

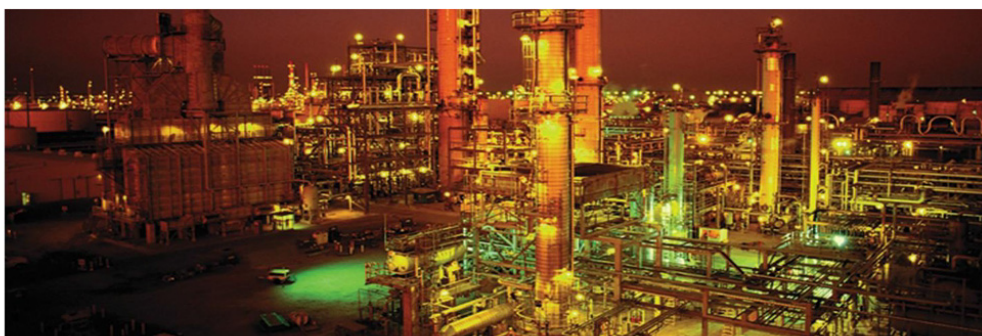
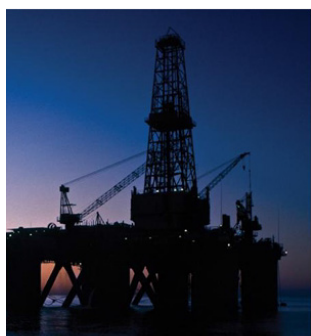
User Manual

Original Instructions

PlantPAx
Distributed Control System

PlantPAx Virtualization

Version 4.6



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.

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

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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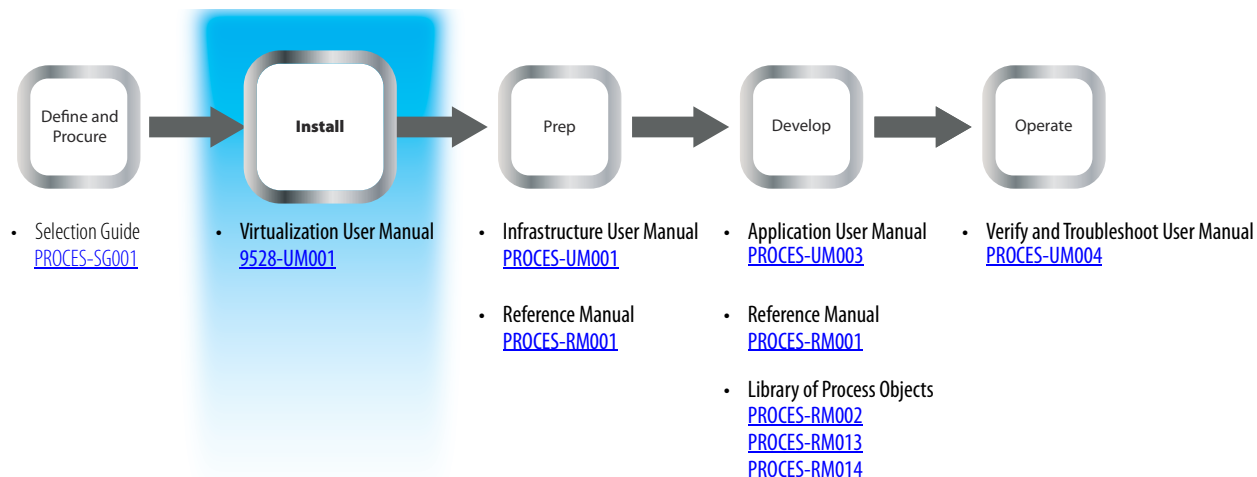
Glossary

Notes:

This virtualization user manual describes how to leverage virtual image templates 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
Added chapter 3 for initial server configuration.	87
Updated chapter 4 for updated workflow and graphics	97
Added chapter 5 for initial workstation configuration	165
Updated chapter 6 for updated workflow and graphics	173

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 6](#) if you are deploying a PASS-C or OWS ISO.

Before You Begin

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

- 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. End user is responsible for the proper Microsoft® licensing.
 - **Electronic Software Delivery (ESD)** - Download 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 that you can use to create a bootable device.
- Virtual servers require Microsoft OS License Keys for Windows Server operating systems.
- Virtual workstations require a Microsoft OS License Key for Windows 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 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](#)

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

- 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.

The end user is responsible for properly licensing a Microsoft OS for each template deployed. Additional licenses can be purchased from your Microsoft distributor.

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. The end user is responsible for acquiring the appropriate Microsoft OS license for Server 2016. All required Rockwell Automation software is pre-installed but not activated.
EWS	9528-EWSVTENM	USB device contains the virtual image template for the EWS. The end user is responsible for acquiring the appropriate Microsoft OS license for Windows 10. All required Rockwell Automation software is pre-installed but not activated.
OWS	9528-OWSVTENM	USB device contains the virtual image template for the OWS. The end use is responsible for acquiring the appropriate Microsoft OS license for Windows 10. 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. The end user is responsible for acquiring the appropriate Microsoft OS license for Server 2016. All required Rockwell Automation software is pre-installed but not activated. You also must purchase the appropriate Windows CAL from a Microsoft distributor. IMPORTANT: Each client needs an RDS CAL license.
AppServ-Info (Historian)	9528-APPHISENM	USB device contains the virtual image template for AppServ-Info (Historian). The end user is responsible for acquiring the appropriate Microsoft OS license for Server 2016. 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. The end user is responsible for acquiring the appropriate Microsoft OS license for Server 2016. 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). The end user is responsible for acquiring both the appropriate Microsoft OS license for Server 2016 and Microsoft SQL server.
AppServ-Info (VantagePoint)	9528-APPVTPENM	USB device contains the virtual image template for AppServ-Info (VantagePoint). The end user is responsible for acquiring the appropriate Microsoft OS license for Server 2016. Most required Rockwell Automation software is pre-installed but not activated. The FactoryTalk VantagePoint software is not pre-installed for your convenience. For details, see the PlantPAx Virtualization User Manual, publication 9528-UM001 .
AppServ-Batch	9528-APPBATENM	USB device contains the virtual image template for AppServ-Batch. The end user is responsible for acquiring the appropriate Microsoft OS license for Server 2016. 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. The end user is responsible for acquiring the appropriate Microsoft OS license for Server 2016. You also must 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. The end user is responsible for acquiring the appropriate Microsoft OS license for Server 2016. 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 end user is responsible for acquiring the appropriate Microsoft OS 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 - System and Software Requirements

Element	Category	Description
Process Automation System Server (PASS)	Operating system	Microsoft® Windows Server 2016 Standard
	Rockwell Automation® software	<ul style="list-style-type: none"> • FactoryTalk® Services Platform <ul style="list-style-type: none"> – FactoryTalk Services platform software, version 6.11.00 – FactoryTalk Activation Manager software, version 4.03.03 – FactoryTalk Linx software, version 6.11.00 • FactoryTalk View Site Edition Client software, version 11.00.00 • FactoryTalk View Site Edition Server software, version 11.00.00 • FactoryTalk View Studio Enterprise software, version 11.00.00 • FactoryTalk Alarm and Event software, version 6.11.00 • FactoryTalk Diagnostics software, version 6.11.00 • FactoryTalk Historian SE Live Data Interface, version 6.00.00 • Rockwell Automation® Windows Firewall Configuration Utility, version 1.00.12
Engineering Workstation (EWS)	Operating system	Microsoft Windows 10
	Rockwell Automation software	<ul style="list-style-type: none"> • FactoryTalk Services Platform <ul style="list-style-type: none"> – FactoryTalk Services Platform software, version 6.11.00 – FactoryTalk Linx software, version 6.11.00 – RSLinx® Classic software, version 4.11.00 – FactoryTalk Activation Manager software, version 4.03.03 • FactoryTalk View Site Edition Client software, version 11.00.00 • FactoryTalk View Site Edition Server software, version 11.00.00 • FactoryTalk View Studio Enterprise software, version 11.00.00 • FactoryTalk Alarm and Event software, version 6.11.00 • FactoryTalk Diagnostics software, version 6.11.00 • RSLogix 5000® Professional software, versions 20.05.00 • Studio 5000 Logix Designer® application, versions 31.01.00, 24.02.00 • Studio 5000 Architect Software, version 4.00.00 • RSNetWorx™ <ul style="list-style-type: none"> – RSNetWorx for EtherNet/IP™ software, version 28.00.00 – RSNetWorx for ControlNet® software, version 28.00.00 – RSNetWorx for DeviceNet® software, version 28.00.00 • FactoryTalk AssetCentre <ul style="list-style-type: none"> – FactoryTalk AssetCentre Client software, version 9.00.00 • FactoryTalk Historian SE Management Tools, version 6.00.00 • Studio 5000® Logix Emulate™, version 31.01.00 • ControlFLASH Plus™ software, version 2.00.00 • ControlFLASH software, version 15.01.00 • Rockwell Automation Windows Firewall Configuration Utility, version 1.00.12
	Additional third-party software	<ul style="list-style-type: none"> • LOOP-PRO TUNER (Rockwell Automation Edition) software, version 1.9 • Microsoft SQL Server 2012 SP4 Management Tools • Microsoft SQL Server 2012 SP4 Client Connectivity
Operator Workstation (OWS)	Operating system	Microsoft Windows 10
	Rockwell Automation software	<ul style="list-style-type: none"> • FactoryTalk Services Platform <ul style="list-style-type: none"> – FactoryTalk Services Platform software, version 6.11.00 – FactoryTalk Linx software, version 6.11.00 – RSLinx Classic software, version 4.11.00 – FactoryTalk Activation Manager software, version 4.03.03 • FactoryTalk Diagnostics software, version 6.11.00 • FactoryTalk View Site Edition Client software, version 11.00.00 • FactoryTalk Alarm and Event software, version 6.11.00 • FactoryTalk AssetCentre Client software, version 9.00.000 • Rockwell Automation Windows Firewall Configuration Utility, version 1.00.12
Process Automation Domain Controller (PADC)	Operating system	Microsoft Windows Server 2016 Standard

Table 3 - System and Software Requirements

Element	Category	Description
Application Server OWS (AppServ-OWS)	Operating system	Microsoft Windows Server 2016 Standard
	Rockwell Automation software	<ul style="list-style-type: none"> • FactoryTalk Services Platform <ul style="list-style-type: none"> – FactoryTalk Services Platform software, version 6.11.00 – FactoryTalk Linx software, version 6.11.00 – RSLinx Classic software, version 4.11.00 – FactoryTalk Activation Manager software, version 4.03.03 • FactoryTalk View Site Edition Client software, version 11.00.00 • FactoryTalk Diagnostics software, version 6.11.00 • FactoryTalk Alarm and Event software, version 6.11.00 • FactoryTalk AssetCentre Client software, version 9.00.00 • Rockwell Automation Windows Firewall Configuration Utility, version 1.00.12
Application Server EWS (AppServ-EWS)	Operating system	Microsoft Windows Server 2016 Standard
	Rockwell Automation software	<ul style="list-style-type: none"> • FactoryTalk Services Platform <ul style="list-style-type: none"> – FactoryTalk Services Platform software, version 6.11.00 – FactoryTalk Linx software, version 6.11.00 – RSLinx® Classic software, version 4.11.00 – FactoryTalk Activation Manager software, version 4.03.03 • FactoryTalk View Site Edition Client software, version 11.00.00 • FactoryTalk View Site Edition Server software, version 11.00.00 • FactoryTalk View Studio Enterprise software, version 11.00.00 • FactoryTalk Alarm and Event software, version 6.11.00 • FactoryTalk Diagnostics software, version 6.11.00 • RSLogix 5000® Professional software, versions 20.05.00 • Studio 5000 Logix Designer® application, versions 31.01.00, 24.02.00 • Studio 5000 Architect Software, version 4.00.00 • RSNetWorx™ <ul style="list-style-type: none"> – RSNetWorx for EtherNet/IP software, version 28.00.00 – RSNetWorx for ControlNet software, version 28.00.00 – RSNetWorx for DeviceNet software, version 28.00.00 • FactoryTalk AssetCentre <ul style="list-style-type: none"> – FactoryTalk AssetCentre Client software, version 9.00.00 • FactoryTalk Historian SE Management Tools, version 6.00.00 • Studio 5000® Logix Emulate™, version 31.01.00 • ControlFLASH Plus™ software, version 2.00.00 • ControlFLASH software, version 15.01.00 • Rockwell Automation Windows Firewall Configuration Utility, version 1.00.12
	Additional third-party software	<ul style="list-style-type: none"> • LOOP-PRO TUNER (Rockwell Automation Edition) software, version 1.9 • Microsoft SQL Server 2012 SP4 Management Tools • Microsoft SQL Server 2012 SP4 Client Connectivity
Application Server Historian (AppServ- Info Historian)	Operating system	Microsoft Windows Server 2016 Standard
	Rockwell Automation software	<ul style="list-style-type: none"> • FactoryTalk® Services Platform <ul style="list-style-type: none"> – FactoryTalk Services Platform software, version 3.00.00 – FactoryTalk Activation Manager software, version 4.02.00 – FactoryTalk Diagnostics software, version 3.00.00 • FactoryTalk Alarm and Event software, version 3.00.00 • FactoryTalk Historian Site Edition Server, version 6.00.00 • FactoryTalk Historian ActiveView software, version 3.20.03 • FactoryTalk Historian DataLink software, version 4.20.02 • FactoryTalk Historian Management software, version 6.00.00 • FactoryTalk Historian ProcessBook software, version 3.20.03 • FactoryTalk Historian SE Live Data Interface, version 6.00.00 • Rockwell Automation Windows Firewall Configuration Utility, version 1.00.10 • FactoryTalk Linx software, version 6.00.00

Table 3 - System and Software Requirements

Element	Category	Description
Application Server Asset Management (AppServ-Asset)	Operating system	Microsoft Windows Server 2016 Standard
	Rockwell Automation software	<ul style="list-style-type: none"> FactoryTalk Services Platform <ul style="list-style-type: none"> FactoryTalk Services Platform software, version 6.11.00 FactoryTalk Diagnostics software, version 6.11.00 FactoryTalk Linx software, version 6.11.00 RSLink Classic software, version 4.11.00 FactoryTalk Activation Manager software, version 4.03.03 FactoryTalk Alarm and Event software, version 6.11.00 FactoryTalk AssetCentre <ul style="list-style-type: none"> FactoryTalk AssetCentre Server software, version 9.00.00 FactoryTalk Asset Centre Client software, version 9.00.00 Rockwell Automation Windows Firewall Configuration Utility, version 1.00.12
	Additional third-party software	<ul style="list-style-type: none"> Microsoft SQL Server Express 2012 SP4 Advanced (includes Management Studio)
Application Server Information SQL (AppServ-Info-SQL)	Operating system	Microsoft Windows Server 2016 Standard
	Microsoft software	<ul style="list-style-type: none"> Microsoft SQL Server Standard 2012 SP4 (includes Management Studio)
Application Server Information VantagePoint® (AppServ-Info-VantagePoint)	Operating system	Microsoft Windows Server 2016 Standard
	Rockwell Automation software	<ul style="list-style-type: none"> FactoryTalk Services Platform <ul style="list-style-type: none"> FactoryTalk Services Platform software, version 3.00.00 FactoryTalk Activation Manager software, version 4.02.00 FactoryTalk Diagnostics software, version 3.00.00 FactoryTalk Linx software, version 6.00.00 FactoryTalk VantagePointSystem Server software, version 8.10.00 Rockwell Automation Windows Firewall Configuration Utility, version 1.00.10
Application Server Batch Management (AppServ-Batch)	Operating system	Microsoft Windows Server 2016 Standard
	Rockwell Automation software	<ul style="list-style-type: none"> FactoryTalk Services Platform <ul style="list-style-type: none"> FactoryTalk Activation Manager software, version 4.02.00 FactoryTalk Diagnostics software, version 3.00.00 FactoryTalk Services Platform software, version 3.00.00 RSLink Classic software, version 3.81.00 FactoryTalk Batch, version 13.00.02 Rockwell Automation Windows Firewall Configuration Utility, version 1.00.10

[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 2016 Standard
	Rockwell Automation software	<ul style="list-style-type: none"> • FactoryTalk Services Platform <ul style="list-style-type: none"> – FactoryTalk Services platform software, version 6.11.00 – FactoryTalk Activation manager software, version 4.03.03 – FactoryTalk Linx software, version 6.11.00 – RSLinx Classic software, version 4.11.00 • FactoryTalk View Site Edition Client software, version 11.00.00 • FactoryTalk View Site Edition Server software, version 11.00.00 • FactoryTalk View Studio Enterprise software, version 11.00.00 • FactoryTalk Alarm and Event software, version 6.11.00 • FactoryTalk Diagnostics software, version 6.11.00 • FactoryTalk Historian SE Live Data Interface, version 6.00.00 • Rockwell Automation Windows Firewall Configuration Utility, version 1.00.12 • FactoryTalk Historian SE software, version 6.00.00 • FactoryTalk AssetCentre Server, version 9.00.00 • FactoryTalk AssetCentre Client, version 9.00.00 • Studio 5000 Logix Designer®, version 31.01.00 • Studio 5000 Logix Designer, version 24.02.00 • RSLogix 5000, version 20.05.00 • VantagePoint® System Server, version 8.10.00 • ControlFLASH software, version 15.01.00 • ControlFLASH Plus software, version 2.00.00
	Additional software	Microsoft SQL Server Express 2012 SP4 Advanced (includes Management Studio)
Operator Workstation (OWS ISO)	Operating system	Microsoft Windows 10
	Rockwell Automation software	<ul style="list-style-type: none"> • FactoryTalk Services Platform <ul style="list-style-type: none"> – FactoryTalk Services platform software, version 6.11.00 – FactoryTalk Linx software, version 6.11.00 – RSLinx Classic software, version 4.11.00 – FactoryTalk Activation manager software, version 4.03.03 • FactoryTalk Diagnostics software, version 6.11.00 • FactoryTalk View Site Edition Client software, version 11.00.00 • FactoryTalk Alarm and Event software, version 6.11.00 • FactoryTalk AssetCentre Client, version 9.00.00 • Rockwell Automation Windows Firewall Configuration Utility, version 1.00.12

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 PROCES-RM001	Details the application rules for implementing a PlantPAx system.
PlantPAx Distributed Control System Selection Guide, publication PROCES-SG001	Provides procurement information for a PlantPAx system.
Product Certifications website, http://www.ab.com	Provides declarations of conformity, certificates, and other certification details.
FactoryTalk Historian SE Installation and Configuration Guide, publication HSE-IN025	Provides information on how to install, secure, configure, use, and troubleshoot FactoryTalk Historian SE.
PlantPAx Distributed Control System Infrastructure Configuration, publication PROCES-UM001	Provides screen facsimiles and step-by-step procedures to configure infrastructure components for your system requirements.
PlantPAx Distributed Control System Application Configuration, publication PROCES-UM003	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 https://rockwellautomation.custhelp.com/app/answers/detail/a_id/32715 You must have a TechConnect SM 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 https://rockwellautomation.custhelp.com/app/answers/detail/a_id/496679 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 https://rockwellautomation.custhelp.com/app/answers/detail/a_id/567658 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 https://rockwellautomation.custhelp.com/app/answers/detail/a_id/60585 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.

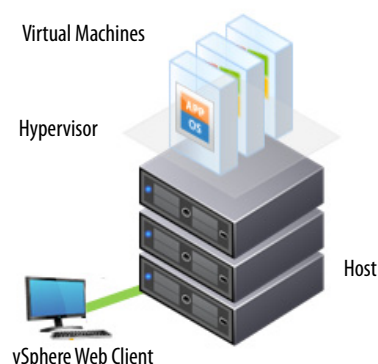
Notes:

Basics of Virtualization

Overview

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.

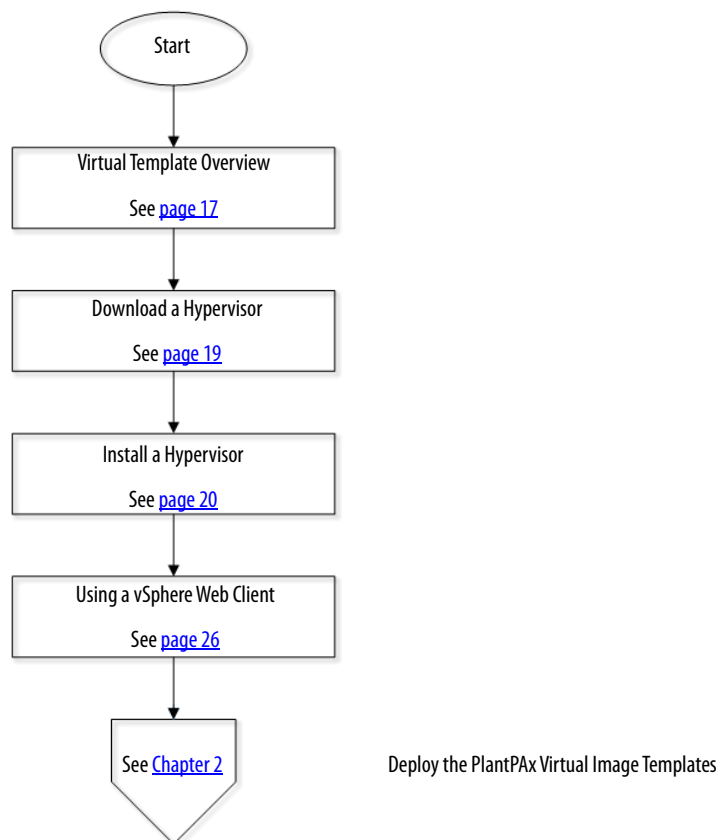
Some of the benefits of a virtualized PlantPAx system include the following:

- 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



Download a Hypervisor

IMPORTANT The following procedures apply only to virtual templates. Skip to [Chapter 6](#) if you are deploying a PASS-C or OWS ISO

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.

The image displays two side-by-side screenshots of the VMware Download Center login and registration interface. The left screenshot shows the login form, which includes a header with 'I Have an Account' and 'Create an Account' buttons. Below this is the text 'Register to download your Free Product'. The form contains two input fields: 'Email Address or Customer Number:' and 'Password :', both marked with a red asterisk. There is a link for 'Forgot your password?' and a checkbox for 'Remember me'. A blue 'Log in' button is at the bottom right. The right screenshot shows the registration form, also with the same header. It includes the text 'Register to download your Free Product'. The form has three input fields: 'First name *', 'Last name *', and 'Email address *'. Below these is a section for 'Are you a VMware Partner?' with radio buttons for 'Yes' and 'No' (selected). A blue 'Continue' button is at the bottom.

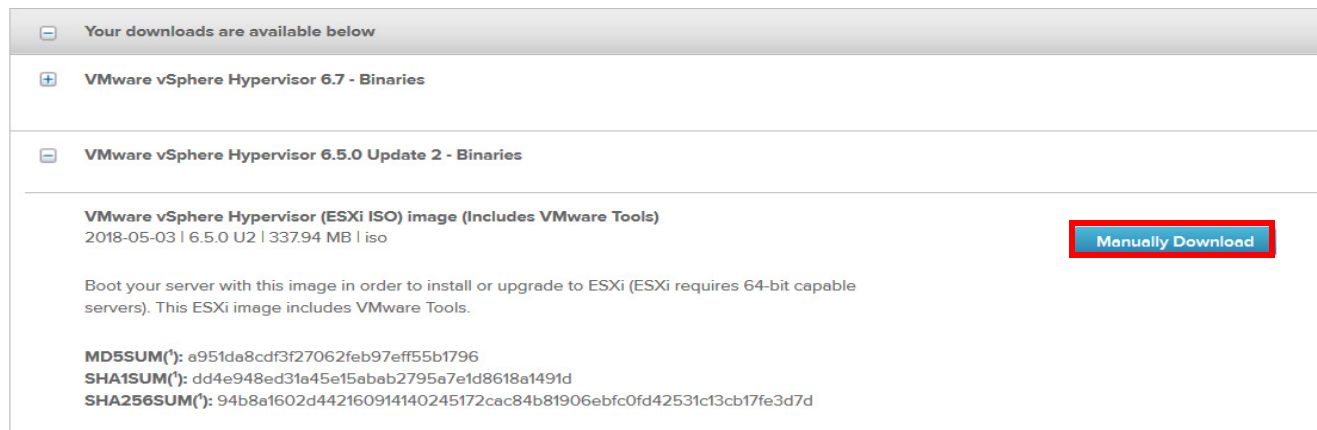
3. Do one of the following:
 - For an existing account, type an email address or customer number, a password, and click 'Log in'.
 - For a new account, Type your first name, last name, and Email Address. Click Continue and follow the prompts to register.

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

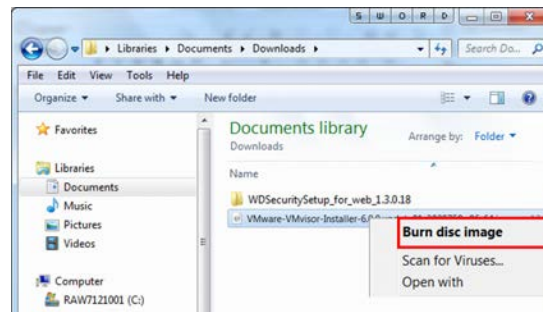
This section describes how to install the VMware vSphere hypervisor to a host server. The hypervisor, which is also known as ESXi, is used to manage the resources of your server to enable deployment of virtual images. To install the hypervisor on your server, we recommend that you copy the installer 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.

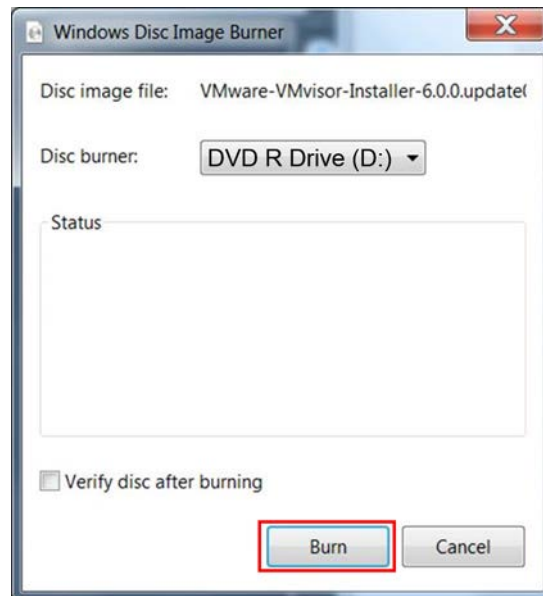
Copy Installer Image to DVD

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.

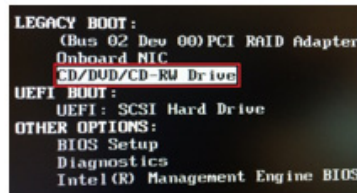
Complete these steps to copy the hypervisor installer image (.iso) to a USB drive.

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.

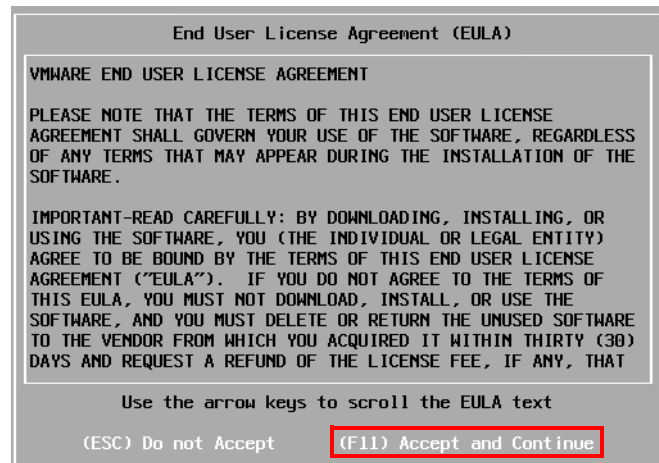
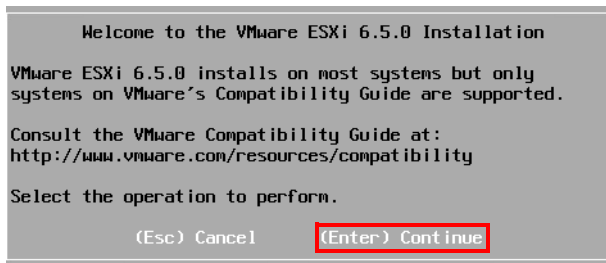
Use a DVD or USB Drive to Start Server

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).

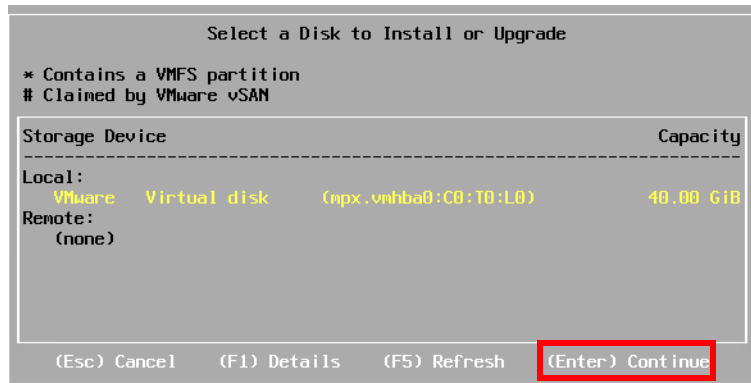
1. Insert the DVD or USB drive into the host physical server.
2. Choose the optional booting address during the server startup.



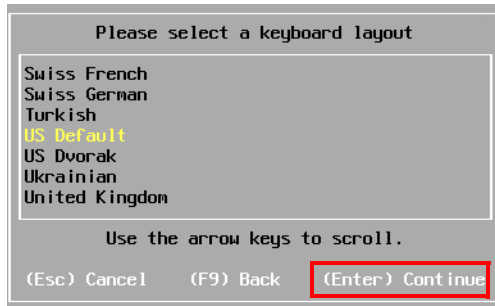
3. Press Enter to continue!
4. On the End User License Agreement (EULA) page, read the EULA, and press F11 to accept the terms of the EULA and continue.



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



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

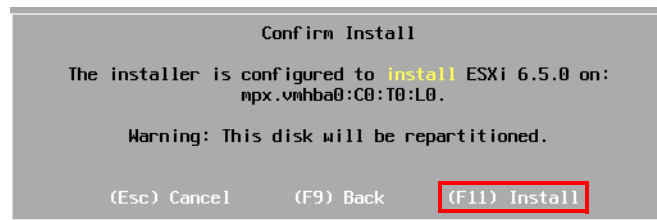


7. Type a root password, retype the password, and press Enter to continue.

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

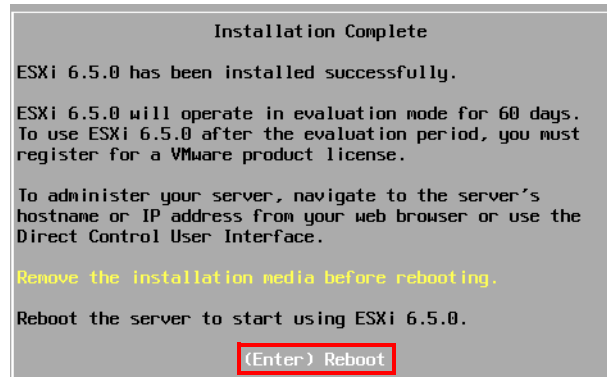
A message appears when the system scans for information. This scan can take a few minutes.

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.

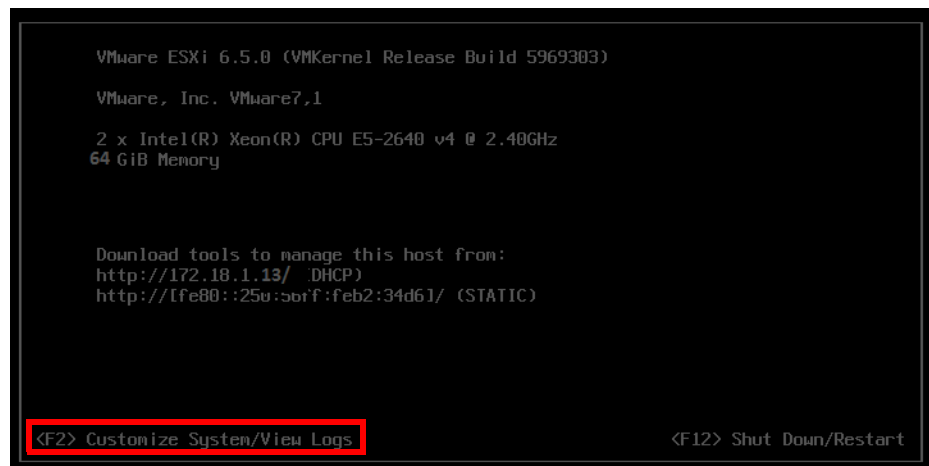
Assign an IP Address to the Host

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.

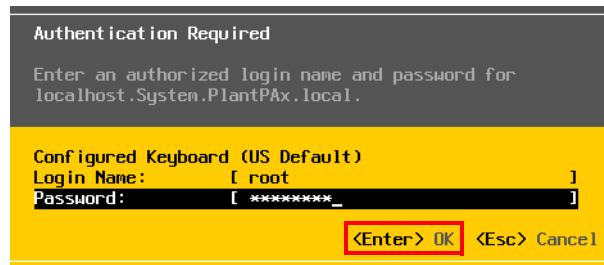
Complete these steps.

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



2. Type the Login name and password.

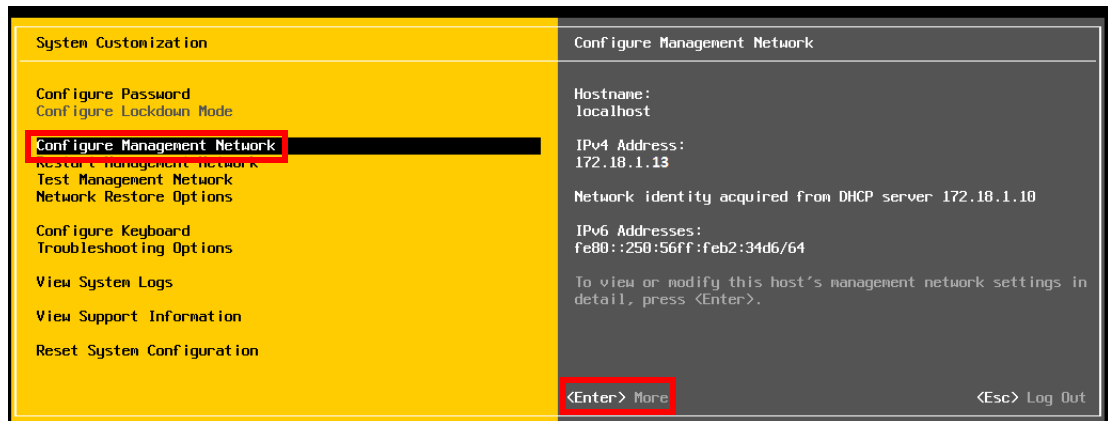
Use the Login name and password that you created in [step 7 on page 23](#).



3. Press Enter to OK.

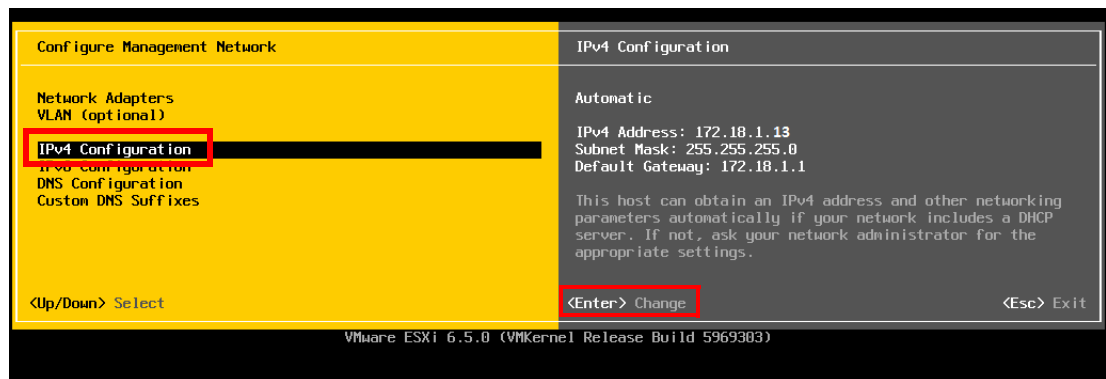
The System Customization page appears.

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.

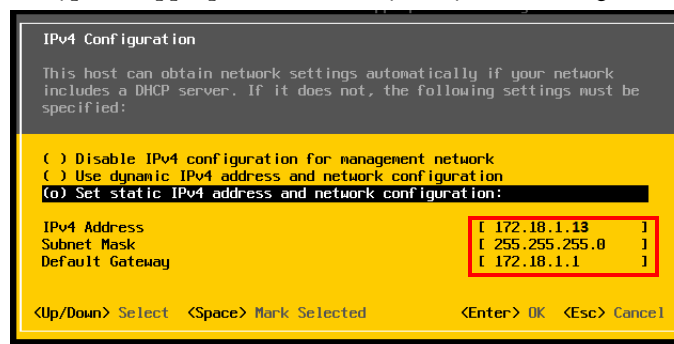


The IPv4 Configuration page appears.

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

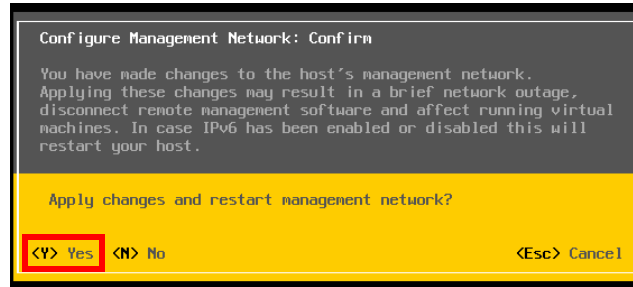
The presence of a small circle between the parentheses indicates that this option is selected.

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.

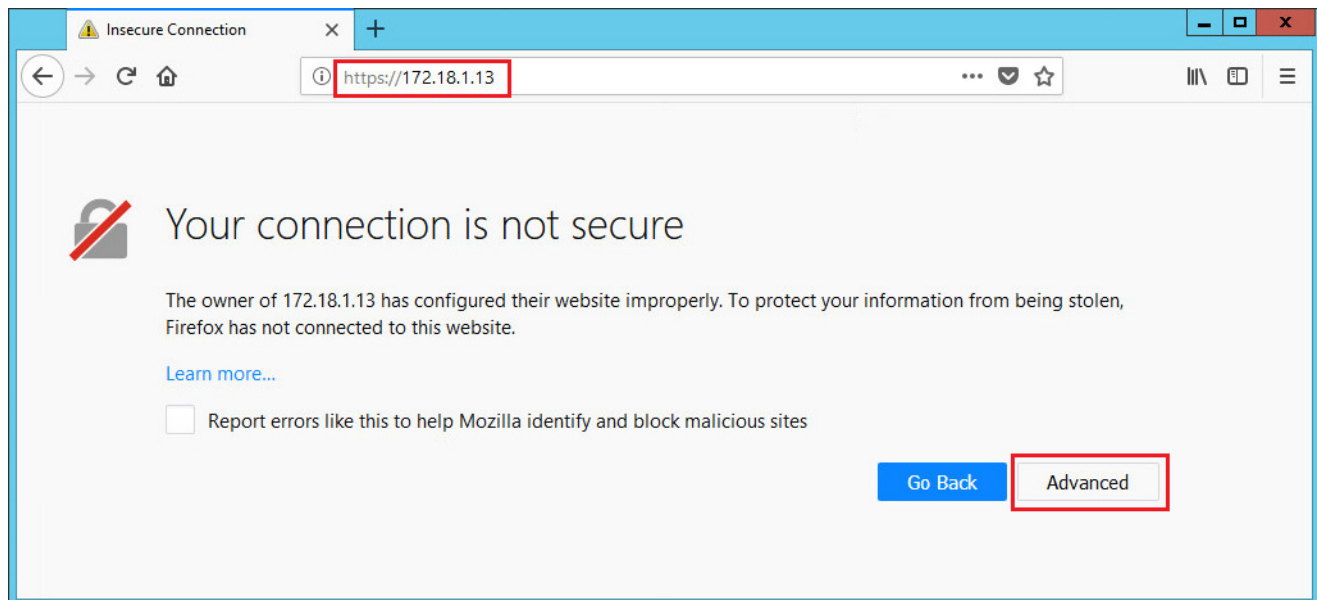
1. Open a web browser and type the IP address that you created for the hypervisor host.

Use the IP address that you entered for [step 7 on page 25](#).



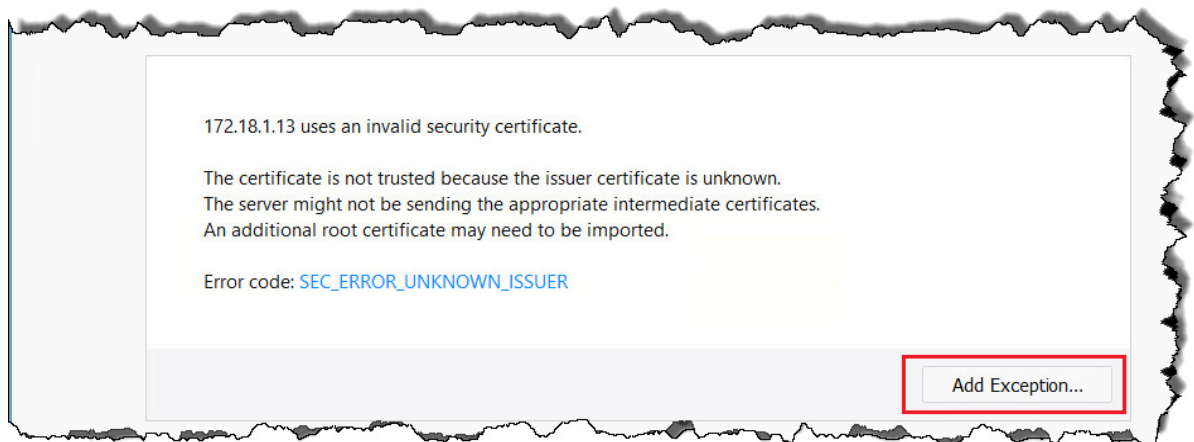
A security warning appears the first time that you connect to the ESXi host server.

2. Click Advanced.



The security warning expands with an invalid certificate message.

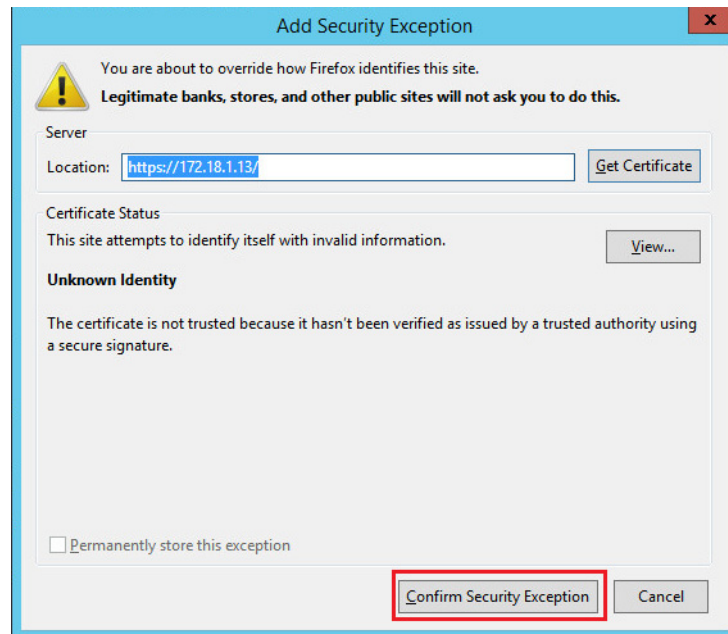
3. Click Add Exception.



The Add Security Exception dialog box appears.

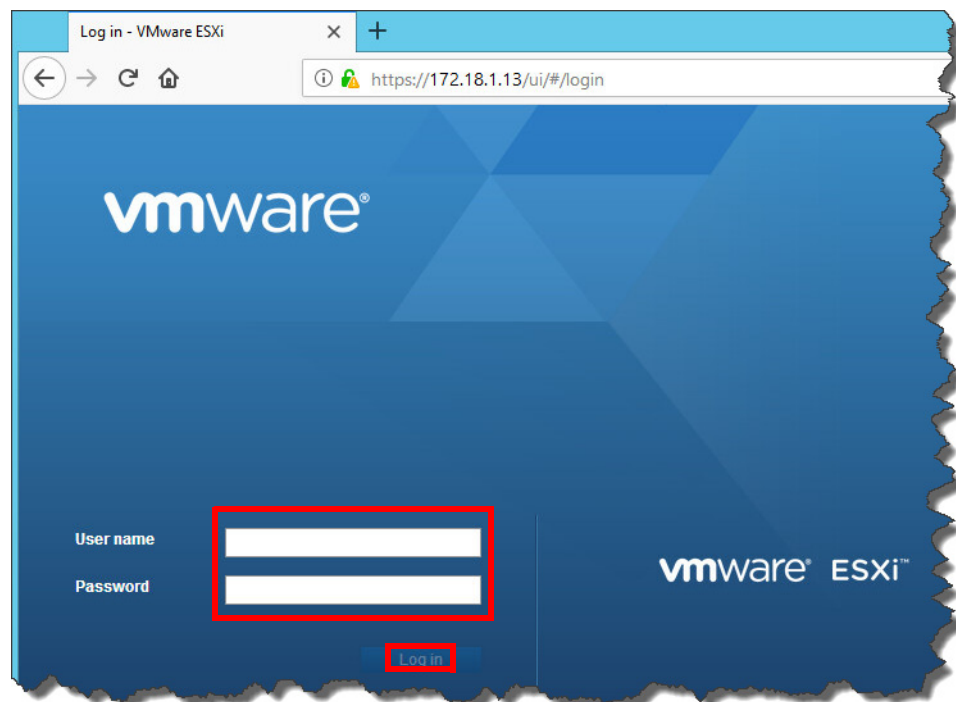
4. To ignore the warning, click Confirm Security Exception.

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



The VMware ESXi Host login dialog box appears.

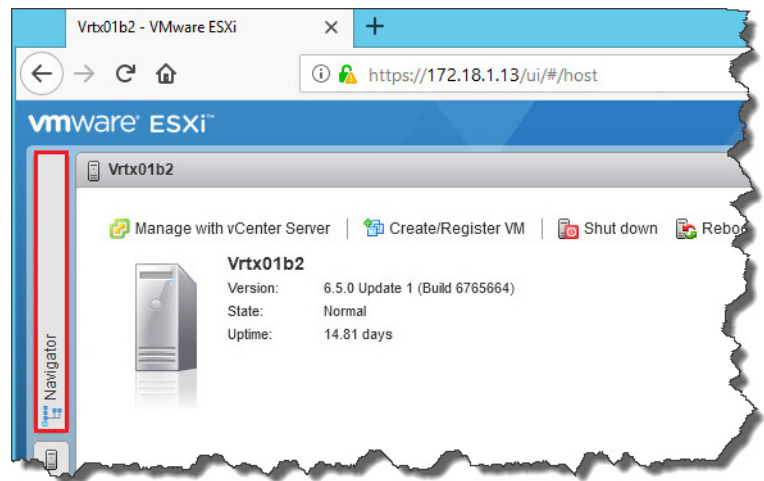
5. Type the user name and password that you created in [step 7 on page 23](#).



6. Click Log in.

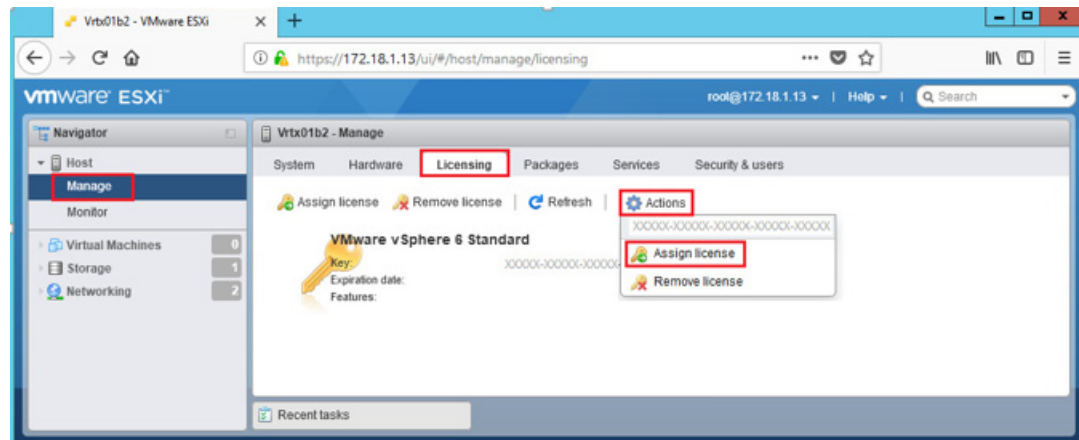
The ESXi Web Client window appears.

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



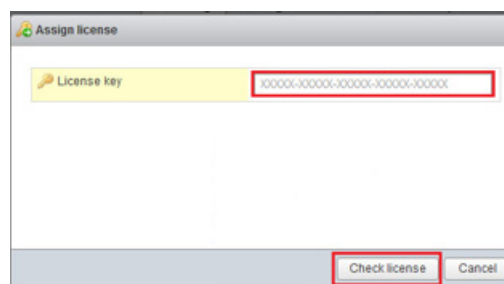
The Navigator Window opens in the left pane.

8. Click Manage.

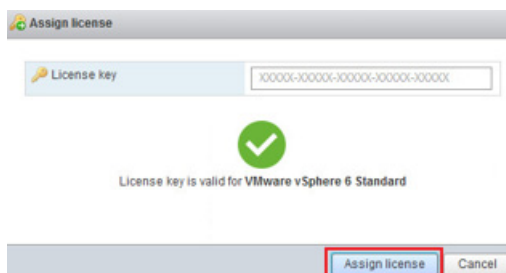


9. Click the Licensing tab, then choose Assign license under Actions.

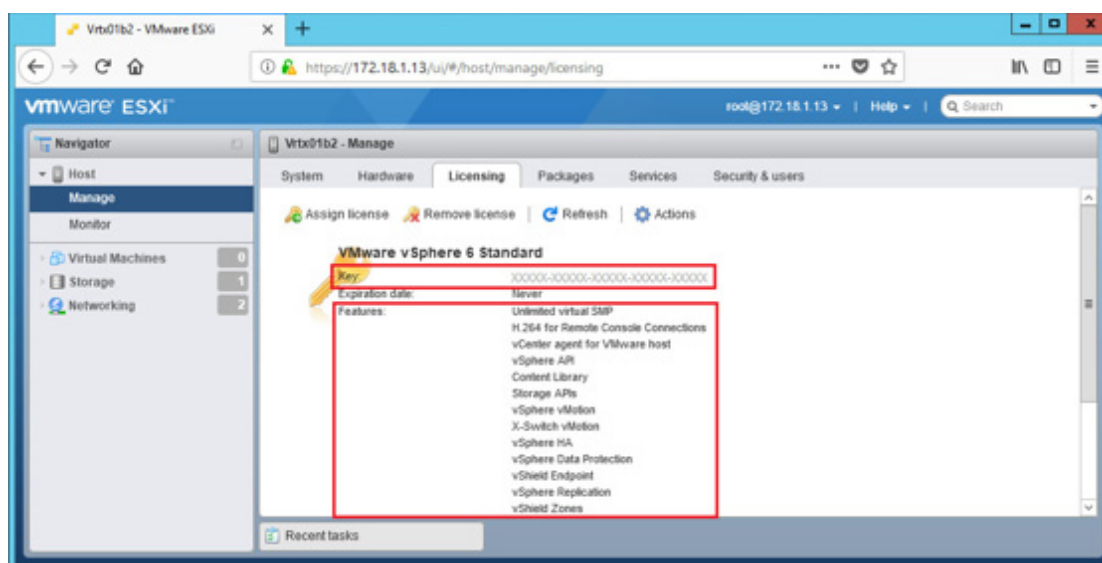
10. Type your license key and click Check license.



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.

Deploy the PlantPAx Virtual Image Templates

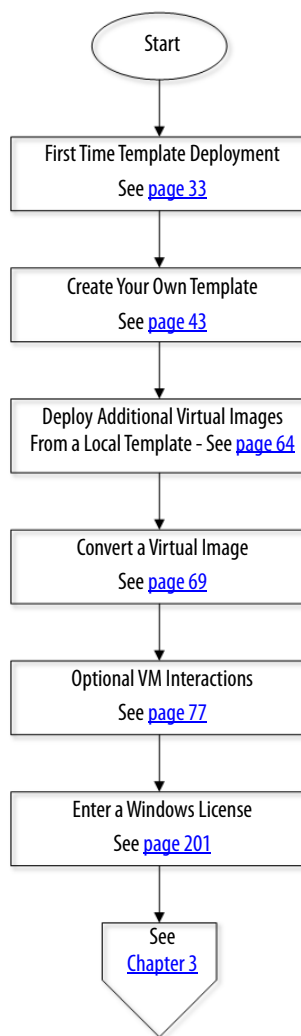
Distributed control systems are composed of several industry-accepted system elements. Virtual Image Templates are virtualized system elements, which contain the software and tools that comprise a specific system element. The templates are a framework to deploy the necessary system elements for a PlantPAx®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

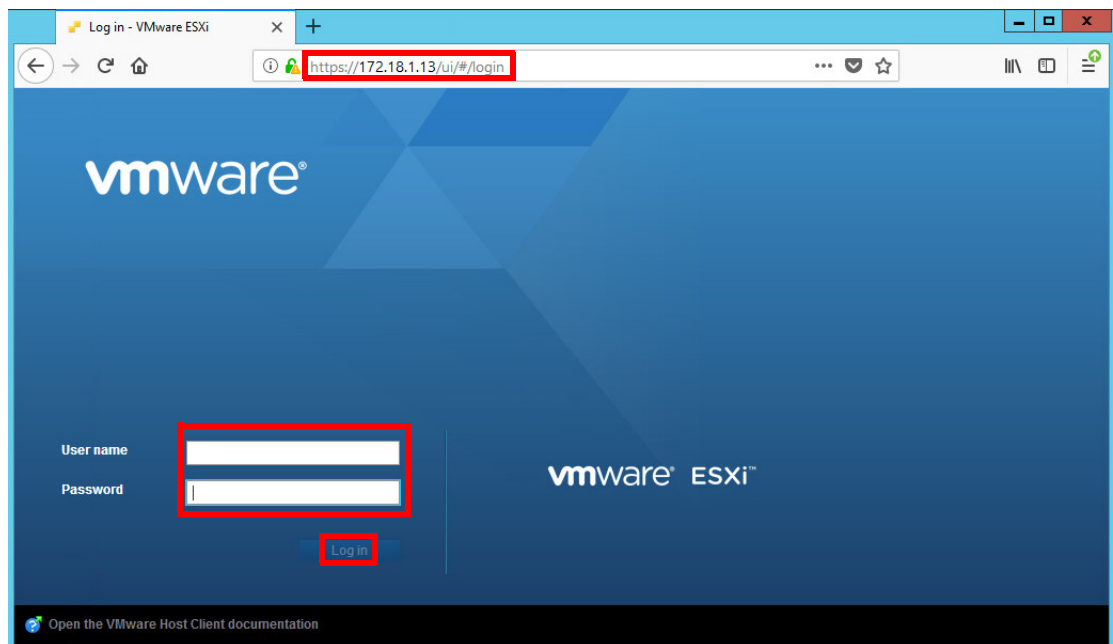
This procedure must be followed every time a virtual image template is deployed for the **first** time into your system.

IMPORTANT If you plan to deploy a domain controller, it is recommended that the domain controller is the first element that is deployed in the system. The PADC template facilitates future activities, such as creating your own virtual image templates and deploying virtual images to your system at your convenience.

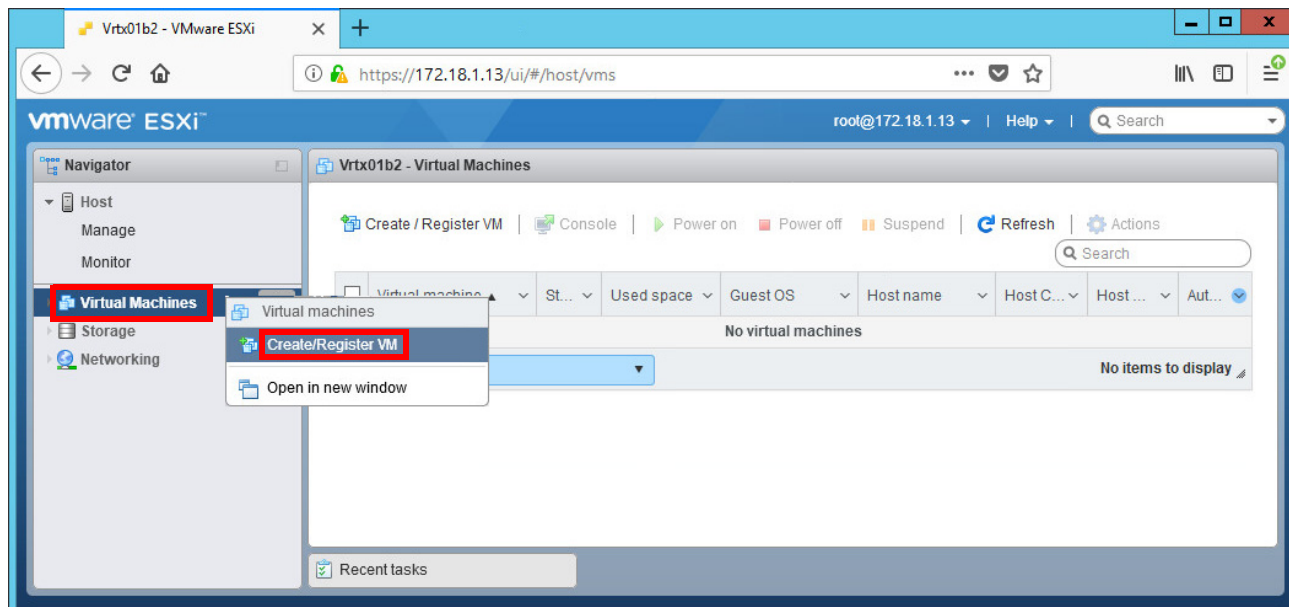
To deploy a virtual image template for the first time, complete these steps.

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.

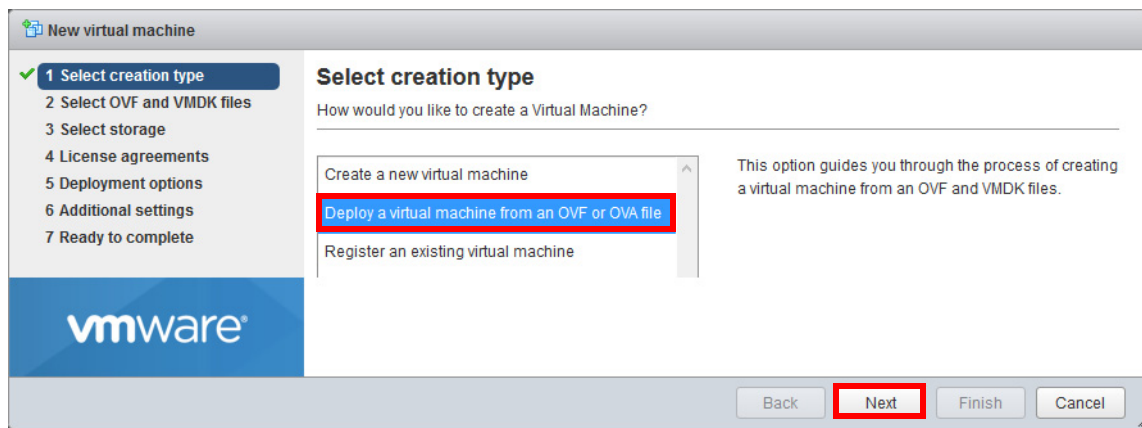
1. Open a web browser and type the IP address that you created for the host server.
2. Type the user name and password for the EXSi host, and click Log in.



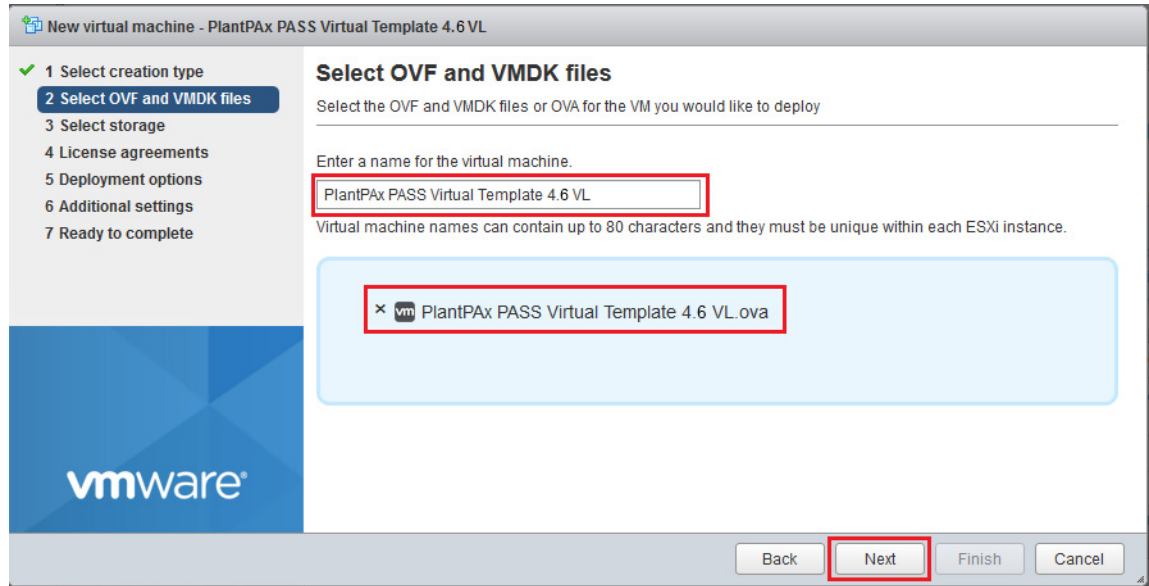
3. In the Navigator pane, click Virtual Machines and choose Create/Register VM.



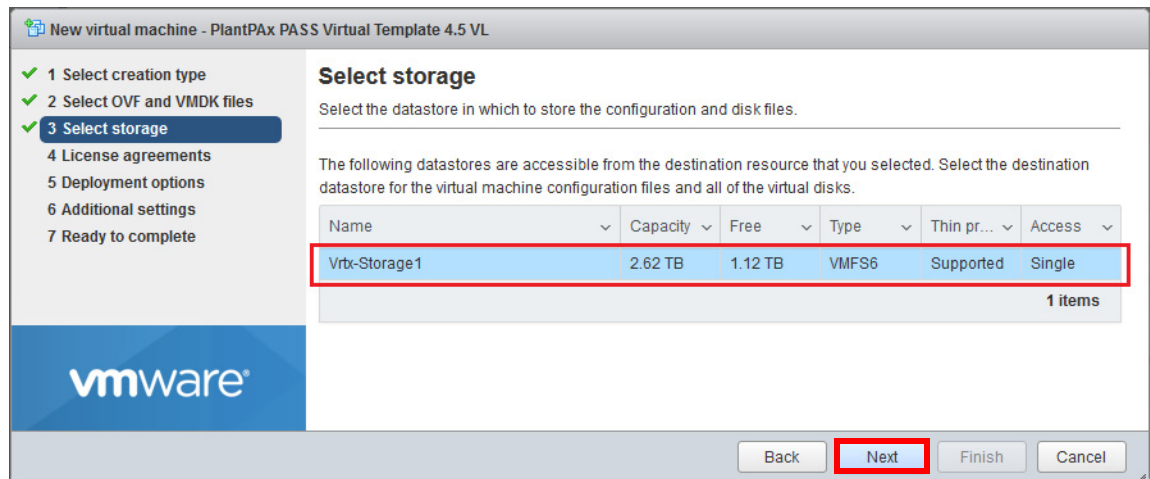
4. Click 'Deploy a virtual machine from an OVF or OVA file' and click Next.



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 'New virtual machine' wizard for 'PlantPAx PASS Virtual Template 4.6 VL'. The left sidebar shows the progress: 1 Select creation type, 2 Select OVF and VMDK files, 3 Select storage, 4 Deployment options (selected), and 5 Ready to complete. The main area is titled 'Deployment options' with the subtitle 'Select deployment options'. It contains three rows: 'Network mappings' with a dropdown menu showing 'VM Network' and 'VM Network' (highlighted with a red box), 'Disk provisioning' with radio buttons for 'Thin' (selected) and 'Thick' (highlighted with a red box), and 'Power on automatically' with an unchecked checkbox (highlighted with a red box). At the bottom right, there are four buttons: 'Back', 'Next' (highlighted with a red box), 'Finish', and 'Cancel'.

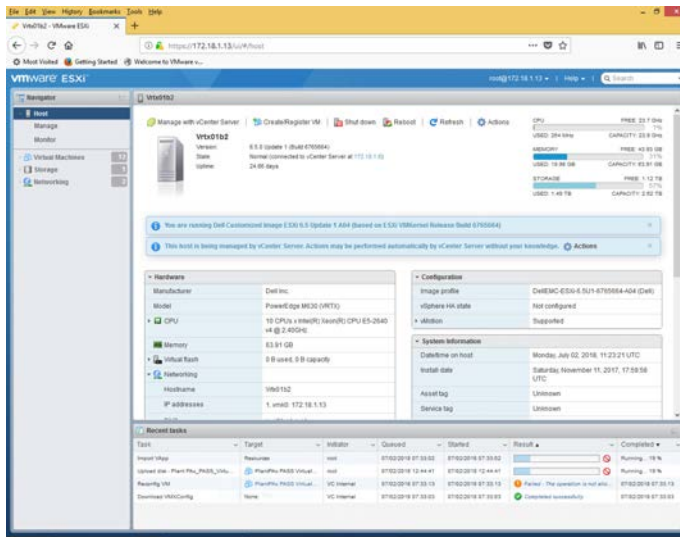
10. Click Finish.

The screenshot shows the 'New virtual machine' wizard for 'PlantPAx PASS Virtual Template 4.6 VL' at the 'Ready to complete' step. The left sidebar shows the progress: 1 Select creation type, 2 Select OVF and VMDK files, 3 Select storage, 4 Deployment options, and 5 Ready to complete (selected). The main area is titled 'Ready to complete' with the subtitle 'Review your settings selection before finishing the wizard'. It contains a table with the following data:

Product	PlantPAx PASS Virtual Template 4.6 VL
VM Name	PlantPAx PASS Virtual Template 4.6 VL
Disks	PlantPAx_PASS_Virtual_Template_4.6_VL-disk1.vmdk
Datastore	Vrtx-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	<div></div>	Running... 7 %
Upload disk - Plant Pax_PASS_Virtu...	PlantPax PASS Virtual...	root	07/02/2018 12:44:41	07/02/2018 12:44:41	<div></div>	Running... 7 %

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

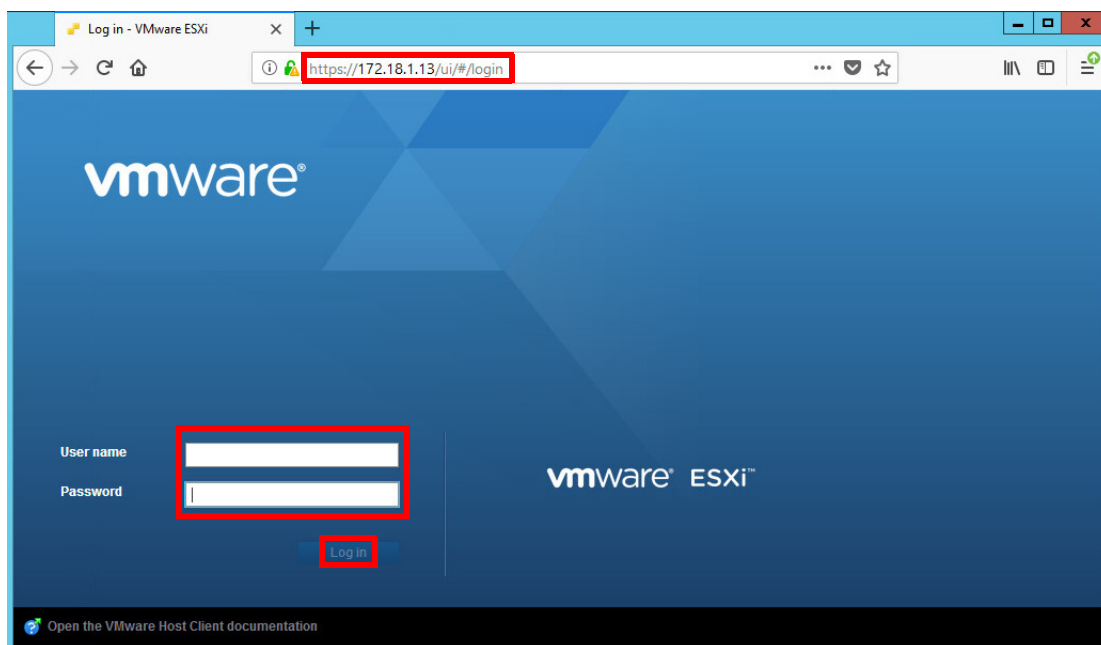
Target	Task	Initiator	Queued	Started	Result	Completed
PlantPax PASS Virtual Te...	Upload disk - Plant Pax_PASS_Virtu...	root	07/02/2018 12:44:41	07/02/2018 12:44:41	Completed successfully	07/02/2018 12:50:27
None	Download VMXConfig	VC Internal	07/02/2018 07:39:13	07/02/2018 07:39:13	Completed successfully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

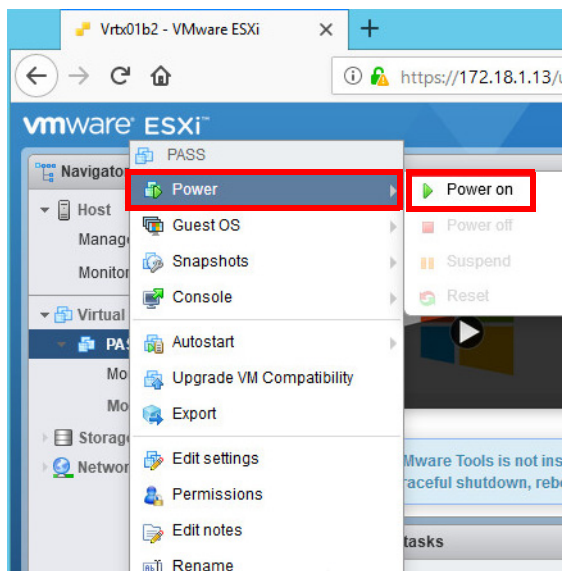
To power up a virtual image template for the first time, complete these steps.

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 [Workstation Common Configuration on page 151](#)
- If you are deploying a virtual server, see [Configure Microsoft Windows Server on page 88](#)

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.

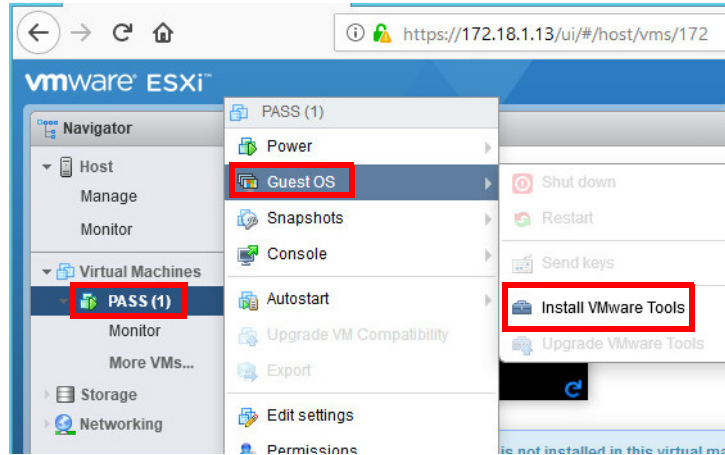
Complete these steps to install or upgrade VMware tools on the VMware Virtual Machine.

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

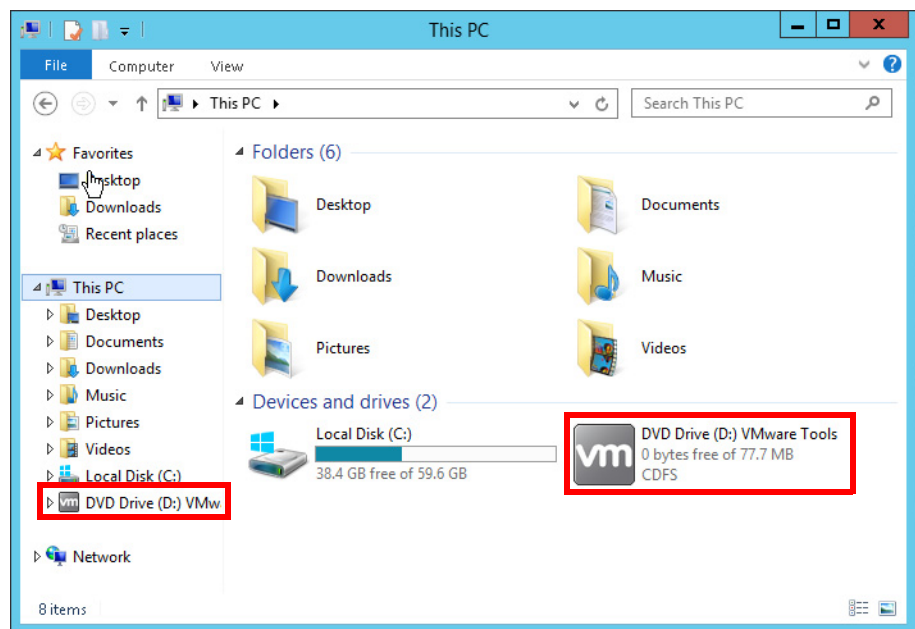
1. Open a web browser and type the IP address that you created for the host server.
2. Type the user name and password for the local host, and click Log in.
The VMware ESXi window appears.
3. From the Navigator in the left pane, right-click the virtual machine in which you want to update or install VMware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

- Click Guest OS and choose Install VMware Tools.

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

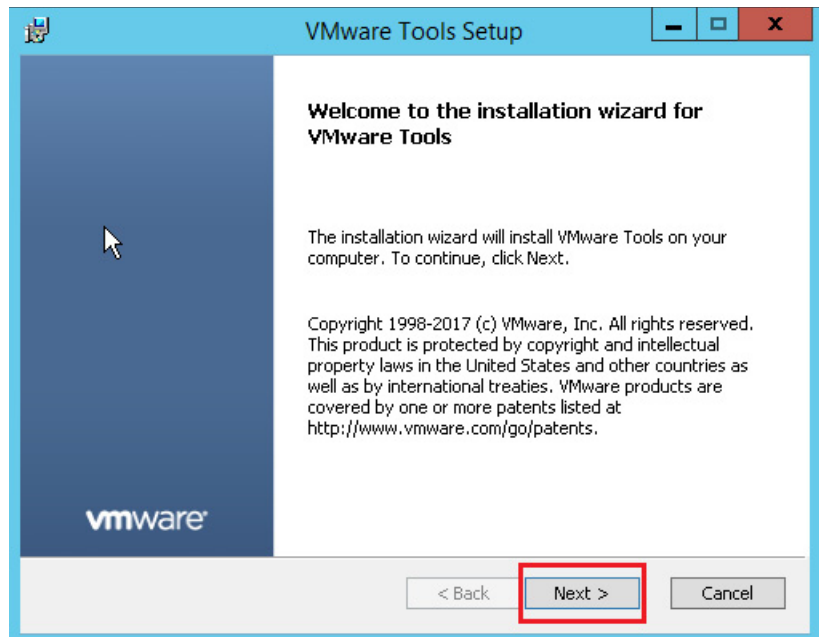


- Open Windows Explorer on the virtual machine image that you want to install VMware Tools.
- Click 'This PC' to view the tools to install on Drive D.

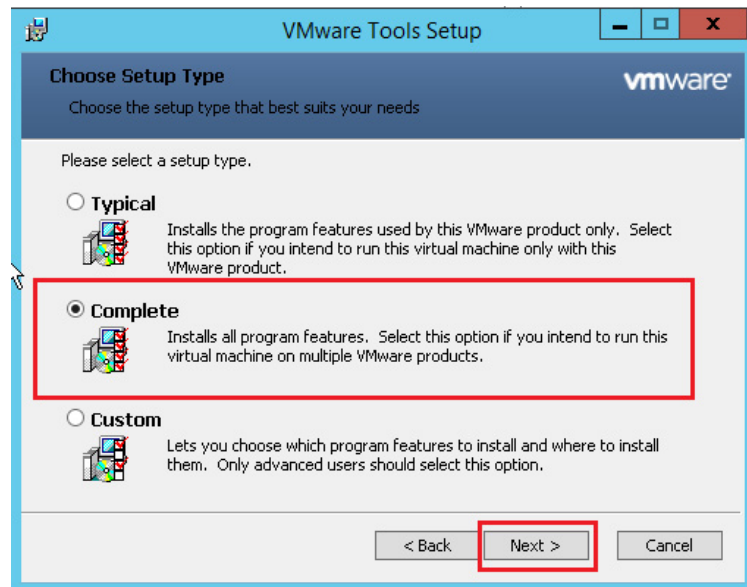


- Double-click the DVD drive to initiate the install.

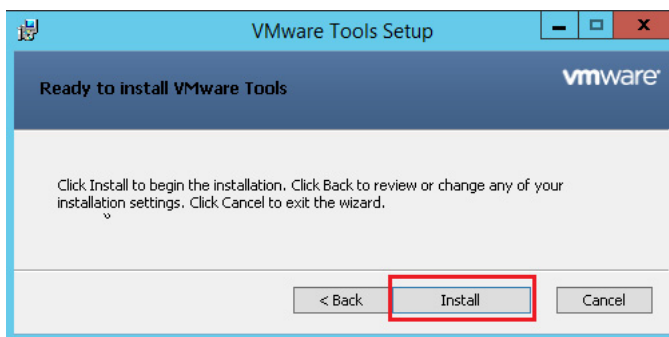
- When the VMware Tools Setup Welcome window appears, click Next to continue.



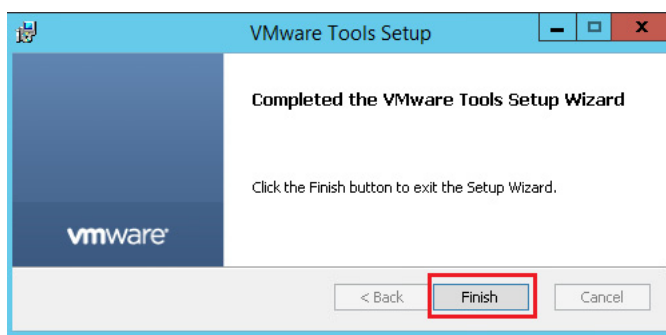
- On the setup screen, click Complete and then click Next to continue.



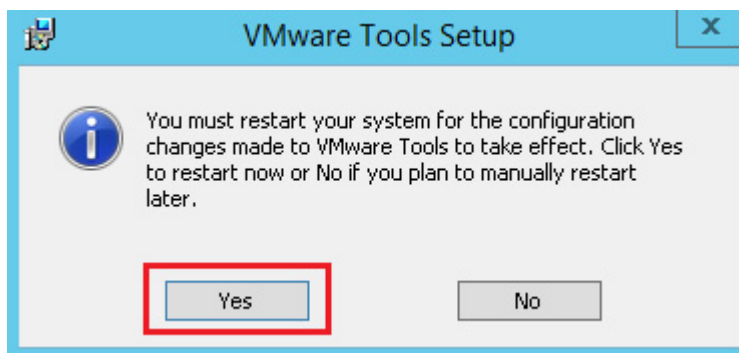
10. To start the installation process, click Install.



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.

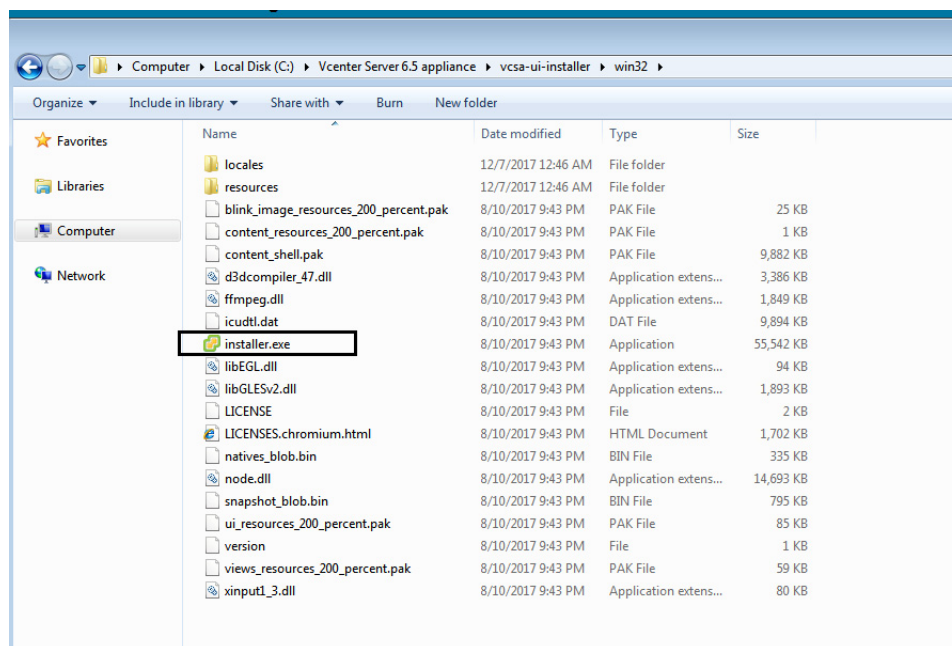
On the workstation you use to manage your virtual appliances (templates and machines), complete these steps.

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

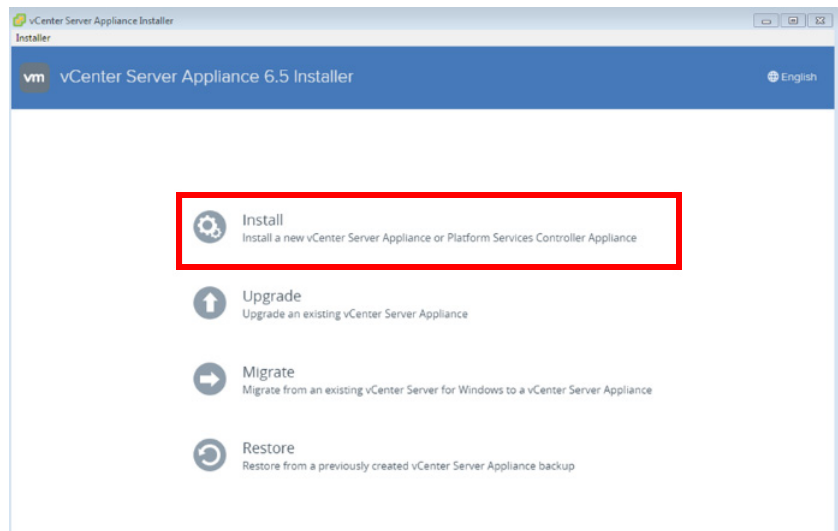
TIP

The steps to download the vCenter server software are similar to the steps used to download Hypervisor, see [Download a Hypervisor on page 19](#).

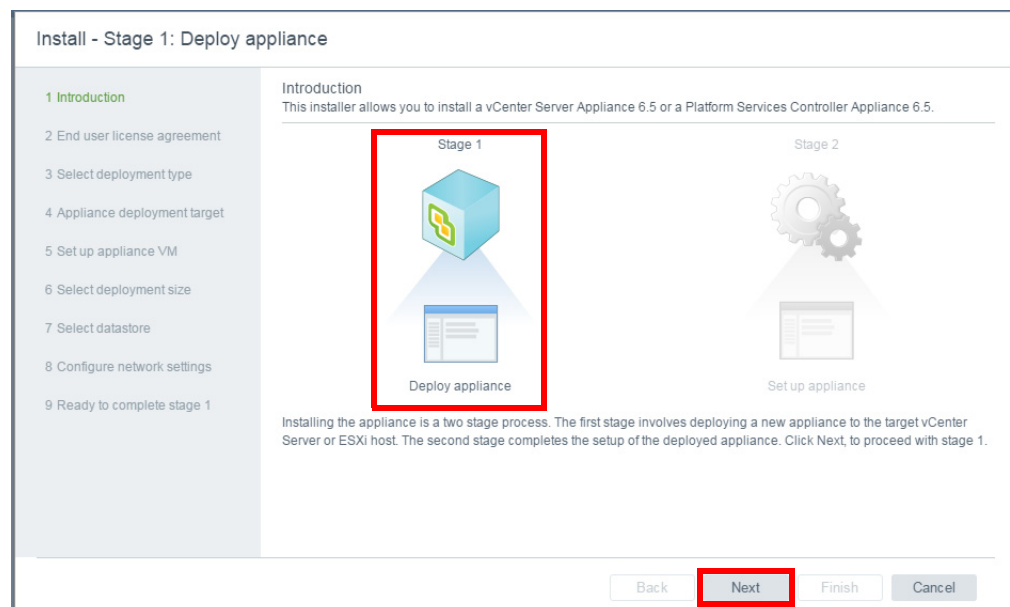
2. Start the vCenter Server Appliance 6.5 installer. Choose vCenter Server 6.5 appliance>vcsa-ui-installer>win32>installer.exe.



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

172.18.1.12

HTTPS port

443

User name

root

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: VRTXvCenter ⓘ

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: Tiny ⓘ

Storage size: Default ⓘ

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 that 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

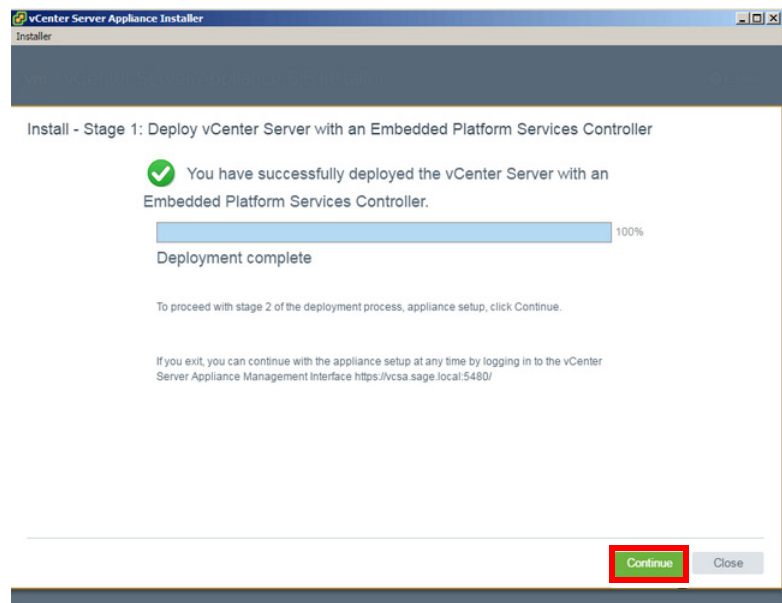
Back

Next

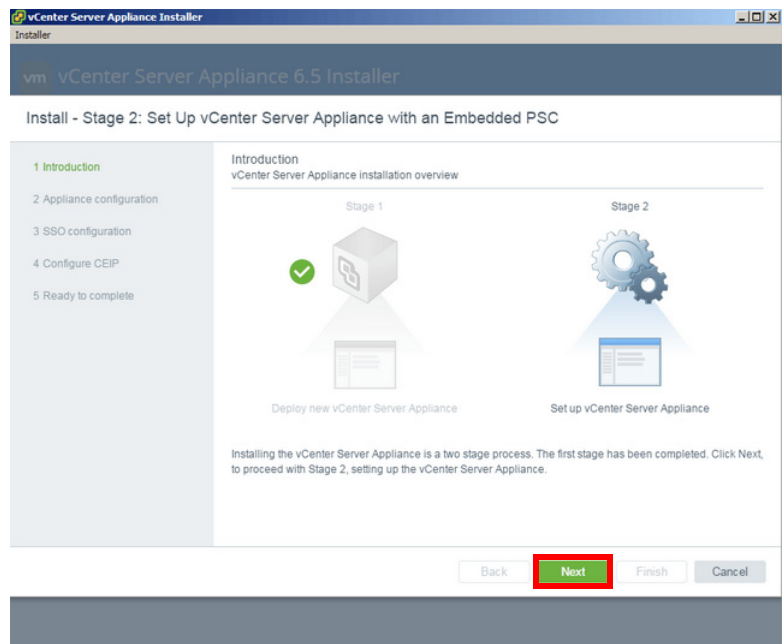
Finish

Cancel

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: *****

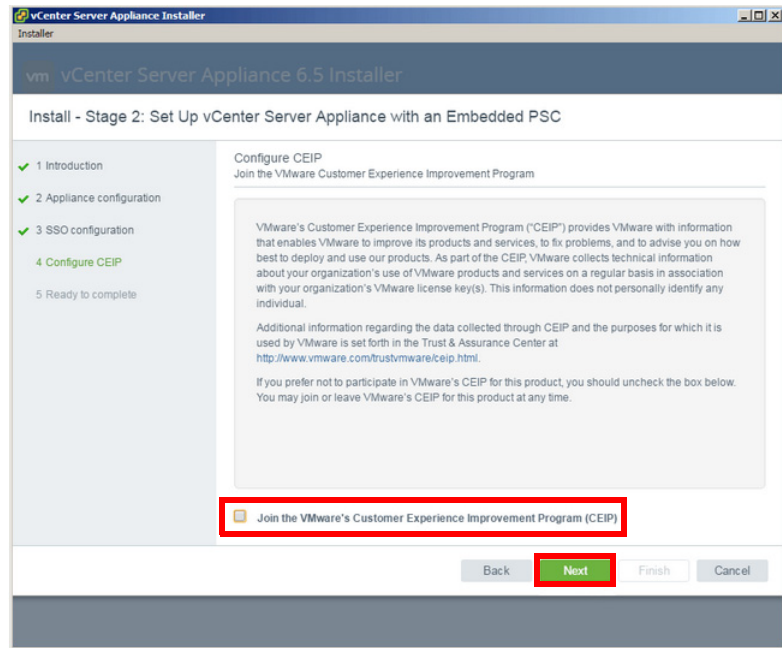
Confirm password: *****

Site name:

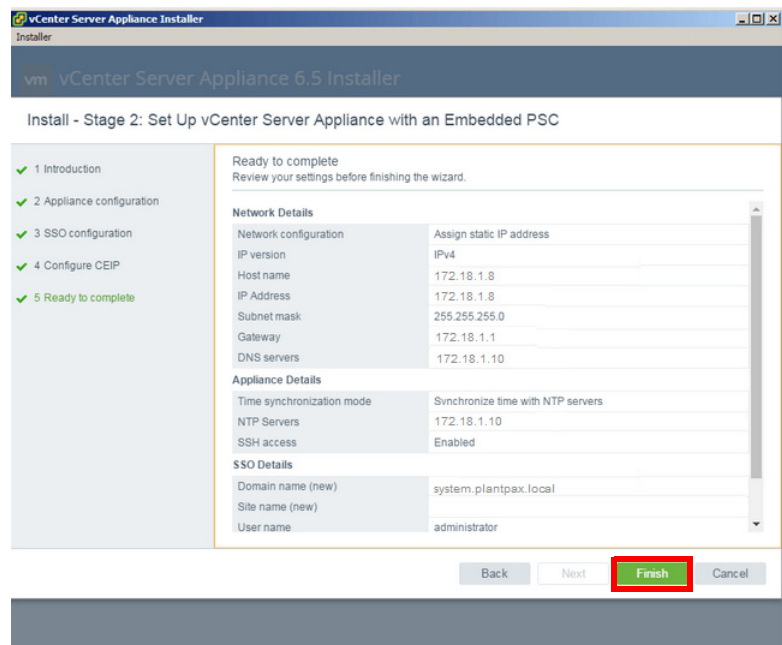
In vCenter 6.5, joining a vCenter with embedded PSC to an external PSC is not supported. For more information on recommended vCenter and PSC topologies, refer to the vCenter Server documentation.

Back Next Finish Cancel

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



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



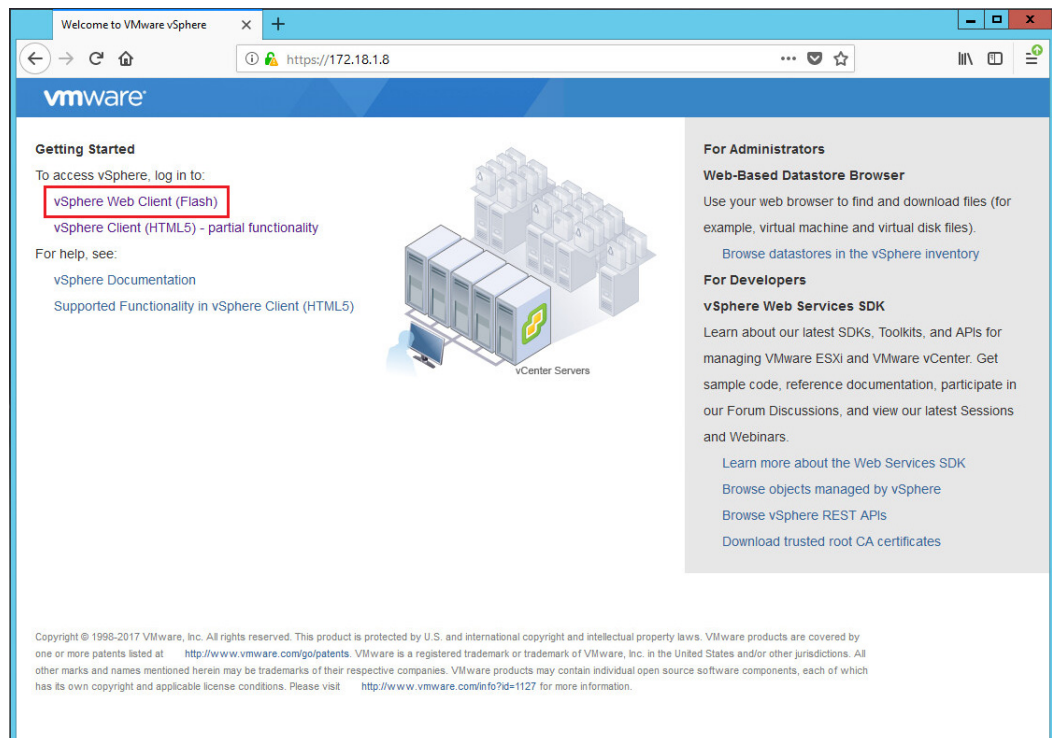
Create a Template from an Existing Virtual Image

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.

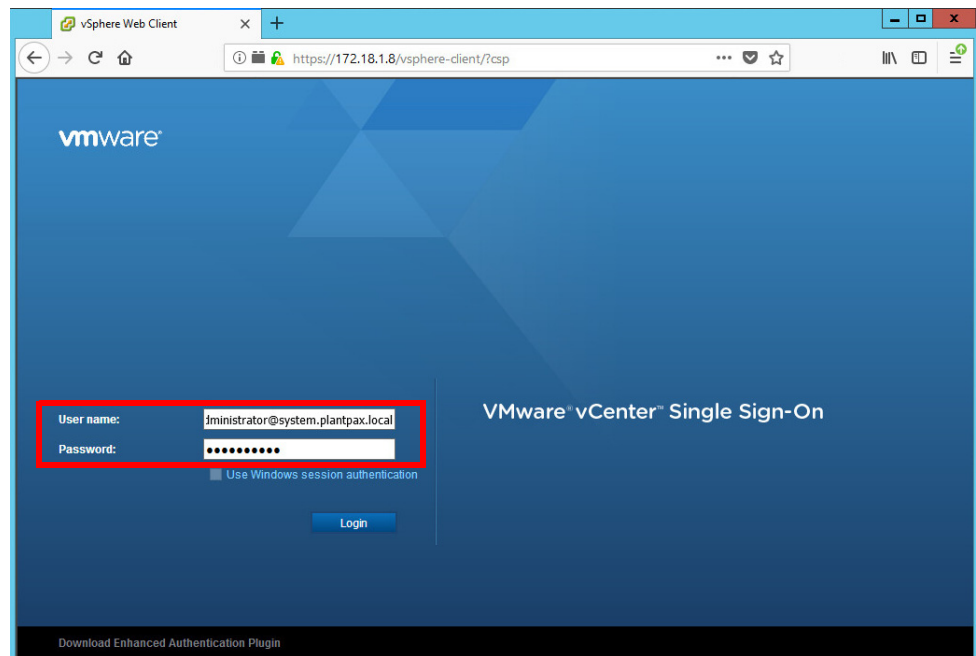
1. In a Web Browser, enter the IP address of the computer where your vCenter Server is installed.
2. Click vSphere Web Client (Flash).



3. Enter the Username and Password. Use the User name and password that you created for the vCenter Server in [step 18 on page 52](#). Click Login.

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

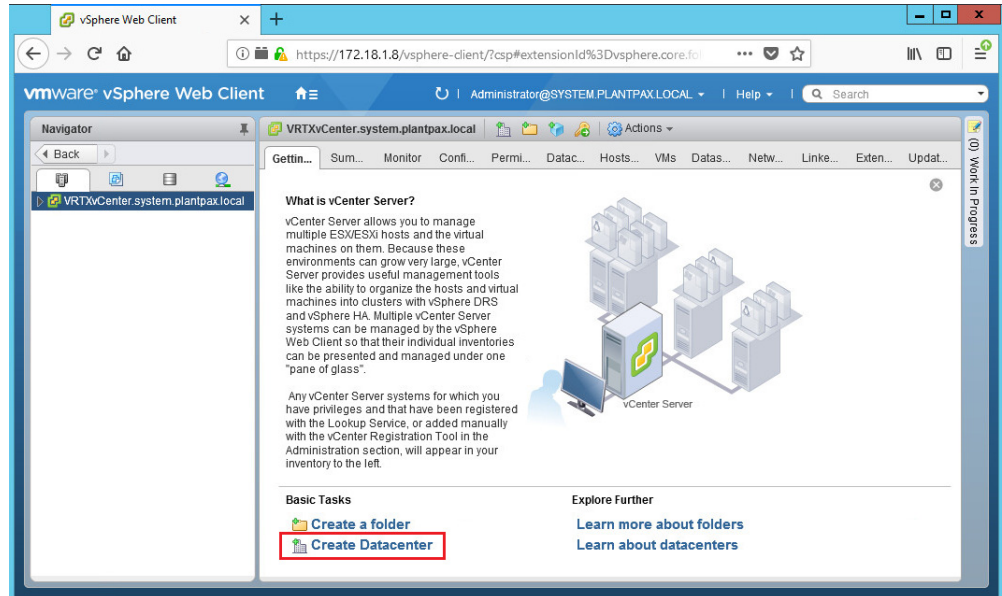
In our example, the user name is 'administrator@system.plantpax.local'.



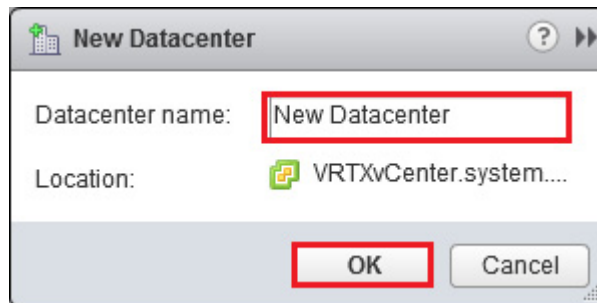
Create a Datacenter

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'.



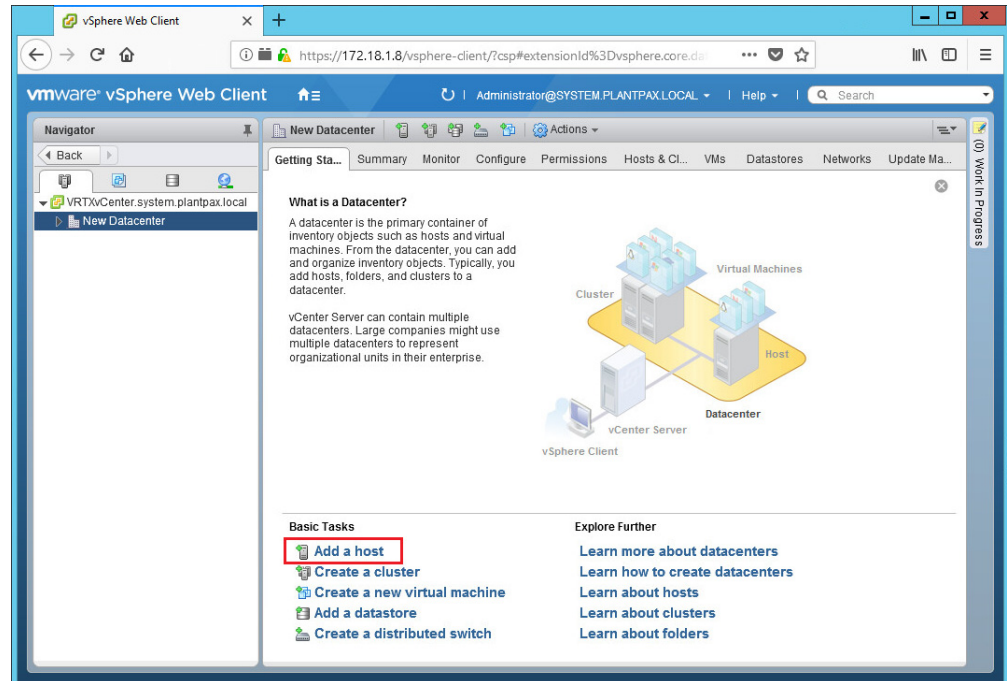
2. When prompted, type a name for the new datacenter ('New Datacenter' in our example) and click OK.



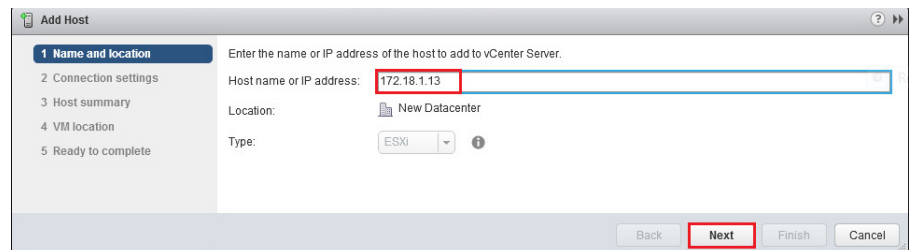
Add a Host

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

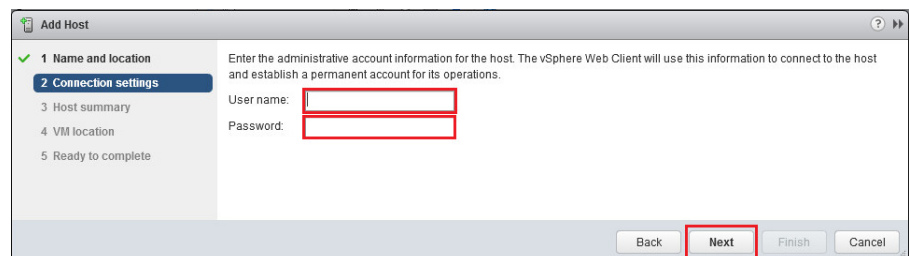
1. The New Datacenter is added under the vCenter Server. Highlight the New Datacenter and click 'Add a Host' to add a host server.



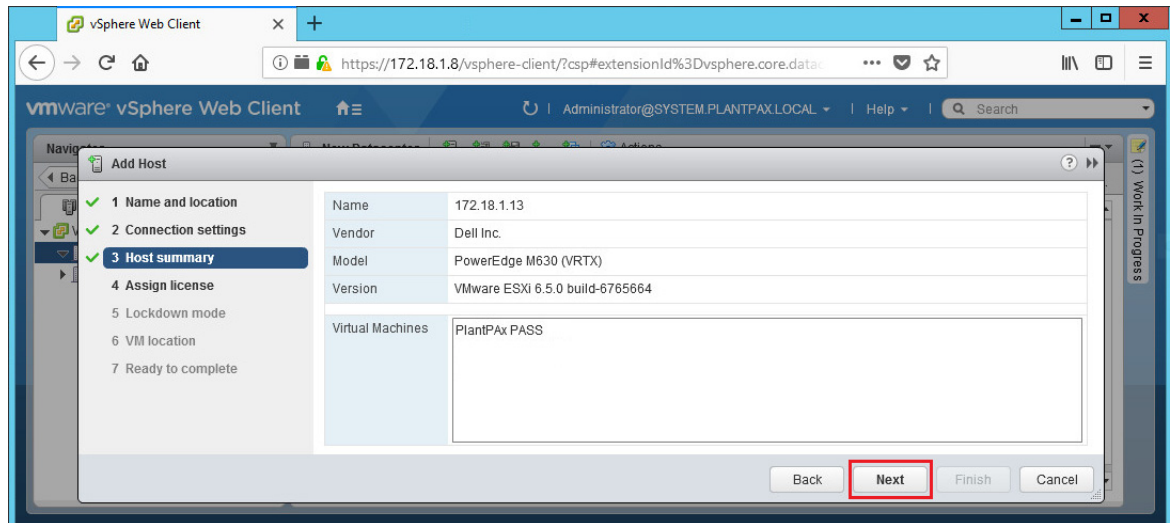
2. The 'Add Host' window appears. In the Name and location step, type the host IP address, and click 'Next'. See [step 7 on page 47](#).



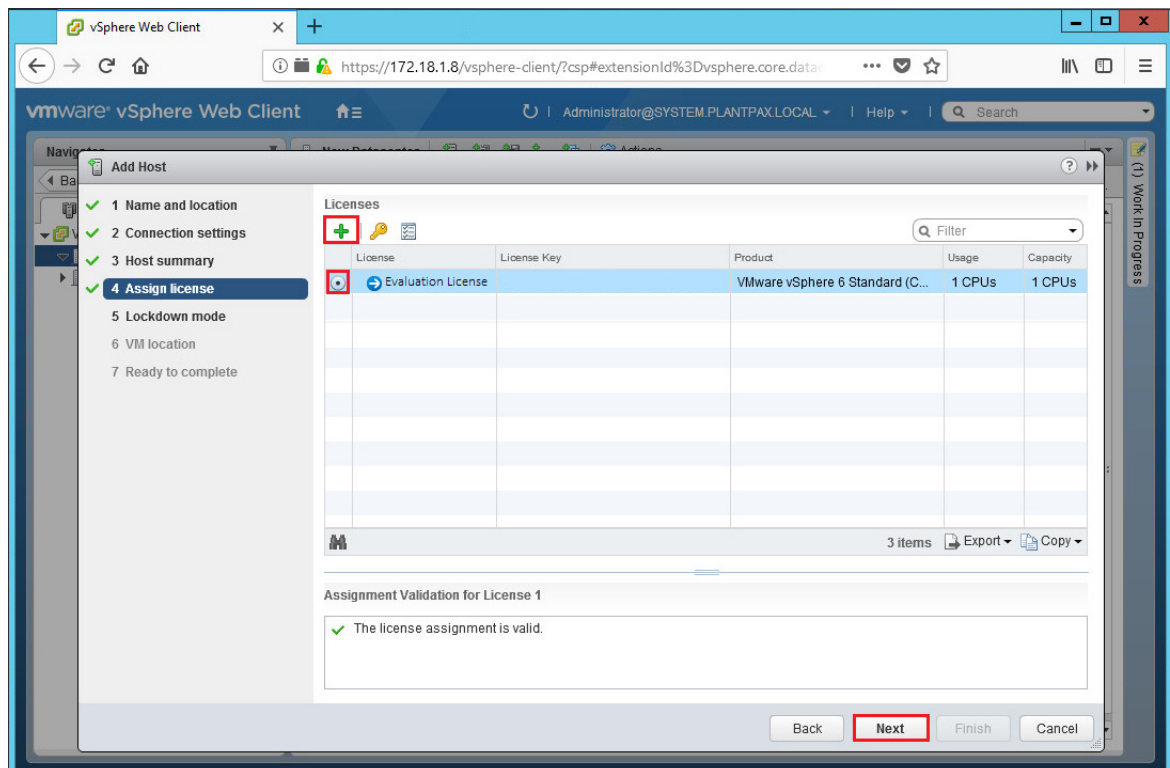
3. In the 'Connection Settings' step, type the User name and Password. The Username and Password were created in [step 7 on page 47](#). Click 'Next'.



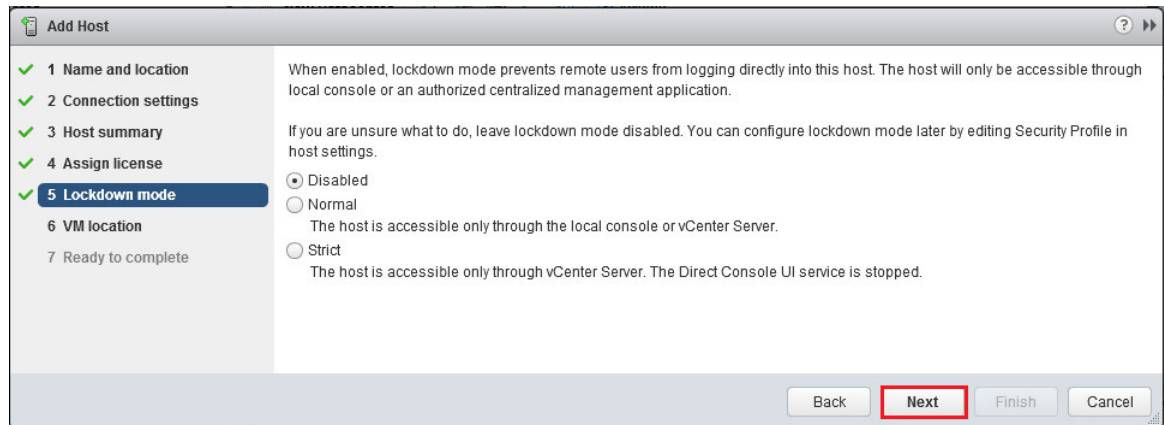
4. Verify that the settings are correct on the Host summary dialog box and then click Next.



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.

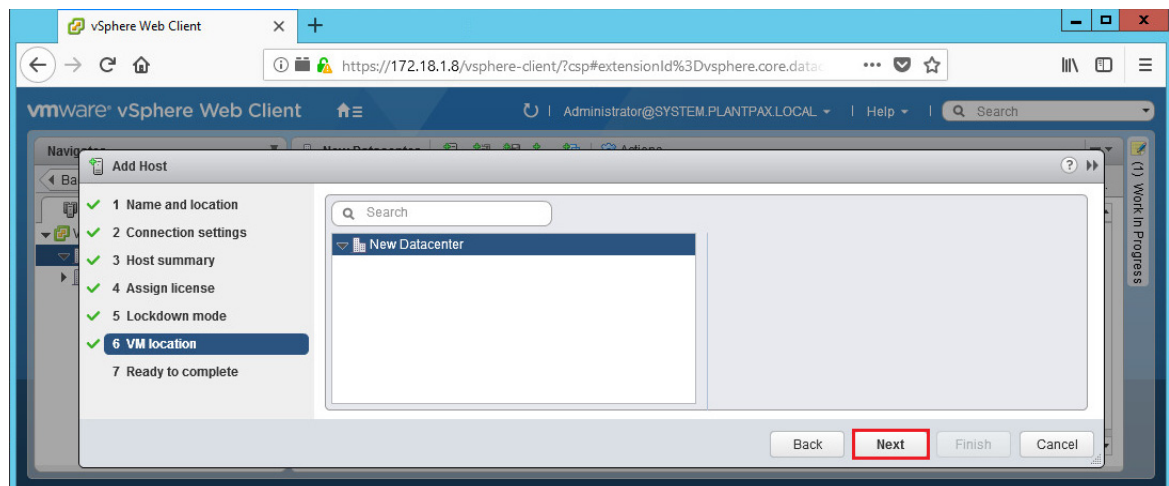


7. In the VM location step, select the Datacenter that you created, and click Next.

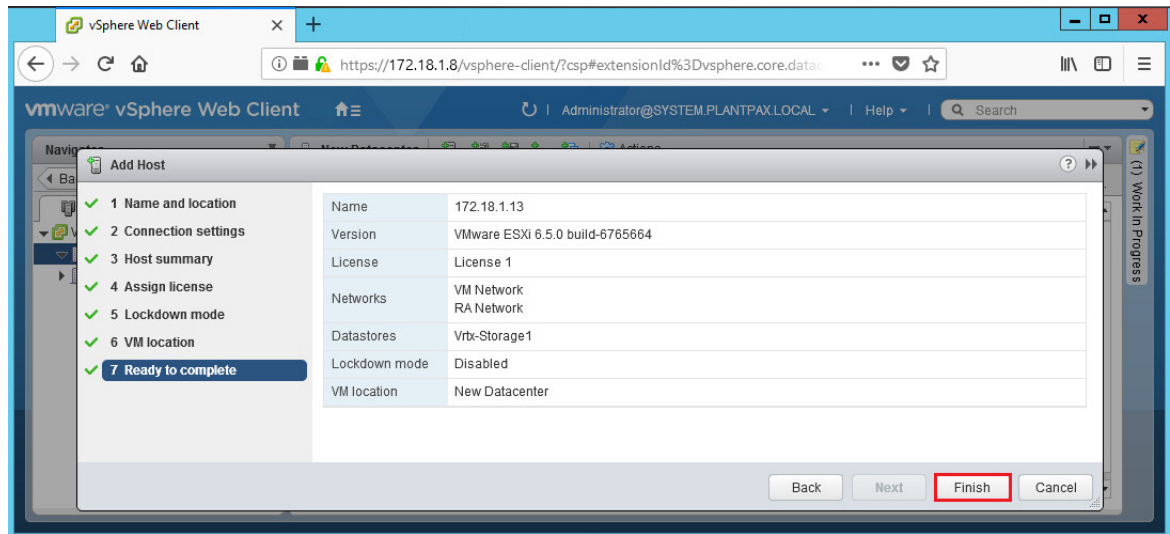
IMPORTANT

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.

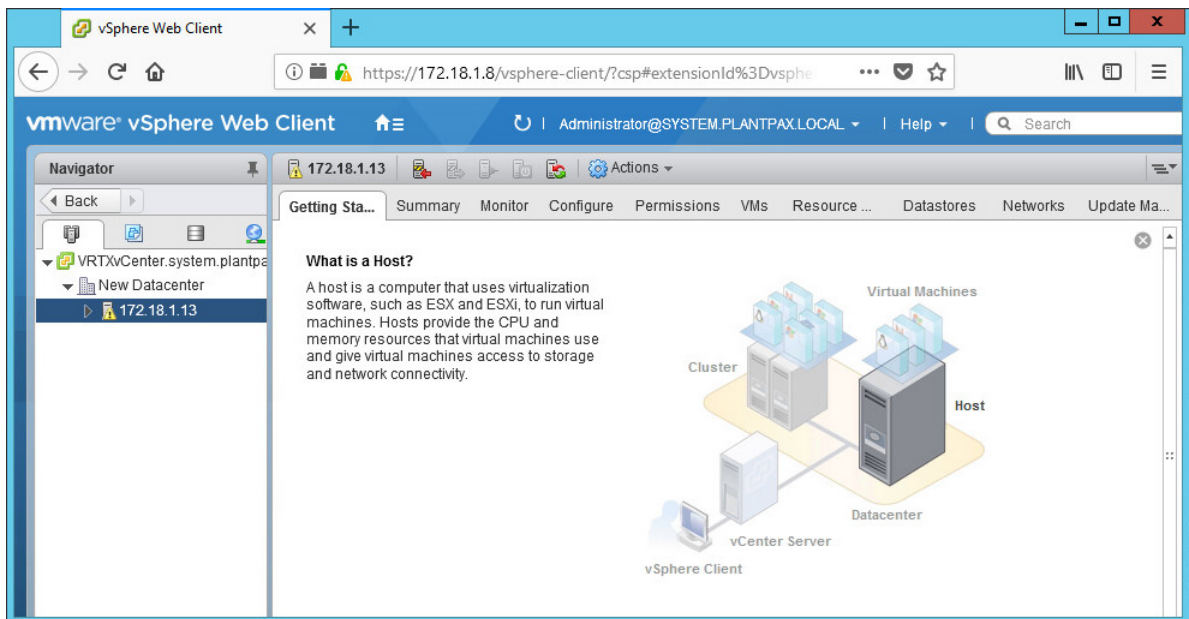
These organizational features help improve your understanding of your infrastructure and help with the management of servers.



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

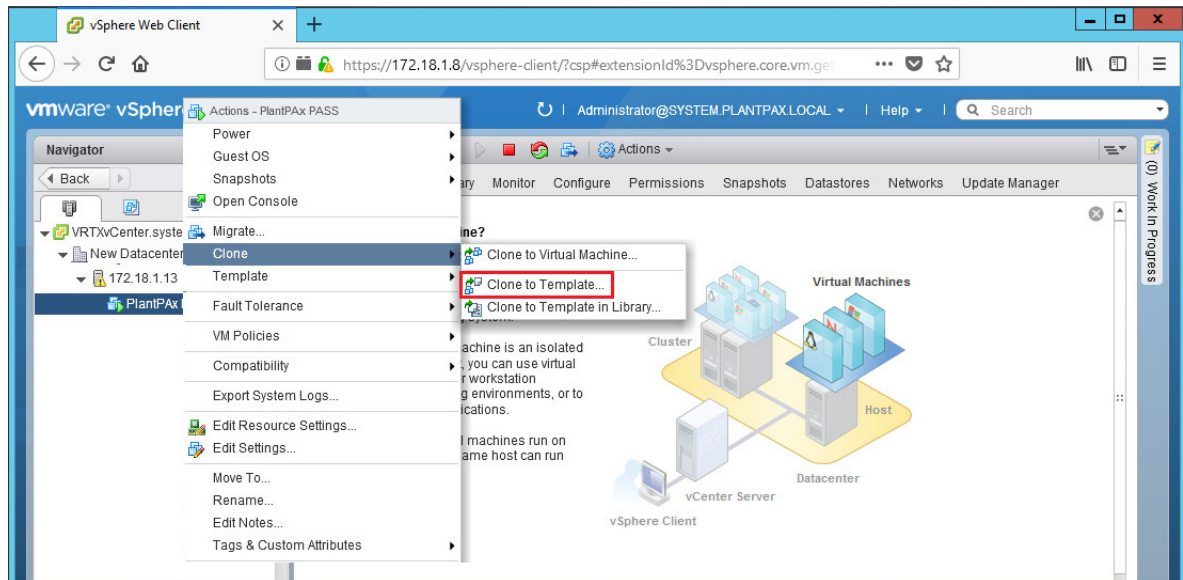


9. The Host is added under the datacenter. The Navigator section of the vSphere Web Client window now includes the vCenter server (VRTXvCenter), the Datacenter (New Datacenter), and the Host (172.18.1.13) as shown in the following image.

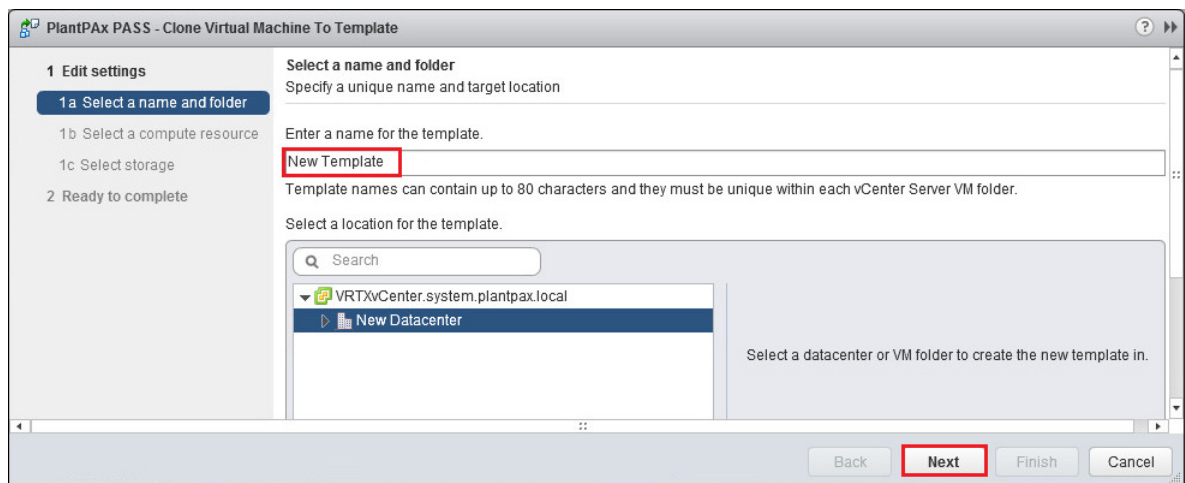


Clone the Image to Template

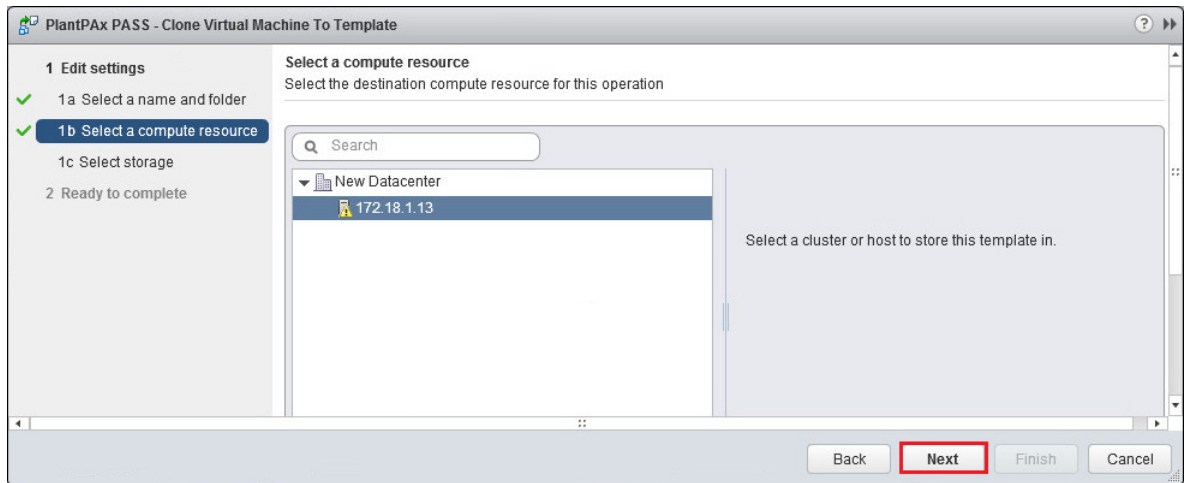
1. Right-click the virtual image that you want to clone and choose Clone>Clone to Template.



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.

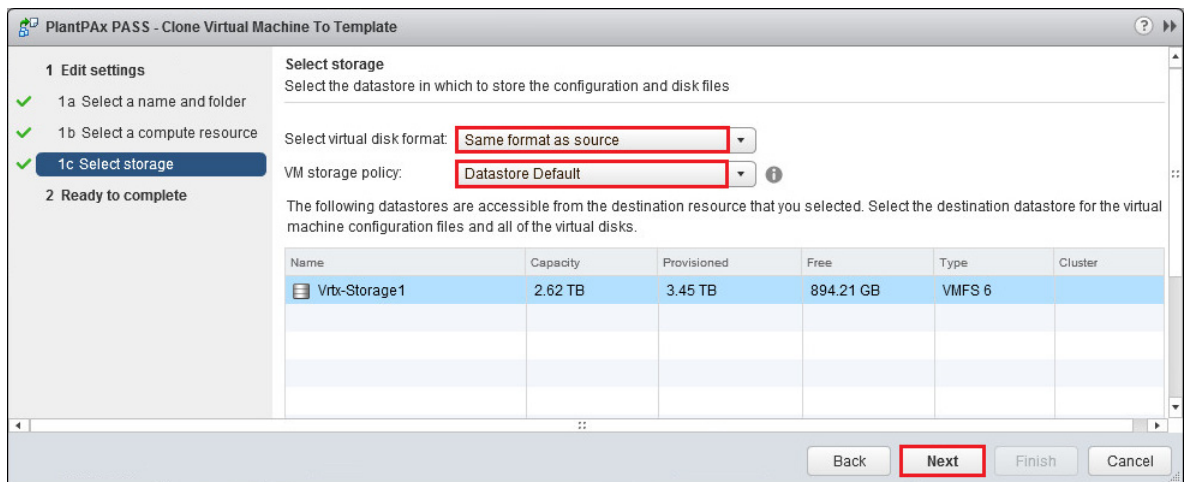


Table 5 - Disk Format Options

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 that 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.

PlantPax PASS - Clone Virtual Machine To Template

1 Edit settings

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

Provisioning type:	Clone virtual machine to template
Source virtual machine:	PlantPax PASS
Template name:	New Template
Folder:	PlantPax
Host:	172.18.1.13
Datastore:	Vrtx-Storage1
Disk storage:	Same format as source

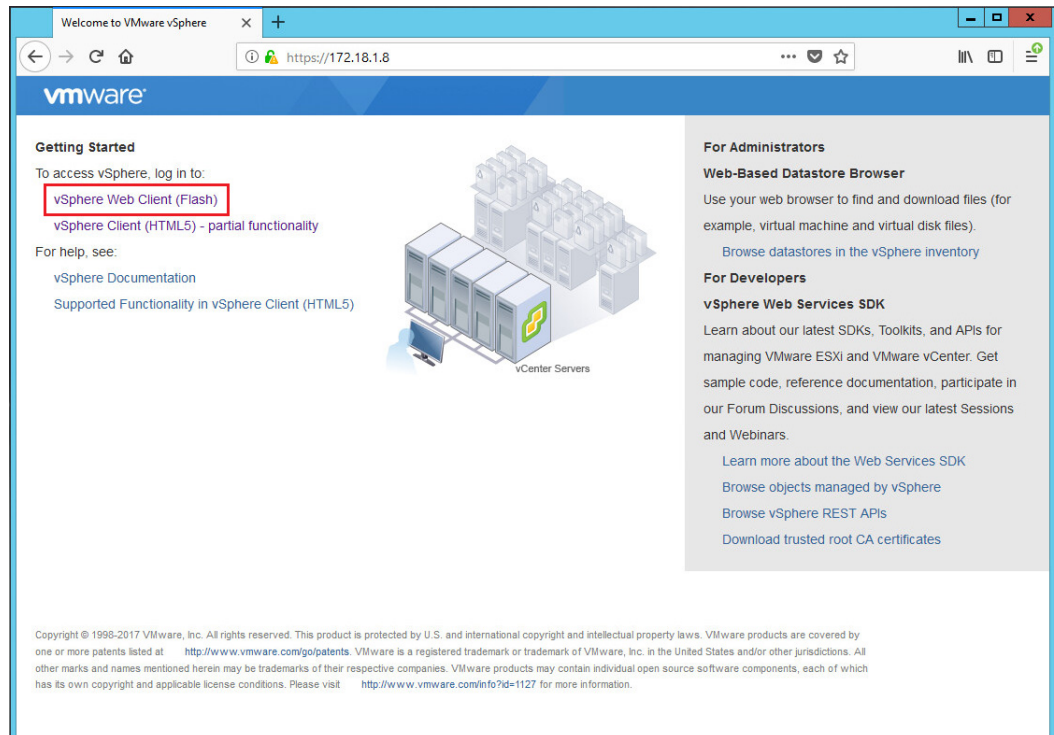
Back Next **Finish** Cancel

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.

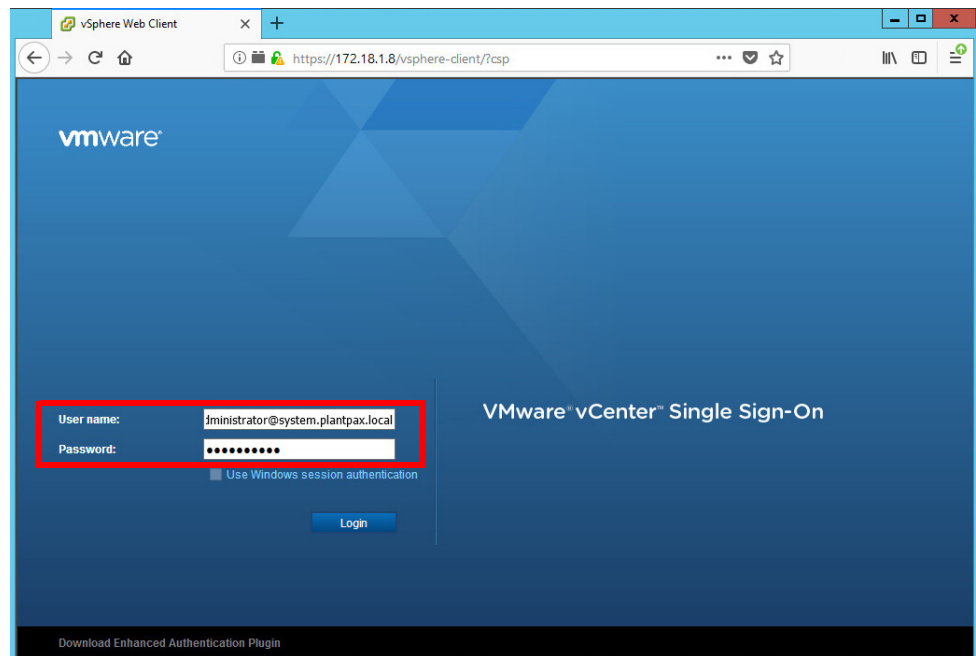
1. In a Web Browser, enter the IP address of the computer where your vCenter Server is installed.
2. Click vSphere Web Client (Flash).



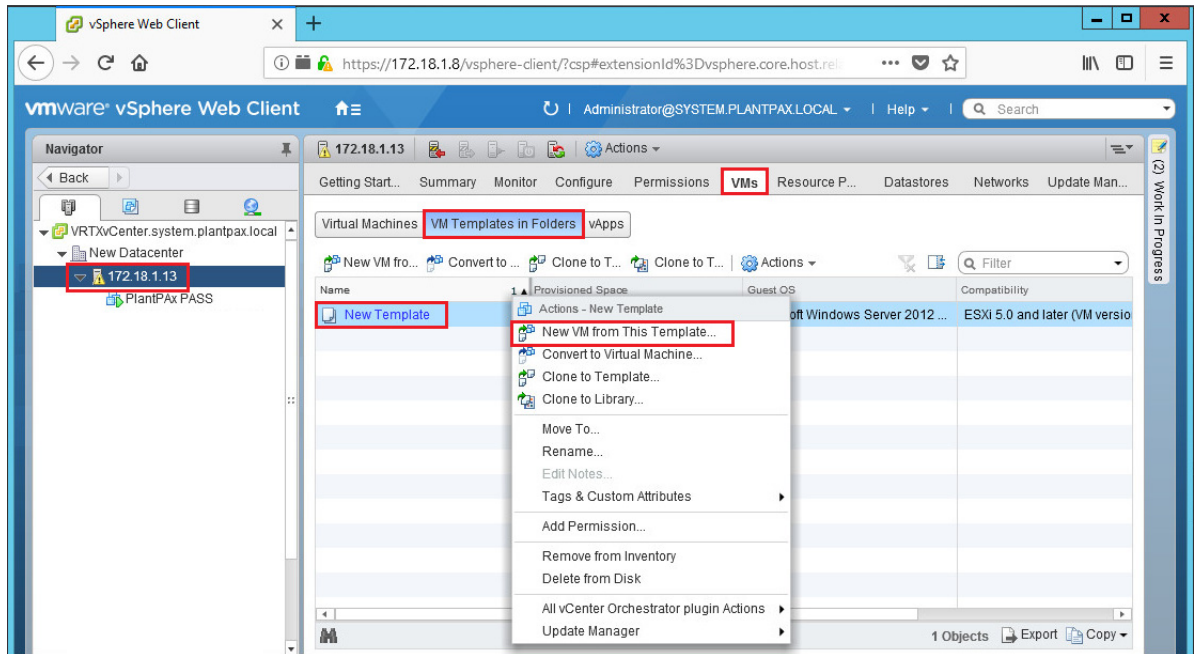
3. Enter the Username and Password. Use the User name and password that you created for the vCenter Server in [step 18 on page 52](#). Click Login.

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

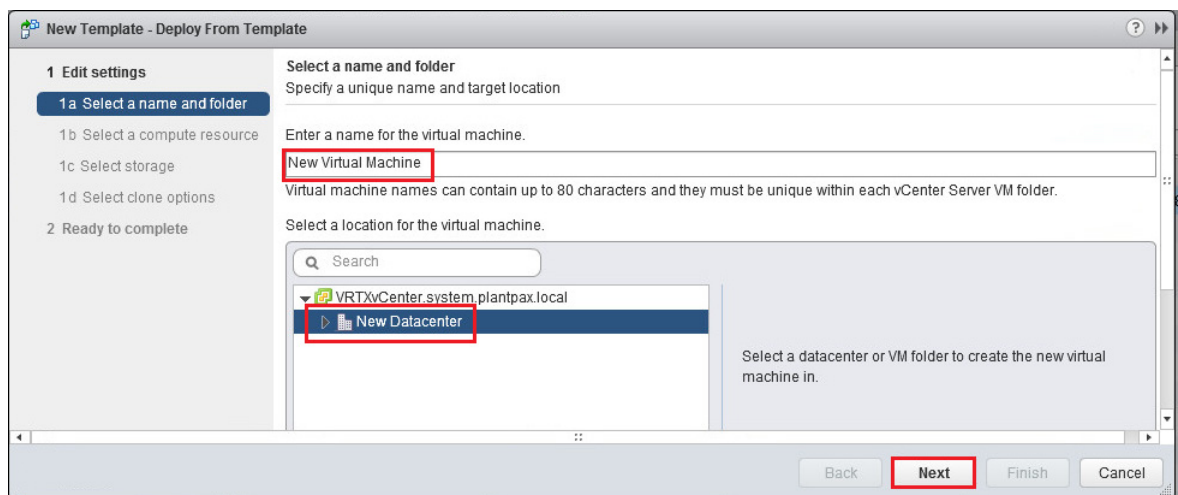
In our example, the user name is 'administrator@system.plantpax.local'.



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.

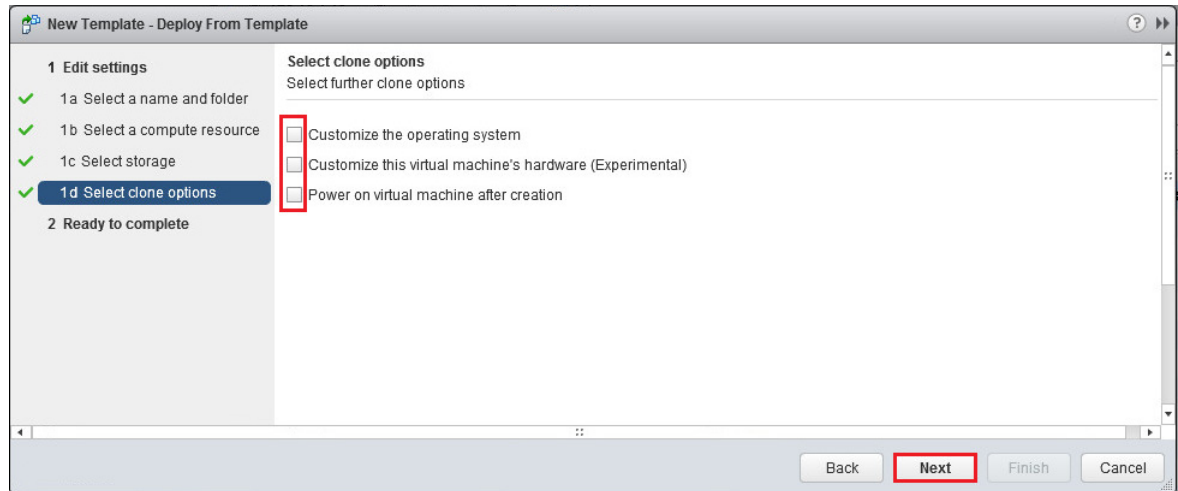
Name	Capacity	Provisioned	Free	Type	Cluster
Vrbx-Storage1	2.62 TB	3.58 TB	851.17 GB	VMFS 6	

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, see [Download a Hypervisor on page 19](#).

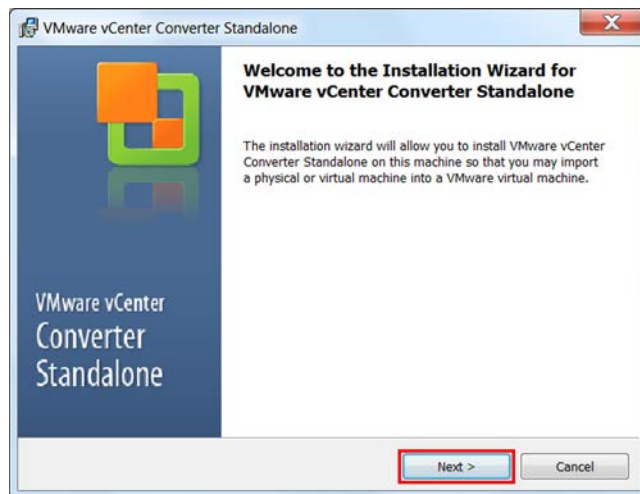
Install the Converter Standalone Software

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.

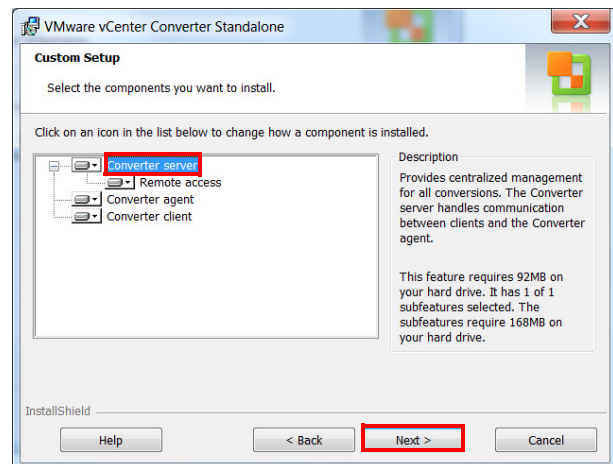
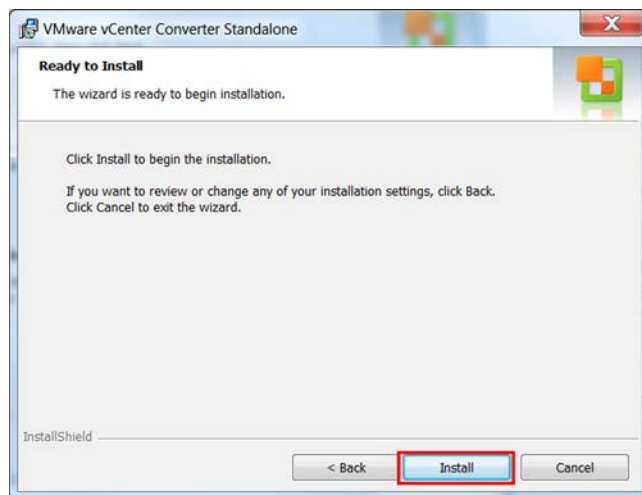
- Click 'I agree to the terms in the License Agreement', and click Next.



- On the Destination Folder page, click Next.
- 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 for more information).

For simplicity, our example is a local installation.

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



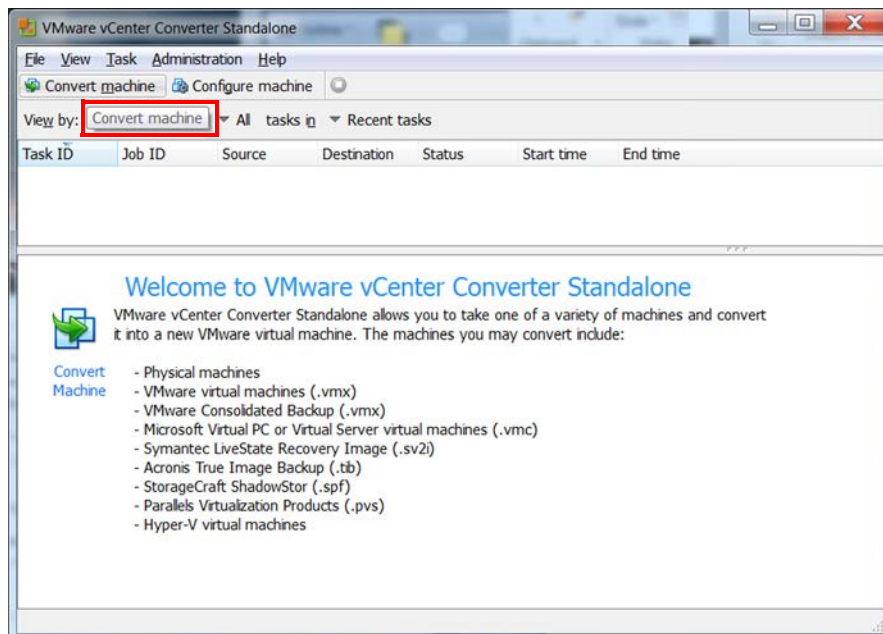
- Click Finish when the installation is complete.

Convert a Virtual Machine

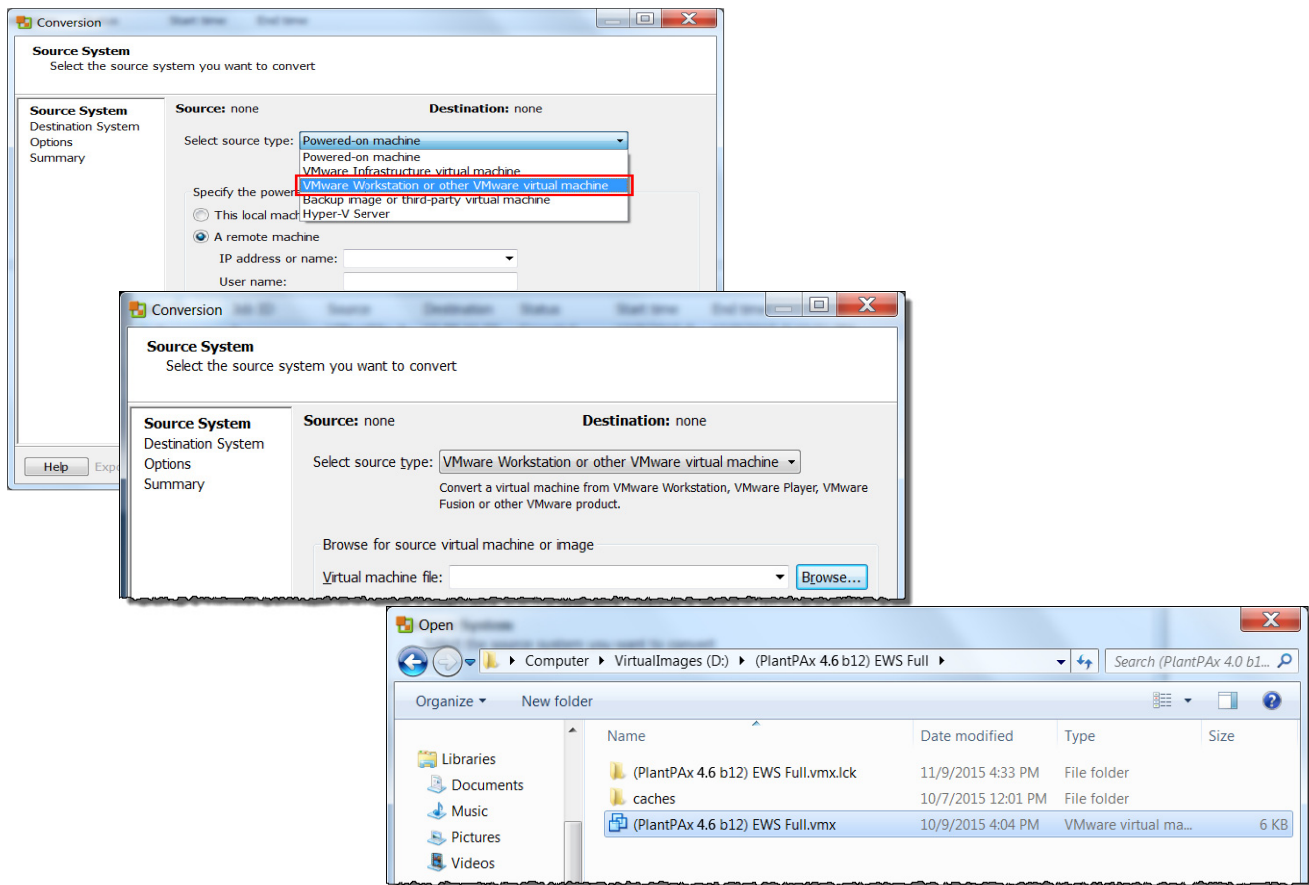
The vCenter Converter Standalone software installs VMware Tools to let you customize the guest operating system. For example, you can change the host name or network settings.

To change the host name, complete these steps.

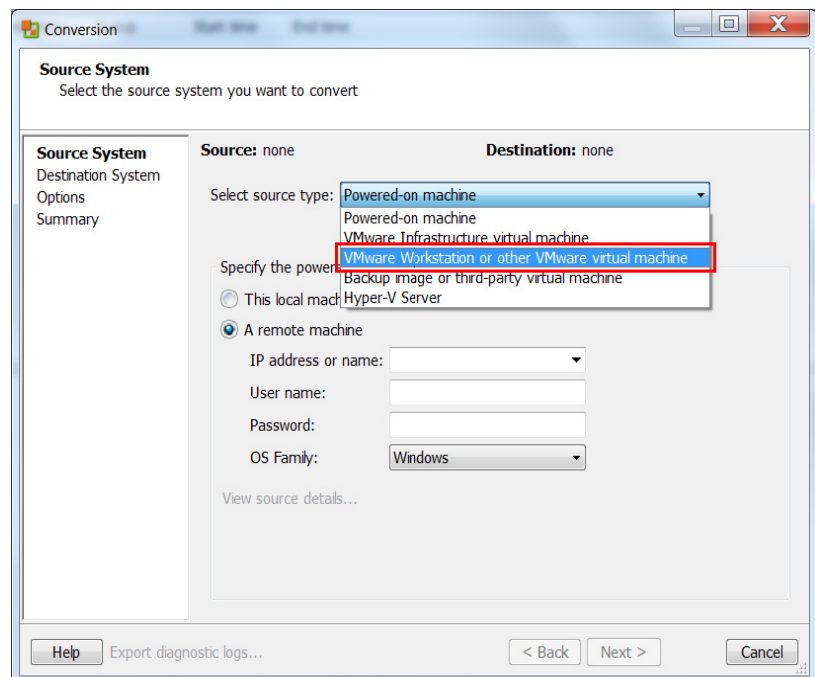
1. Open the VMware vCenter Converter Standalone software and click Convert Machine.



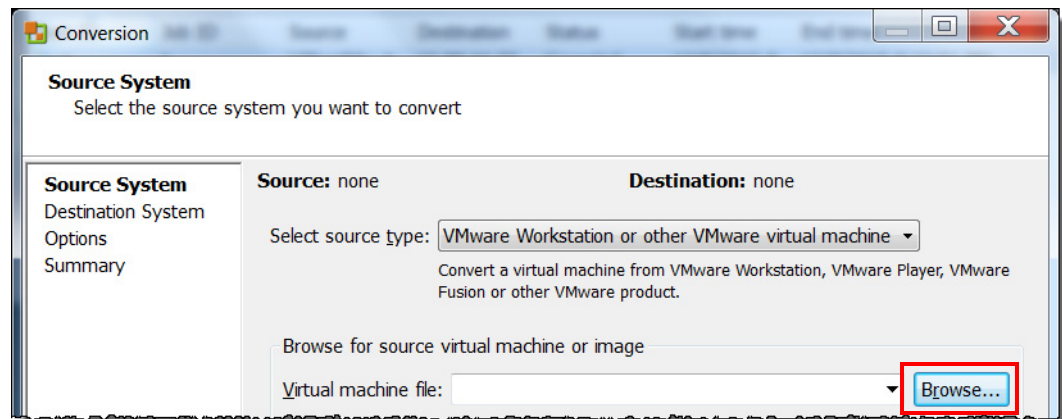
The Conversion dialog box appears.



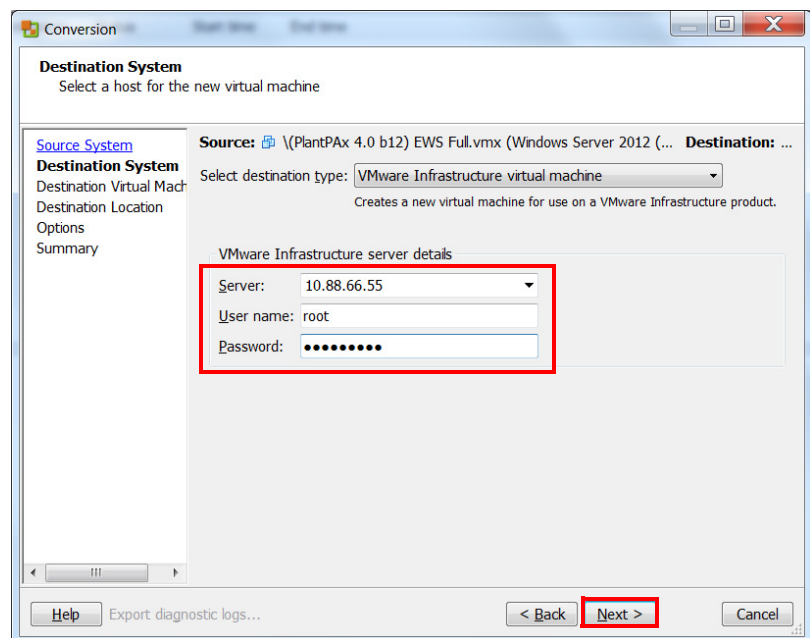
2. Select 'VMware Workstation or other VMware virtual machine' from the 'Select source type' pull-down.



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

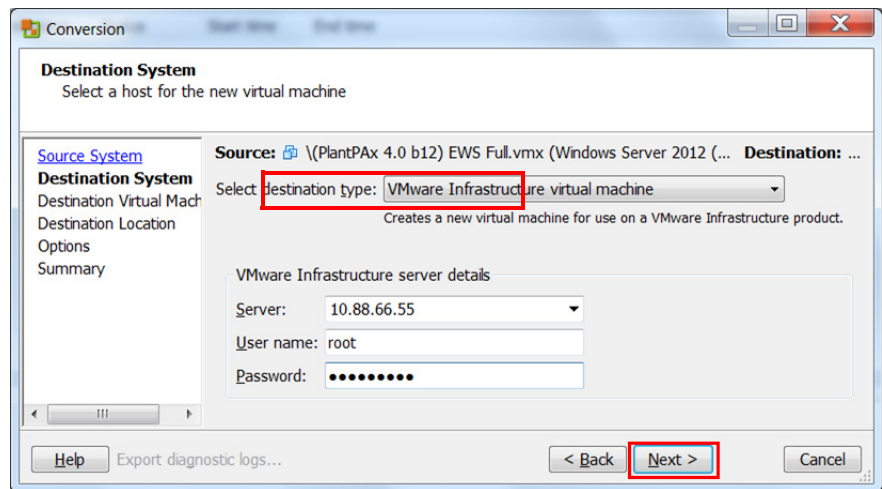


- On the Destination System window, type the IP address, User name, and Password of the server where the virtual machine is being deployed to after conversion.



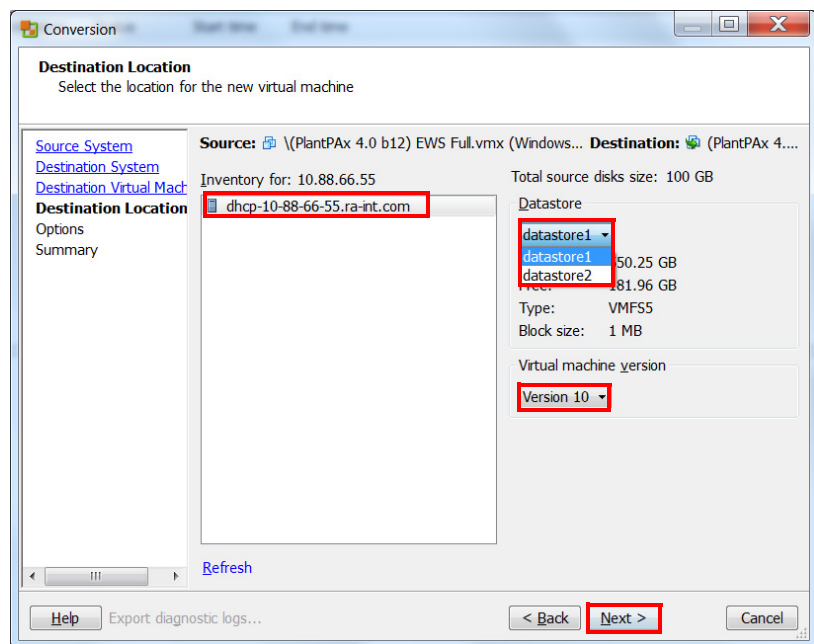
- Click Next.
- Click Ignore for now on the certificate window.
Talk to your system manager about SSL certificates for this application.

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



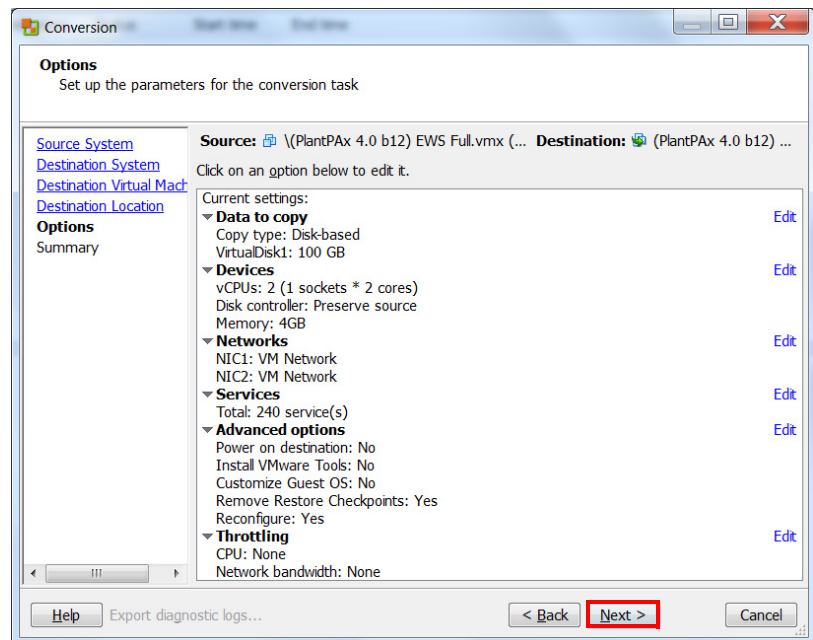
8. Select the location where you store the virtual machine.

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.

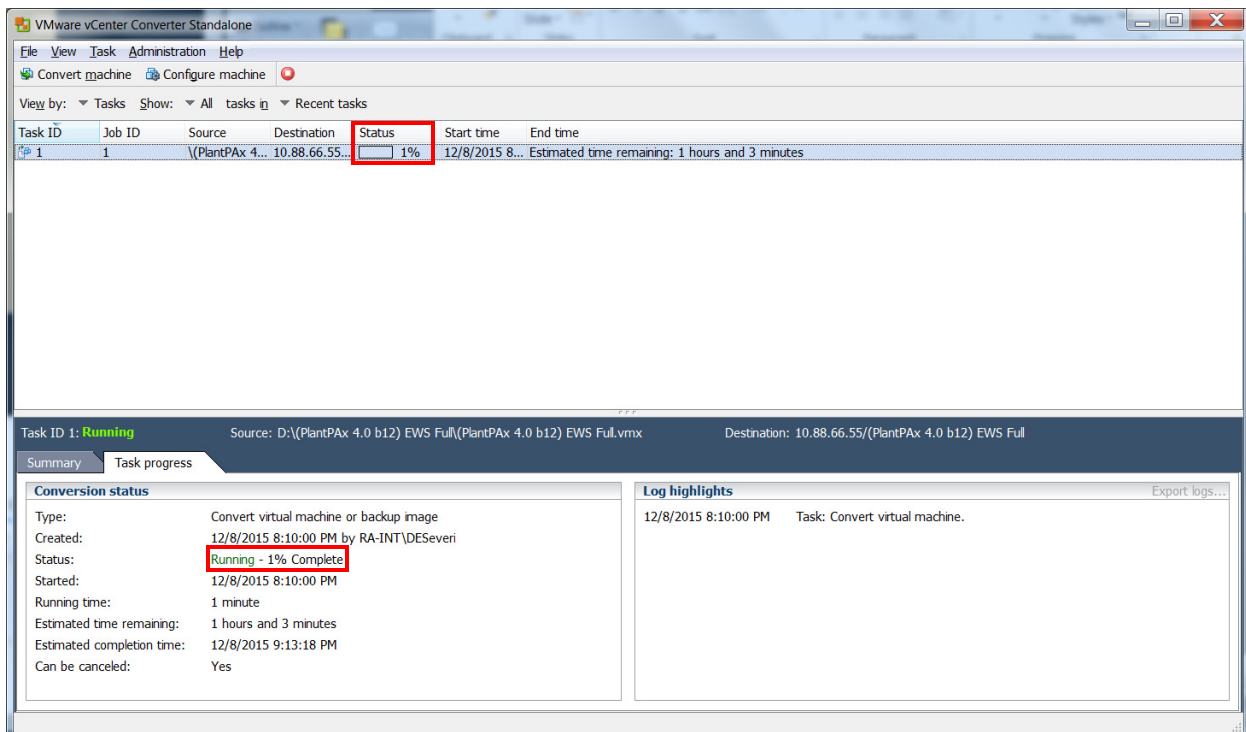
A Conversion window with parameter options for the conversion task appears. This window is where you can make permanent changes according to your needs.



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

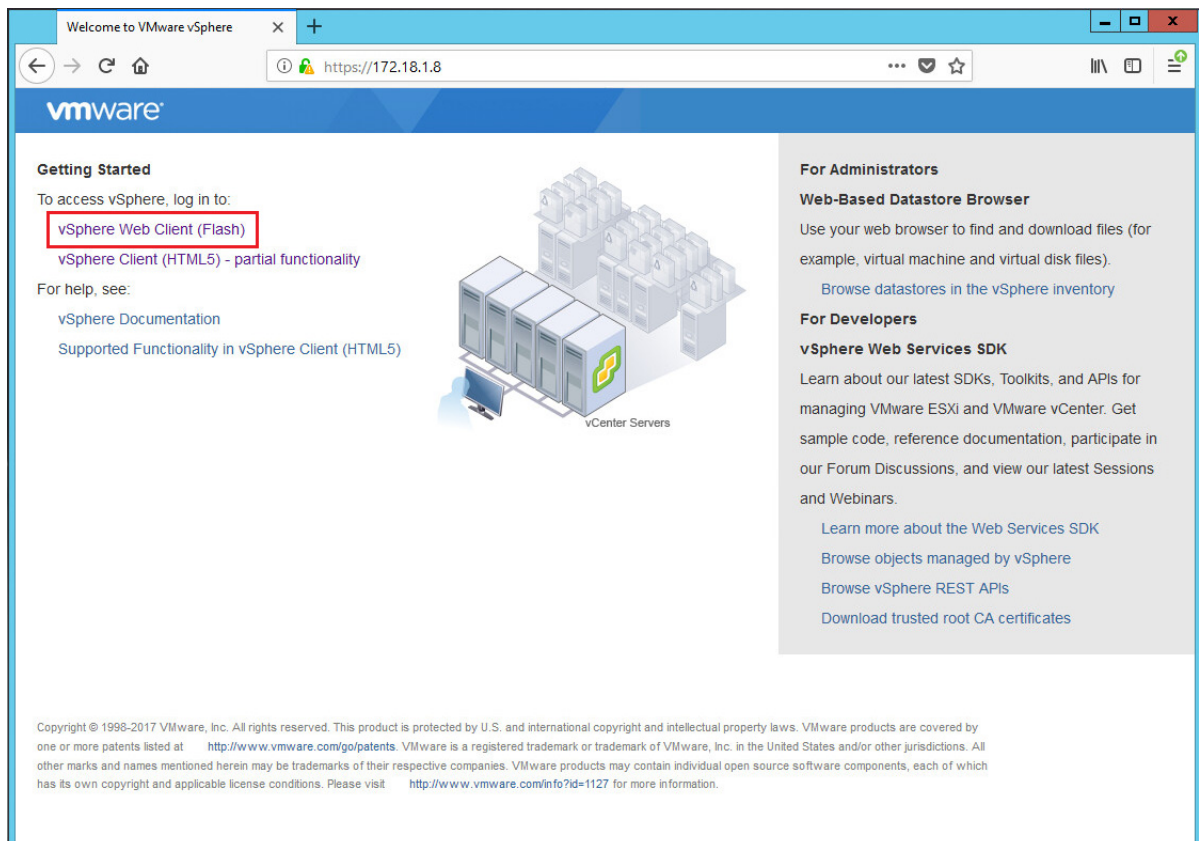
To help expedite the use of your virtual machines, consider the following options:

- [Initiate Automatic Startup on page 77](#)
- [Set Resource Pool Priority on page 83](#)

Initiate Automatic Startup

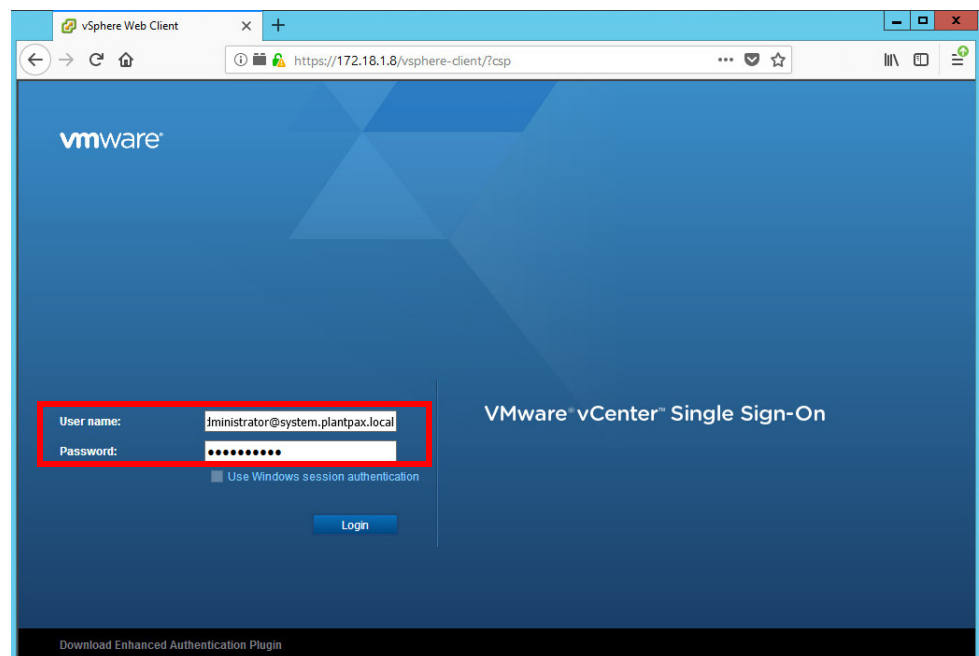
To program the host server to start your virtual machines automatically, complete these steps.

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 25](#).
2. On the Welcome to VMware vSphere screen, click vSphere Web Client (Flash).

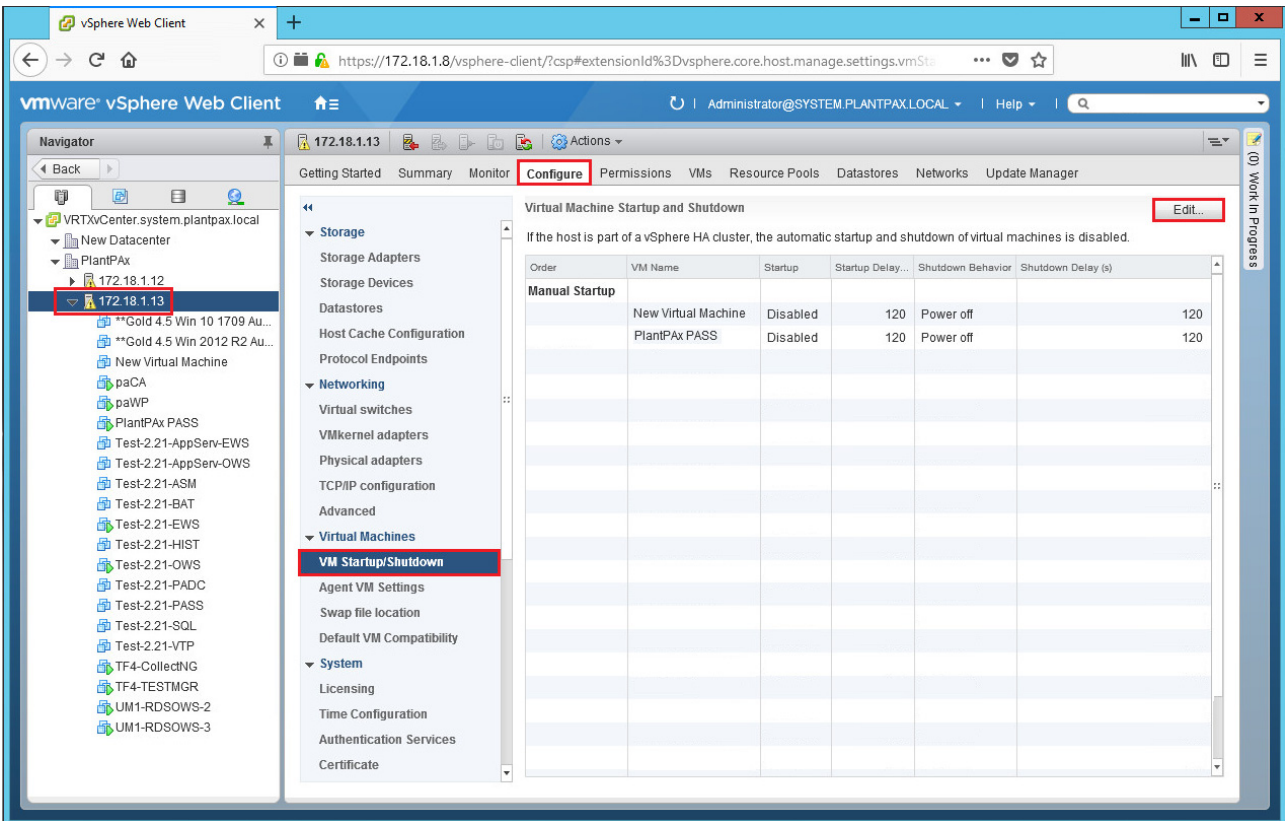



3. Enter the Username and Password. Use the User name and password that you created for the vCenter Server in [step 18 on page 52](#). Click Login.

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'.

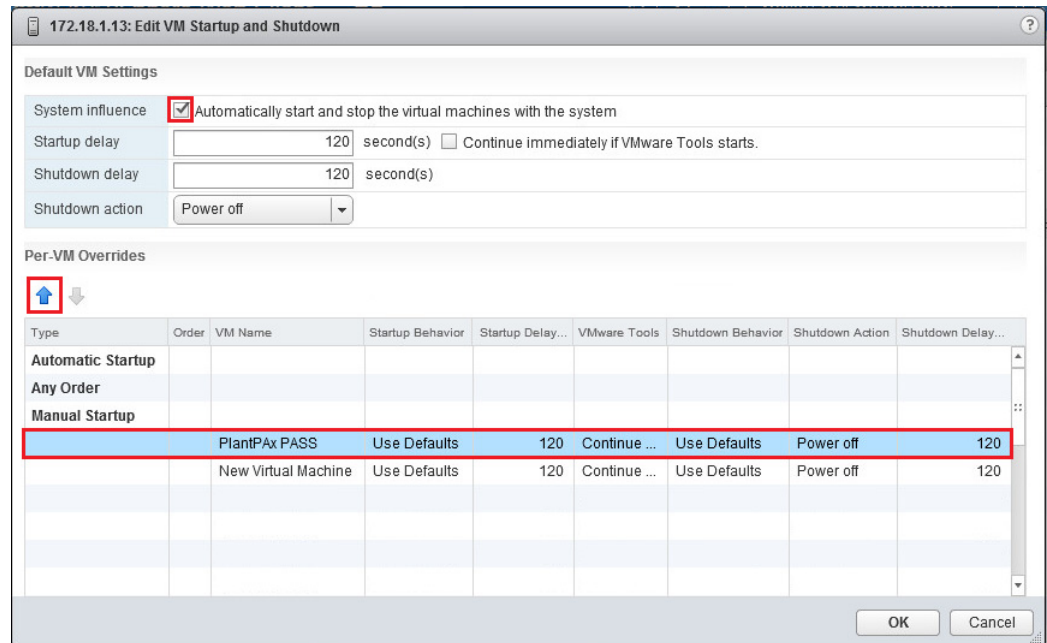


4. Select the Host Server, then select the Configure Tab, then select VM Startup/Shutdown. On the VM Startup/Shutdown window, click 'Edit'.



- 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 second(s) ☐ Continue immediately if VMware Tools starts.

Shutdown delay second(s)

Shutdown action

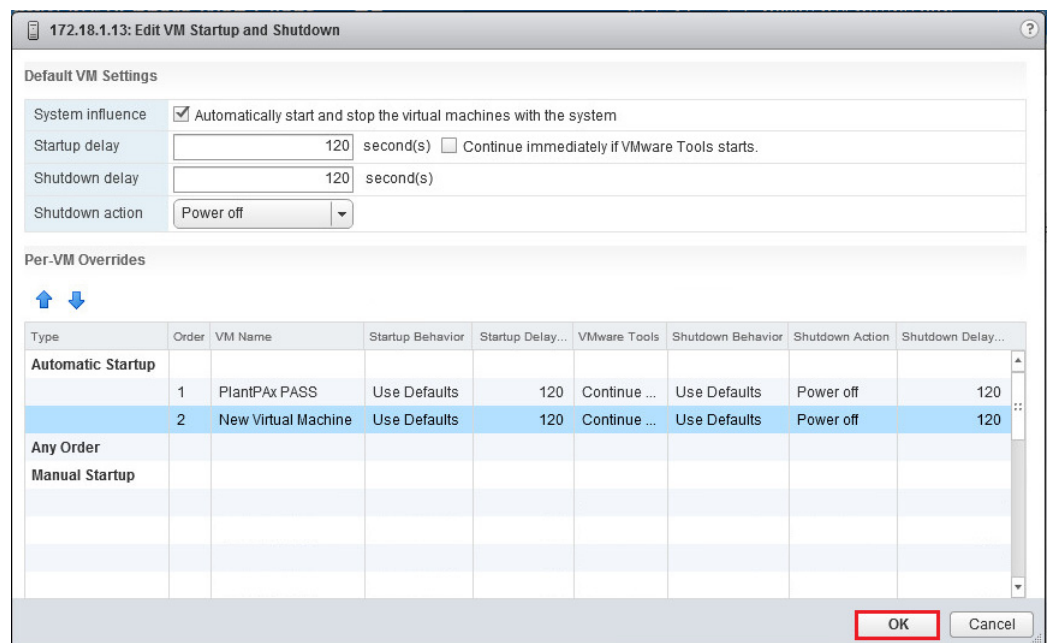
Per-VM Overrides

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

Shutdown delay second(s)

Shutdown action

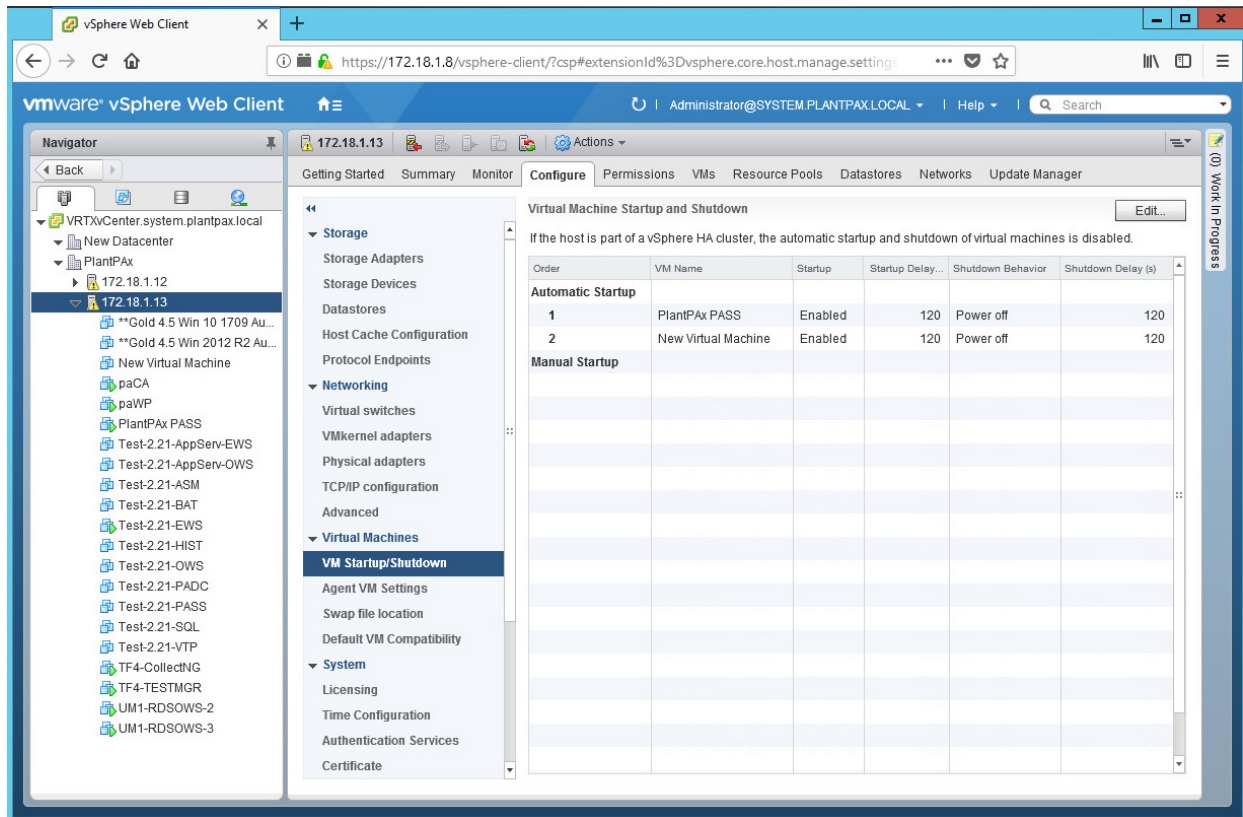
Per-VM Overrides

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

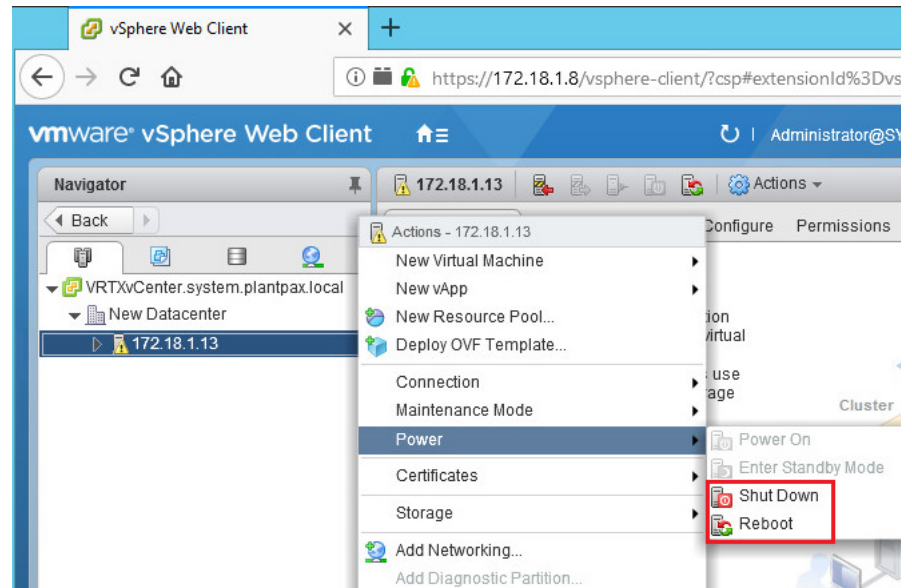
Following is the recommended start-up order for the typical system elements of a virtual PlantPAx system.

1. Process Automation Domain Controller - PACD
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

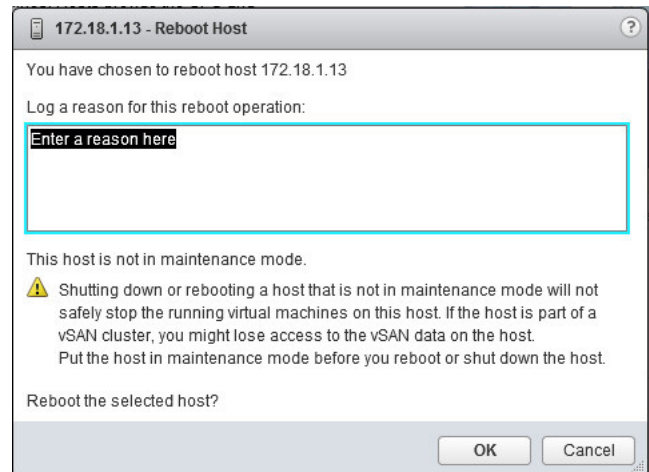
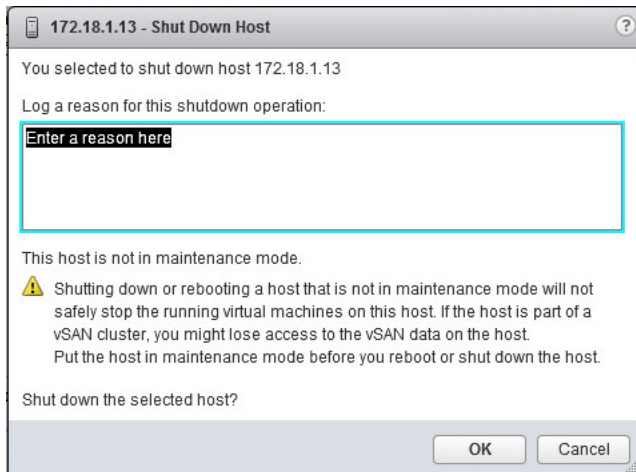
Send Commands to Host Server

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.

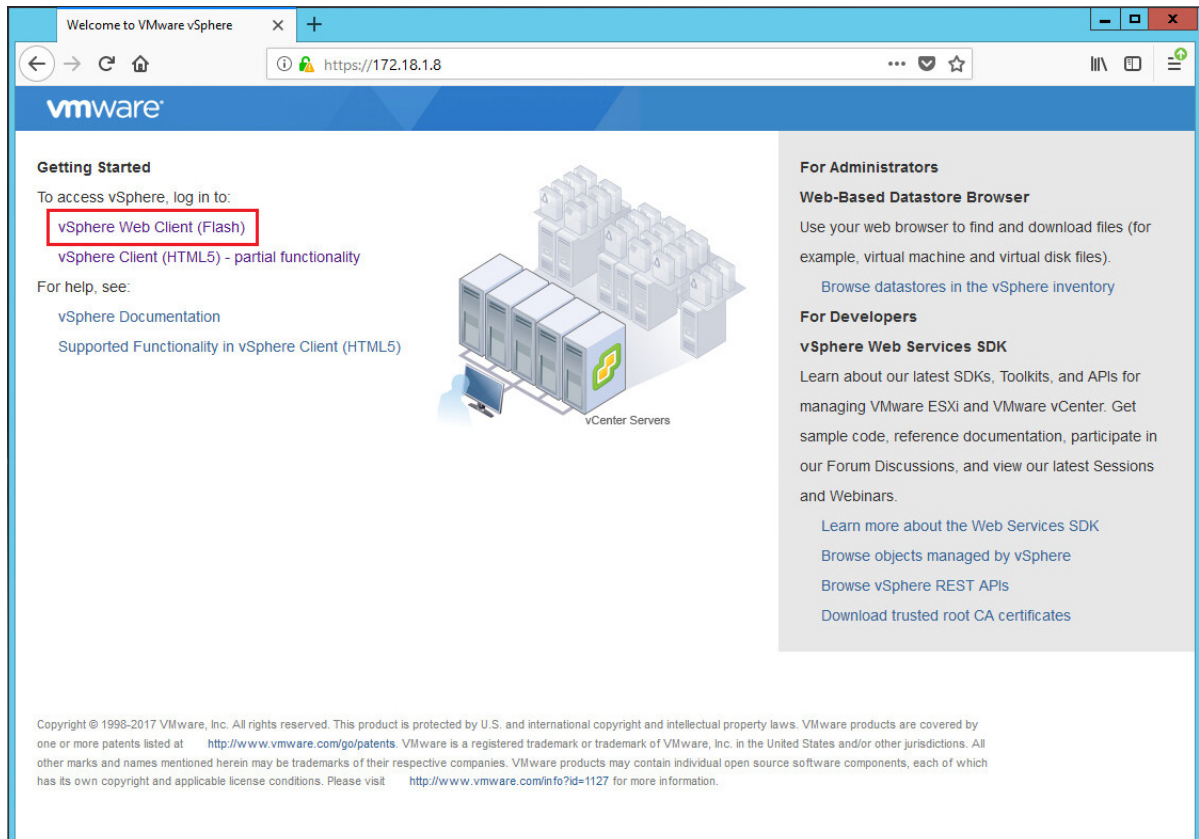


Set Resource Pool Priority

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.

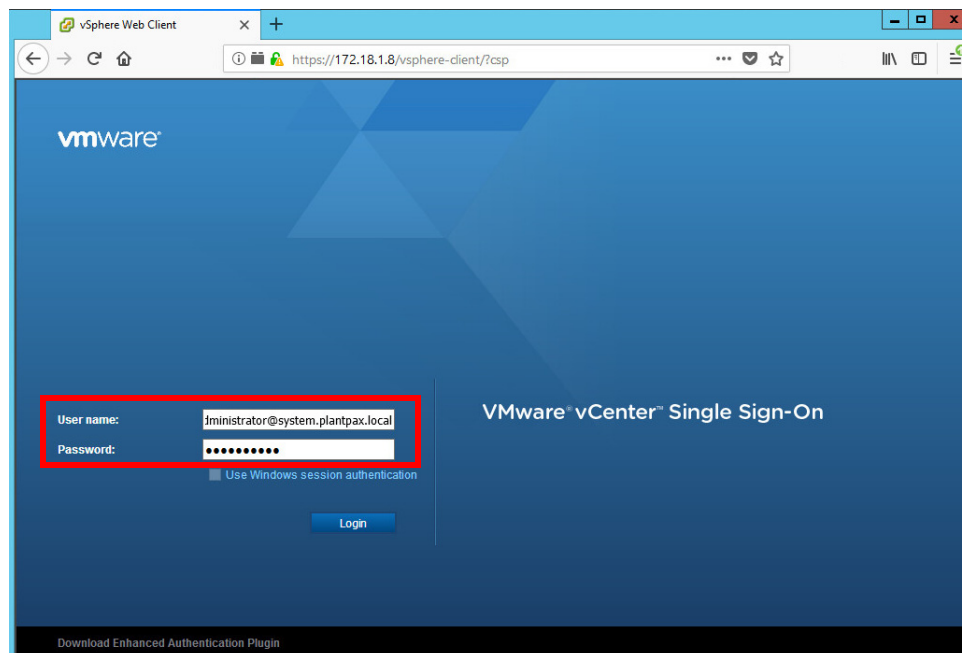
IMPORTANT For more information and resource pool priority recommendations for servers and workstation, see Resource Pool Allocation in the PlantPAX System Reference Manual, publication [PROCES-RM001](#).

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).

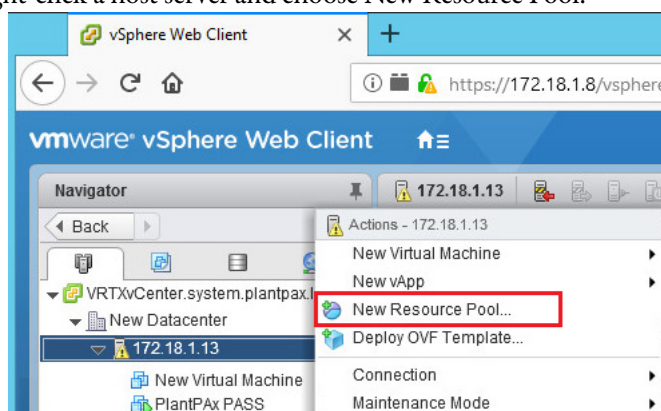


3. Type the User name and Password. Use the User name and password that you created for the vCenter Server.
4. Click Login.

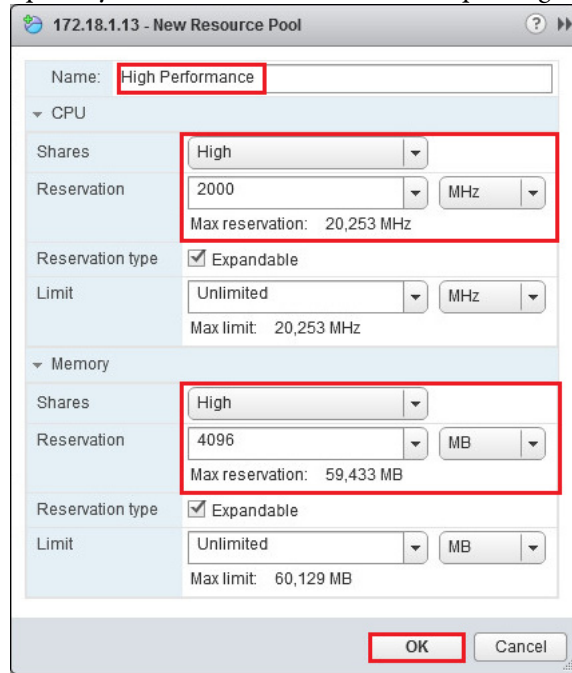
IMPORTANT The user name consists of the vCenter Single Sign-On user name plus '@' plus the Domain name.
In our example, the user name is 'administrator@system.plantpax.local'.



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



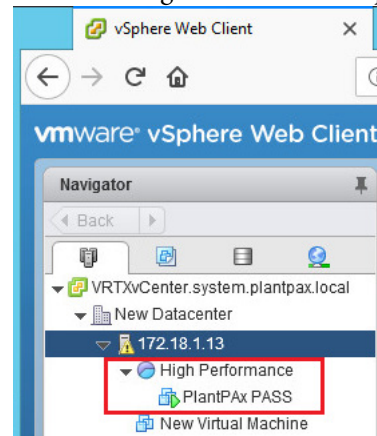
6. Type the priority in the Name text box. For example, High Performance.



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:

Server Initial Configuration

PlantPAx® system servers (whether physical or virtual machines) share a collection of data to clients. This chapter describes how to configure virtual server templates. This chapter is performed initially when configuring all system elements.

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 - PADDC
- 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 [Activation Considerations on page 201](#) for activation procedures.

IMPORTANT	Perform this procedure on all servers before configuring the system elements. If you already own individual product activations, these activations can also be used to activate the virtual image templates.
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Configure Microsoft Windows Server

Complete these steps to configure Microsoft Windows Server 2016 settings for your virtual servers.

Windows Server

Complete these steps to install the server software.

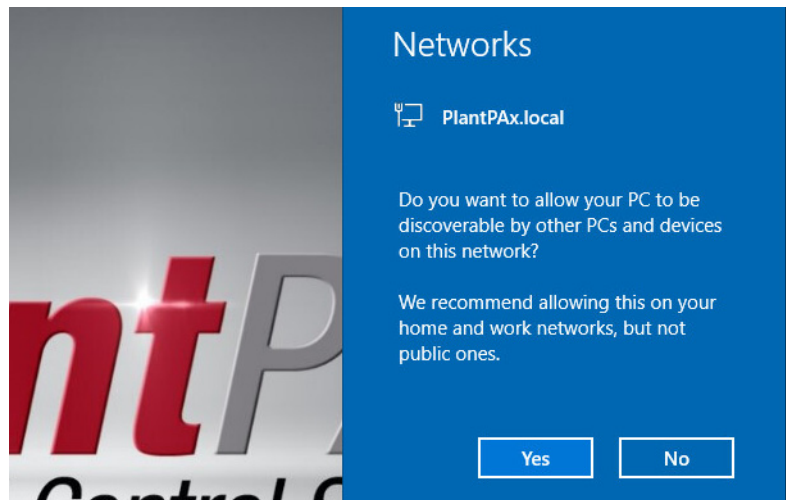
1. From a web browser, enter the IP address of the computer where your host server is installed.
2. Type the user name and password for the host server, and click Login. The VMware ESXi window appears.
3. From the Navigator in the left pane, right-click the virtual machine that you want to configure, and select Power>Power On.
4. Right-click the virtual machine again, and select Console>Launch Remote Console.
5. Choose the appropriate location, language, and keyboard settings and click Next.
6. On the EULA dialog box, read the license terms and click 'Accept'.
7. Type a password for administrator, retype the password to verify, and click 'Finish.'

A logon message appears: 'Press Ctrl + Alt + Delete to unlock'. Do not press Ctrl + Alt + Delete.

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. Press Ctrl+Alt+Insert.
9. Type the Administrator password that you created and Press Enter.
If you see the Other-User logon, type 'Administrator', type the administrator password that you created and Press Enter. Wait until you see the network message in the following step.

10. Click 'Yes' to allow the PC to be discoverable.



11. Wait until the Product Key window appears.
12. In the Product Key window, type a valid Windows Server Product Key and click OK.
13. Verify that the product key is correct and click Yes.
14. Click OK in the message window when the product key was installed successfully.
15. Click OK in the activation window.

Administrative Server Configuration

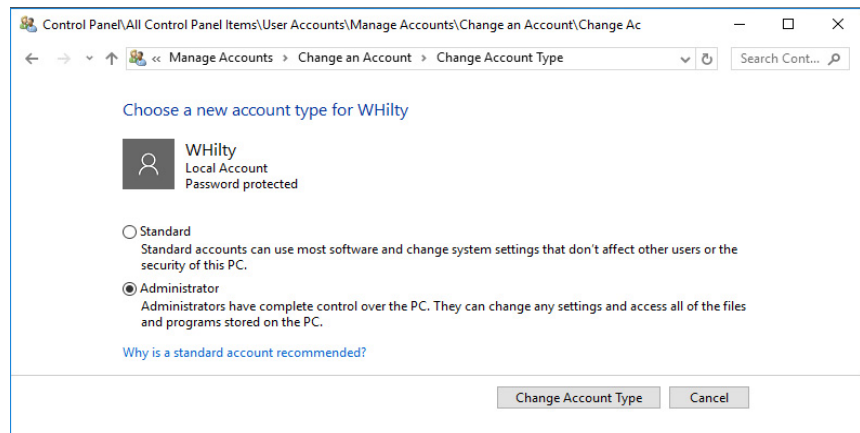
The following procedures help manage who has access to the server and login privileges. Complete these procedures on all virtual servers to be deployed.

Create an Administrator User Account

We suggest that you create an Administrator user account for each user that requires administrative privileges. This 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.

1. Navigate to the Control Panel.
2. Click User Accounts.
3. Click Manage another account.
4. Click 'Add a user account' below the Administrator icon.
5. 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.
6. Click Next, and then Finish on the next dialog box.
7. Click the user that you created.

8. Click 'Change the account type'.
9. On the next window, select Administrator and click 'Change Account Type'.



10. Sign out of Windows.
11. Press Ctrl+Alt+Insert.

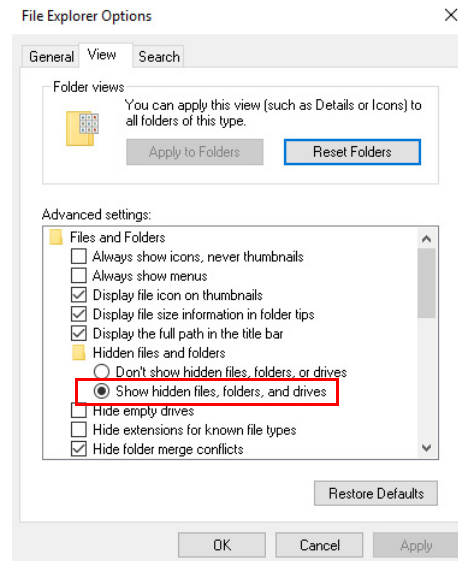
Even though 'Press Ctrl + Alt + Delete ...' is displayed on the screen, you must press Ctrl + Alt + Insert to access the virtual machine. The sequence 'Ctrl + Alt + Del' is reserved for the terminal from where you connect to the server that hosts the virtual machine.

12. Log in with the user that was created.

Configure Programs Menu

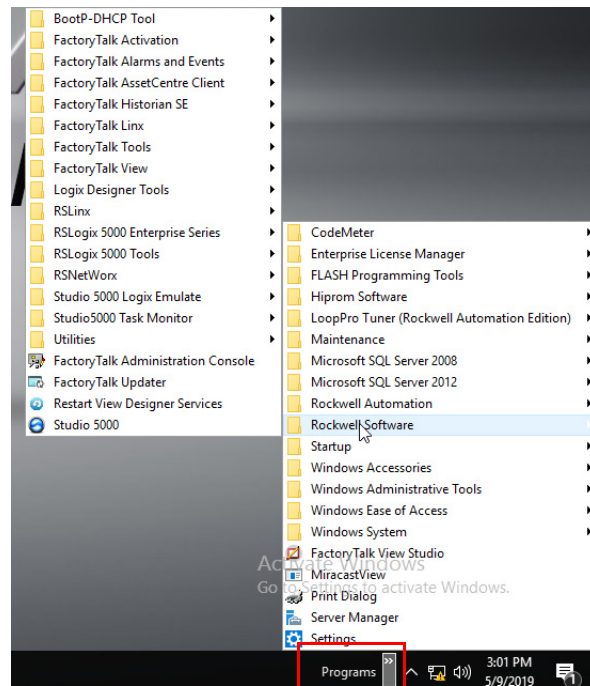
Complete the steps on the system computers to group folders under 'Programs' on the taskbar. When complete, you can access Windows and Rockwell Software® folders by clicking the symbol next to Programs » on the task bar.

1. Navigate to the Control Panel and choose File Explorer Options.
2. On the View Tab, select 'Show hidden files, folders, and drives' and click OK.



3. Right-click on the taskbar, choose Toolbars>New toolbar.
4. On the New Toolbar window, navigate to your Programs folder.
C:\ProgramData\Microsoft\Windows\StartMenu\Programs
5. Click Select Folder.

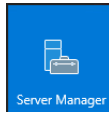
The result is a custom menu with easy access to Rockwell Software conveniently located on the Windows taskbar.

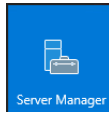


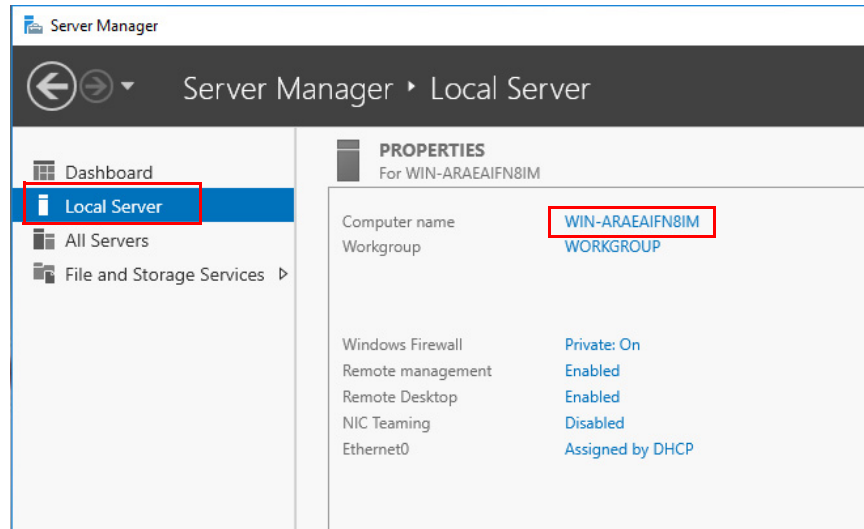
6. Before proceeding, click the Date/Time in the lower right-hand corner of the desktop. Verify that the Date and Time settings are correct.
7. Turn off the 'Set time automatically' feature in the Date and Time settings.

Rename the Computer

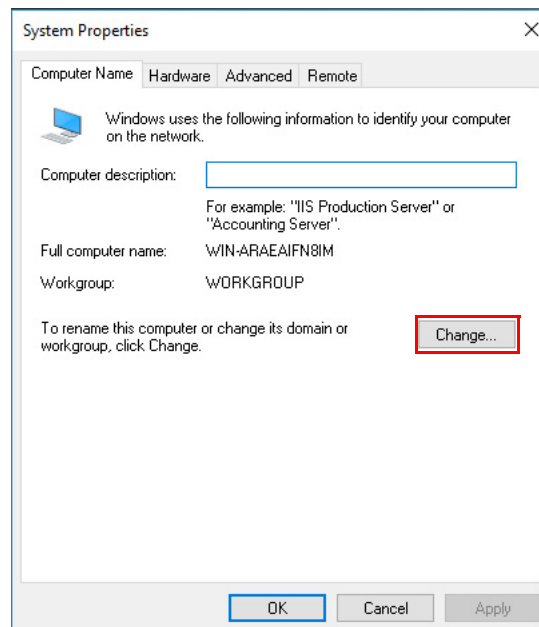
Complete these steps to rename the computer.



1. Click  from the windows menu to open the Server Manager.
2. On the Server Manager window, click Local Server and then click the computer name.



3. Click Change on the System Properties dialog box.



4. Type a new computer name.

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

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

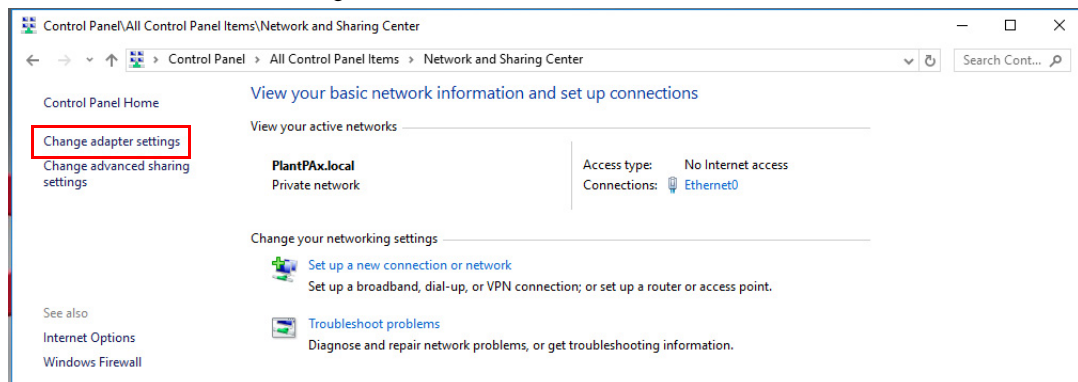
IMPORTANT We recommend that you restart your computer so that these changes take effect.

- Enter an administrator username and password.
- Click OK when the welcome to domain window appears.
- Restart the virtual machine for the changes to the settings to take effect.
- Log in by using your domain credentials or the local user administration account previously created.

Verify Ethernet Network Adapter Settings

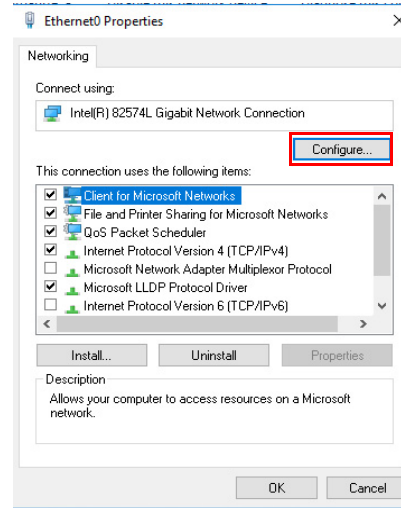
Complete these steps to verify the speed, duplex, and power management settings for the Ethernet adapter.

- Navigate to the Control Panel.
- Click Network and Sharing Center.
- In the Network and Sharing Center window, click Change Adapter Settings.

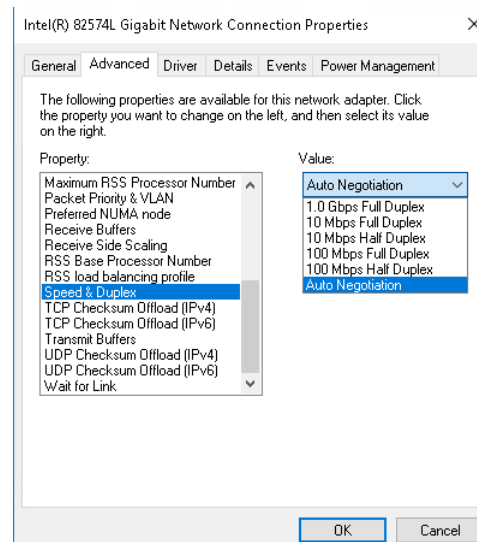


- Right-click the Ethernet network connection and choose Properties.
- If asked, type your password and click Yes.

6. In the Ethernet Properties dialog box, click Configure.



7. Click the Advanced tab.
8. Select Speed and Duplex and then 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.

Verify 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 at the top of the window, 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.

Verify the Processor Scheduling Setting

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

1. Right-click the Windows Start icon and choose System.
2. Click the Advanced system settings.
3. Click Settings in the Performance section.
4. Choose the Advanced tab.
5. Click Background services in the Processor scheduling section to adjust for the best performance.
6. Click OK twice.

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 - PADDC
- 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 [Activation Considerations on page 201](#) for activation procedures.

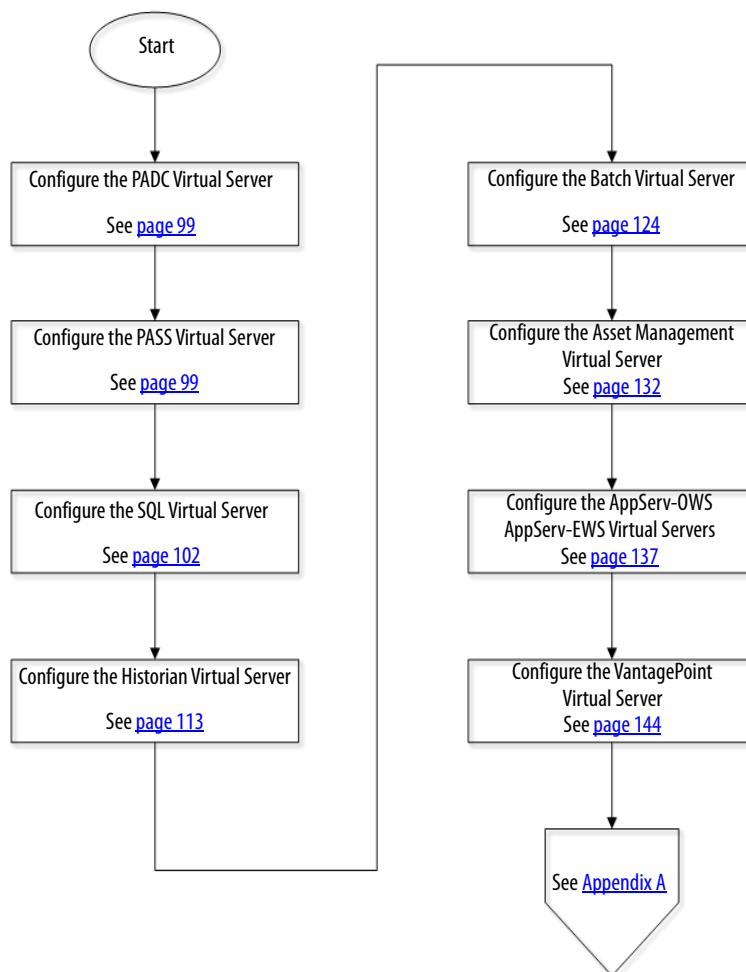
IMPORTANT	Complete Chapter 3 Server Initial Configuration on page 87 on all servers before configuring any system element. If you already own individual product activations, these activations can also be used to activate the virtual image templates.
------------------	--

Configure Server Templates

[Figure 3](#) 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 3 - 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 one 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:

- Chapter 2 [Deploy the PlantPAx Virtual Image Templates on page 31](#).
- Chapter 3 [Server Initial Configuration on page 87](#).

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 on page 10](#) for catalog numbers.

Before configuring the PASS Server, complete the following tasks:

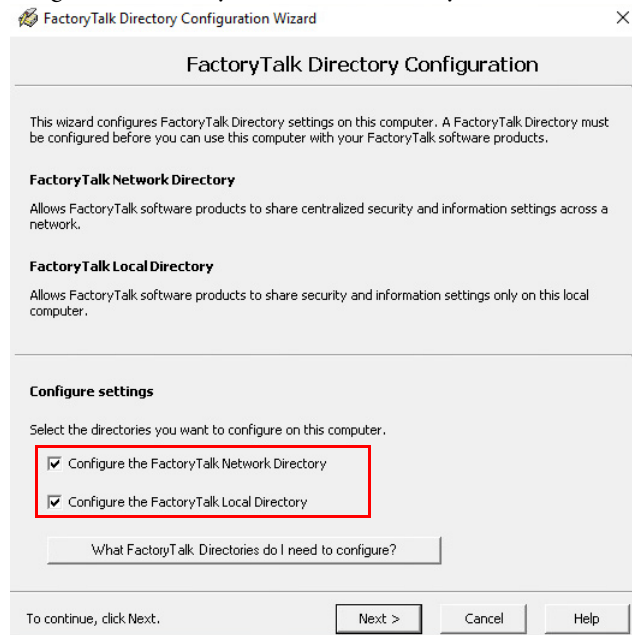
- Chapter 2 [Deploy the PlantPAx Virtual Image Templates on page 31](#).
- Chapter 3 [Server Initial Configuration on page 87](#).

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. Use the Administrator User Account credentials that were created in [Create an Administrator User Account on page 89](#).

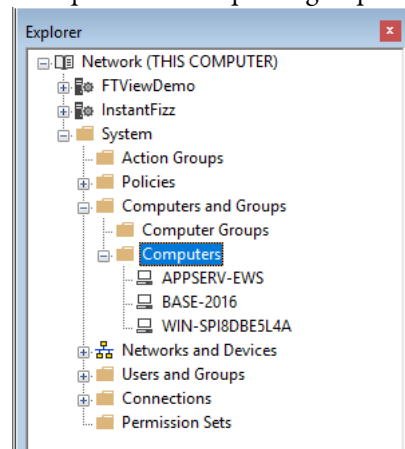
5. Type the FactoryTalk Network Directory credentials for the network directory configuration and click Next.
6. Type the credentials for the Local Directory configuration and click Next.
7. Click Close on the summary windows showing that the network configuration and the local configuration were completed successfully.

Delete the Old Computer Name

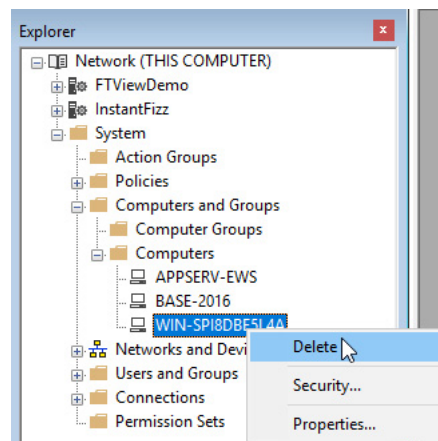
The old computer name is embedded in the sample applications. Therefore, if you want to use the sample applications, complete these steps to rehost the applications on the new computer name. You delete the old computer name from the FactoryTalk Directory by using the Administration Console.

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. Click the Programs icon and choose Rockwell Software>FactoryTalk Administrator Console.
2. Select Network (default directory) and click OK.
Enter the password if necessary.
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 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 2.
7. When finished, exit the FactoryTalk Administrator console.
8. Restart your computer.

Configure the SQL Virtual Server / Historian AF

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.

Before configuring the server, complete the following tasks:

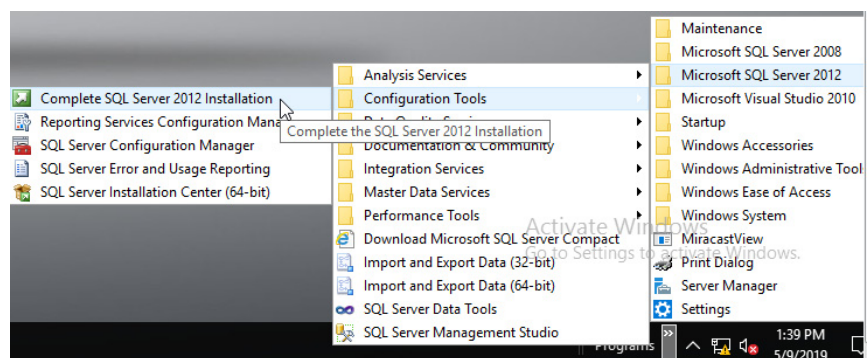
- Chapter 2 [Deploy the PlantPAx Virtual Image Templates on page 31](#).
- Chapter 3 [Server Initial Configuration on page 87](#).

IMPORTANT Use this procedure if you are installing SQL Standard on this server and are either installing a separate Historian server or are not using a Historian server. If installing a standalone Historian Server with SQL Express, skip this section and proceed to [Configure the Historian Virtual Server on page 113](#).

IMPORTANT If installing both a Historian and SQL server, Complete chapter 3 [Server Initial Configuration](#) on both servers before continuing with this procedure.

Install SQL Server 2012 Standard

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



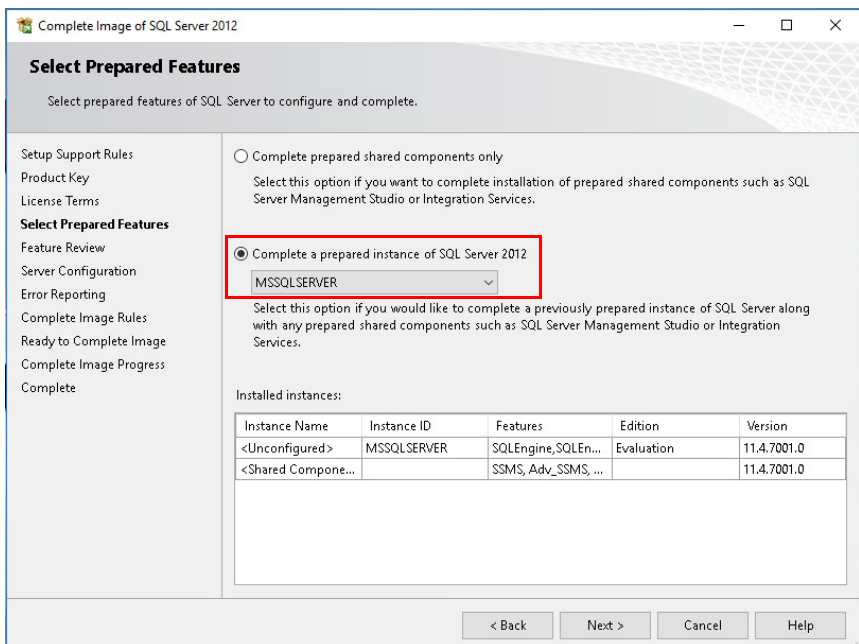
2. Click Yes to allow the changes to be made to the device.
3. Click OK once all Setup Support Rules have passed.
4. Click Next to continue the setup.

5. 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.
6. Click Next.
7. Read the license terms, and click 'I accept the license terms'
8. 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. We recommend accepting 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.

9. 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.



10. Use defaults and click Next for the Feature Review step.

11. Click Default Instance and click Next for the Instance Configuration step.

Instance Configuration

Specify the instance name for the selected SQL Server prepared instance.

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
Ready to Complete Image
Complete Image Progress
Complete

☒ **Default instance**
☐ Named instance: MSSQLSERVER

Instance ID: MSSQLSERVER
Instance root directory: C:\Program Files\Microsoft SQL Server\

SQL Server directory: C:\Program Files\Microsoft SQL Server\MSSQL11.MSSQLSERVER
Analysis Services directory: C:\Program Files\Microsoft SQL Server\MSAS11.MSSQLSERVER
Reporting Services directory: C:\Program Files\Microsoft SQL Server\MSRS11.MSSQLSERVER

Installed instances:

Instance Name	Instance ID	Features	Edition	Version
<Unconfigured>	MSSQLSERVER	SQLEngine,SQLEn...	Evaluation	11.4.7001.0
<Shared Compone...		SSMS, Adv_SSMS, ...		11.4.7001.0

< Back Next > Cancel Help

12. Use defaults and click Next for the Server Configuration step.
13. Select Mixed mode then enter and confirm the password. Specify the SQL Server administrators. At least one must be chosen either by clicking 'Add Current User' or 'Add.' Click Next.

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
Ready to Complete Image
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
WIN-ARAEAFN8IM\WHilcy (WHilcy)

Add Current User Add... Remove

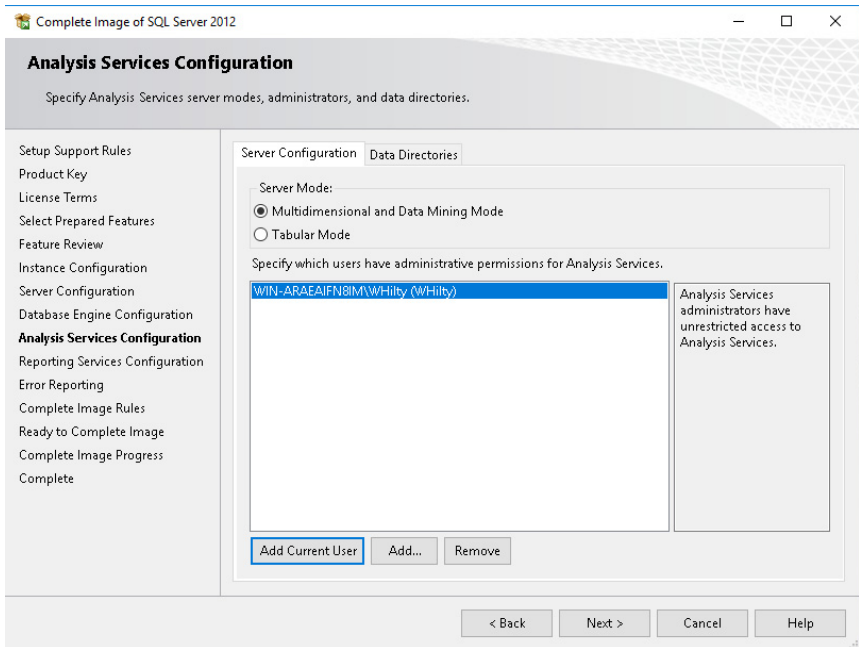
SQL Server administrators have unrestricted access to the Database Engine.

< Back Next > Cancel Help

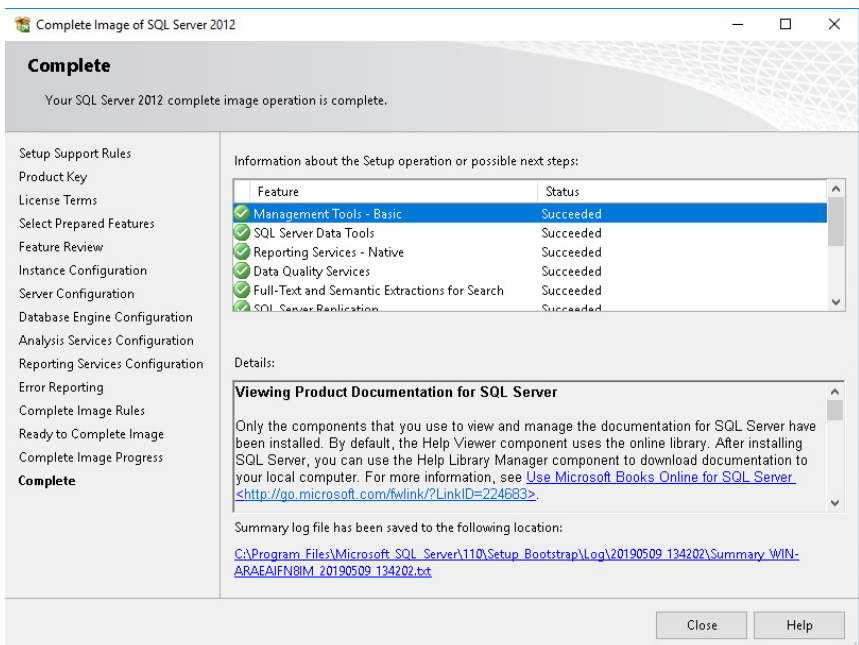
TIP

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

14. Specify which users have administrative privileges for Analysis Services. At least one must be chosen either by clicking 'Add Current User' or 'Add.' Click Next.



15. Click Next to Install and Configure the report server.
 16. Click Next to use the defaults for Error Reporting.
 17. Click Next once the Image Rules have completed.
 18. Click Complete to finish the configuration of the image.
 19. Click Close once the operation is complete.



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

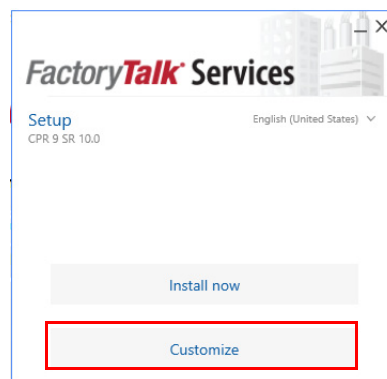
IMPORTANT If you are not installing Asset Framework on the SQL Server, not deploying a Historian server, or installing a standalone Historian or you can skip this section. Proceed to [Add Local User to the SQL Server on page 111](#).

Install FactoryTalk Services Platform

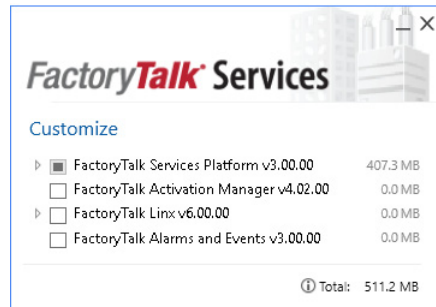
Perform these steps to install FactoryTalk Services Platform.

IMPORTANT The installation files are not included in the SQL Server template. The installation files for services platform are located in the Historian template in c:\install files\6.00.00\FTHistorian\SE-DVDDL. If Historian is already deployed on the network, access the installation files through the network. Otherwise, the Historian template can be downloaded from the Product Compatibility and Download Center (PCDC) at <http://compatibility.rockwellautomation.com/Pages/home.aspx>.

1. Navigate to the installation files.
c:\Install Files\6.00.00\FTHistorian\SE-DVDDL.
2. Click Setup.exe.
3. Click 'Install FactoryTalk Historian Site Edition'.
4. Click 'Install FactoryTalk Services'.
5. Click 'Install FactoryTalk Services' on this screen as well.
6. Click 'Customize'.



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



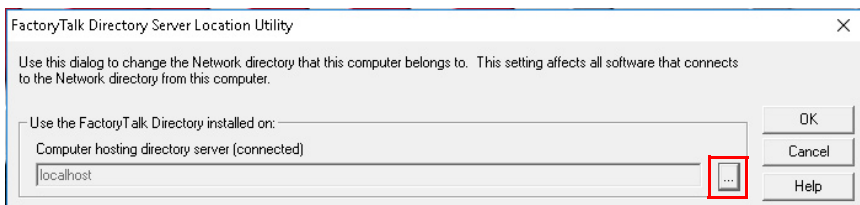
8. Read the EULA, and click Accept all.
9. The installation takes several minutes to complete. Click 'Restart now' once the installation is complete.
10. Press Ctrl+Alt+Insert and log in.

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.

Specify the FactoryTalk Directory Location

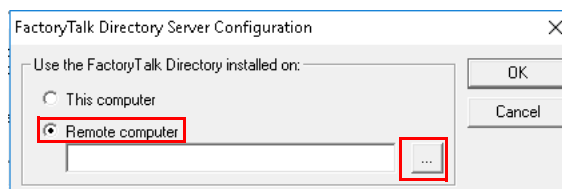
Complete these steps on the SQL server to specify the network FactoryTalk Directory location.

1. Click the Programs icon and choose Rockwell Software>FactoryTalk Tools>Specify FactoryTalk Directory Location.
2. Click Yes to allow the application to make changes to the device.
3. In the FactoryTalk Directory Server Location Utility dialog box, click Browse (ellipsis '...').



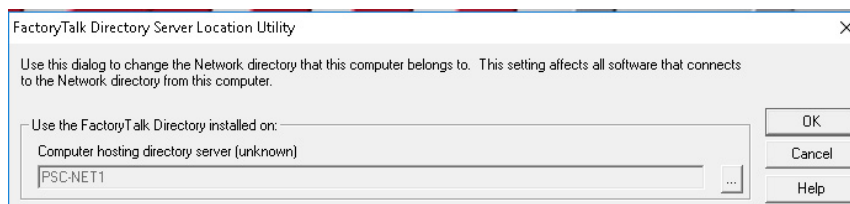
4. Type your FactoryTalk Directory Administration Console credentials into the login screen and click OK.

5. Click Remote computer and click Browse.



IMPORTANT Browse can be inactive if Network Discovery and File Share are not turned on. If Browse is inactive, type the computer name of the virtual machine that is hosting the FactoryTalk Directory.

6. Navigate the network to find the computer name of the server (typically PASS) that is hosting the FactoryTalk Directory services. Click OK.
7. Click OK to accept the location.
8. Click OK to finalize the location.



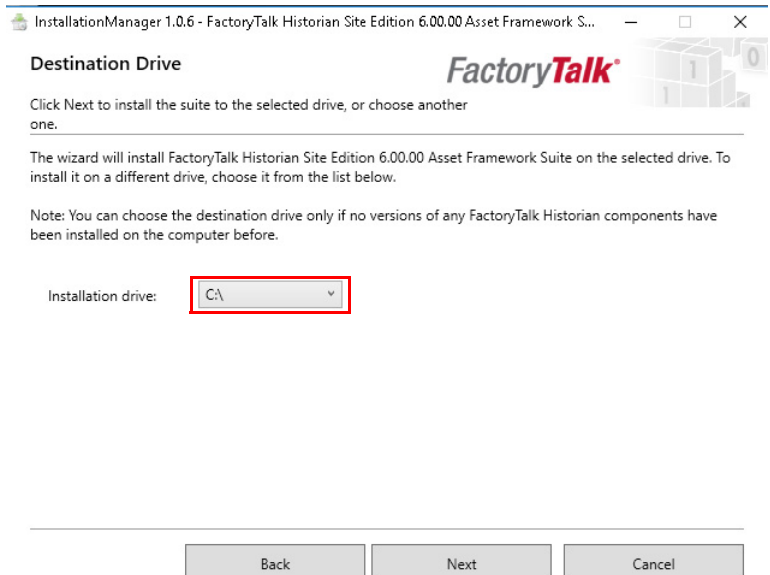
9. When prompted, type your credentials and click OK.
10. Restart after you make this change.

Install Historian Asset Framework

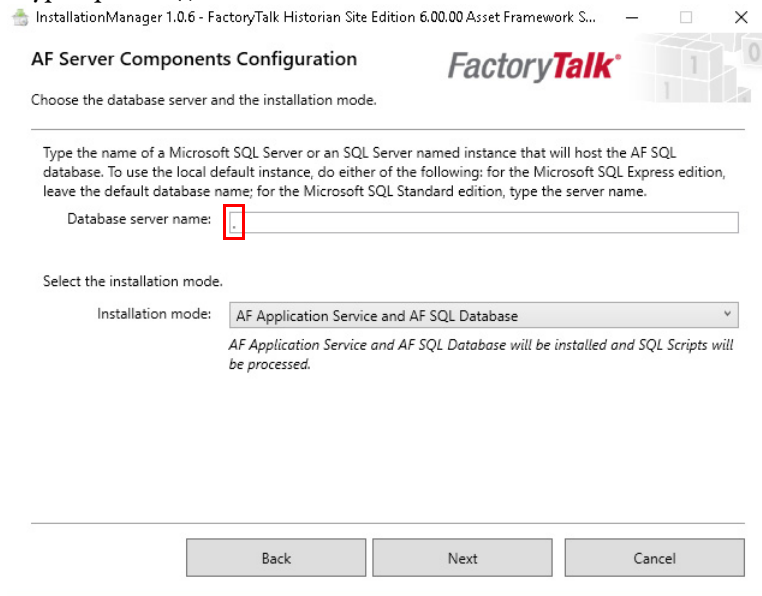
Perform these steps to install Historian Asset Framework.

IMPORTANT The installation files are not included in the SQL Server template. The installation files are in the Historian template in c:\install files\6.00.00\FTHistorian\SE-DVDDL. If Historian is already deployed on the network, access the installation files through the network. Otherwise, the Historian template can be downloaded from the Product Compatibility and Download Center (PCDC) at <http://compatibility.rockwellautomation.com/Pages/home.aspx>.

1. Navigate to the installation files.
c:\Install Files\6.00.00\FTHistorian\SE-DVDDL.
2. Click Setup.exe.
3. Click 'Install FactoryTalk Historian Site Edition'.
4. Click 'Install FactoryTalk Historian Asset Framework'.
5. Click 'Install FactoryTalk Historian AF Server'. An installation wizard window opens separately.
6. Click Next on the 'Welcome' window.
7. Read the License Agreement, click 'I accept the terms in the license agreement' and click Next.
8. Click Next on the Review Component Installation window.
9. Select the destination drive and click Next.



10. Type a period (.) for the 'Database Server name' and click Next



11. Click Install to start the installation process. If a security prompt opens, click Run to allow the process to continue.

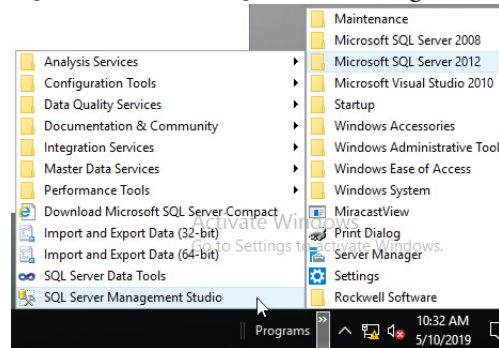
IMPORTANT At the end of the installation process (approximately 15...20 minutes), the Release Notes display in a separate window. The installation process is not complete until you close the Release Notes window.

12. Close the Release Notes, then click Finish to close the wizard.
13. Click Exit to close the Historian Installation window.

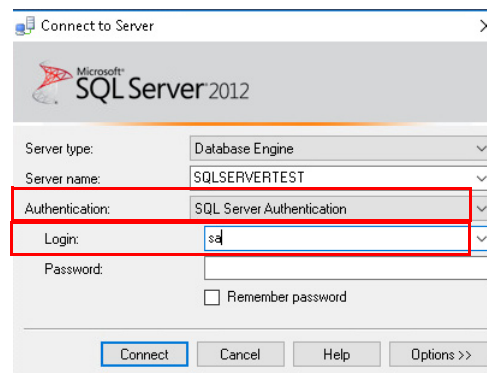
Add Local User to the SQL Server

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.

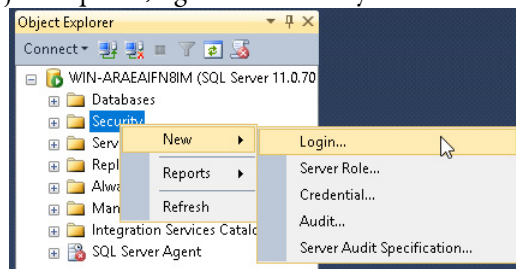
1. On the virtual image desktop, click the Programs icon and choose Microsoft SQL Server 2012>SQL Server Management Studio.



2. On the Connect to Server dialog box, log in to the 'sa' account with SQL Server Authentication.

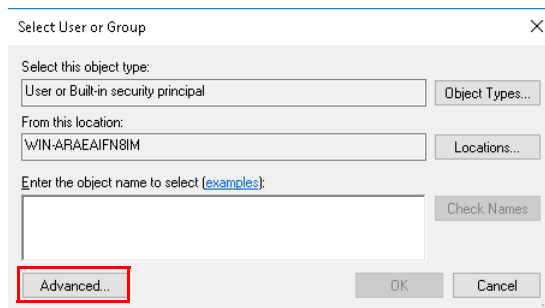


3. Type the password that you created during the SQL installation (see [page 104](#)).
4. Click Connect.
5. In the Object Explorer, right-click Security and choose New>Login.

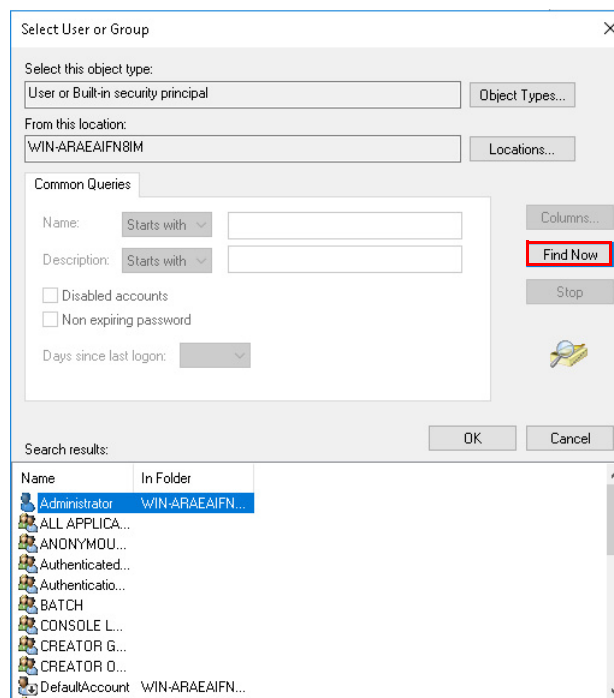


6. Click Search next to Login Name on the Login - New window.
7. Enter your security credentials.

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

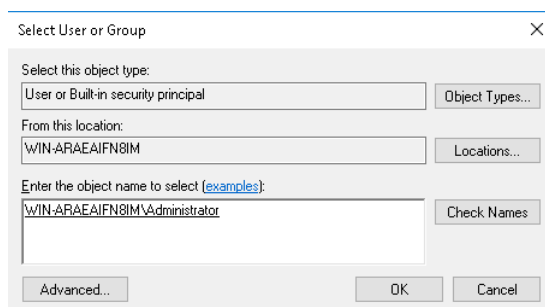


9. In the Select User or Group dialog box, click Find Now.
The Search Results are populated.



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.

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 102](#)).

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.

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 standalone Historian server.

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

Before configuring the server, complete the following tasks:

- Chapter 2 [Deploy the PlantPAx Virtual Image Templates on page 31](#).
- Chapter 3 [Server Initial Configuration on page 87](#).

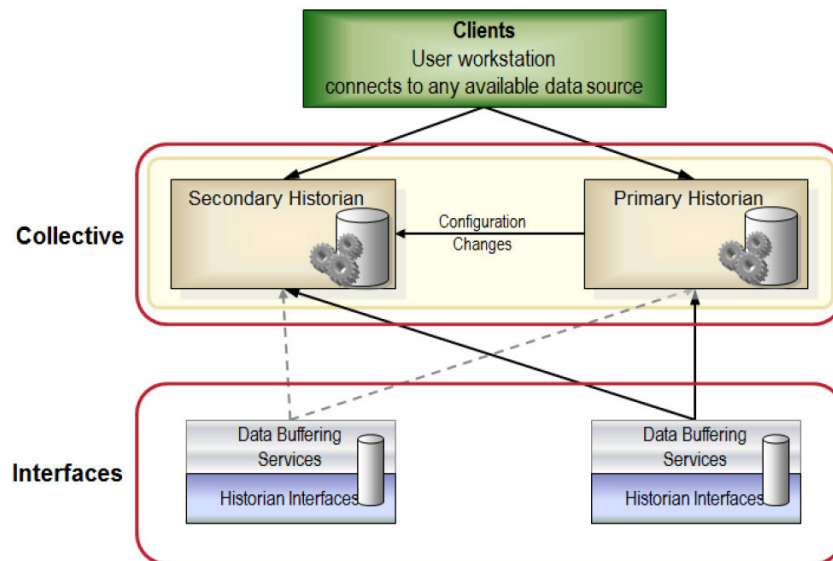
Use Collective For Historian

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 that you install AF server on the SQL Server computer.



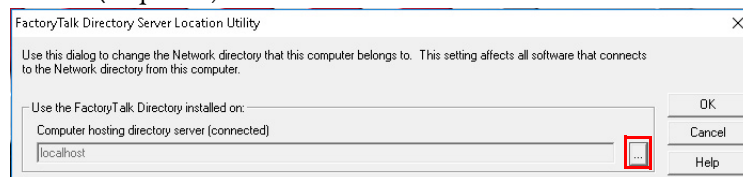
Historian Configuration

Specify the FactoryTalk Directory Location

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

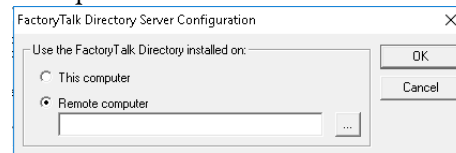
IMPORTANT During the configuration of the Historian server, a User Account Control window asks if you want to allow a program to make changes to the computer. Click Yes.

1. Click the Programs icon and choose Rockwell Software> FactoryTalk Tools>Specify FactoryTalk Directory Location.
2. Click Yes to allow changes to be made to this device.
3. In the FactoryTalk Directory Server Location Utility dialog box, click Browse (ellipsis '...').



4. Type your FactoryTalk Directory Administration Console credentials into the Login screen and click OK.

5. Click Remote computer.



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

IMPORTANT Browse can be inactive if Network Discovery and File Share are not active. Manually type the name of the server if necessary.

7. Choose the appropriate server name and click OK.
The Network FactoryTalk Directory location has now been specified.
8. When prompted, enter your credentials and click OK.
9. Restart AppServ-Info (Historian) after making this change.

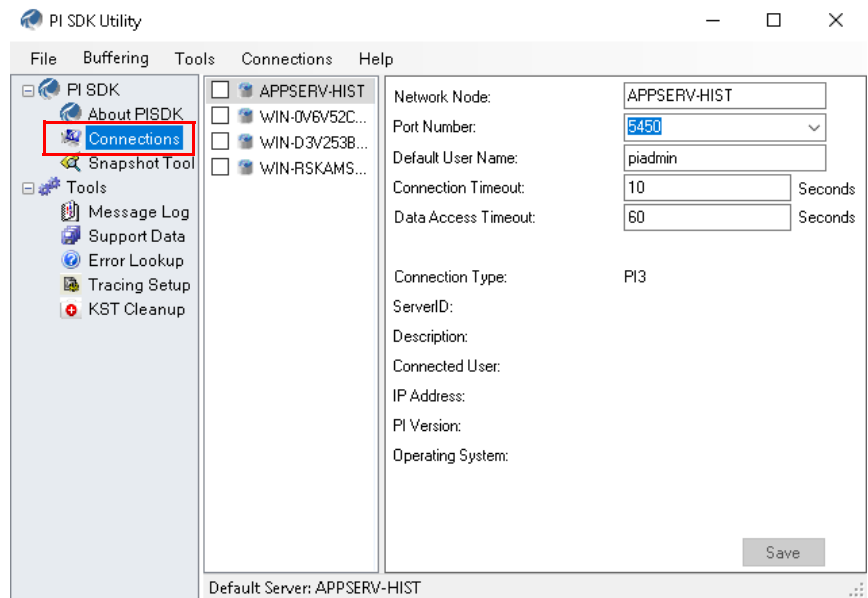
Delete Old Computer Name

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.

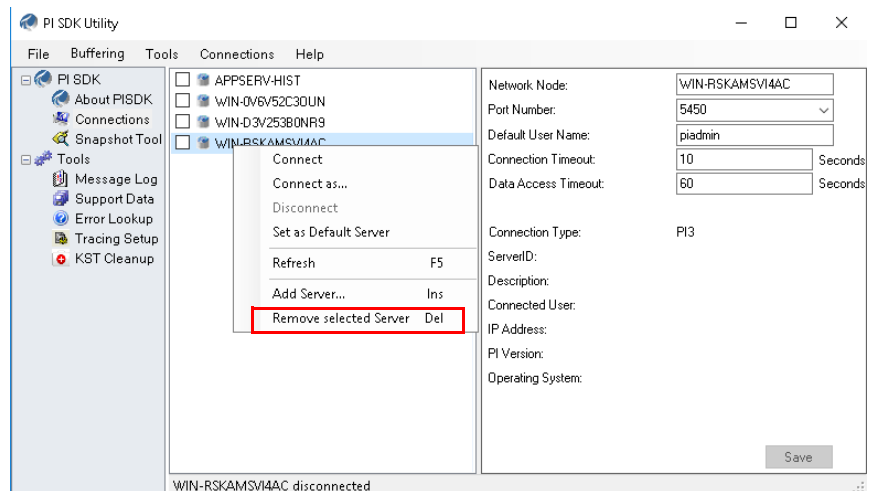
The PI Software Development Kit window opens.

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.

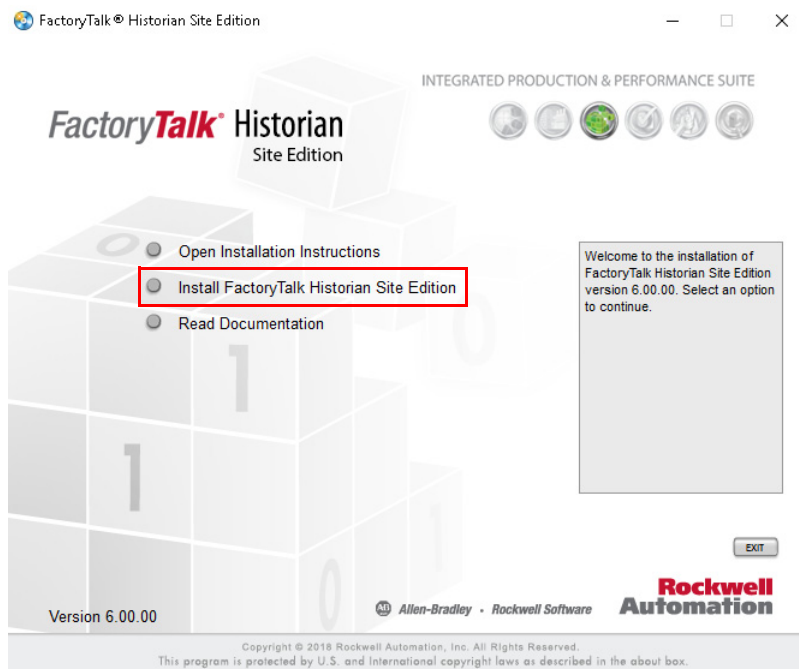
IMPORTANT If you are installing a standalone historian server, proceed with the next section. If you are installing a Historian server with Historian Asset Framework on a separate server, skip to [Complete Historian Configuration on page 123](#).

Install SQL Server Express

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

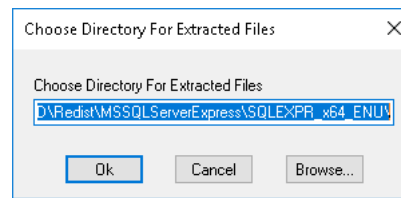
We recommend that you install FactoryTalk Historian AF software (a component of Historian software) on the SQL server. If you cannot install AF software on the SQL Server or another computer, and want to install on the Historian computer, then you are creating a standalone Historian server. Install SQL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

1. Navigate to the install files:
C:\Install Files\6.00.00-FTHistorian-SE-DVD\
2. Double-click setup.exe.
3. Run the FactoryTalk Historian SE installation wizard.
4. Click 'Install FactoryTalk Historian Site Edition'.



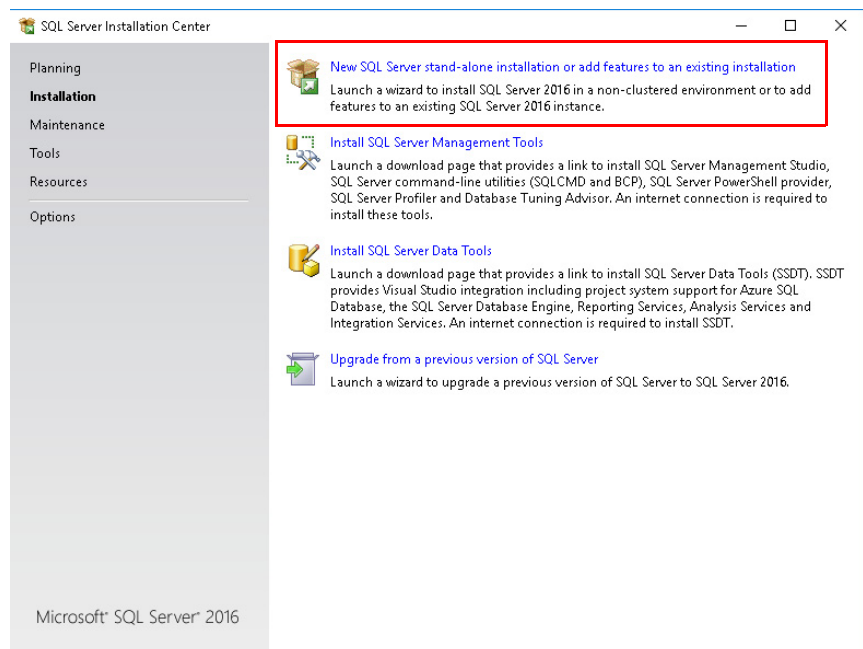
5. Click 'Install FactoryTalk Historian Asset Framework'.
6. Click 'Install Microsoft SQL Server 2016 Express'.

- Click OK to choose the default directory.



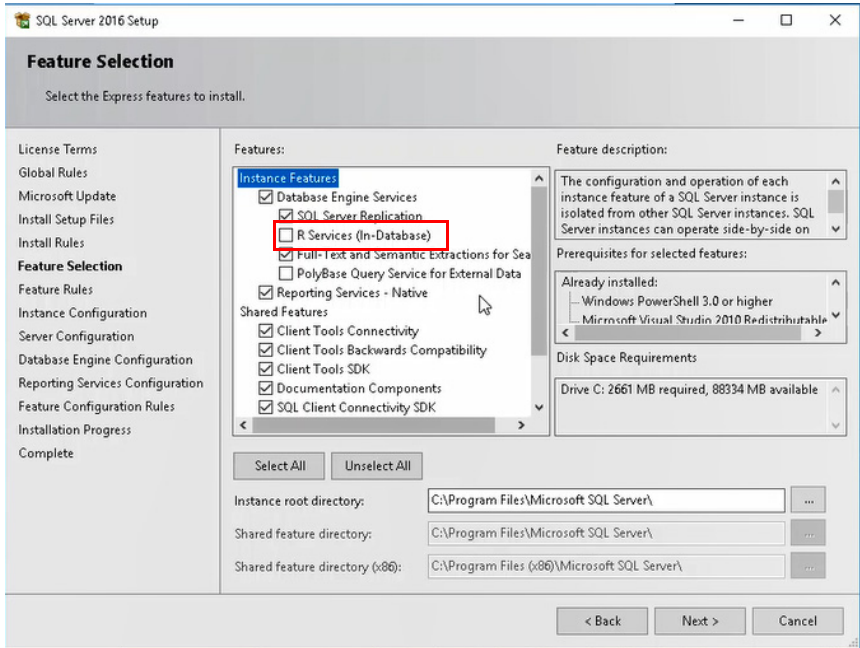
IMPORTANT For more information on installing Microsoft SQL Server 2016 Express, refer to the FactoryTalk Historian Installation and Configuration Guide. We recommend that you use the default settings during the installation of Microsoft SQL Server Express.

- Click the first option to install a new standalone SQL Server.



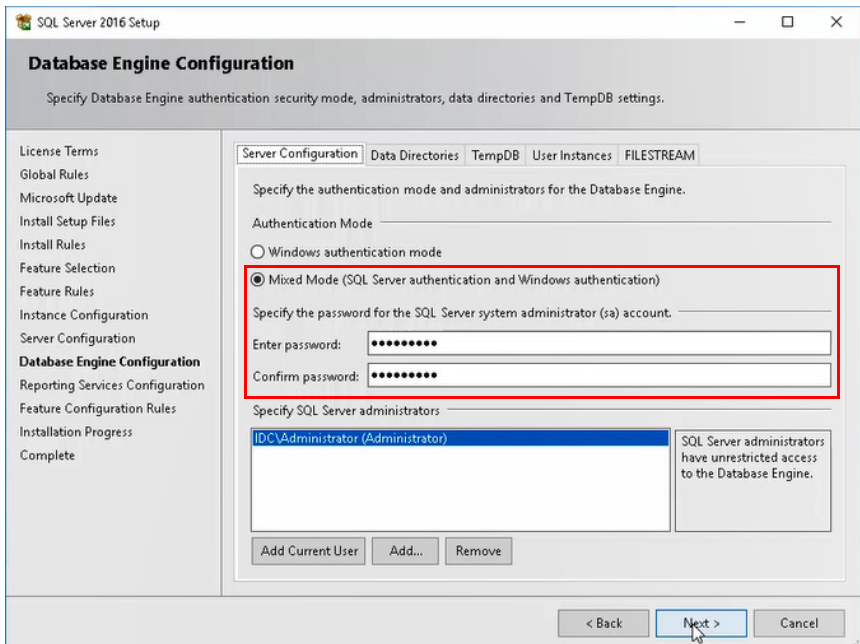
- Read the license agreement, accept the terms, and click next.
- Clear the checkbox for Microsoft updates and click next.
- Click next in the product update page.
- Click Next on the Install Rules page.

13. Clear the checkbox for R Services on the features page. Leave the default option for the rest of the features. Click Next.



TIP R Services are not required but can be installed if an Internet connection is available.

14. Click Next to accept the defaults for Instance Configuration.
15. Click Next to accept the defaults for Server Configuration.
16. Select Mixed Mode, enter the system administrator password, and click Next.



17. Select Install and Configure for Reporting Services Configuration. Click Next.
18. Click Close once the installation is complete. Installation takes approximately 15 minutes.

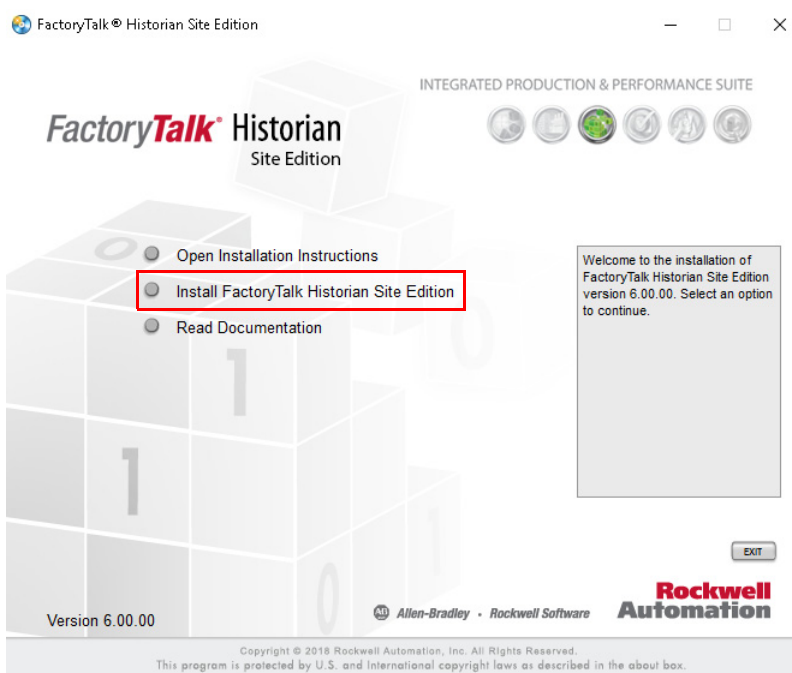
TIP Installing SQL Management tools is optional and requires an Internet connection.

19. Exit the installation wizard.
20. Restart the computer, if prompted.

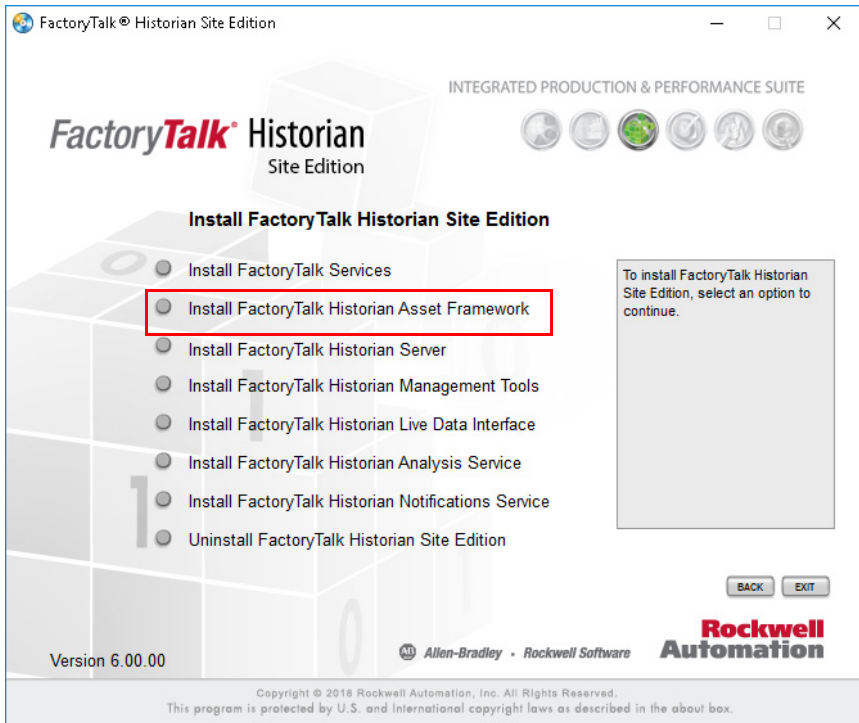
Install Historian Asset Framework (AF)

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

1. Navigate to the install files:
C:\Install Files\6.00.00-FTHistorian-SE-DVD\
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 FactoryTalk Historian AF Server'.
7. Click Next on the 'Welcome' window.
8. Read the License Agreement, click 'I accept the terms in the license agreement,' and click Next.
9. Click Next on the Review Component Installation window.
10. Click Next to use the default destination drive.

11. Click Next to accept '.\sqlexpress' as the default Database Server Name.

InstallationManager 1.0.6 - FactoryTalk Historian Site Edition 6.00.00 Asset Framework S...

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

12. Click Install to start the installation process.

InstallationManager 1.0.6 - FactoryTalk Historian Site Edition 6.00.00 Asset Framework S...

Installation Progress

Click Install to start the installation.

Component Name	Installed Version	New Version	Status
PI AF Server 2017 R2		2.9.5.8368	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.

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

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/hsc-in025.pdf>).

-
- | | |
|------------------|--|
| IMPORTANT | See the pages that are referenced in the FactoryTalk Historian SE Installation and Configuration Guide, publication HSE-IN025A : <ul style="list-style-type: none">• Verify that Historian Services are Running• Verify that Historian Server is Updating Data for Default Tags• Prepare PI MDB to AF Synchronization• Create Security Mappings• Adding the Server to the FactoryTalk Directory Connection• Assigning License Activations to the Historian Server |
|------------------|--|
-

Configure the Batch Virtual Server

This section provides procedures to install FactoryTalk Batch independently, with FactoryTalk eProcedure, or with Event archiver.

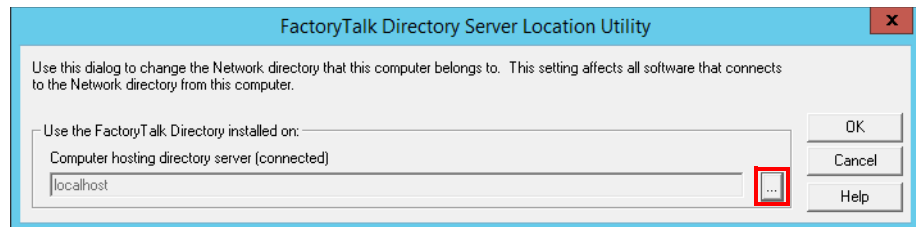
Before configuring the server, complete the following tasks:

- Chapter 2 [Deploy the PlantPAx Virtual Image Templates on page 31](#).
- Chapter 3 [Server Initial Configuration on page 87](#).

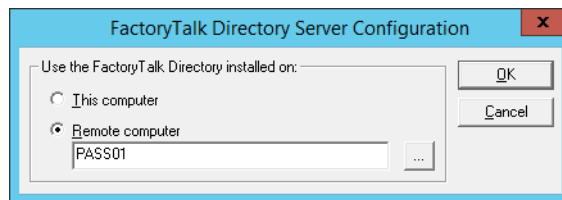
Specify FactoryTalk Directory Location

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 '...').



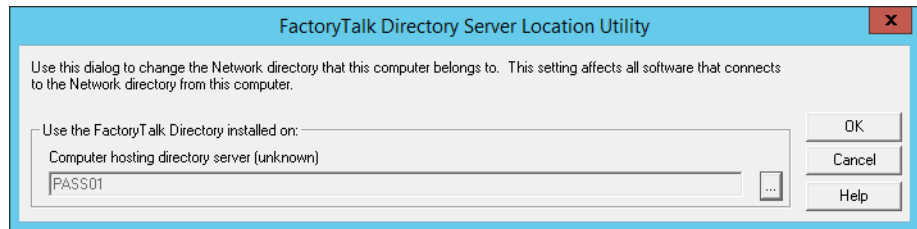
3. In the FactoryTalk Directory Server Configuration dialog box, click Remote Computer.
4. Type the name of your PASS server, or click Browse (ellipsis '...'), search for, and select your PASS server.



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

5. Click OK

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

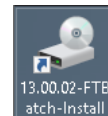


7. Log in to the FactoryTalk server when prompted.
8. Restart the virtual machine.

Install FactoryTalk Batch

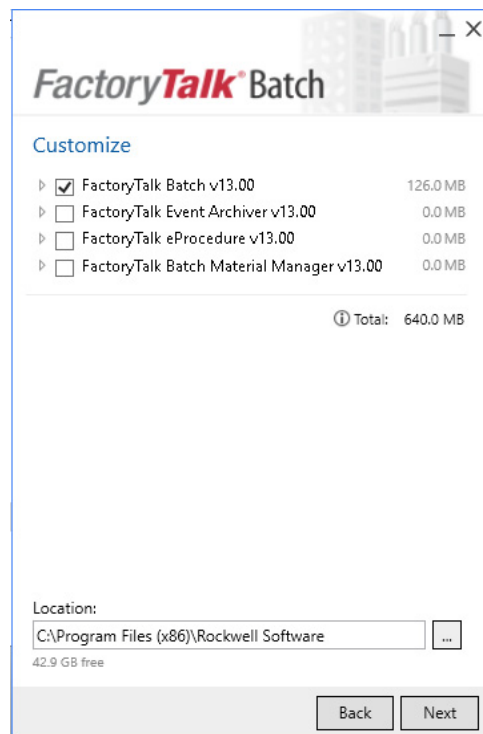
The Batch virtual server provides efficient, consistent predictable batch processing and supports the reuse of code, recipes, phases, and logic. FactoryTalk Batch combines the ISA S88 standard with proven technology that provides the flexibility you need to supply your product to market faster.

1. On the desktop, double-click the shortcut to the Batch Installation file folder.



2. Double-click Setup.exe.
3. When the Setup window displays, click Next.

4. Clear the checkbox for FactoryTalk Event Archiver. Leave FactoryTalk Batch checked. Click Next.



5. Check to allow changes to this computer and click Next.
6. Select Network Directory and click Next.
7. Type a user name and password for the batch server.
8. Click Install.
9. On the EULA page, read the license agreement and click 'Accept all'.

TIP Installation takes approximately 15 minutes.

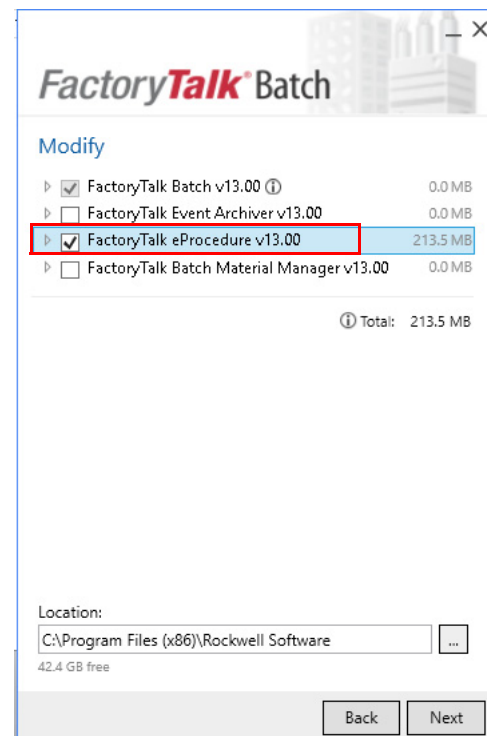
10. Select whether to activate now or later and click Next. You must be connected to the Internet to activate now.
11. Click Close.

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. On the desktop, double-click the shortcut to the Batch Installation file folder.
2. Double-click Setup.exe.
3. When the Setup window displays, click Modify.
4. Check FactoryTalk eProcedure v13.00 and click Next.



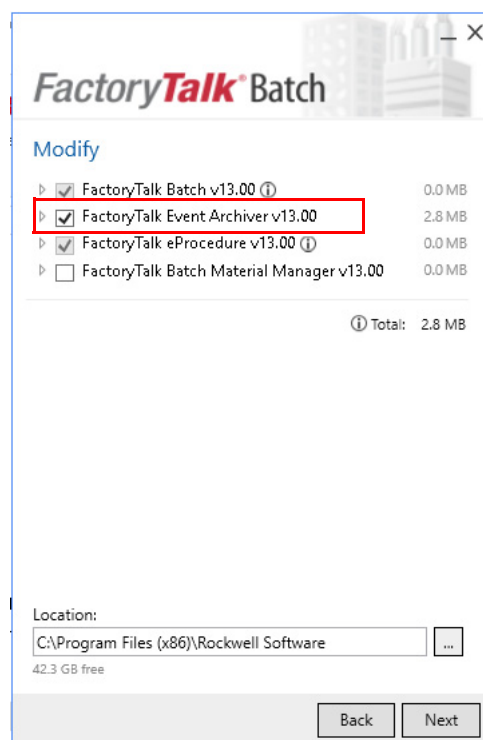
5. Select Network Directory and click Next.
6. Type a user name and password for the batch server.
7. Click Modify.
8. On the EULA page, read the license agreement and click 'Accept all'.
9. Click Close when the modification is complete.

Install FactoryTalk Event Archiver

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

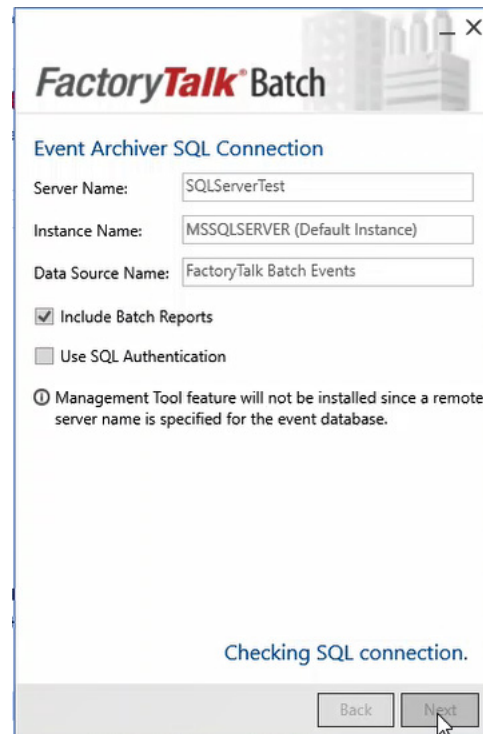
IMPORTANT You must have FactoryTalk Batch installed on the server to complete the following procedure.

1. On the desktop, double-click the shortcut to the Batch Installation file folder.
2. Double-click Setup.exe.
3. When the Setup window displays, click Modify.
4. In the FactoryTalk Batch window, click FactoryTalk Event Archiver v13.00.



5. Click Next.

6. Type your SQL server name. Use the Default Instance, Source Name, and Include Batch Reports.



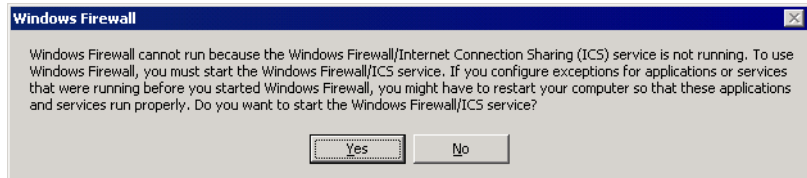
7. Click Next.
8. Click Modify once the connection is validated.
9. On the EULA page, read the license agreement and click 'Accept all'.
10. Click Close once the modification is complete.

TIP Installation takes approximately 3 minutes.

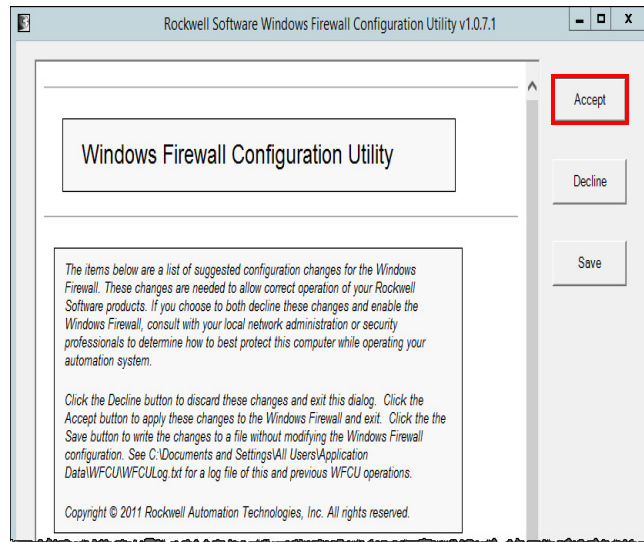
Configure the Windows Firewall (Optional)

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. If no changes are required Click Exit.



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:\Install Files\Batch Installation Software\13.00.02-FTBatch-ePro-MatMgr-DVD
- The FactoryTalk Batch Administrator's Guide is in your template at c:\Program Files (x86)\Commion 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.

Before configuring the server, complete the following tasks:

- Chapter 2 [Deploy the PlantPAx Virtual Image Templates on page 31](#).
- Chapter 3 [Server Initial Configuration on page 87](#).

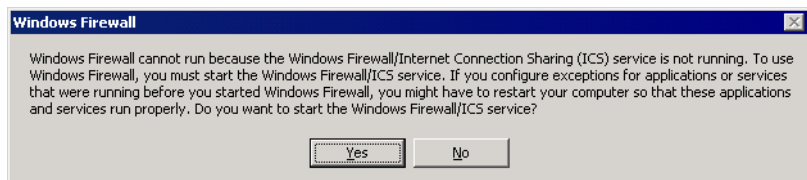
Configure a Firewall

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. If no changes are required Click Exit.
4. Click OK on the Confirm Windows Firewall Changes dialog box.

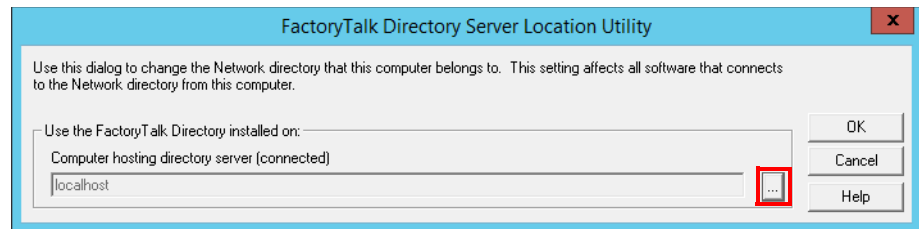
The utility configures the Windows firewall and the firewall is set to a new state (if different).

Specify FactoryTalk Directory Location

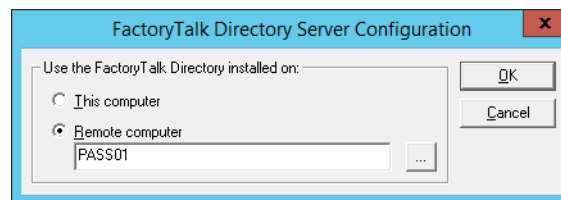
In this section, you specify the location of the FactoryTalk Directory.

Complete these steps.

1. On the virtual image desktop, click the Programs icon and choose Rockwell Software>FactoryTalk Tools>Specify FactoryTalk Directory Location.
2. In the FactoryTalk Directory Server Location Utility dialog box, click Browse (ellipsis '...').

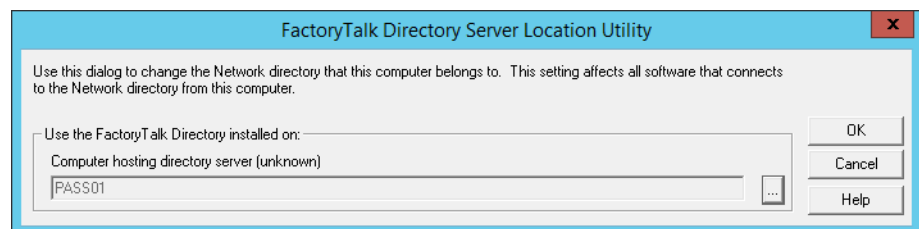


3. In the FactoryTalk Directory Server Configuration dialog box, click Remote Computer.
4. Type the name of your PASS server, or click Browse (ellipsis '...'), search for, and select your PASS server.



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

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

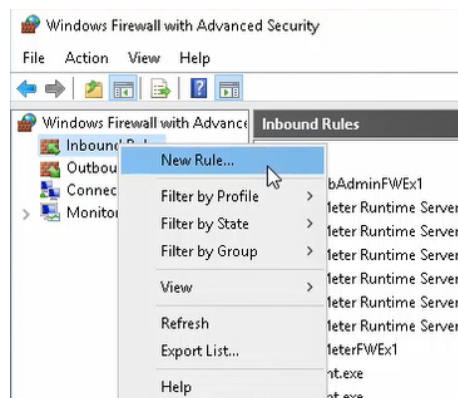


7. Log in to the FactoryTalk server when prompted.
8. Restart the virtual machine.

Create a New Inbound Rule

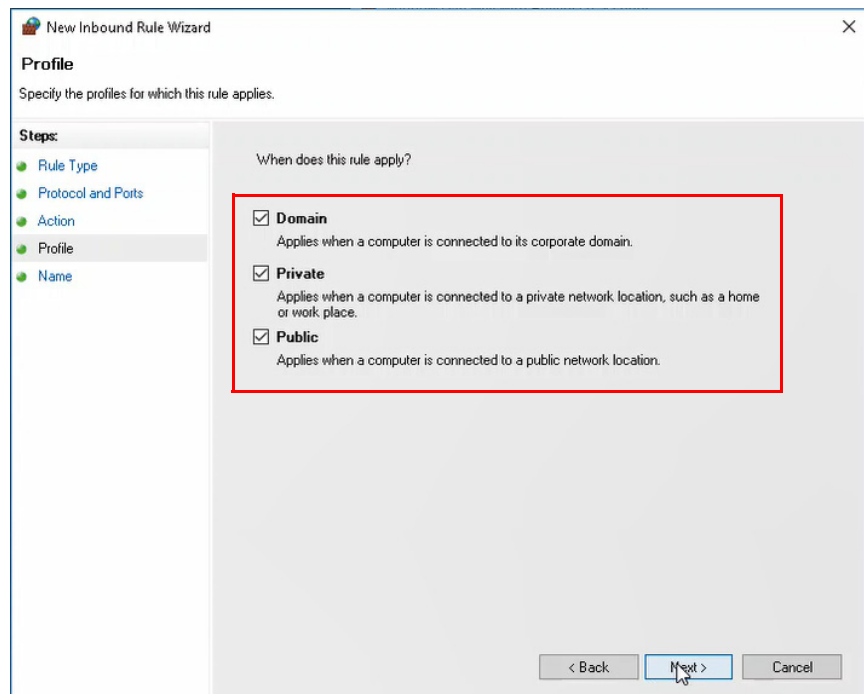
There must be an inbound rule that allows a connection through the firewall to the AppServ-Info (SQL) server.

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. Select TCP and Specify local ports.
6. Type '1433' as the specific local port.
7. Click Next.
8. Select 'Allow the connection' and then click Next.

9. Make sure that all boxes are checked and click Next.



10. Type External SQL Connection in the Name field and click Finish.

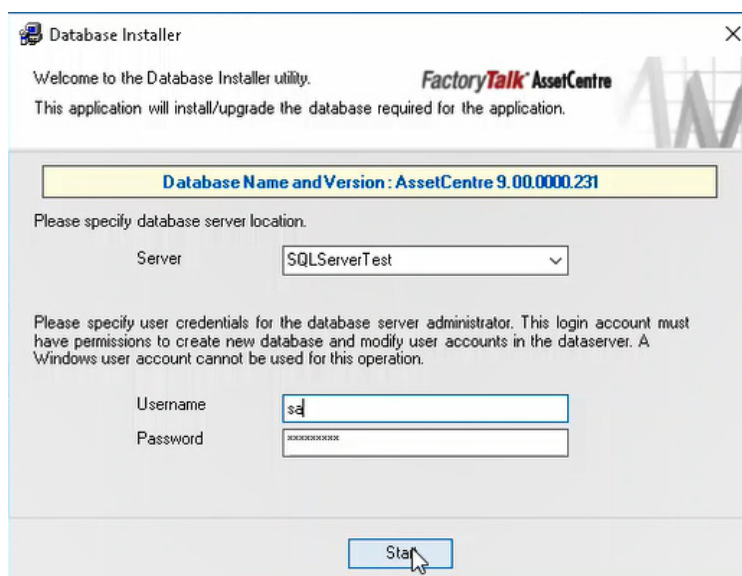
The firewall now permits connections to the external SQL server in a secure manner.

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.

1. Open the Server Setup shortcut on the desktop and run the FTAssetCentre.DBInstaller.exe file.
2. Type the name of the SQL server in the server section. Log in with the 'sa' user account created when installing the SQL server.



3. Click Start.
4. Type a password for the AssetCentreUser account. Click OK.
5. Click YES to acknowledge creating the new user.
6. Open the Server Setup shortcut on the desktop and run the FTAssetCentre.AosCatalogImport.exe file.

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).

Before configuring the server, complete the following tasks:

- Chapter 2 [Deploy the PlantPAx Virtual Image Templates on page 31](#).
- Chapter 3 [Server Initial Configuration on page 87](#) if deployed on a server.
- Chapter 5 [Configure the Servers on page 97](#) if deployed on a workstation.

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 [Activation Considerations on page 201](#) 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.
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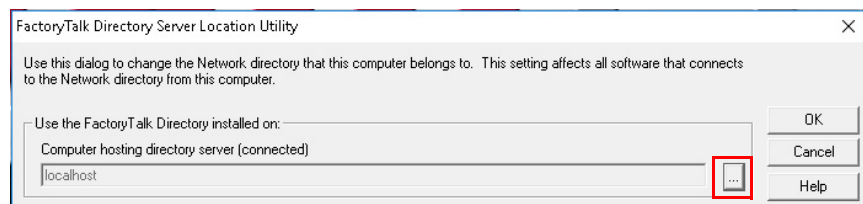
Specify the FactoryTalk Directory Location

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.

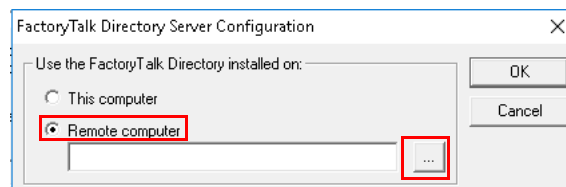
Complete these steps to specify the network FactoryTalk Directory location for EWS and OWS workstations.

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. Click Yes to allow the application to make changes to the device.
3. In the FactoryTalk Directory Server Location Utility dialog box, click Browse (ellipsis '.').



4. Type your FactoryTalk Directory Administration Console credentials into the login screen and click OK.
5. Click Remote computer and click Browse.



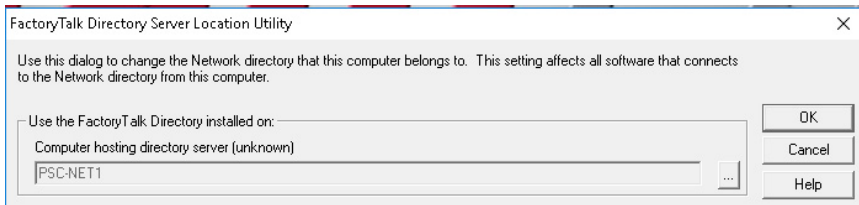
IMPORTANT Browse can be inactive if Network Discovery and File Share are not turned on.

6. Navigate the network to find the computer name of the server (typically PASS) that is hosting the FactoryTalk Directory services. Click OK.

If Browse is inactive, type the computer name of the virtual machine that is hosting the FactoryTalk Directory.

7. Click OK to accept the location.

- Click OK to finalize the location.



- When prompted, type the FactoryTalk Directory Administrator username and password and click OK.

TIP The credentials were configured in [Configure the FactoryTalk Directory on the PASS on page 99](#).

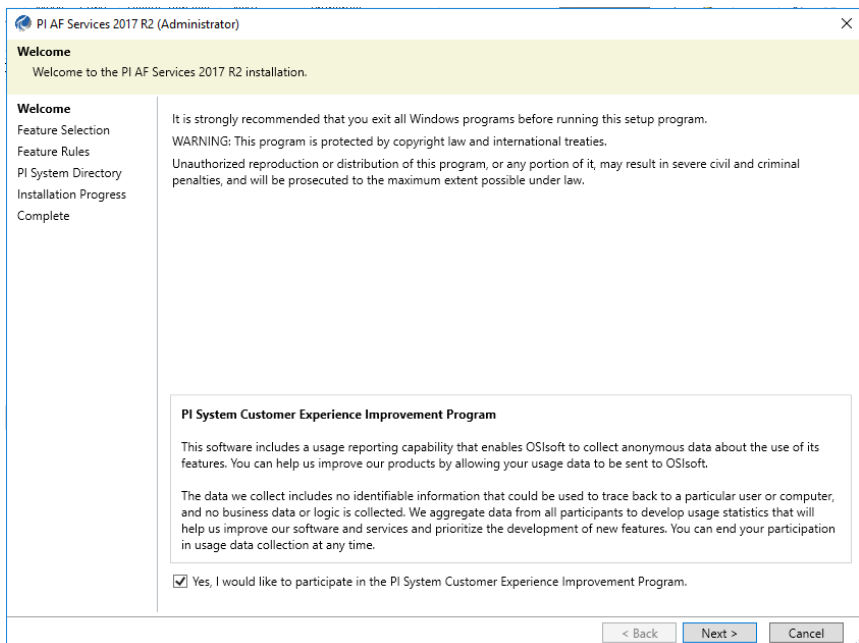
- Restart after you make this change.

Install PI Builder Excel Add-in

IMPORTANT This section is not performed for OWS. Proceed to [Configure Remote Desktop Services on page 141](#).

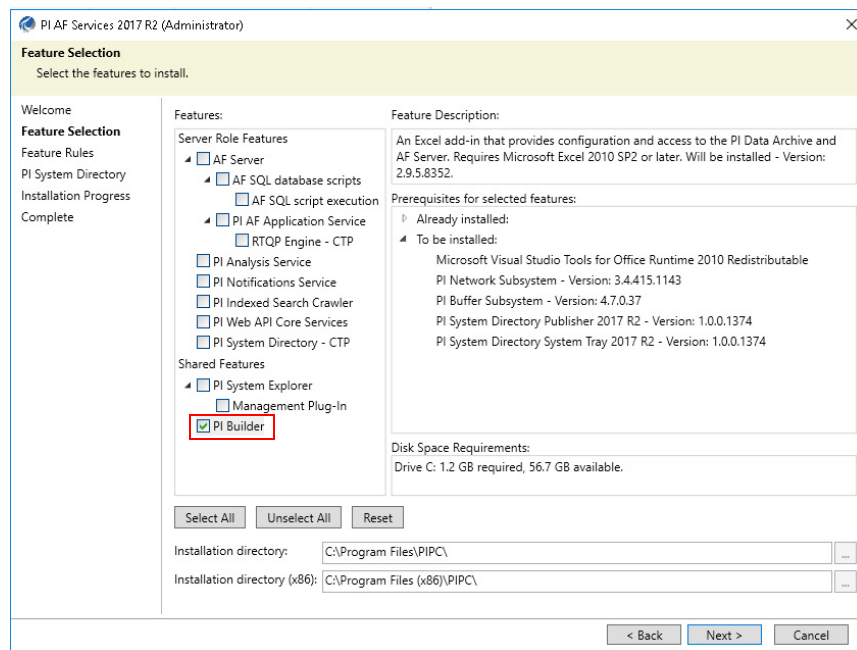
IMPORTANT Microsoft Excel 2010 SP2 or later must be installed before continuing.

- On the single-server image, click the PIAF setup folder shortcut on the desktop.
- Double-click the setup file. PI-AF-Services_2017-R2A_.exe



- Click Next.

4. Check the box for PI Builder and make sure that all other boxes are cleared.



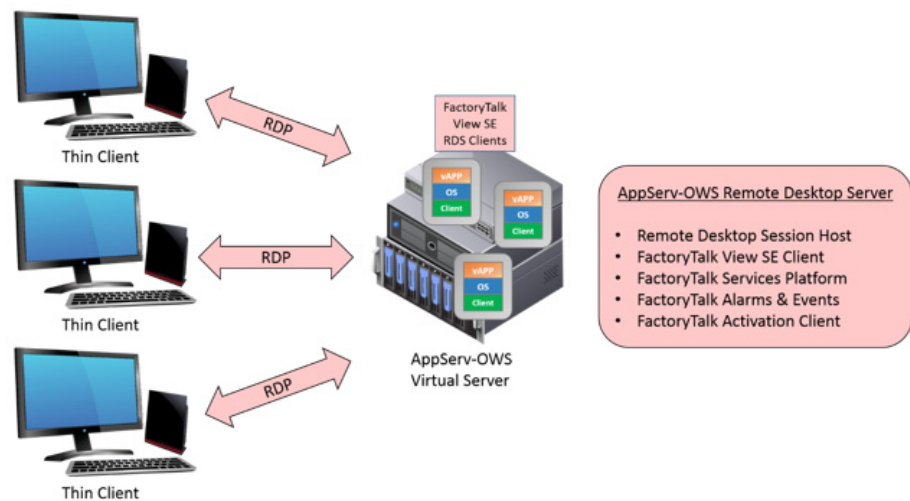
5. Click Next.
6. Click Install to accept the defaults and begin installation.
7. Click Reboot once the installation is finished.

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 one 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 that is 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 one 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 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

IMPORTANT	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.
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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 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, contact your Microsoft distributor.
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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 that is designed specifically for industrial environments with premier Logix integration. VantagePoint EMI integrates all data into one 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.

Before configuring the server, complete the following tasks:

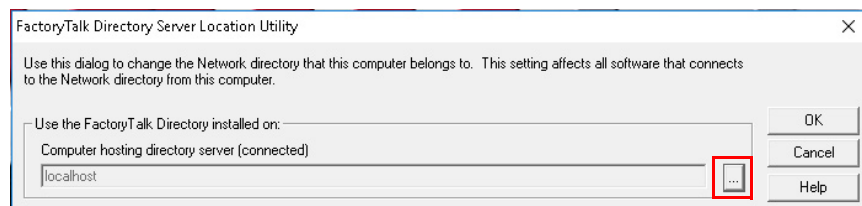
- Chapter 2 [Deploy the PlantPAx Virtual Image Templates on page 31](#).
- Chapter 3 [Server Initial Configuration on page 87](#).

Specify the FactoryTalk Directory Location

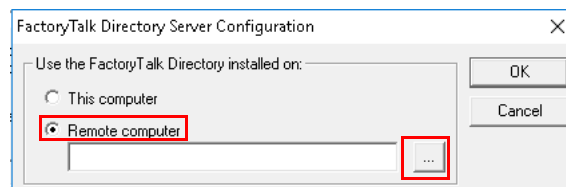
IMPORTANT To complete this procedure, a PASS server must be configured on your system. The workstation being configured must have an established connection with the PASS server.

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

1. Click the Programs icon and choose Rockwell Software>FactoryTalk Tools>Specify FactoryTalk Directory Location.
2. Click Yes to allow the application to make changes to the device.
3. In the FactoryTalk Directory Server Location Utility dialog box, click Browse (ellipsis '...').



4. Type your FactoryTalk Directory Administration Console credentials into the login screen and click OK.
5. Click Remote computer and click Browse.

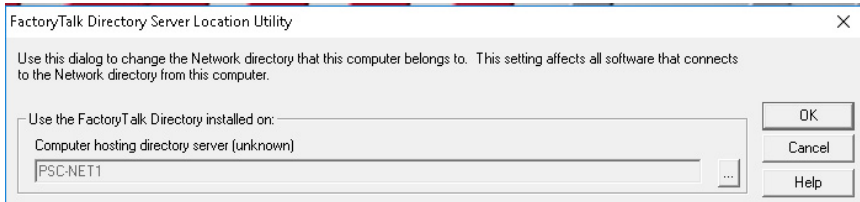


IMPORTANT Browse can be inactive if Network Discovery and File Share are not turned on.

6. Navigate the network to find the computer name of the server (typically PASS) that is hosting the FactoryTalk Directory services. Click OK.

If Browse is inactive, type the computer name of the virtual machine that is hosting the FactoryTalk Directory.

7. Click OK to accept the location.
8. Click OK to finalize the location.



9. When prompted, type the FactoryTalk Directory Administrator username and password and click OK.

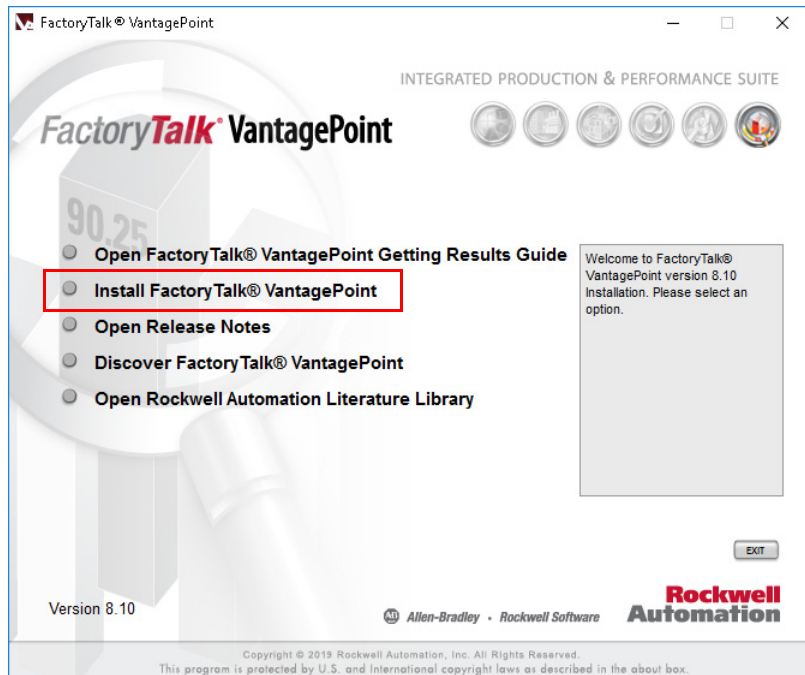
TIP The credentials were configured in [Configure the FactoryTalk Directory on the PASS on page 99](#).

10. Restart after you make this change.

Install VantagePoint Server Software

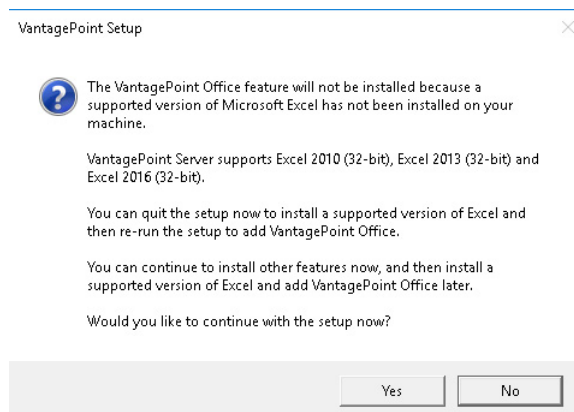
Complete these steps to install FactoryTalk VantagePoint software.

1. Navigate to the installation setup folder:
c:\Install Files\8.10.00-VantagePoint-EMI-DVD
2. Double-click setup.exe.
3. Click Install FactoryTalk VantagePoint.



4. Click Install FactoryTalk VantagePoint.
5. 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.



6. Click Next on the Wizard Welcome page.

7. Read the License Agreement, click 'I accept the terms in the License Agreement', and click Next.
8. Click Express on the 'Choose Setup Type' page.
A warning appears if you have not installed Microsoft Excel.
9. Click OK.
10. 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.

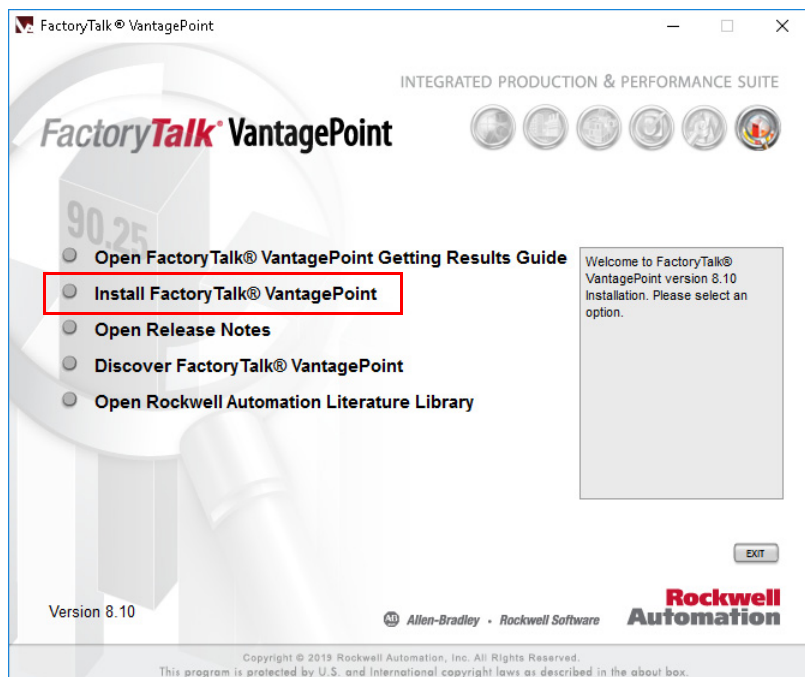
11. Click Next.
12. Type the Domain name, user name for the Domain controller, and password for the Domain controller in the System/Office User page
13. Click Next.
14. Click Install.
15. Click Finish.
A DOS window opens to finish the configuration. It closes automatically.

Install Microsoft Excel Add-In

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

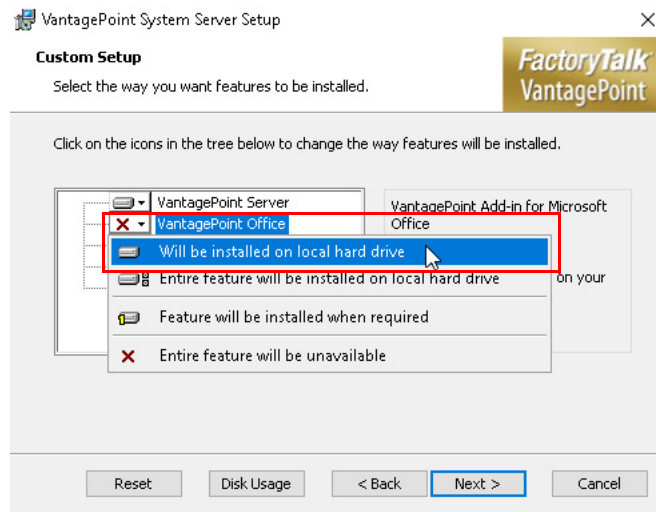
The Microsoft Excel add-in enables FactoryTalk VantagePoint to generate Excel spreadsheet reports. Complete these steps to install the Excel add-on software.

1. Navigate to the installation setup folder:
c:\Install Files\8.10.00-VantagePoint-EMI-DVD
2. Double-click setup.exe.
3. Click Install FactoryTalk VantagePoint.



4. Click Install FactoryTalk VantagePoint.
5. Click Next on the Wizard Welcome page.
6. Click Modify on the Modify, Repair, or Remove installation page.

7. Click the VantagePoint Office pull-down menu and select 'Will be installed on local hard drive.'



8. Click Next.
9. Click Install.
10. Type the Domain name, user name for the Domain controller, and password for the Domain controller in the System/Office User page
11. Click Next.

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

12. 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.

13. Click Finish.

Notes:

Workstation Common Configuration

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 [Activation Considerations on page 201](#) 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.

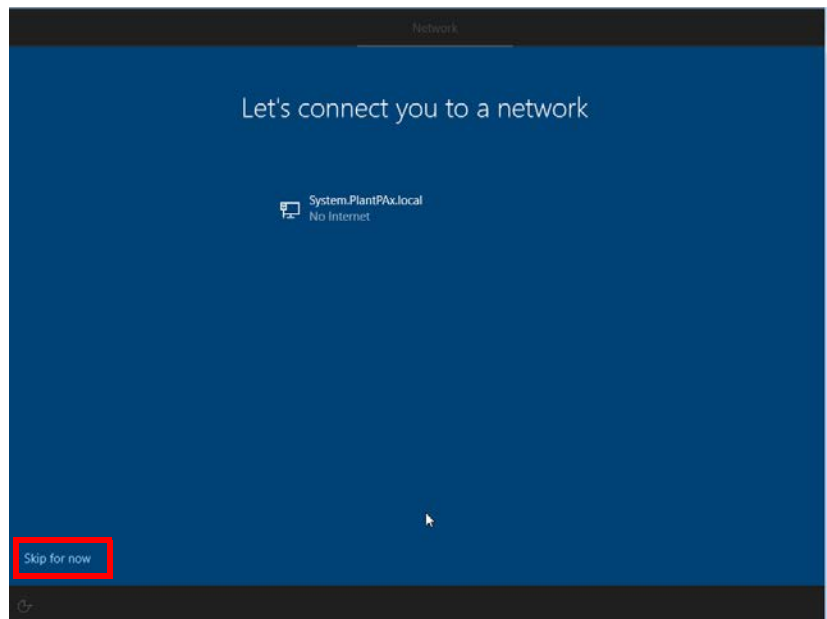
Before You Begin

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 31](#) for details.

Configure Microsoft Windows

Complete these steps to configure Microsoft Windows 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 layout for the appropriate language and click Yes.
7. Next you are asked if you want to add a second keyboard layout. 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.
10. Type a user name and click Next.
11. Create a password and click Next.

12. Retype the password to confirm your entry.
13. Click Next.
14. Create three security questions, and click Next.

Create security questions for this account

Just in case you forget your password, choose 3 security questions, and make sure your answers are unforgettable.

Security question (1 of 3)

Your answer

Next

15. Click No when prompted to make Cortana your personal assistant.
16. Turn Off all privacy settings for your device and click Accept.

Choose privacy settings for your device

Microsoft puts you in control of your privacy. Choose your settings, then select 'Accept' to save them. You can change these settings at any time.

Speech recognition
You won't be able to talk to Cortana and other voice-enabled Microsoft Store apps.
☐ Don't use speech recognition

Find my device
Windows won't be able to help you keep track of your device if you lose it.
☐ No

Inking & typing
Don't use my data to help improve the language recognition and suggestion capabilities of apps and services running on Windows.
☐ No

Ad ID
The number of ads you see won't change, but they may be less relevant to you.
☐ No

Location
You won't be able to get directions based on your current location automatically or enjoy other services that require your location to work properly.
☐ No

Diagnostic data
Send only info about your device, its settings and capabilities, and whether it is performing properly. Diagnostic data is used to help keep Windows secure and up-to-date, troubleshoot problems, and make product improvements.
☐ Basic

Tailored experiences
The tips, offers, and recommendations you see will be more generic and may be less relevant to you.
☐ No

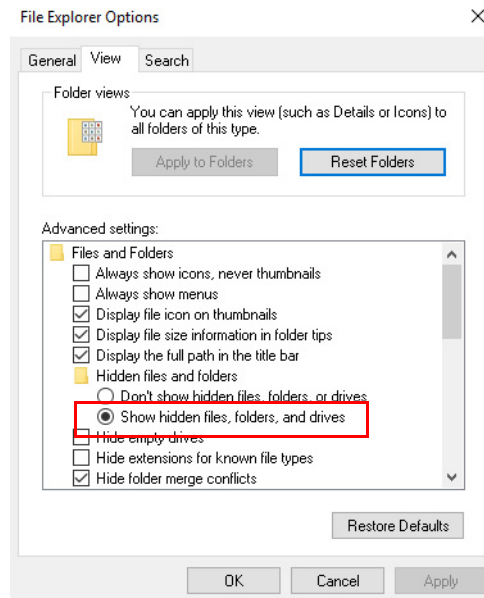
Learn more Accept

17. Enter the Windows product key.

Configure Programs Menu

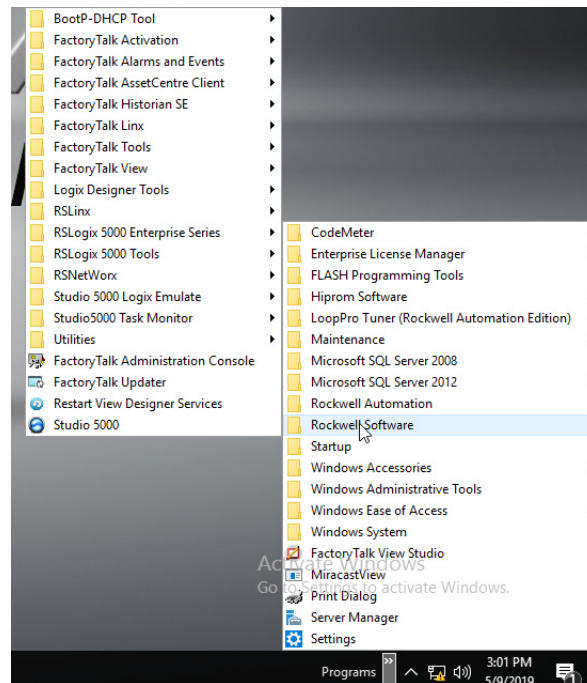
Complete the steps on the system computers to group folders under 'Programs' on the taskbar. When complete, you can access Windows and Rockwell Software® folders by clicking the Programs » symbol on the task bar.

1. Navigate to the Control Panel and choose File Explorer Options.
2. On the View Tab, select 'Show hidden files, folders, and drives' and click OK.



3. Right-click on the taskbar, choose Toolbars>New toolbar.
4. On the New Toolbar window, navigate to your Programs folder.
For example:
C:\ProgramData\Microsoft\Windows\StartMenu\Programs
5. Click Select Folder.

The result is a custom menu with easy access to Rockwell Software conveniently on the Windows taskbar.



6. Before proceeding, click the Date/Time in the lower right-hand corner of the desktop. Verify that the Date and Time settings are correct.
7. Turn off the 'Set time automatically' feature in the Date and Time settings.

Standard Workstation Configuration

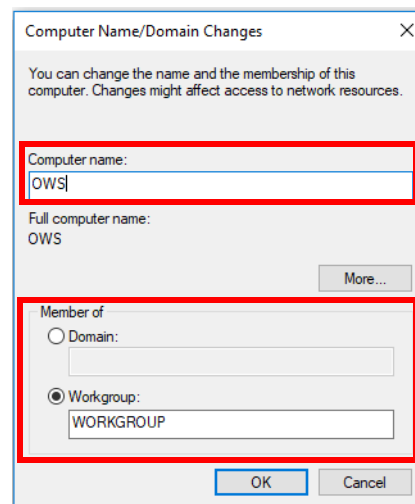
The following procedures apply to EWS and OWS workstations.

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. Navigate to the Control Panel on the workstation and select 'System'.
2. Click 'Change Settings' in the computer name, domain, and workgroup settings area.
3. On the System Properties window, on the Computer Name tab, click Change.
4. Type a computer name in the Computer Name box.

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



5. 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.

6. Click OK.

7. Type an Administrator username and password.
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. Navigate to the Control Panel.
2. Choose System.
3. Click Remote settings.
4. In the Remote Assistance Section, verify that the checkbox to 'Allow Remote Assistance connections to this computer' is not checked.
5. In the Remote Desktop Section, click the 'Allow remote connections to this computer' box.
6. Click OK.

Adjust the Processor Scheduling Setting

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

1. Navigate to the Control Panel.
2. Choose System.
3. Click the Advanced system settings.
4. Click Settings under Performance.
5. Select the Advanced tab.
6. Select 'Adjust for best performance.'
7. Click OK.

EWS / OWS Configuration

See [Configure the AppServ-OWS/AppServ-EWS Virtual Servers on page 137](#) to continue the configuration.

TIP The configuration is the same from this point forward for both server and workstation-based EWS and OWS.

Configure PASS-C / OWS ISO

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 3](#).

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

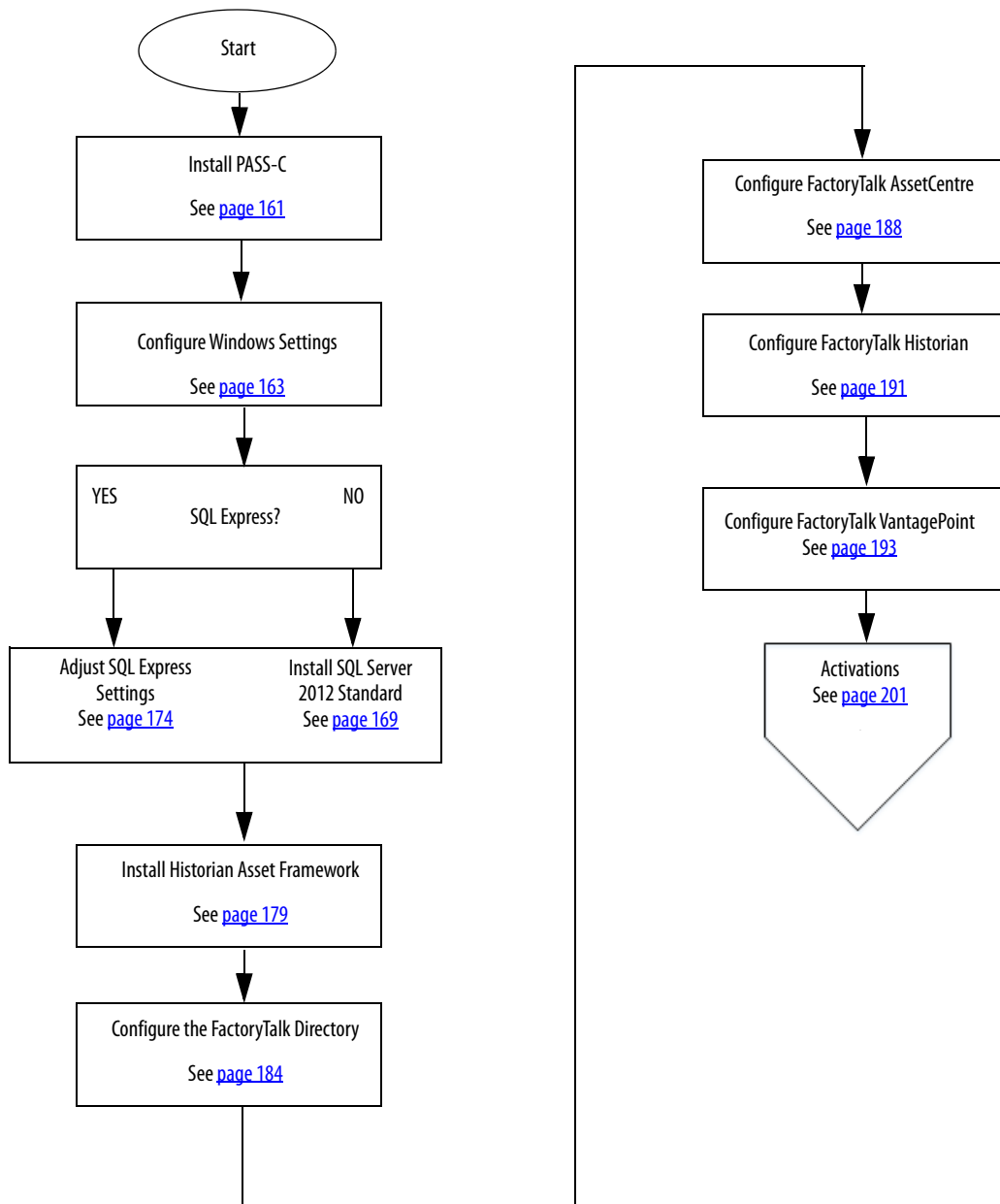
IMPORTANT The USB device contains a bootable installation of a PASS-C server or OWS workstation.

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 one file (.ISO type) which can be used to create your own bootable device. Typical bootable devices that 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 4](#) 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.

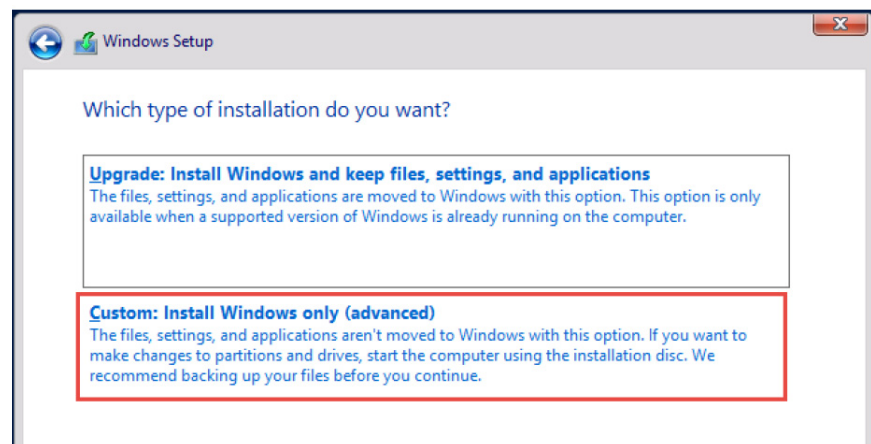
Figure 4 - PASS-C Server Workflow



Install PASS-C

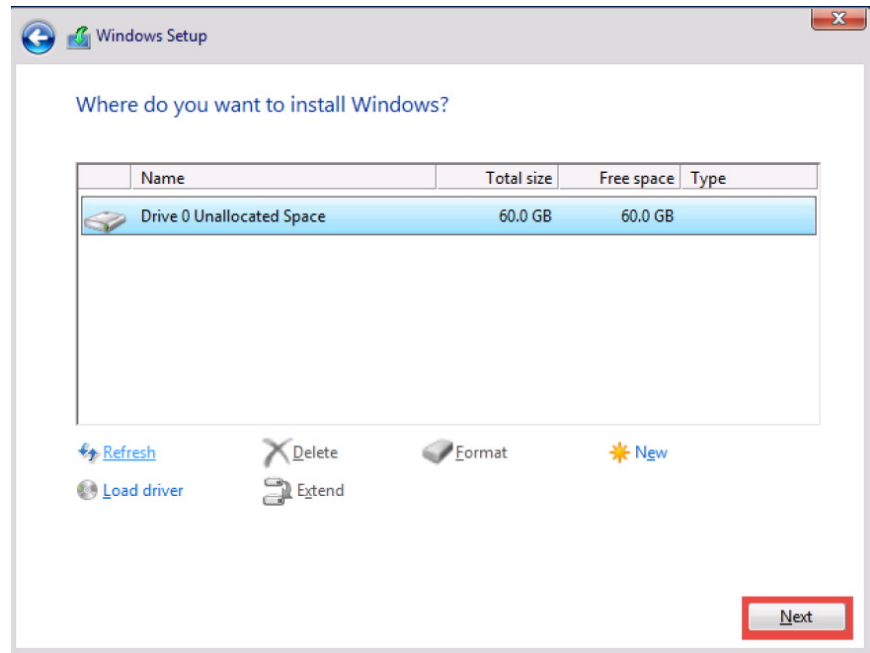
Complete these steps to install the PASS-C.

1. Make sure that your computer is capable of booting from a USB drive. Enter the BIOS Setup as the computer is powering on (typically by pressing the F2 key). Make sure that the Boot options include booting from a USB device.
2. Shut down the computer and connect the USB drive.
3. Turn on the computer. 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. Enter the product key or Click I don't have a product key.
8. Click Install Now.
9. Click "I accept the license terms", and click Next.
10. Click Custom (installation).



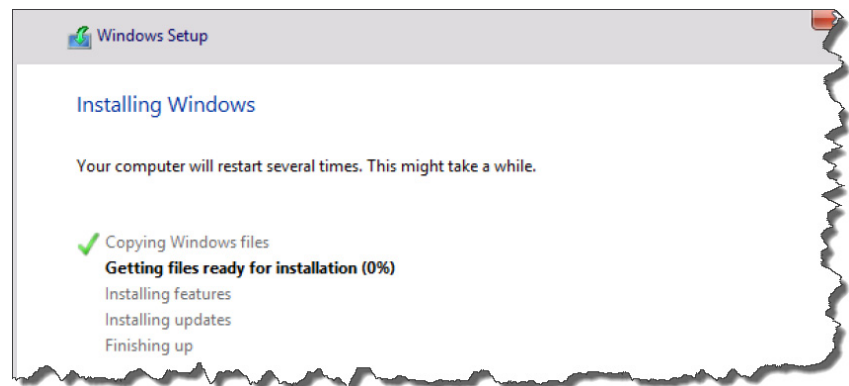
11. To store the installation, select the hard disk drive.

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



12. Click Next.

The installation typically takes about an hour.



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

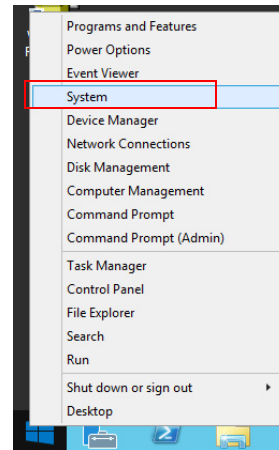
13. Type an Administrator password (for your system).
14. Type a confirmation password and click Finish.

The installation is complete.

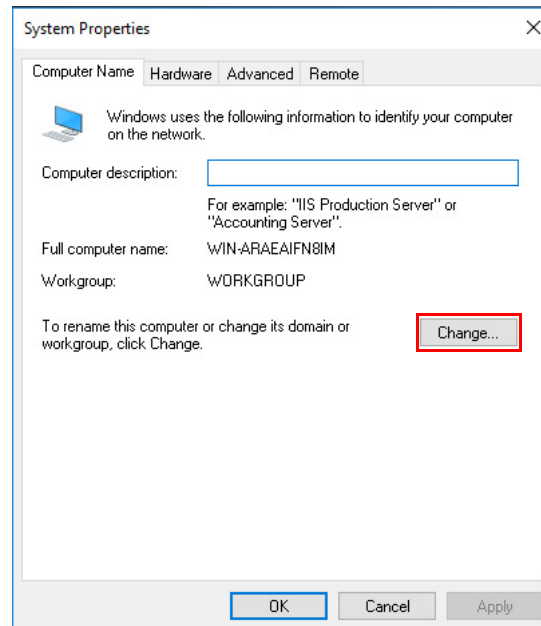
Configure Windows Settings

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. In the Product Key window, type a valid Windows Server Product Key and click OK.
3. Verify that the product key is correct and click Yes.
4. Click OK in the message window when the product key was installed successfully.
5. Install any required drivers for your hardware (graphics, Ethernet, chipset, and so on).
6. Right-click the windows start icon and select 'System'.



7. Click 'Change Settings'.
8. Click Change on the System Properties dialog box.



9. Enter the new computer name. Click OK.

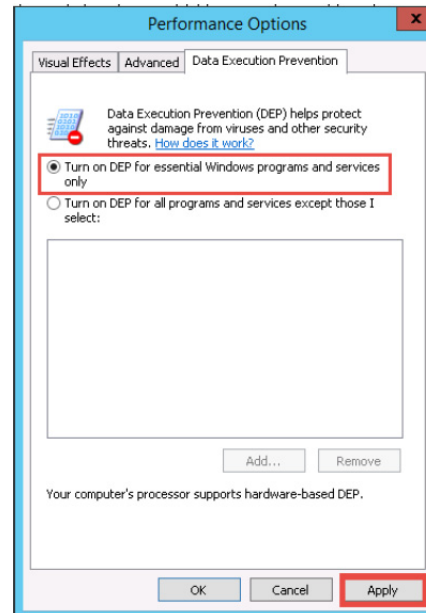
IMPORTANT Do not use spaces or any special character symbols.

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

IMPORTANT Do not restart your computer now.

11. Click the Advanced tab.
12. Click Settings in the Performance section.
13. Choose the Advanced tab.
14. Click Background services in the Processor scheduling section to adjust for the best performance.
15. To help protect against viruses and security threats, click the Data Execution Prevention tab.

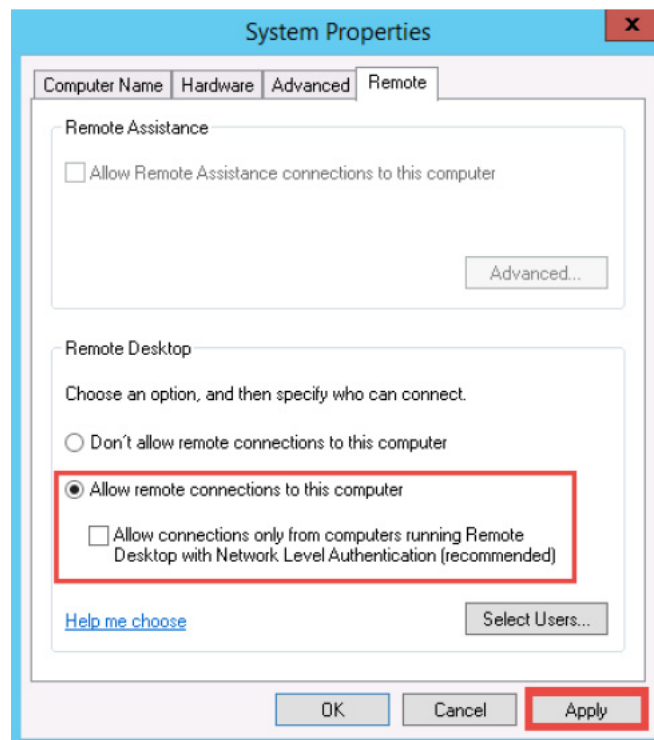
16. Select 'Turn on DEP for essential Windows programs and services only' and click Apply.



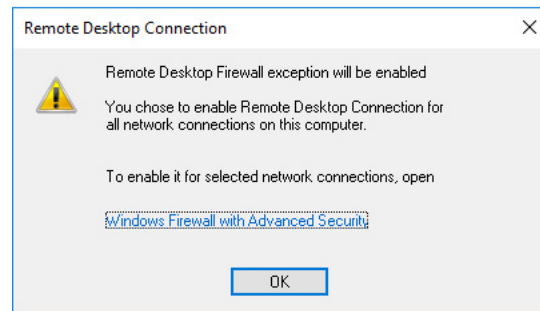
17. Acknowledge the prompt that changes will take effect on restart.

IMPORTANT Do not restart the computer now.

18. Click OK to close the window.
19. On the Remote tab, click 'Allow remote connections to this computer'.



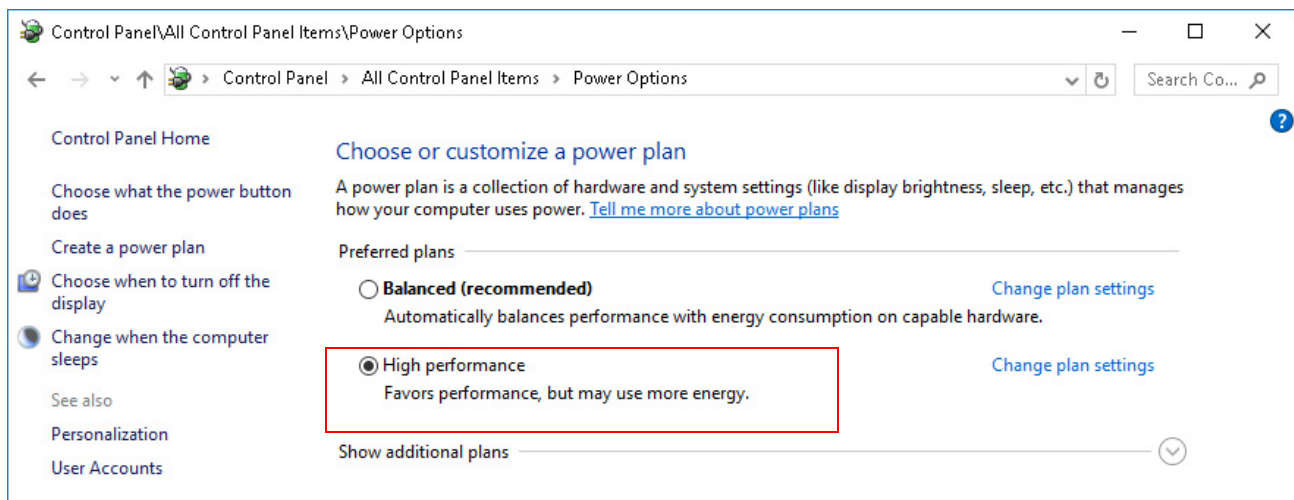
20. Click OK to enable the Remote Desktop Firewall exception.



21. Remove the check mark from the 'Allow connections only from computers ...' box and click Apply.

IMPORTANT Do not restart the computer now.

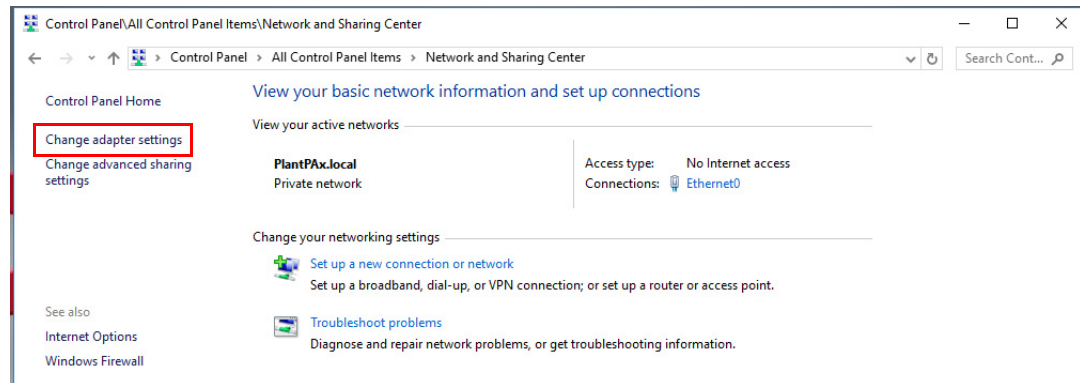
22. Click Restart Later.
23. Navigate to the Control Panel.
24. Click Power Options.
25. Select 'High Performance' in the Preferred Plans section.



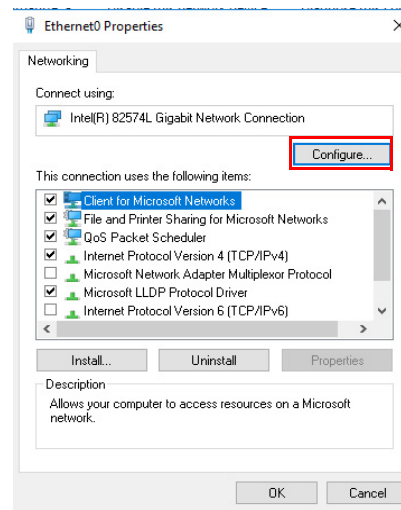
Verify Ethernet Network Adapter Settings

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

1. Navigate to the Control Panel.
2. Click Network and Internet.
3. Click Network and Sharing Center.
4. In the Network and Sharing Center window, click Change Adapter Settings.

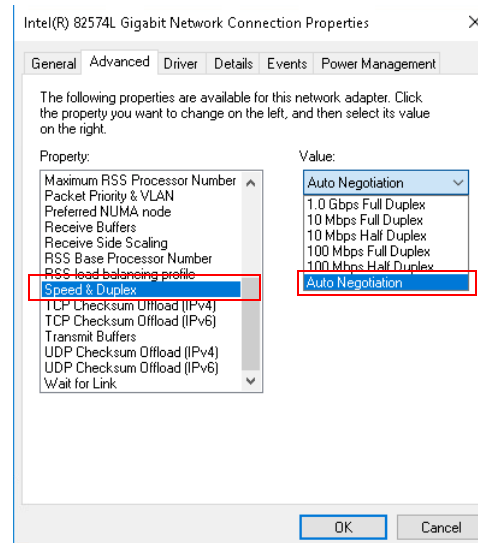


5. Right-click the Ethernet network connection and choose Properties.
6. If asked, type your password and click Yes.
7. In the Ethernet Properties dialog box, click Configure.



8. Click the Advanced tab.

9. Select Speed and Duplex and then choose Auto Negotiation.



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

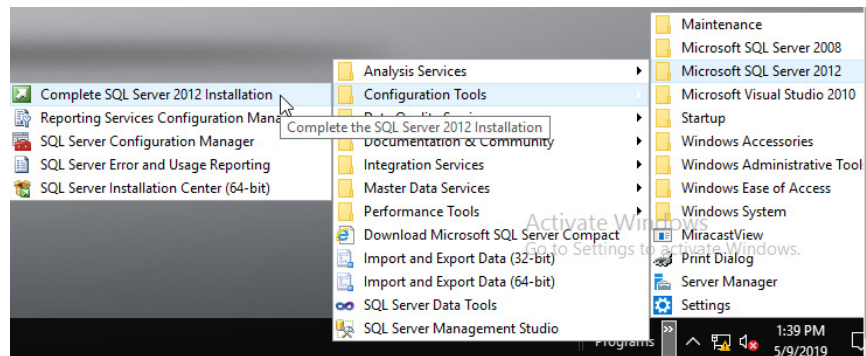
Configure System Software

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 174](#). 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 174](#).
 - b. If using SQL Server 2012 Standard, continue with this procedure.
2. On the virtual image desktop, click the Programs icon and choose Microsoft SQL Server 2012>Configuration Tools>Complete SQL Server 2012 Installation.

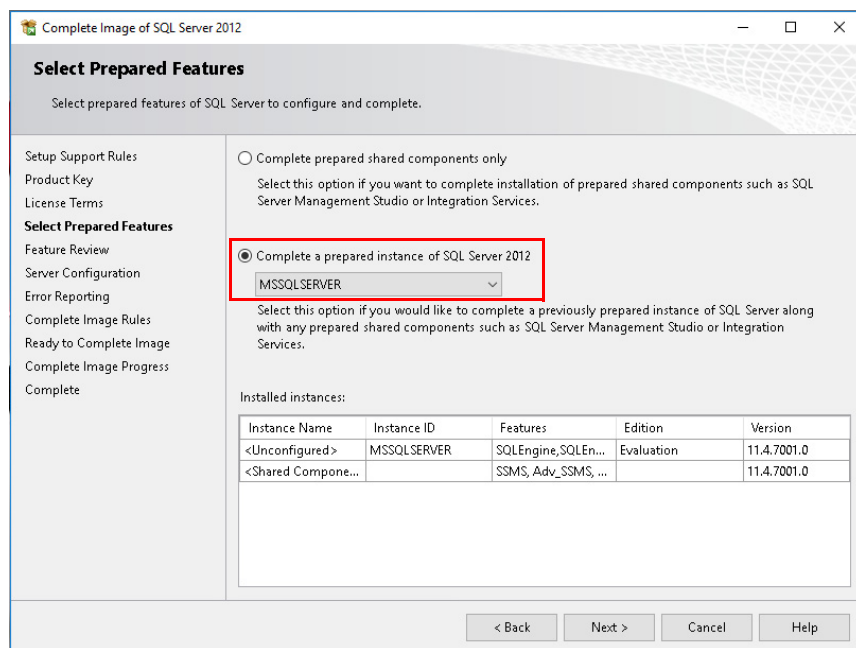


3. Do one of the following:
 - Select Specify a free edition and then select Evaluation from the pull-down menu for a 90-day trial.
 - Select Enter the product key and type your key to license your software.
4. Click Next.
5. Read the license terms, and click 'I accept the license terms'
6. Click Next.

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.

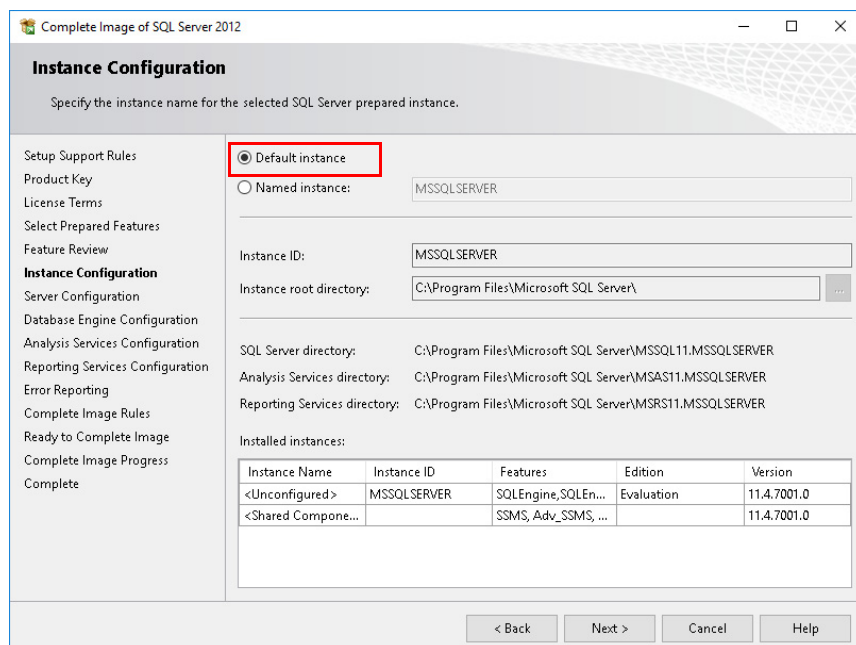
7. Use the default name of your SQL server instance and click Next.

IMPORTANT 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.



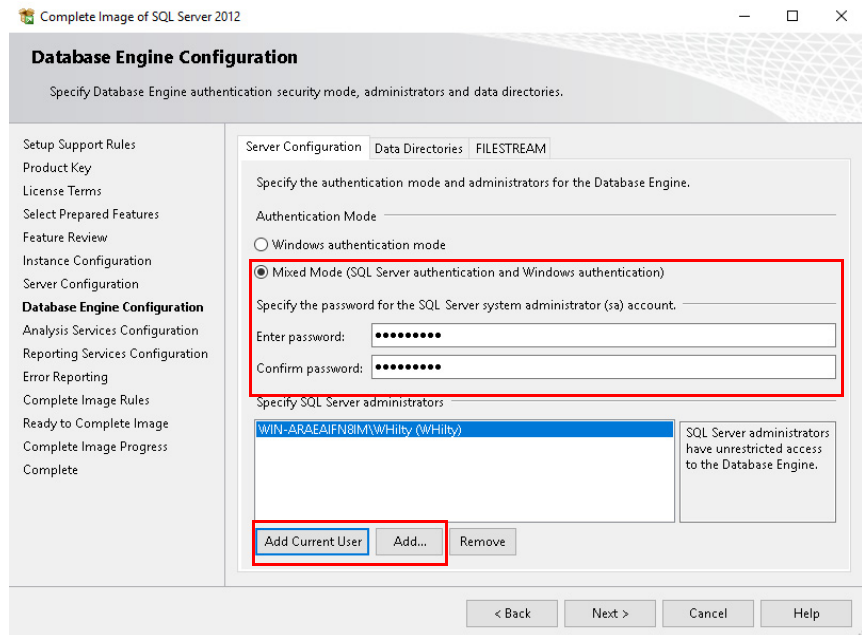
8. Use defaults and click Next for the Feature Review step.

9. Click Default Instance and click Next for the Instance Configuration step.



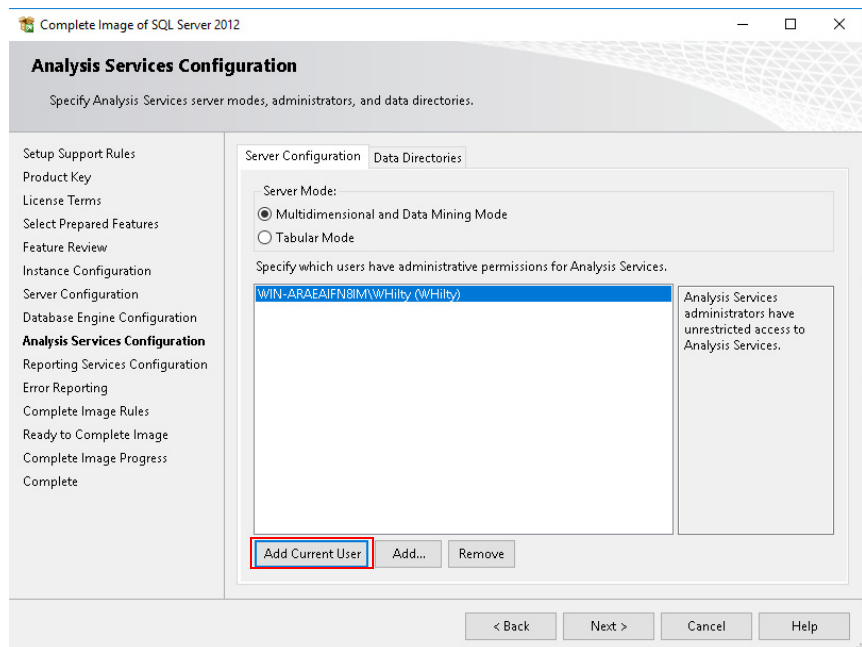
10. Use defaults and click Next for the Server Configuration step.

11. Select Mixed mode then enter and confirm the password. Specify the SQL Server administrators. At least one must be chosen either by clicking 'Add Current User' or 'Add.' Click Next.



IMPORTANT Additional SQL administrators can be added, if necessary. Click Help for clarification.

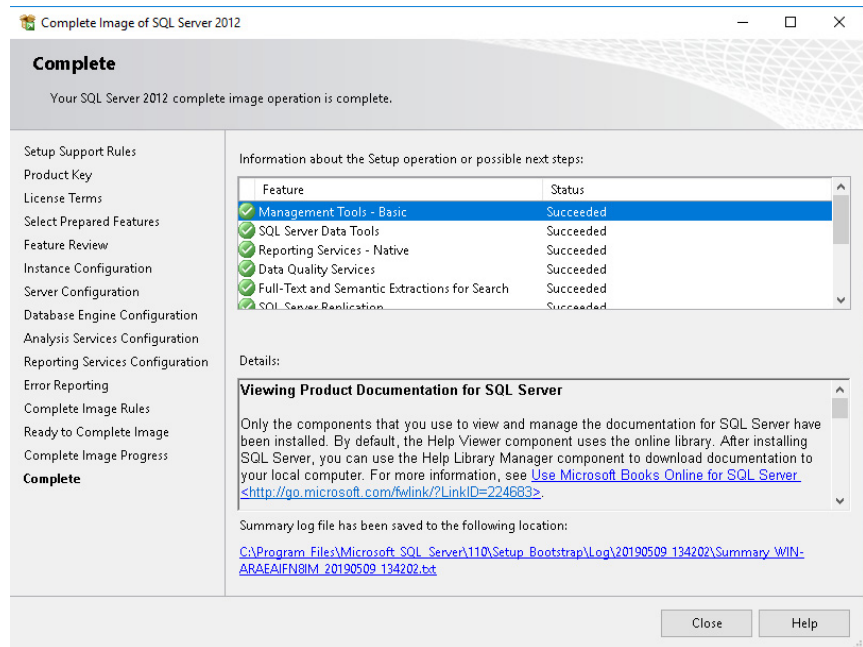
12. Specify which users have administrative privileges for Analysis Services. At least one must be chosen either by clicking 'Add Current User' or 'Add.' Click Next.



13. Click Next to Install and Configure the report server.

14. Click Next to use the defaults for Error Reporting.
15. Click Next once the Image Rules have completed.
16. Click Complete to finish the configuration of the image.

17. Click Close once the operation is complete.



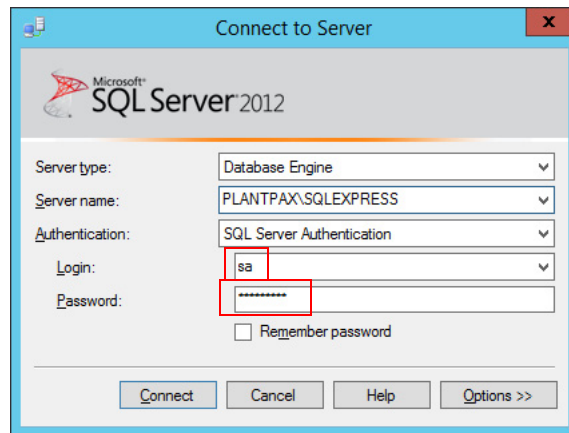
18. Skip to [Install Historian Asset Framework on page 179](#).

IMPORTANT Do not perform the following procedure, Adjust SQL Express Settings, if you just installed SQL Server Standard. Skip to installing Historian Asset Framework.

Adjust SQL Server Express Settings

IMPORTANT Do Not perform this procedure if you just completed installing SQL Server Standard. Skip to [Install Historian Asset Framework on page 179](#).

1. Log in as Administrator.
2. Navigate to Programs>Microsoft Server 2012>SQL Server Management Studio.
3. Enter the server name.
The Server name is <ComputerName>\SQLEXPRESS.
Where <ComputerName> = the computer name set in [Configure Windows Settings on page 163](#).
4. Log on by using the 'sa' account and **Rockwell1** as the password.

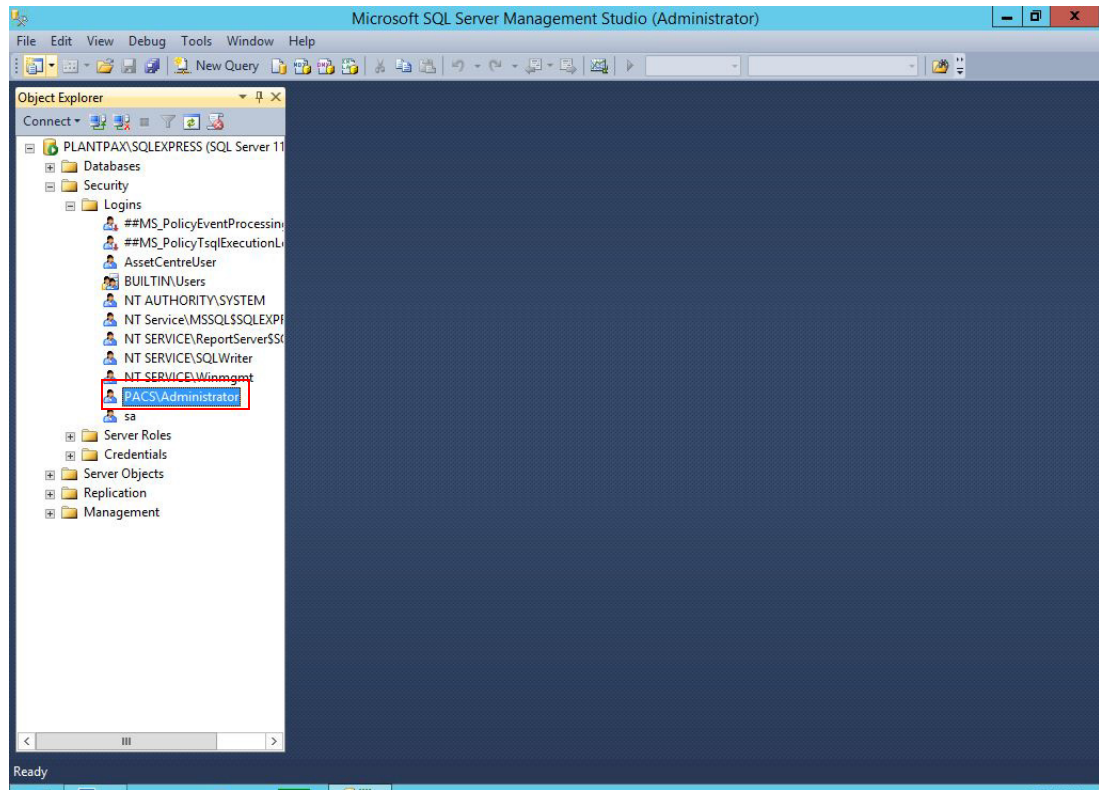


IMPORTANT After you complete the initial settings, change your logon and password settings under Options.

5. 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.

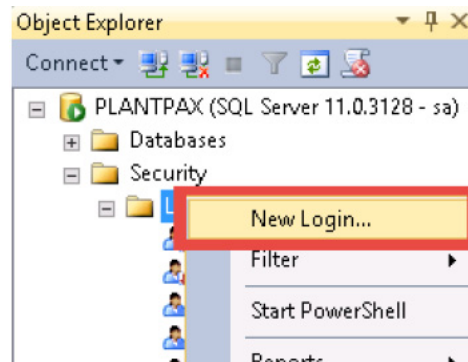


- Right-click the Administrator account and choose Delete.
- Click OK and accept any prompts.

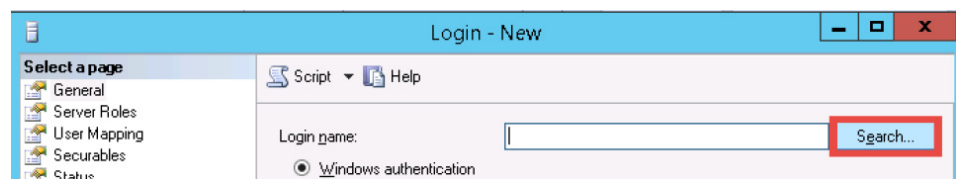
Add Administrator Account to Computer

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

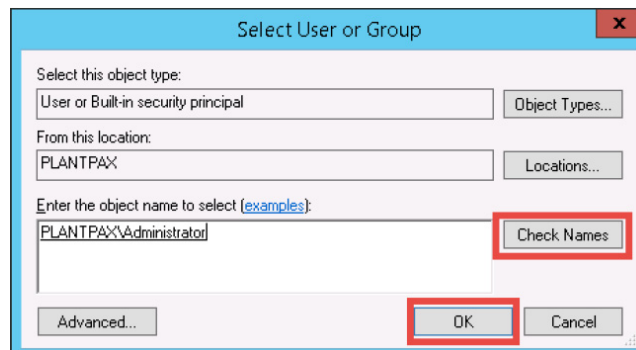
1. From the SQL Server Management Studio configuration tree, right-click the Logins folder and choose New Login.



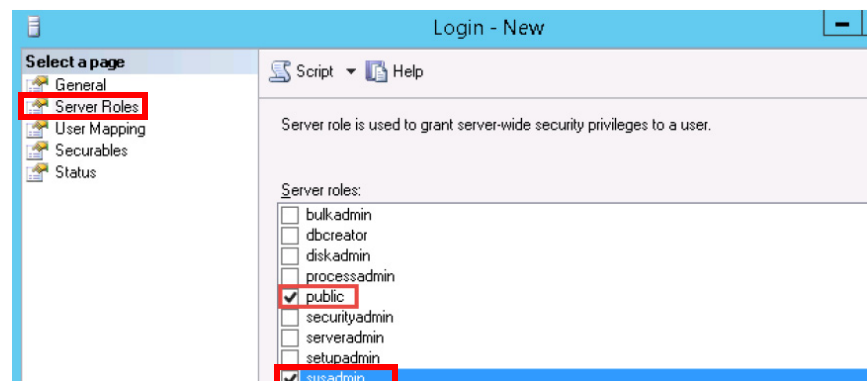
2. To create the Administrator login, click Search.



3. Type 'administrator' in the object name box and click Check Names.
4. Verify that the user is successfully verified, and click OK.

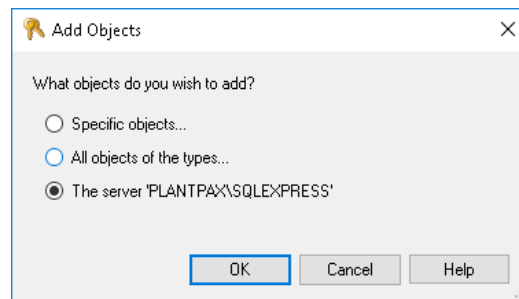


5. Click Server Roles and checkboxes for public and sysadmin.



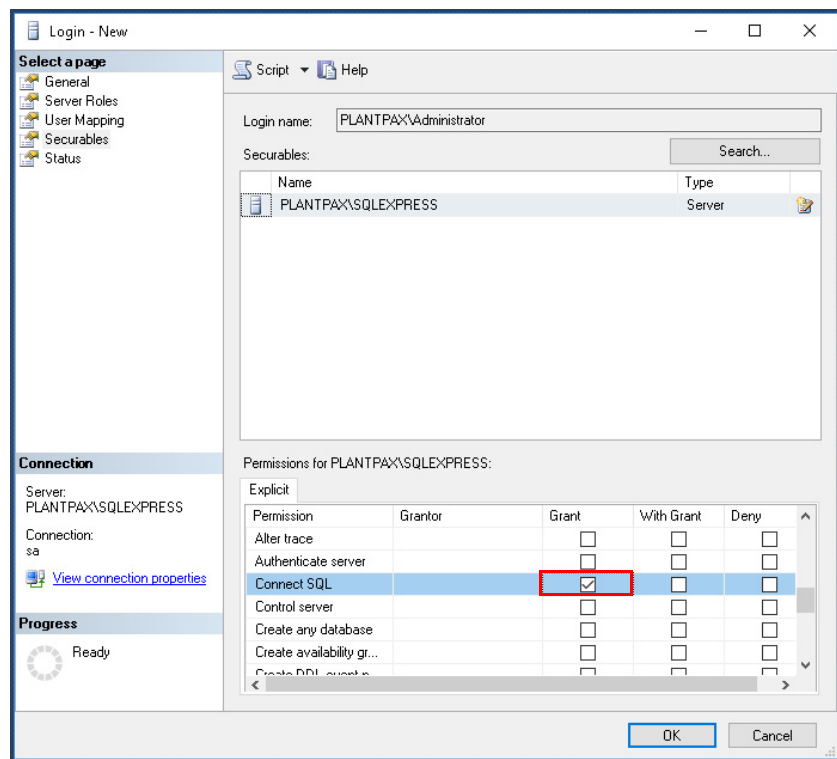
6. Click Securables and then click Search.
7. To retrieve the server name, click the last option.

The example is PLANTPAX\SQLEXPRESS.



The server name appears under Securables.

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

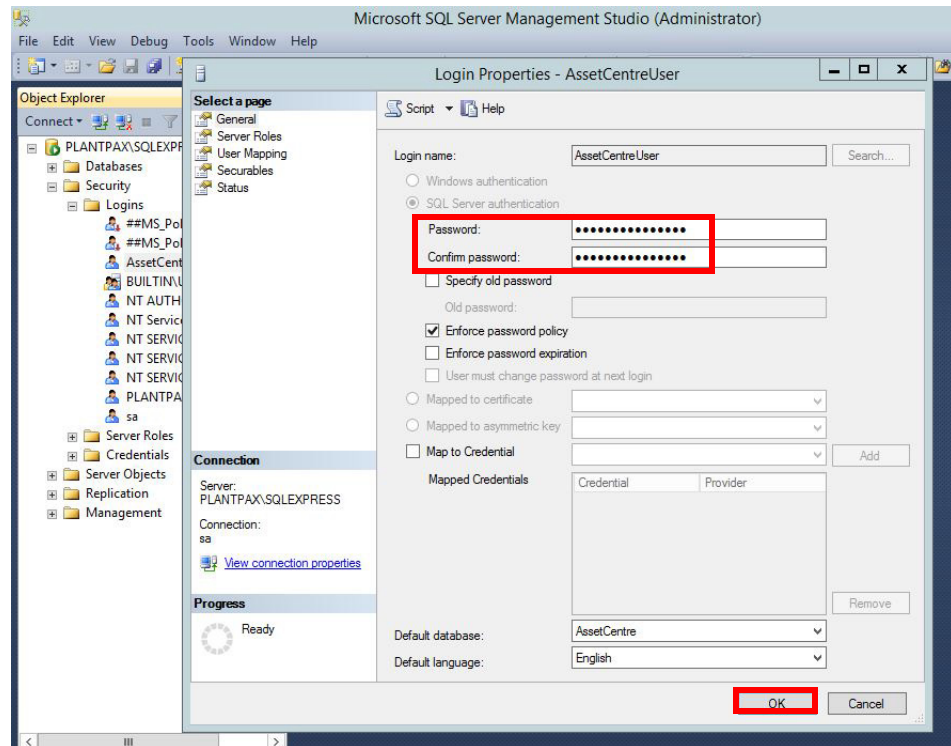


9. Click OK.

Configure AssetCentre User Account

Complete these steps.

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



3. Click OK.
4. Close SQL Server Management Studio.

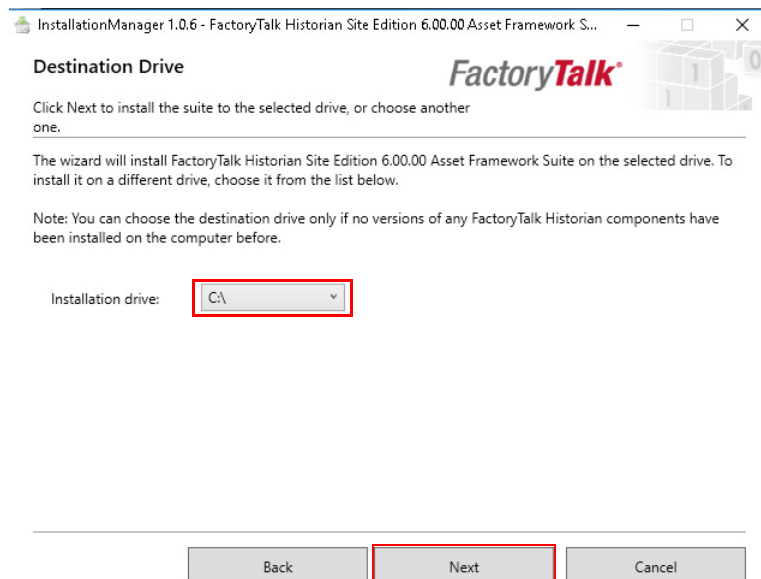
Install Historian Asset Framework

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 Server

Perform these steps to install Historian Asset Framework.

1. Navigate to the installation files.
c:\Install Files\6.00.00-FTHistorian-SE-DVD.
2. Double-click Setup.exe.
3. Click 'Install FactoryTalk Historian Site Edition'.
4. Click 'Install FactoryTalk Historian Asset Framework'.
5. Click 'Install FactoryTalk Historian AF Server'. An installation wizard window opens separately.
6. Click Next on the 'Welcome' window.
7. Read the License Agreement, click 'I accept the terms in the license agreement' and click Next.
8. Click Next on the Review Component Installation window.
9. Select the destination drive and click Next.



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

Figure 5 - SQL Server

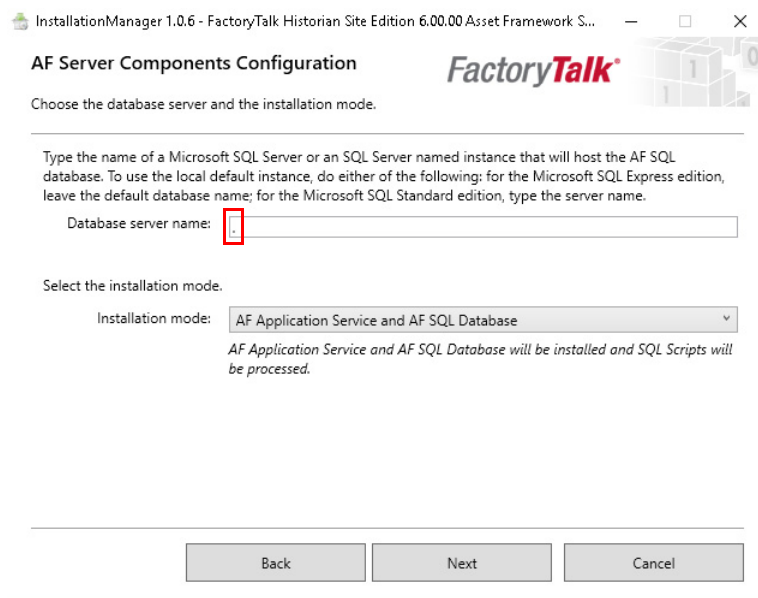
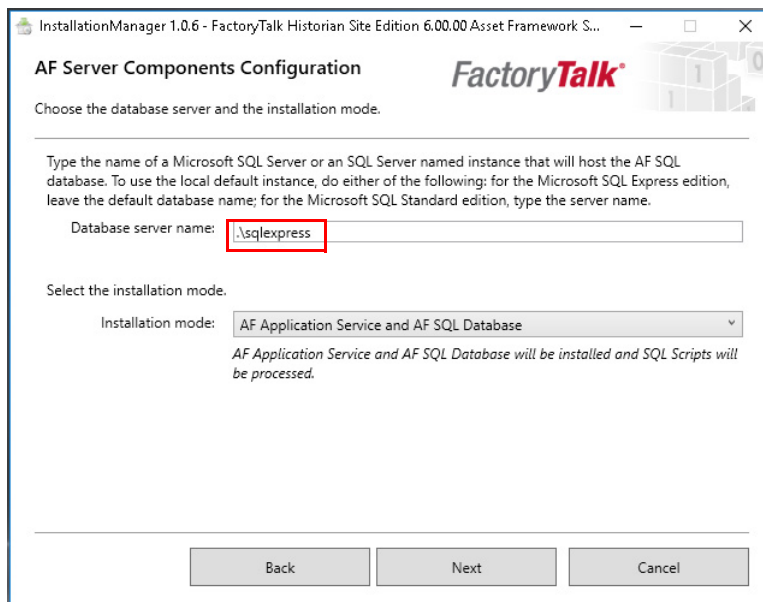


Figure 6 - SQLEXPRESS



11. Click Install to start the installation process. If a security prompt opens, click Run to allow the process to continue.

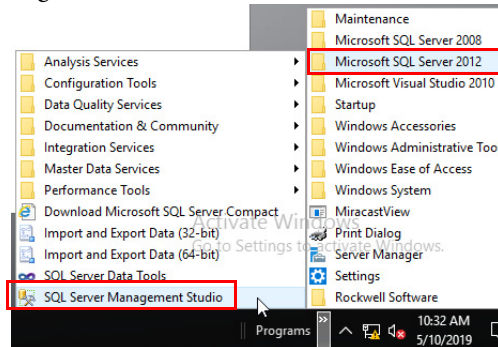
IMPORTANT At the end of the installation process, the Release Notes display in a separate window. The installation process is not complete until you close the Release Notes window.

12. Close the Release Notes, then click Finish to close the wizard.
13. Click Exit to close the Historian Installation window.

Verify the AFServers Database and Account

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

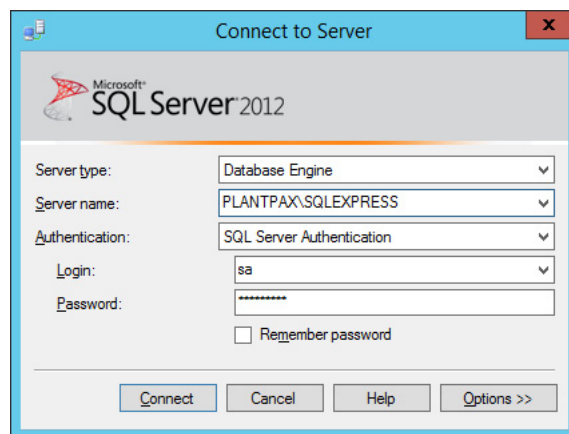
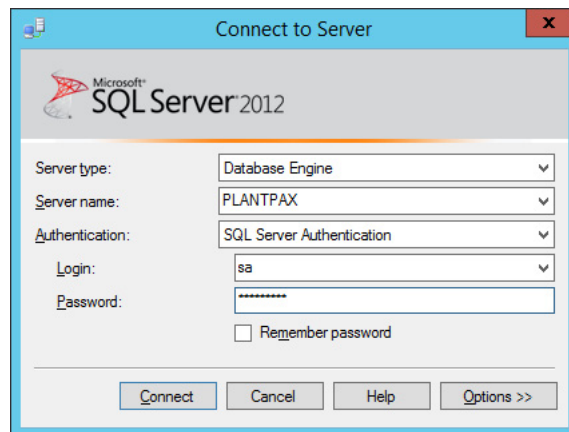
1. Click the Programs icon and choose Microsoft SQL Server 2012>SQL Server Management Studio.



2. Enter the server name.
 - The Server name is <ComputerName> if using SQL standard
 - The Server name is <ComputerName>\SQLEXPRESS' if using SQL Express.

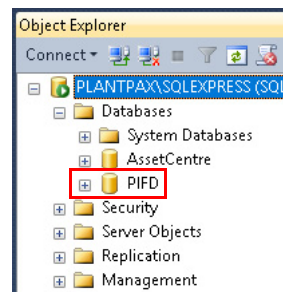
IMPORTANT <ComputerName> = The computer name set in [Configure Windows Settings on page 163](#)

3. Log on by using the 'sa' account and the password.

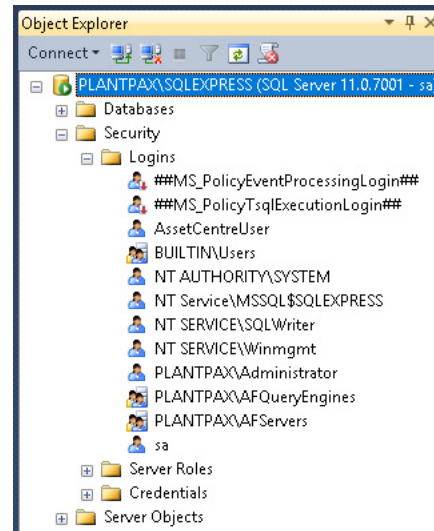


IMPORTANT After you complete the initial settings, change your logon and password settings under Options.

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



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

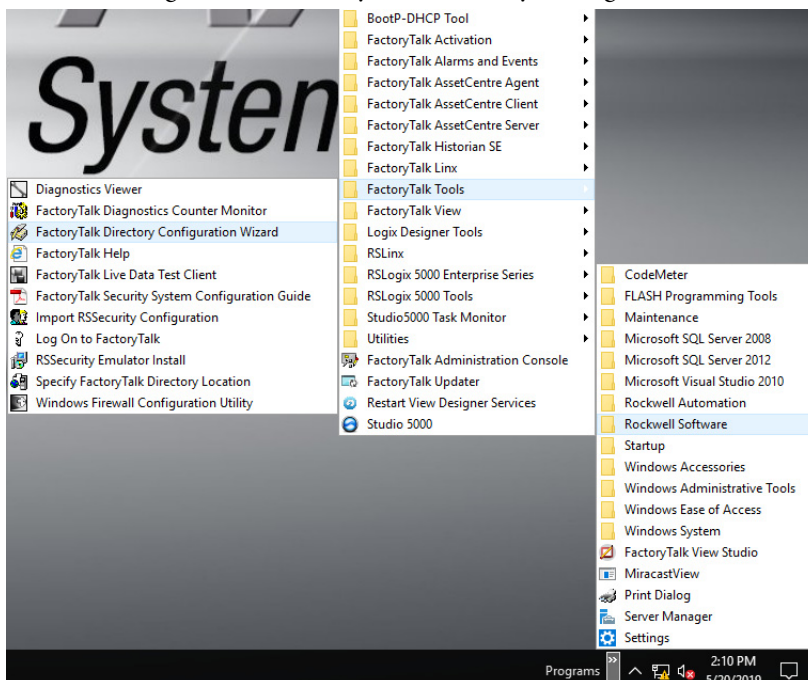


7. If the PIFD database or AFServers group do not appear, reinstall the Historian Asset Framework.
8. Close SQL Server Management Studio.

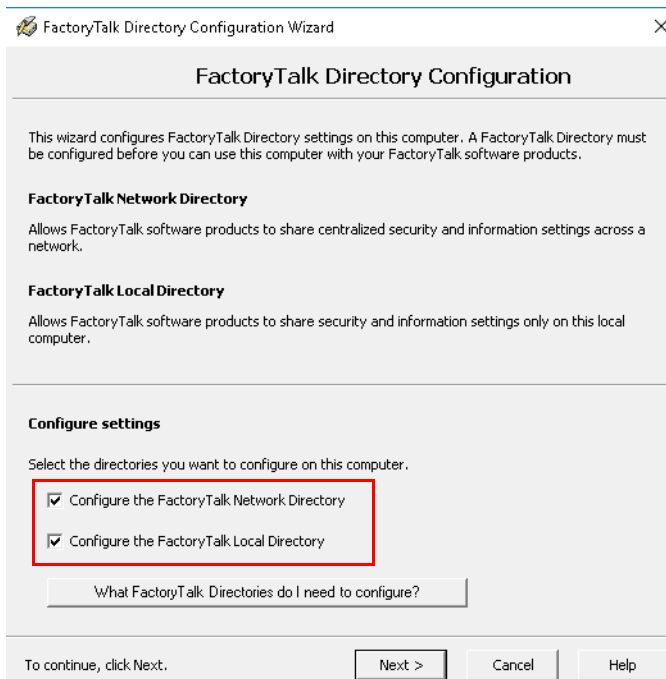
Configure the FactoryTalk Directory

Complete these steps to configure the FactoryTalk directory.

1. Navigate to the FactoryTalk Directory Configuration Wizard.



2. Check both boxes under configure settings to configure the Network and Local directories and click Next.



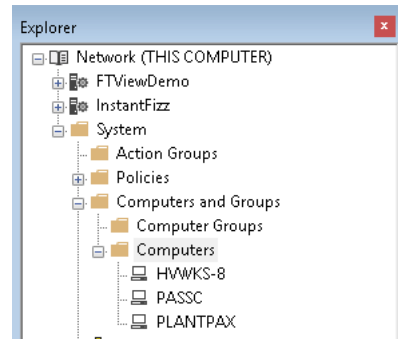
3. Type the administrator user name and password.

IMPORTANT Step 3 must be done twice. You have to enter a user name and password for each directory (local and network).

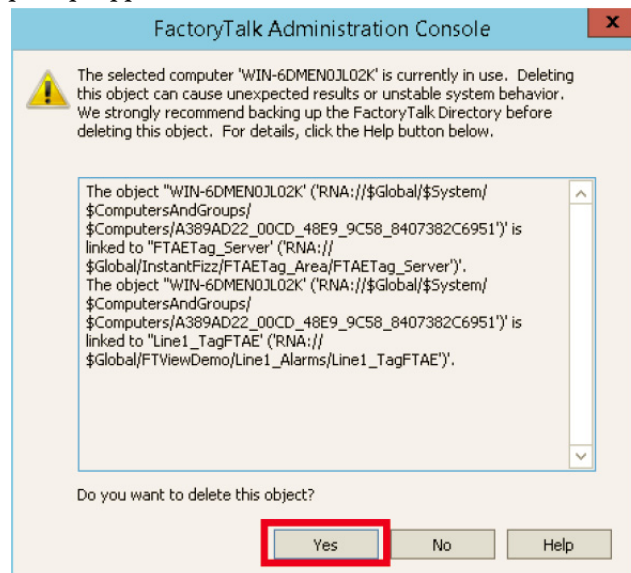
4. Click Close in the summary window once complete.

Delete "Old" Computer Names from Directory

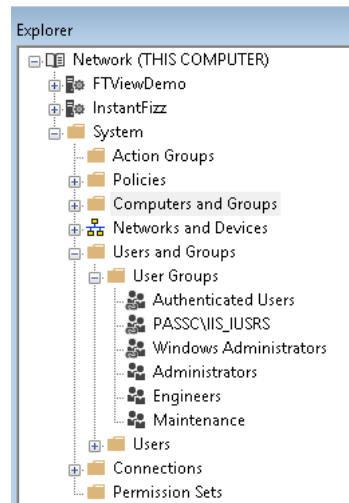
1. Navigate to Programs>Rockwell Software>FactoryTalk Administration Console.
2. Select Network (directory) and click OK.
3. Expand System>Computers and Groups>Computers in the explorer pane.



4. Right-click any old or unused computer names and choose Delete.
5. If a prompt appears, click Yes.



6. Expand Users and Groups>User Groups in the explorer pane.

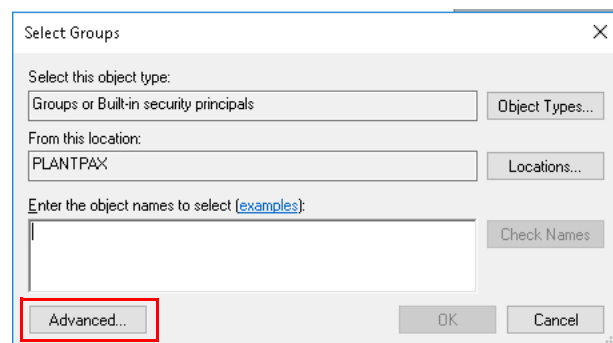


7. Right-click the IIS_IUSRS user group and choose Delete.
8. Click Yes.
9. Add the IIS_IUSRS user group and link with the new computer name.

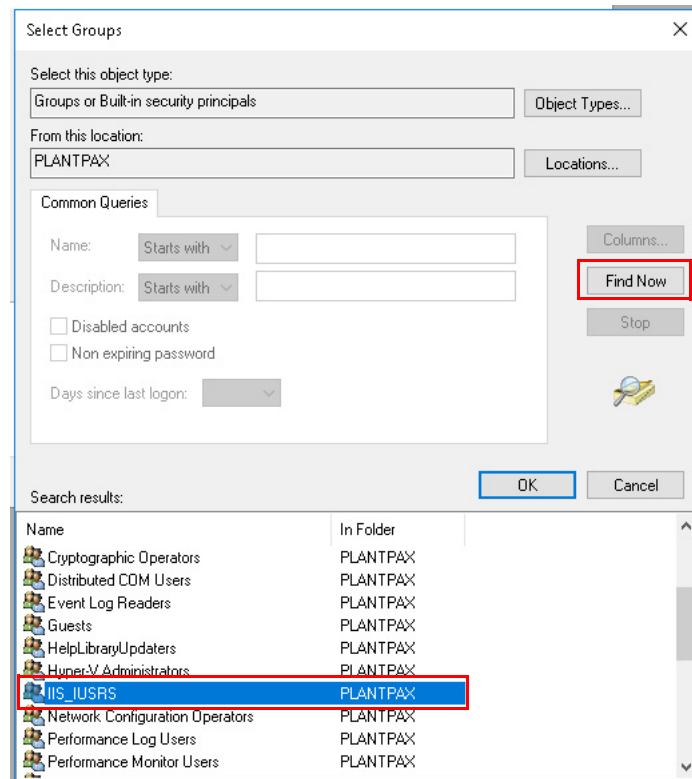
From the Explorer pane, right-click the User Groups folder and choose New>Windows-Linked User Group.



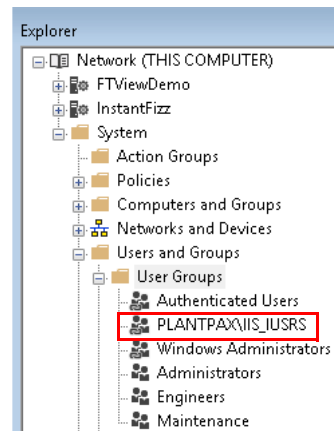
10. Click Add.
11. Click Advanced.



12. Click Find Now, select IIS_IUSRS, and click OK..



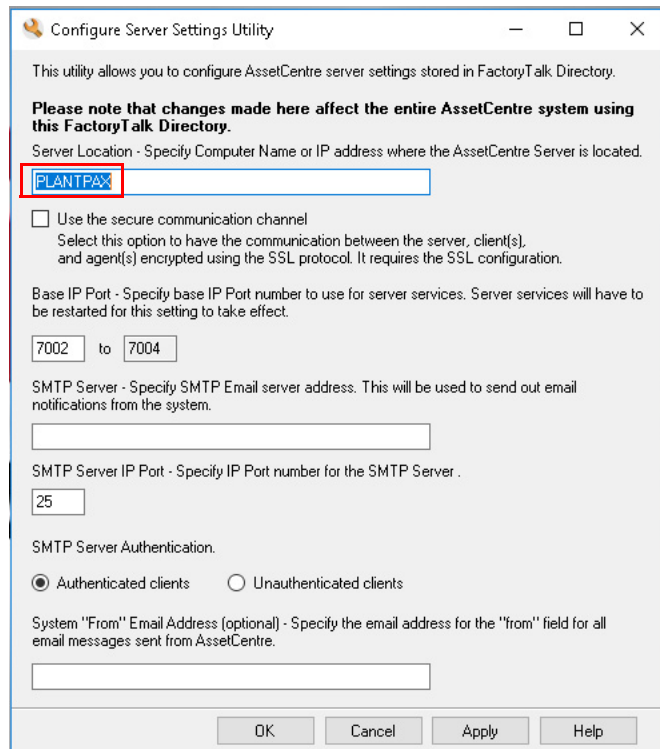
13. Verify that the user group is correct, and click OK.



14. Restart your computer.

Configure FactoryTalk AssetCentre (FTAC)

1. Navigate to Programs>Rockwell Software>FactoryTalk Asset Centre Server>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. Open the Server Setup folder on the desktop and run the FTAssetCentre.DbInstaller.exe.
2. Type a period (.) for the server name if using SQL Server Standard, or type ".\sqlexpress" if using SQL Server Express.

3. Log in by using the 'sa' and the password for your SQL server and click Start.

Database Installer

Welcome to the Database Installer utility. **FactoryTalk AssetCentre**

This application will install/upgrade the database required for the application.

Database Name and Version : AssetCentre 9.00.0000.231

Please specify database server location.

Server

Please specify user credentials for the database server administrator. This login account must have permissions to create new database and modify user accounts in the dataserer. A Windows user account cannot be used for this operation.

Username

Password

Start

Database Installer

Welcome to the Database Installer utility. **FactoryTalk AssetCentre**

This application will install/upgrade the database required for the application.

Database Name and Version : AssetCentre 9.00.0000.231

Please specify database server location.

Server

Please specify user credentials for the database server administrator. This login account must have permissions to create new database and modify user accounts in the dataserer. A Windows user account cannot be used for this operation.

Username

Password

Start

The Database User Configuration dialog box appears.

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

The Install Shield Wizard Completed dialog box appears.

Database User Configuration

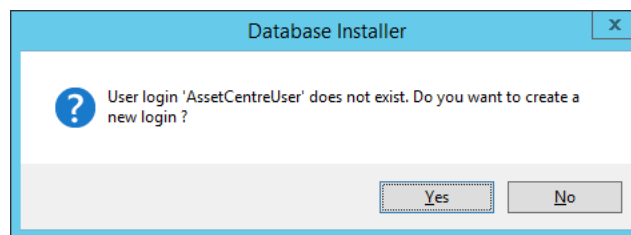
Please specify the user credentials for the account that will be used by the server to access the database. This account cannot be a Windows User account.

Username

Password

OK Cancel

5. If prompted to create a new user, click yes, and follow the prompts.



6. Open the Server Setup folder on the desktop and run the FTAssetCentre.AosCatalogImport.exe
7. Restart your computer.

Configure FactoryTalk Historian

Remove Old Computer Names

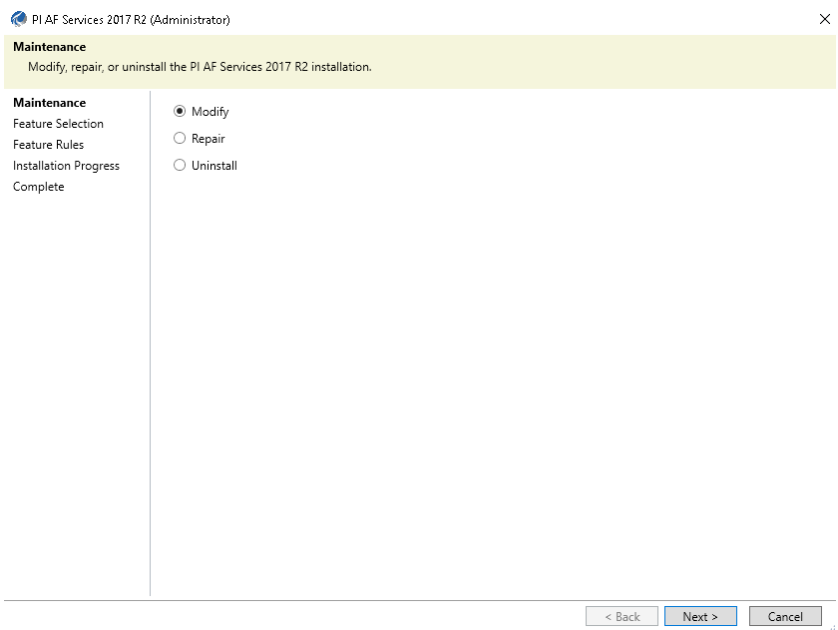
1. Navigate to:
Programs>Rockwell Software>FactoryTalk Historian SE>FactoryTalk Historian SE System>AboutPI-SDK
2. In the left pane, click Connections, right-click the old server names, and choose Remove selected Server.
3. Close PI-SDK utility.

Install PI Builder Excel Add-in

PI Builder lets you import and export FactoryTalk Historian points and Asset Framework objects to and from a Microsoft Excel Add-in spreadsheet.

IMPORTANT Microsoft Excel 2010 SP2 or later 32-bit software must be installed for these procedures.

1. Double-click the PIAF client shortcut on the desktop.
2. Select Modify.



3. Click Next.
4. Leave the defaults checked and check the box for PI Builder.
5. Click Next.
6. Click Modify to begin installation.
7. Click Close.

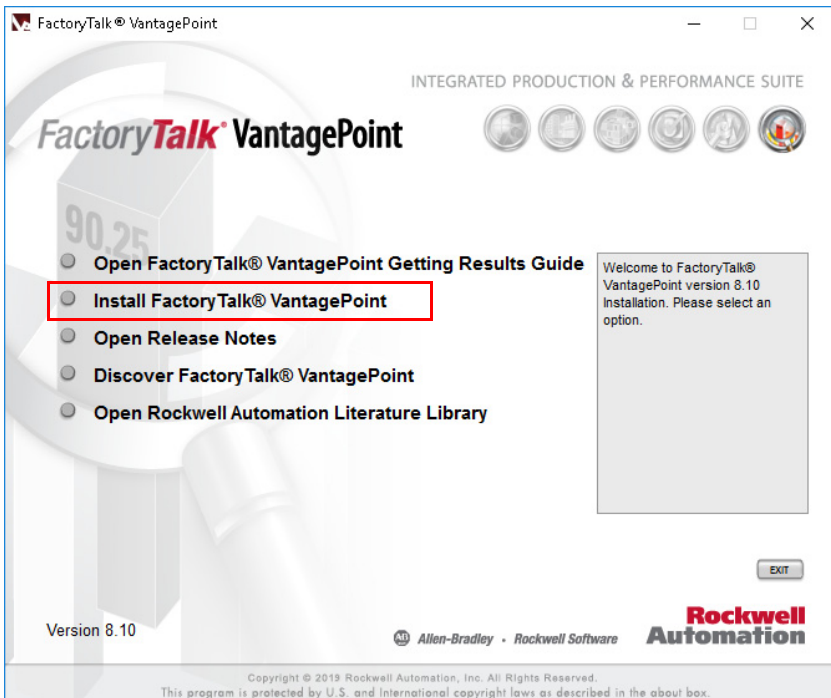
Complete Historian Configuration

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

-
- | | |
|------------------|--|
| IMPORTANT | See the pages that are referenced in the FactoryTalk Historian SE Installation and Configuration Guide, publication HSE-IN025A : <ul style="list-style-type: none">• Verify that Historian Services are Running• Verify that Historian Server is Updating Data for Default Tags• Prepare PI MDB to AF Synchronization• Create Security Mappings• Adding the Server to the FactoryTalk Directory Connection• Assigning License Activations to the Historian Server |
|------------------|--|
-

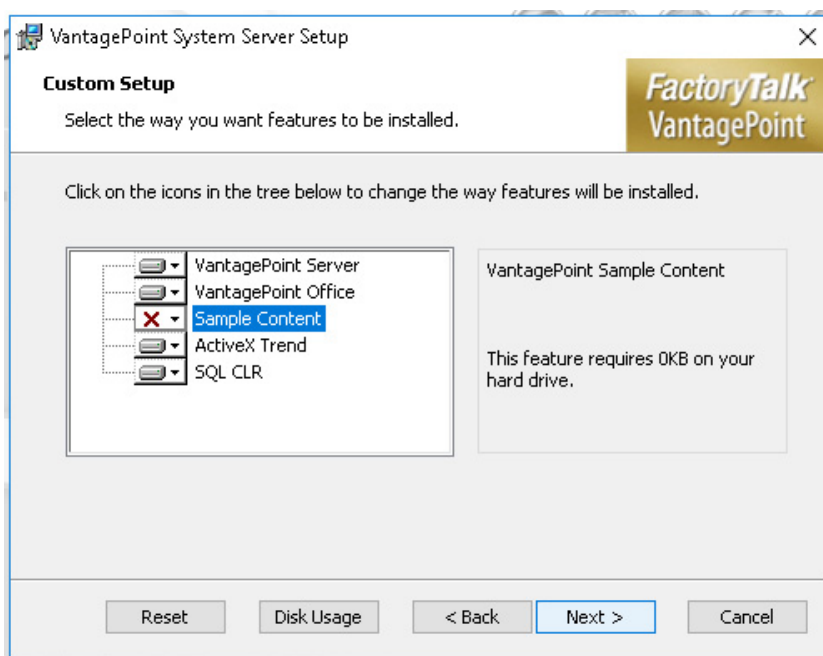
Configure FactoryTalk VantagePoint

1. Navigate to the folder:
C:\Install Files\8.10.00-VantagePoint-EMI-DVD
2. Double-click setup.exe.
3. Click 'Install FactoryTalk VantagePoint'.

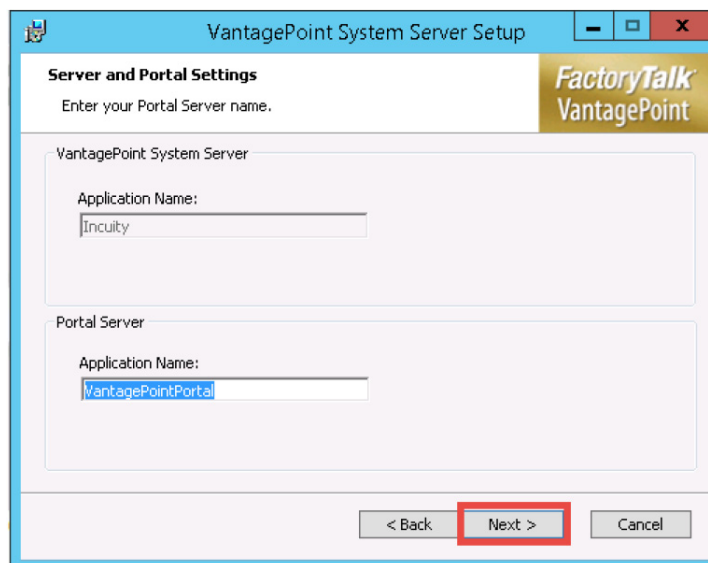


4. Click 'Install FactoryTalk VantagePoint'.
5. Click Next.
6. Read the license agreement, Check the box to accept the agreement, and click Next.
7. Click Custom setup type.

8. Choose the following options and click Next.



9. Type a portal server name and click Next.



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 title bar with a close button (X) and a 'FactoryTalk VantagePoint' logo in the top right corner. The main text area contains the following information:

Database Connection Information
Specify an account that has permissions to create the database.

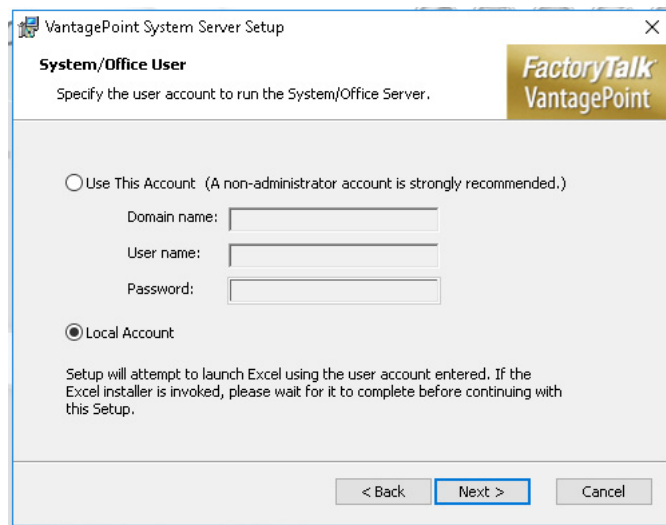
The VantagePoint Server uses a SQL Server 2012 or 2016 database that is created as part of the installation. Please provide the logon credentials to the SQL Server where the IncuityStore database will be created.

Fields and options shown:

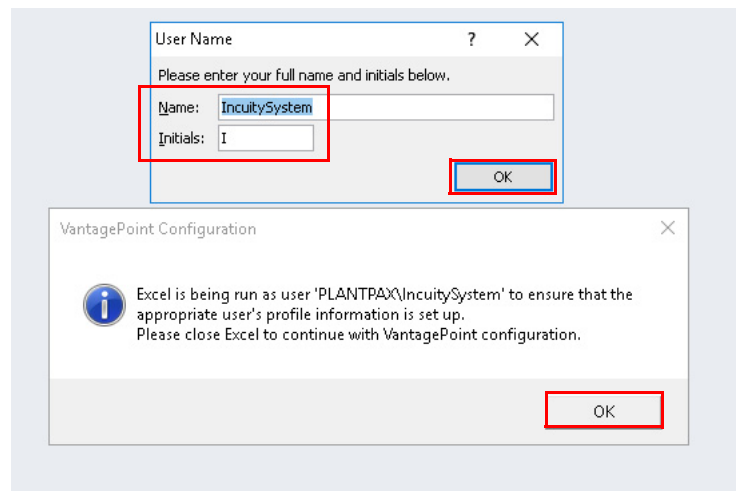
- Server: .\sqlexpress (highlighted with a red box)
- Database: IncuityStore
- Security mode: ☒ Integrated, ☐ SQL Server
- User name: sa
- Password: (empty field)

At the bottom right, there are three buttons: '< Back', 'Next >' (highlighted with a blue box), and 'Cancel'.

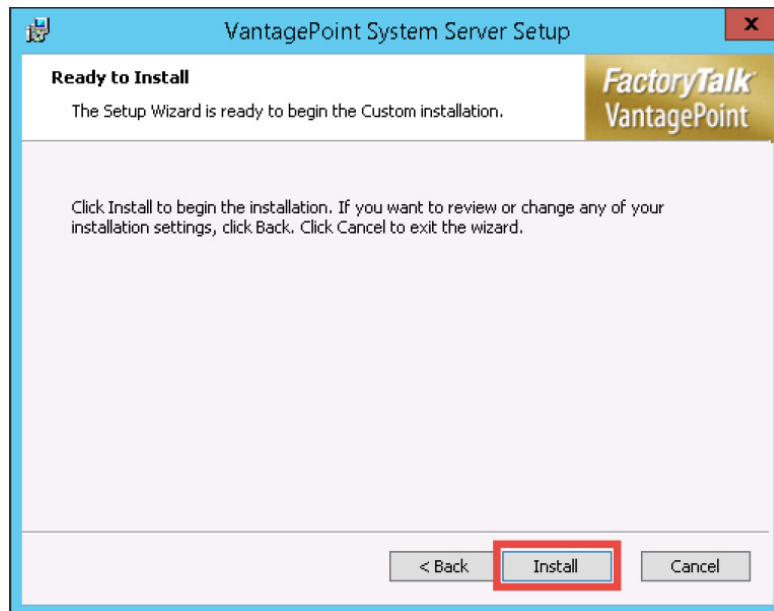
11. If you have a local user account that is specified for VantagePoint, type the user name in the prompt. Use the computer name as the domain. If you do not have a local user account, select Local Account and a user is created.



12. If Microsoft Excel is installed, the software automatically launches. Acknowledge the prompts and close Excel.

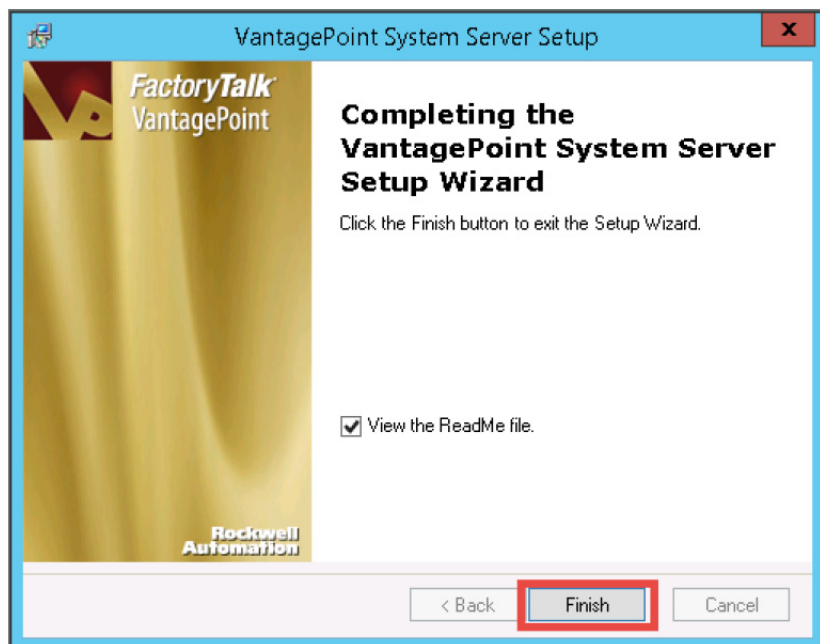


13. Click Install.



IMPORTANT Installation can take 20...30 minutes.

14. Click Finish.

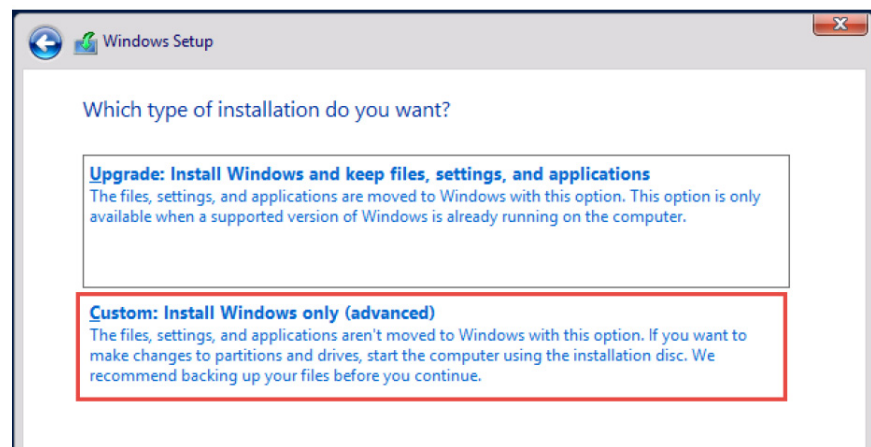


15. Wait for the installation to complete. A popup window appears that informs you the configuration is still running. It closes automatically.
16. Click Exit on the Vantage Point Installer.
17. Restart your computer.

Install OWS ISO

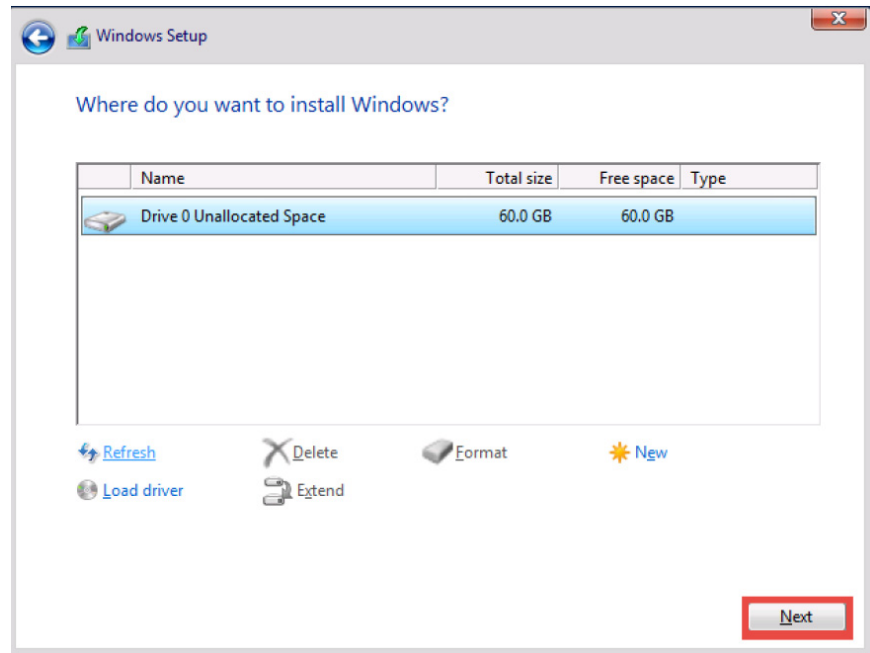
Complete these steps to install the OWS ISO.

1. Make sure that your computer is capable of booting from a USB drive. Enter the BIOS Setup as the computer is powering on (typically by pressing the F2 key). Make sure that the Boot options include booting from a USB device.
2. Shut down the computer and connect the USB drive.
3. Turn on the computer. 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. 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.

TIP The installation typically takes about an hour.

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

12. Skip to the [Configure Windows Settings](#) procedure and complete chapter 3 starting on [step 5 on page 152](#) to install OWS ISO.

Notes:

Activation Considerations

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 7 - 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 PROCES-UM001 . 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.

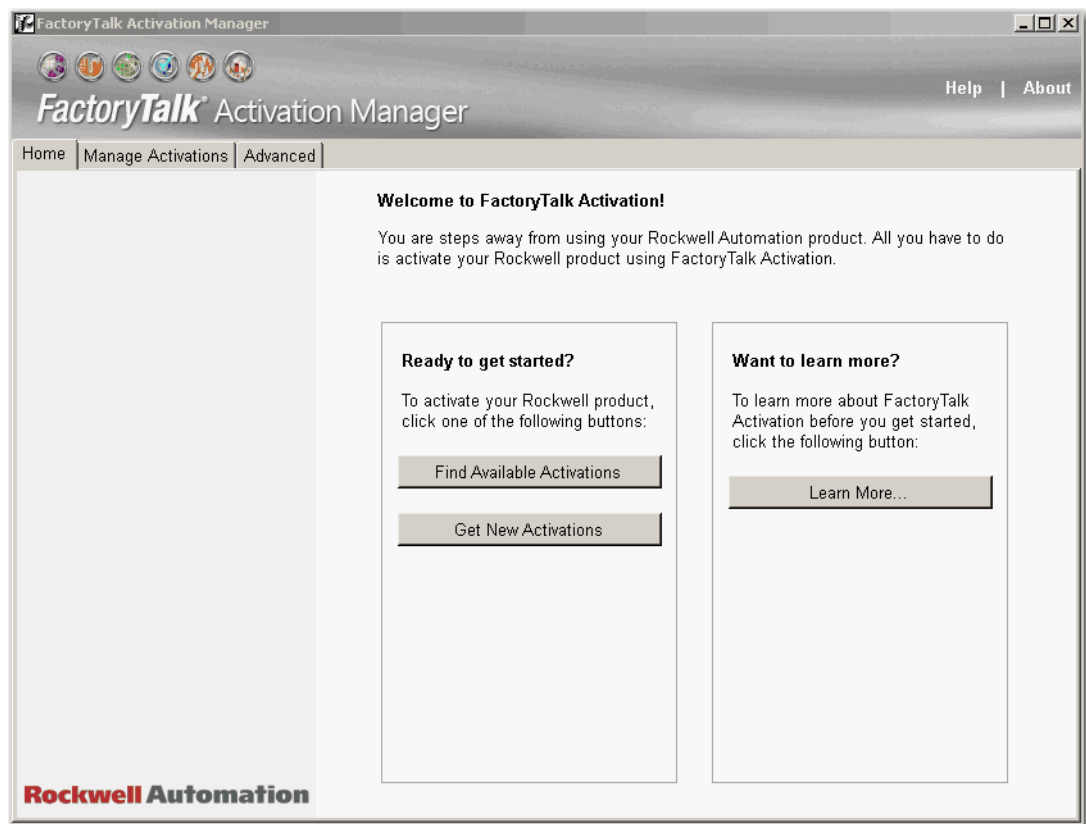
FactoryTalk Activation Manager

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 and activate your Microsoft license. This procedure is also compatible with Windows and Windows Server.

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.
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.

RSLink software RSLink® software is the communication driver (data server) for computer-based programs to access information in Rockwell Automation controllers. There is RSLink Classic software and RSLink Enterprise software. FactoryTalk View SE software uses RSLink 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.

Notes:

Rockwell Automation Support

Use the following resources to access support information.

Technical Support Center	Knowledgebase Articles, How-to Videos, FAQs, Chat, User Forums, and Product Notification Updates.	https://rockwellautomation.custhelp.com/
Local Technical Support Phone Numbers	Locate the phone number for your country.	http://www.rockwellautomation.com/global/support/get-support-now.page
Direct Dial Codes	Find the Direct Dial Code for your product. Use the code to route your call directly to a technical support engineer.	http://www.rockwellautomation.com/global/support/direct-dial.page
Literature Library	Installation Instructions, Manuals, Brochures, and Technical Data.	http://www.rockwellautomation.com/global/literature-library/overview.page
Product Compatibility and Download Center (PCDC)	Get help determining how products interact, check features and capabilities, and find associated firmware.	http://www.rockwellautomation.com/global/support/pcdc.page

Documentation Feedback

Your comments will help us serve your documentation needs better. If you have any suggestions on how to improve this document, complete the How Are We Doing? form at http://literature.rockwellautomation.com/idc/groups/literature/documents/du/ra-du002_-en-e.pdf.

Rockwell Automation maintains current product environmental information on its website at <http://www.rockwellautomation.com/rockwellautomation/about-us/sustainability-ethics/product-environmental-compliance.page>.

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