



FactoryTalk Linx Gateway Getting Results Guide



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.

No patent liability is assumed by Rockwell Automation, Inc. with respect to use of information, circuits, equipment, or software described in this manual.

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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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About this publication

The *Getting Results Guide* provides you with information on installing and using FactoryTalk® Linx Gateway.

Tip: The *Getting Results Guide* is included in a portable document format (PDF) on your FactoryTalk Linx Gateway software installation DVD. These files must be viewed using the Adobe® Acrobat® Reader software.

This section includes the following information:

- Intended audience
- Where to find additional information
- Legal notices

Intended audience

You should be familiar with:

- Microsoft® Windows® operating systems
- FactoryTalk Linx (previously called RSLinx Enterprise)
- Allen-Bradley® programmable logic controllers (PLCs) and programmable automation controllers (PACs)
- Rockwell Automation control system development software

Find additional information

For additional information about FactoryTalk Linx Gateway, consult the following resources:

Help

The Help includes overview, procedural, screen, and reference information for the product. The Help contains these basic components:

- Overview topics
- Quick-start topics
- Step-by-step procedures
- Dialog box descriptions

To view the Help, click **Help** in the **FactoryTalk Linx Gateway Configuration Tool**.

Release Notes

The Release Notes provide information updates that are necessary to use FactoryTalk Linx Gateway effectively. The Release Notes contains the following components:

- System requirements
- System features
- Anomalies
- Functional changes
- Application notes

To view the FactoryTalk Linx Gateway Release Notes, download them from the [Product Compatibility and Download Center](http://www.rockwellautomation.com/compatibility/#/scenarios)
<http://www.rockwellautomation.com/compatibility/#/scenarios>.

Knowledgebase

The Rockwell Automation Customer Support Center offers an extensive online database that includes frequently asked questions and the latest

patches. The Knowledgebase web page leads to a comprehensive, searchable database of support information for all Rockwell Automation products.

To access the Knowledgebase web page, visit <http://www.rockwellautomation.com/support>, then select **Knowledgebase Support Center**.

Technical support

Questions concerning installation and use of FactoryTalk Linx Gateway software are handled by the Rockwell Automation Customer Support Center. The center is staffed Monday through Friday, except on U.S. holidays, from 8 a.m. to 5 p.m. Eastern time zone for calls originating within the U.S. and Canada.

To reach the Customer Support Center, call 440-646-3434 and follow the prompts. For calls originating outside the U.S. or Canada, locate the number in your country by visiting <https://rockwellautomation.custhelp.com/app/phone>.

When you call, you should be at your computer and be prepared to provide the following information:

- The product version number
- The type of hardware you are using
- The exact wording of any errors or messages that appeared on your screen
- A description of what happened and what you were doing when the problem occurred
- A description of how you tried to solve the problem

Training programs

Rockwell Automation offers a wide range of training programs, from regularly scheduled classes to custom-tailored classes conducted at your site.

If you need more information about these training programs, visit the Rockwell Automation site or contact the Rockwell Automation Training Coordinator. The web site address and telephone numbers are available at the bottom of the back cover.

Consulting services

Rockwell Automation provides expert consulting and turnkey implementations for making optimal use of Rockwell Automation software products. Please contact your local representative for more information.

Legal Notices

Rockwell Automation publishes legal notices, such as privacy policies, license agreements, trademark disclosures, and other terms and conditions on the [Legal Notices](#) page of the Rockwell Automation website.

End User License Agreement (EULA)

You can view the Rockwell Automation End User License Agreement (EULA) by opening the license.rtf file located in your product's install folder on your hard drive.

The default location of this file is:

C:\Program Files (x86)\Common Files\Rockwell\license.rtf.

Open Source Software Licenses

The software included in this product contains copyrighted software that is licensed under one or more open source licenses.

You can view a full list of all open source software used in this product and their corresponding licenses by opening the index.html file located your product's OPENSOURCE folder on your hard drive.

The default location of this file is:

C:\Program Files (x86)\Common Files\Rockwell\Help\FactoryTalk Linx Gateway\Release Notes\OPENSOURCE\index.htm

You may obtain Corresponding Source code for open source packages included in this product from their respective project web site(s).

Alternatively, you may obtain complete Corresponding Source code by contacting Rockwell Automation via the **Contact** form on the Rockwell Automation website: <http://www.rockwellautomation.com/global/about-us/contact/contact.page>. Please include "Open Source" as part of the request text.

Welcome to FactoryTalk Linx Gateway

This chapter includes the following information:

- What is FactoryTalk Linx Gateway?
- Overview of basic concepts
- Quick start: Set up and use FactoryTalk Linx Gateway

What is FactoryTalk Linx Gateway?

FactoryTalk® Linx™ Gateway is an OPC Unified Architecture (UA) and Classic Data Access (DA) data server. It allows OPC clients to connect to and access tag data from FactoryTalk applications that contain FactoryTalk Linx and FactoryTalk View SE servers. FactoryTalk Linx Gateway can send data to, and retrieve data from, any FactoryTalk Live Data server or OPC server that is defined within a FactoryTalk system.

FactoryTalk Linx Gateway consists of:

- A service that provides tag data to OPC DA clients.
- A service that provides tag data to OPC UA clients.
- A configuration tool that configures the runtime operation of the service. The configuration tool enables the selection of the area or application, from which you want to access data (called the scope) as well as to start and stop the service.

Use FactoryTalk Linx Gateway if you need to:

- Use FactoryTalk Linx as a data server for OPC clients.
- Use FactoryTalk View SE as a data server for OPC clients to access HMI server tags (such as alarm, derived, and system tags) and direct references.

-
- Important:**
- FactoryTalk Linx Gateway service starts and stops from the machine on which it is installed.
 - FactoryTalk Linx Gateway supports OPC client notification under normal shutdown conditions. However, it is the OPC client's responsibility to provide a mechanism to detect when it is no longer connected to the server and flag data as bad quality.
 - Your access to, and actions within, FactoryTalk Linx Gateway are controlled by FactoryTalk Security settings.
-

Only one FactoryTalk Linx Gateway is permitted to run on a given computer. The activation type determines feature support and the maximum capacity of unique tags that can be added to the FactoryTalk Linx Gateway server. The tag limit is for all unique tags, including active, inactive, and valid tags. However, the OPC DA service and UA service tag limits are separate; a 5,000 tag limit activation can simultaneously serve 5,000 tags to DA clients and 5,000 tags to

UA clients. All FactoryTalk Linx Gateway activations support a capacity of up to 20 simultaneous OPC DA or OPC UA client connections.

FactoryTalk Diagnostics and FactoryTalk Diagnostics Counter Monitor provide alerts when FactoryTalk Linx Gateway has reached the maximum tag capacity. This capacity can be increased with additional activations. Refer to [About Activations](#) on [page 55](#) for more information about activations.

Before FactoryTalk Linx Gateway version 6.00.00, here are the available activations:

Activation Name	Activation	Tag Limit	FactoryTalk Directory	Activates FactoryTalk Linx Data Bridge
FactoryTalk Gateway Distributed	RSOPCD.UNLTD	No fixed limit	Local or Network Station or Distributed	N
FactoryTalk Gateway Distributed 70K	RSOPCD.70000	70,000	Local or Network Station or Distributed	N
FactoryTalk Gateway Distributed 32000	RSOPCD.32000	32,000	Local or Network Station or Distributed	N
FactoryTalk Gateway Station 32000	RSOPCS.32000	32,000	Local	N
FactoryTalk Gateway Distributed 5000	RSOPCD.5000	5,000	Local or Network Station or Distributed	N
FactoryTalk Gateway Station 5000	RSOPCS.5000	5,000	Local	N
FactoryTalk Gateway Distributed 1500	RSOPCD.1500	1,500	Local or Network Station or Distributed	N
FactoryTalk Gateway Station 1500	RSOPCS.1500	1,500	Local	N

From FactoryTalk Linx Gateway version 6.00.00, only the four activations below are available for new users. However, the other legacy activations used in previous versions of the product are still supported.

Activation Name	Activation	Tag Limit	FactoryTalk Directory	Activates FactoryTalk Linx Data Bridge
FactoryTalk Linx Gateway Professional	LINXGW.PROFESSIONAL	No fixed limit	Local or Network Station or Distributed	Y
FactoryTalk Linx Gateway Distributed	LINXGW.DISTRIBUTED	32,000	Local or Network Station or Distributed	N
FactoryTalk Linx Gateway Standard	LINXGW.STANDARD	5,000	Local or Network Station	N
FactoryTalk Linx Gateway Basic	LINXGW.BASIC	1,000	Local or Network Station	N

For more information regarding OPC, refer to the OPC Foundation Web site: <https://opcfoundation.org>

Overview of basic concepts

Because FactoryTalk Linx Gateway enables OPC clients to connect to FactoryTalk applications, it is important to understand some basic concepts about FactoryTalk. For more detailed information about FactoryTalk, refer to the FactoryTalk Services Platform Help.

FactoryTalk Services Platform

Formerly known as FactoryTalk Automation Platform, the FactoryTalk Services Platform is an underlying architecture and set of services that Rockwell Automation software products build upon.

The FactoryTalk Services Platform:

- Provides common services (such as diagnostic messages, health monitoring services, access to real-time data) and shares plant resources (such as tags and graphics) throughout an automation system.
- Allows defining plant-floor resources once, and then allows simultaneous access to those resources across product boundaries.
- Supports centralized security services.

The FactoryTalk Services Platform includes the following components:

- FactoryTalk Directory
- FactoryTalk Live Data
- FactoryTalk Diagnostics
- FactoryTalk Administration Console
- FactoryTalk Security
- FactoryTalk Activation Manager

FactoryTalk Directory

FactoryTalk Directory allows products to share a common address book, which finds and provides access to plant-floor resources, such as data tags and graphics.

The FactoryTalk Services Platform includes two separate directories: a Local Directory and a Network Directory. In a Local Directory, a Directory Server, all project information, and all participating software products are located on a single computer. Local applications cannot be shared across a network. A Network Directory organizes project information from multiple FactoryTalk products across multiple computers on a network.

FactoryTalk Live Data

FactoryTalk Live Data manages connections between FactoryTalk products and data servers. It reads values from and writes values to OPC Unified Architecture (UA), OPC Classic Data Access (DA), and Live Data servers on behalf of client software products, such as FactoryTalk View and FactoryTalk Transaction Manager.

FactoryTalk Diagnostics

FactoryTalk Diagnostics collects and provides access to activity, status, warning, and error messages generated throughout a FactoryTalk system.

FactoryTalk Administration Console FactoryTalk Security

FactoryTalk Administration Console is an optional, stand-alone tool that enables you to configure and manage FactoryTalk-enabled applications.

FactoryTalk Security offers centralized security services that provides the ability to control access to your automation system. Your access to, and actions within, the FactoryTalk Linx Gateway tool are controlled by FactoryTalk Security settings. Refer to [Secure FactoryTalk Linx Gateway using FactoryTalk Security](#) on [page 69](#) before attempting to configure FactoryTalk Linx Gateway.

FactoryTalk Activation Manager

FactoryTalk Activation Manager provides a secure, software-based system for activating Rockwell Automation software products and managing software activation files.

Application types

An application organizes project information, including elements such as data servers, HMI servers, and alarm and event servers, and makes it available to FactoryTalk-enabled software products that support the same FactoryTalk Directory type.

- **Network applications** are held in a FactoryTalk Network Directory. Project information and participating software products can be located on multiple computers distributed across a network. All of the computers participating in a particular Network application share a common Network Directory Server located on a network computer.
- **Local applications** are held in a FactoryTalk Local Directory. Project information is located on a stand-alone computer and is available only to software products installed on that same local computer. Local applications cannot be accessed remotely and cannot share project information with a Network application.

Important:

- Ensure all components intended for use in the same FactoryTalk system support the same FactoryTalk Directory types.
- The installed FactoryTalk Linx Gateway activation may limit support for FactoryTalk Directory types. For details on which FactoryTalk Directory types are supported by a certain activation, see [Activation types](#) on [page 56](#).

Quick start: Set up and use FactoryTalk Linx Gateway

Important: If there is a possibility that a client will attempt to access tags during setup, before continuing, shut down all OPC clients and inhibit FactoryTalk Linx Gateway services using **FactoryTalk Linx Gateway Configuration Tool > Server Configuration**. This prevents the services from automatically starting while making changes.

Use the following checklist to guide you through the process of setting up and using FactoryTalk Linx Gateway.

Step	Description	Refer to:
<input type="checkbox"/> 1.	Read and understand the FactoryTalk Linx Gateway <i>Getting Results Guide</i> .	
<input type="checkbox"/> 2.	Verify your personal computer meets the minimum hardware and software requirements.	System requirements on page 17
<input type="checkbox"/> 3.	Install FactoryTalk Linx Gateway.	Install FactoryTalk Linx Gateway on page 17
<input type="checkbox"/> 4.	Install a valid FactoryTalk Linx Gateway activation.	About Activations on page 55
<input type="checkbox"/> 5.	Configure FactoryTalk Security, if required.	FactoryTalk Services Platform Help
<input type="checkbox"/> 6.	Create a FactoryTalk application (or point to an existing application).	FactoryTalk Services Platform Help

Step	Description	Refer to:
☐ 7.	Add a FactoryTalk Linx data server or an HMI server.	FactoryTalk View Site Edition Help or FactoryTalk Services Platform Help.
☐ 8.	Create a shortcut between the FactoryTalk application and the server or controller.	FactoryTalk View Site Edition Help or FactoryTalk Services Platform Help.
☐ 9.	Start FactoryTalk Linx Gateway by clicking Start > Programs > Rockwell Software > FactoryTalk Linx Gateway > FactoryTalk Linx Gateway Configuration.	Start FactoryTalk Linx Gateway
☐ 10.	Select the scope using the FactoryTalk Linx Gateway Select FactoryTalk Directory dialog box.	About the FactoryTalk Linx Gateway Scope Selection dialog box on page 34
☐ 11.	Configure OPC UA server endpoint in UA Server Endpoints tab	FactoryTalk Linx Gateway Help
☐ 12.	When the OPC client makes a connection with FactoryTalk Linx Gateway, enter FactoryTalk Linx Gateway as the server name to which you wish to connect. If the OPC client supports browsing, select FactoryTalk Linx Gateway from the list of available servers.	OPC client documentation
☐ 13.	Run the OPC client and select the tags you want to access (up to, but not exceeding, the activation count).	OPC client documentation

Install FactoryTalk Linx Gateway

The FactoryTalk Linx Gateway installation DVD provides wizards to guide you through the installation process.

FactoryTalk Linx Gateway supports two installation methods: Setup wizard installation and automated installation with command line syntax. This chapter uses the Setup wizard installation method to illustrate the steps. The automated installation with command line syntax reduces user interaction and provides command line parameters to install FactoryTalk Linx Gateway. See [Install FactoryTalk Linx Gateway with command line syntax](#) on [page 59](#).

This chapter contains the following information:

- System requirements
- Where to install FactoryTalk Linx Gateway
- Install FactoryTalk Linx Gateway for the first time
- Update an existing system
- Install Remote FactoryTalk Linx Gateway

System requirements

To use FactoryTalk Linx Gateway, your personal computer must meet the following minimum hardware and software requirements:

Hardware requirements

FactoryTalk Linx Gateway requires the following hardware:

- Intel® Core i5 Standard Power processor
- 4 GB of memory

Tested FactoryTalk Linx Gateway update rates

Tested FactoryTalk Linx Gateway OPC DA service update rates

CPU and memory requirements for the FactoryTalk Linx Gateway OPC DA server increase as tags are set to active (up to the activation tag capacity) or as more clients connect to the server (up to the 20 connected client capacity). Rockwell Automation tests with the following update rates for a number of active tags.

Processor	Number of tags	Scan rate of all tags	Total CPU utilization
Single	70,000	All data changing value every 250 msec	75%
Dual-core	70,000	All data changing value every 250 msec	50%
Dual-core	70,000	All data changing value every 1000 msec	20%

These values are tested on a computer with a dual-core Intel® Core™ i3-2120 processor, 3.3 GHz, with 4G of RAM. The single core test is run using only one of the cores to provide a basis for comparison. FactoryTalk Linx Gateway and FactoryTalk Linx are installed and configured on the same computer for the test.

The largest impact on CPU utilization is the rate the data is changing even if the data server (in this case, FactoryTalk Linx) is local or remote to the FactoryTalk Linx Gateway.

The total amount of memory used for the runtime tests was approximately 700MB. Additional memory would be utilized if browsing occurred.

Tested FactoryTalk Linx Gateway OPC UA service update rates

CPU and memory requirements for the FactoryTalk Linx Gateway OPC UA server increase as tags are set to active (up to the activation tag capacity) or as more clients connect to the server (up to the 20 connected client capacity). Rockwell Automation tests with the following update rates for a number of active tags.

Number of Active Tags	Tested Update Rate (ms)
50,000	500
100,000	700
150,000	1000
200,000	1500
250,000	2000
300,000	2400
350,000	3000
400,000	3500
450,000	4000
500,000	4500

These values are tested on a computer with a quad-core Intel Xeon E5-1607 v3 processor, 3.2 Ghz, and 8 GB of RAM.

Software requirements

FactoryTalk Linx Gateway is tested on operating systems installed from original Microsoft® media only. They run on the 64-bit versions of the following Windows® operating systems:

- Windows 10 Professional (64-bit)
- Windows 10 Enterprise (64-bit)

See the *Windows Lifecycle FAQ* and *Windows as a Service (WaaS)* topics on the Microsoft® Web site for details regarding servicing requirements and other important information.

- Windows 10 Semi-Annual Channel v1803, v1809, v1903, v1909, and v2004

Windows 10 Semi-Annual Channel is governed by the Microsoft *Modern Lifecycle Policy*. Refer to the Microsoft Web site for details.

- Windows 10 IoT Enterprise 2016 Long-Term Servicing Branch (LTSB)
- Windows 10 IoT Enterprise 2019 Long-Term Servicing Channel (LTSC)

Windows 10 Long-Term Servicing Channel is governed by the Microsoft *Fixed Lifecycle Policy*. Refer to the Microsoft Web site for details.

- Windows Server 2012 Datacenter (64-bit)
- Windows Server 2012 Standard (64-bit)
- Windows Server 2012 R2 Datacenter (64-bit)
- Windows Server 2012 R2 Standard (64-bit)
- Windows Server 2016 Datacenter (64-bit)
- Windows Server 2016 Standard (64-bit)
- Windows Server 2019 Datacenter (64-bit)
- Windows Server 2019 Standard (64-bit)

**Supported with the Allen-Bradley 61xx family of Industrial Computers or CompactLogix™ 5480 family of controllers.

For additional information about Windows 10 Support for the FactoryTalk Suite of Rockwell Software products, refer to Knowledgebase Document ID: [IN4493 - Windows 10 Support for the FactoryTalk Suite of Rockwell Software products](#)

Software compatibility

FactoryTalk Linx Gateway version 6.20.00 (CPR 9 SR 12) has been tested with, and is compatible with, the following Rockwell Automation® products when used on the same computer:

- FactoryTalk® Activation Manager version 4.04.14
- FactoryTalk Services Platform version 6.20.00
- FactoryTalk View version 12.00.00
- FactoryTalk® Linx™ version 6.20.00

Prerequisite software

FactoryTalk Linx Gateway Setup wizard supports to automatically install a series of Rockwell software and the necessary prerequisite software, including:

Rockwell Software

- FactoryTalk Services Platform version 6.20.00 (CPR 9 SR 12)
- FactoryTalk Activation Manager version 4.04.14
- FactoryTalk Alarms and Events version 6.20.00 (CPR 9 SR 12)
- FactoryTalk Linx version 6.20.00 (CPR 9 SR 12)
- Rockwell Automation USB CIP Driver v3.18.06 (for 32-bit operating systems)
- Rockwell Automation x64 Driver v2.01.01 (for 64-bit operating systems)

Prerequisite software

- FactoryTalk Diagnostics version 6.20.00
- Microsoft .NET Framework 4.6.2
- Microsoft Visual C++ 2017 Redistributable (x86) 14.15
- Microsoft Visual C++ 2017 Redistributable (x64) 14.15
- Microsoft SQL Server 2012 Native Client 11.4
- Microsoft SQL Server 2012 Native Client x64 11.4
- Microsoft ODBC Driver 13.1 for SQL Server 13.1.811
- Microsoft ODBC Driver 13.1 for SQL Server x64 13.1.811
- OPC Local Discovery 1.03.400
- OPC .NET API 2.01
- Windows Firewall Configuration Utility 1.00.13
- Wibu CodeMeter Runtime Kit v6.90

System features

FactoryTalk Linx Gateway version 6.00.00:

- Adds OPC UA data access (non-secured endpoint).
- Provides read access to CIP Energy Object information.

FactoryTalk Linx Gateway version 6.10.00:

- Supports FactoryTalk Security to control configuration access/changes.
- Supports FactoryTalk Audit tracking for configuration changes.
- Supports OPC UA Secured endpoints with signing and encryption.

FactoryTalk Linx Gateway version 6.20.00:

- Adds the ability to read/write device data (e.g. PowerFlex Drive, E300 Motor Protector, etc.) using FactoryTalk Linx CIA Messaging. FactoryTalk Linx Gateway also provides the ability to control access to this option.

- Adds the ability to allow OPC UA clients accessing multiple values of an array tag in a single action by configuring the "Index Range" parameter. For example, add an item [shortcut]Tag with index range 1:3 returns the values of Tag[1], Tag[2], and Tag[3] together.
- Adds the ability to allow OPC UA clients to directly access the tag information without browsing the tag in a client application. This is achieved by accessing the tag by entering the object node ID.
- Supports customized outgoing certificate, import and the ability to create a certificate signing request for external Certificate Authority (CA) to sign.
- Adds the ability to allow users to choose the specific activation that will be requested on startup.

Where to install FactoryTalk Linx Gateway

For FactoryTalk Local Directory applications and network station, you must install FactoryTalk Linx Gateway on the local computer.

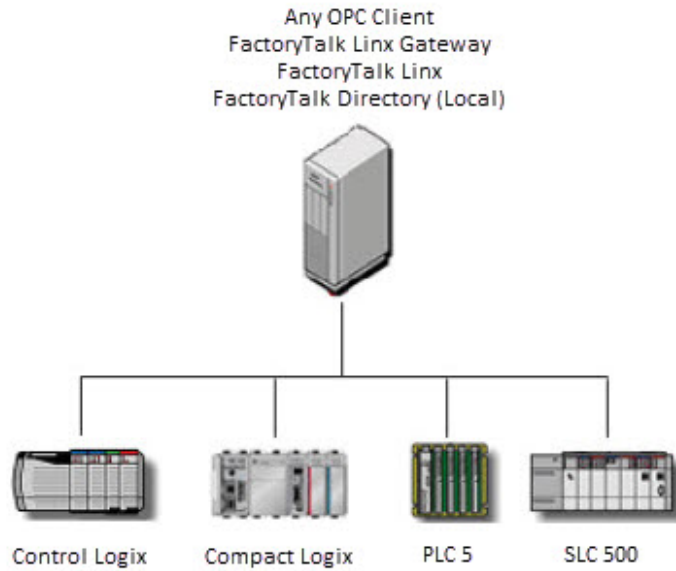
In a FactoryTalk Local Directory application and network station, all project information and security settings are located on a single computer, and the FactoryTalk-enabled system cannot be shared across a network. A FactoryTalk Linx Gateway Local Directory and network station, however, can support remote OPC clients. Products such as FactoryTalk View Site Edition (SE) Station and RSLogix use the Local Directory.

A FactoryTalk application directories can be configured as Local, Network Station, or Network Distributed. These options are determined by the capabilities defined by the license/activation that is being used.

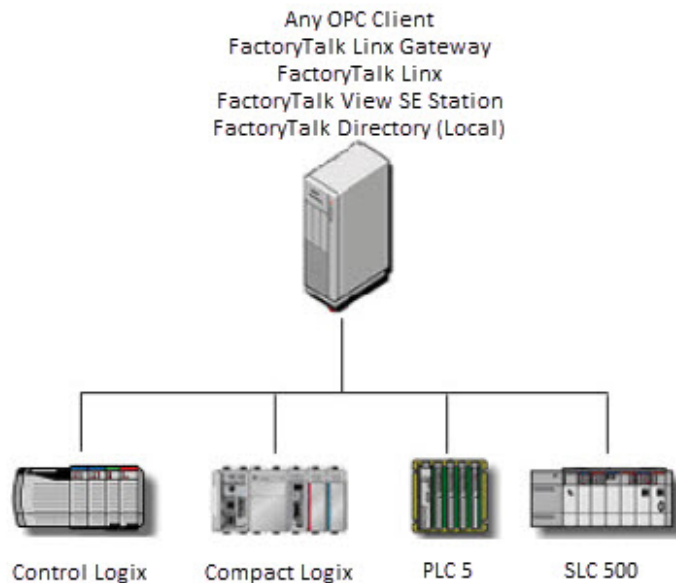
1. Local – Small application where the FactoryTalk Linx or FactoryTalk Linx OPC UA Connector communications service is operated on the same workstation with FactoryTalk Linx Gateway. A local application is configured with a single level where all communications services are defined at the same top level (no areas are supported).
2. Network Station – This configuration uses the Network directory, with all of the communications services defined on the same workstation with FactoryTalk Linx Gateway. A network station application permits areas to be created to improve the organization of the application (This type of configuration can be used with software like FactoryTalk View SE Station or FactoryTalk Historian which does not support Local directory).
3. Network Distributed – This type of directory permits communications services to be located on multiple / different workstations from FactoryTalk Linx Gateway. Up to ten (10) of each type of communications services (FactoryTalk Linx and FactoryTalk Linx OPC UA Connector) can be defined in a system. These communications services can be configured as redundant to support high availability configurations (This type of configuration can be used with software like FactoryTalk View SE Distributed).

Depending on your requirements, FactoryTalk Linx Gateway installation options for Local FactoryTalk Directory applications include the following:

To use FactoryTalk Linx as a data server to HMI and other third-party OPC clients, FactoryTalk Linx Gateway, FactoryTalk Linx, and FactoryTalk Directory are installed on the same machine as shown in the following diagram:



For FactoryTalk View Site Edition (SE) applications that need to serve OPC data, FactoryTalk View SE Station can also be installed on the same machine, as shown in the following diagram. This also provides the benefit of FactoryTalk View SE Station features, such as alarm and derived tags and direct references. Plus, either FactoryTalk Linx or FactoryTalk View SE Station can be used as a data server.



For FactoryTalk Network Directory applications, you can install FactoryTalk Linx Gateway on any computer.

A FactoryTalk Network Directory organizes project information and security settings from multiple FactoryTalk-enabled products across multiple computers on a network. When a Network Directory is configured on a computer, that computer can then be used as a Network Directory Server, or it can be made a client of a Network Directory Server configured on a different computer on the network. Products such as FactoryTalk View SE Distributed and FactoryTalk Transaction Manager use the Network Directory.

Tip: In FactoryTalk Network Directory applications, you can choose from multiple computers to install FactoryTalk Linx Gateway. It is recommended that you install FactoryTalk Linx Gateway and the client on the same computer, instead of using Remote OPC across the network. Because FactoryTalk Live Data is used as the network protocol in what is considered to be a more robust and secure fashion than Remote OPC.

Depending on your requirements, FactoryTalk Linx Gateway provides many installation options for FactoryTalk Network Directory applications.

To connect to multiple FactoryTalk Linx servers or multiple FactoryTalk View SE Distributed servers, FactoryTalk Linx Gateway, FactoryTalk Linx, and FactoryTalk Directory can be distributed over different machines, as shown in the following diagram:

In this example, one FactoryTalk Linx Gateway is serving all clients. If a system requires 32,000 or more tags, use a no fixed limit tag activation and refer to the **FactoryTalk Linx Gateway Release Notes > Application Notes** for tested hardware and update rates.

You can have multiple FactoryTalk Linx Gateway servers point to the same scope in the same FactoryTalk Directory to provide redundancy for each other. The client code controls the switching between the FactoryTalk Linx Gateway servers.

FactoryTalk Linx Gateway supports redundant FactoryTalk Linx data servers and HMI servers. Refer to the FactoryTalk Services Platform Help for more information.

About Remote FactoryTalk Linx Gateway

Remote FactoryTalk Linx Gateway enables an OPC DA client to access a remote OPC DA server like FactoryTalk Linx Gateway without installing Rockwell Automation software on the OPC DA client computer. It is intended for use with OPC DA clients that do not support server enumeration and cannot discover or identify remote OPC DA servers.

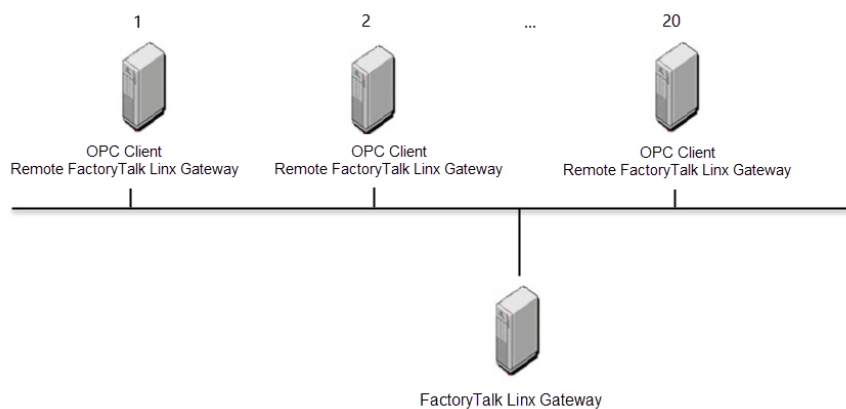
During the install, the Remote FactoryTalk Linx Gateway installer configures the Windows Firewall and security settings to allow DCOM communications between the OPC DA client and Remote FactoryTalk Linx Gateway.

Remote FactoryTalk Linx Gateway does not have a configuration interface. Remote FactoryTalk Linx Gateway does not support connections to OPC UA servers. A Remote FactoryTalk Linx Gateway installation is not required for an OPC UA client on one workstation to connect to the FactoryTalk Linx Gateway OPC UA service on another workstation.

Where to install Remote FactoryTalk Linx Gateway

Install Remote FactoryTalk Linx Gateway on the same computer as an OPC DA client that does not support server enumeration.

Shown below are multiple OPC DA clients connecting to a single FactoryTalk Linx Gateway OPC DA server. Remote FactoryTalk Linx Gateway is installed once per computer that hosts an OPC DA client.



Configure Windows firewall for Remote FactoryTalk Linx Gateway

If you install Remote FactoryTalk Linx Gateway on a remote third party OPC client, you need to configure Windows firewall to allow connections with the FactoryTalk Linx Gateway server. This is automatically configured after installation of FactoryTalk Gateway version 3.90.00 and later. If you want to verify the setting or make changes, follow the steps below.

Tip: The following procedure applies for Windows 7, Windows 8, Windows Server 2008 R2, and Windows Server 2012.

To configure Windows firewall:

1. Select **Start > Control Panel > System and Security** (View by: Category).
2. In the **Windows Firewall** section, click **Allow a program through Windows Firewall**.

For Windows 10 or Windows Server 2016, Type **Allow an app through Windows Firewall** in the **Windows Search** field, and then press **Enter**.

3. In the **Allowed Programs and features** list, verify the program **OPCTest.exe** which FactoryTalk Linx Gateway provided, or your own application for remote connecting, is in the list. If you cannot find it in the list, you can click **Allow another program** to browse and add it to the allowed programs list.
4. Click **OK** to save the changes and close the dialog box.

Install FactoryTalk Linx Gateway

You can install one or more Rockwell Automation software products to a single personal computer.

Important: The user installing or configuring FactoryTalk Linx Gateway must have administrative rights in Windows on the computers where the software is being installed or configured. The Windows domain Administrator account has these rights, for example.

To install FactoryTalk Linx Gateway software:

1. Start your Windows operating system.
2. Insert the FactoryTalk Linx Gateway DVD into the DVD-ROM drive.
3. (optional) If **FactoryTalk Linx Gateway Setup** does not appear, start the setup utility:
 - a. In Windows, select **Start > Run**.
 - b. In **Open**, type `x:\setup`, where x is the letter of the drive containing the FactoryTalk Linx Gateway DVD-ROM, and then click **OK**.
 - c. If Microsoft .NET Framework 4.0 or later is not installed on your computer, the **Microsoft .NET Framework Setup** dialog box shows. Click **Install**.
4. In **FactoryTalk Linx Gateway Setup**, select a product to install from the drop down list. The available products are:

- **Gateway**
Select **Gateway** to install FactoryTalk Linx Gateway and all supporting FactoryTalk software on this computer. FactoryTalk Linx Gateway serves FactoryTalk application data from this computer to OPC DA and UA clients.
 - **Remote Gateway**
Select **Remote Gateway** to install Remote FactoryTalk Linx Gateway. No other FactoryTalk software is installed on this computer. Remote FactoryTalk Linx Gateway enables an OPC DA client on this computer to access a remote OPC DA server. It is intended for use with OPC DA clients that do not support server enumeration and cannot discover or identify remote OPC DA servers.
5. Choose either:
 - **Install Now:** Install FactoryTalk Linx Gateway and prerequisite software to the the default installation directory: **C:\Program Files\Rockwell Software** (for 32-bit operating systems) or **C:\Program Files (x86)\Rockwell Software** (for 64-bit operating systems).
 - **Customize:** Specify which software should be installed and select a different installation directory, then click **Install**.
 6. In **End-User License Agreements**, read the agreements, then select **Accept all** to continue the installation, or click **Decline** to return to the previous page.
 7. (optional) If prompted to restart your computer during the installation, click **Restart now** to restart your computer and continue the installation, or **Restart later** to suspend and exit the installation.
 8. If you are installing FactoryTalk Linx Gateway, **Almost there** appears. Select one of the following options, then click **Next**.
 - Select **Activate your software** to activate FactoryTalk Linx Gateway now.
 - Select **Skip activation** to activate FactoryTalk Linx Gateway later using FactoryTalk Activation Manager. For more information, refer to [About Activations](#) on page 55.

If you are installing Remote Gateway, no activation is required.
 9. In **That's it!**, click **Restart now** to restart your computer and continue the installation, or **Restart later** to exit the installation. You must restart your computer before using FactoryTalk Linx Gateway. Meanwhile, you can also:
 - Click **Installation Summary** to see the installation details.
 - Click **Register for updates** to learn how to receive email updates about product patches.

- Click **Download it free** to install Adobe Acrobat Reader. Adobe Acrobat Reader is required to open the *FactoryTalk Linx Gateway Getting Results Guide* and other documents.
10. The FactoryTalk Linx Gateway installation is complete. When you finish installing the software, remove the FactoryTalk Linx Gateway DVD from the DVD-ROM drive, and store it in a safe place.

Uninstall FactoryTalk Linx Gateway

To uninstall FactoryTalk Linx Gateway software, do any of the following:

- Open **Programs and Features** in Windows **Control Panel**, right-click FactoryTalk Linx Gateway and then click **Uninstall**.
- Open Setup.exe, and then click **modify** or **uninstall**.
- Open the **Command Prompt** window and type a command with the following syntax:

```
Setup.exe [/Q | /QS] /Uninstall /Product="Gateway"
```

Note: Components, such as FactoryTalk Activation Manager, that are shared with other products will not be uninstalled.

For more information about command-line parameter, see [Parameters](#) on [page 60](#).

Update an existing installation

Before you begin

Note the following before upgrading FactoryTalk Linx Gateway:

- The user installing or configuring FactoryTalk Linx Gateway must have administrative rights in Windows on the computers where the software is being installed or configured.
- If you upgrade from RSOPC Gateway 1.00 (CPR 7), do not use **Add/Remove Programs** from Windows **Control Panel** to uninstall RSOPC Gateway 1.00 (CPR 7). Using this method to remove RSOPC Gateway 1.00 (CPR 7) deletes RSOPC Gateway 1.00 (CPR 7) configuration files.
- If you upgrade from FactoryTalk Gateway v3.90 or earlier to FactoryTalk Linx Gateway v6.00 or later, uninstall FactoryTalk Gateway using **Add/Remove Programs** before installing FactoryTalk Linx Gateway.

Upgrade FactoryTalk Linx Gateway

Perform the following steps to upgrade to the latest version of FactoryTalk Linx Gateway:

1. Stop the FactoryTalk Linx Gateway services by selecting the **Inhibit** checkbox in **FactoryTalk Linx Gateway Configuration Tool > Server Configuration**.
2. If FactoryTalk Diagnostics Counter Monitor is running, exit the program.
3. Close the **FactoryTalk Linx Gateway Configuration Tool**.
4. Insert the FactoryTalk Linx Gateway product DVD. Perform the installation steps as presented on the screen.
5. Restart your computer.

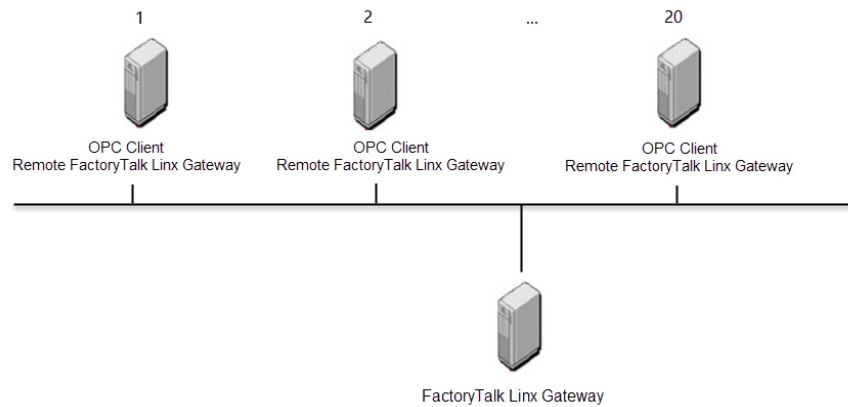
Note: You must restart your computer after installing Rockwell Automation software products. If you are installing multiple products, you must restart your computer after all of the products are installed.

Install Remote FactoryTalk Linx Gateway

Remote FactoryTalk Linx Gateway enables an OPC DA client to access a remote OPC DA server like FactoryTalk Linx Gateway without installing Rockwell Automation software on the OPC DA client computer. It is intended for use with OPC DA clients that do not support server enumeration and cannot discover or identify remote OPC DA servers.

Remote FactoryTalk Linx Gateway does not have a configuration interface. Remote FactoryTalk Linx Gateway does not support connections to OPC UA servers.

Shown below are multiple OPC DA clients connecting to a single FactoryTalk Linx Gateway OPC DA server. Remote FactoryTalk Linx Gateway is installed once per computer that hosts an OPC DA client.



To install Remote FactoryTalk Linx Gateway, select **Remote Gateway** in **FactoryTalk Linx Gateway Setup**, then follow the installation instructions.


Start FactoryTalk Linx Gateway and explore the user interface

This chapter includes the following information:

- Starting FactoryTalk Linx Gateway
- About the FactoryTalk Linx Gateway Configuration dialog box

Start FactoryTalk Linx Gateway

Start FactoryTalk Linx Gateway by selecting **Start > Programs > Rockwell Software > FactoryTalk Linx Gateway > FactoryTalk Linx Gateway**

Configuration. (Or click  on the FactoryTalk Administration Console menu bar.) The **FactoryTalk Linx Gateway Configuration** dialog box opens. The default setting exposes all projects in the directory under the Network node.

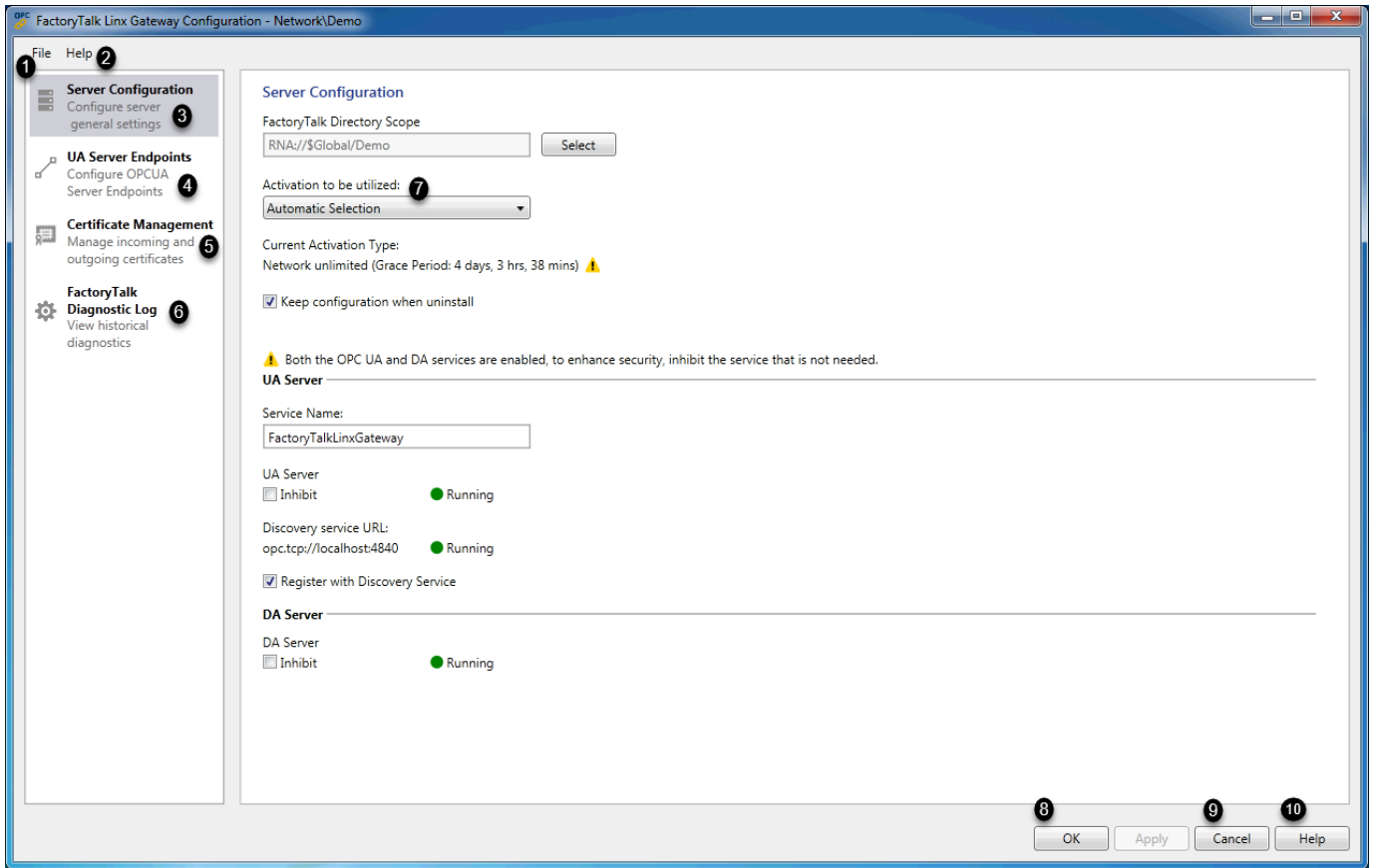
Tip: To start or stop the FactoryTalk Linx Gateway service, you must be either a Windows Administrator or Power User of the computer.

About the FactoryTalk Linx Gateway Configuration dialog box

The **FactoryTalk Linx Gateway Configuration** dialog box shows the Server Configuration, OPC UA Server Endpoints, software revision and activation information, and certificate and diagnostic information.

Note: If there is a possibility that a remote client can start the FactoryTalk Linx Gateway service, you must disable the FactoryTalk Linx Gateway service via the Windows Control Panel (or all of the OPC clients should be stopped or shut down) before you reconfigure the scope. This will prevent the service from automatically starting while you are making changes to the scope configuration. The default DCOM settings prohibit launching the FactoryTalk Linx Gateway remotely and is the recommended setup.

The **FactoryTalk Linx Gateway Configuration** dialog box contains the following information:



Item	Description
1	The File button contains information about: <ul style="list-style-type: none"> • Log On • Log Off • Exit FactoryTalk Linx Gateway Configuration.
2	The Help button contains information about: <ul style="list-style-type: none"> • Release Notes. • Help Content • Software version number. • Activation • Copyright • Contact information
3	The Server Configuration tab contains information about: <ul style="list-style-type: none"> • FactoryTalk Directory scope selection. • OPC UA server name, status, OPC discovery service URL, status, and service inhibit checkbox. • OPC DA server status and service inhibit checkbox.
4	The UA Server Endpoints tab contains information about: <ul style="list-style-type: none"> • OPC UA server name, port, and URL. • Security mode and policy. • Authentication settings. • Diagnostic logging settings.

Item	Description
5	The Certificate Management tab contains information about: <ul style="list-style-type: none"> • Incoming certificate import, reject, trust, and remove button. • Outgoing certificate regenerate button. • Certificate properties
6	The FactoryTalk Diagnostic Log tab contains information about: <ul style="list-style-type: none"> • FactoryTalk Diagnostics information.
7	The Activation to be utilized lists all the activation types. The default option is " Automatic Selection " which FactoryTalk Linx Gateway selects the activation that supports the most tags.
8	Click OK to apply the changes and restart FactoryTalk Linx Gateway service.
9	Click Cancel to close the dialog box.
10	Click Help to access the FactoryTalk Linx Gateway Help.

Server Configuration

Use **Server Configuration** to set FactoryTalk application scope and global server properties for the FactoryTalk Linx Gateway service.

Global Settings

Field	Description
FactoryTalk Diagnostics Scope	<p>Sets the FactoryTalk Diagnostics path to an application. Tags from the selected application are made accessible to OPC clients through the UA or DA server.</p> <p>The supported scope will depend on the FactoryTalk Linx Gateway activation purchased. For more information on supported scopes and activation, see Activation types on page 56.</p> <p>Sets where the FactoryTalk Linx services reside, local to the FactoryTalk Linx Gateway host PC or distributed over the network.</p>

UA Server Settings

Field	Description
Service Name	Sets the OPC UA service name visible to OPC UA clients.
Inhibit	<p>Inhibits or enables the OPC UA service.</p> <ul style="list-style-type: none"> • Checked: Inhibits the OPC UA service from operating. • Unchecked: Enables the OPC UA service. (default)
Discovery service URL	<p>Lists the URL at which the OPC UA service can be accessed.</p> <p>Tip: Copy the URL text into the OPC UA client that accesses information from the FactoryTalk Linx Gateway OPC UA service.</p>
Register with Discovery Service	Sets whether the OPC UA service is listed as part of the local OPC UA discovery service.

DA Server Settings

Field	Description
Inhibit	<p>Inhibits or enables the OPC DA service.</p> <ul style="list-style-type: none"> • Checked: Inhibits the OPC DA service from operating. • Unchecked: Enables the OPC DA service. (default) <p>Tip: If the system only utilizes one of the OPC services, Rockwell Automation recommends inhibiting the other service to reduce the impact on the host computer and eliminate unwanted communications.</p>

Select FactoryTalk Directory

Use **Select FactoryTalk Directory** to select an application, area, or sub-area (also known as the *scope*) from the FactoryTalk Directory. Tags from the scope are presented to OPC UA and DA clients as node IDs for subscription. The top-level or root location in the FactoryTalk Directory tree is not a valid selection.

- Tip:**
- If the server scope is changed up or down a level in the FactoryTalk Directory tree, OPC clients may not be able to access tags from the original configuration. This is because the OPC browse interface provides node ID paths that are relative to the configured scope. After changing the scope, check all relative paths in client applications to determine if their values need to be updated.
 - You must inhibit the FactoryTalk Linx Gateway services before you can configure the scope. Note that if you do not have read permission, an error message opens when you configure scope. Refer to [Secure FactoryTalk Linx Gateway using FactoryTalk Security](#) on page 69. You must be logged into FactoryTalk to be able to configure the scope. If you have not already done so, you will be prompted to log in when you click **Select**.

UA Server Endpoints

Use **UA Server Endpoints** to add, remove, and configure OPC UA server endpoint URLs and properties.

Each endpoint defines a specific approach for accessing data from the FactoryTalk Linx Gateway OPC UA service. With the security mode and policy set to "None", only one endpoint is required. Future extensions will add functionality where multiple endpoints may be desirable to limit tag access via specific security constraints.

UA Server Endpoints

Field	Description
UA Server Endpoints	A list of all configured OPC UA server endpoint URLs, their security modes, and security policies.
Add	Adds a new OPC UA server endpoint to the list.
Remove	Removes the highlighted OPC UA server endpoint from the list.

Endpoint Properties

Field	Description
Name	Sets the name for the OPC UA server endpoint. The name must be unique. The server name displays in the OPC UA namespace and is included in the full tag path for all nodes provided by the server.
Port	Sets the port number for the OPC UA server endpoint. The port must be unique. The default port is 4990 and increments by 1 for each additional endpoint.
URL	<p>Sets the network path to the OPC UA Server. The path must be in the format <code>opc.tcp://hostname_or_ip:port/Endpoint/Name</code> where <code>hostname_or_ip</code>, <code>port</code>, and <code>/Endpoint/Name</code> are replaced with the hostname or IP address, port number, and endpoint name of the OPC UA server.</p> <p>This URL must be provided to OPC UA client applications in order to connect to the FactoryTalk Linx Gateway UA service.</p> <p>The firewall on the FactoryTalk Linx Gateway OPC UA server must allow incoming connections to the selected port for the connection to succeed.</p>
Security Mode	<p>Displays the security method required for connections between OPC UA clients and the FactoryTalk Linx Gateway OPC UA server.</p> <ul style="list-style-type: none"> • Sign: Use signature to secure the connection. • Sign & Encrypt: Use signature and encryption to secure the connection. • Sign + Sign & Encrypt: Use either signature or signature and encryption to secure the connection.
Security Policy	<p>Displays whether security is required or optional for connections between OPC UA clients and the FactoryTalk Linx Gateway OPC UA server.</p> <p>There are three security algorithm suites:</p> <ul style="list-style-type: none"> • Basic128Rsa15 • Basic256 • Basic256Sha256
Anonymous	Sets OPC UA clients' log on user group is Anonymous with read and write access.
Limit to read-only access	Sets the log on user group is Anonymous with only read access.
FactoryTalk Security User	Sets OPC UA clients' log on user group is FactoryTalk Security user with read and write access. The user is created in FactoryTalk Administration Console > System > Users and Groups. Username and password are needed.
Log diagnostic message on tag write	When enabled, FactoryTalk Linx Gateway will create a diagnostic or audit message every time a tag is written by an external OPC UA client. The default setting is disabled.
Log as audit message	When enabled, FactoryTalk Linx Gateway will create an audit message in the FactoryTalk Audit log with time-and date-stamped information to track changes that occurred during the operation of the system.
Log as diagnostic message	When enabled, FactoryTalk Linx Gateway will create a diagnostic message in the FactoryTalk Diagnostics log with time-and date-stamped information to help diagnose anomalies.

About FactoryTalk Linx Gateway

Use **About FactoryTalk Linx Gateway** to identify the version of the FactoryTalk Linx Gateway user interface, OPC UA and DA servers, and OPC Foundation Discovery Service, or to view the activation type and grace period status.

To open About FTLinx Gateway:

1. From the **Windows Start Menu**, select **All Programs > FactoryTalk Linx Gateway > FactoryTalk Linx Gateway Configuration**.
2. Click **Help > About FactoryTalk Linx Gateway**.

Revision

Field	Description
FactoryTalk Linx Gateway User Interface Revision	Lists the version number of the FactoryTalk Linx Gateway user interface on the local machine.
FactoryTalk Linx Gateway OPC UA Server Revision	Lists the version number of the FactoryTalk Linx Gateway OPC UA service on the local machine.
FactoryTalk Linx Gateway OPC DA Server Revision	Lists the version number of the FactoryTalk Linx Gateway OPC DA service on the local machine.
OPC Foundation Discovery Service Revision	Lists the version number of the OPC Foundation Discovery Service on the local machine.

Certificate Management

Use **Certificate Management** to view FactoryTalk Linx Gateway OPC UA server certificate information.

FactoryTalk Linx Gateway creates a default, self-signed security certificate during installation. The security certificate is stored at `C:\ProgramData\Rockwell\FTLinxGateway\PKI\own\cert_ftgw_opcua_server.der` on the host computer for the FactoryTalk Linx Gateway server. A custom security certificate can be created by generating a certificate signing request in FactoryTalk Linx Gateway and signed by an external trusted security authority and then imported to FactoryTalk Linx Gateway to replace the default certificate.

Certificate properties

Field	Description
Name	Displays the name of the security certificate.
Status	Displays the certificate status, either Trusted or Rejected .
Location	Displays the path to the security certificate on the FactoryTalk Linx Gateway computer.
Application Name	Displays the application from where the certificate is presented.
Organization	Displays the organization name that submitted to CA when requesting the certificate.
Application URI	Displays the FactoryTalk Linx Gateway application URI associated with the security certificate.
Domain	Displays the workstation name.
Subject Name	Displays the subject properties on the certificate. For example, Common Name (CN).
Valid From	The date and time when the security certificate is valid.
Expiration Time	The date and time when the security certificate expires.
Thumbprint	A short sequence of bytes created by applying the cryptographic hash function to identify a certificate.

Certificate actions

Button	Description
Import	Specify and import the certificate to be used as incoming certificate or outgoing certificate.
Reject	Move the specific certificate(s) from Trusted Certificates list to Rejected Certificates list. The client(s) cannot communicate with FactoryTalk Linx Gateway.

Button	Description
Remove	Remove the specific certificate(s) from Trusted Certificates list or Rejected Certificates list. The client(s) cannot communicate with FactoryTalk Linx Gateway.
Trust	The specific certificate is added to Trusted Certificates list and the client can communicate with FactoryTalk Linx Gateway.
Create CSR	Create a Certificate Signing Request (CSR) and save the request as a . CSR file.
Regenerate	Create another certificate to renew the valid period.

FactoryTalk Diagnostic Log Use **FactoryTalk Diagnostic Log** to view historical error, warning, and information level diagnostic messages about the FactoryTalk Linx Gateway services on the current computer.

FactoryTalk Diagnostic Log

Button	Description
Refresh	Clear the FactoryTalk Diagnostic Log and refresh diagnostic messages from the FactoryTalk Diagnostics server on the local computer.
Launch FactoryTalk Diagnostic Viewer	Starts the FactoryTalk Diagnostic Viewer to view diagnostic messages for all FactoryTalk devices and services, or to view diagnostic messages for a remote computer.

Use FactoryTalk Linx Gateway to Access Data

This chapter includes the following information:

- Before you begin
- Starting FactoryTalk Linx Gateway
- Selecting the scope
- Accessing data


Before you begin

Before you can access data via FactoryTalk Linx Gateway, you must:

1. Install and activate FactoryTalk Linx Gateway.
For the detailed steps, refer to [Install FactoryTalk Linx Gateway](#) on [page 17](#).
2. Create a FactoryTalk application, or point to an existing application, in FactoryTalk Administration Console.
For the detailed steps, refer to FactoryTalk Services Platform Help.
3. Add a data server, for example, a FactoryTalk Linx data server.
For the detailed steps, refer to FactoryTalk Services Platform Help.
4. Add shortcuts to target controllers in FactoryTalk Linx.
For the detailed steps, refer to FactoryTalk Linx Online Help.

Start FactoryTalk Linx Gateway

Start FactoryTalk Linx Gateway by selecting **Start > Programs > Rockwell Software > FactoryTalk Linx Gateway > FactoryTalk Linx Gateway**

Configuration. (Or click  on the FactoryTalk Administration Console menu bar.) The **FactoryTalk Linx Gateway Configuration** dialog box opens. The default setting exposes all projects in the directory under the Network node.

Tip: To start or stop the FactoryTalk Linx Gateway service, you must be either a Windows Administrator or Power User of the computer.

Select the scope

The scope is the area or application from which you want to access data. The main **FactoryTalk Linx Gateway Configuration** dialog box shows the current scope. The supported scope will depend on the FactoryTalk Linx Gateway activation purchased. For more information on supported scopes and activation, see [Activation types](#) on [page 56](#).

A local scope means that only one instance of a FactoryTalk Linx data server can be configured, and resides on the local host computer. A network scope means that multiple FactoryTalk Linx data servers can be configured and may

be distributed across the network. If the FactoryTalk Linx Gateway is providing data to a FactoryTalk View SE application, activations that support the local or network application must be installed for FactoryTalk Linx Gateway and FactoryTalk View SE.

- Tip:
- If there is a possibility of a remote or local client requesting tag data from FactoryTalk Linx Gateway, you must disable the FactoryTalk Linx Gateway service via the Windows **Control Panel**, or stop or shut down all of the OPC clients before you reconfigure the scope. This will prevent the service from automatically starting while you are configuring the scope. The default DCOM settings prohibit launching the FactoryTalk Linx Gateway OPC <DA> service remotely and is the recommended setup.
 - You must stop the service before you can configure the scope. Note that if you do not have read permission, an error message opens when you configure scope. Refer to the FactoryTalk Linx Gateway Help. You must be logged into FactoryTalk to be able to configure the scope. If you have not already done so, you will be prompted to log in when you click **Select**.
 - When using a new system, or if you need to change the scope, use the FactoryTalk Administration Console.

To select the scope:

1. In **Server Configuration**, next to **FactoryTalk Diagnostics Scope**, click **Select**.
2. In **Select FactoryTalk Directory**, select either the Network or Local FactoryTalk Directory.
3. From the FactoryTalk Directory tree, select an application or area.
4. Select **OK**.
5. In **Server Configuration**, select **Apply**.
6. In **FactoryTalk Linx Gateway Configuration**, click **Yes** to restart the FactoryTalk Linx Gateway services and apply the scope change.

Access the data

Your access to, and actions within, the FactoryTalk Linx Gateway tool are controlled by FactoryTalk Security settings. Refer to [Secure FactoryTalk Linx Gateway using FactoryTalk Security](#) on [page 69](#) before attempting to configure FactoryTalk Linx Gateway.

Once a FactoryTalk Directory scope has been selected and the FactoryTalk Linx Gateway service is running, OPC UA and DA clients can read and write the data provided from the FactoryTalk Linx Gateway services. Refer to your OPC client documentation for more information.

Prerequisites:

1. In the scoped FactoryTalk application, add a FactoryTalk Linx data server.
2. In the scoped FactoryTalk application, create a shortcut from the application to the server hosting the tag data.

- a. In FactoryTalk View Studio or FactoryTalk Administration Console, open **Communication Setup**.
 - b. In **Device Shortcuts**, click **Add**.
 - c. (optional) Type a unique name for the shortcut.
 - d. In the communications heirarchy tree in the right-hand pane, click the device that contains the tag data, then click **Apply**.
 - e. Click **Yes** to apply changes.
 - f. In **Shortcut Type**, select a type of shortcut. The default value is Processor.
 - g. Click **OK** to close **Communication Setup**.
- For more information about shortcuts, see FactoryTalk Linx Help.
3. (optional) On the FactoryTalk Linx Gateway host PC, use **Server Configuration** to verify the FactoryTalk Linx Gateway OPC UA or OPC DA service is running.

To access data from FactoryTalk Linx Gateway:

1. Start an OPC UA or DA client.
2. Configure the OPC UA or DA client to connect to the FactoryTalk Linx Gateway service.
 - For OPC DA clients, this is done by entering or browsing to the hostname or IP address of the FactoryTalk Linx Gateway server.
 - For OPC UA clients, this is done by entering or browsing to an OPC UA Endpoint URL. If security is required, the client may need to accept the FactoryTalk Linx Gateway security certificate.
3. In the OPC client, add a data group.
4. In the OPC client, add one or more data items to the data group, up to but not exceeding the FactoryTalk Linx Gateway activation capacity.

For more information on FactoryTalk Linx Gateway activations, see [Activation types](#) on [page 56](#).

Use FactoryTalk Diagnostics Counter Monitor with FactoryTalk Linx Gateway

This chapter includes the following information:

- About FactoryTalk Diagnostics Counter Monitor
- Run FactoryTalk Diagnostics Counter Monitor
- Create a snapshot file
- Use FactoryTalk Diagnostics Counter Monitor to troubleshoot FactoryTalk Linx Gateway

About FactoryTalk Diagnostics Counter Monitor

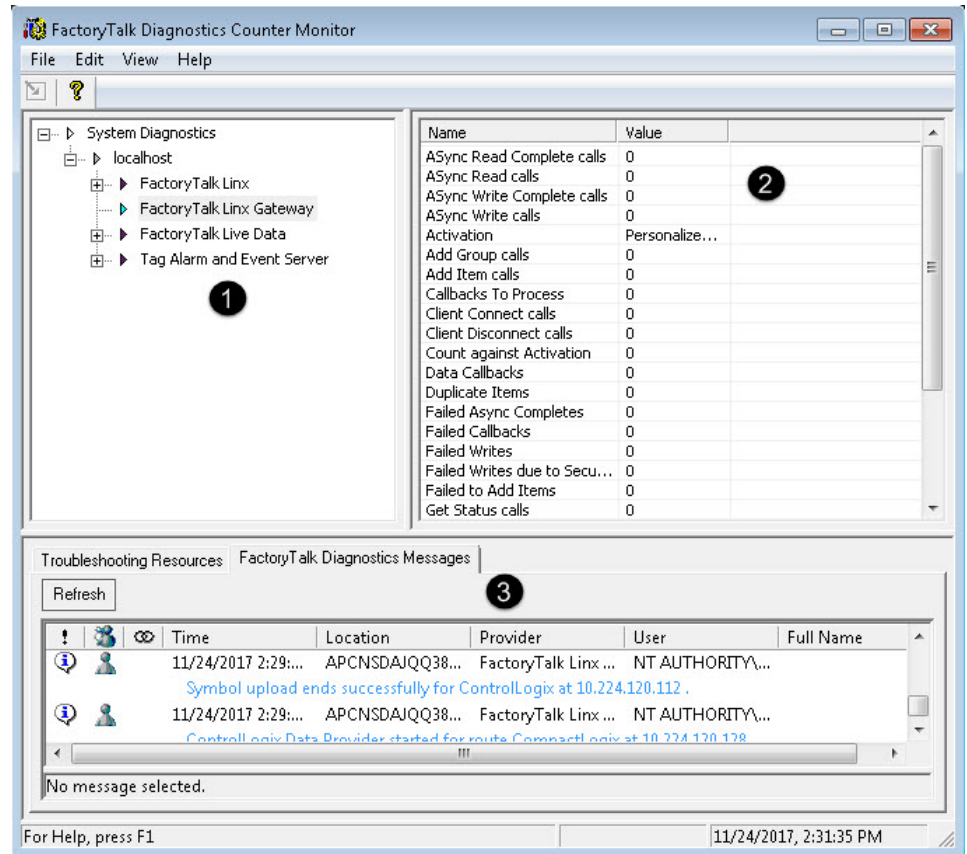
FactoryTalk Diagnostics Counter Monitor is installed with FactoryTalk Services Platform. This stand-alone tool shows diagnostic counter information as well as OPC clients, groups, and corresponding items.

FactoryTalk Diagnostics Counter Monitor shows diagnostic information about the FactoryTalk Linx Gateway runtime operation:

- Diagnostic counters are displayed as properties at the FactoryTalk Linx Gateway, client, and group levels.
- Individual diagnostic items are displayed as children of their corresponding group connection.

Tip: FactoryTalk Diagnostics Counter Monitor shows diagnostics for FactoryTalk Linx Gateway, FactoryTalk Live Data, and FactoryTalk Linx (if installed).

The FactoryTalk Diagnostics Counter Monitor main window contains three areas:



Item	Description
1	<p>Navigator</p> <p>Workstations are manually added to or removed from a tree in the Navigator area. If FactoryTalk Linx or FactoryTalk Linx Gateway is installed on a workstation, FactoryTalk Diagnostics Counter Monitor automatically detects and shows them on the tree under the associated workstation.</p>
2	<p>Data</p> <p>The values of the selected diagnostic items are displayed in the Data area.</p> <p>The Data area contains the following columns:</p> <ul style="list-style-type: none"> • Name: At the root, provider, and client levels, this is the name of the diagnostic counter. At the group level, this is the tag name. • Value: At the root and provider levels, this is the returned data value of the diagnostic counter. At the group level, this indicates the status of the tag: Active or Inactive. <p>Note that neither the list of names nor their values can be modified.</p> <p>For a description of each counter, refer to the FactoryTalk Diagnostics Counter Monitor Help.</p>
3	<p>Viewer, which contains two tabs:</p> <ul style="list-style-type: none"> • Troubleshooting Resources The Help is integrated into FactoryTalk Diagnostics Counter Monitor using this viewer. • FactoryTalk Diagnostics Messages Error messages associated with FactoryTalk Diagnostics Counter Monitor are logged to FactoryTalk Diagnostics. These messages are also displayed on the FactoryTalk Diagnostics Messages viewer. This enables you to see if there is any correlation between the logged messages and the values of the diagnostic items displayed in the Data area. Note that FactoryTalk Diagnostics messages are displayed for the local workstation only.

To further aid in diagnosing problems, an **integrated snapshot feature** captures diagnostic values into an .xml file. This enables you to send this

information to Rockwell Automation Technical Support if you need troubleshooting assistance. Refer to [Create a snapshot file](#) on [page 46](#).

Tip: FactoryTalk Diagnostics Counter Monitor is currently supported for desktop servers only. Windows CE is not supported in this release.

Keep the following in mind while using FactoryTalk Diagnostics Counter Monitor:

- Inactive tags are displayed with a value of Inactive.
- If a group's state is inactive, then the items within that group are inactive, regardless of what appears on the screen. However, if a group's state is active, it does not affect the state of any items within that group; that is, items within that group may be active or inactive.
- If client and group names are supplied by the client, then those names will be shown in the FactoryTalk Diagnostics Counter Monitor Navigator area.
- Duplicate items are given a numerical suffix (that is, itemname (#)) to distinguish them and are treated as unique tags. Duplicate items are numbered sequentially as they are added, regardless of the Group to which they are added. For more information, refer to FactoryTalk Diagnostics Counter Monitor Help.

Run FactoryTalk Diagnostics Counter Monitor

Note the following before you begin using FactoryTalk Diagnostics Counter Monitor:

- FactoryTalk Linx Gateway must be installed and running on one or more host computers on the network.
- The diagnostics client must have access to a workstation that has an application with diagnostic items associated with it. A client must be accessing those diagnostic items in order for them to be shown on FactoryTalk Diagnostics Counter Monitor.
- To prevent FactoryTalk Linx Gateway performance degradation, run only one instance of FactoryTalk Diagnostics Counter Monitor at a time, and close the tool when you have finished troubleshooting.

To run FactoryTalk Diagnostics Counter Monitor:


1. Start FactoryTalk Diagnostics Counter Monitor.

Click **Start > Programs > Rockwell Software > FactoryTalk Tools > FactoryTalk Diagnostics Counter Monitor**.

The FactoryTalk Diagnostics Counter Monitor main window opens. By default, the Navigator area shows a single root item called System Diagnostics.

2. Add a workstation to the **Navigator** area.

Right-click on the root in the **Navigator** area, and select **Add Workstation**. The **Enter Workstation IP Address/Hostname** dialog box opens.

Tip: Alternately, you can add a workstation by clicking the root in the **Navigator** area and clicking .

Enter the hostname or the device name of the workstation that contains the diagnostics you want to view, and click **OK**. For more information about the **Enter Workstation IP Address/Hostname** dialog box, refer to FactoryTalk Diagnostics Counter Monitor Help. Note that the default workstation is localhost.

3. Expand the workstation to expose the installed data provider(s).
4. Click on any diagnostic item in the tree. The diagnostic counters associated with the selected item are shown in the **Data** area of the FactoryTalk Diagnostics Counter Monitor main window. While the item is selected, the counter values are updated automatically as new values are received.

Create a snapshot file


Snapshot files aid in troubleshooting by capturing all diagnostic values in an .xml file, which can then be sent to Rockwell Automation Technical Support. The .xml file contains the values of all of the diagnostic counters, whether expanded and displayed or not. Refer to the FactoryTalk Diagnostics Counter Monitor Help for more information.

To create a snapshot file:

1. Click **File > Save Snapshot**.
2. Select the location to which you want to save the snapshot file. The default location is the C: drive.
3. Enter a filename, or use the default filename, *FTDiagData.xml*.
4. Click **Save**.

Use FactoryTalk Diagnostics Counter Monitor to troubleshoot FactoryTalk Linx Gateway

To use FactoryTalk Diagnostics Counter Monitor to troubleshoot FactoryTalk Linx Gateway:

1. Start FactoryTalk Linx Gateway. (**Start > Programs > Rockwell Software > FactoryTalk Linx Gateway > FactoryTalk Linx Gateway Configuration** or click  on the FactoryTalk Administration Console menu bar.)
2. Start FactoryTalk Diagnostics Counter Monitor. (**Start > Programs > Rockwell Software > FactoryTalk Tools > FactoryTalk Diagnostics Counter Monitor**.)
3. Click **FactoryTalk Linx Gateway OPC UA Server** or **FactoryTalk Linx Gateway OPC UA Server** in the FactoryTalk Diagnostics Counter Monitor **Navigator** area.
4. Use the counters displayed in the Counter area to see the high-level status of the FactoryTalk Linx Gateway interactions with the clients:
 - **Activation:** Verify the value indicates the correct activation.
 - **Count against Activation:** Verify there are tags present (value > 0).
 - **Service Status:** Verify the service is Running.

- **Selected Scope:** Verify the scope is correct for your application.
 - **Data Callbacks:** Verify that tags are updating (values increase). If tags are not updating, there are a number of possible reasons:
 - The data values are static.
 - The controller is in PROGRAM mode.
 - Groups or items at the client level are inactive.
5. Click the **FactoryTalk Diagnostics Messages** tab in the **Viewer** area. For more information about using this resource, refer to the FactoryTalk Diagnostics Counter Monitor Help.

Troubleshoot FactoryTalk Linx Gateway

This chapter includes the following information:

- What to check first if you're having problems
- Troubleshooting tools for FactoryTalk Linx Gateway
- Troubleshooting topics
- How to contact technical support

What to check first if you have problems

Does your FactoryTalk Linx Gateway meet the minimum hardware and software requirements? Refer to [Install FactoryTalk Linx Gateway](#) on [page 17](#) for these requirements.

Is the software installed correctly? Refer to [Install FactoryTalk Linx Gateway](#) on [page 17](#) for installation instructions. Restart your computer after installing the software before you begin using FactoryTalk Linx Gateway.

Do you have a valid activation file? Check the FactoryTalk Diagnostics log. An information message is logged if the activation file is not detected by the system when you launch FactoryTalk Linx Gateway. Refer to the FactoryTalk Services Platform Help for information about FactoryTalk Diagnostics messages. Refer to [About Activations](#) on [page 55](#) for information about activations.

Is the OPC UA client successfully connected to the FactoryTalk Linx Gateway server? Check if the OPC UA client use the same security mode and policy with FactoryTalk Linx Gateway. For example, **Sign & Encrypt** and **Basic256Sha256**. Make sure the OPC UA client trust the FactoryTalk Linx Gateway certificate: `cert_ftgw_opcua_server.der`. Refer FactoryTalk Linx Gateway Online Help for information about secure OPC UA client and certificate validation.

Troubleshooting Tools

To help you isolate, diagnose, and correct any problems you may experience using FactoryTalk Linx Gateway, use the following troubleshooting tools:

FactoryTalk Linx Gateway Configuration Tool

Use the **FactoryTalk Linx Gateway Configuration Tool** to view status and diagnostic information. **Server Configuration** displays the server status. **About > FactoryTalk Historical Diagnostics** displays FactoryTalk Diagnostics messages scoped to the FactoryTalk Linx Gateway service.

FactoryTalk Diagnostics

FactoryTalk Diagnostics provides the ability to log errors, warnings, and other status messages generated throughout a FactoryTalk-enabled system to a central location called an event log. If you encounter a problem, you can review the events in the log that led up to the problem to assist in determining

the cause. Or, you can monitor the log to identify potential problems and take corrective action before a problem occurs.

Note that FactoryTalk Diagnostics messages are displayed for the local workstation only.

Refer to the FactoryTalk Services Platform Help for more information about FactoryTalk Diagnostics and the event log. Refer to the FactoryTalk Linx Gateway Help for more information about diagnostic messages specific to FactoryTalk Linx Gateway.

FactoryTalk Diagnostics Counter Monitor

FactoryTalk Diagnostics Counter Monitor aids in troubleshooting OPC connections from third-party products. It shows diagnostic information about the FactoryTalk Linx Gateway runtime operation. The FactoryTalk Diagnostics event log and Help are integrated into this tool. Refer to [Use FactoryTalk Diagnostics Counter Monitor with FactoryTalk Linx Gateway](#) on [page 43](#) for more information. Refer to the FactoryTalk Diagnostics Counter Monitor Help for individual counter descriptions.

FactoryTalk Live Data Test Client

FactoryTalk Live Data Test Client is a utility to test your OPC DA connection after you have configured the FactoryTalk Linx Gateway. This utility is installed automatically with FactoryTalk Services Platform. This utility can only test connections to the FactoryTalk Linx Gateway OPC DA service.

OPC Test Client

OPC Test Client is a utility that enables you to test your data connections if you are using remote OPC Client functionality. This utility is installed automatically as part of Remote FactoryTalk Linx Gateway on the FactoryTalk Linx Gateway product DVD.

The OPC Foundation provides an OPC UA sample client, available for download at <https://opcfoundation.org/developer-tools/developer-kits-unified-architecture/sample-applications>.

Troubleshooting topics

The topics below provide information to help you troubleshoot FactoryTalk Linx Gateway.

FactoryTalk Linx Gateway activations

If you are experiencing activation problems, refer to:

- [About Activations](#) on [page 55](#)
- FactoryTalk Linx Gateway troubleshooting topics in FactoryTalk Linx Gateway Help.
- FactoryTalk Activation Manager troubleshooting topics in FactoryTalk Activation Manager Help.

FactoryTalk Security

If you are experiencing problems with FactoryTalk Security, refer to:

- [Secure FactoryTalk Linx Gateway using FactoryTalk Security](#) on [page 69](#)
- Troubleshooting topics in FactoryTalk Services Platform Help.

FactoryTalk Linx Gateway service (starting and stopping) Data quality

If you are experiencing problems starting or stopping the FactoryTalk Linx Gateway service, verify your Windows user account privileges. You must have administrative rights to start and stop the service.

If you are experiencing problems with bad quality data, no data being returned, data is stale or frozen, or tags do not appear during an OPC client tag browse operation, use the following steps to isolate and correct the problem:

1. If testing an OPC DA connection, verify that the FactoryTalk connection is working.
 - a. If testing an OPC DA connection, use the FactoryTalk Live Data Test Client to connect directly to FactoryTalk (not FactoryTalk Linx Gateway). Then, verify that you can browse and add an item. If there are no problems, then the issue is with FactoryTalk Linx Gateway, not FactoryTalk.
2. Test the connection.
 - a. If testing an OPC DA connection, run OPC Test Client or FactoryTalk Live Data Test Client. Note that you may need to change the DCOM settings if you use OPC Test Client.
 - a. Navigate to the application containing the data server that you are trying to use.
 - b. Browse, and put some tags on scan. If you cannot browse for tags, then the data server is not configured correctly or the devices that the data server is pointing to are not configured or connected.
 - c. If testing an OPC UA connection, use the OPC Foundation UA Sample Client to connect to FactoryTalk Linx Gateway. If the sample client connects, the issue is not with FactoryTalk Linx Gateway but with the OPC UA client.
3. Verify that the tags are not hidden by the External Access attribute (set in Logix Designer, starting with version 18 for controllers that support External Access). For more information on the External Access attribute, refer to the documentation for version 18 (CPR 9 SR 2) or later of the application. Note that if the External Access attribute for a tag in a controller is changed from None to Read or Read/Write, you may need to restart the data client to see the tag. If the External Access attribute for a tag in a controller is changed from Read or Read/Write to None, the Quality changes to Out of Service for that tag.
4. Check the FactoryTalk Linx Gateway configuration.
 - a. Open FactoryTalk Linx Gateway.

- b. Verify that the server is running. If you are experiencing stale or frozen data, it is possible that the client was not notified that FactoryTalk Linx Gateway service had stopped.
 - c. Verify that the proper application, including scope (network or local), is selected.
 - d. Verify that you have the correct activation for the application you are trying to run.
5. Check the FactoryTalk Diagnostics log. Some events to check for:
 - a. A controller is in the process of downloading a new program. The FactoryTalk Diagnostics log will indicate if a new program has been downloaded and specify the path.
 - b. The activation is incorrect for the application or you have exceeded the activation capacity.
 - c. The tag does not exist. Any currently non-existing tags should be logged as not existing in the controller.
 6. Check the FactoryTalk Linx configuration.
 - a. Open FactoryTalk Administration Console or FactoryTalk View Studio.
 - b. Right-click the FactoryTalk Linx server and select **Properties**. Verify the correct computer hosting FactoryTalk Linx is shown.
 - c. Double-click **Communication Setup**.
 - d. Verify that there is a shortcut configured and that it has the correct name.
 - e. Click the shortcut and verify that it is pointing to the expected device within the communication tree.
 - f. SS6. Right-click the network you are using and select **Start Browsing**. If the device disappears from the Communication tree, then FactoryTalk Linx is no longer finding the device. Verify that the device is online.
 7. If testing an OPC DA quality issue, verify that DCOM access settings are configured correctly.
 8. Verify any firewall software is configured to allow access to FactoryTalk Linx Gateway OPC DA and UA service ports.
 9. Verify that the scope and FactoryTalk Linx shortcuts are correctly configured. Refer to [Access the data](#) on [page 40](#).

If the above steps do not resolve your problem, please contact Rockwell Automation Technical Support.

Communication slow or unreliable

There are many factors to consider when diagnosing communication problems:

- **Computer effect on communication**

- Memory, disk space, and anti-virus scans can affect computer performance. Refer to [System requirements](#) on [page 17](#).
- Firewalls and switches can completely or partially block communication.
- The typical timing factor for communication updates is the CPU load. Rockwell Automation recommends a 40% maximum steady state CPU loading. This balances utilization of the hardware and gives enough bandwidth for peak loading.
- **Multiple clients effect on communication**
 - The packaging of data to OPC standards takes computer CPU power to achieve, and this can be significant depending on the data loading.
 - The number of clients requesting data from a single OPC data server can also significantly impact computer CPU loading, particularly if they are not requesting the same items (tags).
 - Clients creating and destroying groups can significantly impact CPU usage.
- **Network effect on communication**
 - An incorrect network configuration can reduce communication effectiveness. Verify your network configuration as well as your installation. Refer to [Install FactoryTalk Linx Gateway](#) on [page 17](#).
- **Controller effect on communication**
 - For ControlLogix controllers, data requests are handled by a CPU separate from the control program CPU. (FlexLogix controllers have one CPU to handle all tasks.) However, eventually these data requests are handled by the controller program. This affects communication efficiency since the controller is performing higher priority tasks and handles communication when CPU time is available. You can monitor task utilization using Logix 5000 Task Monitor on the Logix Designer utilities DVD.
 - Data requests are sent to controllers via a network port (for example, Ethernet, ControlNet, DeviceNet). For ControlLogix Ethernet communication, the ENET, ENBT, EN2T, or EWEB module is required. These modules could be a bottleneck to communication depending on the number of data requests and the number of requesting clients.
 - Tag structure in a controller program can also have a significant impact on communication efficiency. Refer to your Logix Designer documentation.
 - The communication time slice setting within the controller (set using Logix Designer application) will affect communication. You may need to increase the setting value.

- The way OPC clients request data can either help or hinder the ControlLogix Optimized Packets process. Refer to your ControlLogix controller documentation.
- Offline or disconnected controllers will cause additional retries and diagnostics to be logged. Inhibit a controller using FactoryTalk Linx if it will not be present in the system for an extended period of time.
- **DCOM effect on communication**
OPC DA is based on DCOM, therefore:
 - Changing DCOM security settings may stop the OPC DA service from working.
 - Changing DCOM security settings may prevent a client from browsing tags through the OPC UA service.
 - If the server and client become disconnected (either via a physical network disconnect or a software disconnect), there is a hard-coded 6-minute time-out notification.
 - If the server and client are reconnected, the OPC connection is not automatically reconnected to the original objects. Therefore, servers and clients may require restarting.

**Contact Rockwell
Automation Technical
Support
Phone
Worldwide web**

If you are experiencing a problem with, or have a question about, FactoryTalk Linx Gateway, please consult the Help and Release Notes. If you cannot find the answer, contact Rockwell Automation Technical Support.

440-646-3434

<http://www.rockwellsoftware.com>

<http://support.rockwellautomation.com>

Hours of operation

Support staff are available 8 a.m. to 5 p.m. EST, Monday through Friday, except holidays.

Before you call

Before you call, you should be at your computer and be prepared to give the following information:

- The product serial number and version number. These can be found by clicking **Start > Settings > Control Panel > Add/Remove Programs** and clicking **FactoryTalk Linx Gateway**.
- The type of hardware you are using.
- The version of Windows operating system you are using.
- The exact wording of any messages that appeared on your screen.
- What happened and what you were doing when the problem occurred.
- How you tried to solve the problem.

About Activations

Rockwell Automation Windows-based software products are copy protected and require an activation key, located in an activation file, to run the software.

When you launch FactoryTalk Linx Gateway, the software checks for the activation file. If a valid activation cannot be found, an error is logged to FactoryTalk Diagnostics and FactoryTalk Linx Gateway operates under a grace period. Refer to FactoryTalk Services Platform Help for more information about grace periods.

This appendix includes the following information:

- Activate FactoryTalk Linx Gateway
- Activation types

Activate FactoryTalk Linx Gateway

FactoryTalk Linx Gateway supports activating software during the software installation. The new Installation Setup Wizard contains an **Software Activation** check box. This no longer requires you to open FactoryTalk Activation Manager to activate the software.

To activate your copy of FactoryTalk Linx Gateway in the **FactoryTalk Linx Gateway Installation Setup Wizard**, perform the following steps:

1. Perform the steps in [Install FactoryTalk Linx Gateway](#) on [page 17](#) to install FactoryTalk Linx Gateway software.
2. On the **Rockwell Software Setup** dialog box in the Installation Setup Wizard, select the **Activate your software** check box and click **Finish**.
3. On the **Software Activation** dialog box, enter the product key from your Activation Certificate. The serial number should have been automatically added. If the serial number is not automatically added, enter the serial number.
4. Select **Activate locally** to activate FactoryTalk Linx Gateway on a single computer, or select **Activate using a dongle** to activate FactoryTalk Linx Gateway on any computer by using a dongle.
Tip: The Activate using a dongle option requires that you have a dongle to lock the activation.
5. Click **Continue**.

You can still activate FactoryTalk Linx Gateway via FactoryTalk Activation Manager by clicking the **Explore other options** link in the **Software Activation** dialog box. The link provides direct access to the FactoryTalk Activation Manager software. To activate your copy of FactoryTalk Linx Gateway in the

FactoryTalk Activation Manager, click **Get New Activations** and follow the instructions in the FactoryTalk Activation Manager.

For more information on using the FactoryTalk Activation Manager, click **More** or **Help** in the FactoryTalk Activation Manager.

EvRSI activation is replaced by FactoryTalk Activation Manager. If you are using EvRSI activation, please contact your local Rockwell Automation Sales office or Technical Support for information on migrating your activations to FactoryTalk Activation Manager.

For Rockwell Automation Technical Support in the U.S., call (440) 646-3434.

Outside the U.S., visit <http://www.rockwellautomation.com/locations>.

Activation types

The activation type determines feature support and the maximum capacity of unique tags that can be added to the FactoryTalk Linx Gateway server. The tag limit is for all unique tags, including active, inactive, and valid tags. However, the OPC DA service and UA service tag limits are separate; a 5,000 tag limit activation can simultaneously serve 5,000 tags to DA clients and 5,000 tags to UA clients. All FactoryTalk Linx Gateway activations support a client capacity of up to 20 simultaneous OPC DA or 110 OPC UA client connections (the suggested connection quantity is 20 based on the previous testing). But the actual capacity for OPC client connections could vary based on available computer resources and the amount of information being requested.

If a valid activation cannot be found, FactoryTalk Linx Gateway operates under a grace period.

Note: Grace period is a 7 days free trial of FactoryTalk Linx Gateway during which, a user has the tag subscription capability equals to the "Professional" activation. When the grace period is over, the OPC UA/DA clients cannot connect to the FactoryTalk Linx Gateway.

If an activation limits FactoryTalk Linx Gateway to a Local FactoryTalk Directory, a Network FactoryTalk Directory scope cannot be selected. If a Network FactoryTalk Directory is already selected and the activation is downgraded, FactoryTalk Linx Gateway displays an error and writes a diagnostic message to FactoryTalk Diagnostics.

A FactoryTalk application directories can be configured as Local, Network Station, or Network Distributed. These options are determined by the capabilities defined by the license/activation that is being used.

1. Local – Small application where the FactoryTalk Linx or FactoryTalk Linx OPC UA Connector communications service is operated on the same workstation with FactoryTalk Linx Gateway. A local application is configured with a single level where all communications services are defined at the same top level (no areas are supported).
2. Network Station – This configuration uses the Network directory, with all of the communications services defined on the same workstation with FactoryTalk Linx Gateway. A network station application permits

- areas to be created to improve the organization of the application (This type of configuration can be used with software like FactoryTalk View SE Station or FactoryTalk Historian which does not support Local directory).
3. Network Distributed – This type of directory permits communications services to be located on multiple/different workstations from FactoryTalk Linx Gateway. Up to ten (10) of each type of communications services (FactoryTalk Linx and FactoryTalk Linx OPC UA Connector) can be defined in a system. These communications services can be configured as redundant to support high availability configurations (This type of configuration can be used with software like FactoryTalk View SE Distributed).

When checking for valid activations, FactoryTalk Linx Gateway finds and uses the activation with the highest feature support. The selected activation type is visible in the **About** tab of **FactoryTalk Linx Gateway Configuration**.

From FactoryTalk Linx Gateway version 6.00.00, only the four new activations (FactoryTalk Linx Gateway Professional, FactoryTalk Linx Gateway Distributed, FactoryTalk Linx Gateway Standard, and FactoryTalk Linx Gateway Basic) are available for new users. However, the other legacy activations used in previous versions of the product are still supported. All the activations are shown in the table below from top to bottom as highest to lowest priority.

Activation Name	Activation	Tag Limit	FactoryTalk Directory	Activates FactoryTalk Linx Data Bridge
FactoryTalk Linx Gateway Professional	LINXGW.PROFESSIONAL	No fixed limit	Local or Network Station or Distributed	Y
FactoryTalk Gateway Distributed	RSOPCD.UNLTD	No fixed limit	Local or Network Station or Distributed	N
FactoryTalk Gateway Distributed 70K	RSOPCD.70000	70,000	Local or Network Station or Distributed	N
FactoryTalk Linx Gateway Distributed	LINXGW.DISTRIBUTED	32,000	Local or Network Station or Distributed	N
FactoryTalk Gateway Distributed 32000	RSOPCD.32000	32,000	Local or Network Station or Distributed	N
FactoryTalk Gateway Station 32000	RSOPCS.32000	32,000	Local	N
FactoryTalk Gateway Distributed 5000	RSOPCD.5000	5,000	Local or Network Station or Distributed	N
FactoryTalk Linx Gateway Standard	LINXGW.STANDARD	5,000	Local or Network Station	N
FactoryTalk Gateway Station 5000	RSOPCS.5000	5,000	Local	N
FactoryTalk Gateway Distributed 1500	RSOPCD.1500	1,500	Local or Network Station or Distributed	N
FactoryTalk Gateway Station 1500	RSOPCS.1500	1,500	Local	N
FactoryTalk Linx Gateway Basic	LINXGW.BASIC	1,000	Local or Network Station	N

If a system requires 32,000 or more tags, use a no fixed limit activation and refer to the **FactoryTalk Linx Gateway Release Notes > Application Notes** for tested hardware and update rates.

- Tip:** To check the number of tags added to FactoryTalk Linx Gateway, use FactoryTalk Diagnostics Counter Monitor.
- For OPC DA service tags, view the **Count against Activation** counter.
 - For OPC UA service tags, view the **Total Items in Subscription** counter.

If you have multiple clients subscribing the same tags, the tags being used against the activation limit should be counted separately. For example there are five clients subscribing 1000 tags, then the total activation limit used is 5000 tags.

As a best practice, Rockwell Automation recommends using a shared concurrent activation, which is locked to a networked activation server computer, but shared by client computers on the network. Refer to FactoryTalk Services Platform Help for more information.

Note that if you have multiple FactoryTalk Linx Gateway instances using different tag counts, each FactoryTalk Linx Gateway instance must be activated using its own specific activation file to ensure that each FactoryTalk Linx Gateway instance receives the correct tag count activation.

- Tip:** FactoryTalk Batch v9.00.00 (CPR 9) and later supports direct communication between FactoryTalk Live Data and plant-floor controllers and devices, removing the need for FactoryTalk Linx Gateway.

Install FactoryTalk Linx Gateway with command line syntax

Besides the Setup Wizard installation, FactoryTalk Linx Gateway also supports automated installation using command line syntaxes: unattended installation. You can typically use the unattended installation during large-scale rollouts when it might be too slow and costly to have administrators or technicians interactively install the FactoryTalk Linx Gateway software on individual computers.

In the unattended installation, you enter a specified command line with multiple parameters. During the installation process, instead of prompting you for installation and configuration information interactively, the process follows the parameters you specified in the command lines.

To install FactoryTalk Linx Gateway in the unattended mode, follow the steps below. The steps may vary slightly. Follow the on-screen instructions that apply to your operating system.

Perform unattended installation

1. Close all open Windows programs.
2. Open the **Command Prompt** window as administrator.
3. In the **Command Prompt** window, navigate to *D:*, where *D:* is the drive containing the FactoryTalk Linx Gateway installation DVD or installation package, and press **Enter**.

Tip: The **User Account Control** dialog box may show after you press **Enter**, click **Yes** to continue. The silent installation requires the Windows Administrator privilege.

4. Type a command line with the following syntax:

```
Setup.exe {/Q | /QS}  
    /IAcceptAllLicenseTerms  
    [/AutoRestart]  
    [/SetupLanguage=language]  
    /Product=product_name  
    [/InstallDrive=drive]  
    [/SerialNumber=serial_number]  
    [/ProductKey=product_key]  
    [/Version=product_version]
```

5. Press **Enter**. The installation process starts with the parameters you specified.
6. For detailed description about each parameter, see [Parameters](#) on [page 60](#). You can also type **Setup /?** in the **Command Prompt** window, and press **Enter** to view the help information of all parameters and examples.

Parameters

The parameters and values are not case sensitive. If the value includes spaces, you need to enclose it in quotation marks (" ").

/Q

One of **/Q** and **/QS** is required if **/Record** is not specified.

Installs the product in the silent mode without any user interface.

/QS

One of **/Q** and **/QS** is required if **/Record** is not specified.

Installs the product in the unattended mode without user interaction during installation, and shows the progress, errors, or complete messages on the user interface.

/IAcceptAllLicenseTerms

Required for **/Q** or **/QS**.

Specifies that you read and acknowledge all license agreements, and agree to continue the installation.

/AutoRestart

Optional. If specified, the computer will be restarted automatically after the installation, if a restart is required to complete the installation.

The parameter is ignored if a restart is not required.

/SetupLanguage=*language*

Optional. Specifies which language will be displayed during the installation process. The value must be the one of **ENU**, **CHS**, **DEU**, **ESP**, **FRA**, **ITA**, **JPN**, **KOR**, or **PTB**.

If omitted, the default language is the user or system user interface language.

/Record

Optional. Records your inputs to a recording file.

/Playback

Optional. Plays back a recording file.

/IgnoreWarning

Optional. If specified, the setup will ignore and continue.

/Product=*product name*

Required. Specifies which product will be installed. The product name must be one of the following:

- Gateway

- Remote Gateway

/Uninstall=*Product name*

Optional. Uninstall the product.

/InstallDrive=*drive*

Optional. Specifies the installation drive.

If omitted, the default drive and location are:

- **C:\Program Files (x86)\Rockwell Software** (64-bit) or
- **C:\Program Files\Rockwell Software** (32-bit).

/SerialNumber=*serial_number*

Optional. Specifies the serial number that is required if you want to get activation keys during installation.

/ProductKey=*product_key*

Optional. Specifies the product key that is required if you want to get activation keys during installation.

/Version=*product_version*

Optional. Specifies the version corresponding to the product version that the **SerialNumber** and **ProductKey** are able to activate if you want to get activation keys during the installation.

If the version information is omitted, the installer uses a default version which is the most recent product version available when retrieving the activation.

Examples

The following examples show how to use the commands during the unattended installation.

Example 1

```
Setup.exe /Q /IAcceptAllLicenseTerms /Product="Gateway"
```

means:

The FactoryTalk Linx Gateway unattended installation uses the default settings during the installation process, with no user interface.

Example 2

```
Setup.exe /QS /IAcceptAllLicenseTerms /AutoRestart  
/SetupLanguage=CHS /Product="Gateway" /InstallDrive=D:  
/SerialNumber=0123456789 /ProductKey=ABCDE-FGHIJ  
/Version=6.00.00
```

means:

- During the installation, the progress, error, or complete messages show on user interfaces. The displayed language is Chinese.
- FactoryTalk Linx Gateway will be installed to **D:\Program Files (x86)\Rockwell Software** if you are using a 64-bit operating system, or **D:\Program Files\Rockwell Software** if you are using a 32-bit operating system.
- The setup will get activation keys during installation if the serial number *0123456789* and product key *ABCDE-FGHIJ* are valid.
- After the installation, if a restart is required, the computer will be restarted automatically.

Example 3

```
Setup.exe /Q /Uninstall /Product="Gateway"
```

means:

- The software is uninstalled silently with no user interface.

About FactoryTalk Linx

About FactoryTalk Linx

This appendix includes an overview of FactoryTalk Linx.

FactoryTalk® Linx™ is a FactoryTalk® Live Data server and communications service designed to deliver control system information from Allen-Bradley® control products to the Rockwell Automation FactoryTalk® software portfolio and Studio5000® design software. While FactoryTalk Linx can communicate with most Allen-Bradley Programmable Logic Controllers (PLC®) and many other control products, it is specifically optimized to work with Logix 5000™ Programmable Automation Controllers (PAC) using EtherNet/IP. This gives the fastest data rates and capacity possible, while minimizing the impact on automation networks and control system operation. FactoryTalk Linx provides a scalable solution that can support small applications running on a single computer with a single controller, to large distributed and even redundant data server configurations communicating with many controllers.

FactoryTalk Linx:

- Is delivered and installed with the FactoryTalk Services Platform (FTSP) which is included with most Rockwell Automation software products. FactoryTalk Linx is also delivered within the PanelView Plus Electronic Operator Interface (EOI) terminal's firmware.
Tip: The FactoryTalk Services Platform Installation includes several useful tools. Use FactoryTalk Live Data Test Client to interface with FactoryTalk Linx to read and write data directly to controllers. For more information about FactoryTalk Live Data Test Client, see *FactoryTalk Services Platform Online Help*.
- Is accessed as an embedded component within each software package that utilizes its services. Configure FactoryTalk Linx using the **Communication Setup** editor launched from a FactoryTalk application design environment (e.g. FactoryTalk View Studio) or from the FactoryTalk Administration Console.
- Starting with version 6.00.00, EtherNet/IP network drivers can be configured directly from the FactoryTalk Linx Network Browser control embedded within Studio 5000 and other Rockwell Automation design software.
- Provides access to controller and device data from any FactoryTalk application using FactoryTalk Live Data.
- Is highly optimized for Logix 5000 communications.
- Starting with version 5.30.00, supports FactoryTalk Alarms and Events. For more information about FactoryTalk Alarms and Events, See *FactoryTalk Alarms and Events Online Help*.

- Starting with version 5.30.00, network applications provide the option of specifying a secondary, or redundant, server to take over when the primary server fails.
- Starting with version 5.60.00, reads data directly from devices using parameters specified in the device's Electronic Data Sheed (EDS) file
- Starting with version 5.70.00, receives data from Logix 5000 controllers directly via unsolicited message.
- Starting with version 5.70.00, is able to communicate with Micro800 controllers
- Starting with version 5.80.00, reads energy usage information from devices that support the ODVA CIP Energy object.
- Starting with version 5.90.00, reads Logix 5000 tag extended properties (e.g. **@Min**, **@Max**, **@Description**) and deliver them to FactoryTalk View applications. With FactoryTalk Linx version 6.10.00, this capability is enhanced to improve read performance and adds the ability to provide a description using information indirectly associated with a tag. This enables a FactoryTalk View SE client to obtain descriptions for tag elements that do not directly have a description assigned. This is similar to the description pass-through capability of Studio 5000 Logix Designer.
- Starting with version 5.90.00, removes Logix 5000 tag requests when their external access is switched to *no access* in Logix Designer, and the tags can be removed from the controller while it is operating.
- Starting with version 5.90.00, permits communications to specific Logix 5000 shortcuts to be inhibited to reduce the impact of Logix 5000 controllers that are disabled or off-line
- Starting with version 6.00.00, provides access to Logix 5000 tag based alarm attributes (e.g. **@Alarm...**)
- Offers a variety of communication drivers and routing options.
- Supports Local applications (also called stand-alone applications) for smaller systems, and Network applications (also called distributed applications) for larger systems.
- Starting with version 6.00.00, enables the configuration of two redundant shortcut paths to a single Logix 5000 controller to support high availability systems that desire to retain communications when a path through a network becomes disabled.
- Starting with version 6.00.00, permits configuration of two shortcut paths to the primary and secondary Logix 5000 controllers in a redundant ControlLogix revision 31.5x system to retain communications when a redundancy switchover occurs.
- FactoryTalk Linx 6.00.00 added the ability to provide communications and browsing services for Studio 5000 and ControlFLASH. FactoryTalk Linx version 6.10.00 extends this functionality to support the Connected Components Workbench (CCW) version 12.00.00 and FactoryTalk AssetCentre version 9.00.00.

- FactoryTalk Linx version 6.00.00 updated both the Virtual Backplane and USB drivers and had them signed by Microsoft to permit them to operate on a workstation with Windows 10 Secure boot enabled. FactoryTalk Linx version 6.10.00 extends this functionality to include the drivers associated with the 1784-PCICS and 1784-PCKTS cards. In FactoryTalk Linx version 6.20.00, 1784-PKTX driver signed by Microsoft to support Windows 10 secure boot.
- FactoryTalk Linx version 6.10.00 added a new standalone version of FactoryTalk Linx Network Browser that can be launched from the Windows Start Menu. Previously this component was only available from within other Rockwell Automation software (For example, ControlFLASH and Studio 5000 Logix Designer). The Network Browser can be used to visualize the network to determine which devices are active in the system.
- FactoryTalk Linx version 6.10.00 added FactoryTalk Security Product Policy to provide more control over the configuration for authorized users.
- FactoryTalk Linx version 6.10.00 added logging of FactoryTalk Audit messages to track configuration changes of FactoryTalk Linx.
- FactoryTalk Linx version 6.10.00 supports a new capability in Logix5000 V32 controllers to change the names of tags and structure members on a running controller. When FactoryTalk Linx detects the rename operation, it will immediately stop requesting the old names and provide an appropriate error status back to the FactoryTalk software that requested the data, making it easier to locate other software that is impacted by the rename operation.
- FactoryTalk Linx version 6.10.00 added the ability to receive unsolicited messages using PLC-2 Unprotected Writes. This enables Logix5000 or legacy controllers to send information to a FactoryTalk software package using FactoryTalk Linx.
- FactoryTalk Linx version 6.10.00 changes the default setting for the “listen on Ethernet/IP Encapsulation port” (port 44818) for its Ethernet driver so that FactoryTalk Linx will respond to network browse requests and receive unsolicited messages from Logix5000 controllers. RSLinx Classic version 4.00.01 or earlier allocated this port by default but was updated with versions 4.10.00 to not allocate the port to reduce the likelihood of a conflict between these two software packages.
- FactoryTalk Linx version 6.10.00 added the ability to configure two independent instances of the data service on a single Windows operation system. It allows applications to have more tags, data clients (e.g. HMI clients), and/or controllers without affecting the other FactoryTalk Linx data server.
- FactoryTalk Linx version 6.11.00 added the ability to establish secure encrypted communications with FactoryTalk Policy Manager using CIP security. See *FactoryTalk Policy Manager Online Help* for more information about CIP security.

- FactoryTalk Linx version 6.20.00 added the ability to access information inside of devices that support the Open Device Vendors Association (ODVA) Common Industrial Protocol (CIP), using the Class, Instance and Attribute (CIA) messaging with the **CIP Object - Class/Instance/Attribute Message** shortcut type.
- The FactoryTalk Security Policy for FactoryTalk Linx was enhanced to control the user's capabilities from the FactoryTalk Linx Network Browser and to control access to CIA Messaging.
- In conjunction with FactoryTalk Linx Gateway, provides standard OPC connectivity into the FactoryTalk system for third-party products. For more information about FactoryTalk Linx Gateway, refer to the FactoryTalk Linx Gateway Help.FactoryTalk Linx version 6.20.00 adds the ability to access information inside of devices that support the Open Device Vendors Association (ODVA) Common Industrial Protocol (CIP), using the Class, Instance and Attribute (CIA) messaging with the **CIP Object - Class/Instance/Attribute Message** shortcut type.
- Starting from version 6.20.00, FactoryTalk Linx supports tag communication with data types as LINT, ULINT, LREAL, USINT, UINT, and UDINT.
- Starting from version 6.20.00, FactoryTalk Linx instance02 supports Logix-based Alarms and Events.
- Starting from version 6.20.00, FactoryTalk Linx provides the ability to communicate using solicited messaging with Allen-Bradley controllers using PLC-5 or SLC-5 messaging over the DH+ network without having a 1784-PKTX card installed on the computer. This is achieved by using the 1756 EtherNet module bridging across a ControlLogix chassis to a DH+ network connected to a 1756-DHRIO module.
- FactoryTalk Linx version 6.20.00 adds the ability to configure existing drivers in FactoryTalk Linx Browser > **Configure Drivers** dialog box.
- FactoryTalk Linx version 6.20.00 adds the ability to view new CIP Identity Object Manufacturer information, which include **Catalog Number, Manufacture Date, Hardware Revision, Warranty, and Series**.
- FactoryTalk Linx version 6.20.00 adds FactoryTalk Audit information to diagnose configuration changes made from the FactoryTalk Linx Network Browser.
- FactoryTalk Linx version 6.20.00 adds the ability for FactoryTalk Linx Network Browser to browse through the 5094 IO HART modules and display HART connected devices in the topology.
- FactoryTalk Linx version 6.20.00 adds the ability for the FactoryTalk Linx Network Browser to access Device Statistics to help diagnose devices.
- FactoryTalk Linx version 6.20.00 adds the ability for the FactoryTalk Linx Network Browser to access Device Configuration to help configure port and network configuration of a device.

- FactoryTalk Linx version 6.20.00 adds the ability for the FactoryTalk Linx Network Browser to launch an Internet browser to open the device embedded web page.
- FactoryTalk Linx version 6.20.00 provides the ability for FactoryTalk and PanelView Plus V12 terminals to access four attributes @Name, @Quality, @Timestamp, and @Scope.
- FactoryTalk Linx version 6.20.00 adds the ability for FactoryTalk and PanelView Plus V12 terminals to access PlantPAX Controller extended tag properties: @Library, @Instruction, @Label, @Area, @URL, and @Navigation.
- Starting from version 6.20.00, FactoryTalk Linx changed to utilize a device's **Network Path** to store location of the device in a system, which enables the user to configure and store the shortcut path using the device's IP address and slot number in a chassis.
- FactoryTalk Linx version 6.20.00 provides Chinese, German, French, and Japanese localized user interface (the localized FactoryTalk Linx can only be installed when installing the same localized version of FactoryTalk View SE).
- FactoryTalk Linx version 6.20.00 adds the ability to close unused connections after a specified time.
- FactoryTalk Linx version 6.20.00 adds the ability to specify the max number of connections for a **Processor** shortcut connecting to PLC/SLC controllers using the DHRIO module.

For more information, refer to FactoryTalk Linx Help.

Secure FactoryTalk Linx Gateway using FactoryTalk Security

This appendix includes the following information:

- About FactoryTalk Security
- Using FactoryTalk Security with FactoryTalk Linx Gateway
- Securing tag write access for FactoryTalk Linx Gateway

About FactoryTalk Security

FactoryTalk® Security improves the security of your automation system by limiting access to those with a legitimate need. FactoryTalk Security authenticates the identities of users, and authorizes user requests to access a FactoryTalk system against a set of defined user accounts and access permissions held in the FactoryTalk network directory or FactoryTalk local directory.

For help configuring security services, refer to FactoryTalk Services Platform Help.

If you prefer not to use security services, you can grant all users full access to your automation system. For help overriding security services, refer to FactoryTalk Services Platform Help.

Secure the FactoryTalk Linx Gateway Configuration tool

The FactoryTalk Linx Gateway Configuration tool enables you to start or stop the FactoryTalk Linx Gateway service and configure the scope. To configure security for the tool, in the FactoryTalk Administration Console, right-click the network (the highest level of the tree), and select **Security** from the menu.

The following example shows the steps to restrict a user from changing the scope:

Before you begin:

- Log in as Windows Administrator or Power User of the computer.
- Obtain Read/Write/List Children permissions within the Common section of Security.
- Log in to FactoryTalk.

To restrict a user from changing the scope:

1. In the FactoryTalk Administration Console Explorer, right-click **Network > Security**. The **Security Settings for Network** dialog box opens.
For local scope, right-click **Local (THIS COMPUTER) > Security**. The **Security Settings for Local** dialog box opens.
2. On the **Permissions** tab, select **View permissions by User** and you can see all the user groups (Administrators, All Users, Anonymous Logon), highlight the user you want to restrict.
3. From the **Permissions for *** from All Computers list**, click **Common > Write**, and select the **Deny** check box.
4. Click **OK**.

Secure runtime actions

Runtime actions are browsing, reading, or writing to tags. You configure security governing these actions using the Anonymous Logon user account at either the application level or area level.

To browse the directory and read the data, the Anonymous Logon user must have List Children and Read permissions within the Common section of Security.

To write to tags, the Anonymous Logon user must have Write Value permissions within the Tag section of Security.

Keep the following in mind when securing runtime actions:

- Security for the FactoryTalk Linx Gateway is set at the FactoryTalk Linx Gateway level using the Anonymous Logon user account. Therefore, all clients that access that specific FactoryTalk Linx Gateway will have the same privileges. If different clients need different privileges, then a second FactoryTalk Linx Gateway will need to be configured on another computer.
- Security is area-based. It is a best practice to have only one data server per area. This allows you to place different permissions on each area (data server).
- When configuring the scope for the FactoryTalk Linx Gateway, you should select the FactoryTalk Application, not an area. Selecting the scope at the application level enables you to add areas to that application without having to change the scope. Changing a scope affects all the existing tag references that have been previously configured in the clients.
- You can deny both Read and Write access to areas. This is shown in the following example.

Example

Assume a Network-scoped distributed system. This system has a FactoryTalk Application called MyFTApp that contains three areas and three data servers.

Assume the requirements for the OPC clients are:

- Full access (Reads/Writes) allowed through FactoryTalk Linx.
- No Reads allowed from the OPC client through RSLinx Classic.
- No Writes allowed from the OPC client into the FactoryTalk View SE HMI (Reads are allowed).

To meet these requirements:

1. The selected scope (using the **FactoryTalk Linx Gateway Configuration** screen) should be Network/MyFTApp. (**Selected Scope** field shows Network/MyFTApp.)
2. Security for Area1 (using the FactoryTalk Administration Console) should be configured as follows:
 - a. Under Application **MyFTApp**, right-click **Area1 > Security** to open **Security Settings for Area1** dialog box, and then select **Anonymous Logon** user group.
 - b. From **Permissions for Anonymous Logon from All Computers** list, select **Common > Read > Allow**.
 - c. From **Permissions for Anonymous Logon from All Computers** list, select **Common > List Children > Allow**.
 - d. From **Permissions for Anonymous Logon from All Computers** list, select **Tag > Write Value > Allow**.
3. Security for Area2 (using the FactoryTalk Administration Console) should be configured as follows:
 - a. Under Application **MyFTApp**, right-click **Area2 > Security** to open **Security Settings for Area2** dialog box, and then select **Anonymous Logon** user group.
 - b. From **Permissions for Anonymous Logon from All Computers** list, select **Common > Read > Deny**.
4. Security for Area3 (using the FactoryTalk Administration Console) should be configured as follows:
 - a. Under Application **MyFTApp**, right-click **Area3 > Security** to open **Security Settings for Area3** dialog box, and then select **Anonymous Logon** user group.
 - b. From **Permissions for Anonymous Logon from All Computers** list, select **Tag > Write Value > Deny**.

If a write action is attempted into Area3, the following error is logged in FactoryTalk Diagnostics:

"FactoryTalk Linx Gateway write failed due to denied access for client 'Client1' group 'Group1 (Active, 250ms)' item 'Area3::my_int'. Verify you have the correct security authorization to perform the write operation."

If you attempt to browse the FactoryTalk application, Area2 will not show since Read permissions have been denied. If your display has a tag previously referenced from Area2, its value will show as (Empty Data) with a Quality of Invalid Quality. The following errors are logged in FactoryTalk Diagnostics:

```
"Cannot interpret area RNA://$Global/MyFTApp/Area2
(result=80042062)
Failed to add item '[FTI_Advanced]my_tag' to server
RNA://$Global/MyFTApp/Area2:RSLC' because of insufficient access
rights."
```

Tip: Access to resources (such as applications, areas, or servers) and the ability to perform tasks (such as read or write) are governed by the permissions set in FactoryTalk Security. As a result, if you do not have the appropriate permission, some components on a dialog box may be unavailable, or entire dialog boxes or context menu selections described in the Help may be inaccessible. Refer to the FactoryTalk Services Platform Help for more information.

Secure tag write access for an application or area

When using the **Anonymous Logon**, the system administrator can manage tag write access in an application, area, or sub-area for FactoryTalk Linx Gateway servers. Tag write access is enabled (Write Tag permission is set to **Allow**) by default.

Before you begin:

- Find the Anonymous Logon in Users and Group > Users.
- Do not delete or change password.
- Check Effective permissions to verify Rights for the Anonymous Logon user.

To disable write access for an application, area, or sub-area:

1. On the **FactoryTalk Administration Console application** tab, click the application, area, or sub-area.
2. Right-click and select **Security**. The **Security Settings** dialog box opens.
3. Select **Anonymous Logon** from the list of users.
4. Click and expand **Tag** in the list of permissions to expose the **Write Value** permission.
5. Select the **Deny** check box.
6. Click **OK**.

Secure tag write access for a computer

When using the **Anonymous Logon**, the system administrator can manage tag write access for a specific computer. Use the system administrator to specify permissions for each FactoryTalk Linx Gateway.

Before you begin:

- Find the Anonymous Logon in Users and Group > Users.
- Do not delete or change password.
- Check Effective permissions to verify Rights for the Anonymous Logon user.

To disable tag write access for a computer:

1. On the application window, select the application, area, or sub-area.
2. Right-click and select **Security**. The **Security Settings** dialog box opens.
3. Click **Add**. The **Select User and Computer** dialog box opens.
4. Select **Anonymous Logon** from the list of users. If **Anonymous Logon** is not listed, select **Show users only**.
5. Select the appropriate computer from the list, If computers are not listed, select **Show computers only**, and the click **OK**.
6. Click and expand **Tag** in the list of permissions to expose the **Write Value** permission.
7. Select the **Deny** check box.
8. Click **OK**.

Feature Security Properties

Use the **Policy Settings** tab in **Feature Security Properties** dialog box to secure features of a single FactoryTalk product. By setting permissions to a single feature, you can limit a user or a group of users to perform securable actions.

Starting from version 6.10.00, FactoryTalk Linx Gateway enhance the user security by requesting the users to log on to FactoryTalk Linx Gateway server when starts FactoryTalk Linx Gateway Configuration and when changing the scope.

The logon scope is determined by the user's activation type. If a user has a local license, he can only log on to local scope. If the user has a network license, he can logon to both network and local scope.

To log on FactoryTalk Linx Gateway server, do one of the followings:

- Click **File > Log On**.
- Click **Select** next to **FactoryTalk Diagnostics Scope** on **Server Configuration** tab.
 - Note:**
 - If you have enabled single sign-on function in FactoryTalk Services Platform > **Explorer > System Policies > Security Policy**, there is no need to manually log on FactoryTalk Linx Gateway server.
 - Log off and log on back for the feature security settings to take effect.

As the product policy is configured upon the logon scope, make sure the FactoryTalk Linx Gateway server logon scope is the same with FactoryTalk Diagnostics scope.

The following table shows the relationship between FactoryTalk Linx Gateway feature security policies and securable actions that the user can perform:

Feature security policy	Allow	Deny
View Gateway Server Properties	<p>Allow users to view information in Server Configuration tab including:</p> <ul style="list-style-type: none"> • FactoryTalk Diagnostics Scope • UA Server Service Name • UA Server status • Local Discovery Service URL and status. • DA Server status 	Hide UA Server and DA Server information. Users can only select scope in Server COnfiguration tab.
Modify Gateway Server Properties	<p>Allow users to edit in Server Configuration tab:</p> <ul style="list-style-type: none"> • Change UA Server Service Name. • Inhibit UA Server communication. • Select if register with LDS. • Inhibit DA Server communication. 	Set Service Name area, UA Server Inhibit checkbox, Register with Discovery Service checkbox, and DA Server Inhibit checkbox unavailable.
View UA Server Endpoint Properties	<p>Allow users to view UA server configuration information and security settings in UA Server Endpoints tab including the endpoints:</p> <ul style="list-style-type: none"> • Name • Port • URL • Security Policy • Security Mode • Authentication Settings • Diagnostic Logging 	Hide the Endpoint Properties area.
Remove UA Server Endpoint	Allow users to remove the selected endpoint in UA Server Endpoints tab.	Set the Remove button unavailable.
Add/Configure UA Server Endpoint Properties	<p>Allow users to add a new endpoint and edit existing endpoints' configuration information and security settings in UA Server Endpoints tab including:</p> <ul style="list-style-type: none"> • Name • Port • URL • Security Policy • Security Mode • Authentication Settings • Diagnostic Logging 	Set the Endpoint Properties area and the Add button unavailable.
Manage Incoming Certificate	Allow users to view and import, reject, trust and remove certificates in Certificate Management tab.	Set the Import, Reject, Trust, and Remove button as unavailable.
View Outgoing Certificate Properties	Allow users to view the outgoing certificates information in Certificate Management > Outgoing Certificate tab.	Set the outgoing certificate properties unavailable. When switching to Outgoing Certificate tab, the Certificate Properties area still shows the Incoming Certificate properties.
Modify Outgoing UA Certificate Properties	Allow users to regenerate an outgoing certificate when the old one is expired or there is a need to do so.	Set the Regenerate button as unavailable.
OPC UA Client Read Access	Allow OPC UA clients to read data values through FactoryTalk Linx Gateway server.	OPC UA clients cannot read data values through FactoryTalk Linx Gateway server. An access denied error occurs during communication.

Feature security policy	Allow	Deny
OPC UA Client Write Access	Allow OPC UA clients to read and write data values through FactoryTalk Linx Gateway server.	OPC UA clients cannot write data values through FactoryTalk Linx Gateway server. An access denied error occurs when editing tag values.

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[H-U on page 81](#)

A-F

- A -

access path

An access path defines the computer, driver, networks, and communication devices used to communicate with a destination device or processor in Object Linking and Embedding for Process Control (OPC) conversations.

acknowledgment (ACK)

An ASCII control character used to acknowledge the reception and acceptance of a transmission block.

activate

To make a Rockwell Software product active so that it can run without the limitations imposed by demonstration mode. Without activation, some Rockwell Software products will not run, some will run with diminished functionality, and others will run for a limited period of time and then shut down with or without warning.

activation file

A text file that contains all of the activation information that is required to license a software product and allow it to properly function. While the file is simply plain text, the contents of the file are protected by a signature.

activation host

The device associated with an activation by a unique ID.

activation server

An activation server is any computer that hosts concurrent activations. The activation server manages the activations and shares them with other configured computers on the network.

alias

A logical name for a variable in a device or memory. Similar to a tag.

application

A machine or process monitored and controlled by a controller or the use of computer-based or controller-based routines for specific purposes.

area

An area organizes and subdivides a distributed Network application into logical or physical divisions.

- B -**baud**

A unit of signaling speed equal to the number of discrete conditions or signal events per second. Where one bit is encoded on each signaling event, the number of baud is the same as the number of bits per second.

Block Check Character (BCC)

An error checking method developed to improve error detection in data communications. The BCC is added to the end of each block of data before the block is transmitted.

- C -**client**

A component or subsystem that uses data or functionality provided by some other component or subsystem (the server). The term can also refer to the computer that executes this software, connecting to a server computer across a communication network.

Common Industrial Protocol (CIP)

The Common Industrial Protocol (CIP) is an industrial protocol for industrial automation applications supported by ODVA. Previously known as Control and Information Protocol, CIP defines messages and services for the collection of manufacturing automation applications – control, safety, synchronization, motion, configuration and information. It is used in EtherNet/IP, DeviceNet, CompoNet and ControlNet. Extensions to CIP are CIP Safety, CIP Motion, CIP Security, and CIP Sync.

CIP security

CIP security has multiple layers of security that enables a CIP-connected device to protect itself from malicious CIP communications. Then the device can reject data that has been altered, reject messages send by untrusted people or untrusted devices, and reject messages that request actions that are not allowed. CIP security defines the notion of a security profile, which is a set of well-defined capabilities to facilitate device interoperability and end-user selection of devices with the appropriate security capability.

concurrent activation

A type of activation that allows multiple computers across a network to use Rockwell Software products at the same time. Concurrent activations include floating activations and borrowed activations.

configuration

A file that contains information about the physical structure you defined for your system. This file includes all network paths, defined drivers and devices, Data Providers, and object protocols.

cyclic redundancy check (CRC)

A Cyclic Redundancy Check (CRC) is an error checking technique used by computers.

- D -**DA**

See **OPC DA**.

data element

An individually addressable item of data. For example, an OPC tag, an HMI tag, a graphic display, an event file, a node, and a channel.

data provider

One of the building blocks of FactoryTalk Linx, a data provider acts as a multiplexer for multiple clients and optimizes what data can be read together for more efficient handling.

data server

Data servers serve tags, or data items, contained in OPC-DA (Data Access) servers. Clients that need access to data items use data server application elements to locate the computers that are hosting OPC-DA 2.0 compliant data servers.

dongle

A dongle is a security or copy protection device for commercial computer programs. When required by a program, a dongle must be connected to an input/output port, such as USB or parallel port of the computer, to allow the program to run. Programs that use a dongle query the port at start-up and at programmed intervals thereafter, and terminate if the dongle does not respond with the expected validation code.

- E -**External Access**

A property that allows you to specify the level of access (Read Only, Read/Write, or None) external applications and devices have to tags.

- F -**floating activation**

A type of concurrent activation that requires a continuous network connection and allows multiple computers to use Rockwell Software products concurrently. An activation server manages a predetermined number of activations in a pool, and makes these activations available to any configured computer on the network.

When a computer connects to the network and runs a Rockwell Software product, it automatically "checks out" an activation from the pool of available concurrent activations. When the product shuts down, the activation is automatically freed and returns to the activation server's available pool. Checking out activations from the pool and returning them to the server happens automatically, without any user intervention.

H-U**- H -****HMI server**

The software module that is responsible for performing core run-time operations such as data collection, alarm detection, historical data logging and retrieval, and for providing FactoryTalk View SE Clients with graphic displays, run-time data, and events.

- O -**OPC DA**

OPC (Open Platform Communications) Data Access (DA) is a non-proprietary technical specification that defines a set of standard interfaces based on

Microsoft's OLE/COM (Component Object Model) technology. Applying OPC DA standards makes interoperability possible among automation and control applications, field systems and devices, and business and office applications.

The FactoryTalk Services Platform supports and extends the OPC DA 3.0 specification, which includes the ability to browse data items.

For more information on OPC DA, see <https://opcfoundation.org>

OPC test client

A data connections test utility that shows whether you are using Remote OPC Client functionality.

OPC UA

OPC (Open Platform Communications) Unified Architecture (UA) is a platform independent service-oriented architecture that integrates the individual OPC Classic specifications into one extensible framework. Applying OPC UA standards makes interoperability possible among automation and control applications, field systems and devices, and business and office applications.

For more information on OPC UA, see <https://opcfoundation.org>

- P -

poll

Systematically request data from a device.

poll rate

Often how data is requested from a device. Poll rates are typically specified in milliseconds. (A poll rate of 1000 ms results in data being requested every second).

- R -**rehost (an activation)**

Rehosting an activation provides a way of moving an activation file from one computer or device to another. Rehosting an activation file deactivates the file on the computer that is hosting it, and then creates a rehost code that Rockwell Technical Support staff can use to generate a new activation file for use on another computer.

- S -**scope**

The level at which tags and routines may be created. They can be created at the controller level (accessible to all routines), or at the program level (accessible to only the routines within a single program).

shortcut

A symbolic reference to a physical device that you want to connect to on the network, and the data that device contains. The communication path associated with the shortcut tells the application where to find that data.

- T -**tag**

A named area of the process-connected device or controller's memory where data is stored. It is the basic mechanism for allocating memory, referencing data from logic, and monitoring data.

topology

The way a network is physically structured. This includes all networks, nodes, devices, Data Providers, drivers/channels, and object protocols. In FactoryTalk Linx, this is presented in tree form (the communications tree).

- U -

UA

See **OPC UA**.

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Rockwell Automation support

Use these resources to access support information.

Technical Support Center	Find help with how-to videos, FAQs, chat, user forums, and product notification updates.	rok.auto/support
Knowledgebase	Access Knowledgebase articles.	rok.auto/knowledgebase
Local Technical Support Phone Numbers	Locate the telephone number for your country.	rok.auto/phonesupport
Literature Library	Find installation instructions, manuals, brochures, and technical data publications.	rok.auto/literature
Product Compatibility and Download Center (PCDC)	Get help determining how products interact, check features and capabilities, and find associated firmware.	rok.auto/pcdc

Documentation feedback

Your comments help us serve your documentation needs better. If you have any suggestions on how to improve our content, complete the form at rok.auto/docfeedback.

Waste Electrical and Electronic Equipment (WEEE)



At the end of life, this equipment should be collected separately from any unsorted municipal waste.





Rockwell Automation maintains current product environmental information on its website at rok.auto/pec.

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