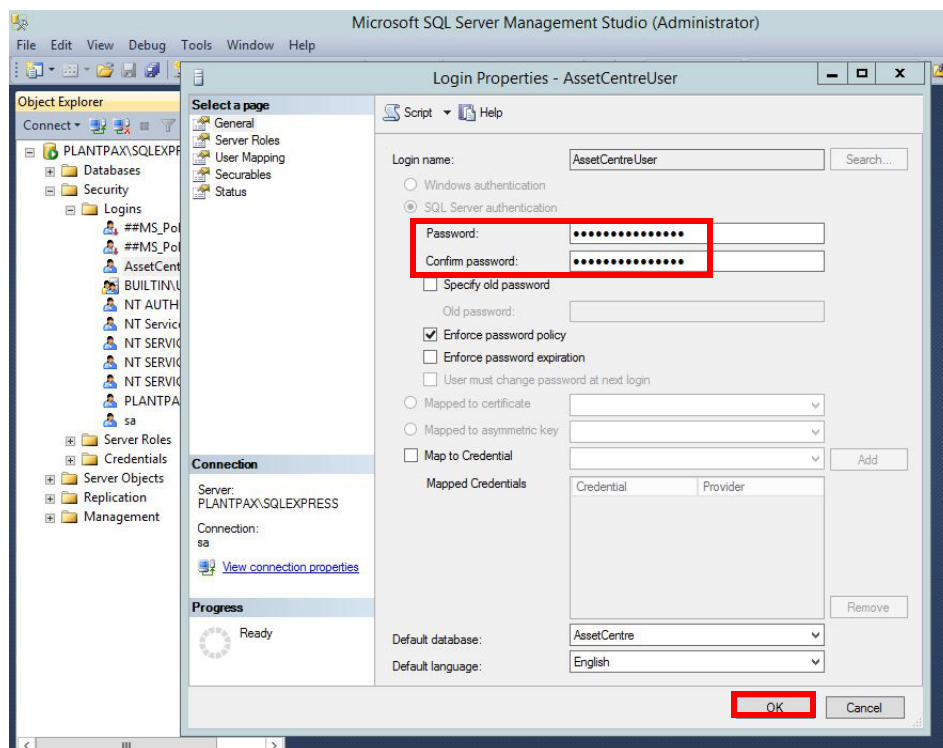


11. Click OK.

### Configure AssetCentre User Account

Complete these steps.

1. Right-click on AssetCentreUser and choose Properties.
2. Configure a password for the account.



3. Click OK.

### Install Historian Asset Framework

The procedures in this section apply only if you plan to do the following:

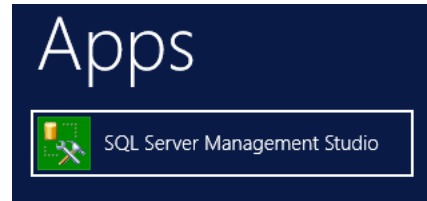
- Use FactoryTalk Historian Asset Framework in your PlantPAx® system
- Install Asset Framework Server on the SQL Server

Refer to [Install Historian Asset Framework on page 144](#) to complete this section.

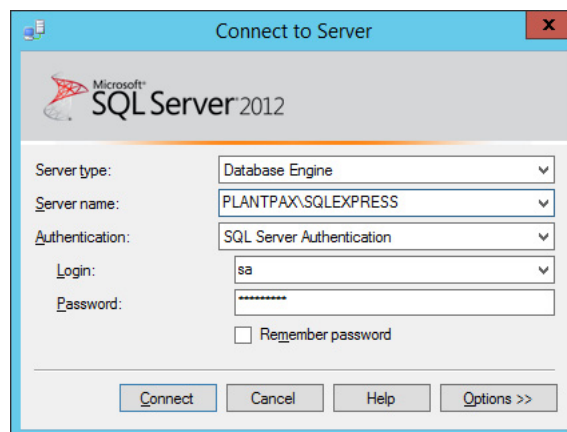
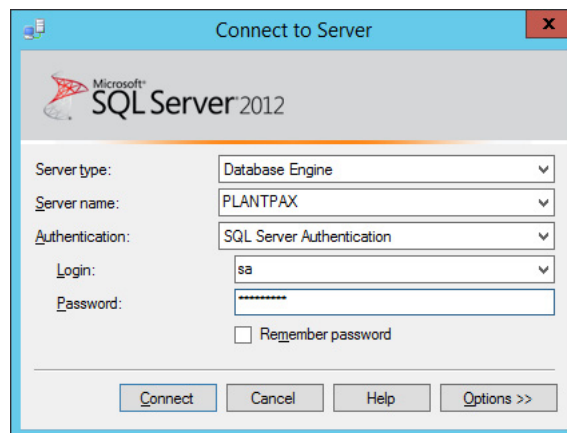
### Verify the AFServers Database and Account

Complete these steps to verify the Historian AF database and user group were added to your computer.

1. Click Start and open the SQL Server Management Studio.



2. Enter the server name. The Server name is ComputerName if using SQL standard or ComputerName\SQLEXPRESS if using SQL Express.
3. Log on by using the 'sa' account and Rockwell1 as the password.



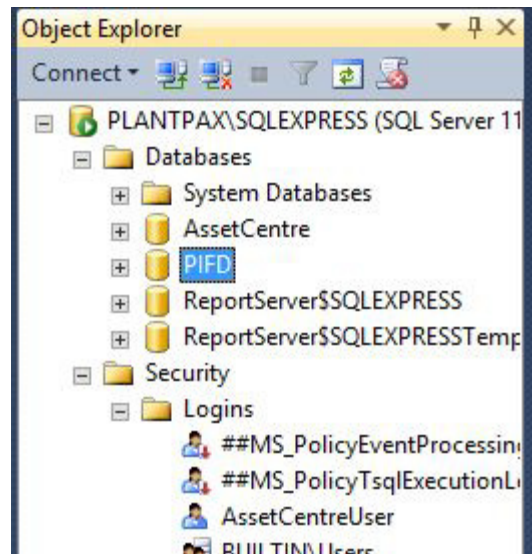

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**IMPORTANT** After you complete the initial settings, change your logon and password settings under Options.

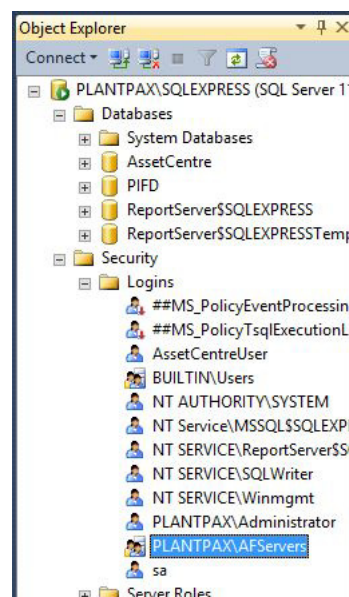
---

4. Click Connect.

- From the SQL Server Management Studio configuration tree, expand the Databases folder and verify that PIFD appears in the list.



- Expand the Security\Logins folder and verify that the AFServers user group was added.



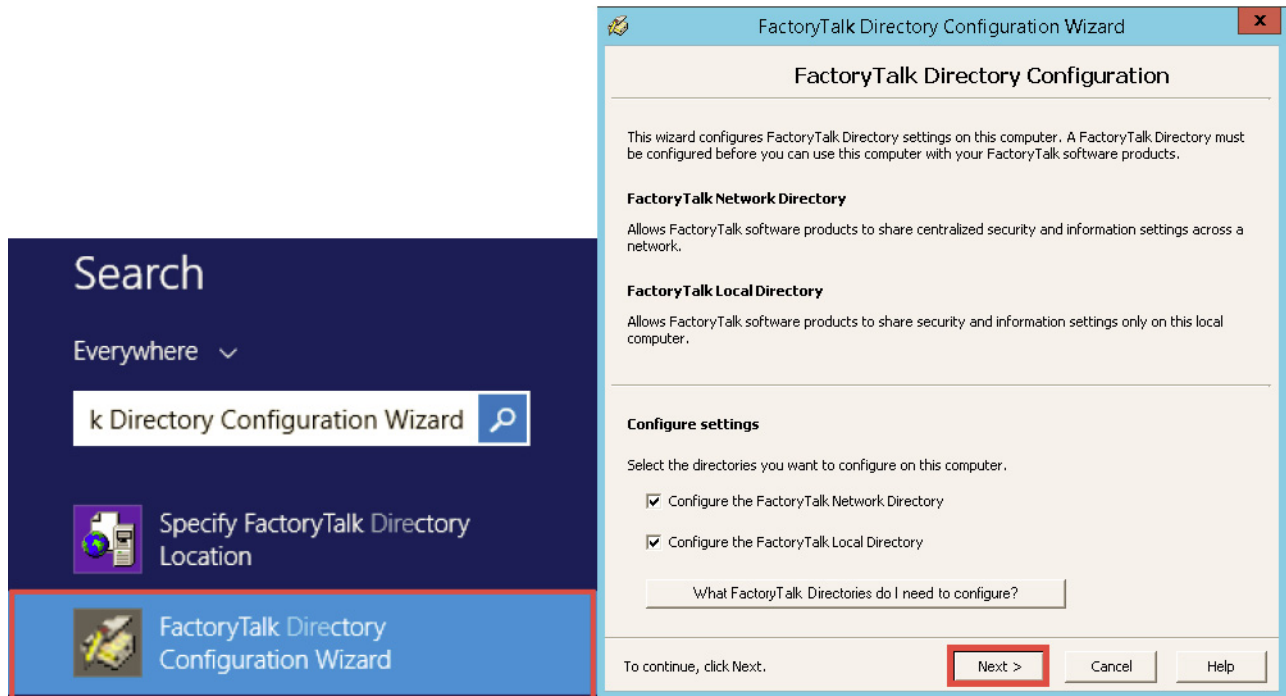
- If the PIFD database or AFServers group do not appear, reinstall the Historian Asset Framework.



## Configure the FactoryTalk Directory

Complete these steps to configure the FactoryTalk directory.

1. Click Start and choose FactoryTalk Directory Configuration Wizard.
2. Check both boxes under configure settings and click Next.

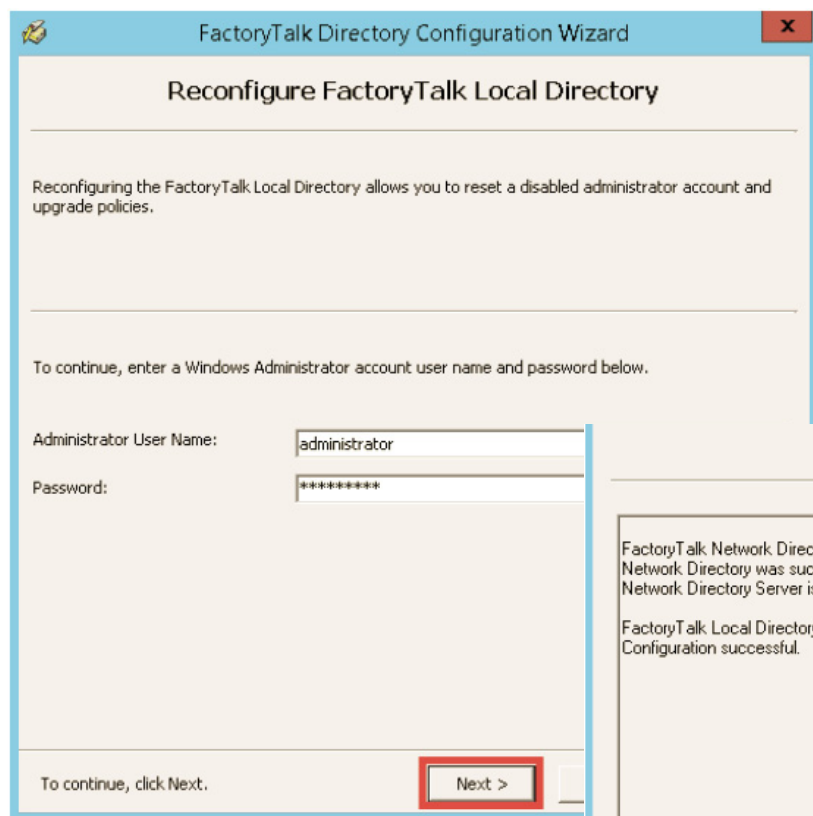


3. Type the administrator user name and password.

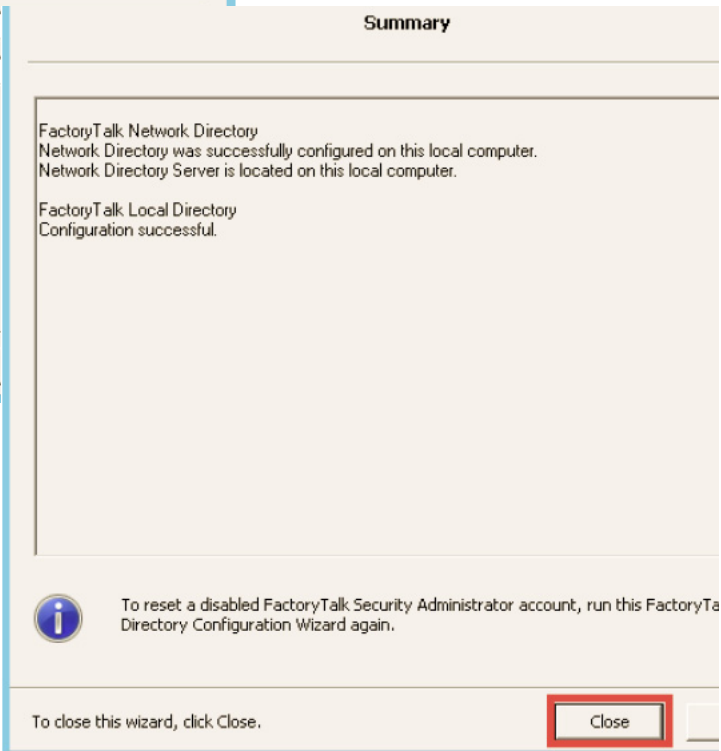
---

**IMPORTANT** Step 3 must be done twice. You have to enter a user name and password for each directory (local and network).

---



The screenshot shows the 'Reconfigure FactoryTalk Local Directory' window of the FactoryTalk Directory Configuration Wizard. The title bar reads 'FactoryTalk Directory Configuration Wizard'. The main heading is 'Reconfigure FactoryTalk Local Directory'. Below the heading, a paragraph states: 'Reconfiguring the FactoryTalk Local Directory allows you to reset a disabled administrator account and upgrade policies.' Another paragraph says: 'To continue, enter a Windows Administrator account user name and password below.' There are two input fields: 'Administrator User Name:' with the text 'administrator' and 'Password:' with masked characters '\*\*\*\*\*'. At the bottom left, it says 'To continue, click Next.' and there is a 'Next >' button highlighted with a red rectangle.

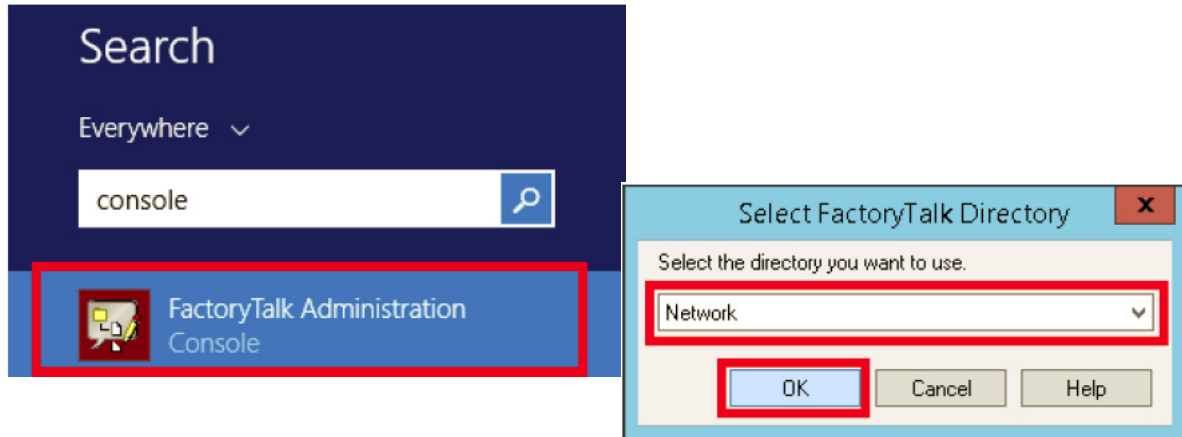


The screenshot shows the 'Summary' window of the FactoryTalk Directory Configuration Wizard. The title bar reads 'FactoryTalk Directory Configuration Wizard'. The main heading is 'Summary'. Below the heading, there are two sections of text: 'FactoryTalk Network Directory' with the text 'Network Directory was successfully configured on this local computer. Network Directory Server is located on this local computer.' and 'FactoryTalk Local Directory' with the text 'Configuration successful.' At the bottom left, there is an information icon (i) and a paragraph: 'To reset a disabled FactoryTalk Security Administrator account, run this FactoryTa Directory Configuration Wizard again.' At the bottom right, there is a 'Close' button highlighted with a red rectangle. Below the button, it says 'To close this wizard, click Close.'

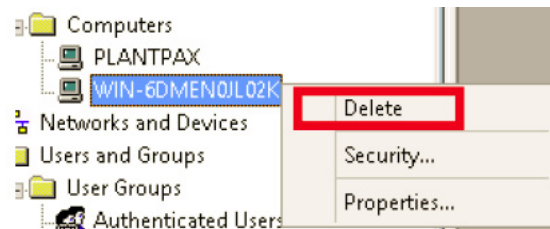
4. Click Close.

### Delete "Old" Computer Names from Directory

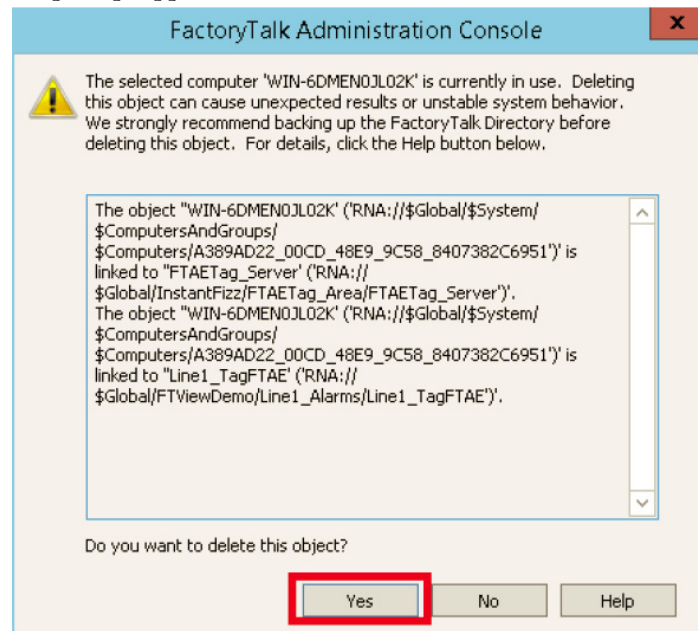
1. Click Start and choose FactoryTalk Administration Console.
2. Select Network (directory) and click OK.



3. From the Explorer pane, right-click any old or unused computer names and choose Delete.

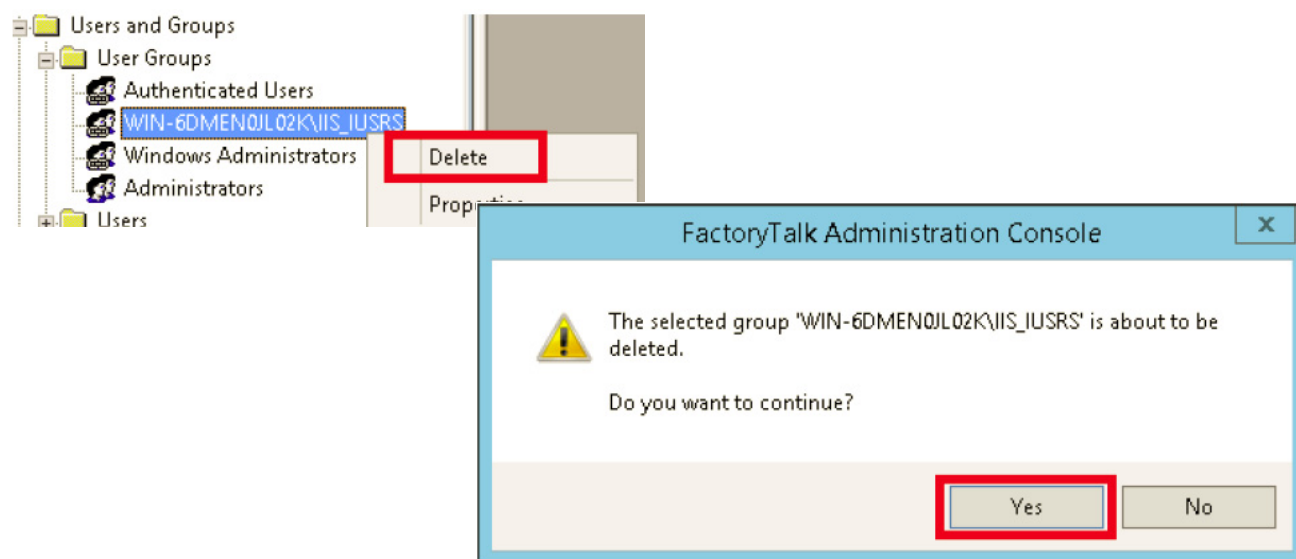


4. If a prompt appears, click Yes.



5. From the Explorer pane, right-click the IIS\_IUSRS user group and choose Delete.

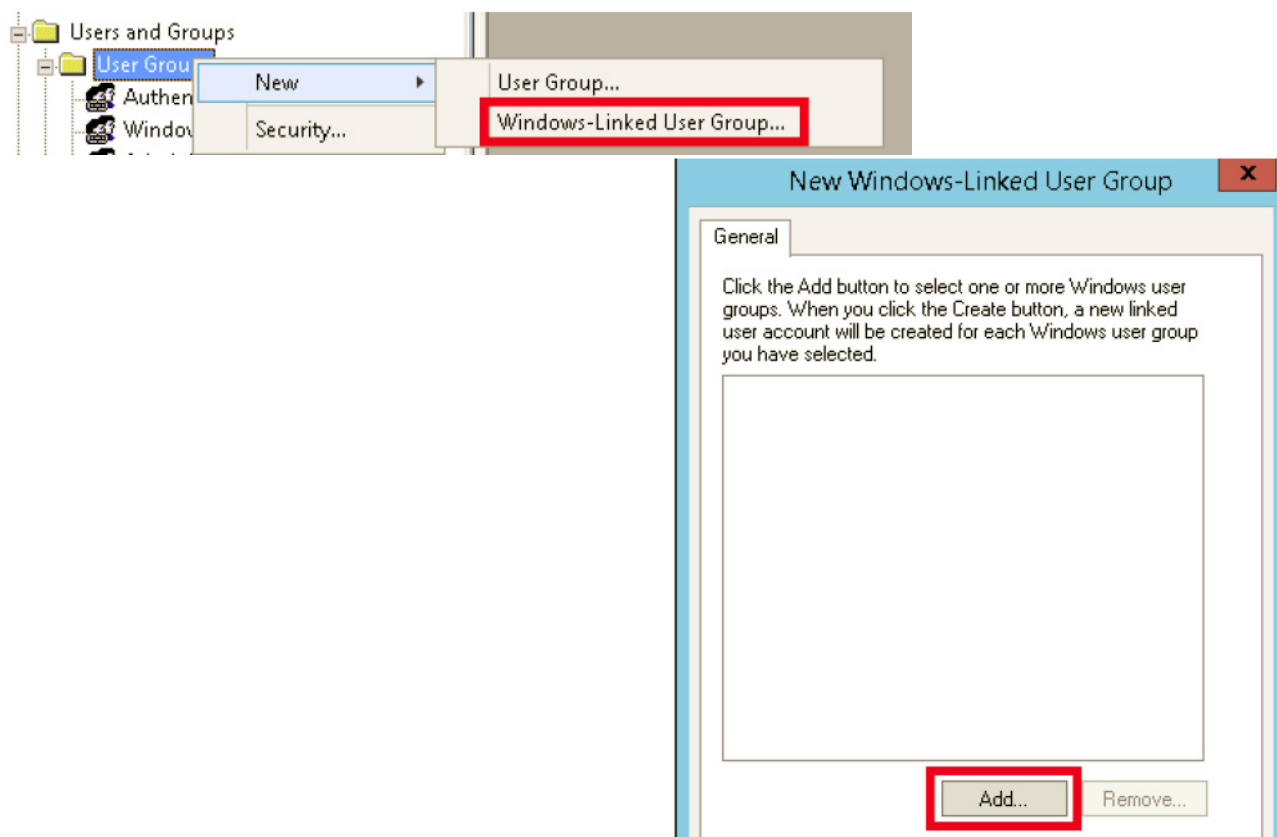
6. Click Yes.



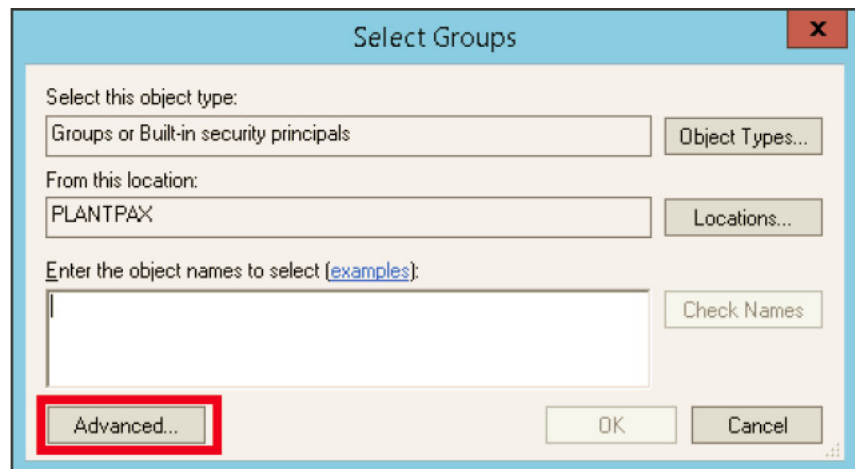
Now you have to add the IIS\_IUSRS user group and link with the new computer name.

7. From the Explorer pane, right-click the User Groups folder and choose New>Windows-Linked User Group.

8. Click Add.

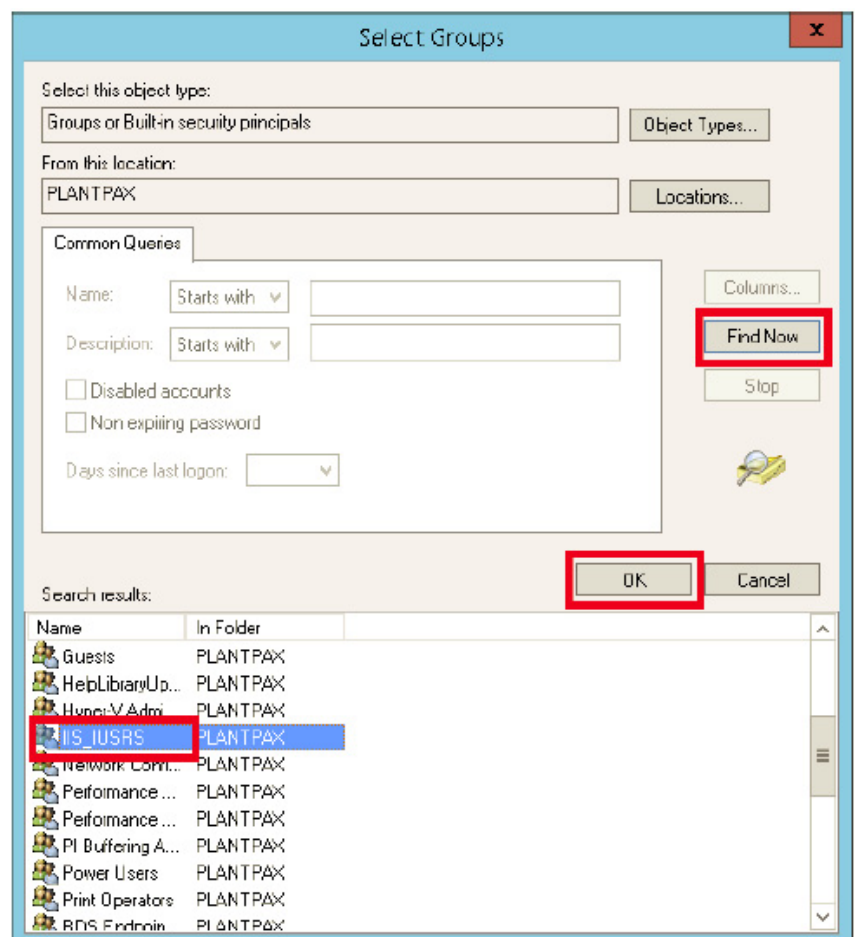


9. Click Advanced.



10. Click Find Now and select IIS\_IUSRS.

11. Click OK.

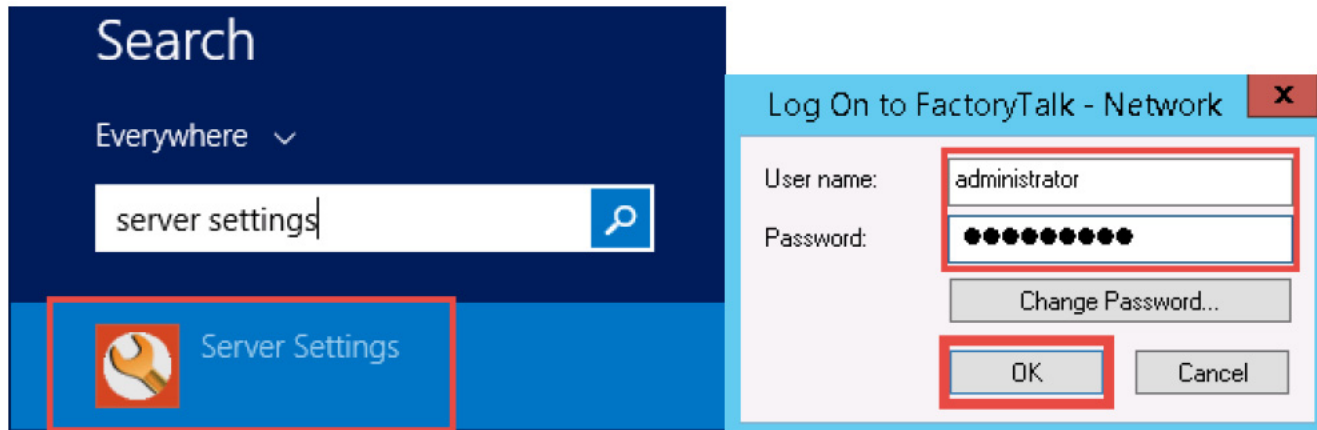


12. Verify that the user group is correct, and click OK.

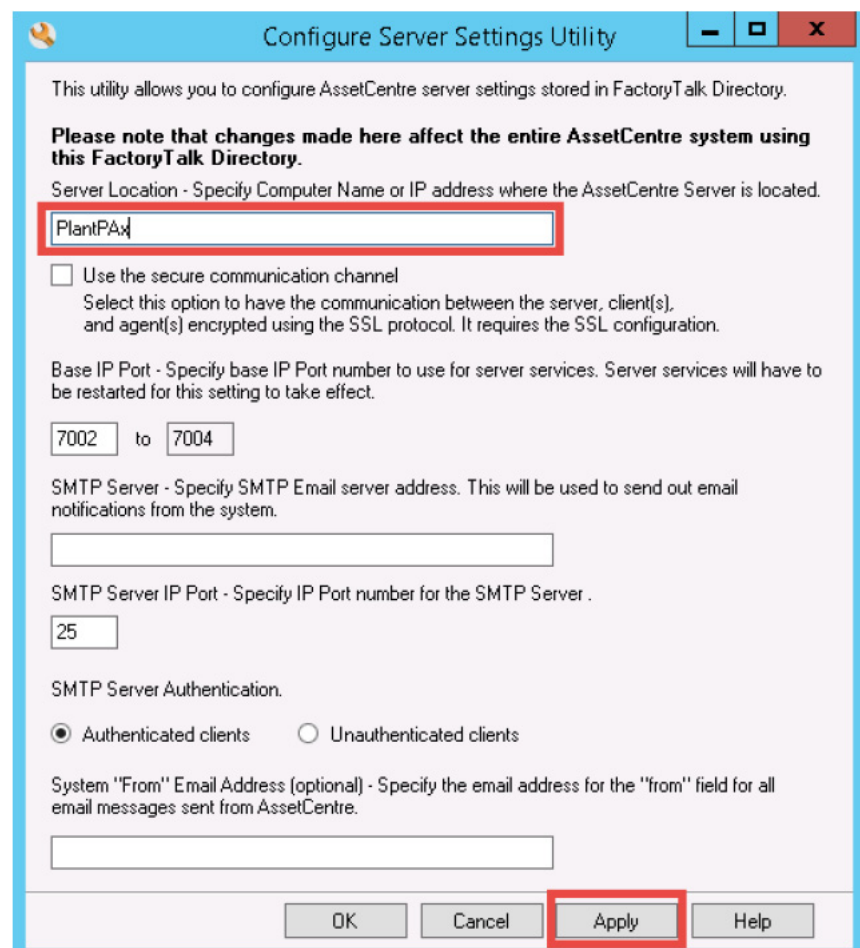
13. Restart your computer.

## Configure FactoryTalk AssetCentre (FTAC)

1. Click Start and choose Server Settings.
2. Type a user name and password and click OK.



3. Type the new computer name and click Apply.

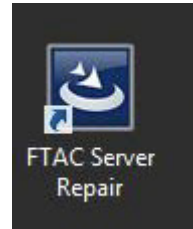


4. Click OK.

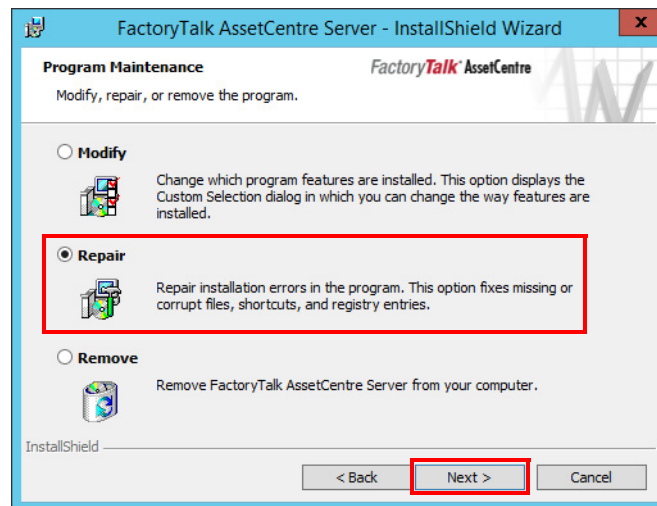
### FactoryTalk AssetCentre Repair

Run FTAC repair to update FTAC with the new computer name.

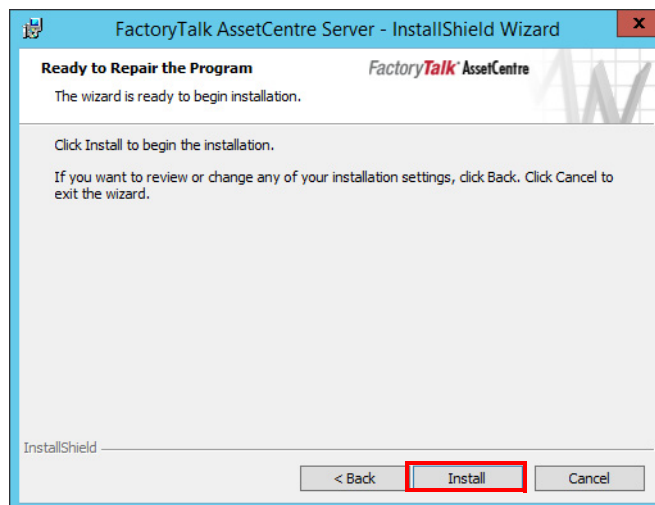
1. Double click on the FTAC Server Repair shortcut on the desktop.



2. Click Next on the Welcome screen.
3. In the Program Maintenance dialog box, click Repair and then click Next. The 'Ready to Repair the Program' dialog box appears.

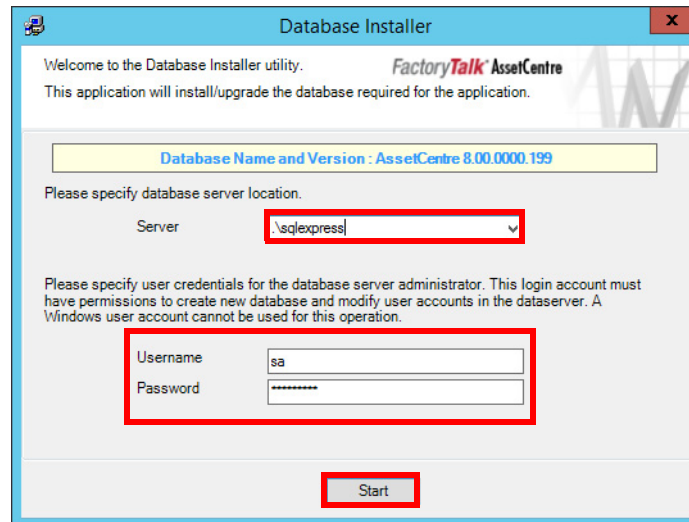
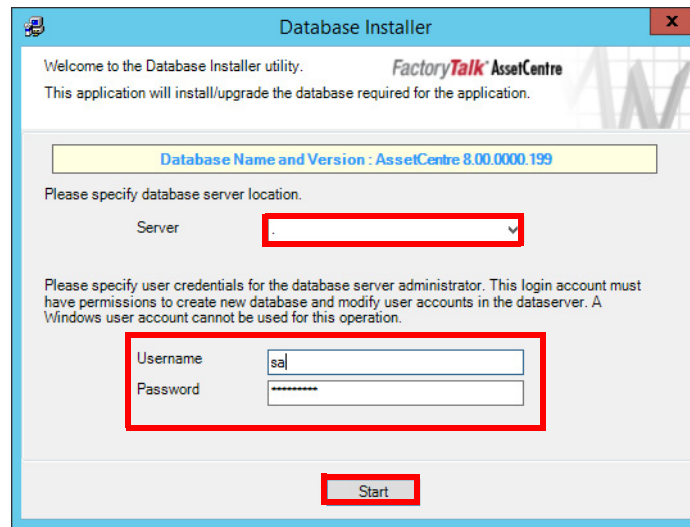


4. Click Install to begin.



5. Type a period (.) for the server name if using SQL Server Standard, or type ".\sqlexpress" if using SQL Server Express.

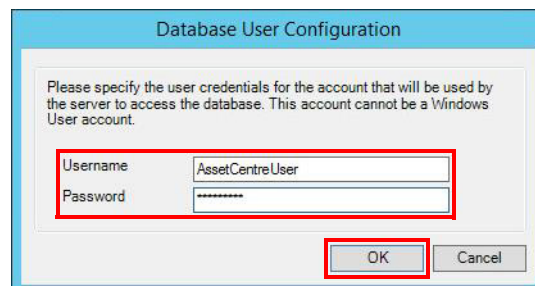
6. Log in by using the Username and Password for your SQL server and click Start.



The Database User Configuration dialog box appears.

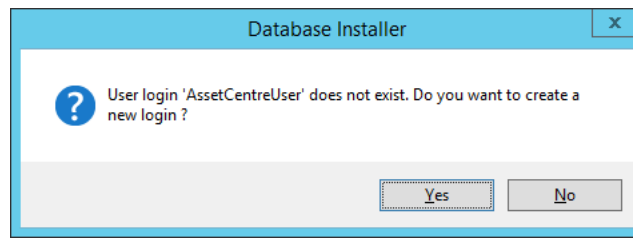
7. Type your Username, Password, and click OK.

The InstallShield Wizard Completed dialog box appears.

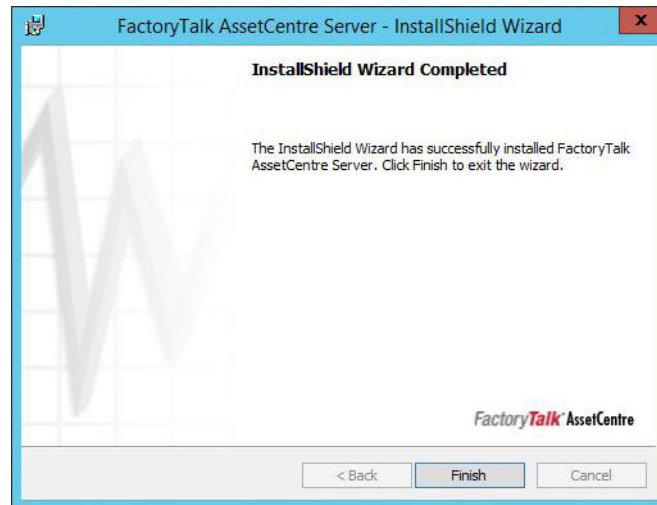




8. If prompted to create a new user, click yes and follow the prompts.



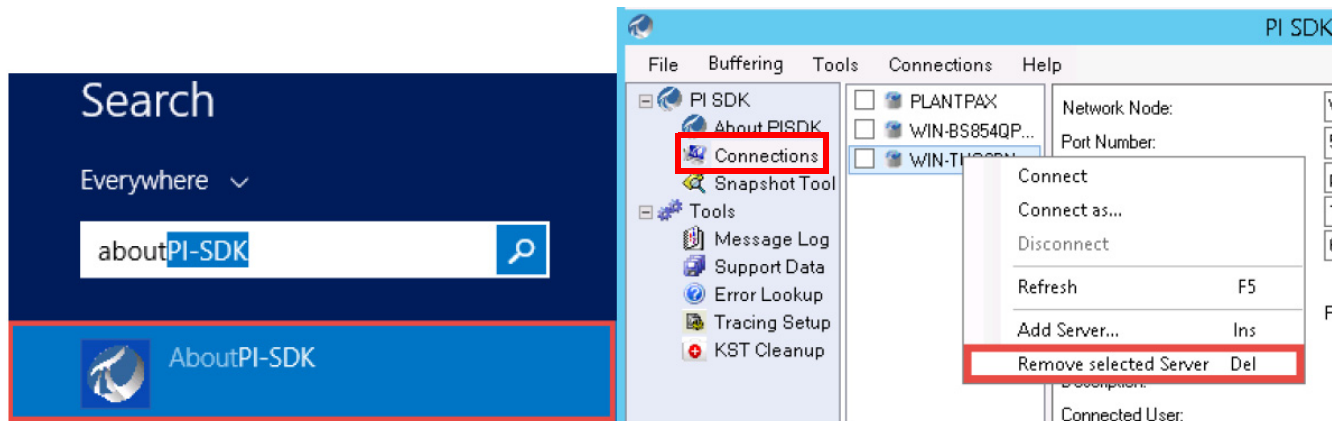
9. Click Finish.



10. Restart your computer.

## Configure FactoryTalk Historian

1. To remove the old computer names from the Historian server, click Start and choose AboutPI-SDK.
2. In the left pane, click Connections, right-click the old server names, and choose Remove selected Server.



PI Builder lets you import and export FactoryTalk Historian points and Asset Framework objects to and from a Microsoft Excel Add-in spreadsheet.

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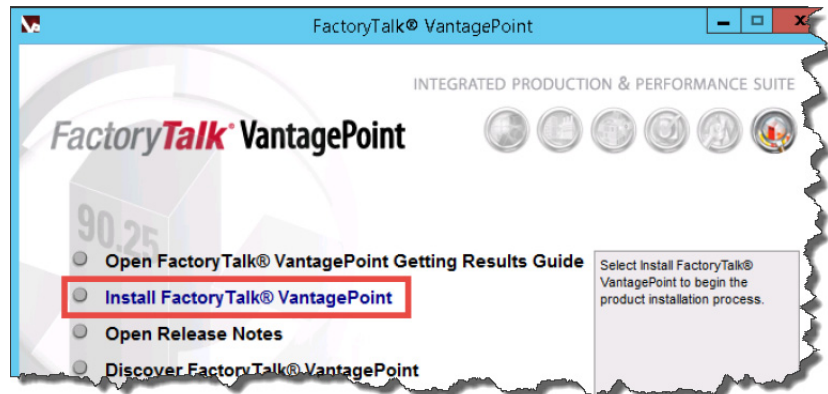
**IMPORTANT** Microsoft Excel 32-bit software must be installed for these procedures.

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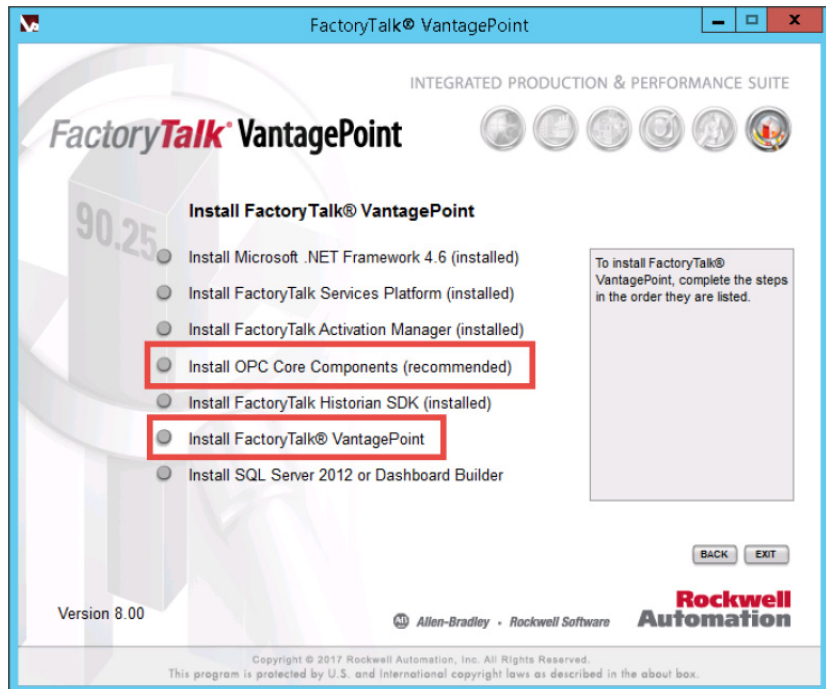
If you plan to use PIBuilder with Excel, see the installation procedures in the AppServ-EWS section in [Install PI Builder Excel Add-in on page 196](#).

## Configure FactoryTalk VantagePoint

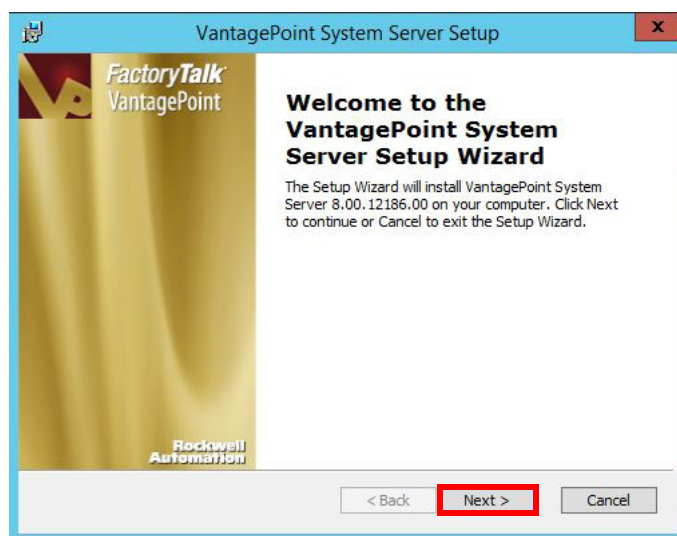
1. Navigate to the folder (C:\Install Files\VantagePoint 8.00.00-EMI-DVD) and double-click setup.exe.
2. Click 'Install FactoryTalk VantagePoint'.



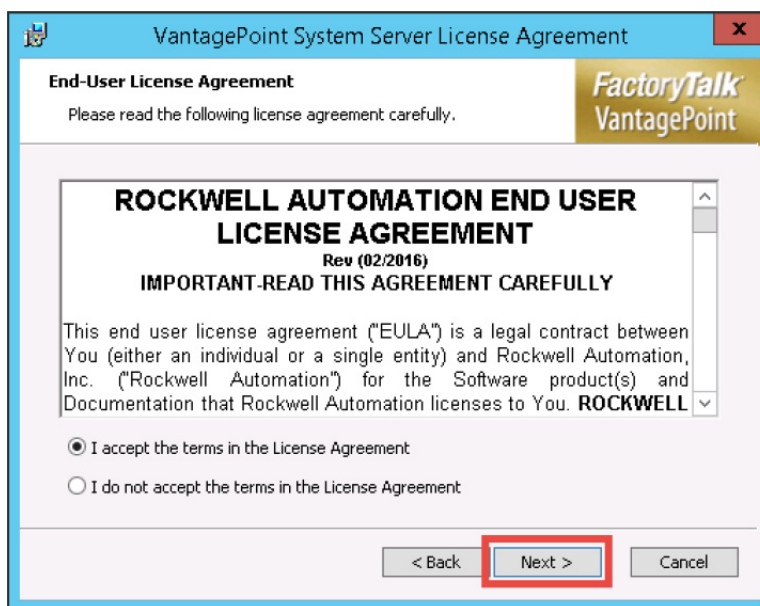
3. Click 'Install OPC Core Components (recommended)'.
4. When the OPC install is complete, click 'Install FactoryTalk VantagePoint'.



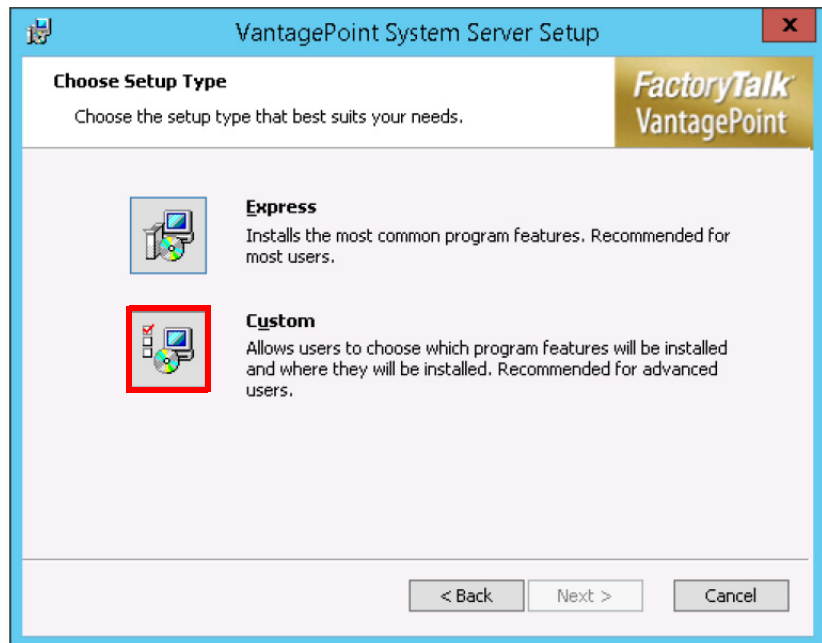
5. Click Next.



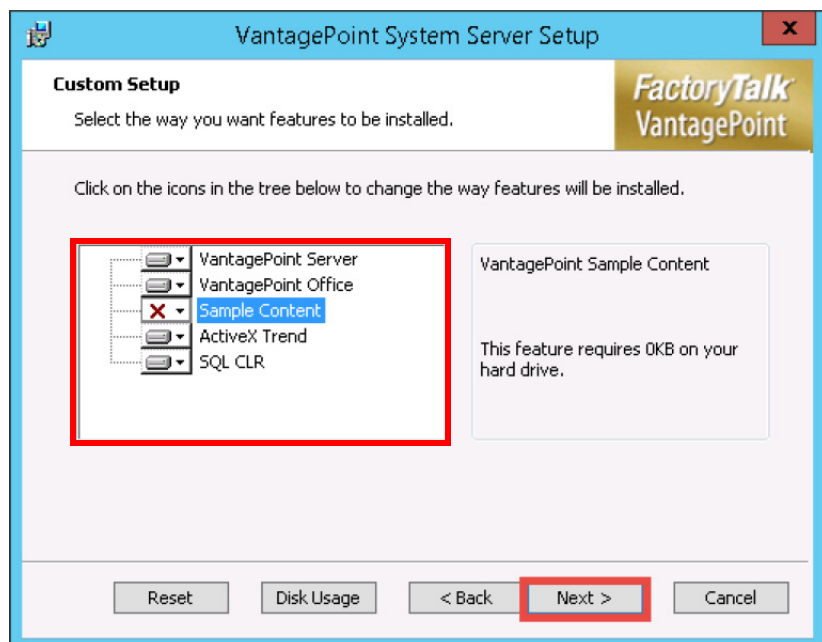
6. Read the license agreement, and click Next.



7. Click Custom setup type.



8. Choose the following options and click Next.



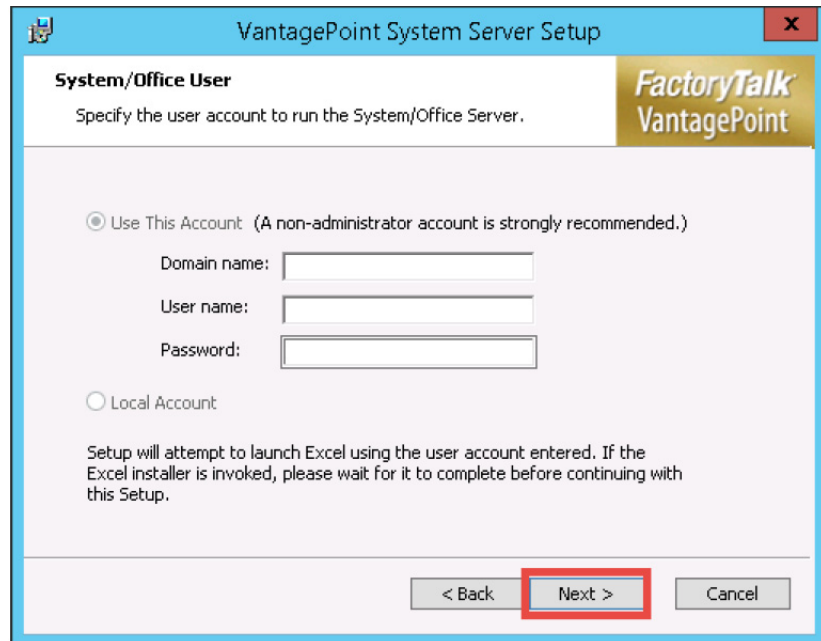
9. Type a portal server name and click Next.

The screenshot shows the 'VantagePoint System Server Setup' window with the 'Server and Portal Settings' tab selected. The window has a blue title bar and a yellow 'FactoryTalk VantagePoint' logo in the top right. Below the title bar, the text 'Enter your Portal Server name.' is displayed. The main area contains two sections: 'VantagePoint System Server' and 'Portal Server'. The 'VantagePoint System Server' section has an 'Application Name:' label and a text box containing 'Incuity'. The 'Portal Server' section has an 'Application Name:' label and a text box containing 'VantagePointPortal'. At the bottom right, there are three buttons: '< Back', 'Next >', and 'Cancel'. The 'Next >' button is highlighted with a red rectangle.

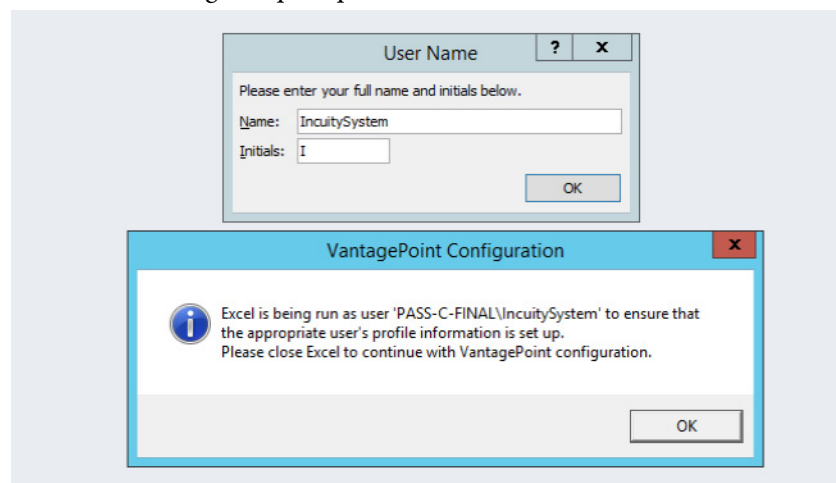
10. If you are using SQL 2012 Standard, accept the defaults and click Next. If you are using SQL Express, enter “.\sqlexpress” for the server and then click Next.

The screenshot shows the 'VantagePoint System Server Setup' window with the 'Database Connection Information' tab selected. The window has a blue title bar and a yellow 'FactoryTalk VantagePoint' logo in the top right. Below the title bar, the text 'Specify an account that has permissions to create the database.' is displayed. The main area contains a paragraph of text: 'The VantagePoint Server uses a SQL Server 2012 database that is created as part of the installation. Please provide the logon credentials to the SQL Server where the IncuityStore database will be created.' Below this text are several fields: 'Server:' with a text box containing '.', 'Database:' with a text box containing 'IncuityStore', 'Security mode:' with two radio buttons, 'Integrated' (selected) and 'SQL Server', 'User name:' with a text box containing 'sa', and 'Password:' with an empty text box. At the bottom right, there are three buttons: '< Back', 'Next >', and 'Cancel'. The 'Next >' button is highlighted with a red rectangle.

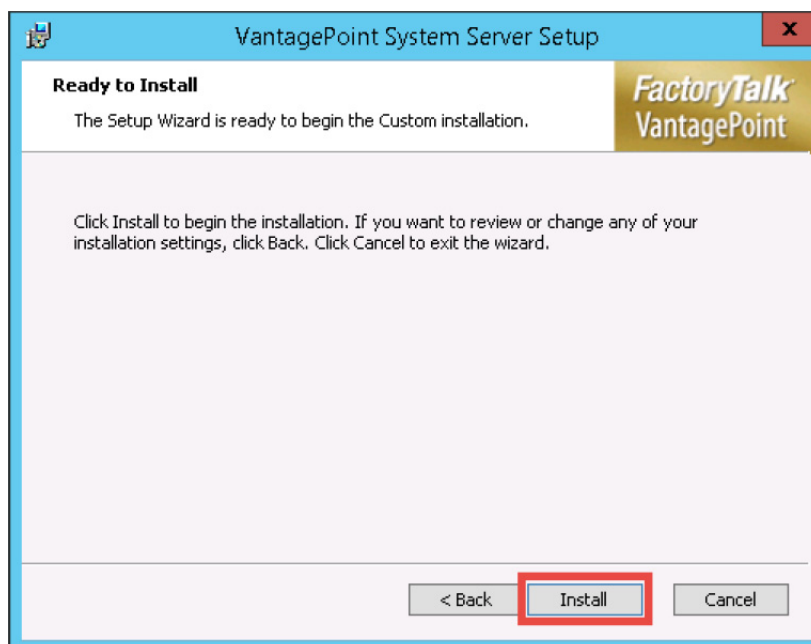
11. If you have a local user account specified for VantagePoint, type the user name in the prompt. Use the computer name as the domain. If you do not have a local user account, select Local Account and a user is created.



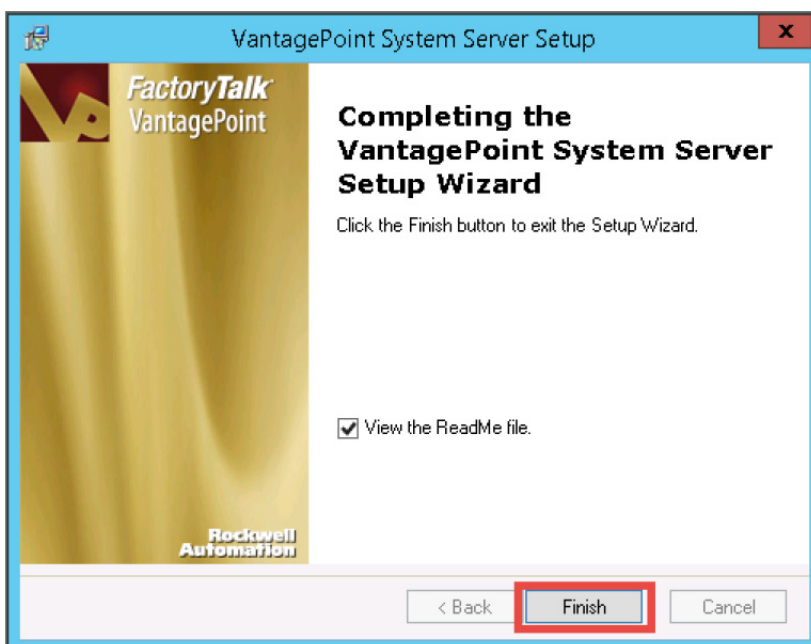
12. If Microsoft Excel is installed, the software automatically launches. Acknowledge the prompts and close Excel.



13. Click Install.



14. Click Finish.



15. Restart your computer after a popup window closes automatically.



## Install OWS ISO

Complete these steps to install the OWS ISO.

1. Make sure your computer is capable of booting from a USB drive. Enter the BIOS Setup as the computer is powering on (typically by hitting the F2 key). Make sure that the Boot options include booting from a USB device.
2. Shutdown the computer and connect the USB drive.
3. Turn the computer on. While the computer is powering on, strike the F12 key to open the boot options screen.
4. Select the USB device containing the OWS ISO installation.
5. Complete steps 5...11 in the [Install PASS-C on page 215](#).
6. Skip to the [Configure Microsoft Windows 10](#) procedure and complete chapter 3 starting on [step 5 on page 91](#) to install OWS ISO.

## **Notes:**

## Activations

### Use FactoryTalk Activations

For continuous use of FactoryTalk® products and other Rockwell Automation® software products, computers running the software must have access to activation files. FactoryTalk Activation software provides a secure, software-based system for activating Rockwell Automation software products and managing software activation files. With FactoryTalk Activation software, there is no need for a physical master disk or any physical media. Instead, activation files are generated and distributed electronically.

Concurrent activations are locked to a central activation-server computer on the network. The activation server manages a pool of activation keys for connected clients to share. Floating concurrent activations are assigned automatically to clients that need them. These activations are returned automatically to the activation server pool when the software stops running on the client, or when the client computer shuts down.

Client computers must be configured to obtain floating activations from the activation server. A continuous network connection is also required for clients to use floating activations. After a client obtains a floating activation, if the activation server detects that the client has been disconnected, the activation is returned to the server pool.

Table 8 - Activation Considerations

Consideration	Details
Software that is not activated	If the components you have installed cannot be activated, for example, because the activation server is unavailable, then the software continues to run for up to seven days. The seven-day grace period provides time to correct the problem with acquiring activations, without disrupting critical applications. If activation is restored within seven days, normal operations resume. If activation is not restored, the grace period expires. After the grace period expires, if you restart the components and activation remains unavailable, the software runs for two hours in Demo mode.
Location of activation server	Activations for Rockwell Automation software can be stored local to the system element containing the Rockwell Automation software in question or remotely depending on your preferences and needs. Typically critical system elements keep their activations locally in case the connection with the remote activation location is lost. If you want to remotely activate Rockwell Automation software in non-critical system elements consider storing them in a system element with uninterrupted connection to your PlantPAx® DCS. Keep in mind the information in Consideration section "Software that is not activated" when using a remote location for activations.
Options for adding activation files to the PASS	To make concurrent floating activations available to activation clients, first you must download the activation files to the activation server computer, from the Rockwell Automation Activation window. If the PASS has internet access, see 'Open Activation Manager' in the PlantPAx Distributed Control System Infrastructure Configuration User Manual, publication <a href="#">PROCES-UM001</a> . If the PASS does not have internet access, the activations can be downloaded on a different computer with internet connectivity and then transferred to the PASS.
Protect activation files	Activation files are simple text files that must have a .lic extension. As long as the .lic extension is retained, you can copy or rename an activation file without harming it. However, tampering with text inside the activation file can disable your Rockwell Software products. If an activation file is damaged or deleted, contact Rockwell Automation Technical Support. For safekeeping, keep an original set of your activation files on back-up media. Use descriptive names for the files, so that you can identify them later, and copy them back to the appropriate computers. Activation files are locked to the Host IDs of the computers (or dongles) that need them. Activation fails for Rockwell Software products on a computer where the specified Host ID is not recognized by the activation file.

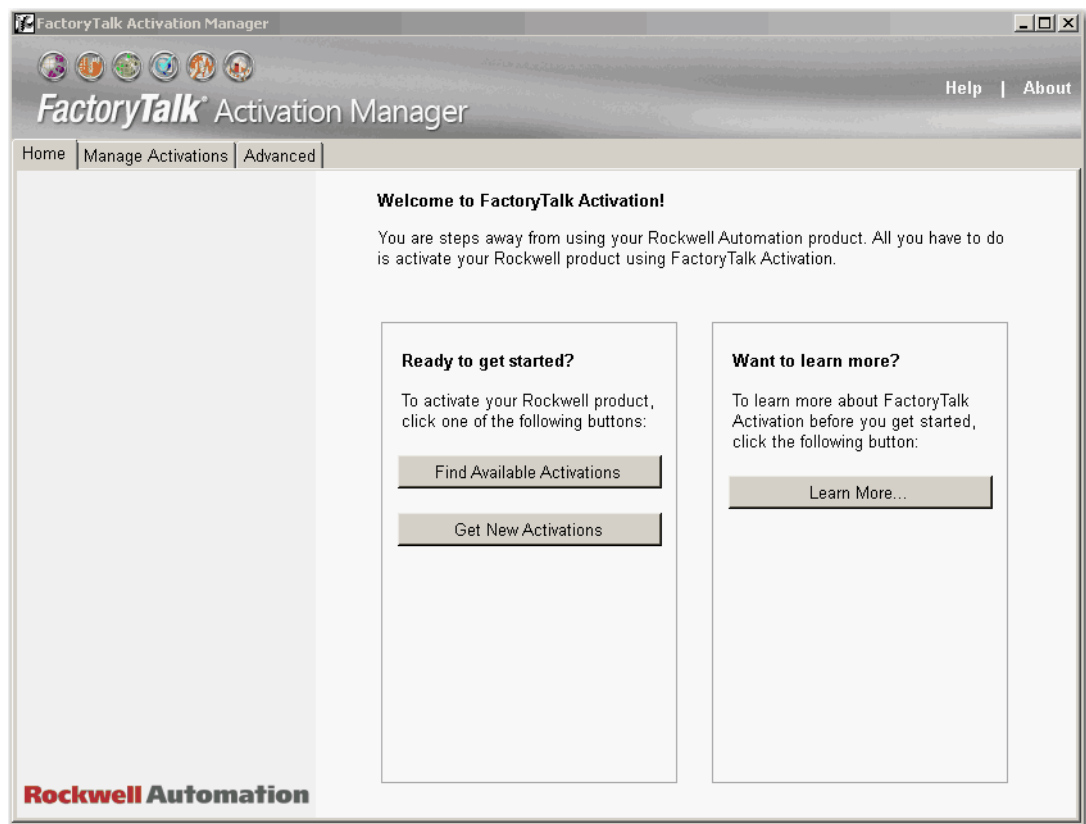
## FactoryTalk Activation Manager

FactoryTalk Activation software provides a secure, software-based system to apply Rockwell Automation licenses for continuous use of FactoryTalk software and other Rockwell Automation software products.

With FactoryTalk Activation software, there is no need for a physical master disk or any physical media. Instead, activation files are generated and distributed electronically.

On the selected Activation Manager computer, start the activation process by opening the FactoryTalk Activation Manager.

Click the Programs symbol and choose Rockwell Software>FactoryTalk Activation>FactoryTalk Activation Manager.




The FactoryTalk Activation Manager window appears. For additional instructions and information on activation types, host IDs, and how to use a plug-and-play dongle, see Activate Rockwell Software Products, publication [FTA-QS002](#).

You also can use the website at <https://activate.rockwellautomation.com>.

## Use Windows License Keys

This procedure enables you to enter your Product key (volume) and activate your Microsoft license. This procedure is also compatible with Windows 10 and Windows Server 2012.

Complete these steps to enter your product key to activate the Microsoft Windows operating system.

1. Right-click the Windows  icon and choose 'Command Prompt (Admin)'.
2. At the command prompt, type 'slmgr /ipk <Product key>' and press Enter to add your volume license key.

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**IMPORTANT** To distribute PlantPAx virtual image templates, Rockwell Automation must meet Microsoft distribution requirements for Windows OS. To meet these requirements, Rockwell Automation includes Volume License products with each virtual template purchase via Microsoft email instructions. See <https://www.microsoft.com/en-us/licensing/default.aspx> for more license information.

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3. Click OK when a dialog box appears informing you that the product key installed successfully.
4. At the command prompt, type 'slmgr /ato' and press Enter to activate Windows.
5. Click OK when a dialog box appears informing you that the product activated successfully.
6. Close the command prompt window.

For definitions of terms not listed here, refer to the Allen-Bradley Industrial Automation Glossary, publication [AG-7.1](#).

- application server (AppServ)** The application server (AppServ) is a server in addition to the Process Automation System Server (PASS) that is typically a FactoryTalk® Directory client of the PASS. Examples are AppServ-Batch for a FactoryTalk Batch application or AppServ-History for an Historian application.
- architecture** An architecture is a representation of a control and software system, as well as the process and discipline for effectively implementing the designs for such a system. An architecture conveys the information content of the related elements comprising a system, the relationships among those elements, and the rules governing those relationships.
- Asset Framework** Historian Asset Framework (AF) is a key component of the FactoryTalk Historian System that allows organization of data with context, such as the physical assets such as equipment, devices, and processing units that exist in a plant.
- datastore** Represents a storage location for virtual machine files. A storage location can be a virtual machine file system volume, a local file system path, or a directory on Network Attached Storage.
- distributed control system (DCS)** A specially designed control system for complex and large applications in industrial processes wherein the control elements of the system are distributed geographically throughout the plant. In a DCS, a hierarchy of controllers is connected by communication networks for command and monitoring.
- engineering workstation (EWS)** The engineering workstation (EWS) provides system configuration, development, and maintenance functions of the PlantPAx® system. The EWS contains development software, including FactoryTalk View SE Studio and Studio 5000 Logix Designer®.
- ESXi hypervisor** Also called a 'bare metal' hypervisor, this virtual software is on top of the resources of a host server when the server does not have an operating system installed.
- FactoryTalk directory software** FactoryTalk Directory software defines where system data is stored for access. FactoryTalk Directory software provides a common address book of factory resources that are shared among FactoryTalk-enabled products.
- flowchart** A formalized graphic representation of a logic sequence, work, or manufacturing process, organization chart, or similar formalized structure.
- guest OS** The operating system of the virtual machine. The guest OS is one of the components of the virtual image.
- historian** An historian is a data collection system with the following components: collection, storage, compression, retrieval, reports, and analysis. Historian

functions include raw sampling, compression, storage, retrieval, reconstitute, analyze, summarize, and present (reports and displays).

**historical data** Historical data is data that is used for the long term analysis of past operation.

**host OS** The operating system of the host server. Servers without operating systems leverage an ESXi hypervisor to manage its resources and allocate them to the virtual machines that need them.

**host server** A physical server whose hardware resources are distributed to provide for the needs of the virtual machines deployed in it. Also called a hardware host.

**hypervisor** A program that lets multiple operating systems share resources from a single hardware host; also called a virtual machine manager. The hypervisor manages the host processor and resources, allocating what is needed to each virtual machine to make sure they cannot negatively impact each other.

**hypervisor client** A program that lets you remotely connect to a host server with a hypervisor from any workstation. From the hypervisor client, you can create, deploy, copy, and edit your virtual machines. When a hypervisor client connects to a vCenter server, additional features include management of your virtual machines.

**old computer name** The term 'old computer name' is used to refer to the computer name of the virtual machine prior to your changes. This reference could be the factory default computer name of the virtual machines or a computer name set by your organization. Once the computer name is changed, the previous computer name becomes the 'old computer name'.

**operator workstation (OWS)** The operator workstation (OWS) provides the graphical view and interface into the process. The workstation is a client of either a PASS or AppServ-HMI.

**PlantPAx Distributed Control System** The PlantPAx system has all the core capabilities expected in a world-class distributed control system (DCS). The system is built on a standards-based architecture by using Integrated Architecture® components that enable multi-disciplined control and premier integration with the Rockwell Automation® intelligent motor control portfolio.

**Process Automation System Server (PASS)** The Process Automation System Server (PASS) is the core PlantPAx system server allowing central administration throughout the PlantPAx system. The PASS is a required component.

**RSLinx software** RSLinx® software is the communication driver (data server) for computer-based programs to access information in Rockwell Automation controllers. There is RSLinx Classic software and RSLinx Enterprise software. FactoryTalk View SE software uses RSLinx Enterprise software to directly access tags in a controller.

**server** Software component that serves data to an application (for example, data server). Typically, server software components are installed on server-class computers.

**system element** A system element is a distinctive system entity made up of a combination of hardware and software products that support an identifiable system function or



role. A system element can be manipulated to vary system operation or capability. For example, engineering workstation (EWS), operator workstation (OWS), process automation system server (PASS), and controller.

- virtual machine** A virtual machine is a software implementation of a computer or workstation that executes programs like a physical computer or workstation. A virtual machine is the collection of dedicated resources a computer needs (for example, RAM, HDD, CPU, and so forth). These resources are allocated to a virtual machine with the help of a hypervisor.
- virtualization** Virtualization is the abstracting of the operating system from the hardware to enable multiple virtual machines on a single piece of hardware.
- workstation** A workstation is a computer running development, configuration, and optional maintenance software. A workstation is not a server.

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Publication 9528-UM001F-EN-P - August 2018

Supersedes Publication 9528-UN001E-EN-P - March 2016

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