FactoryTalk Linx Gateway Getting Results Guide

Rockwell Automation

Getting Results

Original Instructions

Important User Information

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

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

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

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

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

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

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

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

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

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

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

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

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

Rockwell Automation recognizes that some of the terms that are currently used in our industry and in this publication are not in alignment with the movement toward inclusive language in technology. We are proactively collaborating with industry peers to find alternatives to such terms and making changes to our products and content. Please excuse the use of such terms in our content while we implement these changes.

Table of Contents

Chapter 4

Start FactoryTalk Linx Gateway and explore the user interface

Chapter 5

Use FactoryTalk Linx Gateway to Access Data

Chapter 6

Use FactoryTalk Diagnostics Counter Monitor with FactoryTalk Linx Gateway

Chapter 7

Troubleshoot FactoryTalk Linx Gateway

Appendix A

About Activations

Appendix B

Install FactoryTalk Linx Gateway with command line syntax

Appendix C

About FactoryTalk Linx

Appendix D

Secure FactoryTalk Linx Gateway using FactoryTalk Security

Glossary

Index

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 oss_license.txt file located in your product's OPENSOURCE folder on your hard drive. This file is divided into these sections:

- Components
  Includes the name of the open source component, its version number, and the type of license.
- Copyright Text
  Includes the name of the open source component, its version number, and the copyright declaration.
- Licenses
  Includes the name of the license, the list of open source components citing the license, and the terms of the license.

The default location of this file is:

C:\Program Files (x86)\Common Files\Rockwell\Help*<product name>*\Release Notes\OPENSOURCE\oss_licenses.txt.

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.

The following table lists the commercially licensed software components in FactoryTalk Linx Gateway.

Component	Copyright
Softing OPC UA C++ Server SDK for Windows V5.66.1	Copyright Softing Industrial Automation GmbH 2009 - 2021

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 75 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	Distributed Network	Activates FactoryTalk Linx Data Bridge
FactoryTalk Gateway Distributed	RSOPCD.UNLTD	500,000*	Local or Network	Y	N
FactoryTalk Gateway Distributed 70K	RSOPCD.70000	70,000	Local or Network	Y	N
FactoryTalk Gateway Distributed 32000	RSOPCD.32000	32,000	Local or Network	Y	N
FactoryTalk Gateway Station 32000	RSOPCS.32000	32,000	Local	N	N
FactoryTalk Gateway Distributed 5000	RSOPCD.5000	5,000	Local or Network	Y	N
FactoryTalk Gateway Station 5000	RSOPCS.5000	5,000	Local	N	N
FactoryTalk Gateway Distributed 1500	RSOPCD.1500	1,500	Local or Network	Y	N
FactoryTalk Gateway Station 1500	RSOPCS.1500	1,500	Local	N	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	Distributed Network	Activates FactoryTalk Linx Data Bridge
FactoryTalk Linx Gateway Professional	LINXGW.PROFESSIONAL	500,000*	Local or Network	Y	Y
FactoryTalk Linx Gateway Distributed	LINXGW.DISTRIBUTED	32,000	Local or Network	Y	N
FactoryTalk Linx Gateway Standard	LINXGW.STANDARD	5,000	Local or Network	N	N
FactoryTalk Linx Gateway Basic	LINXGW.BASIC	1,000	Local or Network	N	N

Note: Starting from FactoryTalk Linx Gateway version 6.30.00, Professional activation tag limit is changed from unlimited to 500,000.

500,000* : Default tag limit. You can edit it in the FactoryTalk Administration Console (**System** > **Policies** > **FactoryTalk Linx Gateway** > **FactoryTalk Linx Gateway Policy** > **Tag count limitation for professional activation**).

From FactoryTalk Linx Gateway version 6.21.00, three activations are added for users.

Activation Name	Activation	Tag Limit	FactoryTalk Directory	Distributed Network	Activates FactoryTalk Linx Data Bridge
FactoryTalk Linx Gateway Extended	LINXGW.EXTENDED	15,000	Local or Network	N	N

FactoryTalk Linx Gateway Embedded	Verifies its operating on a CompactLogix 5480 windows core	500	Local or Network	N	N
FactoryTalk Linx Data Bridge Embedded	Verifies its operating on a CompactLogix 5480 windows core	500	Local or Network	N	Y

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

FactoryTalk Security

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 91 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 76.

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:
❏	1.	Read and understand the FactoryTalk Linx Gateway *Getting Results Guide*.	
❏	2.	Verify your personal computer meets the minimum hardware and software requirements.	System requirements on page 17

	Step	Description	Refer to:
❑	3.	Install FactoryTalk Linx Gateway.	Install FactoryTalk Linx Gateway on page 17
❑	4.	Install a valid FactoryTalk Linx Gateway activation.	About Activations on page 75
❑	5.	Configure FactoryTalk Security, if required.	FactoryTalk Services Platform Help
❑	6	Create a FactoryTalk application (or point to an existing application).	FactoryTalk Services Platform Help
❑	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 48
❑	11.	Configure to make sure DA or UA Server in **Server Configuration** tab is running and not inhibited.	Server Configuration on page 40
❑	12.	Configure OPC UA server endpoint in the **UA Server Endpoints** tab	FactoryTalk Linx Gateway Help
❑	13.	(Optional) Enable and configure tag list and tag list access to decide if all data to be available or limit it to specific items or if an OPC UA client to be able to access structures and arrays. If disable all available tags from FactoryTalk data servers, the tag list will be available to all OPC Clients.	Tag List on page 41
❑	14.	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
❑	15.	If OPC UA endpoint security is enabled, trust incoming certificate from the UA client in the **Certificate Management** tab.	Certificate Management on page 50
❑	16.	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 <u>Install FactoryTalk Linx Gateway with command line syntax</u> on <u>page 79</u>.

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
- Total processor cores is recommended to be no less than 4 for virtual machines
- 4 GB of memory

    Tip: When FactoryTalk Linx Gateway is operating on Windows 10 IOT Enterprise (for example, the Windows core of a CompactLogix 5480 controller), it is limited to a FactoryTalk Directory and FactoryTalk Linx data server running in the same environment (a remote directory and data server are not supported).

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. Rockwell Automation tests with the following update rates for a number of active tags. This data is captured in FactoryTalk Linx Gateway version 6.21.00 with security disabled.

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

Note: This data was based on tests with the UA tag list disabled.

Number of Active Tags	Tested Update Rate (ms)
10,000	500
50,000	500
100,000	500

150,000	1000
200,000	2000
250,000	2000
300,000	2000
350,000	2000
400,000	2500
450,000	3000
500,000	4000

Note: This data was based on tests with the UA tag list enabled.

These values are tested on a computer with Win 10 enterprise 64 bit,   8G RAM, Intel® Xeon® CPU, E5-2699A v4 @ 2.40 GHz 2.39 GHz 4v CPU .

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* (v2004, v20H2, v21H1, and 21H2)

  FactoryTalk Linx Gateway adopts .NET 4.8 which is only supported in Windows 10 v1803 and later.

- Windows 10 IoT Enterprise 2016 LTSB
- Windows 10 IoT Enterprise 2019 LTSC
- Windows 11
- Windows Server® 2012
- Windows Server 2012 R2
- Windows Server 2016
- Windows Server 2019

*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 6.30.00 (CPR 9 SR 13) was tested with, and is compatible with, the following Rockwell Automation® products when used on the same computer:

- FactoryTalk® Activation Manager version 4.06.13
- FactoryTalk Services Platform version 6.30.00
- FactoryTalk View version 13.00.00
- FactoryTalk® Linx™ version 6.30.00

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 6.30.00 (CPR 9 SR 13)
- FactoryTalk Activation Manager version 4.06.13
- FactoryTalk Alarms and Events version 6.30.00 (CPR 9 SR 13)
- FactoryTalk Linx version 6.30.00 (CPR 9 SR 13)
- Rockwell Automation x64 Driver v2.03.04 (for 64-bit operating systems)

Prerequisite software

- FactoryTalk Diagnostics version 6.30.00
- Microsoft .NET Framework 4.8
- 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 1.03.401
- OPC .NET API 2.01
- Windows Firewall Configuration Utility 1.00.15
- Wibu CodeMeter Runtime Kit v7.30

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.

FactoryTalk Linx Gateway version 6.21.00:

- Adds the ability to support tag list to view and edit the tag group, add tags to tag group and set tag access rights. The tag list supports complex types using array and structures, including the ability to import and export the configuration and includes an option to manually refresh the namespace available to an OPC UA Client when changes are made to the tag list or in other parts of the system (for example,Logix on-line changes).
- Adds new activation type, which is FactoryTalk Linx Gateway Extended, with capacity of 15,000 tags.
- Supports CompactLogix5480 Windows Core embedded activation, with a capacity of 500 tags.
- Adds the ability to support configuration changes without requiring Admin rights.
- Adds the ability to change the Namespace Index that OPC UA clients will utilize when accessing the FactoryTalk Linx Gateway's data model when no tag groups or lists are configured. The user interface provides an option to select a Namespace Index of (2 or 3). Beginning with version 6.20.00, the namespace index presented to OPC UA clients defaults to 2. In previous versions, 3 was the default.
- Adds configuration checks and informs the user when required configuration settings are incorrect or missing. (for example, UA enabled but no endpoint is defined, tag list selected but no tags configured, a client certificate is received but no client certificates are trusted).
- Adds a button on the FactoryTalk Directory scope selection dialog to navigate to the FactoryTalk Administration console where FactoryTalk Linx and other OPC DA/UA data sources can be configured.

FactoryTalk Linx Gateway version 6.30.00:

- Supports Chinese version.
- Adds an option to change the DA access setting on the **Server Configuration** tab after installation completes.

- Adds an option to include additional sub-element references (scalar, structure, or array) for all arrays in the namespace provided to OPC UA Clients.
- Adds the ability to include individual array sub-elements (scalar, structure, or array) in tag groups.
- Adds the ability to backup and restore configurations.
- Adds the ability to specify, refresh, import, or export OPC UA namespace index.
- Adds the ability to restart after the FactoryTalk Directory was restored.
- Updates installation option to diminish security risk by selecting **Gateway Server OPC DA and UA (only local DA clients)** or **Gateway Server OPC DA and UA (local or remote DA clients)** before installation.
- Adds the ability to limit access to security certificate management operations to administrators or individuals approved by an administrator to diminish security risk.
- Adds the ability to substantially improve or reduce the amount of time required to load tag information into the **Add Tag** dialog.
- Adds user interface warning when the configuration contains an invalid scope or a referenced workstation is renamed.
- Changes Professional activation tag limit from unlimited to 500,000.
- Encrypts the configuration files and does not support copying them to another computer. Instead, use the Backup and Restore on page 61 function to reuse the configuration.
- Downgrades OPC UA service account to **Local Service**.
- Raises the default DCOM authentication level to Packet Integrity.

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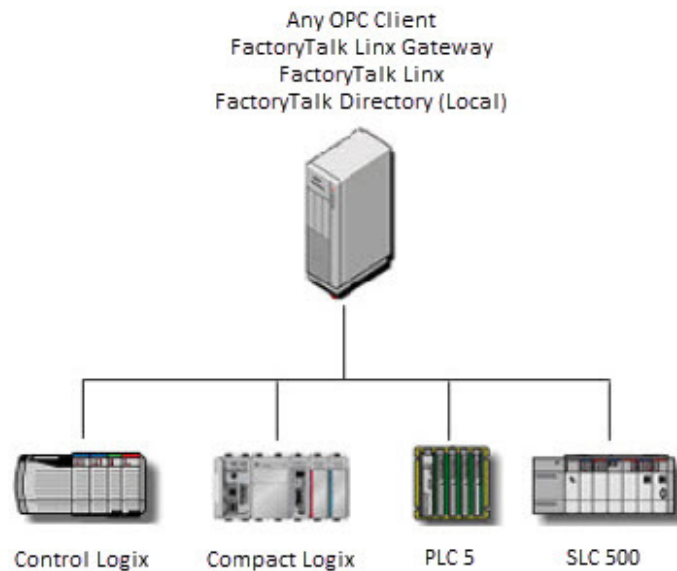
For FactoryTalk View Site Edition (SE) applications that need to serve OPC data, FactoryTalk View SE Station can also be installed on the same machine, as shown in the following diagram. This also provides the benefit of FactoryTalk View SE Station features, such as alarm and derived tags and direct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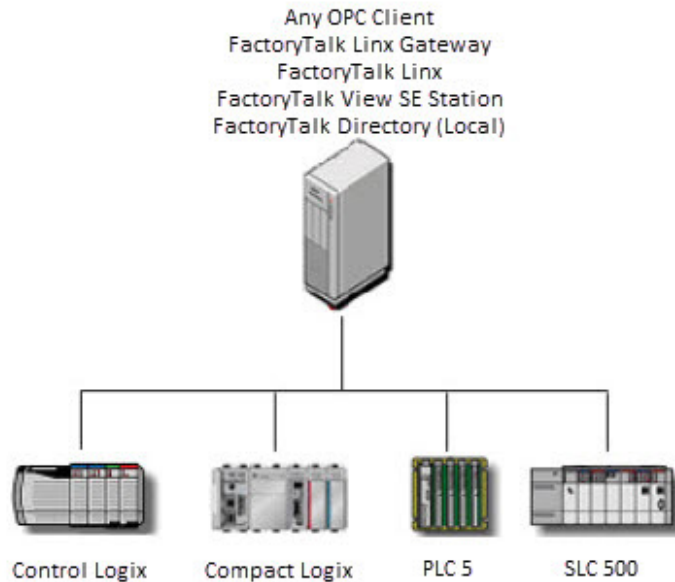
For FactoryTalk Network Directory applications, you can install FactoryTalk Linx Gateway on any computer.

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.

Download a localized version of FactoryTalk Linx Gateway

Starting from version 6.30.00, FactoryTalk Linx Gateway is available with limited localized language support. FactoryTalk Linx Gateway provides language-specific installation packages that are available as optional downloads from the Rockwell Automation download center.

To download the localized version

1. Go to [Product Compatibility and Download Center (PCDC)](#) and search FactoryTalk Linx Gateway to download.
2. After validating the serial number and the product key, in the **Available Software** dialog, click **Show All**.
3. Expand **Show Optional Downloads** > **Localized products**.
4. Select the localized version you want to download.
5. Click ⬇.

    Tip: Only one language edition of FactoryTalk Linx Gateway or FactoryTalk Services might be installed at a time on a single workstation.

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 (OPC DA client computer configuration)

Install Remote FactoryTalk Linx Gateway (OPC DA client computer configuration) 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 (OPC DA client computer configuration) is installed once per computer that hosts an OPC DA client.
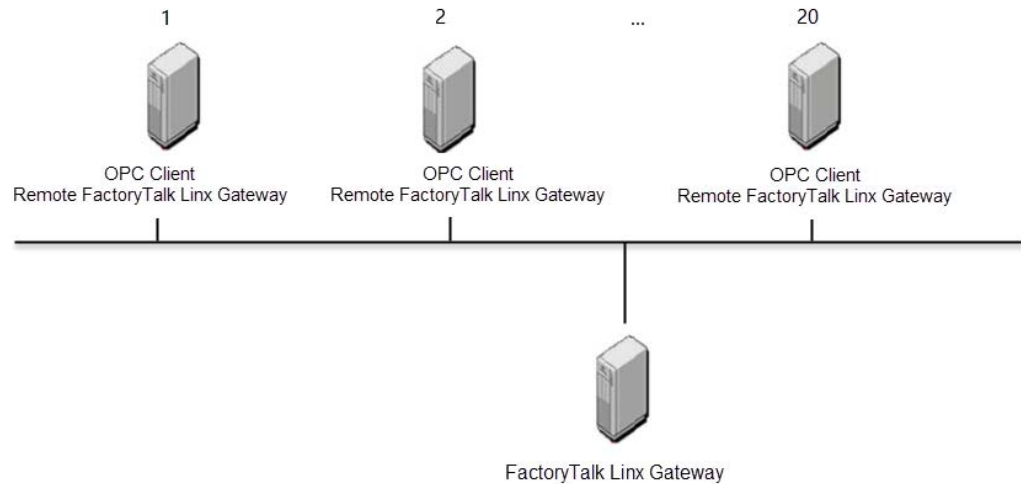
Configure Windows firewall for Remote FactoryTalk Linx Gateway

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 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 Server OPC DA and UA (local or remote DA clients)**

     DCOM remote access permissions are set as **ANONYMOUS LOGON** and **Everyone** to have remote access rights.

   - **Gateway Server OPC DA and UA (only local DA clients)**

     DCOM remote access permission is only set as **ANONYMOUS LOGON**.

   Select **Gateway Server OPC DA and UA (local or remote DA clients)** or **Gateway Server OPC DA and UA (only local DA clients)** 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 (DA Client remote configuration)**

Select **Remote Gateway (DA Client remote configuration)** 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 (x86)\Rockwell Software**.
   - **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 75](#).

   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.

Change DA access

After installation completes, FactoryTalk Linx Gateway supports changing the DA access setting in the **Server Configuration** on tab when the current FactoryTalk Linx Gateway Configuration is relaunched as administrator.
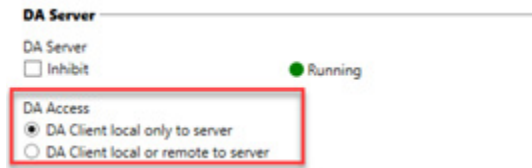
- Go to Start> FactoryTalk Linx Gateway Configuration> Run as administrator.
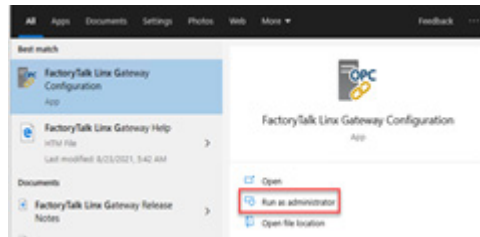
Tip: This configuration will not be backed up.

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
Server OPC UA and DA (local or remote DA clients)"
```

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 on .

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.
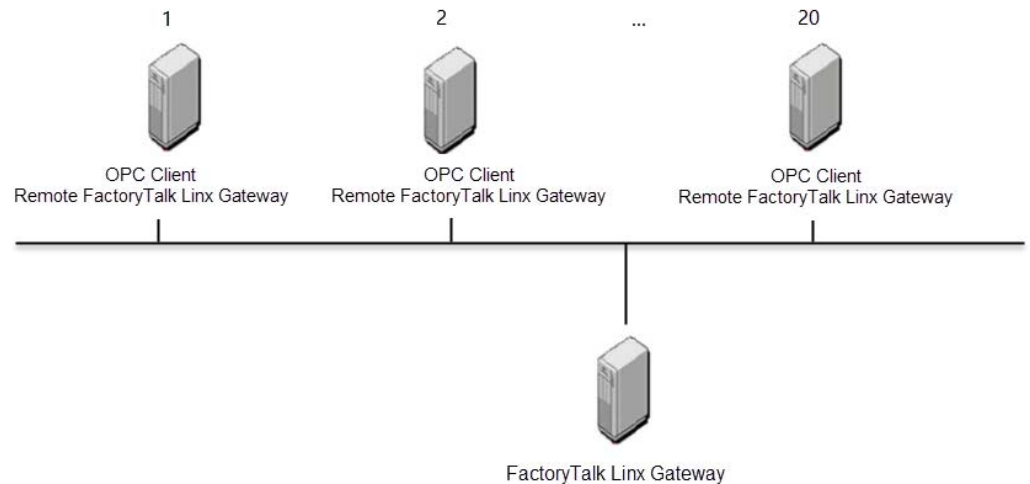
To install Remote FactoryTalk Linx Gateway, select **Remote Gateway (DA Client remote configuration)** in **FactoryTalk Linx Gateway Setup**, then follow the installation instructions.

Start FactoryTalk Linx Gateway and explore the user interface

This chapter includes the following information:

- Application authentication level for DCOM security
- Starting FactoryTalk Linx Gateway
- About the FactoryTalk Linx Gateway Configuration dialog box

Application authentication level for DCOM security

In response to Microsoft Distributed Component Object Model (DCOM) Hardening patch (MS KB5004442), the minimum DCOM authentication level used by Rockwell Automation products was raised to Packet Integrity.

IMPORTANT	Installing this product's latest version with earlier unpatched versions of other FactoryTalk products or products using Classic OPC DA connections may cause a loss of connectivity due to the difference in DCOM authentication level used. For additional information, see the Knowledgebase Document ID: IN39461 - Microsoft DCOM Hardening Information TOC.

Microsoft releases the DCOM Hardening patch in response to CVE-2021-26414. This patch elevates the minimum DCOM authentication level that is required to establish a DCOM connection. DCOM is used by many Rockwell Automation products and may be affected by the change that is made by the Microsoft patch. For additional information about the affected Rockwell Automation products, see the Knowledgebase Document ID: PN1581 - Product Notification 2022-01-001 - Rockwell Automation products unable to establish proper DCOM connection after installing Microsoft DCOM Hardening patch (MS KB5004442).

Impact on Rockwell Automation software

If computers within your network have installed the Microsoft patch, the DCOM authentication level of the client or server applications on these computers is required to update to RPC_C_AUTHN_LEVEL_PKT_INTEGRITY, while the authentication level of applications on other computers are not. As a result, the communication across the two types of computers will fail.

Tip:
- The distributed third-party OPC DA server and client applications are also impacted.
- To ensure proper communication, the authentication level of both the server application and the client application should be at the same level.

Solutions

We recommend installing the latest version of Rockwell Automation software or installing the patch for the corresponding software version.

To avoid the compatibility issue, make sure all Rockwell Automation applications you use are updated.

If any computers within your network have not installed the Microsoft patch or some Rockwell Automation applications are not updated to the latest version, you can lower the DCOM application authentication level on all computers. To do so, do one of the following:

- Remove the Microsoft DCOM patch from all workstations in the system.
- Switch the DCOM authentication level on all workstation in the system using one of the following methods:
  - Use **Registry Editor**.
    - FactoryTalk software
      - Open **Registry Editor**, select **HKEY_LOCAL_MACHINE** > **SOFTWARE** > **Rockwell Software** > **FactoryTalk** > **Platform**, right-click **DCOMAuthLevel** > **Modify**, and then edit the **Value data** to 1. The default value after upgrading the Rockwell Automation application is 5 (RPC_C_AUTHN_LEVEL_PKT_INTEGRITY) and the former value is 1 (RPC_C_AUTHN_LEVEL_PKT_NONE).
    - RSLinx Classic software
      - Open **Registry Editor**, select **HKEY_LOCAL_MACHINE** > **SOFTWARE**   > **WOW6432Node** > **Rockwell Software** > **RSLinx**, right-click **DCOMAuthLevel** > **Modify**, and then edit the **Value data** to 1. The default value after upgrading the Rockwell Automation application is 5 (RPC_C_AUTHN_LEVEL_PKT_INTEGRITY) and the former value is 1 (RPC_C_AUTHN_LEVEL_PKT_NONE).
  - Use the **DCOMAuthLevel** utility.
    - Open **DCOMAuthLevel**, select **None (for backward compatibility)**, and then click **OK**.

        Tip:
        - The authentication level lower than 5 will not be supported after installing the Microsoft patch.
        - This utility will adjust the Authentication level for FactoryTalk Services Platform, FactoryTalk Live Data OPC DA client interface, FactoryTalk Linx Gateway OPC DA server interface, and RSLinx Classic's OPC DA server interface.
        - The Windows Component Services DCOM configuration setting is not utilized or supported by FactoryTalk software or RSLinx Classic.

About OPC DA communication

As the distributed OPC DA server and client also use DCOM to communicate, the same issue might also appear. Do one of the following to resolve the issue:

- The OPC DA interface for FactoryTalk Linx Gateway, FactoryTalk Live Data, and RSLinx Classic must be configured to utilize the appropriate DCOM authentication level to work with or without the Microsoft patch (described earlier).
- Set the authentication level of third-party OPC DA server or client to the same level as the Rockwell Automation applications.
- Lower the authentication level on computers that are installed with the patch as mentioned above.
- Deploy the OPC DA server and client on the same computer.
- Change the communication method from OPC DA to OPC UA.

Set DCOM authentication level of KEPServer Enterprise

When using KEPServer Enterprise, change the authentication level through the following:

1. Open **Component Services**.
2. Double-click **Console Root** > **Component Services** > **Computers** > **My Computer** > **DCOM Config**.
3. Right-click **KEPServerEnterprise x.xx** and select **Properties**.
4. On the **General** tab, select the authentication level in **Authentication Level**.
5. Click **OK** and restart KEPServer Enterprise.

Workgroup and domain settings after the applications' authentication level is required to be updated

After the applications authentication level is adjusted to RPC_C_AUTHN_LEVEL_PKT_INTEGRITY, ensure all users in your network that contains Rockwell Automation software and third party OPC DA meet the requirement of DCOM for RPC_C_AUTHN_LEVEL_PKT_INTEGRITY:

- Each workstation in a workgroup or a domain must have the same user accounts, with the same user names and passwords on each machine, for all machines participating in a client-server environment.

For more information, see Microsoft documentation How to Configure a Domain User or Group.

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:
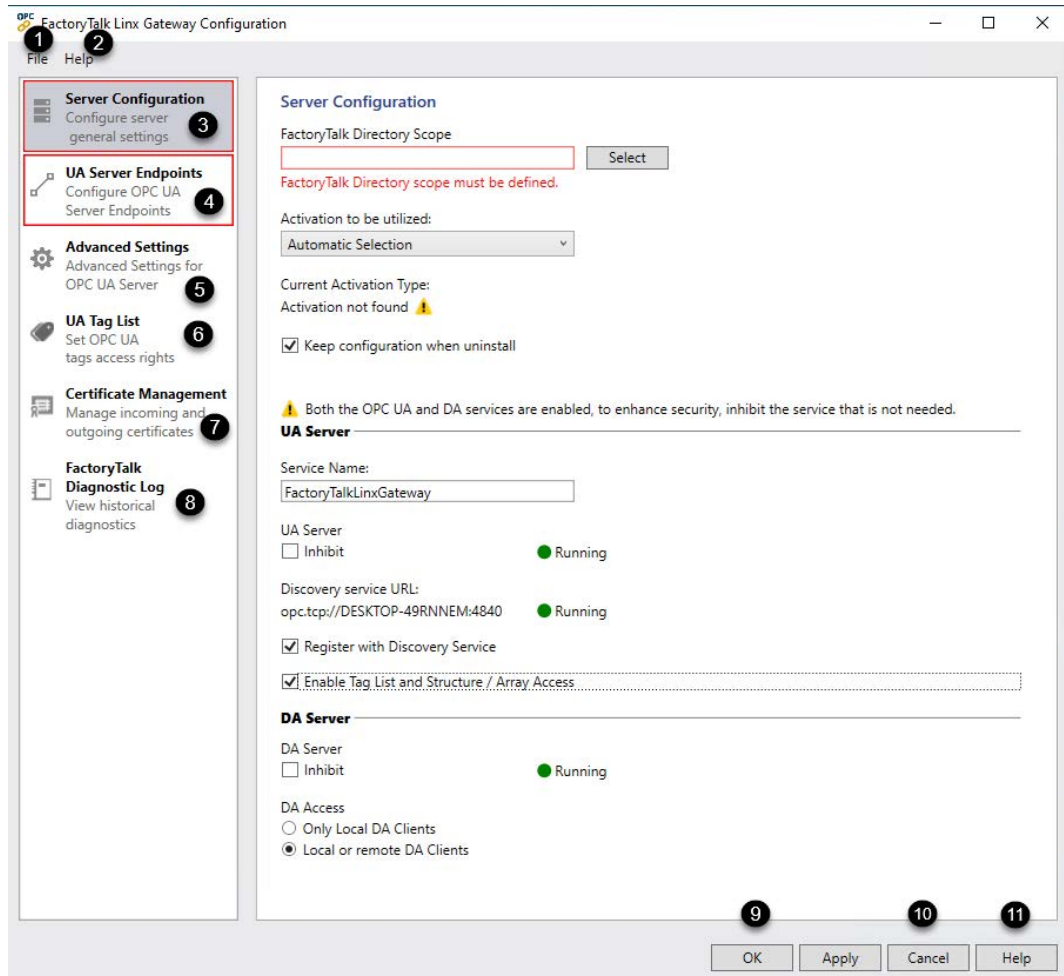
Item	Description

Item	Description
❶	The **File** button contains information about: • Log On • Log Off • Exit FactoryTalk Linx Gateway Configuration.
❷	The **Help** button contains information about: • Release Notes. • Help Content • Software version number. • Activation • Copyright • Contact information
❸	The **Server Configuration** tab contains information about: • 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.
❹	The **UA Server Endpoints** tab contains information about: • OPC UA server name, port, and URL. • Security mode and policy. • Authentication settings. • Diagnostic logging settings.
❺	The **Advanced Settings** tab contains information about: • OPC UA namespace index configuration. • Create additional references for each array element in the OPC UA namespace.
❻	The **UA Tag List** tab contains information about: • Set tag group, add tags to tag groups • Access of tags • Data type in UA Tag List and OPC UA/DA Client
❼	The **Certificate Management** tab contains information about: • Incoming certificate import, reject, trust, and remove button. • Outgoing certificate regenerate button. • Certificate properties
❽	The **FactoryTalk Diagnostic Log** tab contains information about: • FactoryTalk Diagnostics information.
❾	Click **OK** to apply the changes and restart FactoryTalk Linx Gateway service.
❿	Click **Cancel** to close the dialog box.
⓫	Click **Help** to access the FactoryTalk Linx Gateway Help.

Tip: The red boxes and text indicate the configuration is incomplete or invalid and requires changes to permit normal operation.

Server Configuration

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

Global Settings

Field	Description

Field	Description
FactoryTalk Diagnostics Scope	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. 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 76. Sets where the FactoryTalk Linx services reside, local to the FactoryTalk Linx Gateway host PC or distributed over the network.

UA Server Settings

Field	Description
Service Name	Sets the OPC UA service name visible to OPC UA clients.
Inhibit	Inhibits or enables the OPC UA service. • **Checked:** Inhibits the OPC UA service from operating. • **Unchecked:** Enables the OPC UA service. (default)
Discovery service URL	Lists the URL at which the OPC UA service can be accessed. **Tip:** Copy the URL text into the OPC UA client that accesses information from the FactoryTalk Linx Gateway OPC UA service.
Register with Discovery Service	Sets whether the OPC UA service is listed as part of the local OPC UA discovery service.
Enable Tag List and Structure / Array Access	Determines how the OPC UA service will present information to OPC UA Clients. • When disabled OPC UA Clients can access all data from all servers defined in a FactoryTalk application. Use this mode to provide compatibility with systems defined prior to version 6.21.00. • When enabled, OPC UA Clients will be limited to the items selected on the **OPC UA Tag List** tab. Use this setting to control which tags are accessible to specific OPC UA Clients and to access complex types using structures (Logix UDTs) and arrays.

DA Server Settings

Field	Description
Inhibit	Inhibits or enables the OPC DA service. • **Checked:** Inhibits the OPC DA service from operating. • **Unchecked:** Enables the OPC DA service. (default) **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.
DA Access	Changes the DA access after installation. This setting is only available when the current FactoryTalk Linx Gateway Configuration is relaunched as administrator. • Selects **Only local DA clients** to allow DA client and FactoryTalk Linx Gateway to operate on the same computer. • Selects **Local or remote DA clients** to allow DA client to operate on the same or on a remote computer. If this is selected, security risk might occur with higher DCOM privilege. **Tip:** This configuration will not be backed up. For more information about DCOM authorization level change, see Application authentication level for DCOM security on page 35.

UA Tag List

How do I open the **Tag List** window?

1. On the **Server Configuration** page, select the **Enable Tag List and Structure/Array Access** checkbox under **UA Server**.
2. Click **UA Tag List** that shows on the left column.

The UA tag list configuration determines the data values that each OPC UA Client can access from FactoryTalk Linx Gateway. The UA tag list option provides both enhanced security and complex type information (for example, structures and arrays). When the UA tag list option is disabled, all tags that are available from data sources in a FactoryTalk Application (for example, controllers and hardware via FactoryTalk Live, OPC DA and OPC UA servers) are accessible as scalar values to OPC UA Clients. The UA tag list contains one or more tag groups that define access rights and includes complex type information enabling an OPC UA Client to utilize structures or User Defined Types (UDT) from Logix controllers.

Use **UA Tag List** to view and edit the tag group, add tags to the tag group and <u>set tag access rights</u> on <u>page 44</u>.

FactoryTalk Linx Gateway provides the ability to create tag groups, which includes a subset of data tags in the FactoryTalk system and to add one tag to multiple tag groups. By configuring the tag group access rights with users, FactoryTalk Linx Gateway limits the OPC UA Client's access to this group of tags instead of exposing all the tags and manages accesses to different groups of clients. Users who are not given access to a tag group in FactoryTalk Security will have no access to the tags in the tag group.

UA Tag List is also required if the OPC UA Client needs to access structured type information.

Only the tags configured in the tag group can be added to namespace under the group folder.

FactoryTalk Linx Gateway adds the OPC UA namespace based on the groups configured in **UA Tag List**.

Use **UA Tag List** to add the following tags:

- Structure and array and its elements separately.

  Note: If an element is added while the structure itself is not added, the structure will be added as a folder, and the rest elements under the structure will not be added automatically.

  If you add a structure or array in the **UA Tag List**, the exact structure or array will show in OPC UA Client.

- Scalar.
- Folder (for example, Shortcut to a Logix controller or program in a Logix controller and all its contents). OPC UA Client is able to find the tags under the folder in a real-time and dynamic way. When the tags in the **Tag Browsed** pane are changed, re-browse to find the updated tags.

  Tip: You need to add all the items you want to access individually to the tag list.

  Tip: The UA tag list does not support FactoryTalk Diagnostic Audit message.

Set up and use UA Tag List

Configure **UA Tag List** to add tags to groups, set access right on page 44 and user group of tags, export and import tags, and enable client to monitor and edit tags.

Use the **Export** function to back up tags to a CSV file, which simplifies the operations of adding and editing multiple tags and tag groups.

Use the **Import** function to import tags and tag groups in bulk.

To add a tag group

1. Click + next to **Tag Groups**
2. In the **Tag Group Setting** dialog box, define **Name**, **Description**, **Access Configuration,** and **Permission**.
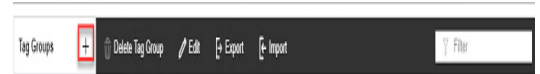
   Tip: For multiple tag groups, by clicking **Overview** under **Tag Groups**, FactoryTalk Linx Gateway supports batch editing of access rights and tag groups.

To add a tag to a tag group

1. Click **Add Tags**.
2. Expand the left pane's folder to locate a controller shortcut folder for data items within a controller navigate in into the shortcuts **Online** Folder and select the item(s) you want to add in the **Tag Browsed** pane.

   Tip: You can select multiple items simultaneously in the **Tag Browsed** pane. Selecting a shortcut or Logix program, structure or array   will result in all items associated within the selected item being included in the tag group.

3. In the **Tag Browsed** pane, click + to select the tag and click **Add**.

   Tip: The number of total items of all tag groups should be no more than 300,000 or error message will appear and cannot apply the configuration. Recommend adding array, structure or folder to avoid the large number of items.

In the **Add Tag** window, the left side shows Folder and Structure. Array is listed in the right **Tag Browsed** pane.

The **Tag Browsed** pane only displays two access rights, ReadOnly and ReadWrite.

   Tip:
   - The access right column displays the level of access provided by the Logix controller associated with the shortcut in the configuration. Utilize Studio 5000 Logix Designer to modify the controller's tag settings.
   - If the tags or folders added in the UA tag list are invalid, the user should delete them or they will be shown in the Client with bad quality.

Use **Refresh Namespace** to sync namespace if namespace or projects in controllers are edited or updated.

To refresh namespace

- Click **Refresh Namespace**
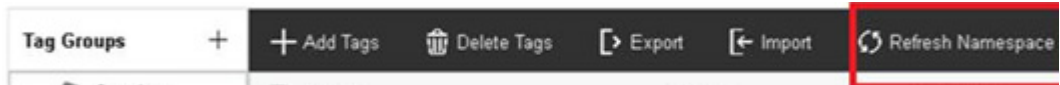
Tip: When processing a namespace refresh operation, the UA tag list cannot be modified.

To stop a namespace Refresh operation

- At the bottom of the window, click **Stop refreshing**
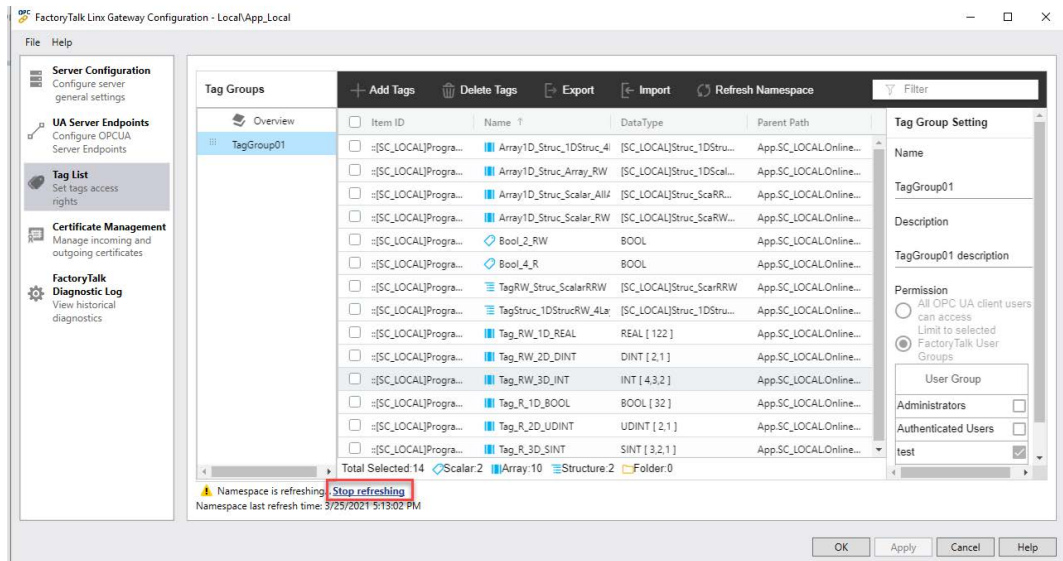
After the namespace refresh is stopped, the user can configure the UA tag lists and then restart refreshing.

When namespace refresh is finished, the UA tag list is refreshed and saved. Click **OK** or **Apply** to restart the service for the OPC UA Server to utilize the updated namespace.

Access configuration in UA Tag List

To improve security, set different accesses to each tag to different user groups.

Tags can be configured to be accessed by all users or a specific FactoryTalk Security group. If tags are assigned to a FactoryTalk Security group, when an OPC Client connects, its user ID and password are checked against FactoryTalk Security. If a valid user ID is provided, the security groups for the user are verified with the Security Groups associated with each tag group.   If the user is in a security group authorized to access a tag group, the client is given access to the tags in the authorized tag groups.

To configure the tag group access

On the **Tag Group Setting** pane, under **Permission**

- Select **All OPC UA client users can access**. All users can access this tag group.

  Then under **Access Configuration**, select **Tags in group limited to read only** or **Tags in group support read/write**.

- Select **Limit to selected FactoryTalk User Groups**.

  Only the users assigned to the certain user groups can access this tag group. The tag access rights of the users under the selected user group are defined in FactoryTalk Security.

  Tip: At least one user group should be selected, otherwise all users will have access.

Add Tag Group

Name

TagGroup01

Description

TagGroup01 description

Permission
- ⦿ All OPC UA client users can access
- ⦾ Limit to selected FactoryTalk User Groups

Access Configuration
- ⦾ Tags in group limited to ready only
- ⦿ Tags in group support read/write

[Add] [Cancel]

Add Tag Group

Name

TagGroup01

Description

TagGroup01 description

Permission
- ⦾ All OPC UA client users can access
- ⦿ Limit to selected FactoryTalk User Groups

User Group	
Administrators	☐
Authenticated Users	☐
Engineers	☑
Maintenance	☑
Windows Administrators	☐

[Add] [Cancel]

> **Tip:** Multiple OPC UA Clients can be configured in the same FT Security group. A FactoryTalk Linx Gateway tag group can be assigned to multiple FactoryTalk Security groups.
> Multiple tags can be configured in a single FactoryTalk Linx Gateway tag group. The read/write access for tags is determined by the associated settings for the FactoryTalk Security group it is configured in.

> **Tip:** Multiple OPC UA Clients can be configured in the same FT Security group. An FactoryTalk Linx Gateway tag group can be assigned to multiple FactoryTalk Security groups.
> Multiple tags can be configured in a single FactoryTalk Linx Gateway tag group. The read/write access for tags is determined by the associated settings for the group it is configured in.

The following table lists access configuration and results of tags when the UA tag list is enabled or disabled.

Desired access	Server Configuration OPC UA "Enable Tag List" Setting	OPC UA Server Endpoint "Authentication" setting	Tag Group "Permission" setting
All tags from all data servers can be accessed by all clients	Disabled	Anonymous	N/A
All tags from all servers can be accessed by authenticated clients	Disabled	FactoryTalk Security	N/A
A limited set of tags can be accessed by all clients	Enabled	FactoryTalk Security	One or more tag groups with, "All OPC Client users can access" selected
Each client can access a different set of tags	Enabled	FactoryTalk Security	Multiple tag groups with "Limit to selected FactoryTalk User Groups" selected

The following table describes how to configure the security options from the previous table.

Access configuration location and how to locate	Access configuration
Tag Group Setting page Click the **UA Tag List** tab.	Select **Read only** or **Read and Write** under **Access Configuration**. Select a user group that is allowed to access the tags: • All OPC UA client users can access • Limit to selected FactoryTalk User Groups
Authentication Settings Click the **UA Server Endpoints** tab and find in the **Endpoints Properties** pane.	Set access to users: • Anonymous If the OPC UA endpoint is configured to accept Anonymous users and the tag group access is set as **Limit to selected FactoryTalk User Groups** on the **Tag Group Setting** pane, the **Anonymous** user should be added as a member of the selected **FactoryTalk User Groups**. Configure read and write access to CIA message in the **UA Server Endpoints** tab. • Authenticate with FactoryTalk Security
FactoryTalk Administration Console Open FactoryTalk Administration Console and expand **System>Polices>Product Policies>FactoryTalk Linx Gateway**. Double-click **Feature Security.**	Create a user in the desired FactoryTalk Security group for the OPC UA Client to use as its Login ID and Password. Set OPC UA Client Read and Write access to different user groups. See more in Authenticate an OPC UA client
Controller	The access set in the controller.

IMPORTANT The final access right of a tag is determined by the intersection of all the access configuration results.

If a tag is set as Read Only in the controller and Read and Write in Tag Group, OPC UA Client will quote the access as Read and Write set in the Tag Group. However, the tag's actual access in OPC UA Client is Read Only, so it's unable to write.

Note: For Structure tag access right, if one element under the structure is set as Read Only, others are set as Read and Write, when clients try to write the structure, the element with the Read Only access fails to be written, while other elements are written successfully.

If an offline tag .ACD file contains tags with access right set to be None in the controller, when adding the .ACD file in OPC UA Servers and adding its tags to a tag group in **UA Tag List**, the offline tags' actual access is not able to be browsed in **Tag Browsed** pane.

Data type in UA Tag List and OPC UA/DA Client

The data type shown in the **UA Tag List** and **Tag Browsed** pane uses the type names utilized by Logix5000 which is somewhat different from the names defined by OPC UA and DA. To clarify the map of the data type shown in different applications, the following table lists the corresponding data type relationship.

UA Tag List	OPC DA	OPC UA
BOOL	VT_BOOL	Boolean
USINT	VT_UI1	Byte
SINT	VT_I1	SByte
INT	VT_I2	Int16
UINT	VT_UI2	UInt16
DINT	VT_I4	Int32
UDINT	VT_UI4	UInt32
LINT	VT_I8	Int64
ULINT	VT_UI8	UInt64
REAL	VT_R4	Float
LREAL	VT_R8	Double
STRING	VT_BSTR	String

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 . 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	Sets the network path to the OPC UA Server. The path must be in the format `opc.tcp://hostname_or_ip:port/Endpoint/Name` where `hostname_or_ip`, `port`, and `/Endpoint/Name` are replaced with the hostname or IP address, port number, and endpoint name of the OPC UA server. This URL must be provided to OPC UA client applications in order to connect to the FactoryTalk Linx Gateway UA service. The firewall on the FactoryTalk Linx Gateway OPC UA server must allow incoming connections to the selected port for the connection to succeed.
Security Mode	Displays the security method required for connections between OPC UA clients and the FactoryTalk Linx Gateway OPC UA server. • **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	Displays whether security is required or optional for connections between OPC UA clients and the FactoryTalk Linx Gateway OPC UA server. There are four security algorithm suites: • 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.
Enable read access to CIA message	Permits an OPC UA client connected to FactoryTalk Linx Gateway with Anonymous login and read access permissions to retrieve information from a device using a FactoryTalk Linx shortcut configured with: CIP Object - Class/Instance/Attribute Message
Enable write access to CIA message	Permits an OPC UA client connected to FactoryTalk Linx Gateway with Anonymous login and write access permissions to send information to a device using a FactoryTalk Linx shortcut configured with: CIP Object - Class/Instance/Attribute Message
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.

Field	Description
Thumbprint	A short sequence of bytes created by applying the cryptographic hash function to identify a certificate.

Certificate actions

Button	Description
Import	Specifies and import the certificate to be used as incoming certificate or outgoing certificate.
Reject	Moves the specific certificate(s) from **Trusted Certificates** list to **Rejected Certificates** list. The client(s) cannot communicate with FactoryTalk Linx Gateway.
Remove	Removes 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	Creates a Certificate Signing Request (CSR) and save the request as a `CSR` file.
Regenerate	Creates another certificate to renew the valid period.
Refresh	Refreshes to display the latest certificates.
Manage Access	Limits access to security certificate management operations to administrators or individuals approved by an administrator. This function is only available to Administrator.
	To add user or group:
	1. On **Certificate Management** tab, click **Manage Access**.
	2. In **Manage Access** dialog, click **Add**.
	3. In **Select User or Group** dialog, click **Advanced** > **Find Now**.
	4. In **Search results**, select the name of the user or group you want to add.
	5. Click **OK**.
	Tip: If you are Administrator and in the Administrator group but this option is still not available, do the following:
	1. Launch **Run**.
	2. Enter **gpedit.msc** and click **OK**.
	3. In **Local Group Policy Editor** dialog, select **Computer Configuration** > **Windows Settings** > **Security Settings** > **Local Policies** > **Security Options**.
	4. Double-click **User Account Control: Run all administrators in Admin Approval Mode**.
	5. Select **Disabled**.

Advanced Settings

How do I open Advanced Settings?

1. From the **Windows 10 Start** menu, select **Rockwell Software** > **FactoryTalk Linx Gateway Configuration**.
2. Select **Advanced Settings**.

Use **Advanced Settings** to configure advanced performance.

Field	Description
Enable configuration of OPC UA namespace index	Selects this checkbox to specify, refresh, delete, import or export OPC UA namespace index when tag list is turned on. For more details, see Enable configuration of OPC UA namespace index.
Namespace index presented to OPC UA clients	Sets user option to select FactoryTalk Linx Gateway OPC UA service namespace index value. An OPC UA Client will see (2 or 3). Default is 2. • When tag list is enabled, the UA client browsed the tag as namespace index = 2 or 3, with scalar/array/structure. • When tag list is disabled, the UA client browsed the tag as namespace index = 2 or 3.
Create additional references for each array element in the OPC UA namespace	When selected, FactoryTalk Linx Gateway will support OPC UA Clients to browse sub-elements under array. Tip: This option is only available when **Enable Tag List and Structure/Array Access** on the **Server Configuration** tab is selected.

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 <u>Install FactoryTalk Linx Gateway</u> on <u>page 17</u>.

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 [OPC icon] 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 <u>Activation types</u> on <u>page 76</u>.

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 Directory 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 91](#) 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 hierarchy 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 .

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
❶	**Navigator** 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.
❷	**Data** The values of the selected diagnostic items are displayed in the Data area. The Data area contains the following columns: • **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. Note that neither the list of names nor their values can be modified. For a description of each counter, refer to the FactoryTalk Diagnostics Counter Monitor Help.

Item	Description
❸	**Viewer**, which contains two tabs: • **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 <u>Create a snapshot file</u> on <u>page 60</u>.

> 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 [OPC icon] 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.

Back up and restore FactoryTalk Linx Gateway configuration

Starting with version 6.30.00, the FactoryTalk Linx Gateway configurations can be backed up and restored in FactoryTalk Administration Console or by commands. It is important to create a backup of the system configuration after any significant changes are made, to help recover system operation if a computer hardware or operating system failure occur.

The FactoryTalk Linx Gateway configuration is contained in Server configuration, UA Server Endpoint settings, Advanced Settings, and UA Tag List that must all be retained if you plan to restore the system later.

Back up FactoryTalk Linx Gateway configuration

FactoryTalk Services Platform provides an option to back up FactoryTalk Linx Gateway configuration configured on the same computer. You can back up the current settings and restore them later to control the settings, especially when the application or scope (Local or Network) of FactoryTalk Linx is changed.

The backup operation cannot include:

- Incoming and outgoing certificates of FactoryTalk Linx Gateway
- Trusted and rejected lists
- DA Access option
- The list of approved users that can manage certificates

Refer to to find steps to restore FactoryTalk Linx Gateway configuration on the local computer and distributed data servers.

Prerequisites

- Identify the security permissions needed to perform the backup operation. Backup is only available when you have the access in FactoryTalk Security (**System** > **Policies** > **System Policies** > **User Rights Assignment** > **Backup and Restore**).

To back up FactoryTalk Linx Gateway configuration

1. In FactoryTalk Administration Console **Explorer**, right-click the **Network** or **Local**, then select **Backup**.
2. In **Specify archive name**, use the default name or a customized name for the backup file.

   Tip: We don't recommend changing the default archive name. The default name contains the leading digits of the security authority identifier which allows you to easily identify the archive file associated with a specific directory.

3. In **Specify archive location**, use the default archive path or customize the path as needed.
4. In **Backup Contents**:

   - Select **FactoryTalk Linx Gateway configuration**.

     Tip: This option is not available if the FactoryTalk Linx Gateway is not installed or the installed FactoryTalk Linx Gateway version is earlier than 6.30.00.

   - (optional) Select **FactoryTalk Directory configuration** to back up the entire FactoryTalk Directory.
   - (optional) Select **FactoryTalk Linx configuration** to back up the FactoryTalk Linx shortcut and driver configurations.

5. To encrypt your archive file, select the **Encrypt file contents** checkbox, and then enter the same passphrase in the **Passphrase** and **Confirm passphrase** boxes. If you clear this check box, your backup archive file will not be encrypted or protected.

   Encrypt file contents is not available if your operating system does not support the proper level of encryption.

6. Select **OK**.

Restore FactoryTalk Linx Gateway configuration

The FactoryTalk Linx Gateway configuration can be restored when the configuration is backed up. This is helpful when a computer needs to be replaced or refreshed resulting from a significant hardware or operating system failure.

Prerequisites

- Identify the security permissions needed to perform the restore operation. Restore is only available when you have the access in FactoryTalk Security (**System** > **Policies** > **System Policies** > **User Rights Assignment** > **Backup and Restore**).

To restore FactoryTalk Linx Gateway configuration

1. In FactoryTalk Administration Console **Explorer**, right-click **Network** or **Local**, and select **Restore**.
2. In **Restore**, select **Browse**, select the backup file (*.bak) to restore, and select **Open**.
3. Select **Next**.
4. If the backup file is encrypted, **Restore Backup File** opens. Enter the passphrase used during the backup operation.
5. In **Restore Contents**, select **FactoryTalk Linx Gateway configuration** to restore configurations.

   Tip: This option is not available if the FactoryTalk Linx Gateway is not installed or the installed FactoryTalk Linx Gateway version is earlier than 6.30.00.
6. Select **Finish**.

After restoring is completed, you should:

1. (recommended) Restart computer.
2. Confirm that the FactoryTalk Directory scope is existing.
3. Refresh the URL in the **UA Server Endpoints** tab if the hostname of the computer is changed.

4. Re-trust or re-reject the incoming certificates.
5. Regenerate or re-import the outgoing certificate.
6. (optional) Add users that can manage certificates.

Use commands to back up and restore

FactoryTalk Linx Gateway supports backup and restore by commands.

Parameter	Required/Optional	Description

Parameter	Required/Optional	Description
-s	Required	Specifies the FactoryTalk Directory scope. Only "Global" and "Local" scopes are supported.
-sso	Required	Uses single sign-on for authentication.
-b	Required	Command for backup, which is conflict with the -r command.
-r	Required	Command for restore, which is conflict with the -b command.
-bak	Required	Specifies the location to save the backup file or the location where restore file can be found. (For example: -bak c:\aa.bak) • For backup operation, the existing files will be replaced while creating new files. • For restore operation, make sure the file already exists in the system.
-ftd	Optional	The whole FactoryTalk directory. The -sys and -app commands will be ignored if the -ftd is used.
-sys	Optional	The FactoryTalk System directory.
-app	Optional	Specifies the FactoryTalk application. Specific application names are needed when using this parameter.
-ido	Optional	Used to restore the FactoryTalk Directory identifier. It's only valid with command -r.
-prod	Optional	Specifies the product names. (For example: -prod "FactoryTalk Linx Gateway")
-e	Optional	Used to encrypt the backup file.
-pp	Optional	The plain passphrase is used to encrypt or decrypt the backup file. The command will be ignored when "-ep" command is used or the "-e" command is not used. **Note**: If the passphrase contains a **"**, it should be type as **" "** in command line. For example, if the passphrase is ~!@#$%^&*()_+-={}[]\|\:";'<>,.?/, when you use the passphrase to encrypt or decrypt the backup file in commands, you should type the passphrase as "~!@#$%^&*()_+-={}[]|\:"";'<>,.?/".
-f	Optional	Used to force replace the opened applications if needed.
-ow	Optional	Used to overwrite the existing applications.

Examples of using the command line:

- Back up the FactoryTalk Linx Gateway

```
"C:\Program Files (x86)\Common
Files\Rockwell\FTSysBackupRestoreTool.exe" -b -s
Global -sso -bak C:\backup\FTLGW_File.bak -prod
"FactoryTalk Linx Gateway"
```

- Back up the the FactoryTalk Directory and FactoryTalk Linx

```
"C:\Program Files (x86)\Common
Files\Rockwell\FTSysBackupRestoreTool.exe" -b -s
Global -sso -bak
C:\Users\Administrator\Desktop\identifier.bak -ido
"C:\Program Files (x86)\Common
Files\Rockwell\FTSysBackupRestoreTool.exe -b -s Global
-sso -bak c:\backup\FTLGW_File.bak -prod "FactoryTalk
Linx"
```

- Restore the FactoryTalk Linx Gateway

```
"C:\Program Files (x86)\Common
Files\Rockwell\FTSysBackupRestoreTool.exe -r -s
Global -sso -bak C:\backup\FTLGW_File.bak -prod
"FactoryTalk Linx Gateway"
```

Restore the FactoryTalk Directory and FactoryTalk Linx

```
"C:\Program Files (x86)\Common
Files\Rockwell\FTSysBackupRestoreTool.exe" -r -s
Global -sso -bak
C:\Users\Administrator\Desktop\identifier.bak -ido
"C:\Program Files (x86)\Common
Files\Rockwell\FTSysBackupRestoreTool.exe -r -s Global
-sso -bak c:\backup\FTLGW_File.bak -prod "FactoryTalk
Linx"
```

Note: For an encrypted bak file created in FactoryTalk Services Platform version 3.00 and before, if no passphrase was entered, the restore commands should be like:

```
"C:\Program Files (x86)\Common
Files\Rockwell\FTSysBackupRestoreTool.exe" -r
-s Global -sso -bak
C:\Users\Administrator\Desktop\Network.bak -ftd
-e
```

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 difficulties are experienced

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 75 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. Also confirm both the OPC Client and the FactoryTalk Linx Gateway have trusted each other's security certificates. There could be a case where the two connect properly but no data is available. This can happen if the user chooses tag list but does not configure any tags. Another case could occur when the client successfully connects and is able to browse tags but is not able to read or write.　This could be because the security is not configured or the client is not using the correct ID/Password credentials.

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 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. While this test client is not able to interface with the FactoryTalk Linx Gateway OPC interface, it can be used to verify if FactoryTalk Linx is able to access the desired data.

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/samples-and-tools-unified-architecture/net-stack-and-sample-applications/.

Troubleshooting topics

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

FactoryTalk Linx Gateway's OPC UA service does not appear in the OPC Local Discovery Service (LDS)

Possible causes and solutions

- FactoryTalk Linx Gateway is not configured

  a. No scope

  To solve this issue, configure the related scope based on the activation type and apply the system configuration.

  b. OPC UA is disabled

  To solve this issue, enable the OPC UA server in the **Server Configuration** tab.

  c. No endpoint configured

  To solve this issue, configure the endpoint URL in the **UA Server Endpoints** tab and apply the system configurations.

  d. An endpoint is inhibited

  To solve this issue, enable the endpoint.

- FactoryTalk Linx Gateway OPC UA service is not started

    To solve this issue, start the OPC UA service from **Control Panel>System and Security>Administrative Tools>Services> FactoryTalk Linx Gateway OPC UA Server**.

- FactoryTalk Linx Gateway OPC UA service is inhibited

    To solve this issue, enable the OPC UA server in the **Server Configuration** tab.

- FactoryTalk Linx Gateway is not activated correctly or activation is expired

    To solve this issue, get a new key from Rockwell Automation.

- The option to register with the LDS is disabled

    To solve this issue, select **Register with Discovery Service** in the **Server Configuration** tab.

- FactoryTalk Linx Gateway has not trusted the OPC LDS certificate

    To solve this issue, click **Trust** in the **Certificate Management** tab to add the LDS certificate into the trust list.

- The OPC LDS certificate has expired

    To solve this issue, stop the service and delete its certificate from the hard drive. Once the service starts it will automatically regenerate the certificate.

- OPC Local Discovery Service (LDS) service is not started

    To solve this issue, start the LDS service from **Control Panel>System and Security>Administrative Tools>Services>OPC UA Local Discovery Server**

FactoryTalk Linx Gateway activations

If you are experiencing activation problems, refer to:

- <u>About Activations</u> on <u>page 75</u>
- 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 91
- 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.

   b. 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 .

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.
  - In response to Microsoft Distributed Component Object Model (DCOM) Hardening patch (MS KB5004442), the minimum DCOM authentication level used has been raised to Packet Integrity.
  - Both OPC DA clients and servers must have the same DCOM authentication level.

Contact Rockwell Automation Technical Support

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.

Phone

440-646-3434

Worldwide web

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 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. The maximum capacity of tags supported is 500,000.

Beginning with version 6.20, the FactoryTalk Linx Gateway Basic and Standard activations can operate with a FactoryTalk View SE station or distributed application using a network directory when there is a single FactoryTalk Linx data server operating on the same workstation FactoryTalk Linx Gateway is installed on. Version 6.21 added the Extended activation with the same local and network/station capability. A patch is also available to support a similar operation and Extended activation for FactoryTalk Linx Gateway version 6.00 to version 6.20 and for FactoryTalk Gateway version 3.74 to version 3.90.

A FactoryTalk application directories can be configured as Local or Network. 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 as 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).

   Note: Grace period is a seven-day 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.

2. Network -This configuration uses the Network directory. 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). There are two categories designed for Network directory.

- Station - Data servers (FactoryTalk Linx and FactoryTalk Linx UA Connector) must be on the same workstation as FactoryTalk Linx Gateway. When operating on a compute module, the data servers must be in the same module and cannot be remote.
- 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. From FactoryTalk Linx Gateway version 6.21.00, only the three new activations (FactoryTalk Linx Gateway Extended, FactoryTalk Linx Gateway Embedded, and FactoryTalk Linx Data Bridge Embedded) 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	Distributed Network	Activates FactoryTalk Linx Data Bridge
FactoryTalk Linx Gateway Professional	LINXGW.PROFESSIONAL	500,000*	Local or Network	Y	Y
FactoryTalk Gateway Distributed	RSOPCD.UNLTD	500,000*	Local or Network	Y	N
FactoryTalk Gateway Distributed 70K	RSOPCD.70000	70,000	Local or Network	Y	N
FactoryTalk Linx Gateway Distributed	LINXGW.DISTRIBUTED	32,000	Local or Network	Y	N
FactoryTalk Gateway Distributed 32000	RSOPCD.32000	32,000	Local or Network	Y	N
FactoryTalk Gateway Station 32000	RSOPCS.32000	32,000	Local	N	N
FactoryTalk Linx Gateway Extended	LINXGW.EXTENDED	500	Local or Network	N	Y
FactoryTalk Gateway Distributed 5000	RSOPCD.5000	5,000	Local or Network	Y	N
FactoryTalk Linx Gateway Standard	LINXGW.STANDARD	5,000	Local or Network	N	N
FactoryTalk Gateway Station 5000	RSOPCS.5000	5,000	Local	N	N
FactoryTalk Gateway Distributed 1500	RSOPCD.1500	1,500	Local or Network	Y	N
FactoryTalk Gateway Station 1500	RSOPCS.1500	1,500	Local	N	N
FactoryTalk Linx Gateway Basic	LINXGW.BASIC	1,000	Local or Network	N	N
FactoryTalk Linx Gateway Embedded	Verifies its operating on a CompactLogix 5480 windows core	500	Local or Network	N	N

Activation Name	Activation	Tag Limit	FactoryTalk Directory	Distributed Network	Activates FactoryTalk Linx Data Bridge
FactoryTalk Linx Data Bridge Embedded	Verifies its operating on a CompactLogix 5480 windows core	500	Local or Network	N	Y
FactoryTalk Linx Data Bridge Standard	LINXDB.STANDARD	2000	Local or Network	N	Y
Gold Master	GOLDMASTER	500,000*	Local or Network	Y	Y

If a system requires 32,000 or more tags, use a 500,000* activation and refer to the **FactoryTalk Linx Gateway Release Notes > Application Notes** for tested hardware and update rates.

500,000* : Default tag limit. You can edit it in the FactoryTalk Administration Console (**System** > **Policies** > **FactoryTalk Linx Gateway** > **FactoryTalk Linx Gateway Policy** > **Tag count limitation for professional activation**).

> 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 to 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.

Perform unattended installation

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.

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 . 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 Server OPC UA and DA (local or remote DA clients)
- Gateway Server OPC UA and DA (only local DA clients)
- Remote Gateway (DA Client remote configuration)

For more details, please refer to the following list

- Setup.exe /Product="Gateway"

Equal to Setup.exe /Product="Gateway Server OPC UA and DA (local or remote DA clients)". Both will install "Gateway Server OPC UA and DA (local or remote DA clients)".

- Setup.exe /Product="Gateway-L"

Equal to Setup.exe /Product="Gateway Server OPC UA and DA (only local DA clients)". Both will install "Gateway Server OPC UA and DA (only local DA clients)".

- Setup.exe /Product="Remote Gateway"

Equal to Setup.exe /Product="Remote Gateway (DA Client remote configuration)". Both will install "Remote Gateway (DA Client remote configuration)".

/Uninstall=*Product name*

Optional. Uninstall the product.

/InstallDrive=drive

Optional. Specifies the installation drive.

If omitted, the default drive and location is:

- **C:\Program Files (x86)\Rockwell Software**

/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

Server OPC UA and DA (local or remote DA clients)"
```
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
Server OPC UA and DA (local or remote DA
clients)" /InstallDrive=D: /
SerialNumber=0123456789 /ProductKey=ABCDE-FGHIJ /

Version=6.30.00
```
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**
- 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
Server OPC UA and DA (local or remote DA
clients)"
```

means:

- The software is uninstalled silently with no user interface.

About FactoryTalk Linx

This appendix includes an overview of FactoryTalk Linx.

About 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) and the PlantPax process controller 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 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.
- FactoryTalk Linx version 6.21.00 adds an **About** dialog box in FactoryTalk Linx Network Browser to show the version of the installed FactoryTalk Linx Network Browser and FactoryTalk Linx, or to view the copyright and contact information.
- FactoryTalk Linx version 6.21.00 adds the ability to detect devices that support a user initiate LED blink operation and presents an option on the device property dialog to locate where a device is physically installed by flashing a device's LEDs.
- FactoryTalk Linx version 6.21.00 adds an option to set the **Terminal file transfer communication package size**. User can choose either 2000 bytes or 1400 bytes for the terminal communication package size (Default 2000). The smaller packet size improves the transfer time when FactoryTalk View Studio ME is operating within a virtual machine.
- FactoryTalk Linx version 6.21.00 adds two predefined tags (@NamespaceTimestamp, @NamespaceTimestampOPC) to show a timestamp for the last Logix controller namespace change.
- FactoryTalk Linx version 6.21.00 included a new tool named **FactoryTalk Linx Configuration Import Export Tool**, which enables the FactoryTalk Linx driver and shortcut configuration to be extracted, modified and replaced, providing an alternative to manually creating or editing the driver and shortcuts configuration from the FactoryTalk Administration Console user interface.

- FactoryTalk Linx version 6.21 supports to backup and restore shortcut and driver configurations in FactoryTalk Administration Console.
- FactoryTalk Linx version 6.21 adds the ability to generate SysLog for select events include CIP Security configuration changes, network configuration changes, and FactoryTalk Linx service restart.
- FactoryTalk Linx version 6.21.00 improved performance for design software that utilizing FactoryTalk Linx for communications direct to device (for example, Studio 5000 Logix Designer and ControlFLASH Plus).
- In FactoryTalk Linx version 6.21.00, the FactoryTalk Linx Redundancy Module Configuration Tool can be launched from the FactoryTalk Linx Network browser.
- FactoryTalk Linx version 6.30.00 adds an option to enable or disable CIP Security (Port 2221) for the server workstation or a device via the **Network Browser**.
- FactoryTalk Linx version 6.30.00 supports browsing 5015 adapters and optimizes the user interface of 5015 adapters with their I/O modules.
- FactoryTalk Linx **Network Browser** version 6.30.00 supports indicating the offline status of devices.
- FactoryTalk Linx version 6.30.00 adds one predefined tag (**@TrackedStateValue**) to show the tracked state change detection value from a Logix L7 series controller.
- FactoryTalk Linx version 6.30.00 adds an LLDP tab in the **Network Browser** to view and edit the Link Layer Discovery Protocol (LLDP) detection status of a device.
- FactoryTalk Linx version 6.30.00 adds **@RedundancyEnabled** and **@RedundancyState** predefined tags associated with a processor shortcut, to indicate if the associated controller is operating in a ControlLogix Redundancy configuration and its current operational state. These tags are helpful for Human Machine Interface (HMI) displays that monitor the operation of a redundant ControlLogix controller's operation.
- FactoryTalk Linx **Network Browser** version 6.30.00 supports browsing of GuardLink connected devices.
- FactoryTalk Linx version 6.30.00 removes the "IO Linx" communications driver.
- FactoryTalk Linx version 6.30.00 enhances the configuration of port 44818 that keeps the same configuration status in both FactoryTalk Linx and FactoryTalk Administration Console.
- FactoryTalk Live Data version 6.30.00 extends the supported subscription rates to include 600, 700, 800, and 900 ms.
- FactoryTalk Live Data version 6.30.00 adds leading zeros for array indexes so that FactoryTalk Live Data Tag browser sorts array elements in the proper numerical order.
- FactoryTalk Linx version 6.30.00 raises the minimum DCOM authentication level to Packet Integrity. For additional information

about the affected Rockwell Automation products, see the Knowledgebase Document ID: [PN1581 - Product Notification 2022-01-001 - Rockwell Automation products unable to establish proper DCOM connection after installing Microsoft DCOM Hardening patch (MS KB5004442)](#).

- FactoryTalk Live Data common tag browser user interface included with FactoryTalk Services Platform version 6.21.00 now uses data type names that match the types presented in Studio 5000 Logix designer.

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.

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	Allow users to view information in **Server Configuration** tab including: • 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.

Feature security policy	Allow	Deny
Modify Gateway Server Properties	Allow users to edit in **Server Configuration** tab: • 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	Allow users to view UA server configuration information and security settings in **UA Server Endpoints** tab including the endpoints': • 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	Allow users to add a new endpoint and edit existing endpoints' configuration information and security settings in **UA Server Endpoints** tab including: • Name • Port • URL • Security Policy • Security Mode • Authentication Settings • Diagnostic Logging	Set the **Endpoint Properties** area and the **Add** button unavailable.
View Tag List Configuration	Allow user to view tag list configuration in the **UA Tag List** tab	User cannot configure tag list in the **UA Tag List** tab
Modify Tag List Configuration	Allow user to modify tag list configuration in the **UA Tag List** tab	User cannot modify tag list in the **UA Tag List** tab
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.
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.

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 -

Certificate

A digital certificate is an electronic representation of an identity. A certificate binds the identities public key to its identifiable information, such as name, organization, email, username, and/or a device serial number. A certificate is used to authenticate the connection to other devices. Selected by default when CIP security is enabled.

CIA Messaging

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.

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.

DCOM

Distributed Component Object Model (DCOM) is a proprietary Microsoft technology for communication between software components on connected computers. It allows a computer to run programs over the network on a different computer as if the program was running locally.

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 close if the dongle does not respond with the expected validation code.

- E -

Endpoint

An endpoint represents the set of configuration settings on an OPC UA Server that determine how OPC UA clients will interface with the server. This includes a Universal Resource Locator (URL) string, Transport Control Protocol (TCP) port, security and data access settings.

Encryption

In cryptography, encryption is the process of encoding information. This process converts the original representation of the information, known as plaintext, into an alternative form known as ciphertext. Ideally, only authorized parties can decipher a ciphertext back to plaintext and access the original information. Encryption does not itself prevent interference but denies the intelligible content to a would-be interceptor.

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.

- I -

Incoming Certificate

Certificate provided by an OPC UA clients to FactoryTalk Linx Gateway when the client initiates a communications request. Note that incoming certificates are not trusted until a user accepts or trusts them through the FactoryTalk Linx Gateway's user interface.

IP Address

Each server or client on a TCP/IP internet is identified by a numeric IP (Internet Protocol) address. The two types of IP addresses are the IPv4 (IP version 4) address and the IPv6 (IP version 6) address.

IP addresses are managed and allocated to users by the Internet Assigned Numbers Authority (IANA) and its delegates. The internet address specifies both the network and the individual host. This specification varies with the size of the network. An IP address identifies a machine in an IP network and is used to determine the destination of a data packet. Port numbers identify a particular application or service on a system.

- L -

Localized

Software Localization is the process of adapting or translating software to a specific locale's language, culture, and legal requirements. Localization will require modifications to the user-visible components of software such as the user interface, images, documentation.

- N -

Namespace

A collection of information that a Server makes visible to its Clients.

Namespace index

The numeric values used to identify OPC UA namespaces correspond to the index into the NamespaceArray.

NodeID

A numeric or text value that uniquely identifies a data value in an OPC UA Server. An OPC UA client will receive NodeIDs from an OPC UA server while browsing its namespace and will make read, write and subscription requests for data by delivering the NodID back to the OPC UA server.

Network Interface Controller

A network interface controller (NIC) is a computer hardware component that connects a computer to a computer network, typically a circuit board or chip.

- 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

Outgoing Certificate

Certificate generated by FactoryTalk Linx Gateway and delivered to OPC UA clients when they initiate a communications request. Note that many OPC UA clients require manual approval when they receive a certificate in order to enable communications with an OPC UA server.

- P -

poll

Systematically request data from a device.poll

poll rate

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

port number

A port number is a way to identify a specific process to which an internet or other network message is to be forwarded when it arrives at a server. All network-connected devices come equipped with standardized ports that have an assigned number. These numbers are reserved for certain protocols and their associated function.

- 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 -

signing

Cryptographic digital signatures use public key algorithms to provide data integrity. When you sign data with a digital signature, someone else can verify the signature, and can prove that the data originated from you and was not altered after you signed it.

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 -

TCP

TCP (Transmission Control Protocol) is a standard that defines how to establish and maintain a network conversation through which application programs can exchange data. TCP works with the Internet Protocol (IP), which defines how computers send packets of data to each other.

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.

tag group

A set of data items defined in the FactoryTalk Linx Gateway's UA Tag List interface that share a set of security settings enabling authorized OPC UA clients to access the 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).

trigger tag

Configure a trigger tag to refresh destination tag. If the trigger tag value changes or trigger tag quality is changed to good (**Update destination tags with refresh trigger quality changes** checkbox is selected), the destination tag references for the current group will be refreshed.

- U -

UA

See **OPC UA**.

UA tag list

The UA tag list configuration determines the data values that each OPC UA Client can access from FactoryTalk Linx Gateway. The UA tag list option provides both enhanced security and complex type information (for example, structures and arrays). When the UA tag list option is disabled, all tags that are available from data sources in a FactoryTalk Application (for example, controllers and hardware via FactoryTalk Live, OPC DA and OPC UA servers) are accessible as scalar values to OPC UA Clients. The UA tag list contains one or more tag groups that define access rights and includes complex type information enabling an OPC UA Client to utilize structures or User Defined Types (UDT) from Logix controllers.

URL

A Uniform Resource Locator (URL) is a reference to a OPC UA Server that specifies its location on a computer network the TCP port used to interface with it.

Index

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.

Connect with us.

rockwellautomation.com

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