Application Technique
Original Instructions

Allen-Bradley
by ROCKWELL AUTOMATION

FactoryTalk Optix Solutions

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.

These 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).

The following icon may appear in the text of this document.

Identifies information that is useful and can help to make a process easier to do or easier to understand.

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

Preface

The FactoryTalk® Optix™ Visualization Platform from Rockwell Automation® is an open, scalable, extensible, and optional cloud-based editing software that lets you design applications for your system and deploy them across many devices. This publication provides an overview of the system, application examples, and ordering guidelines to help you choose exactly what you need. It also guides you through the basics of creating and deploying your own application.

Summary of changes

This publication contains the following new or updated information.

Topic
Added Version Control with FactoryTalk AssetCentre Disaster Recovery on page 14
Added OptixPanel Operator Panels on page 17
Updated Join an Organization on page 29
Updated Create an Organization on page 30
Updated Table 6: FactoryTalk Hub Home Page on page 31
Added MicorSD card on page 49
Added FactoryTalk Optix Application on page 58
Added Studio 5000 Logix Designer and FactoryTalk Design Studio Integration on page 58

Terminology

This table defines terms that are used in this publication.

Table 1. Terminology

Term	Definition
Activate a FactoryTalk® Hub™ Entitlement	The process of either assigning an entitlement to a runtime target device or a myRockwellAutomation User. The process is the same to upsize an existing entitlement. Activation is typically performed by The myRockwellAutomation User who is a member of the FactoryTalk® Hub™ organization to which the entitlement is allocated. See FactoryTalk Optix Studio Entitlement on page 32 and FactoryTalk Optix Runtime Entitlement on page 37.
Advisor	A cloud-based platform for product selection, configuration, bill of materials management, and more. Available through FactoryTalk® Hub™.
Allocate a FactoryTalk® Hub™ Entitlement	After purchase of a FactoryTalk® Optix™ or FactoryTalk® Remote Access™ entitlement, you must allocate the entitlement to the appropriate FactoryTalk Hub organization before it can be used. The myRockwellAutomation User who placed the order on the Rockwell Automation Software Commerce Portal typically allocates the entitlement. See FactoryTalk Optix Studio Entitlement on page 32 and FactoryTalk Optix Runtime Entitlement on page 37.

Table 1. Terminology (continued)

Term	Definition
Application Code Libraries/Trusted Content	Preconfigured content that is developed, managed, and made available from Rockwell Automation at no additional cost to help expedite project creation and project maintenance.
Container	A containerized software deployment. A container is a way to package an application and its requirements into one unit, making the application portable and easier to manage. See FactoryTalk Optix Studio Applications as Container Solution on page 60.
Devices with Optix embedded	Specific Runtime Target Devices that come from Rockwell Automation® preloaded with the software and entitlements for FactoryTalk® Optix™ Runtime Tools and FactoryTalk® Remote Access™ Runtime. Access to the operating system in these devices is restricted (closed system). See Table 3: Entitlements and Software by Target Device on page 12.
Entitlement	The license that is required to run FactoryTalk® Hub™ software, such as FactoryTalk® Optix™ and FactoryTalk® Remote Access™.
FactoryTalk® Design Studio™	A cloud-based design platform that enables teams to work on projects involving multiple controllers. Available through FactoryTalk® Hub™.
FactoryTalk® Hub™	A cloud-based platform, which serves as a central access point for Software-as-a-Service (SaaS) offerings. FactoryTalk® Hub™ is accessible via www.FactoryTalkHub.com and requires a MyRockwellAutomation account to sign in. Some FactoryTalk® Hub™ products require the purchase of a license to operate.
FactoryTalk® Hub™ Organization	An organization acts as a grouping for myRockwellAutomation Users, licenses, and access rights within FactoryTalk® Hub™, which enables collaboration and resource sharing. It is free to create or join an organization and required to use FactoryTalk® Hub™.
FactoryTalk® Optix™	A cloud-enabled Human Machine Interface and IIoT platform. Available through FactoryTalk® Hub™.
FactoryTalk® Optix™ Application	The project that is developed in FactoryTalk® Optix Studio™ and compiled to run.
FactoryTalk® Optix™ Entitlement	Available in several package sizes consisting of a quantity of feature tokens. The entitlement can be upsized to a larger package size at any time. Also available as perpetual entitlement with maintenance or a subscription. A perpetual entitlement is included with some runtime target devices with an optional one-step upsize of the perpetual entitlement available. See Table 3: Entitlements and Software by Target Device on page 12.
FactoryTalk® Optix™ Runtime Tools	FactoryTalk® Optix™ runtime software that is used to run a FactoryTalk® Optix™ Application.
FactoryTalk® Optix Studio™	FactoryTalk® Optix™ design-time software
FactoryTalk® Optix Studio™ Entitlements	Available in two options: Standard (free) or Pro (paid subscription).
FactoryTalk® Remote Access™	A cloud-based solution that enables secure remote connectivity to industrial automation equipment. Available through FactoryTalk® Hub™.
FactoryTalk® Remote Access™ Manager	A web-based interface for managing remote connections to industrial automation systems with a FactoryTalk® Remote Access™ Runtime.
FactoryTalk® Remote Access™ Manager Entitlement	Available as a subscription based on the number of concurrent users. The number of concurrent users is how many users can connect to remote devices simultaneously, not the total number of users that can use the software.
FactoryTalk® Remote Access™ Runtime	Software that allows you to establish secure, remote connections to industrial equipment from the FactoryTalk® Remote Access™ Manager.

Table 1. Terminology (continued)

Term	Definition
FactoryTalk® Remote Access™ Runtime Entitlement	Available as a perpetual entitlement or a subscription. In either Basic or Pro levels. A perpetual entitlement is included with some hardware. Upsizing from Basic to Pro is available. See Table 3: Entitlements and Software by Target Device on page 12.
Feature Tokens	The number of feature tokens determines the size of a FactoryTalk® Optix™ Runtime Entitlement. See Table 10: Token Packages on page 62.
myRockwellAutomation	A centralized user access platform from Rockwell Automation® that provides a personalized experience by bringing together a wide range of digital tools and resources, including product information, software subscriptions, support documentation, Knowledgebase articles, and more. Access and create a free account at www.myRockwellAutomation.com.
myRockwellAutomation User	The email address that is registered with myRockwellAutomation.
Offline	The runtime target computer is not on a network that can be routed to FactoryTalk® Hub™.
Online	The runtime target computer is on a network that can be routed to FactoryTalk® Hub™. Examples of online scenarios: • Your local computer is remote from the runtime target computer and they both have access to networks that can be routed to FactoryTalk® Hub™. • Your local computer is remote from the runtime target computer and they both have access to the internet.
Purchase	• Purchase Rockwell Automation software through the Rockwell Automation Software Commerce Portal or from your local Allen-Bradley distributor. • Purchase Rockwell Automation hardware through your local Allen-Bradley distributor.
Rockwell Automation Software Commerce Portal	Also known as the Subscription Portal, compliments Rockwell Automation's network of authorized distributors by serving as a centralized ecommerce platform for software purchases, subscription management, and more. Access to the Rockwell Automation Software Commerce Portal requires a MyRockwellAutomation account to sign in. • Subscription licensing – Provides access to the software for an annual fee. Subscription license includes ongoing support and software updates. • Perpetual with maintenance licensing - Grants the right to use the software indefinitely after a one-time cost with the first year of maintenance included. The maintenance component can be a recurring fee when ongoing support and software updates are needed.
Runtime Target Computer	Specific Runtime Target Device that is either an ASEM™ 6300 industrial computer or any PC or virtual machine that runs Windows® or Linux operating system. Access to the operating system in these devices is not restricted (open system).
Runtime Target Device	The compute device that you use to run the FactoryTalk® Optix™ Application. Types of Runtime Target Devices include: • Runtime Target Computers • Devices with Optix embedded See Table 3: Entitlements and Software by Target Device on page 12.
Software-as-a-Service (SaaS)	A software distribution model that allows access to software through a web browser or app instead of installing and managing software on a PC or device.
Virtual Machine	Virtual version of a physical computer, which allows multiple operating systems and applications to run on one physical computer.

Additional resources

These documents contain additional information concerning related products from Rockwell Automation. You can view or download publications at rok.auto/literature.

Resource	Description
FactoryTalk Optix Portfolio Technical Documentation	Quickly access online help and manuals to help you choose cloud-based software and target devices for the your HMI solution with the FactoryTalk® Optix™ portfolio.
FactoryTalk Optix Installation Guide	Provides information on the FactoryTalk® Optix™ architecture, and installation instructions.
FactoryTalk Optix Help	Browser-based version of the software online help, which lets you select individual topics to quickly find what you are looking for.
FactoryTalk Remote Access Help	Browser-based version of the software online help, which lets you select individual topics to quickly find what you are looking for.
Embedded Edge Compute Module user manual, publication 1756-UM021	Explains how to configure and use ControlLogix® Embedded Edge Compute modules.
OptixPanel Operator Panels Specifications Technical Data, publication2800-TD001	Provides technical specifications, environmental specifications, certifications, and dimensions for the Allen-Bradley® OptixPanel™ portfolio of operator panels.
OptixPanel™ Compact Operator Panel User Manual, publication 2800C-UM001	Provides procedures to install, connect, operate, and troubleshoot the operator panel.
FactoryTalk® AssetCentre Getting Results Guide, publication FTAC-GR002	Provides information on how to get started using your FactoryTalk® AssetCentre system.
FactoryTalk® Optix™ Plex APM Library Object Reference Manual, publication INFO-RM005	Provides information on Integrated Portfolio Solutions.
Power Device Library Reference Manual, publication DEVICE-RM100	Provides objects for discrete, velocity, motion, and PowerMonitor™ devices.
ThinManager® 14.1 Thin Client Management Platform User Manual, publication TM-UM001	Provides information for the ThinManager® thin client management software.
OptixPanel™ Operator Panels technical documentation	Link to our Technical Documentation Center, which provides downloadable copies of user information for OptixPanel™ operator panels.
ASEM™ 6300 Industrial PCs technical documentation	Link to our Technical Documentation Center, which provides downloadable copies of user information for ASEM™ 6300 Industrial Computers and Monitors.
Product Selection and Configuration tools, rok.auto/systemtools	Helps configure complete, valid catalog numbers and build complete quotes based on detailed product information.
Product Certifications website, rok.auto/certifications	Provides declarations of conformity, certificates, and other certification details.

FactoryTalk® Optix™ Overview

FactoryTalk® Optix™ is a visualization platform that accelerates value delivery with modern technologies, innovative designs, and modular deployment options. The platform is designed to help improve your process, efficiency, and deliverables, in one easy-to-access tool. Access new levels of collaboration, scalability, and interoperability to achieve your HMI vision. New SaaS-enabled workflows let your team collaborate anytime, from anywhere, via built-in change tracking and versioning that automatically tracks who did what and when. With FactoryTalk® Optix™ you can:

- Design and test HMI projects without being tied to specific display hardware
- Style your HMI graphics for a global audience
- Enable teams to deploy projects to a station, tablet, or mobile display using a simple selection
- Create an application once and deploy to any device
- Deploy projects in a distributed configuration
- Achieve openness and interoperability by supporting both machine-to-machine communication and machine-to-cloud communication using OPC UA at the core of the platform.

FactoryTalk® Optix™ consists of different software components that run on different parts of your automation system:

- FactoryTalk Optix Studio on page 9
- FactoryTalk Optix Runtime Tools on page 10
- FactoryTalk Optix Application on page 11
- Runtime Entitlements on page 12
- Application Code Libraries/Trusted Content on page 14 (optional trusted content to expedite project development)

To access and utilize the FactoryTalk® Optix™ components, you must:

- Have a myRockwell account. To create your Rockwell Automation® account, register your business email on myRockwellAutomation.
- Have access to the FactoryTalk® Hub™.

IMPORTANT: A FactoryTalk® Hub™ organization is a set of associated user accounts, applications, and resources that are managed together. Typically, a FactoryTalk® Hub™ organization is created for a company and company users can join that organization. All entitlements that are activated for a company are allocated to the organization.

FactoryTalk® Optix Studio™

FactoryTalk® Optix Studio™ provides designers with unlimited flexibility to:

- Design and test HMI projects directly from a web browser via the cloud, or if you prefer, use desktop-installable design software.
- Build and modify projects dynamically at runtime.
- Modify applications from anywhere, anytime, with an integrated cloud-based code repository and version management to track changes and know who did what and when.
- Use wizard-based workflows for managing users and groups, communications drivers, data logging, and recipes.
- Start projects easily with modern templates for navigation, sign in, alarms, and notifications.
- Build projects by using pre-built libraries and a comprehensive set of graphical objects, including industry standard objects and Rockwell Automation® standard libraries, which are organized with logical library folders. Quickly find and filter objects with library search tools.
- Create, save, and reuse single objects or complete projects in user-defined libraries, with the flexibility to store your libraries locally or in a cloud-based storage. Multi-user collaboration enables library management standards among plant engineering, OEMs, and integrators.

See FactoryTalk Optix Studio User Interface on page 66 for more information.

FactoryTalk® Optix Studio™ Options

FactoryTalk® Optix Studio™ is available in two options, Standard and Pro.

- FactoryTalk® Optix Studio™ Standard is a locally installed design editor and lets you create and deploy applications from your device. Standard is available at no cost and provides editing tools for designing HMIs with no activation or entitlement required.
- FactoryTalk® Optix Studio™ Pro is a cloud-based editor that can run in a web browser or as a locally installed application. FactoryTalk® Optix Studio™ Pro requires a subscription, based on a user entitlement.
  FactoryTalk® Optix Studio™ Pro provides technical support and features that require a cloud connection, such as cloud-based code repository integration, cloud-hosted version control, remote deployment (requires FactoryTalk® Remote Access™), and multi-user collaboration.

IMPORTANT: FactoryTalk® Optix Studio™ Pro requires an entitlement that you must allocate to an organization. FactoryTalk® Optix Studio™ Pro entitlements are then assigned to organization users. See FactoryTalk Optix Studio Entitlement on page 32.

Table 2: FactoryTalk Optix Studio Standard and Pro Options on page 10 explains the capabilities of each version.

Table 2. FactoryTalk® Optix Studio™ Standard and Pro Options

Feature	Standard	Pro
Install FactoryTalk® Optix Studio™ on your laptop or PC	✓	✓
Build, save, and deploy FactoryTalk® Optix™ applications using the desktop version of FactoryTalk® Optix Studio™ environment	✓	✓
Build, save, and deploy FactoryTalk® Optix™ applications on your laptop or PC using the web-based FactoryTalk® Optix Studio™ environment	–	✓
Save FactoryTalk® Optix™ applications and libraries to a remote repository and track changes with version control	–	✓
Allow multiple concurrent users — together with version control, this feature lets multiple users collaborate on a project simultaneously while managing potential conflicts	–	✓
Deploy FactoryTalk® Optix™ applications to remote devices from the cloud	–	✓
Connect to and monitor remote devices from the cloud	–	✓

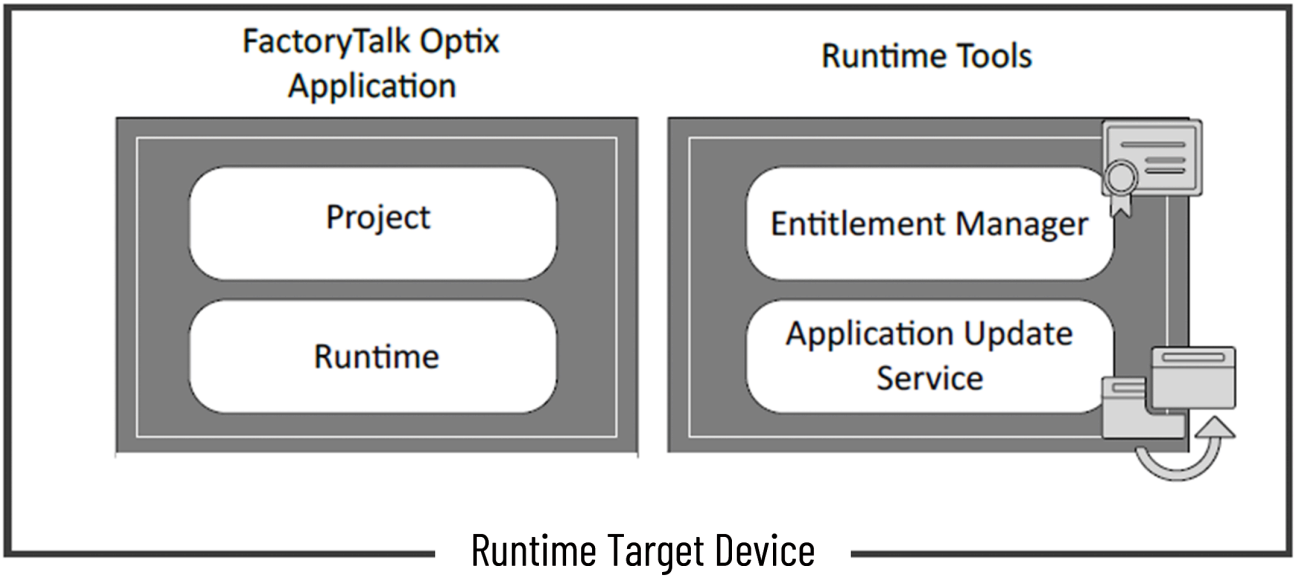
FactoryTalk® Optix Studio™ lets you create your application by combining your project with the appropriate Runtime. The choice of Runtime depends on the target-device (see Target Devices on page 16), for example x86 or ARM and the operating system, Windows® or Linux.
See Runtime Sizing Calculator on page 13.

FactoryTalk® Optix™ Runtime Tools

You must install the Runtime Tools package on the target device to allow for entitlement management and application deployment. This package includes the following components:

- Entitlement Manager - Application that manages FactoryTalk® Optix™ entitlements.
- FactoryTalk® Optix™ Application Update Service - Service that runs in the background that connects FactoryTalk® Optix Studio™ to the target device so you can update and deploy FactoryTalk® Optix™ Applications.
- FactoryTalk® Optix™ Runtime - Service that is optionally selected when installing the Runtime Tools on the target device. Runtime runs the FactoryTalk® Optix™ Application as a service on the target runtime device.

Figure 1. Package Components



IMPORTANT: Runtime Tools come installed in the OptixPanel™ and Embedded Edge Compute module. You must download, install, and activate Runtime Tools for Windows® and Linux devices.

IMPORTANT: Runtime Tools requires an entitlement that you must allocate to an organization, then assign to the devices where they are installed. See FactoryTalk Optix Runtime Entitlement on page 37.

FactoryTalk® Optix™ Application

The FactoryTalk® Optix™ Application is the HMI or IoT application that is developed and compiled in FactoryTalk® Optix Studio™.

The FactoryTalk® Optix™ Application comprises two main components:

- Project - Represents the design and configuration of your application
- Runtime - The Runtime environment where your application runs

FactoryTalk® Optix™ Application is self-contained and can run for 2 hours full-featured on the target computer. To run the FactoryTalk® Optix™ Application in production, FactoryTalk Optix Runtime Tools on page 10 is required.

Application Sizing

Feature tokens function as a unit of currency and accumulate as you configure more features in an application. Each function has a token value, some functions are free with a token value of zero. You can upgrade your entitlement at any time to allow application expansion, and there is an unlimited option that gives you maximum flexibility and expansion.

The selection of components and functions to be activated and used in the project is done at the time of programming with FactoryTalk® Optix Studio™. FactoryTalk® Optix™ Runtime verifies that the total number of tokens that are associated with all activated features is within the token limit of your purchased entitlement.

Each FactoryTalk® Optix™ Runtime entitlement corresponds to a feature token package (see Feature Tokens on page 12), within which designers can select and activate the functions necessary to develop an application.

Examples of features that affect the sizing of your application:

- Controller connections
- Multiple web clients

- Alarming
- Recipe
- PDF reports
- Data logging
- Database connectivity
- OPC UA connectivity

Runtime Entitlements

A Runtime entitlement lets you access and run the FactoryTalk® Optix™ Application in a Microsoft® Windows® or Linux environment. You can select the Runtime entitlement that aligns to the specific requirements of your application. Runtime entitlements are sold in packages that include Feature Tokens on page 12. Different Runtime features are assigned a feature token value, so that any set of features can be used in an application. The application features and total feature tokens used define the Runtime entitlement size required. For more information on sizing your application, see Runtime Sizing Calculator on page 13 and Example Runtime Entitlements on page 64.

Feature Tokens

- See Runtime Entitlement Sizing Guide on page 62 for basic guidance to estimate the number of feature tokens that you need, per the desired feature.
- Access the Runtime Sizing calculator in the FactoryTalk® Optix™ landing page to calculate a more accurate token package according to your specific needs. See Runtime sizing tool on page 13 for how to access the calculator and Runtime Sizing Online Help for how to use the calculator.

Runtime Entitlements Included with Target Devices

Runtime entitlements differ between target devices. Some target devices from Rockwell Automation® include the FactoryTalk® Optix™ Runtime entitlement, as shown in the following table.

Table 3. Entitlements and Software by Target Device

Device Type	Software	Included Entitlement	Upgrade Available	Maximum Entitlement
Embedded Edge Compute Module (1756-CMEE1Y1)	FactoryTalk® Remote Access™ Runtime	Pro	-	-
	FactoryTalk® Optix™ Runtime	XS (5 feature tokens)	Yes	L (15 feature tokens)
OptixPanel™ Compact	FactoryTalk® Remote Access™ Runtime	Basic	Yes	Pro
	FactoryTalk® Optix™ Runtime	S (8 feature tokens)	Yes	M (11 feature tokens)
OptixPanel™ Standard	FactoryTalk® Remote Access™ Runtime	Pro	-	-
	FactoryTalk® Optix™ Runtime	M (11 feature tokens)	Yes	L (15 feature tokens)
ASEM™ 6300 Industrial PCs	FactoryTalk® Remote Access™ Runtime	Basic	Yes	pro
	FactoryTalk® Optix™ Runtime	-	Yes	XL (21 feature tokens)

Table 3. Entitlements and Software by Target Device (continued)

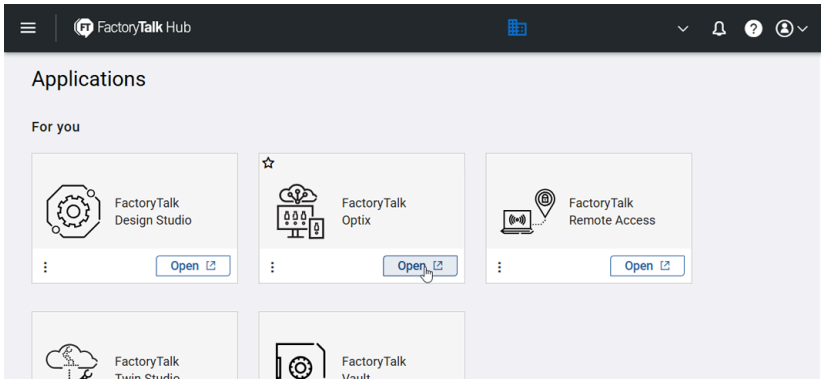
Device Type	Software	Included Entitlement	Upgrade Available	Maximum Entitlement
OptixEdge™ Standard	FactoryTalk® Remote Access™ Runtime	Pro	-	-
	FactoryTalk® Optix™ Runtime	XS (5 feature tokens)	-	-
x64 Industrial PCs and Servers	FactoryTalk® Remote Access™ Runtime	-	Yes	Pro
	FactoryTalk® Optix™ Runtime	-	Yes	XL (21 feature tokens)

Upgrade entitlements are available through the Commerce Portal. You can upgrade any size entitlement except XL to larger sizes.

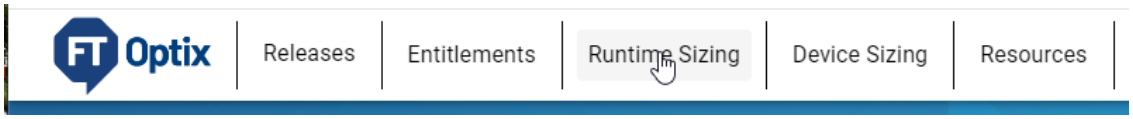
Runtime Sizing Calculator

The Runtime Sizing Calculator lets you enter the details of your project and recommends the feature token package that you need (see Table 10: Token Packages on page 62).
To determine the runtime package that you need for your application, use the Runtime Sizing calculator within the FactoryTalk® Optix™ page on FactoryTalk® Hub™.

1. Select FactoryTalk® Optix™ from the list of available applications.



2. Select Runtime Sizing from the top navigation bar.



3. Follow the wizard to select the features your application needs.

After you complete the wizard, you are provided with the package size needed and the associated software catalog number for purchase via the Commerce Portal. Some target devices from Rockwell Automation come with the FactoryTalk® Optix™ Runtime entitlement included (see Table 3: Entitlements and Software by Target Device on page 12).

Application Code Libraries/Trusted Content

Rockwell Automation® has built libraries of standard application content to help you easily integrate automation products into systems. This application content helps engineers create automation projects from standardized, lifecycle-managed, application-focused libraries in an efficient way.

Reduce design cost, build projects faster, and drive consistent results with the Rockwell Automation® Library of Process Objects (PlantPAx® Libraries), Device Object Libraries, and Machine Builder Libraries.

The following libraries and version of FactoryTalk® Optix™ are compatible:

Table 4. Compatible Libraries

Library	FactoryTalk® Optix™ 1.5 Compatible Version	FactoryTalk® Optix™ 1.4 Compatible Version
Power Device	3.06	3.05
Safety Device [1]	1.06	1.05
Network Device [1]	12.05	12.04
Condition Monitoring Device [1]	1.03	1.02
Hardy Device [1]	1.01	1.00
IO Device [1]	5.05	–
IO-Link Device [1]	3.03	–
Mettler Toledo Device [1]	1.01	–
Plex APM	1.01	1.00
Plex QMS [2]	1.01	1.00
Fiix®[2]	1.01	1.00

You can download the libraries at the Product Compatibility and Download Center (PCDC). The PCDC is available at rok.auto/pcdc.

Version Control with FactoryTalk AssetCentre Disaster Recovery

FactoryTalk® AssetCentre (FTAC) monitors your factory automation system and provides centralized tools to minimize downtime due to unauthorized actions or failing devices, and manages the lifecycle of Rockwell Automation® hardware devices in the system.

You can use the Disaster Recovery (DR) feature of FTAC to back up, compare, and restore FactoryTalk® Optix™ applications that are deployed to target devices with FactoryTalk® Optix™ Runtime (Embedded), and target computers and devices with FactoryTalk Optix Runtime (Software).

This feature requires FactoryTalk® AssetCentre version 16 or later with the Disaster Recovery license. You must have the FactoryTalk AssetCentre Desktop Client to utilize Disaster Recovery. A FactoryTalk Optix Runtime (Embedded) asset requires proper configuration of the Addressing Info and Security Configuration. A FactoryTalk® Optix™ Runtime (Software) asset requires proper configuration of the Addressing Info.

1. For more information, see Power Device Library Reference Manual, publication DEVICE-RM100
2. For more information, see FactoryTalk® Optix™ Plex APM Library Object Reference Manual, publication INFO-RM005

When you use DR to schedule automatic backups, the system compares your FactoryTalk® Optix™ backup files (.OPTIXZ) against protected baseline files. A compare report notifies you if unauthorized or unexpected changes are detected.

FTAC Archive stores versioned backups for auditing and rollback. If DR detects an issue, you can restore your FactoryTalk® Optix™ project to a known good state. You simply retrieve the .OPTIXZ file from FTAC Archive, import the file to FactoryTalk® Optix™ (version 1.6 or later) or FactoryTalk® Remote Access™ Runtime, and redeploy to your runtime target computer or device.

To get started with FactoryTalk® AssetCentre Disaster Recovery, see FactoryTalk® AssetCentre Getting Results Guide, publication FTAC-GR002.

Target Devices

FactoryTalk® Optix™ lets you design and deploy HMI and SCADA applications on a variety of target devices, offering flexible and scalable solutions. The software also supports various third-party devices and systems natively, through OPC UA, and other interfaces.

The following table shows the compatible Rockwell Automation® target devices.

Table 5. Target Devices

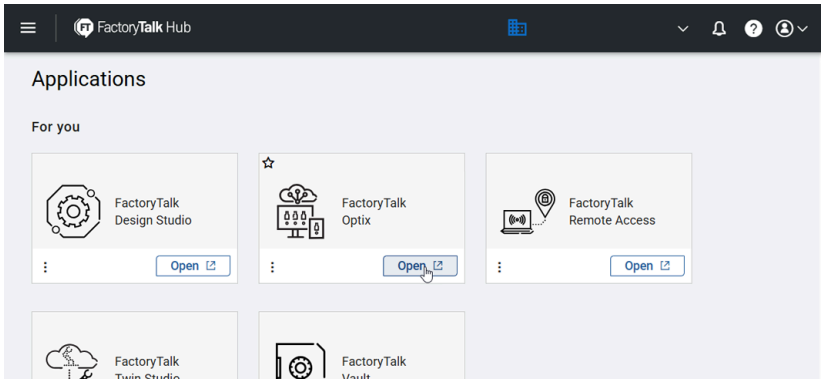
Need	Select Device
A firmware-based visualization appliance with a secure OS at a low total cost of ownership	• OptixPanel™ Standard • OptixPanel™ Compact See OptixPanel™ Graphic Terminals for more information.
A DIN rail mountable (or book mount) firmware-based appliance with a secure OS and with FactoryTalk® Optix™ Runtime included for data analysis and data sharing	OptixEdge™ Standard device
A ControlLogix® in-chassis firmware-based appliance with a secure OS and with FactoryTalk® Optix™ Runtime included for data analysis and data sharing	Embedded Edge Compute module
A high-powered industrial computer with an open compute platform for hardware and software expandability	ASEM™ 6300 industrial computers

IMPORTANT: You must purchase and install FactoryTalk® Optix™ Runtime on personal computers (must be Windows® or Linux based), and on Windows® -based industrial computers, such as an ASEM™ 6300 industrial computer.

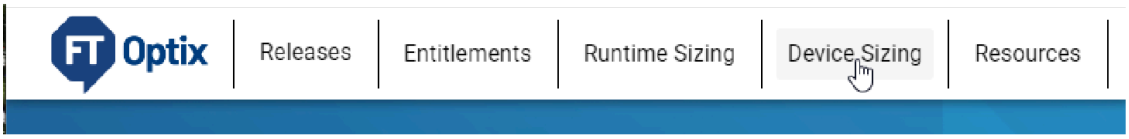
Device Sizing Tool

The device sizing tool lets you enter the number of items, for example, tags, and the number of screens that you need and recommends device and/or computer for running your FactoryTalk® Optix™ application.
To determine the device and/or computer that you need for your application, use the Device Sizing tool within the FactoryTalk® Optix™ page.

1. Select FactoryTalk® Optix™ from the list of available applications.



2. Select Device Sizing from the top navigation bar.



3. Follow the wizard to select the items and screen density that you need.
   For example, Device Sizing Items and Screens options include:
   - Tags
   - Structured Tags
   - Alarms
   - Data Logger
   - Event Logger
   - Recipes
   - Web Clients
   - OPC UA Clients

   Device Sizing Screen Density options include:
   - Low (up to 100 graphic items)
   - Medium (up to 300 graphic items)
   - High (more than 300 graphic items

Ordering Target Devices

Rockwell Automation® engages with premier global partners to deliver industry-leading products and solutions. Hardware offerings are distributed exclusively through an authorized channel network, ensuring consistent quality, service, and support. For pricing and a product availability, search our Partner Network database and connect with a partner today.

Find a business partner

OptixPanel™ Operator Panels

OptixPanel™ operator panels give you a PC-like user experience in a sealed HMI appliance. There is no operating system to secure and graphic terminals are also available in a wide range of screen sizes, bezel options, aspect ratios, and touch screen technologies that support gestures, such as swipe and pinch, for easier integration on your factory floor.

Available OptixPanel™ operator panels:

- OptixPanel™ Standard operator panels:
  - Screen size: 7...21.5 in.
  - Connectivity:
    - Two USB 3.0 ports
    - Two Gigabit Ethernet ports that support the ability to operate independently on two networks
    - One DB9 serial port (RS232/422/485) isolated
    - One MicroSD card slot, push#push mechanism
  - More information: OptixPanel™ Standard Operator Panel User Manual, publication 2800S-UM001

- OptixPanel™ Compact operator panels:
  - Screen size: 4 and 7 in.
  - Connectivity:
    - One USB 2.0 port
    - One Gigabit Ethernet port
    - One DB9 serial port (RS232/422/485) non-isolated
- More information: OptixPanel™ Compact Operator Panel User Manual, publication 2800C-UM001

For panel specifications, see rockwellautomation.com/en-us/products/hardware/hmi/optixpanel-graphic-terminals.html and OptixPanel Operator Panels Specifications Technical Data, publication2800-TD001.

See Table 3: Entitlements and Software by Target Device on page 12 for software and token information.

Embedded Edge Compute Module

The Embedded Edge Compute module is a chassis-based module that can communicate directly with Logix controllers, and has read and write access to all controller tags through the backplane and front Ethernet port. The Embedded Edge Compute module enables FactoryTalk® Optix™, a development platform for creating HMI and Internet of Things (IoT) applications. The Embedded Edge Compute module contains a FactoryTalk® Optix™ XS runtime entitlement with five tokens, and a FactoryTalk® Remote Access™ Runtime Pro license.

For more information about how to use your Embedded Edge Compute module, see Embedded Edge Compute Module user manual, publication 1756-UM021.

Figure 2. Embedded Edge Compute module

ASEM™ 6300 Industrial Computers

Allen-Bradley® ASEM™ 6300 industrial computers (PCs) offer solutions for the physical limitations and requirements of your industrial environment. Non-display computers provide various options in form factors, RAM, storage, performance, operating temperatures and optical drives. Integrated display computers are available in different screen sizes, storage options, performance packages, and models with built-in keypads.

Figure 3. ASEM™ 6300 Industrial Computers

The ASEM™ industrial PC portfolio includes the following:

- Box PCs
- ThinClients
- Hazardous location PCs
- Panel PCs and Monitors
- On-Machine™ Monitors and PCs

For more information on ASEM™ PCs, including the range of available products and product details, see Industrial Computers and Monitors .

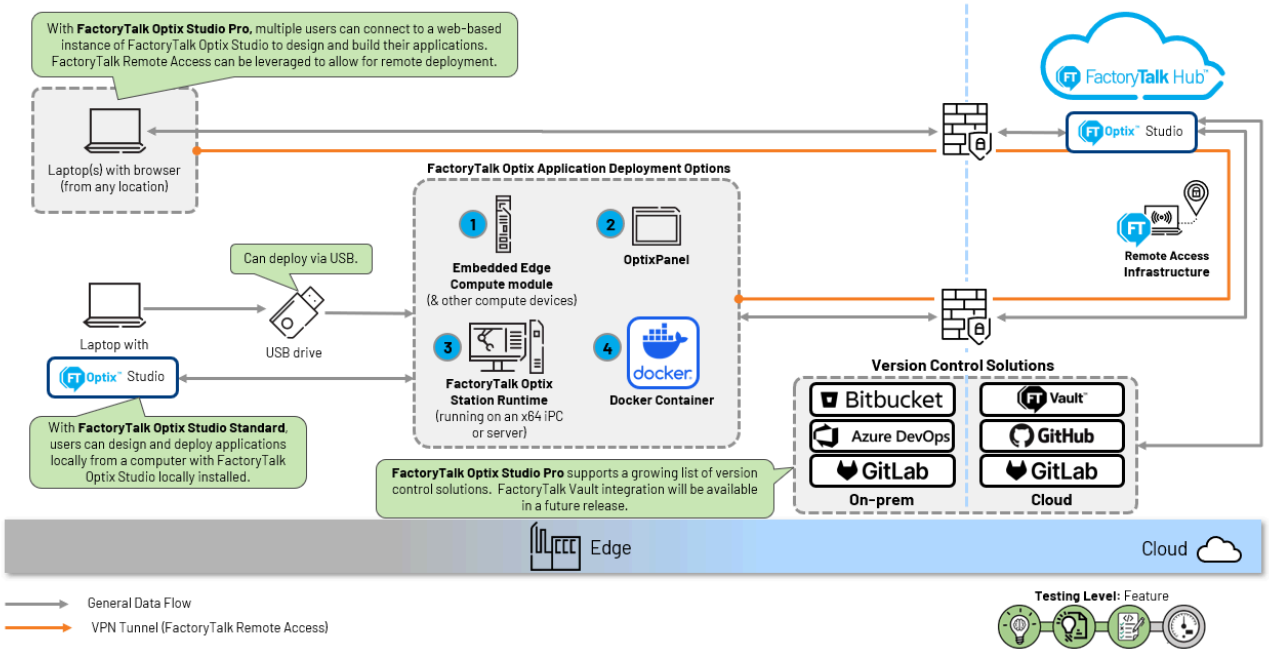
Reference Architectures Overview

FactoryTalk® Optix™ is a visualization platform that helps improve user process, efficiency, and deliverables – in one tool. Take advantage of new levels of collaboration, scalability, and interoperability to achieve their HMI vision.

Modular deployment enables deploying only what is needed to the runtime application. This feature supports scaling of the hardware platform, opening up new options for IIoT and Edge visualization, connectivity, and analytics.

Design and Deployment

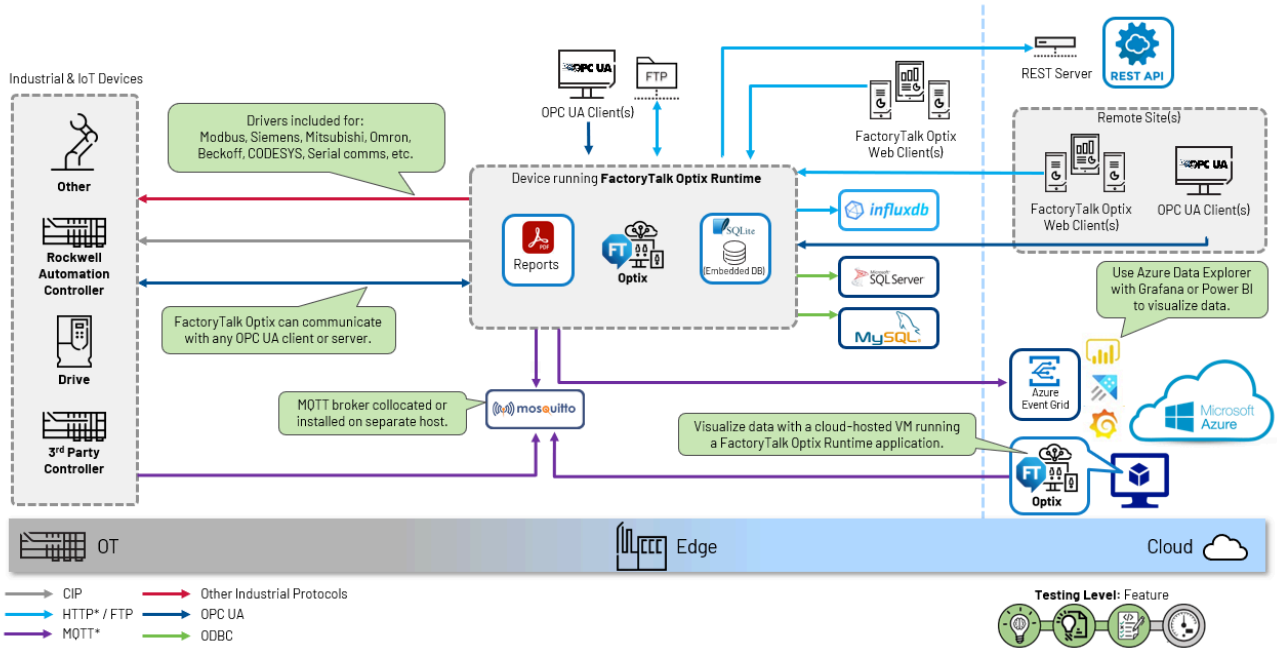
Figure 4. Design and Deployment



FactoryTalk® Optix™ applications can be deployed to a wide variety of devices. See Table 3: Entitlements and Software by Target Device on page 12 for details.

Runtime Application Protocol

Figure 5. Runtime Application Protocol



FactoryTalk® Optix™ provides a wide variety of built-in, reliable connectivity options – from the controller to the cloud.

- Preferred connectivity to ControlLogix®, CompactLogix®, Micro800™ , and MicroLogix™ controllers
- Integration of the OPC UA information model and can communicate with any OPC UA client or server
- MQTT client connectivity for pub/sub plus an embedded MQTT broker
- Connectivity to REST servers
- Database options include Embedded SQLite, External InfluxDB, and ODBC support for MySQL and MS SQL Server
- Web client connectivity with secure web server capabilities
- Azure® connectivity via Azure Event Grid

Third-party driver support includes:

- Allen-Bradley® EtherNet/IP™ driver
- Beckhoff TwinCAT
- CODESYS
- Micro800™ controllers driver
- MicroLogix™ 1400 controllers driver
- Mitsubishi MELSEC FX3U
- Mitsubishi MELSEC Q/FGX5U
- Modbus driver
- Omron EtherNet/IP™ driver
- Omron FINS driver
- Rockwell Automation® EtherNet/IP™
- Serial communication
- Siemens S7 TCP driver
- Siemens S7 TIA PROFINET driver

Sizing Architecture Examples

Runtime entitlements are based on the number of feature tokens that your application requires. The examples that are given in this section are typical applications; your own architecture can be different than what is shown.

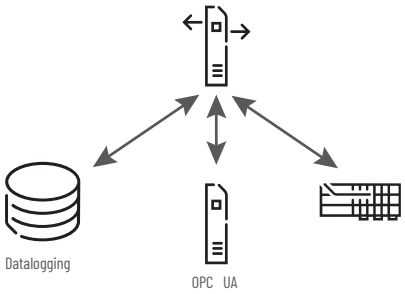
Package sizes:

- XS - extra small; up to five tokens
- S - small; up to eight tokens
- M - medium; up to 11 tokens
- L - large; up to 15 tokens
- XL - extra large; up to 21 tokens

Station Runtime (XS)

This XS example shows you a system architecture using an Embedded Edge Compute module.

Figure 6. XS System architecture

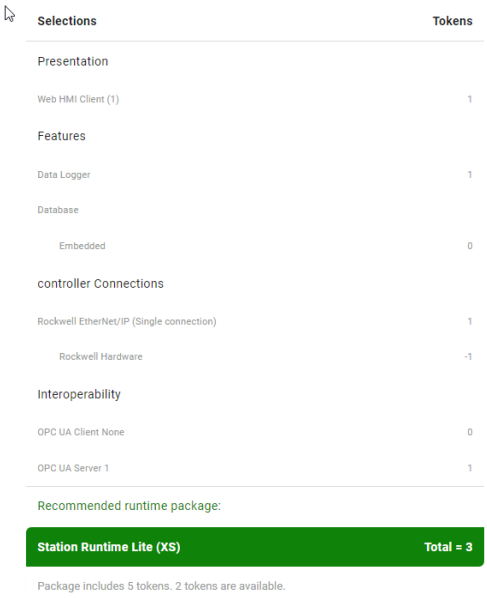


This example architecture has the following components:

- No HMI displays
- Communicates with a Rockwell Automation® controller
- Acts as an OPC UA server
- Logs data to an internal database
- One web client

The following picture shows example runtime sizing for a package that includes these application components.

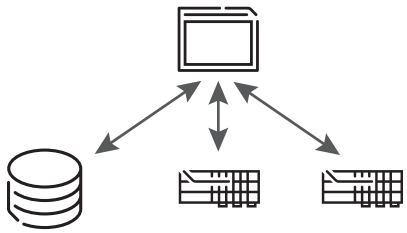
Figure 7. XS with Embedded Edge Compute module



Station Runtime (S)

This S example shows you a system architecture using a panel PC and two controllers.

Figure 8. S System architecture

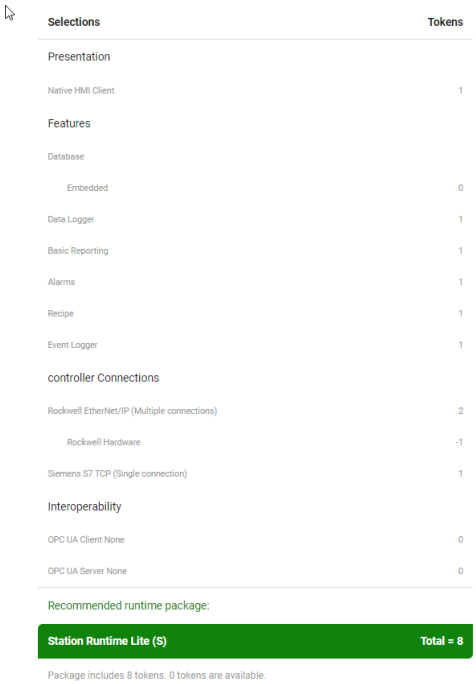


This example architecture has the following components:

- Single HMI station (panel PC) with typical HMI functionality
- Communicates with a Rockwell Automation® controller and a third-party controller
- Logs data to an internal database
- Requires event logging, alarming, recipes, and basic PDF reporting

The following picture shows example runtime sizing for a package that includes these application components.

Figure 9. S with panel PC and multiple controllers



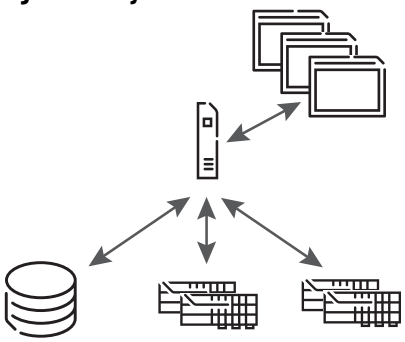
Selections	Tokens
Presentation	
Native HMI Client	1
Features	
Database	
Embedded	0
Data Logger	1
Basic Reporting	1
Alarms	1
Recipe	1
Event Logger	1
controller Connections	
Rockwell EtherNet/IP (Multiple connections)	2
Rockwell Hardware	-1
Siemens S7 TCP (Single connection)	1
Interoperability	
OPC UA Client None	0
OPC UA Server None	0
Recommended runtime package:	
Station Runtime Lite (S)	**Total = 8**

Package includes 8 tokens. 0 tokens are available.

Station Runtime (M)

This M example shows you a system architecture using an HMI and two web clients.

Figure 10. M System architecture

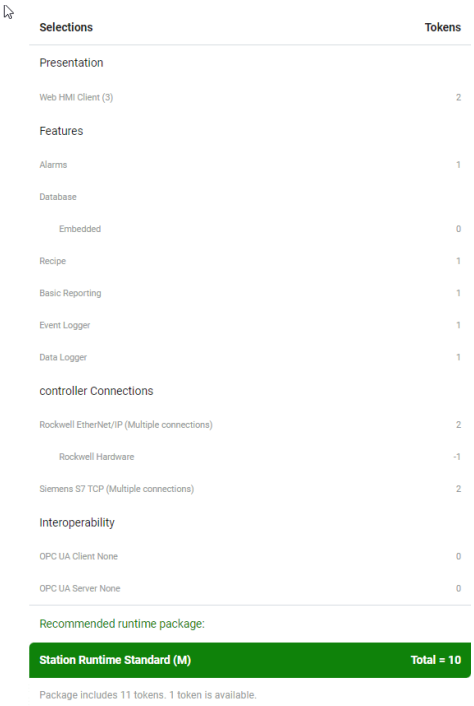


This example architecture has the following components:

- Single HMI station with typical HMI functionality and three web clients
- Communicates with multiple Rockwell Automation® controllers and multiple third-party controllers
- Logs data to an internal database
- Requires event logging, alarming, recipes, and basic PDF reporting

The following picture shows example runtime sizing for a package that includes these application components.

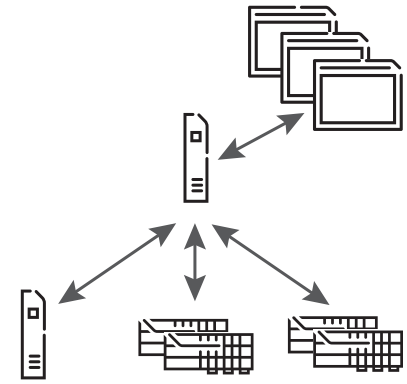
Figure 11. M with HMI and two web clients



Station Runtime (L)

This L example shows you a system architecture using an HMI and two web clients.

Figure 12. L System architecture

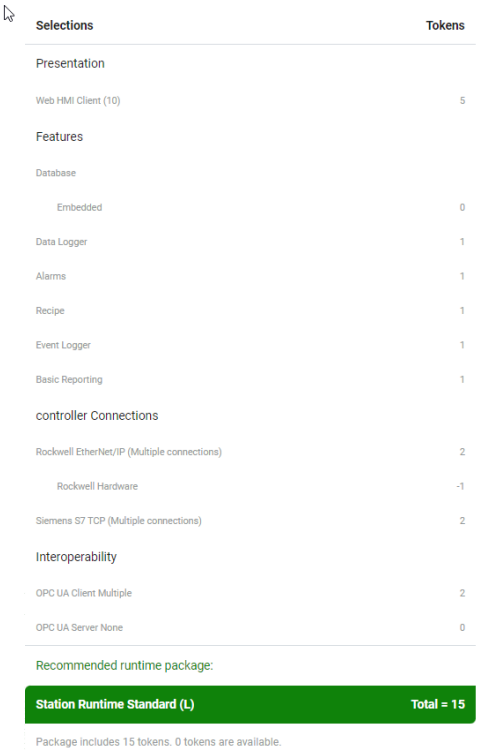


This example architecture has the following components:

- Single HMI station with typical HMI functionality and ten web clients
- Communicates with multiple Rockwell Automation® controllers and multiple third-party controllers
- Acts as a client to other OPC UA servers
- Logs data to an internal database
- Requires event logging, alarming, recipes, and basic PDF reporting

The following picture shows example runtime sizing for a package that includes these application components.

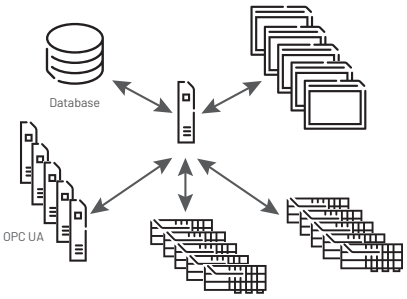
Figure 13. HMI with three web clients and OPC UA



Station Runtime (XL)

This XL example shows you a system architecture using an HMI and two web clients.

Figure 14. XL System architecture

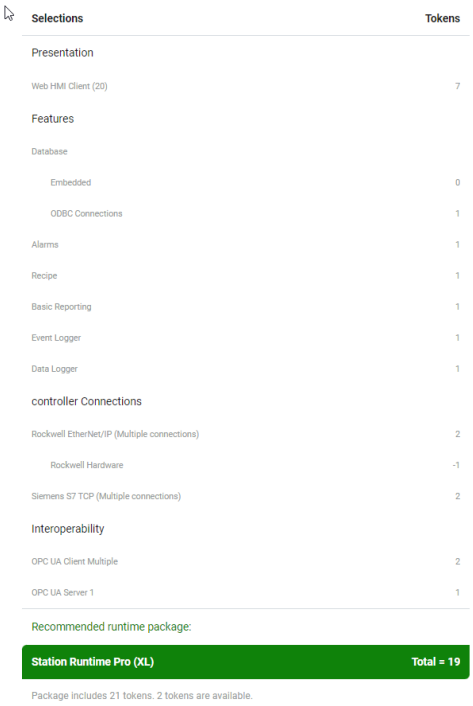


This example architecture has the following components:

- Single HMI station with typical HMI functionality and 20 web clients
- Communicates with multiple Rockwell Automation® controllers and multiple third-party controllers
- Acts as a client to multiple OPC UA servers
- Acts as an OPC UA server to one client
- Logs data to an internal database
- Exchanges data with external databases via ODBC
- Requires event logging, alarming, recipes, and basic PDF reporting

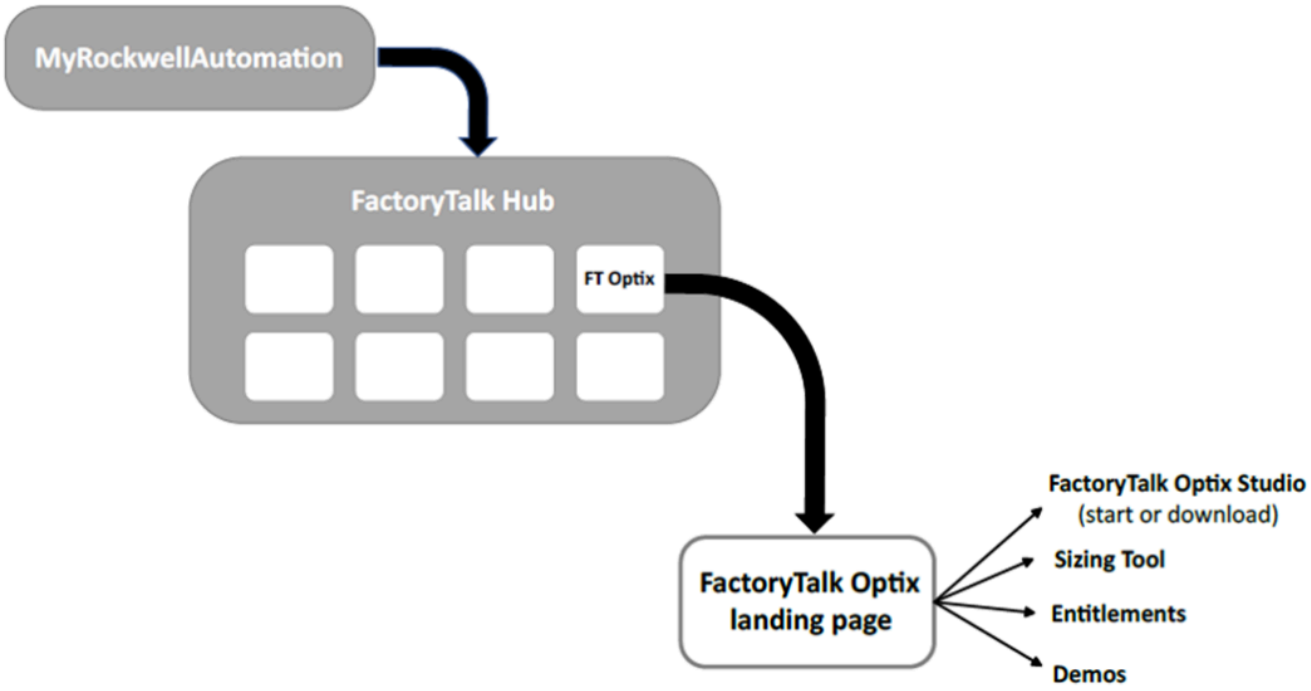
The following picture shows example runtime sizing for a package that includes these application components.

Figure 15. HMI with Extensibility



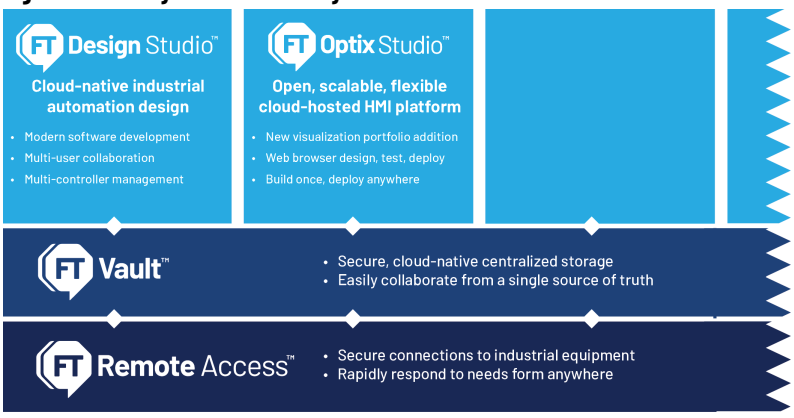
FactoryTalk® Hub™ Ecosystem

Figure 16. FactoryTalk® Hub™ to FactoryTalk® Optix™ System



FactoryTalk® Hub™ is a single, online destination to access cloud-based design, operations, and maintenance tools. A dashboard where you can manage software-as-a-service subscriptions, facilitate collaboration across your team, and access the single source of truth for your operations.

Figure 17. FactoryTalk® Hub™ Ecosystem



Getting Started with FactoryTalk Hub

FactoryTalk Hub is the online location where you can access Rockwell Automation's cloud-based Software as a Service (SaaS) offerings to simplify the way you design, create, and maintain your assets.

To get started with FactoryTalk Hub, you must:

- Browse to and sign in to FactoryTalk Hub.
- Join or create a FactoryTalk Hub organization. See Join an Organization on page 29 or Create an Organization on page 30.

NOTE: The organization you belong to controls the services available to you in FactoryTalk Hub.

Authentication

FactoryTalk Hub uses your MyRockwell user profile to authenticate your access and determine your organization. You can be a member of more than one organization.

When you authenticate and you log on to FactoryTalk Hub, your browser displays the **Organizations** page if you are a new user. Existing user go to their **Applications** page.

If you are a new user, you see options to create or join an organization. If you are already a member of one or more organizations, you see a list of organizations you are assigned to.

Once you select an organization, in the top left corner you see the breadcrumb showing the organization you will be working on.

The breadcrumb only changes when you select a different organization to show which organization you are currently working with.

IMPORTANT: Upon the first use of some FactoryTalk® Hub™ applications, you are prompted for multifactor authentication. You must have an authenticator app, such as Microsoft® Authenticator.

Join an Organization

An organization is a set of associated user accounts, applications, and resources that are managed together.

You can make a request to join existing organizations or sub-organization rather than creating a new one if your colleagues have already created an organization, and you want to share data, access, or entitlements with each other.

Organization only: You can browse for public organizations by navigating to the **Organizations** page and selecting **Join organization**. When you browse, you see a list of public organizations created by users with the same email domain that you are using. It is up to the Administrator or Owner of the organization to make these organizations visible or not. Private organizations require an invitation. The administrator or owner of an organization can invite you via email or they can share a join request link from the Send Invites page in their organization.

If you are sent a join request link, the owner or administrator of the organization or sub-organization will assign your roles on receiving your response to the link

To join an organization:

1. From the FactoryTalk Hub menu, select **Organizations**.
2. On the **Organizations** page, in the top-right corner select **Join organization**.
3. Select an available organization from the list displayed.
4. Select **Continue**.

To join a sub-organization:

1. From the FactoryTalk Hub menu, select **Organizations**.
2. Select the parent organization which sub-organization you want to join.
3. From the FactoryTalk Hub menu, select **Sub-organizations**.
4. Next to the sub-organization, select **Join**.

The access request is sent. You will be notified once the request is approved.

Create an Organization

An organization or sub-organization should be as large as can be easily managed in order to maximize economies of scale and reduce data silos.

The user who creates an organization is the owner of that organization.

An organization or sub-organization:

- can be as large as can be easily managed
- defines how data and entitlements are shared by users
- cannot be permanently deleted

You can archive redundant organizations.

- **(For organization only)** can use the Organization Access check box to make the organization public or private

To create an organization or sub-organization:

1. From the FactoryTalk Hub menu, select **Organizations** or **Sub-organizations**.
2. On the **Organizations** or **Sub-organization** page, in the top-right corner, select **Create organization** or **Create sub-organization**.
3. Enter the organization details.

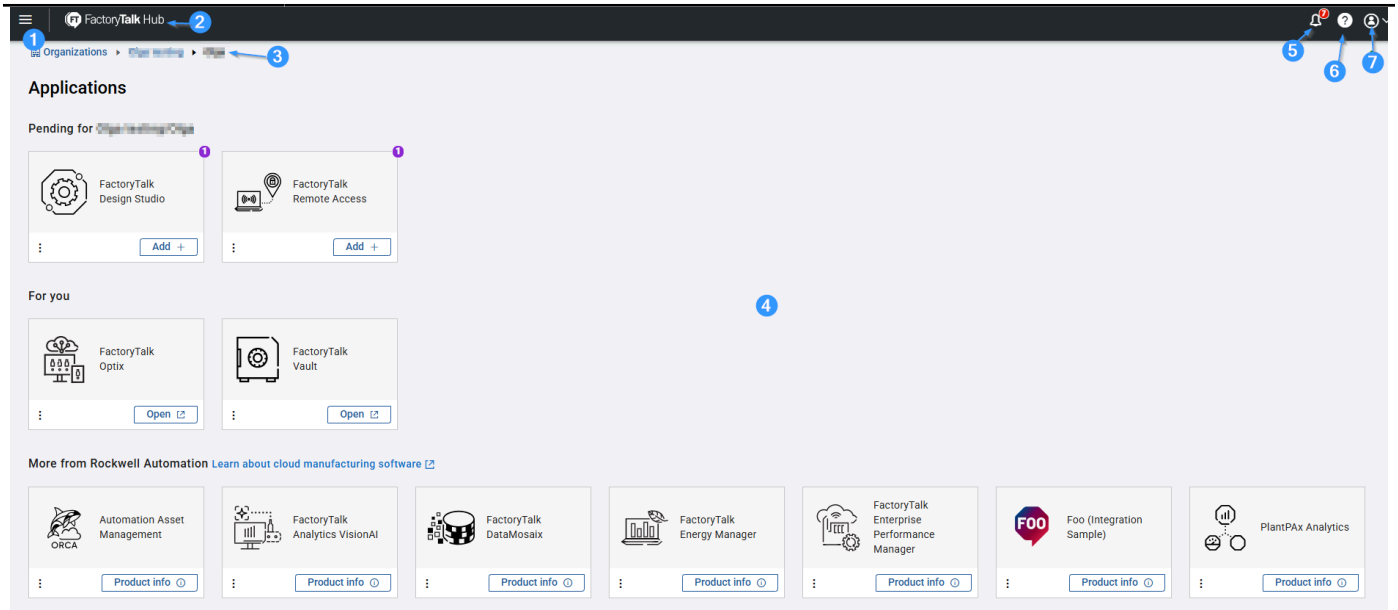
Name	Description
Add Organization Logo	**Optional**: Allows you to add a graphic to help your colleagues identify the organization.
Name of the Organization	(required) - Name of the organization that will be using services and SaaS provisioned for this FactoryTalk Hub. The name does not have to be unique but should be distinct and descriptive.
Owner Name	Name (required) - The name of the person who is responsible for administration of this FactoryTalk Hub organization.  The system automatically populates the owner field based on the user logged as creating the organization.
(For organization only) **Email Domain**	(required) - The email domain that identifies authorized users of this organization.  The system automatically populates the email domain field based on the user logged as creating the organization. An email domain is used to allow other users to find an organization which is marked as public. Users with matching email domains can find this organization and request access to it.
Location	**Optional**: The geographic location of this organization.
Description	**Optional**: A short description of the goal of the organization.

4. Select **Create**.
   A summary of your new organization displays.
5. To allocate existing entitlements or to purchase entitlements for allocation, select the **Allocate Entitlements**.
6. To invite users, select **Send Invites**. See Send Invites.

Access a FactoryTalk® Hub™ Application

1. Click the appropriate panel, such as FactoryTalk® Design Studio™ or FactoryTalk® Remote Access™, to go to that application.
2. Click Home to return to the Home screen.
   Each application has Getting Started information in the online help to help you learn how to perform different tasks.

Table 6. FactoryTalk Hub Home Page



Callout	Item
1	FactoryTalk Hub Menu. enables navigating between different options available in the application according to the selected organization and user's permissions. This menu also contains hub management tools if you are an owner or admin for the organization.
2	Name of the FactoryTalk Hub service you are currently using.
3	Breadcrumb that shows which organization you are currently working with. The breadcrumb changes when you switch between organizations. By clicking the arrow on the right of the parent organization, you can see and select sub-organizations you have access to. If you select a sub-organization is appears at the end of the breadcrumb after its parent organization. By clicking on the parent organization, you can return to it.
4	FactoryTalk Hub Service tiles area. Allows you to select and launch services you are entitled to use. By selecting the star on an application tile, you mark it as a favorite and the tile appears with the other favorites in the favorites row.
5	Notifications menu. Select to see notifications that have been sent to your organization since the last time you signed on. A red number here indicates the number of unread notifications that you have waiting. Click the **Notifications** icon to review the notifications list and respond to alerts.
6	Help button. Provides access to the help menu for the current application. On the main FactoryTalk Hub screen, this link goes to FactoryTalk Hub help. Otherwise to help for the application you are using. You can review the release notes, getting started information, and help topics. Use to contact support, provide feedback, or view legal information.
7	Access the profile of the current user. Select your **Profile** icon to update account settings or log out of FactoryTalk Hub.

FactoryTalk® Optix Studio™ Entitlement

This section explains the process of purchasing, allocating and activating a FactoryTalk® Optix Studio™ entitlement. Without a Pro entitlement, FactoryTalk® Optix Studio™ runs as Standard.

1. Purchase a FactoryTalk Optix Studio Pro entitlement on page 32.
2. After you have purchased and received your FactoryTalk® Optix™ entitlement, Allocate a FactoryTalk Optix Studio Pro entitlement to your organization on page 33.

   IMPORTANT: All entitlements must be allocated to an organization.

3. Lastly, you must Activate a FactoryTalk Optix Studio Pro entitlement on page 36.

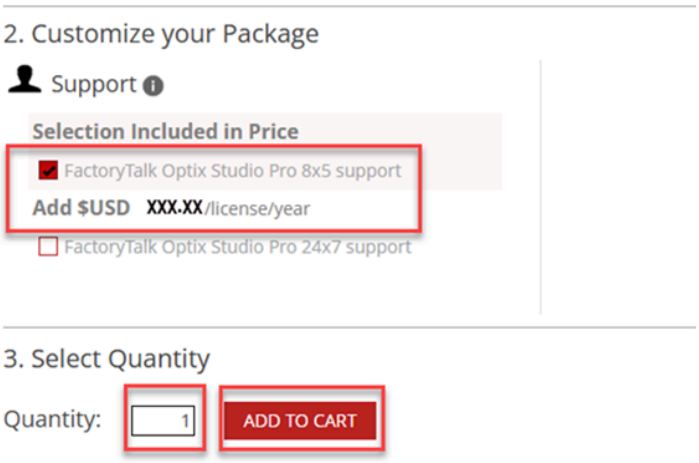
Purchase a FactoryTalk Optix Studio Pro entitlement

FactoryTalk® Optix™ Studio Pro is available by subscription only. Purchase and allocate or assign an entitlement to an organization in order to activate FactoryTalk® Optix™ Studio Pro. You must have a purchase order to purchase software.

Devices that are not activated operate in demo mode and stop running FactoryTalk® Optix™ applications after 2 hours. The **Emulator** client that runs FactoryTalk® Optix™ applications on the development computer does not require a runtime entitlement.

1. From the Commerce Portal, log in to your MyRockwellAutomation account.
2. Scroll to FactoryTalk® Optix™ and under FactoryTalk® Optix™, select **Continue**.

3. Select your package, scroll to select options to customize your package, and then under **Select Quantity**, select the number of entitlements.
4. Select **ADD TO CART**. You can change the number of entitlements in your cart.



If you copied a FactoryTalk® Optix™ Runtime catalog number from the Runtime Sizing tool, you can paste the selected catalog number in the search bar at the top of the Commerce Portal page. Paste the catalog and select to add the catalog number to your cart.

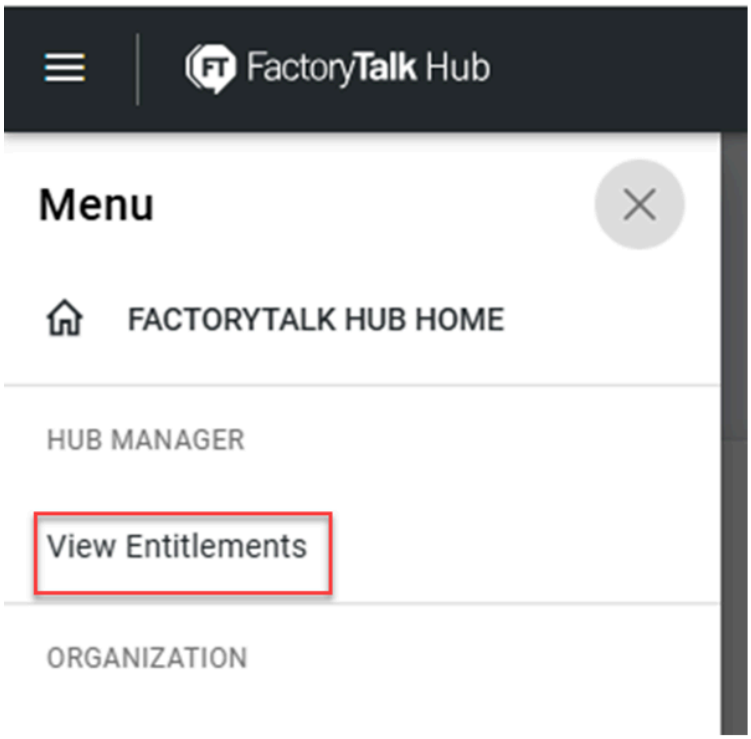
5. Review your cart and the pricing with your Distributor and then select **CHECKOUT**.
6. Confirm your shipping, billing, contract details, and order summary and then select **SUBMIT ORDER**.
7. On the confirmation page, select **Manage Licenses** and confirm your new contract.

Once the entitlement status is active, the entitlement appears in FactoryTalk Hub. You can also confirm your order status in the Commerce Portal by selecting **My Subscriptions/Manage Licenses**.

Allocate a FactoryTalk Optix Studio Pro entitlement to your organization

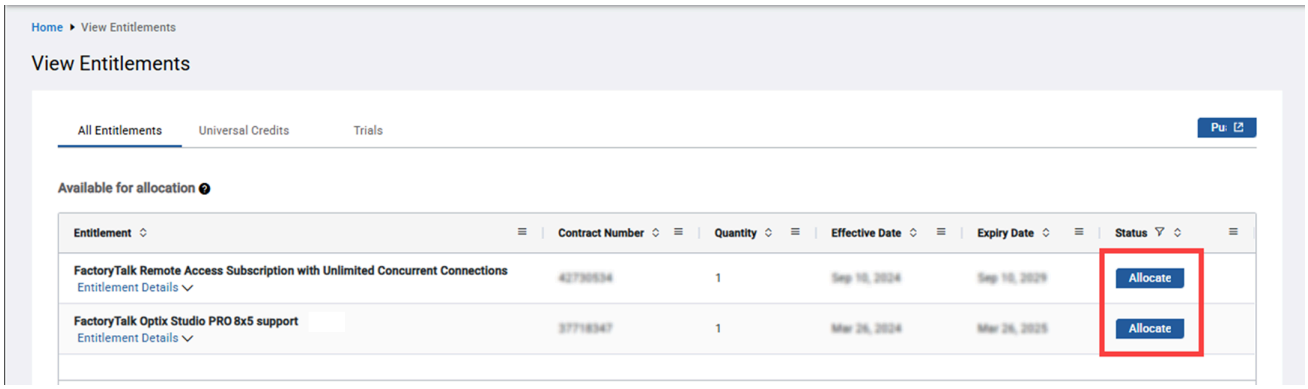
A newly purchased entitlement can be viewed by the purchaser in FactoryTalk® Hub™. Then, the entitlement must be allocated to the related organization, to be made available to other users as well.

1. Access FactoryTalkHub.com to view your new entitlement.
2. In the FactoryTalk® Hub™ page title bar, select , then select **View Entitlements**.

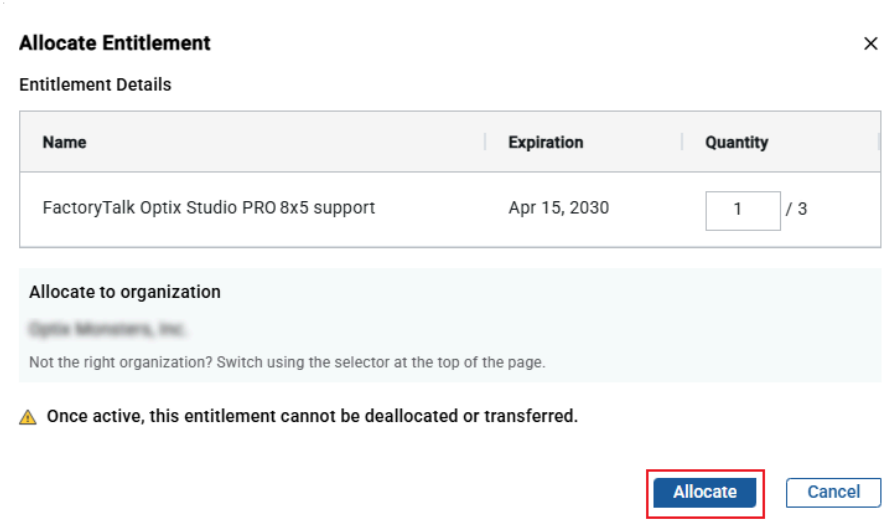


The new entitlement appears at the top of **All entitlements** under **Available for allocation**.

3. Verify that the correct organization name appears on the right side of the FactoryTalk® Hub™ title bar.
4. Locate the entitlement that you want to assign to your organization and select **Allocate** next to the entitlement row.

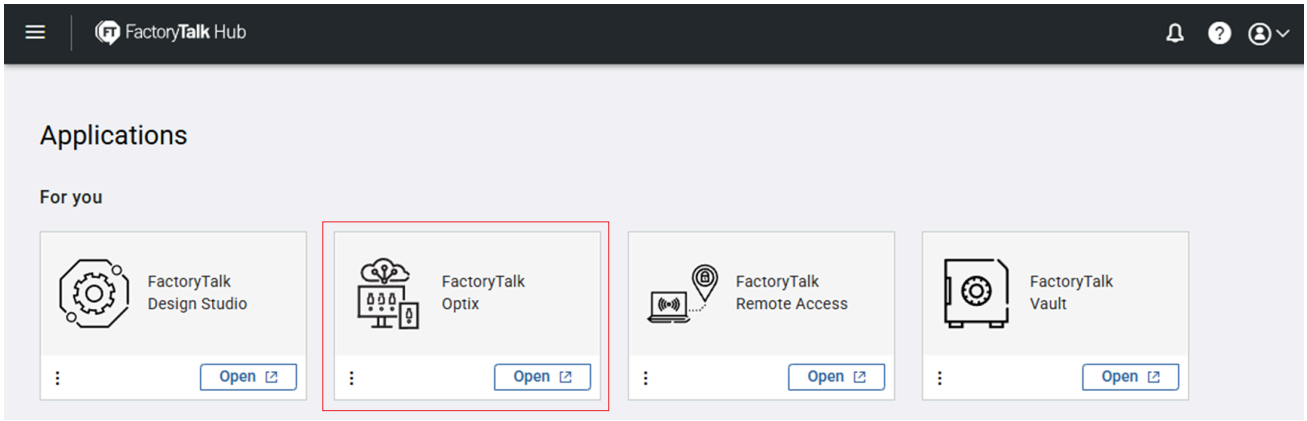


5. Ensure that the entitlement, organization and allocated entitlements quantity are correct, then select **Allocate**.

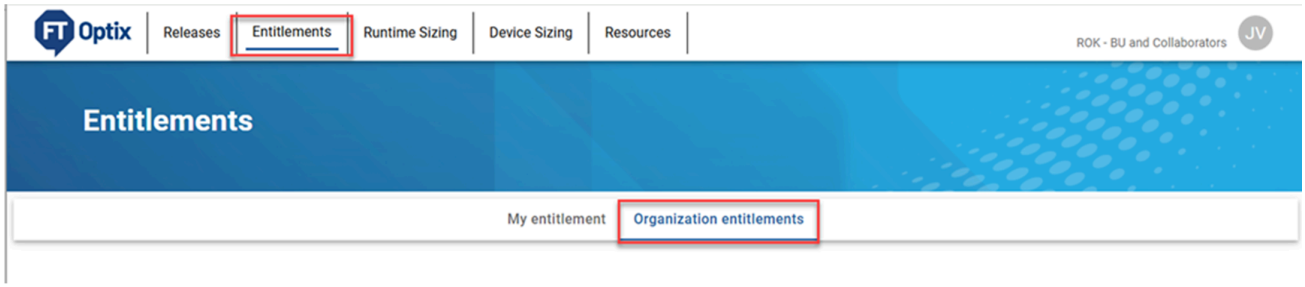


IMPORTANT: Once allocated to an organization, an entitlement cannot be deallocated.

6. In the upper left corner of the FactoryTalk® Hub™ web page, select **Home**.
7. Select the **FactoryTalk Optix** tile.



8. At the top of the FactoryTalk® Optix™ landing page, select **Entitlements**.
9. On the **Entitlements** page, select **Organization entitlements**.



The allocated entitlement appears.

Activate a FactoryTalk Optix Studio Pro entitlement

Before using FactoryTalk® Optix Studio™ Pro, you will need to activate the entitlement assigned to you.

1. Access the FactoryTalk® Optix™ landing page.
2. Select the **Entitlements** tab.
3. Select **My Entitlement** to view the entitlements available in the organization to which you belong.

   If you do not have a FactoryTalk® Optix Studio™ Pro entitlement already, a message appears saying that you are eligible for one.

4. Select **Activate Entitlement** to assign the entitlement to your account.

   You can only activate a FactoryTalk® Optix Studio™ Pro entitlement for your own account. No user can activate an entitlement for another user.

   A message appears confirming the successful entitlement activation.

FactoryTalk® Optix™ Runtime Entitlement

This section explains the process of purchasing, allocating and activating a FactoryTalk® Optix™ Runtime entitlement. Without an entitlement, a FactoryTalk® Optix™ Runtime runs in a 2-hour demo and shuts down automatically

IMPORTANT: To limit access to the firewall of your application to only the entitlement on the FactoryTalk® Hub™ server, we recommend that you add the server to the allow list. (*.cloud.rockwellautomation.com).

1. To purchase a FactoryTalk® Optix™ Runtime entitlement, follow the instructions in Purchase a FactoryTalk Optix Studio Pro entitlement on page 32, but select the appropriate FactoryTalk® Optix™ Runtime entitlement package.

   FactoryTalk® Optix™ Runtime Entitlements can be purchased as either a subscription or perpetual with maintenance. For additional assistance, contact your local Allen-Bradley distributor or Rockwell Automation sales office.

2. To allocate the Runtime entitlement, follow the instructions in Allocate a FactoryTalk Optix Studio Pro entitlement to your organization on page 33, but select the FactoryTalk® Optix™ Runtime entitlement.
3. Steps to activate or upgrade an entitlement on a computer or Target Devices on page 16 depend on device type and whether the device is online or offline.
   - Online - The device is connected to a network that can be routed to FactoryTalk® Hub™ (see Figure 18: FactoryTalk Optix Online Devices on page 37).
     - Activate or Upgrade FactoryTalk Optix Runtime Entitlement on Online Computers on page 38
     - Activate or Upgrade FactoryTalk Optix Runtime Entitlement on Online Target Devices with Optix Embedded on page 41
   - Offline - The device is not connected to the same network as the FactoryTalk® Hub™ (see Figure 19: FactoryTalk Optix Offline Devices on page 38). Extra steps are required to activate or update the entitlement on offline device.
     - Activate or Upgrade FactoryTalk Optix Runtime Entitlement on Offline Computers on page 44
     - Activate or Upgrade FactoryTalk Optix Runtime Entitlement on Offline Target Devices with Optix Embedded on page 49

Figure 18. FactoryTalk Optix Online Devices

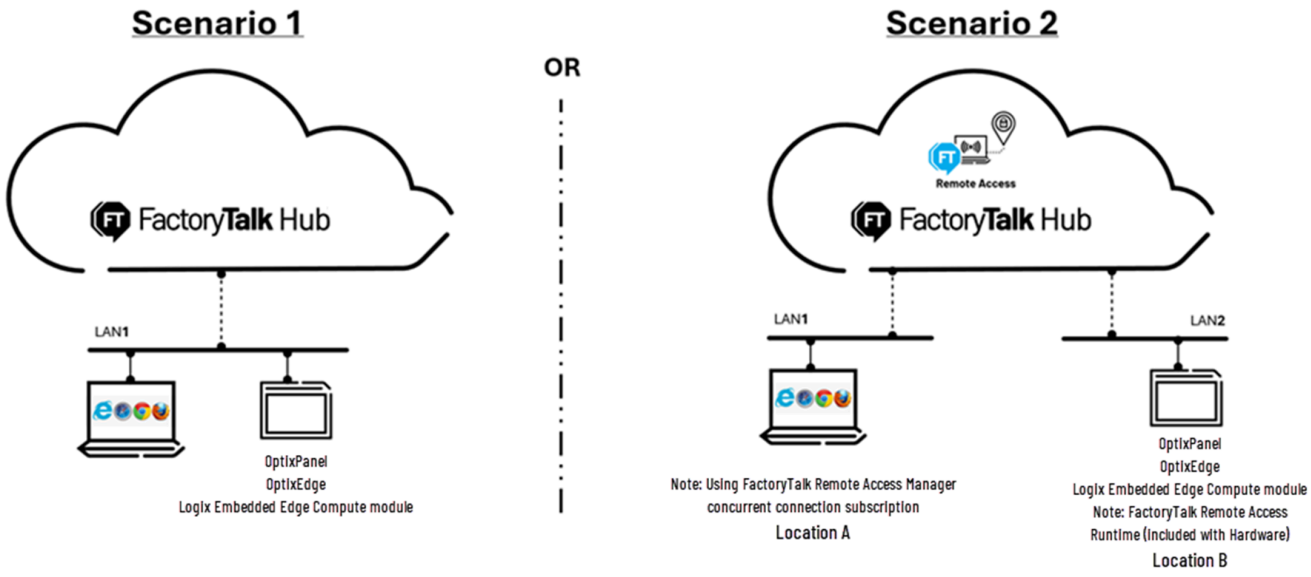
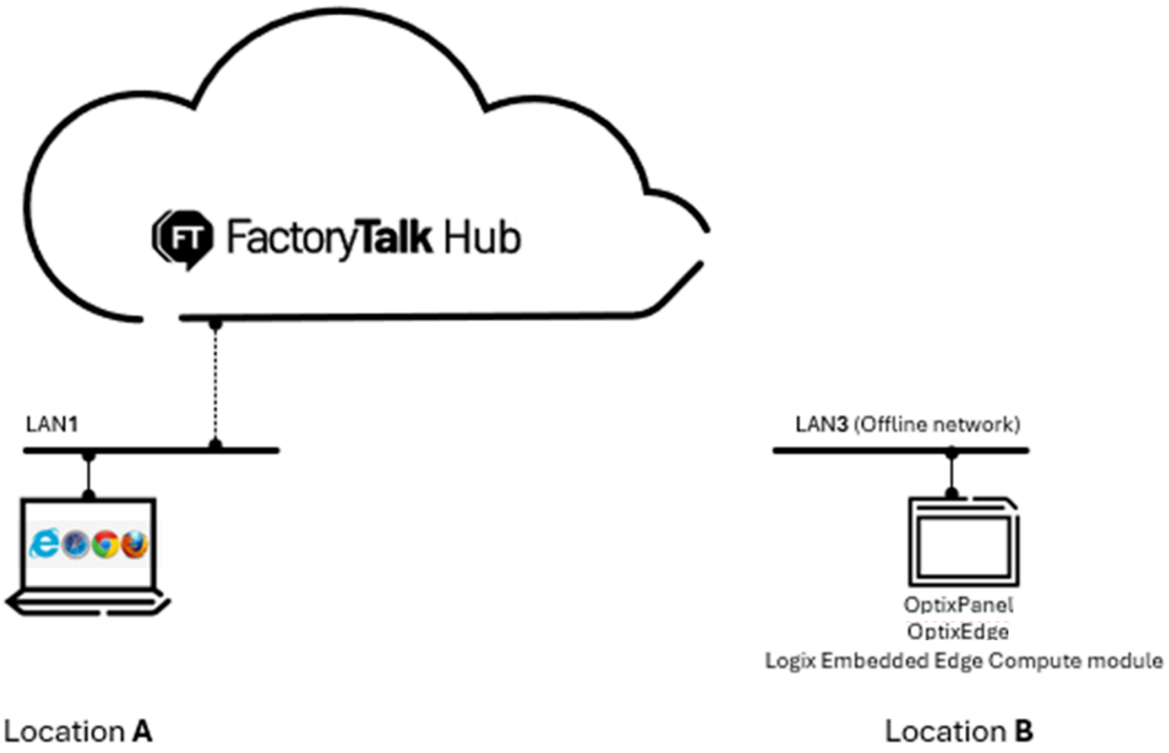


Figure 19. FactoryTalk Optix Offline Devices



FactoryTalk® Optix™ Entitlement Upgrades

An upgrade to your FactoryTalk® Optix™ Runtime entitlement can be necessary, for instance, if you must accommodate a computer with a larger capacity. To do this, add an upgrade entitlement on your computer or device that employs FactoryTalk® Optix™ Runtime.

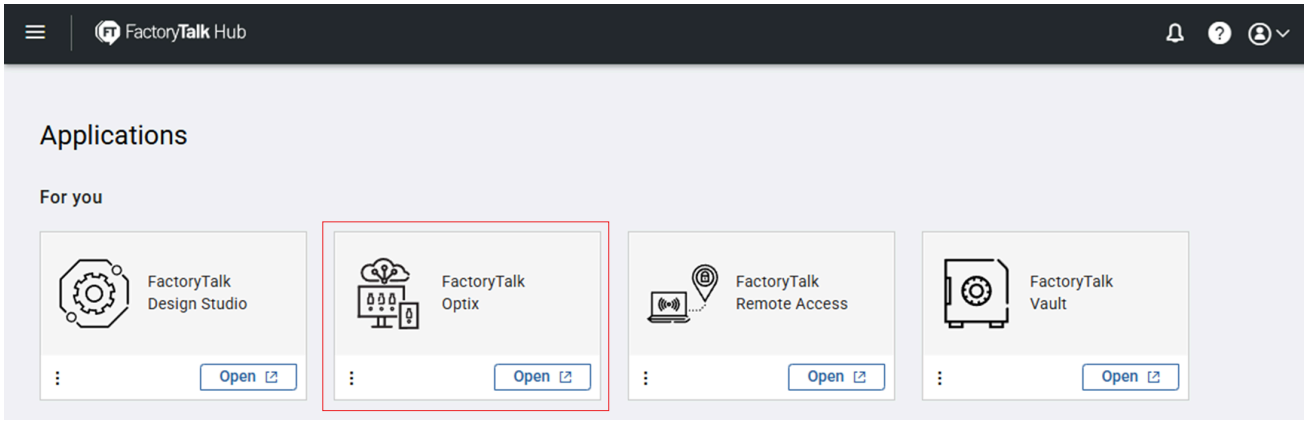
Upgrades are only available with perpetual licenses.

Activate or Upgrade FactoryTalk® Optix™ Runtime Entitlement on Online Computers

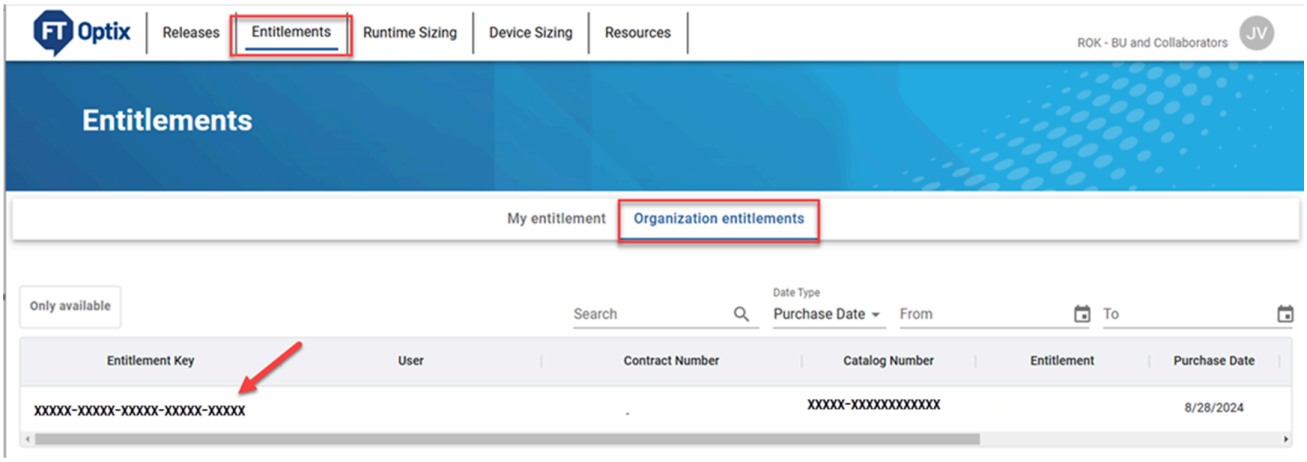
To activate or upgrade an entitlement on an online computer, you must install the Entitlement Manager on the computer as part of the Runtime Tools installation.
The Runtime Tools download is available at the FactoryTalk® Optix™ landing page on the FactoryTalk® Hub™ (sign in required).

Complete the following steps when using a personal computer or ASEM™ 6300 industrial computer running Windows® that is connected to the network.

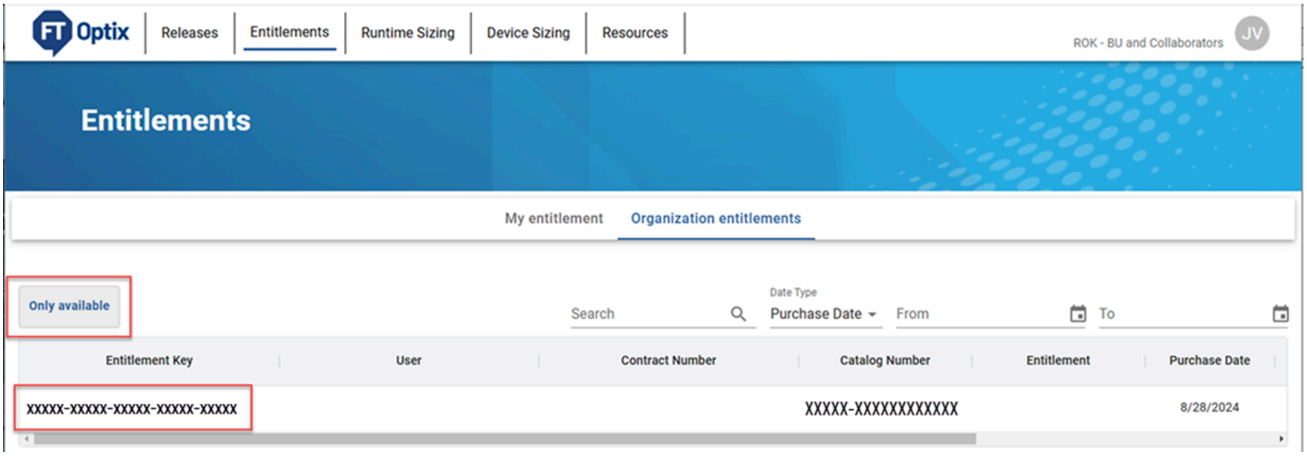
1. Purchase the entitlement or entitlement upgrade and allocate it to your organization as described in Allocate a FactoryTalk Optix Studio Pro entitlement to your organization on page 33.
2. Sign in to the FactoryTalk® Hub™, and click the FactoryTalk® Optix™ tile.



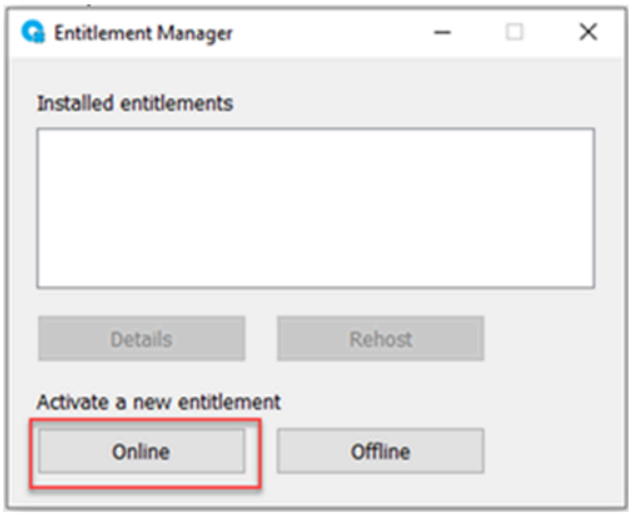
3. Navigate to Entitlements > Organization entitlements and confirm that the entitlement has been allocated to the Organization.



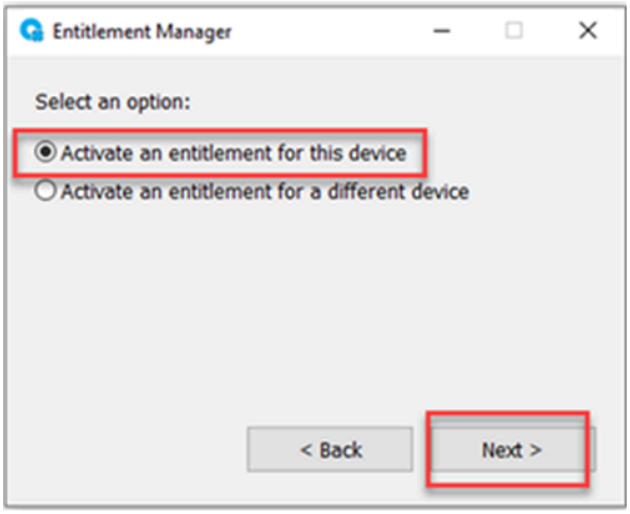
4. Copy the 25-character entitlement key. The entitlement key is required to activate or upgrade the entitlement.



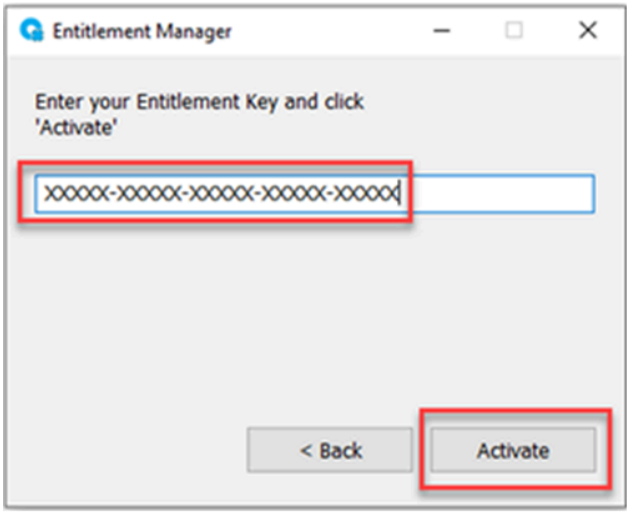
5. On the runtime target computer, open the Entitlement Manager tool.
6. Select Online.



7. Select Activate an Entitlement for this device. Select Next.



8. Enter your entitlement key, and select Activate.



9. Select OK.

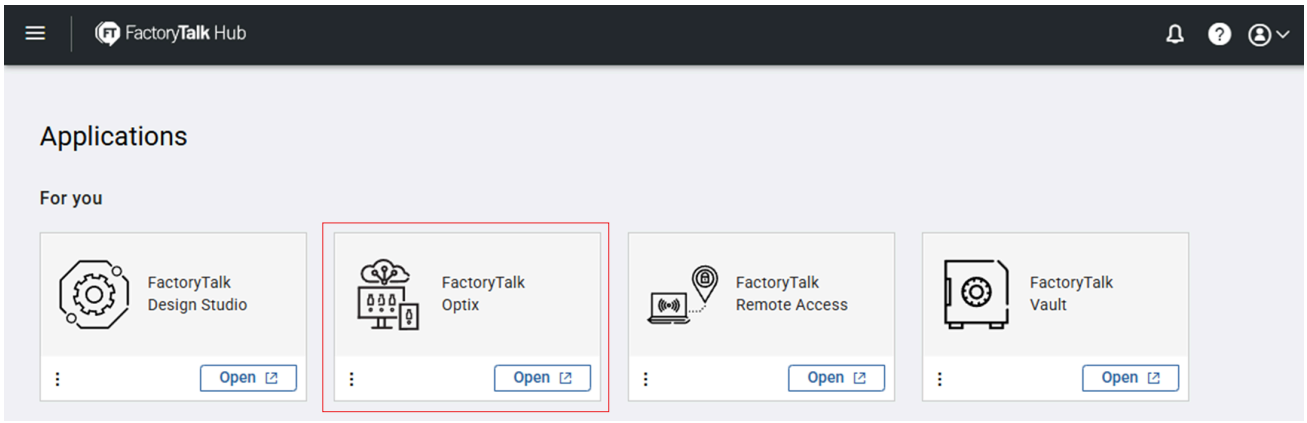
Activate or Upgrade FactoryTalk® Optix™ Runtime Entitlement on Online Target Devices with Optix Embedded

To activate or upgrade an entitlement on an online device, use an online computer to retrieve entitlement key information, then install the entitlement on the device. The computer and device must both be online and connected to the same network as the FactoryTalk® Hub™. You must also have access to the System Manager of the target device.

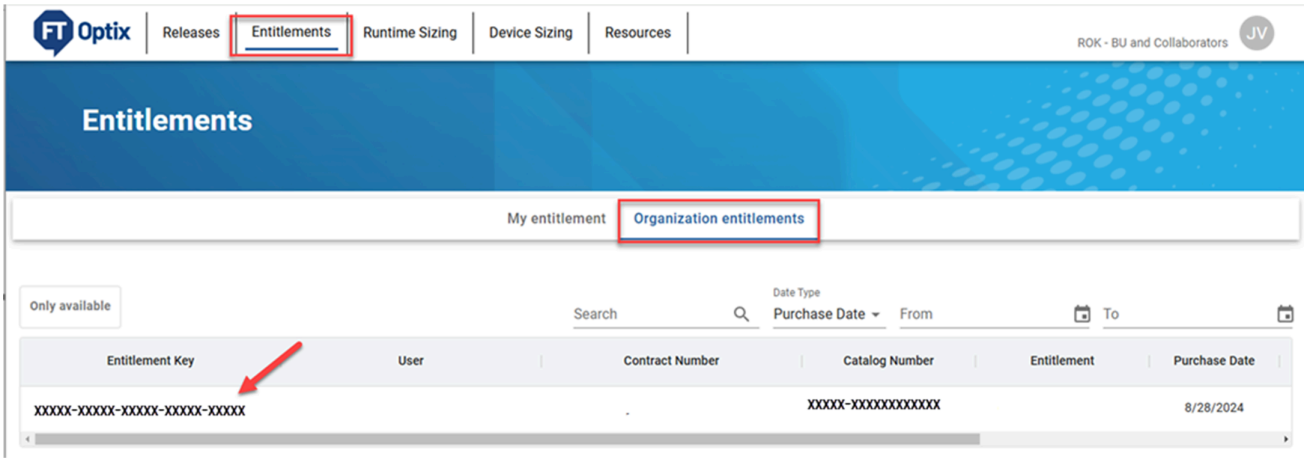
Complete the following steps when using Target Devices on page 16 on which a starting license is included, such as OptixPanel™, OptixEdge™, or EECM.

IMPORTANT: The steps are the same regardless of the target device. For example purposes, the following steps show the OptixPanel™.

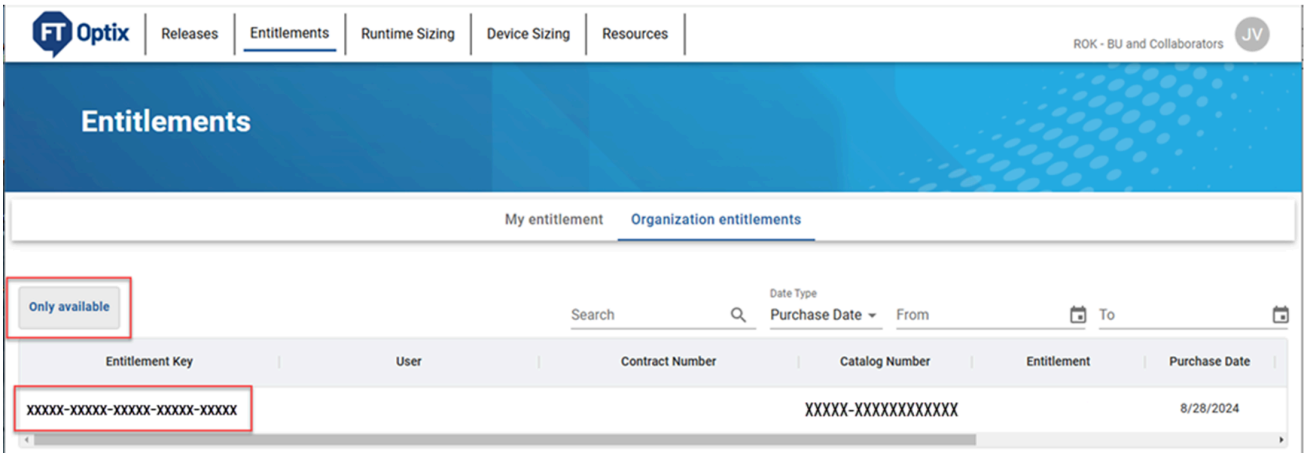
1. Purchase the entitlement or upgrade and allocate it to your organization as described in Allocate a FactoryTalk Optix Studio Pro entitlement to your organization on page 33.
2. Sign in to the FactoryTalk® Hub™, select the appropriate organization, and click the FactoryTalk® Optix™ tile.



3. Navigate to Entitlements > Organization entitlements and confirm that the entitlement has been allocated to the Organization.

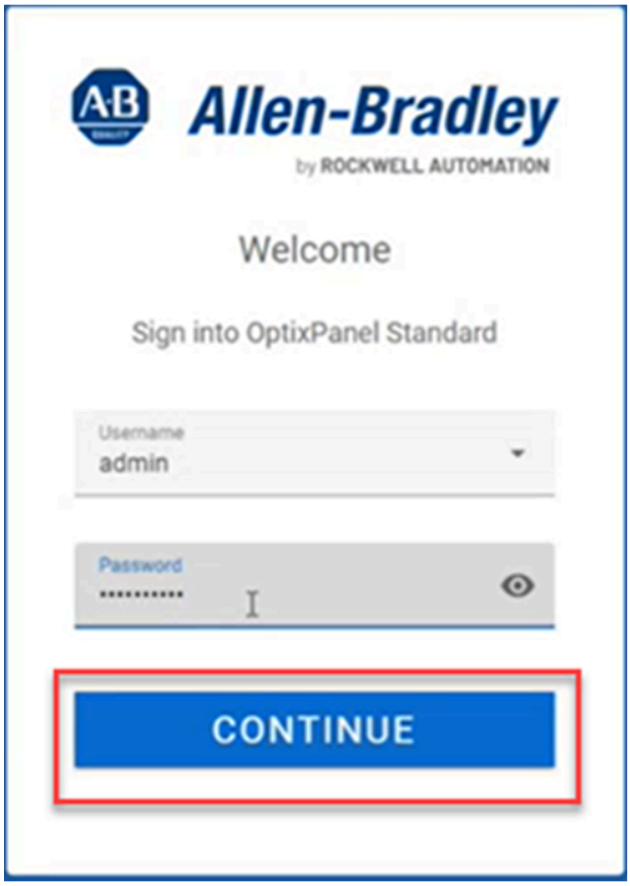


4. Copy the 25-character entitlement key. The entitlement key is required to activate or upgrade the entitlement.

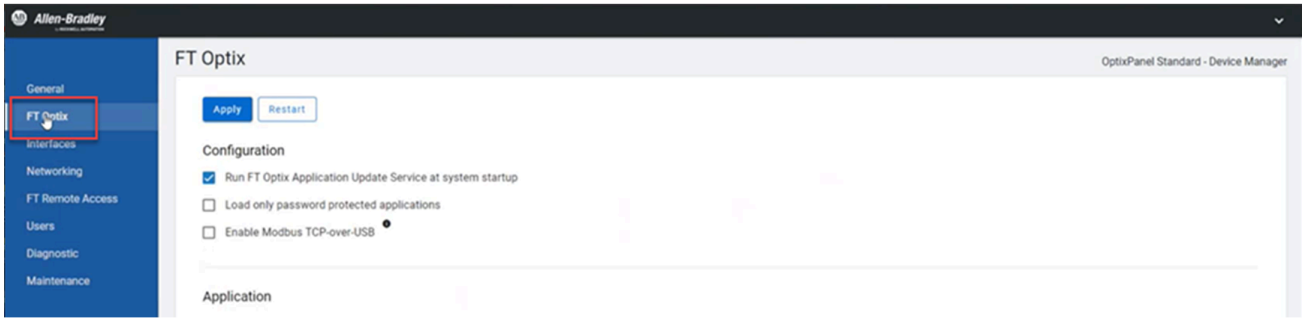


5. On the runtime target device like OptixPanel™, OptixEdge™, or Embedded Edge Compute, access the System Manager. To access the System Manager, enter the runtime target device IP address in the web browser.
6. On the Welcome dialog box, enter the username and password, and select Continue.

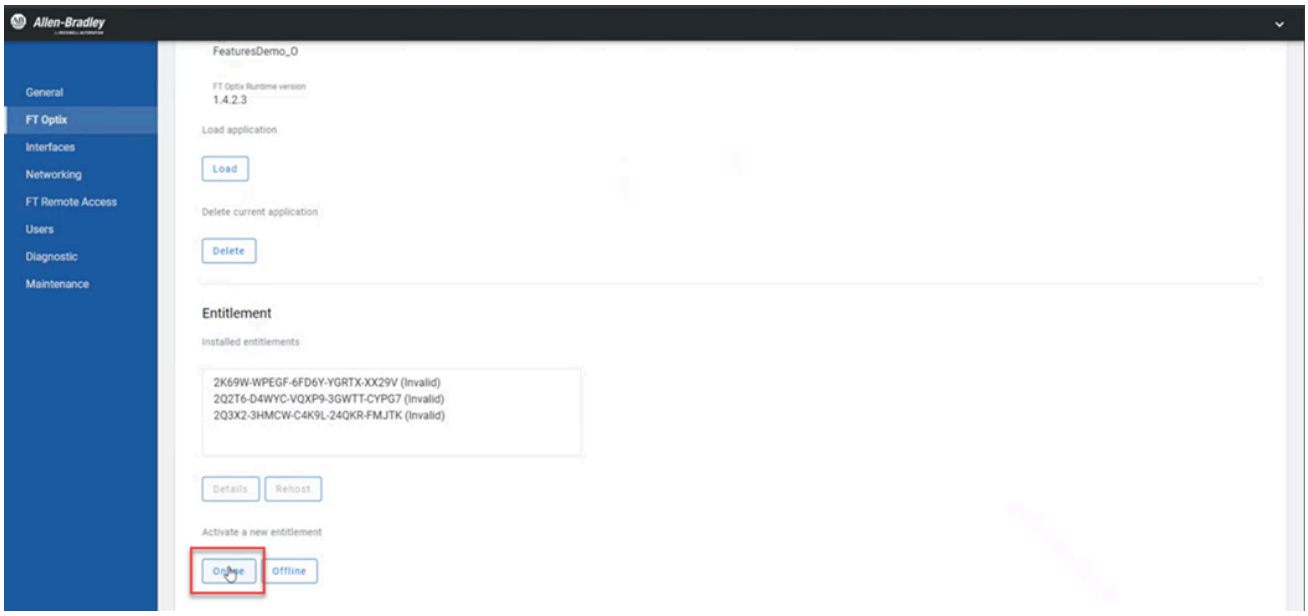
IMPORTANT: The username and password are admin by default. The first time that you sign in to the System Manager, use admin. You are then prompted to create a unique password and a device reset. Use the unique password when you sign in to the System Manager in the future.



7. When the System Manager appears, click FT Optix on the left side of the screen.



8. Scroll to the Entitlement section, and select Online.



9. Enter the entitlement key, and click Activate.

10. Select Close. The OptixPanel™ recognizes the entitlement, and applications that require the entitlement can now run.

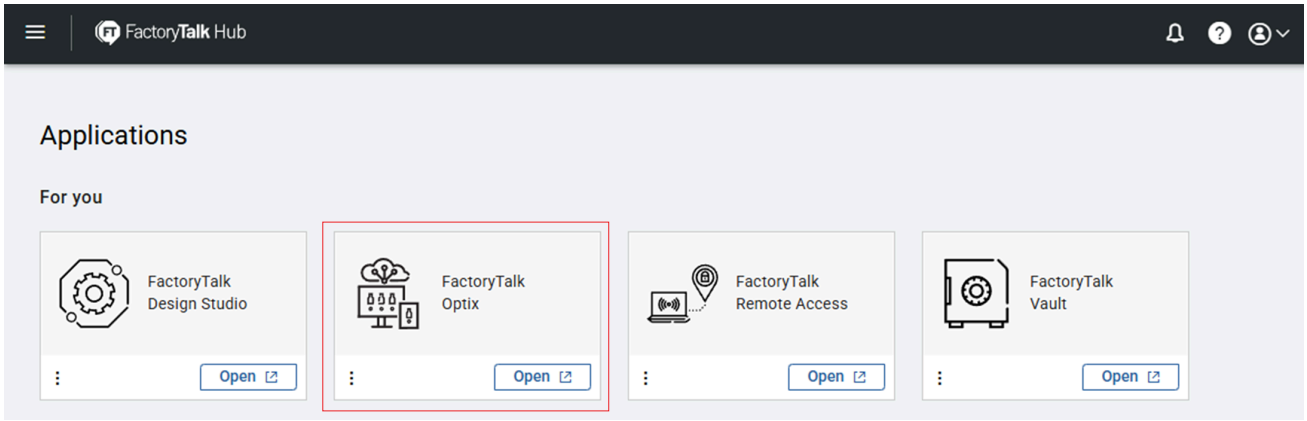
Activate or Upgrade FactoryTalk® Optix™ Runtime Entitlement on Offline Computers

To activate an entitlement on an offline computer, use an online computer to retrieve entitlement key information and then install the entitlement on the offline computer. You must also install the Entitlement Manager on both the offline and online computers as part of the Runtime Tools installation.

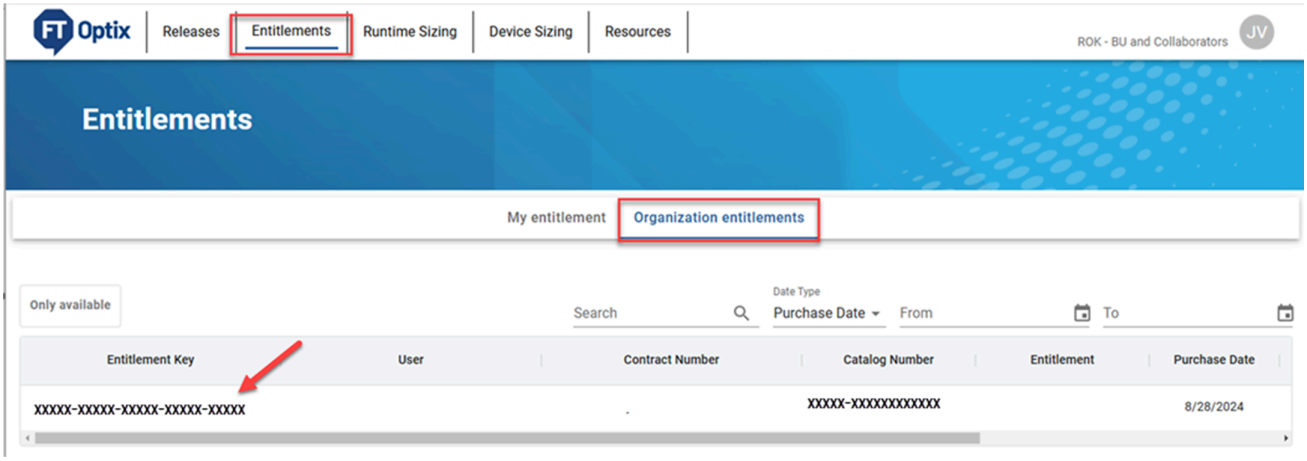
The Runtime Tools download is available at the FactoryTalk® Optix™ landing page on the FactoryTalk® Hub™ (sign in required).

Complete the following steps when using a personal computer or ASEM™ 6300 industrial computer running Windows® that is not connected to the network.

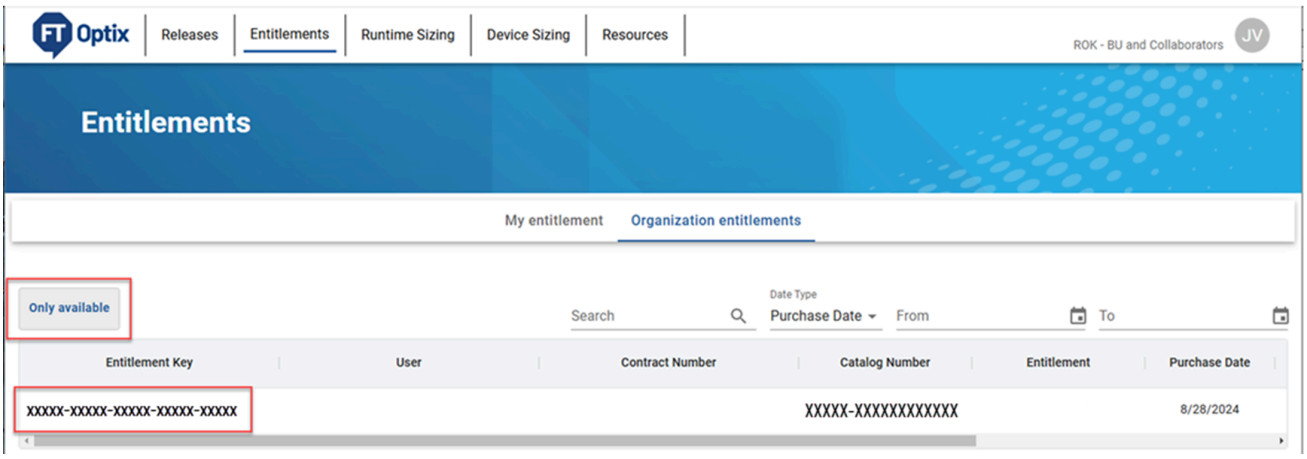
1. Purchase the entitlement or upgrade and allocate it to your organization as described in Allocate a FactoryTalk Optix Studio Pro entitlement to your organization on page 33.
2. If not already done, use a USB drive to copy the Runtime Tools installation package to the offline target device and run the .exe file.
3. Sign in to the FactoryTalk® Hub™, select the appropriate organization, and click the FactoryTalk® Optix™ tile.



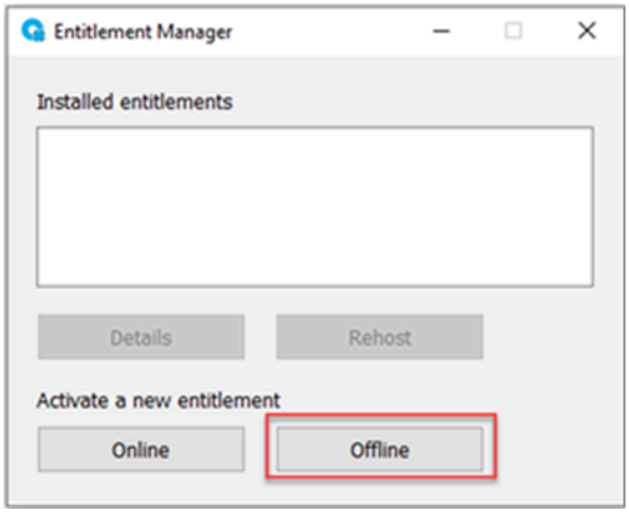
4. Navigate to Entitlements > Organization entitlements and confirm that the entitlement has been allocated to the Organization.



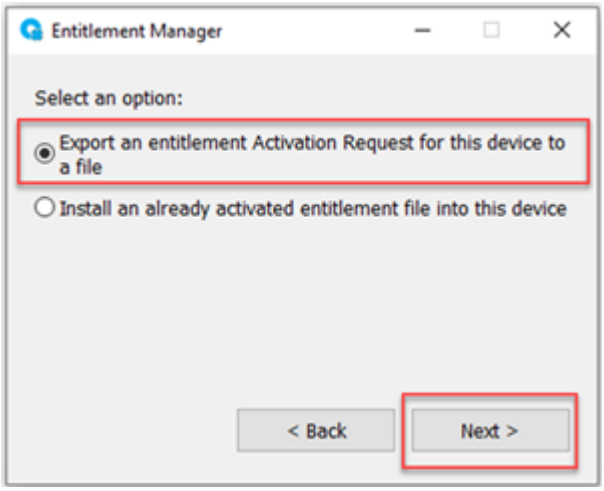
5. Copy the 25-character entitlement key. The entitlement key is required to activate or upgrade the entitlement.



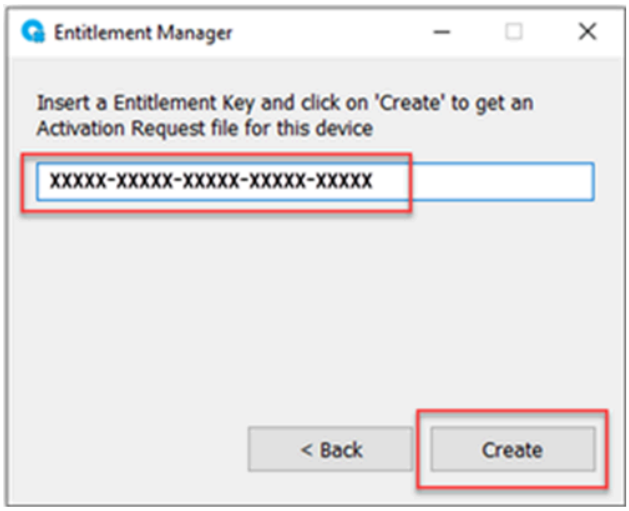
6. On the offline computer, open the Entitlement Manager and select Offline.



7. Select Export an entitlement Activation Request for this device to a file. Select Next.



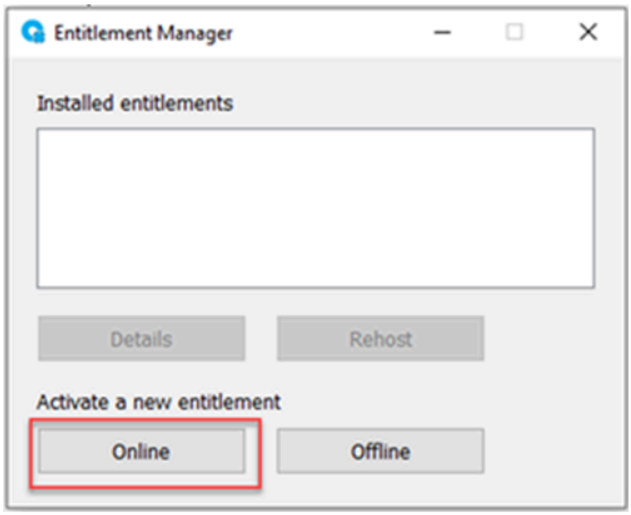
8. Enter your entitlement key and select Create.



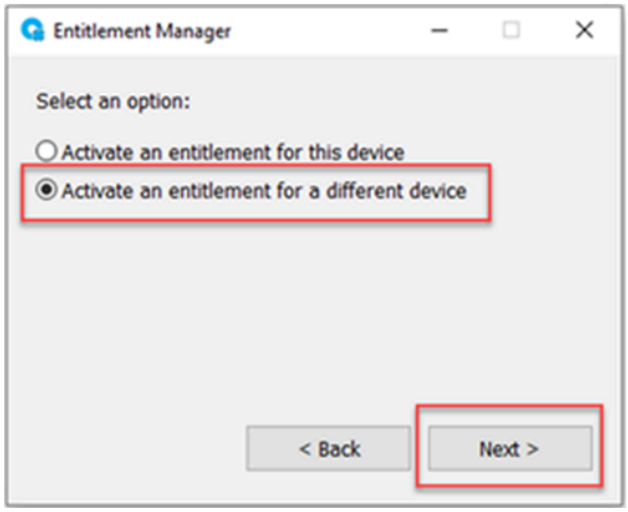
9. Name the Activation Request (.req) file, and select Save.

Save the file in a location that is easy to remember, such as the Desktop. We recommend you use the entitlement key as the file name.

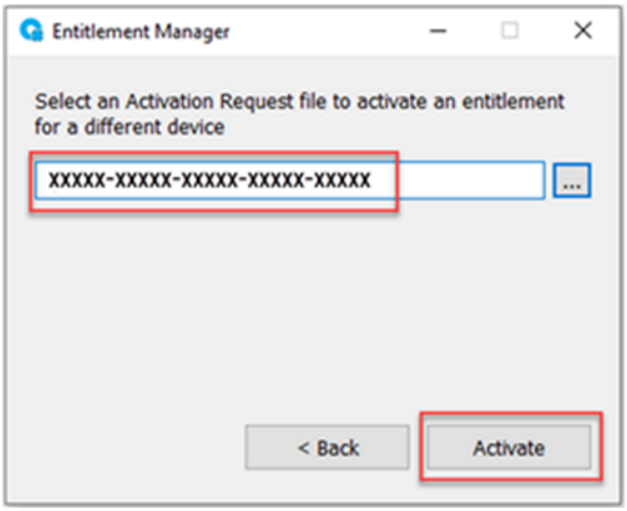
10. Copy the Activation Request file from the offline computer to the online computer.
11. On the online computer, open the Entitlement Manager, and select Online.



12. Select Activate an entitlement for a different device. Select Next.



13. Browse to the Activation Request file (.req) that you copied to the online computer. Select Open, then Activate.

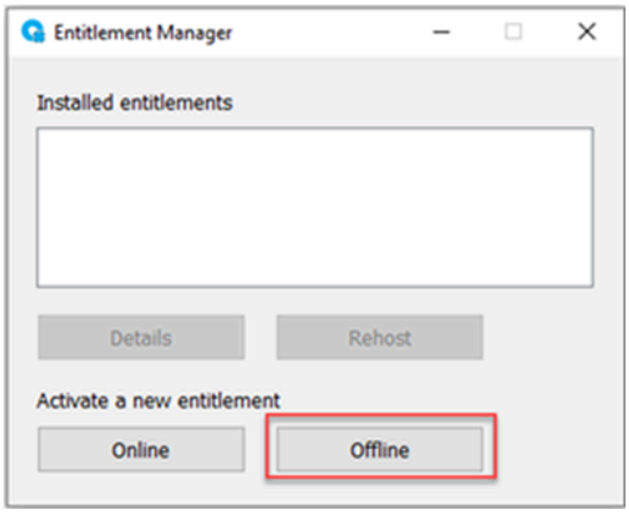


An Explorer window opens to save the new Activated Entitlement file (.ent).

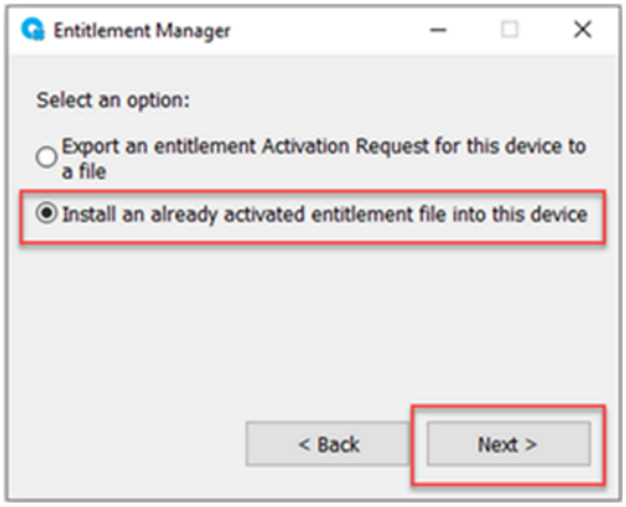
14. Accept the file name and select Save, then OK.

> Save the file in a location that is easy to remember, such as the Desktop.

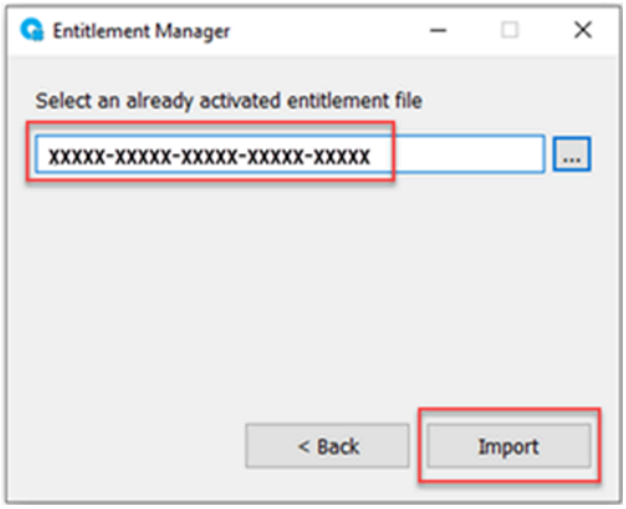
15. Copy the new entitlement file back to the offline computer.
16. On the offline computer, open the Entitlement Manager, and select Offline.



17. Select Install an already Activated Entitlement file (.ent) into this device. Select Next.



18. Browse to the Activated Entitlement file (.ent) file that you copied to the online computer, and select Open.
19. Select Import.



The Entitlement Manager shows the installed entitlement. The offline computer now recognizes the FactoryTalk® Optix™ Runtime entitlement.

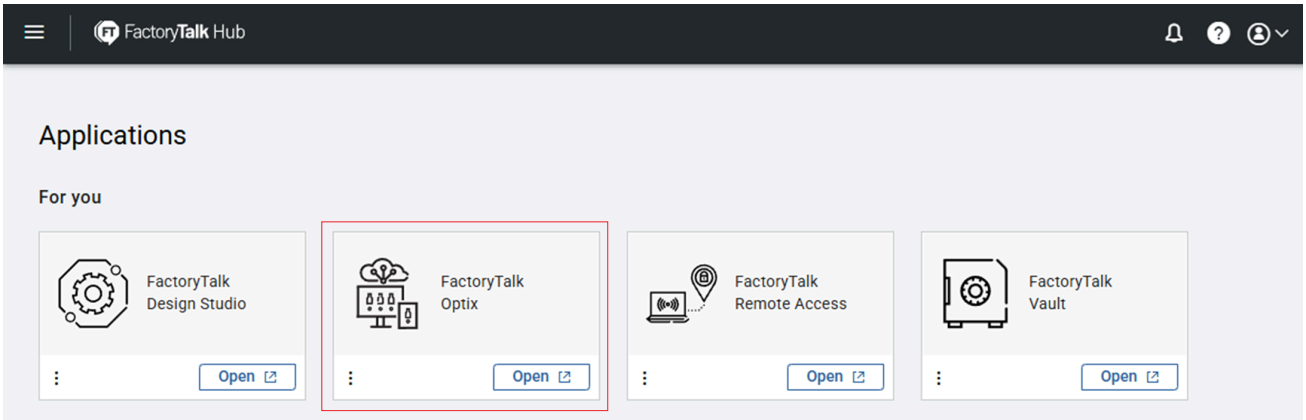
Activate or Upgrade FactoryTalk® Optix™ Runtime Entitlement on Offline Target Devices with Optix Embedded

To activate or upgrade an entitlement on an offline target device, use an online computer to retrieve entitlement key information and then install the entitlement on the offline device. You must also install the Entitlement Manager on both the offline device and the online computer as part of the Runtime Tools installation.

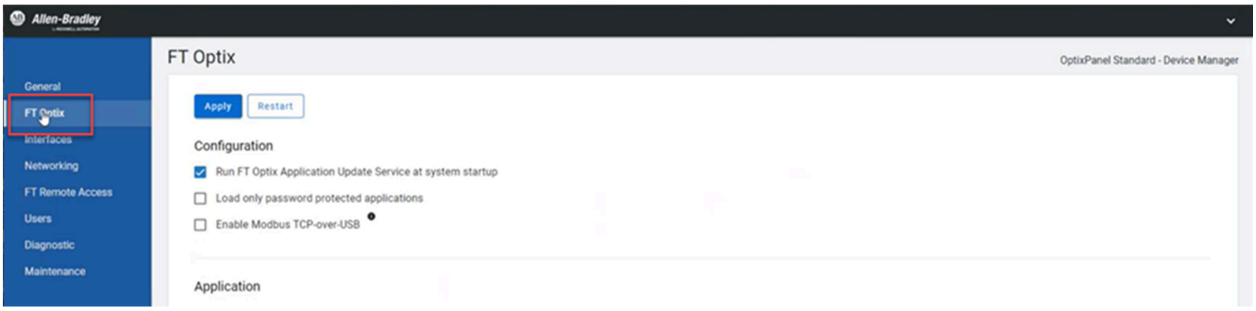
The Runtime Tools download is available at the FactoryTalk® Optix™ landing page on the FactoryTalk® Hub™ (sign in required).

Complete the following steps when using Target Devices on page 16 on which a starting license is included, such as OptixPanel™, OptixEdge™, or EECM.

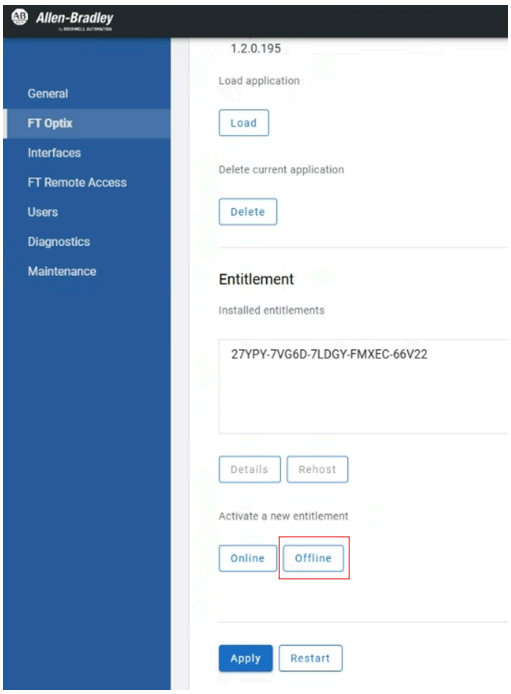
1. Purchase the entitlement or upgrade and allocate it to your organization as described in Allocate a FactoryTalk Optix Studio Pro entitlement to your organization on page 33.
2. Sign in to the FactoryTalk® Hub™, select the appropriate organization, and click the FactoryTalk® Optix™ tile.



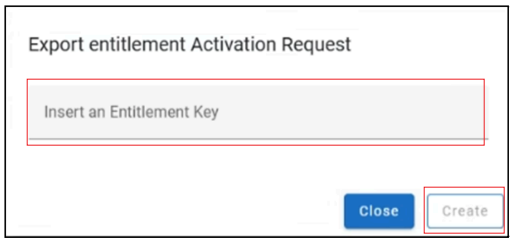
3. Create an Activation Request (.req) file on the offline device.
   a. On the runtime target device like OptixPanel™, OptixEdge™, or Embedded Edge Compute, access the System Manager. To access the System Manager, enter the runtime target device IP address in the web browser.
   b. On the Welcome dialog box, enter the username and password, and select Continue.
   c. When the System Manager appears, click FT Optix on the left side of the screen.



   d. Scroll to the Entitlement section, and select Offline.



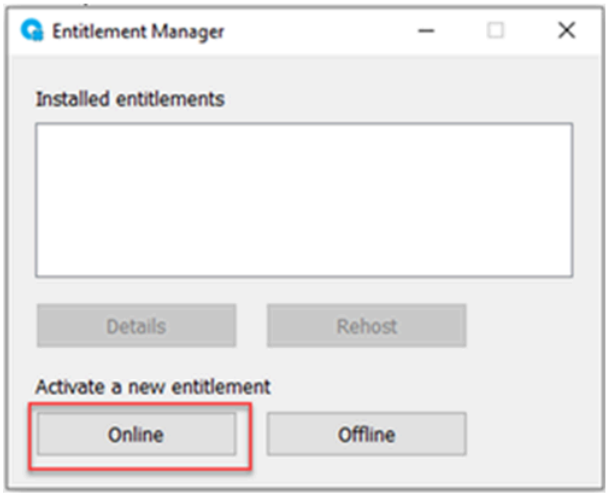
e. Copy the 25-character entitlement key. The entitlement key is required to activate or upgrade the entitlement. Enter your entitlement key and select Create.



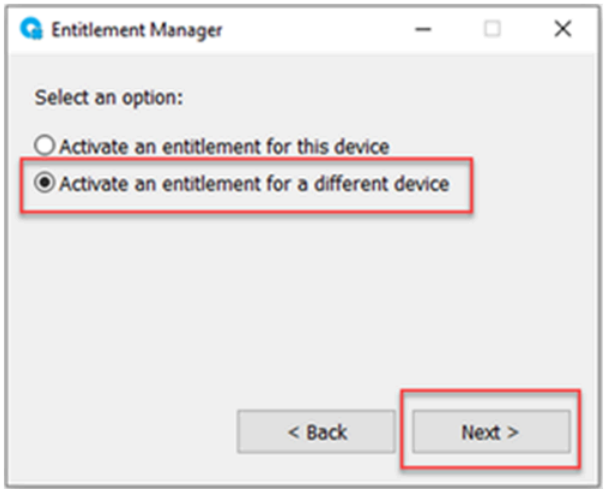
f. Name the Activation Request (.req) file and select Save, then OK.

We recommend you use the entitlement key as the file name.

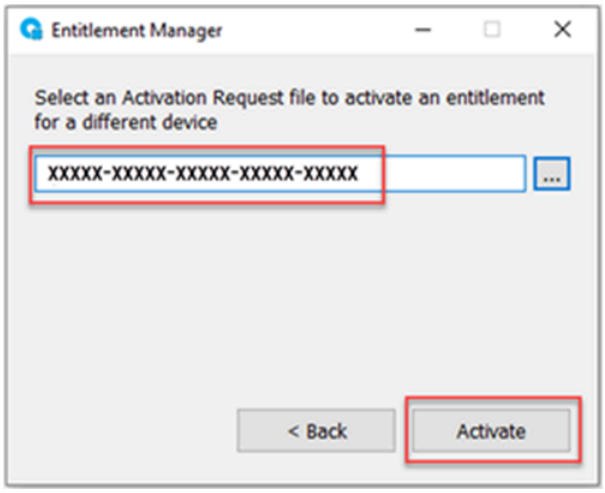
4. Use the USB drive or MicroSD card to transfer the Activation Request (.req) file to the online computer.
   a. On the online computer, open the Entitlement Manager, and select Online.



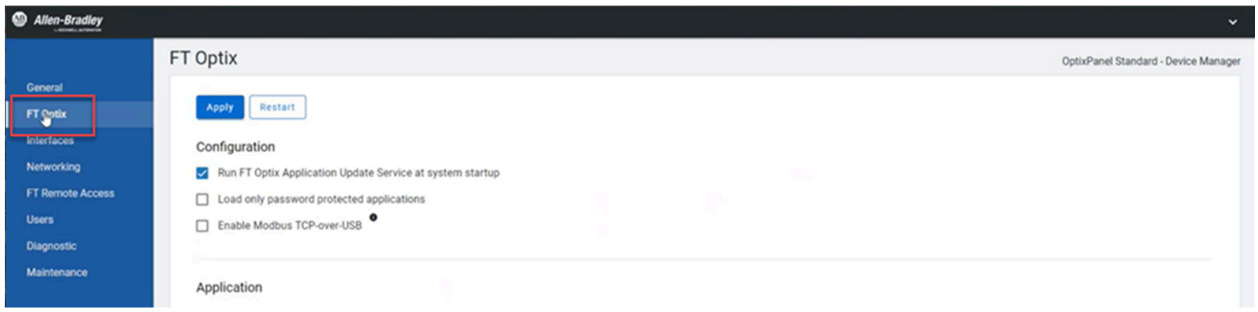
   b. Select Activate an entitlement for a different device. Select Next.



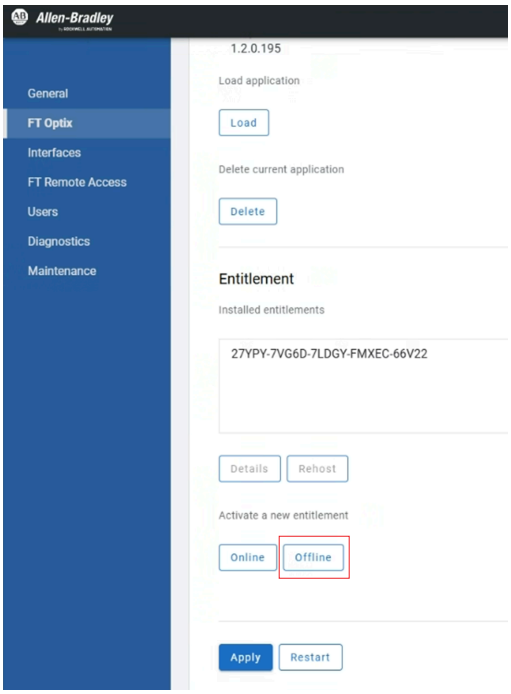
5. Create an activated entitlement file on the online computer.
   a. Browse to the Activation Request file (.req) that you copied to the online computer. Select Open, then Activate.



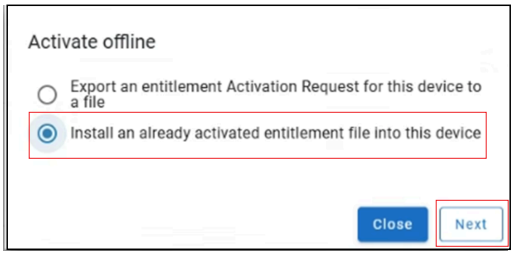
   An Explorer window opens to save the new Activated Entitlement file (.ent).
   b. Accept the file name and select Save, then OK.
6. Use the USB drive or MicroSD card to copy the Activated Entitlement file (.ent) back to the computer used to access the System Manager of the Target Device with Optix embedded.
   a. On the runtime target device like OptixPanel™, OptixEdge™, or Embedded Edge Compute, access the System Manager. To access the System Manager, enter the runtime target device IP address in the web browser.
   b. On the Welcome dialog box, enter the username and password, and select Continue.
   c. When the System Manager appears, click FT Optix on the left side of the screen.



   d. Scroll to the Entitlement section, and select Offline.



e. Select Install an already Activated Entitlement file (.ent) into this device. Select Next



f. Browse to the Activated Entitlement file (.ent) that you copied. Select Open, then OK.
The Entitlement Manager now displays the installed entitlement.

The entitlement is now installed and activated on the offline runtime target device. On the online computer, return to the FactoryTalk® Optix™ landing page and view Organization Entitlements to view and confirm the activation date.

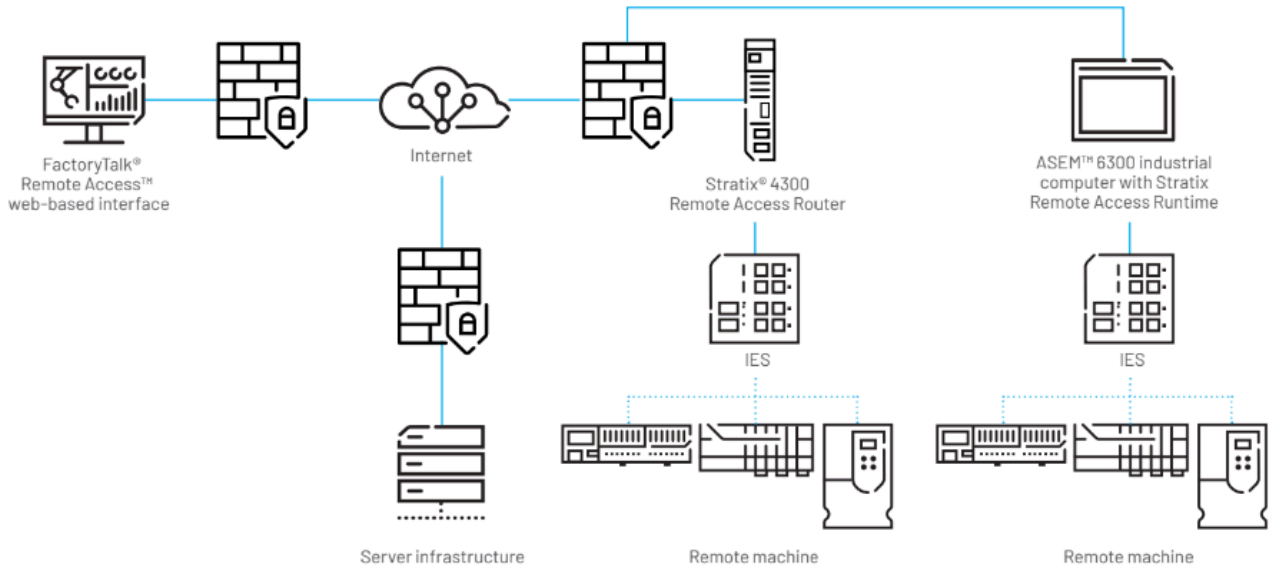
FactoryTalk® Remote Access™

The FactoryTalk® Remote Access™ solution supports the maintenance of operations with remote access via VPN. Also, in situations where operational plants are remote, the solution lets you investigate and resolve issues before planning travel to the site.

With FactoryTalk® Remote Access™ Manager software, you can manage machines from a centralized web-based interface to perform, configure, and operate the VPN tunnel for remote access. You can apply two-factor authentication to validate the user identities. In addition, the Transport Layer Security (or TLS) encryption protocol ensures confidentiality, integrity, and authenticity of the data exchange session. Logs and audit trails are available for tracking remote access operations and established connections.

The Stratix® 4300 remote access router adds hardware to the solution. The router lets machine builders and OEMs operate on remote systems and its subnetworks. The routers are offered in two and five 10/100/1000 Mbps Gigabit Ethernet copper port variants.

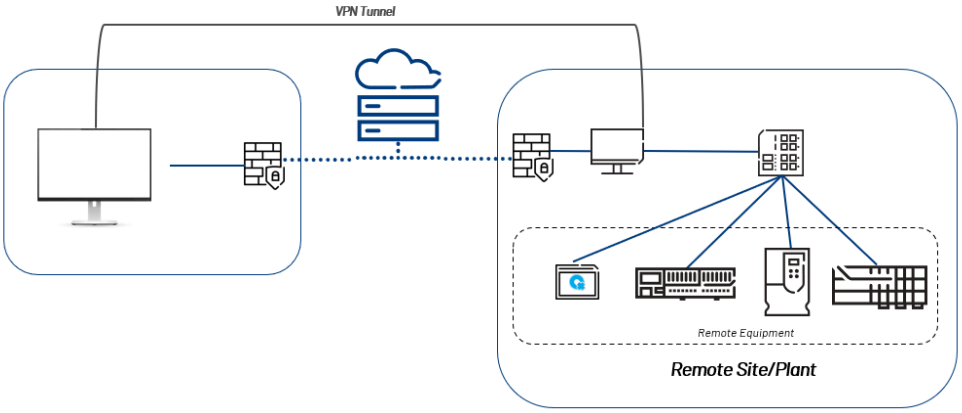
Figure 20. FactoryTalk® Remote Access™ Architecture



Remote Access Architecture

For remote maintenance and troubleshooting of FactoryTalk® Optix™ solutions, configure the FactoryTalk® Remote Access™ Runtime Pro software as the endpoint.

Figure 21. Recommended Architecture for Remote Access

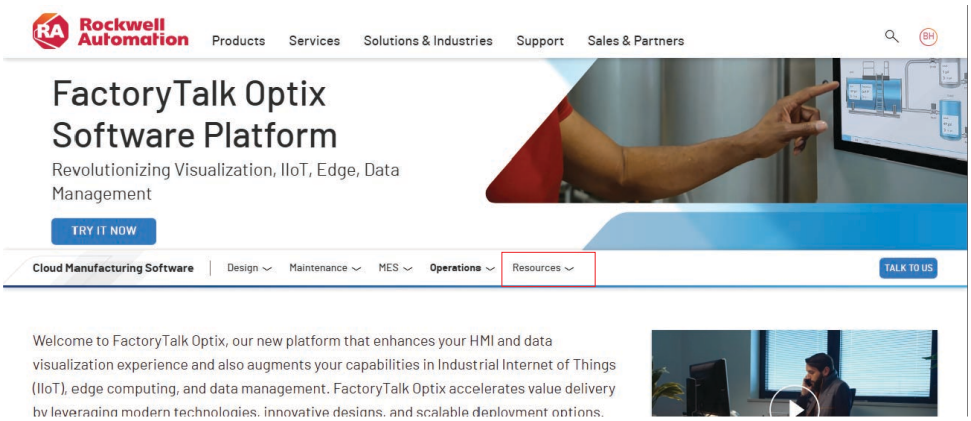


For more information about FactoryTalk® Remote Access™ configurations, see the online help.

Quick Start with FactoryTalk® Optix™

For quick start information, see the following resources.

- FactoryTalk Optix Resources - Explore manuals, online help, diagrams, tutorials, videos, and more.
- FactoryTalk Optix Software Platform - See the Resources tab.



- FactoryTalk Optix organization on GitHub - Contains a set of repositories that you can use as POC, training, or demonstrations.

Deployment Guidelines

After you create your project, you must deploy it to a target device. This section helps you deploy it correctly.

1. Confirm that the FactoryTalk® Optix™ Application Update Service runs on the target device.
   The Application Update Service is part of the FactoryTalk® Optix™ Runtime Tools. OptixPanel™ and Embedded Edge Compute devices come with Runtime Tools preinstalled. You must install the Runtime Tools on other target devices.
2. To operate correctly, the Application Update Service requires the TCP port 49100 to be reachable and a valid username with a configured password.
3. Configure a Target Device on page 56 to accept the application. The Application Update Service requires that a firewall is configured in a way that TCP port 49100 is reachable. The target device username and password are needed.
4. Deploy a FactoryTalk Optix Application on page 59 to the target device.

Configure a Target Device

Configure a target device from the System Manager. The following steps show how to configure an OptixPanel™ or Embedded Edge Compute target device.

1. On the Configuration dialog, check these settings.

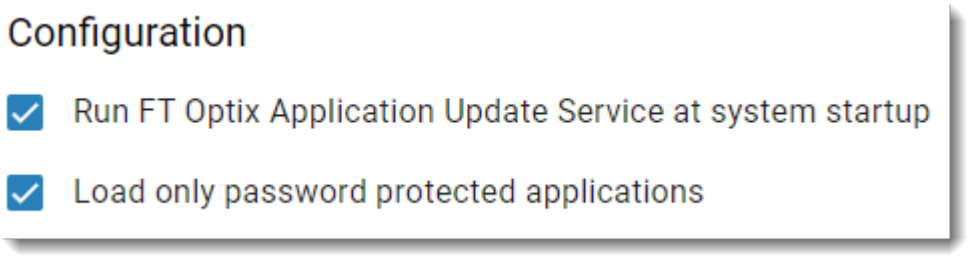


Table 7. Configuration Settings for a Target Device

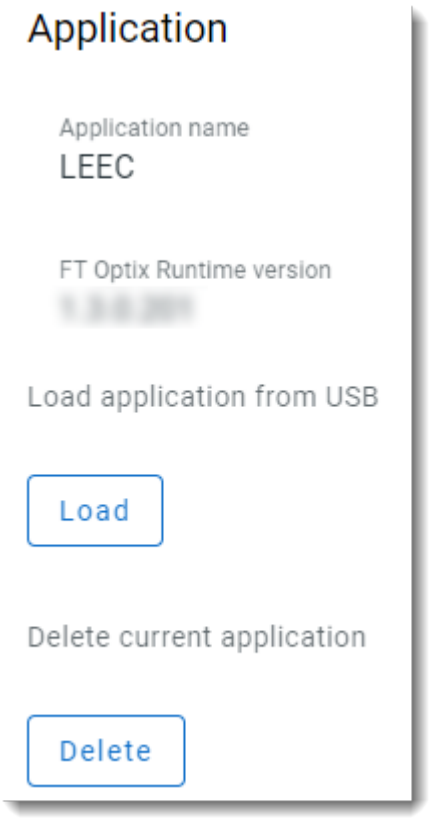
Field	Description
Run FactoryTalk® Optix™ update server at system startup	When this setting is enabled, the update server activates at device startup, allowing the download and update of FactoryTalk® Optix™ applications using FactoryTalk® Optix Studio™. If not enabled, downloading and updating FactoryTalk® Optix™ applications on the device is not possible.
Load only password protected applications	When this setting is enabled, it is possible to load and execute on the device only password-protected applications.

2. Check the Application dialog for additional information as shown in the following table.

Table 8. Application Settings for a Target Device

Field	Description
Application name	This section displays the name of the project that has been loaded onto the device.
FT Optix Runtime version	This section displays the version of the FactoryTalk® Optix Studio™ Runtime that was used to develop the loaded project. The FactoryTalk® Optix Studio™ Runtime provides a development environment for creating and testing HMI projects before deploying them to the device. The version number is important for ensuring compatibility between the project and the runtime environment and can be useful for troubleshooting issues that are related to project development and deployment.
load application from USB	The Load button allows you to transfer a FactoryTalk® Optix™ Application from a USB Memory to the target device (if it supports a USB port).

Field	Description
Delete current application	The Delete button allows you to delete the current application stored on the device.



FactoryTalk Optix Application

You develop and compile FactoryTalk Optix Applications in FactoryTalk Optix Studio. The compiled applications can be deployed to Windows® or Linux client systems.

Studio 5000 Logix Designer® and FactoryTalk® Design Studio™ Integration

FactoryTalk® Optix™ provides tag import for applications that are authored in Studio 5000 Logix Designer® and FactoryTalk® Design Studio™.

To import tags from these applications:

1. In FactoryTalk® Optix™, open your project and start the Configure Communications wizard.
2. Choose New Station and select RA EtherNet/IP station.
3. In Route, use either a plain IP (slot 0) or the backplane to target another slot.
4. Choose either:
   - Online to import Studio 5000 Logix Designer® or FactoryTalk® Design Studio™ tags directly from the controller
   - Offline to import a Studio 5000 Logix Designer® project (file type .ACD, .L5X, or .L5K).
5. Imported tags show in Project View > CommDrivers > RA EtherNet_IPDriver > ? > Tags. Assign your tags to widgets and logic.

Deploy a FactoryTalk Optix Application

Rockwell Automation target devices automatically run FactoryTalk Optix Applications upon deployment. Devices that do not have the update service installed or have the runtime application transferred manually require you to start the application manually on the device or configure the application for automatic startup.

See Deploying projects in FactoryTalk Optix Help for more information on deploying projects.

Use FactoryTalk Optix Studio desktop editor to deploy to either local or remote devices. Use FactoryTalk Optix Studio web editor to deploy to remote devices only. FactoryTalk Optix Studio uses FactoryTalk Remote Access to deploy to remote devices.

IMPORTANT: If a FactoryTalk Optix Application is already running on a target device, deploying another FactoryTalk Optix Application stops and removes the other application.

Prerequisites

- (optional) Configure the presentation engine for the mode in which you will be running FactoryTalk Optix.
- Confirm that FactoryTalk Optix runs on the target device.

  IMPORTANT: To operate correctly when running as an application, FactoryTalk Optix requires the TCP port 49100 to be reachable and a valid username with a configured password.

- Confirm that the target device has a valid entitlement.

  IMPORTANT: If the target device does not have a valid entitlement, FactoryTalk Optix Applications run in the demo mode and stop automatically after 2 hours.

- Configure a device.

To deploy a FactoryTalk Optix Application

1. Select the configured device.
2. If you selected a remote device, you must first establish a VPN connection to that device. Select **VPN** or a remote desktop connection by selecting **Remote Desktop**.
3. Select **Run**.
4. Enter the user password for the target device and select **OK**.

   If you deploy a project to a target device where a project with the same name is already running, you are prompted to **Update** or **Replace** the project at runtime.
   - **Update** overrides the runtime project elements, but retains application files on the device.
   - **Replace** overrides all runtime project and application files that were present on the device. Replaced application files cannot be recovered.

5. To detach FactoryTalk Optix Studio from the target device, close **Output**.
6. To stop the FactoryTalk Optix Application on the target device, select **Stop**.

   If you uninstall Runtime Tools, the next time you log in, your application will automatically restart. You cannot deploy an application after Runtime Tools are uninstalled because the uninstall removes the update service.

The application on the target device stops.

To detach FactoryTalk Optix Studio from the target deice, close the Output pane in FactoryTalk Optix. The application continues to run on the target device but FactoryTalk Optix is no longer connected so messages no longer appear in the Output pane.

FactoryTalk® Optix Studio™ Applications as Container Solution

FactoryTalk® Optix Studio™ Applications can run containerized in two ways.

- Build your own Docker container
- Use ThinManager® containers to run web-based applications and FactoryTalk® Optix™ Applications on thin clients without additional server computers. ThinManager® is Rockwell Automation's content delivery and thin client management software platform.

Run a FactoryTalk Optix Application in a Docker container

See Docker containers in FactoryTalk Optix Help for the latest information.

Deploy a FactoryTalk Optix Application to a running Docker® container with FactoryTalk Optix Runtime.

IMPORTANT: Rockwell Automation is not responsible for any third-party software, including but not limited to its performance, security, updates, or compatibility with our products. Any use of third-party software is at your own risk, and we do not provide support, warranties, or guarantees for such software. Users should refer to the respective third-party providers for assistance and licensing terms.

Prerequisites

Create a Docker image with a FactoryTalk Optix Application

To run a FactoryTalk Optix Application in a Docker container

In the terminal, enter: `docker run --publish external_port:internal_port --interactive --name container_name image_name [--restart unless-stopped ftoptix-updateservice] [-e license_key] [-d -v local_folder:/root/FTOptixApplication/Projects app_name]`

Table 9. Parameters

Parameters	Importance	Description
`--publish external_port:internal_port` `--interactive`	Required	Maps ports ***external_port*** An unused port available on the machine that runs the Docker image. ***internal_port*** (only for applications with GUI) The **Port** property value of the web presentation engine from FactoryTalk Optix Studio.
`--name container_name`	Required	The name for the Docker container to run.
`image_name`	Required	Name of the Docker image to run in the Docker container. You can check the available Docker images by entering `docker images` in the terminal.
`--restart unless-stopped` `ftoptix-updateservice`	Optional	Restart the Docker container automatically if the FactoryTalk Optix Application Update Service does not work.
`-e license_key`	Optional	Your FactoryTalk Optix entitlement license key.

Parameters	Importance	Description
		IMPORTANT: If you do not provide the entitlement license key, the FactoryTalk Optix Application stops running after 120 minutes.
`-d -v` *`local_folder`*`:/root/FTOptixApplication/Projects` *`app_name`*	Optional	Run Docker service in background and bind application folder to a local folder to persist changes made at FactoryTalk Optix Application runtime. ***local_folder*** Folder on a local volume to bind the application folder to. ***app_name*** Name of the FactoryTalk Optix Application.

Run a FactoryTalk® Optix™ Application in a ThinManager® Container

ThinManager® version 14.1 and later includes a FactoryTalk® Optix™ container, which can be used to host an Optix application directly on a ThinManager®-managed thin client. Applications deployed for use with the new ThinManager® Optix Container support both the Native Presentation Engine and the Web Presentation Engine.

We recommend you design and test your Optix application within FactoryTalk® Optix Studio™ as normal. Then export the application from FactoryTalk® Optix Studio™, and import it into the ThinManager® Admin Console.

For more information, see the ThinManager® 14.1 Thin Client Management Platform User Manual, publication TM-UM001.

Runtime Entitlement Sizing Guide

The tables in this section provide information on the features available with FactoryTalk® Optix™ and the number of feature tokens that are required to use them.

IMPORTANT: Use the following tables for guidance only. See Runtime sizing tool on page 13 for up-to-date token packages and how to determine the token package that best meets your needs.

Table 10. Token Packages

	Packages				
Package size	XS	S	M	L	XL
Feature tokens included	5	8	11	15	21

Table 11. Basic HMI Feature Tokens

Feature	Token Value
Core framework, graphics, data controls, charts, user management	Included with all token packages
HMI graphic rendering (1 client)	1
HTML5 HMI graphic rendering (1 web client)	1
HTML5 HMI graphic rendering (up to 3 web clients)	2
HTML5 HMI graphic rendering (up to 5 web clients)	3
HTML5 HMI graphic rendering (up to 10 web clients)	5
HTML5 HMI graphic rendering (up to 20 web clients)	7
Alarming	1
Event Logger (includes Alarm History)	1
Runtime retentivity	1
Data logger	1
Recipes	1
Basic PDF reporting	1
Audit signature	1
Active directory authentication	1
Document signature	1

Table 12. OPC UA Feature Tokens

Feature	Token Value
OPC UA client: FactoryTalk® Optix™ is a client to another OPC UA server	
OPC UA Client – (connected to 1 server)	1
OPC UA Client – (connected to multiple servers)	2
OPC UA server: FactoryTalk® Optix™ is a server to other OPC UA clients	
OPC UA Server – (1 connected client)	1
OPC UA Server – (up to 3 connected clients)	2
OPC UA Server – (up to 5 connected clients)	3
OPC UA Server – (up to 10 connected clients)	5
OPC UA Server – (up to 20 connected clients)	7

Table 13. Database Feature Tokens

Feature	Token Value
Database – Embedded (single database)	Included with Data logger
Database – ODBC (1 database connection)	1
Database – ODBC (up to 3 database connections)	2
Database – ODBC (up to 5 database connections)	3
InfluxDB database - Embedded	1

Table 14. MQTT Connectivity

Feature	Token Value
MQTT broker (max 25 connections)	1
MQTT subscriber	1 (per broker connection)
MQTT publisher	1 (per broker connection)

Table 15. Controller Communications Features

Feature	Token Value
For Logix5000™ controllers	
1 controller connection	Included with all token packages or 1 depending on the runtime target device

3. For ASEM™ 6300 industrial computers or devices with Optix embedded, one feature token is deducted for communication with Rockwell Automation® controllers.

Table 15. Controller Communications Features (continued)

Feature	Token Value
Multiple controller connections	1 or 2 depending on the runtime target device [3]
For non- Allen-Bradley® controllers	
1 controller connection	1
Multiple controller connections	2
Runtime tag upload from controller (Siemens S7, Beckhoff)	1

Example Runtime Entitlements

The following table shows typical features that can be used in FactoryTalk® Optix™ applications. You can use any combination of features in an application, as long as the runtime license covers the total feature tokens required.

Table 16. FactoryTalk® Optix™ Runtime Entitlements and Typical Applications

Feature	XS	S	M	L	XL
Controller connectivity, acting OPC UA server, and basic display					
Single Rockwell Automation® controller	✓	✓	✓	✓	✓
OPC server (1 connected client)	✓	✓	✓	✓	✓
Data logging with local database	✓	✓	✓	✓	✓
HMI graphics	✓	✓	✓	✓	✓
Basic HMI that includes all XS capabilities plus:					
Third-party controller support	–	✓	✓	✓	✓
Alarming	–	✓	✓	✓	✓
Basic reporting	–	✓	✓	✓	✓
Security with Active Directory	–	✓	✓	✓	✓
HMI station that includes all Small capabilities plus:					
Multiple controllers (Rockwell Automation® or third-party)	–	–	✓	✓	✓
Recipes	–	–	✓	✓	✓
OPC UA client	–	–	✓	✓	✓

Table 16. FactoryTalk® Optix™ Runtime Entitlements and Typical Applications (continued)

Feature	XS	S	M	L	XL
Comprehensive HMI station that includes all M capabilities plus:					
HTML5 HMI up to three web clients	–	–	–	✓	✓
Audit signatures	–	–	–	✓	✓
Database—ODBC with one database connection	–	–	–	✓	✓
Extensible HMI station that includes all L capabilities plus:					
Multiple OPC UA client connections	–	–	–	–	✓
OPC UA server for multiple clients	–	–	–	–	✓
Database—ODBC with multiple database connections	–	–	–	–	✓
Unlimited station runtime entitlements also available	–	–	–	–	✓

FactoryTalk® Optix Studio™ User Interface

Figure 22. FactoryTalk® Optix™ Design Environment

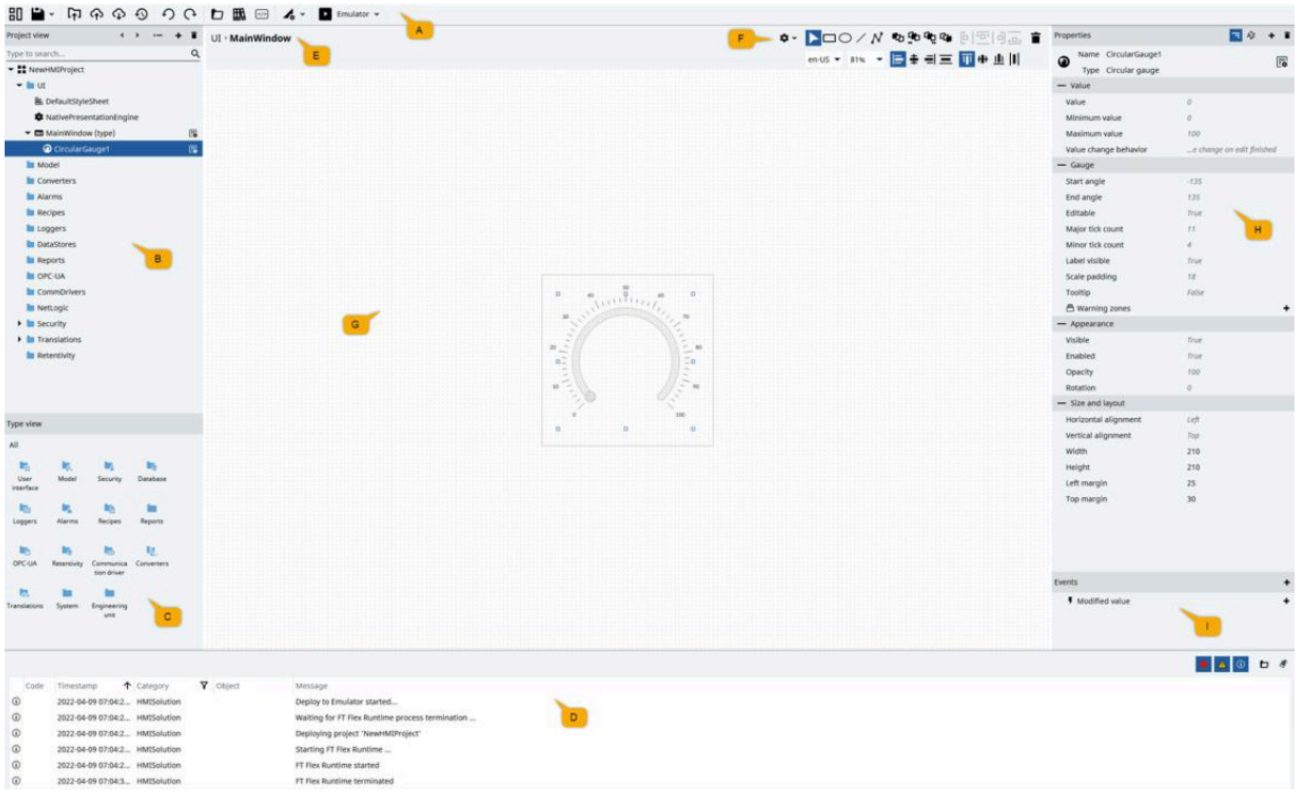


Table 17. FactoryTalk® Optix™ Design Environment

Interface Section	Description
A	Main toolbar
B	Project panel displays project information model to display and set the structure of nodes. The nodes can be organized according to parent/child logics
C	Types panels with details on: • Essential types, which are grouped in folders according to their purpose • Custom project types, which are located in folders that reflect the project structure
D	Log panel displays messages that are related to the operation of the software
E	Path of the object being edited in the editor
F	Toolbar specific to the object type being edited
G	Object editor to set interface objects or to configure other specific object types (such as tag importers or recipes)
H	Properties panel displays the properties of the selected node in the Project or in the object editor
I	Events panel to subscribe methods to events that can be generated

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
Local Technical Support Phone Numbers	Locate the telephone number for your country.	rok.auto/phonesupport
Technical Documentation Center	Quickly access and download technical specifications, installation instructions, and user manuals.	rok.auto/techdocs
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.

Rockwell Otomasyon Ticaret A.Ş. Kar Plaza İş Merkezi E Blok Kat:6 34752 İçerenköy, İstanbul, Tel: +90 (216) 5698400 EEE Yönetmeliğine Uygundur

Connect with us.

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AMERICAS: Rockwell Automation, 1201 South Second Street, Milwaukee, WI 53204-2496 USA, Tel: (1) 414.382.2000
EUROPE/MIDDLE EAST/AFRICA: Rockwell Automation NV, Pegasus Park, De Kleetlaan 12a, 1831 Diegem, Belgium, Tel: (32) 2663 0600
ASIA PACIFIC: Rockwell Automation SEA Pte Ltd, 2 Corporation Road, #04-05, Main Lobby, Corporation Place, Singapore 618494, Tel: (65) 6510 6608
UNITED KINGDOM: Rockwell Automation Ltd., Pitfield, Kiln Farm, Milton Keynes, MK11 3DR, United Kingdom, Tel: (44)(1908) 838-800

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