# Stratix 4300 Remote Access Routers

Catalog Numbers 1783-RA2TGB, 1783-RA2TGC4G, 1783-RA2TGW, 1783-RA2TGWC4G, 1783-RA5TGB, 1783-RA5TGC4G, 1783-RA5TGW, 1783-RA5TGWC4G

Allen-Bradley
by ROCKWELL AUTOMATION

## User Manual

Original Instructions

# Important User Information

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

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

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

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

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

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

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

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

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

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.

## About This Publication

This manual describes how to use the Stratix® 4300 Remote Access™ Routers.

Make sure that you are familiar with use of an EtherNet/IP™ network.

Product compatibility information and release notes are available online within the Product Compatibility and Download Center.

## Summary of Changes

This publication contains the following new or updated information. This list includes substantive updates only and is not intended to reflect all changes.

| Topic | Page |
|---|---|
| Connect Via Ethernet | 23 |
| General Options | 25 |
| External Storage Devices | 27 |
| Upgrade Firmware | 27 |
| DHCP Server on LAN | 34 |
| Gateway Priority | 35 |
| FactoryTalk Remote Access | 39 |
| Reserve Static IP Pool | 41 |
| Update the Device Firmware | 45 |

## Additional Resources

These documents contain additional information concerning related products from Rockwell Automation.

| Resource | Description |
|---|---|
| EtherNet/IP Network Devices User Manual, publication ENET-UM006 | Describes how to configure and use EtherNet/IP devices to communicate on the EtherNet/IP network. |
| Ethernet Reference Manual, publication ENET-RM002 | Describes basic Ethernet concepts, infrastructure components, and infrastructure features. |
| FactoryTalk® Remote Access™ Help website, rok.auto/help | Describes how to use and troubleshoot FactoryTalk Remote Access. |
| Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1 | Provides general guidelines for installing a Rockwell Automation industrial system. |
| Industrial Components Preventive Maintenance, Enclosures, and Contact Ratings Specifications, publication IC-TD002 | Provides a quick reference tool for Allen-Bradley® industrial automation controls and assemblies. |
| Product Certifications website, rok.auto/certifications. | Provides declarations of conformity, certificates, and other certification details. |
| Safety Guidelines for the Application, Installation, and Maintenance of Solid-state Control, publication SGI-1.1 | Designed to harmonize with NEMA Standards Publication No. ICS 1.1-1987 and provides general guidelines for the application, installation, and maintenance of solid-state control in the form of individual devices or packaged assemblies incorporating solid-state components. |
| Stratix 4300 Remote Access Routers Installation Instructions, publication 1783-IN020 | Describes how to install a Stratix 4300 Remote Access Router. |
| Stratix Ethernet Device Specifications Technical Data, publication, 1783-TD002 | Describes the technical specifications of Stratix Devices. |
| System Security Design Guidelines Reference Manual, publication SECURE-RM001 | Provides guidance on how to conduct security assessments, implement Rockwell Automation products in a secure system, harden the control system, manage user access, and dispose of equipment. |

You can view or download publications at rok.auto/literature.

# Notes:

# Remote Access Architecture

The Stratix® 4300 Remote Access™ Router provides the ability for manufactures and OEMs to apply the appropriate skills and resources independent of their physical location by enabling our customers to continue to maintain their operations with remote access via VPN. The solution helps reduce costs, add value to customer operations, and encourage collaboration between OEMs and customers.

The router:

- 1 gigabit ports
- Supports configuration via FactoryTalk® Remote Access™ software
- Uses VPN connections that are optimized for industrial communications with reduced latency
- Supports hard-wired, cellular, and wireless connections for communications to FactoryTalk Remote Access software

Factory Talk Remote Access software:

- Manages user and group configurations to segment network access and permissions
- Provides log and audit trails for activities for established connections

## Remote Access Solution Overview

### Before You Begin

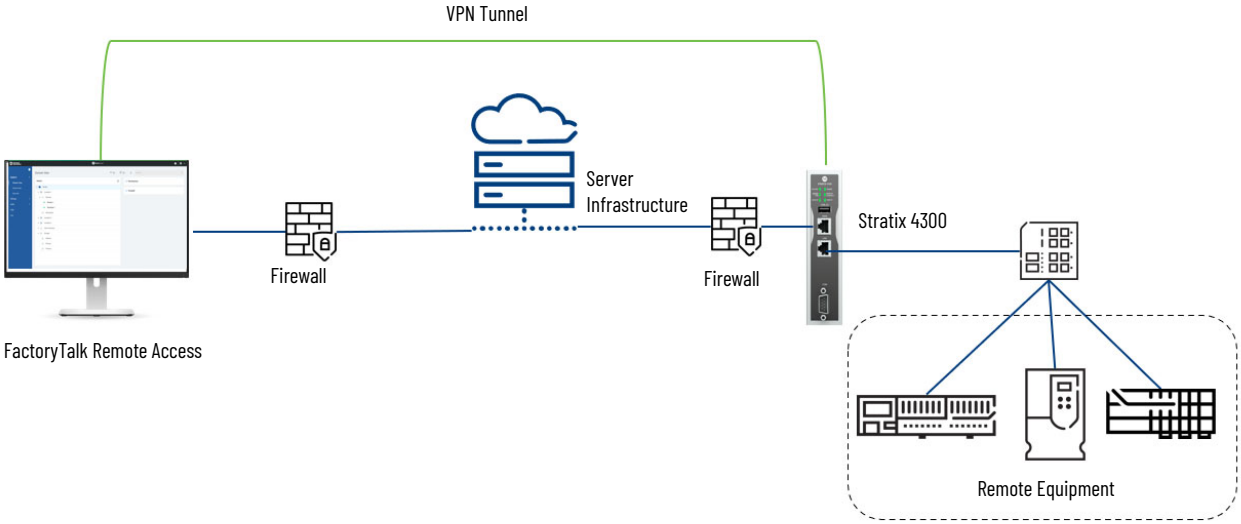
Remote Access for Industrial Equipment enables connectivity to remote machines by leveraging optimized VPN technologies. The remote access solution includes hardware and software.

There are three key components for remote access.

1. The Stratix 4300 Remote Access Router enables access to remote equipment through a VPN connection.
2. Server infrastructure is a distributed cloud-based server infrastructure that facilitates the connections.
3. FactoryTalk Remote access is a web-based client that is used to maintain and initiate remote connections.

Together, these products enable secure access to industrial machines, skids, and assets.

The Stratix 4300 must be registered to FactoryTalk Remote Access before a connection can be initiated.




## Best Practices

- FactoryTalk Remote Access Administrator enforces two-factor-authentication.
- The FactoryTalk Remote Access software must be up to date in case security improvements are released.
- Configure strong, complex user passwords.
- These routers must be connected to the Internet through its WAN port. Stratix 4300 routers do not enable any service through that port and only need an outgoing connection through to the configured outgoing port (TCP port 443, 80, or 5935). An additional firewall can provide more protection.
- Undertake a formal threat and risk assessment in relation to remote access.
- Use the provided role-based access control.
- Use the provided physical controls to enable or disable remote access.
- Monitor security incidents and logs pro-actively to provide timely incident response and accurate forensics.
- Conduct regular reviews and assessments of the secure remote access solution and technologies to maintain compliance with policies and procedures.
- Apply defense in depth practices for the secure remote access solution, including practices to secure the remote computer.

# Remote Access Routers

## Remote Access Router Front Panel View

**Figure 1 - Router Front View**

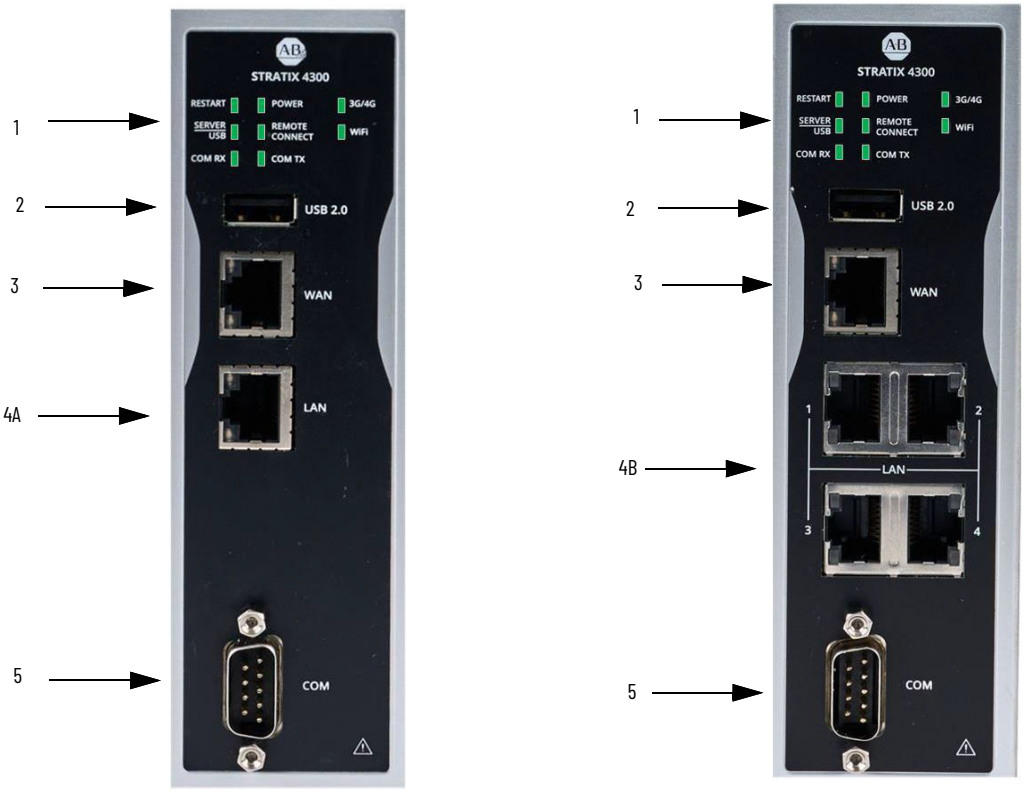



**Table 1 - Router Front View**

| | |
|---|---|
| 1 | Status Indicator[1]s:<br>• Restart Status Indicator<br>• Server/USB Status Indicator<br>• COM RX Status Indicator<br>• Power Status Indicator<br>• Remote Status Indicator<br>• COM TX Status Indicator<br>• 3G/4G Status Indicator<br>• Wi-Fi Status Indicator |
| 2 | USB 2.0 |
| 3 | WAN |
| 4A | LAN |
| 4B | LAN1<br>LAN2<br>LAN3<br>LAN4 |
| 5 | COM |

(1) For more information on status indicators, see Appendix B.

**Figure 2 - Router Top View**

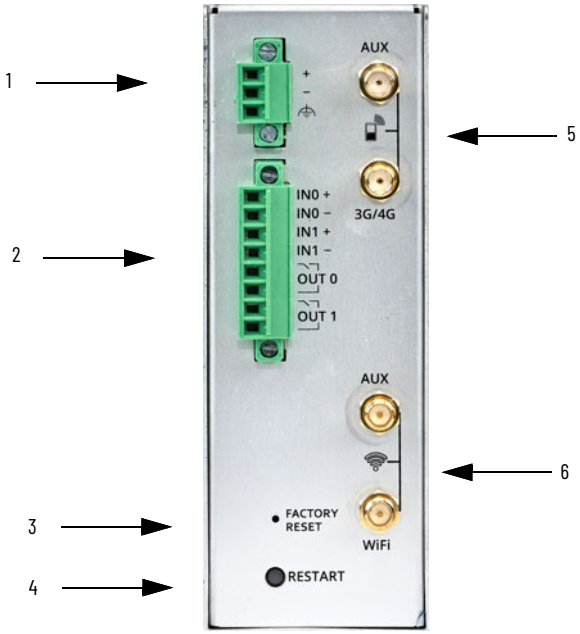



**Table 2 - Router Top View**

| | |
|---|---|
| 1 | Power Connector |
| 2 | Digital input/output Connector |
| 3 | Factory Reset Button |
| 4 | Restart Button |
| 5 | Cellular/Auxiliary Cable Port |
| 6 | WiFi/Auxiliary Cable Port |

**WARNING:** When you press the Factory Reset button while power is on, an electric arc can occur, which could cause an explosion in hazardous location installations.

**Table 3 - Router Top View Definitions**

| | | |
|---|---|---|
| Digital input/output | IN0 | This input works as a Connection mode, also referred as selector key input. By default, the status of this input is ignored. When the router is configured to handle the input, it can be controlled from outside the connection to the server. The input can be driven by a mechanical selector, by a key selector, or by a PLC output. |
| | IN1 | This input controls the device restart from outside. The operation corresponds to the restart button. Once the command is received a proper feedback is returned by the status indicator. |
| | OUT0 | The output is active when the router is connected to its associated Domain. The simple connection to the server does not activate the output. The Stratix 4300 is required to be successfully authenticated to the Domain |
| | OUT1 | The output is active when at least one user is remotely connected to the Router. |
| Factory Reset | | A factory reset reverts the router to factory settings. The system software is reset to its original versions including the operating system. To execute the reset, turn off the device. Press and hold down the reset button for at least 10 seconds. To reach the button, use a small tool, such as a paper clip. The status indicator blinks from red to green multiple times when the reset process has started. Wait for the process to be completed and restart the system. |
| Restart | | Forces the device to restart. This command verifies a complete initialization of all internal electronics and software. The restart status indicator turns on. |
| Wi-Fi | | Intel AC9260, IEEE 802.11a/b/g/n/ac, 2.4GHz/5GHz; Security: WEP 64/128 bit, WPA, WPA2, WPS. |
| Cellular | | 2G/3G./4G LTE CAT4 Multi-Band, Multi-region support. |

## Multi-factor Authentication

Multi-factor authentication is a secure way to protect access to your account, available through FactoryTalk Remote Access.

Multi-factor authentication is enabled when you first sign in to FactoryTalk Remote Access. You receive a message that multi-factor authentication must be configured and activated before use.

1. To display a QR Code for configuration, click the activation link.

   This link can be scanned with any application that supports the Google Authenticator standard.
2. To download and authenticator app, use one of the following links from your device:

- Authy
- Google Authenticator
- Duo
- Microsoft® Authenticator

If your device cannot scan the QR Code, click the link "Cant Read?" to view the security code to be used with your authentication application as an alternative to scanning the QR Code.

After the first sign in, each following sign in asks for your authenticator code. This code is updated every 3 minutes.

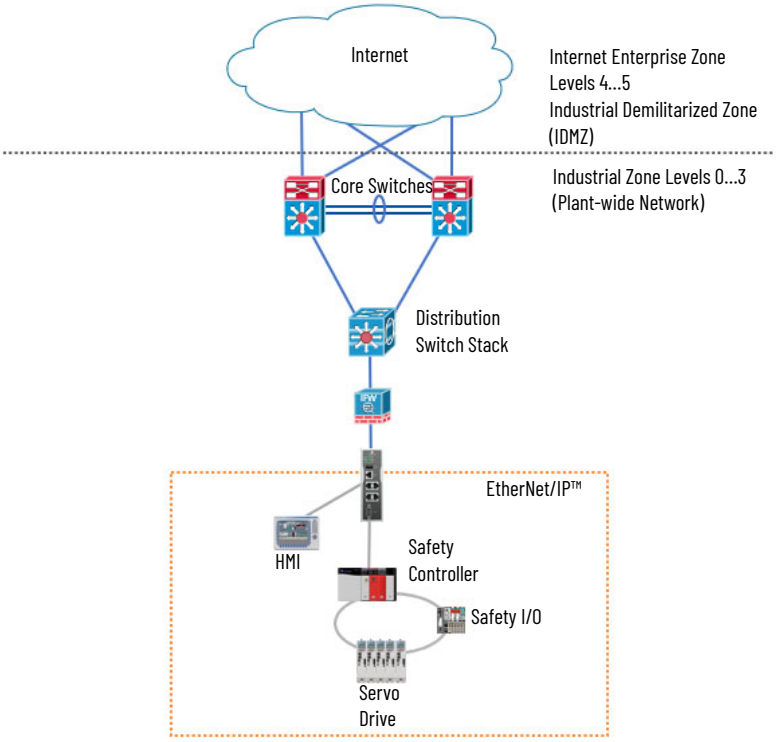
3. Open the authenticator application on your device and type in the current code that is assigned to your account.

# Typical Remote Access Architectures

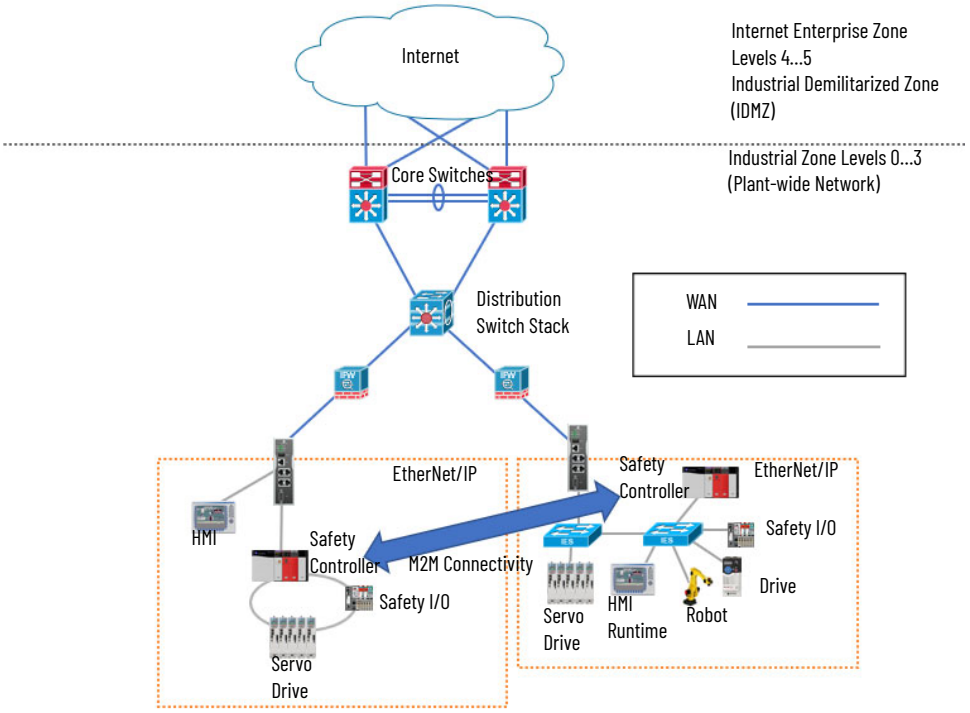
The following examples are common remote access architecture diagrams.

## Secure Remote Connectivity - Use Case: Cell/Area Zone SRA

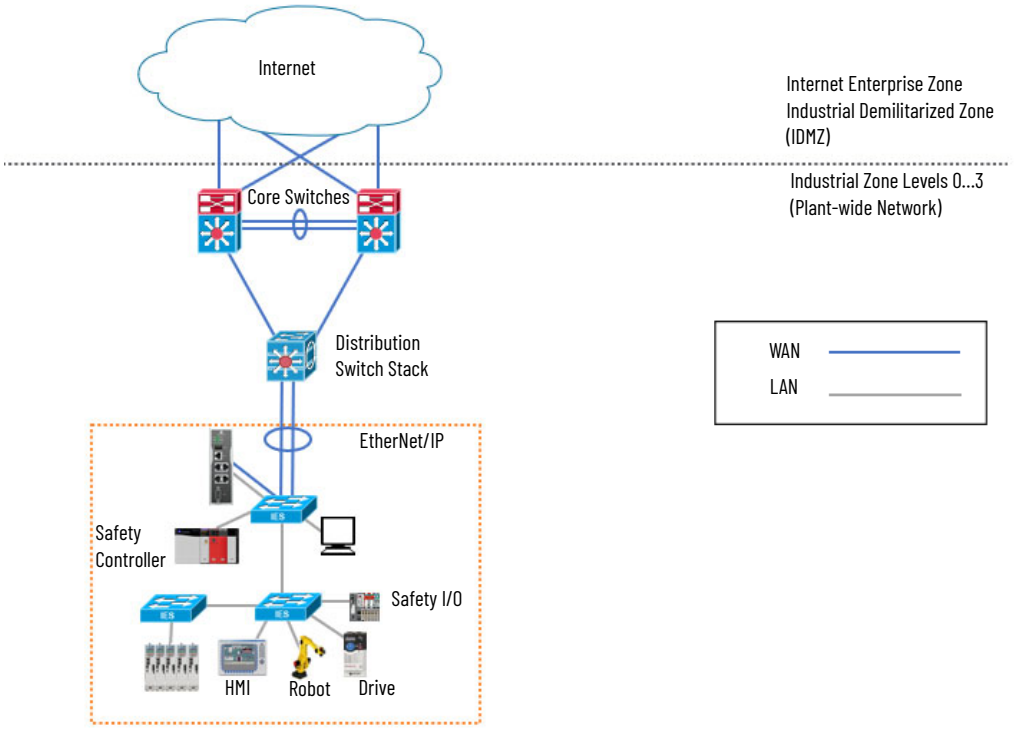
This architecture is highlighting the usage of the Stratix 4300 for remote access purposes and, if needed, for NAT/Routing purposes for the cell/area zone. Without NAT or Routing, there are no North or South data flows through the Stratix 4300. East or West data flow (for example from the HMI to the Safety Controller) within the cell/area zone occurs in the embedded switch of the Stratix 4300.



The following architecture is highlighting the use of the Stratix 4300 for remote access purposes and NAT/Routing purposes. The Stratix 4300 provides remote access to each individual cell/area zone. If there is a need for peer-to-peer or machine-to-machine communication, the Stratix 4300 NAT or Routing features can be configured to allow successful communication.

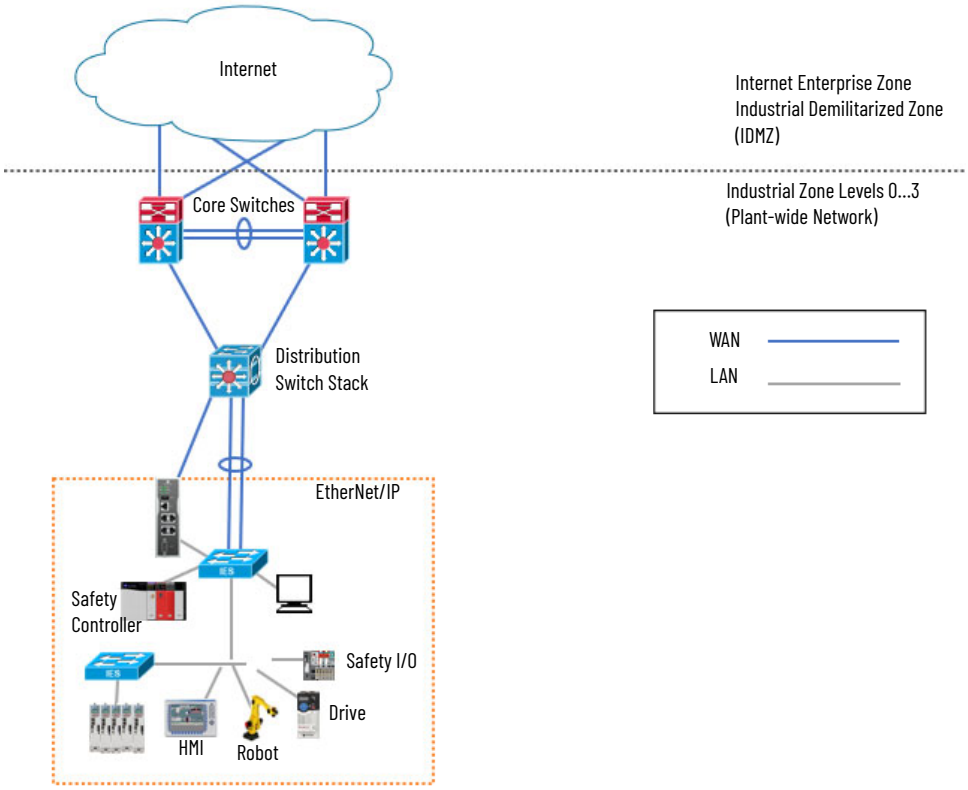


The following architecture is highlighting the use of the Stratix 4300 for remote access purposes. An IES is positioned in the cell for any other North/South and East/West traffic. The IES switching infrastructure also provides routing and switching services to all devices including the Stratix 4300. The VLAN required for Internet access or WAN must be extended into the cell/area zone IES to provide this is to verify that the Stratix 4300 has Internet access for remote access.



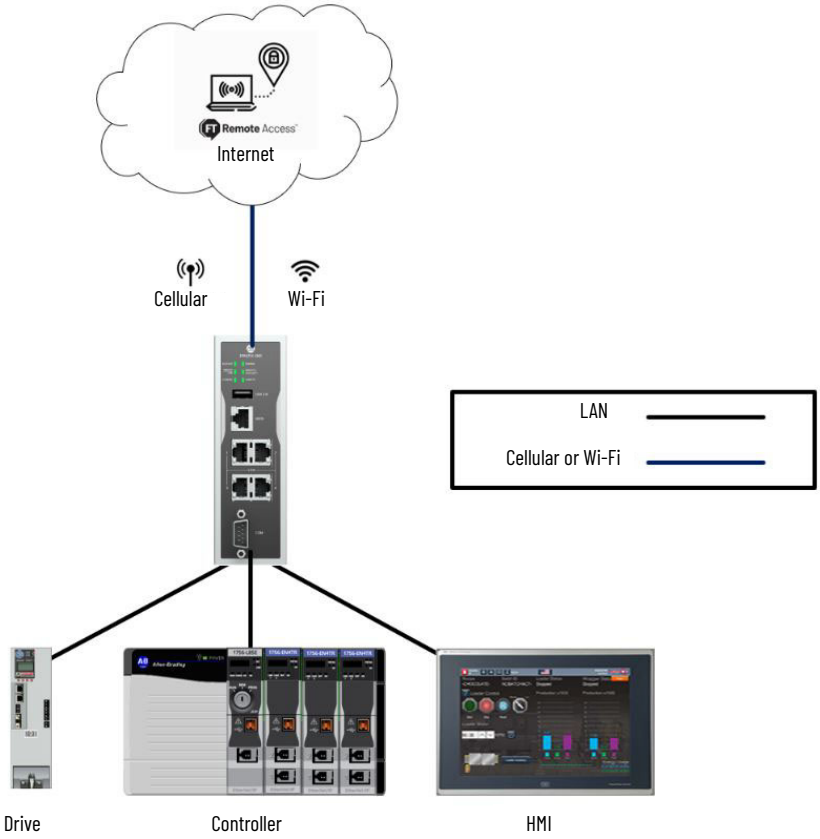
The following architecture is highlighting the usage of the Stratix 4300 for remote access purposes. An IES is positioned in the cell for any other North/South and East/West traffic. The IES switching infrastructure also provides routing and switching services to all devices. In this case, the IES is not providing routing to the Stratix 4300 WAN connection.

The WAN is connected directly to distribution to ease routing requirements. Any cloud or remote access-related traffic from the Stratix 4300 goes directly to the distribution switch. Generally, the distribution switch is the central router for the industrial architecture before the Core routes traffic. No VLAN or routing extends to the Cell/Area Zone in this architecture unless the industrial application requires it.



## Secure Remote Connectivity - Use Case: Modem Direct/Isolated Machine

The following architecture highlights a remote isolated cell. For the Internet connection in this architecture, an Internet modem like those provided by most Internet service providers is used. For the Internet connection in this architecture, a cellular or wireless connection to the Internet can be used.



# Router Integration

The Stratix® 4300 Remote Access™ Router can be configured using an Ethernet connection to the device. You need access to the hardware, FactoryTalk® Hub™, FactoryTalk® Remote Access™, and an Internet connection for this configuration. It is recommended that you correct directly to the router via Ethernet for configuration with system manager.
For more information, see Router Configuration.

## FactoryTalk Hub

To use FactoryTalk Hub, either create an organization or join an existing organization. The organization that you belong to control 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 multiple organizations.

After your account has been authenticated, your browser displays the FactoryTalk Hub Home screen. Panels are displayed that identify the services entitled for your use.

The organizational administrator can use the Portal Menu to add an entitlement, manage the FactoryTalk Hub subscription, define resources, create user profiles, and invite additional users to the organization.

If the link isn't visible, you are not logged in as an organizational administrator.

### Open a Service

To open a service:

1. Click the panel for the service, such as FactoryTalk® Designs Tools™ or FactoryTalk Remote Access.
2. To return to the Home screen, click Home.

Each service has a "Getting Started" section and "help" to assist you in learning how to perform different tasks.

### Verify account

Before you can sign in, your account must be verified. Make sure that the information provided is accurate to receive your verification code. Account verification is automated and occurs within 5 minutes of completion of the service sign-up.

Verification emails come from the sender myrockwell.com. If you have not received the verification email, check your junk or spam folders for the email.

## Create a Domain

To start using FactoryTalk Remote Access, you must create a domain to access and use the services. Your domain must have a unique name.

**IMPORTANT** To create and use the domain, you must have a working Internet connection on the PC and your organization must have the FactoryTalk Remote Access entitlement.

To create a domain, use the following steps.

1. Sign in to FactoryTalk Hub.
2. Select the FactoryTalk Remote Access service tile.
3. When you are prompted, authenticate yourself with your authenticator code.
4. In Create domain, provide a name for the domain. The domain name is required and must be unique.

**IMPORTANT** Domain names cannot be changed after they are created.

5. Click Create Domain.

   Once the domain is successfully created, a confirmation message appears. Each newly created domain is immediately usable.

The first time the domain is accessed, sign in with an administrator user account.

## Domain Membership

Features that can be part of a FactoryTalk Remote Access domain are listed in Table 4.

**Table 4 - Domain Features**

| Entity | Description |
|---|---|
| User Accounts | User accounts are the individual users that sign in to FactoryTalk Hub and use the FactoryTalk Remote Access domain and access remote machines. Each use is authenticated before entering the domain of the organization. Users must have been invited to join the FactoryTalk Remote Access domain to access the service. See Add user accounts. |
| Groups | A group is used to assign permissions to multiple user accounts. You create the groups according to the types of user accounts in your organization. Common categories for groups are roles and regions. FactoryTalk Remote Access provides the Admin, Contributor, and Owner groups by default in each domain.<br>You can belong to multiple groups. |
| Remote Device | A remote device is the Stratix 4300 Remote Access router. |
| Folders | A folder is a container of objects, such as devices, firewall policies, and groups. Like folders and documents on your computer, you can organize objects in different folders. Folders can be added as needed.<br>Once an object is placed in a folder it can be moved to another folder, but it cannot be in multiple folders simultaneously. |
| Permissions | Permissions are rules that are applied to user accounts that allow or deny them access to folders and devices. |
| Firewall Policies | Firewall policies are rules that are applied to VPN packets that control if certain protocols, ports, IP addresses are allowed or denied access to devices. Firewall policies have to be imported or defined first then applied either to folders to apply the policy to all devices in the folder or directly to one device. The firewall policies that are applied are defined according to the user account, so different user accounts can be assigned different policies. |

## Domain Connectivity

The basic requirement for FactoryTalk Remote Access functioning is a working Internet connection. FactoryTalk Remote Access uses outgoing connections, which most firewall systems allow. FactoryTalk Remote Access acts as a "client" of the FactoryTalk Remote Access Cloud Infrastructure, which accepts incoming connections.

FactoryTalk Remote Access must have at least one of the following TCP ports open to connect to the FactoryTalk Remote Access Cloud Infrastructure:

- 80
- 443
- 5935

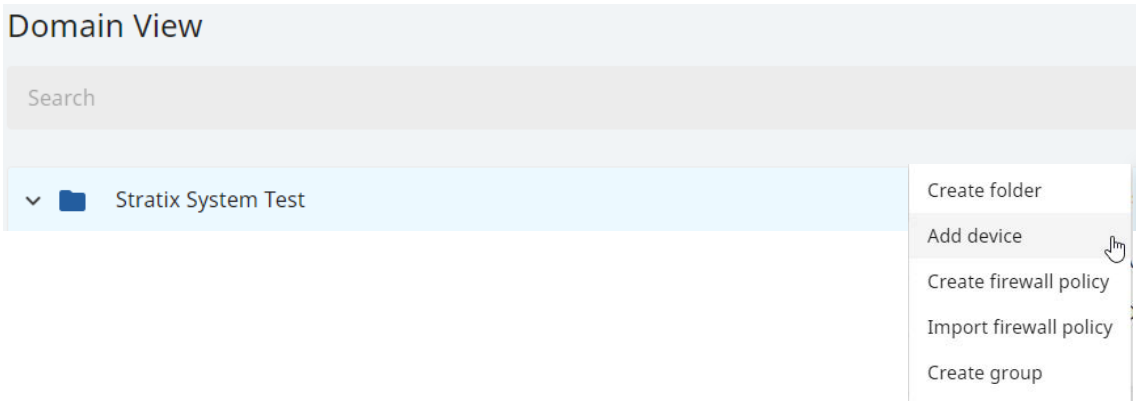
The first open port is used to connect clients to the FactoryTalk Remote Access Servers, after a scan of the available ports; after that, an end-to-end connection the remote device and FactoryTalk Remote Access is established.

| | |
|---|---|
| **IMPORTANT** | All FactoryTalk Remote Access connections, regardless of the port that is used, are made using the secure SSL/TLS protocol to help confirm a safer information exchange over the Internet. The use of the SSL/TLS protocol allows FactoryTalk Remote Access to verify the identity of the FactoryTalk Remote Access Server and later the confidentiality of the information that is exchanged with the server and the remote device. |

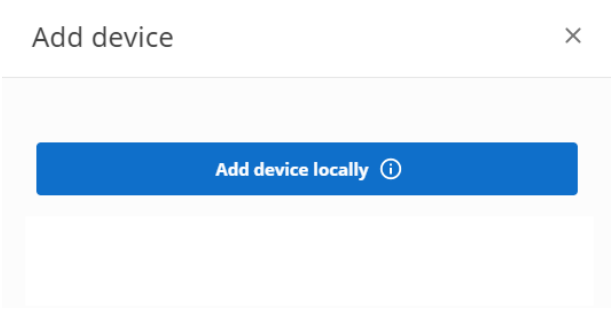
## Associate the Router with a Domain

1. In the FactoryTalk Remote Access environment, choose your domain and click the plus (+) option.

   A tab with the five options that are shown below appears.
2. Click Add Device.

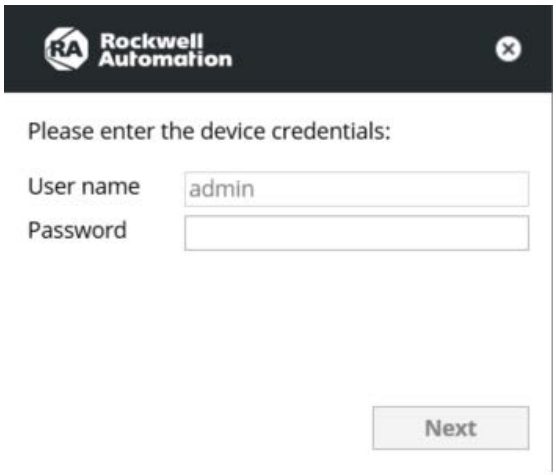


3. To add the router to your FactoryTalk Remote Access remote environment, add a local device,



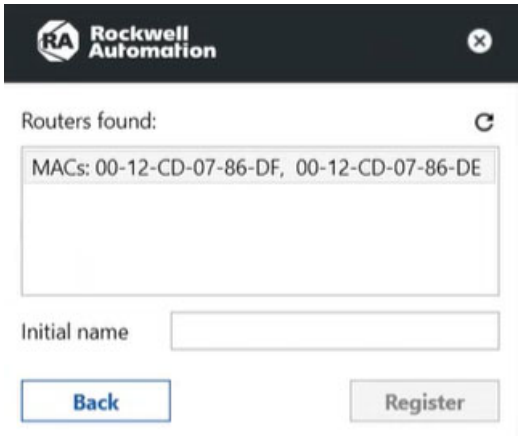

4. To add the device, reenter the router credentials.

**IMPORTANT** Your PC must be in the same subnet as the Stratix 4300 you are adding to the domain.



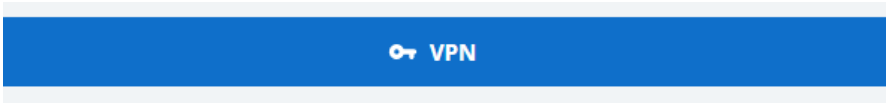

5. Find your router in the list that appears.
6. Name the router in the "Initial name" box, and click Register.

   To determine the correct MAC address for the Stratix 4300, you can either check the side of the physical device, or the Device Manager pages.




After naming the router, refresh your online view and you see the name of your router in your Domain view.

7. To connect the device over VPN, click the VPN bar on the right of the screen, which is shown in the image below.

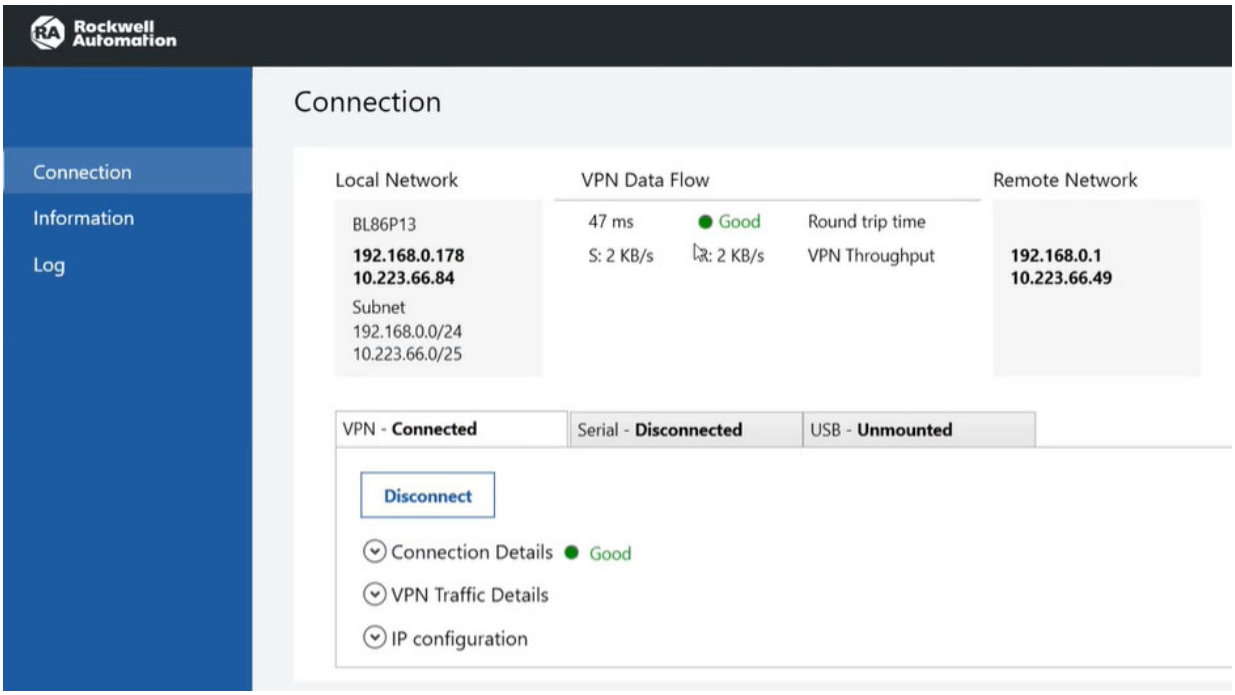



After you click the VPN bar, an image for the VPN blinks in your PC's toolbar at the bottom of your screen.

8. Click the VPN icon in the toolbar.

The connection screen to your device appears.

You can also connect or disconnect from the router with the toggle option you see under the "VPN-Connected" tab.




For more information on the Serial and USB options, refer to the help file in FactoryTalk Remote Access.

## Protect Against Unwanted Domain Change

The Stratix 4300 Remote Access router features additional security for protection against unwanted or unauthorized Domain change attempts.

Once you register a domain, the server stores the details of the binding and blocks any possibility to change the domain without the execution of the dedicated procedure.

This security block is useful if a router is restored to factory settings with the intent to bypass the correct procedure.

A sequence of two flashing red lights on status indicators on the front panel reports this condition, and the router becomes unusable.

For more information on domain change, see FactoryTalk Remote Access Help.

## Remove and Move Devices

A device associated to a domain can be deleted at any time and moved, if necessary, to another domain.

To delete a device from a domain, click once on the device icon and execute the delete command from the menu.

After the device has been removed, the router can be registered to a new domain.

## Set Up Your FactoryTalk Remote Access Connection

To register and configure the Stratix 4300 Remote Access router and make a VPN connection, download and install FactoryTalk Remote Access™ Tools.

### Download the Tools

Use the following steps to download FactoryTalk Remote Access Tools.

1. Sign in to the FactoryTalk Hub with an administrator user account.
2. Start FactoryTalk Remote Access and access the domain.
3. On the main FactoryTalk Remote Access toolbar, click the Help icon and select Software Downloads.

   Your web browser opens to the Product Compatibility and Download Center (PCDC).

If the download does not start automatically, use the following steps.

1. Type FactoryTalk Remote Access in the Search bar.
2. Select FactoryTalk Remote Access XX.xx.
3. In the Available Downloads window, select Tools for FactoryTalk Remote Access.
4. To add the item to your Download Cart, select downloads.
5. In the Download Cart window, select Download Now to start the download.

After the software download starts, perform the following steps.

1. Review the Rockwell Automation End User License Agreement, and then click Accept and Download to continue.
2. If prompted, click Save File.
3. If the download does not start automatically, click the download link to open Direct Downloads.
4. In the Direct Downloads window, click the download link for FactoryTalkRemoteAccessToolsSetup*XX.xx*.exe to download the software.

### Install the Tools

Use the following steps to install the FactoryTalk Remote Access Tools.

1. Run FactoryTalkRemoteAccessToolsSetup*XX.xx*.exe.
2. To allow the software to change your device, click yes.

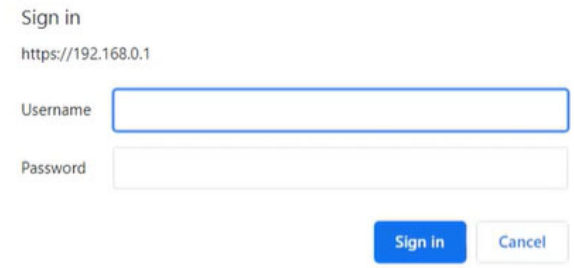
   The FactoryTalk Remote Access Tools installation wizard starts.
3. To install the software, follow the steps in the wizard.

## Connect Via Ethernet

1. Sign in with the default IP address to the device in the Stratix 4300 Device Manager.

   The default IP address of the LAN interface is set to 192.168.0.1 with subnet mask 255.255.255.0. WAN ports are set to request an address via DHCP.

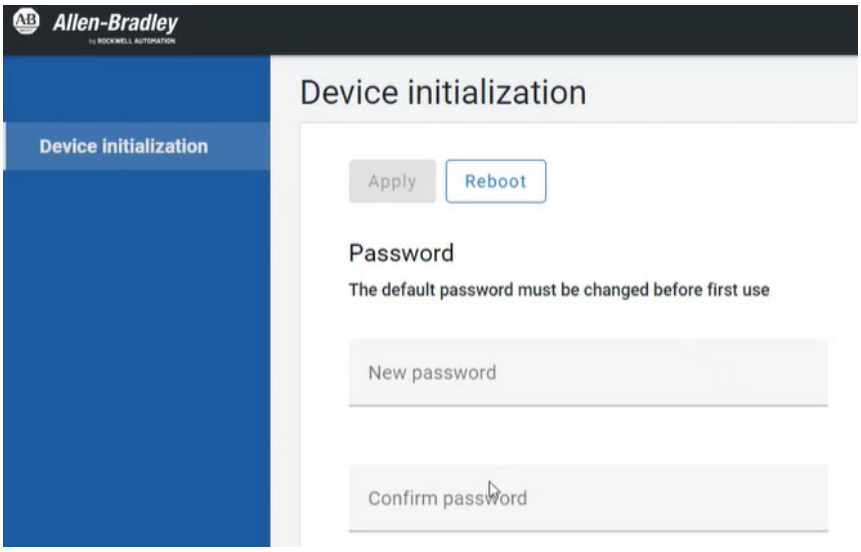
   The default user name and password are both “admin”.




2. When you are prompted, change the password to your device.

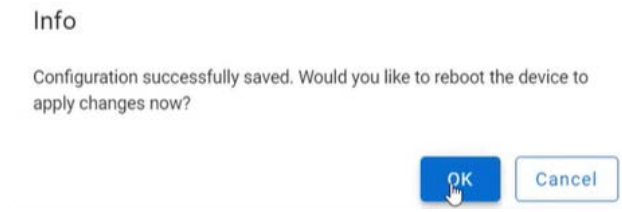
   Create a strong password to reduce cybersecurity risk. Your password must:

   - Be at least 8 characters long.
   - Include at least one of the three following requirements:
     - at least one uppercase character
     - at least one lowercase character
     - at least one numeric character
     - at least one symbolic character
   - Use passphrases longer than 8 characters to enhance password strength.




The password change prompts the device to restart.

3. To apply the changes, restart your device.




After your device reboots, the device manager opens on the general tab. From this point, you can explore more options the Device Manager has in the Router Configuration section in Chapter 3.

# Notes:

# Router Configuration

The Stratix® 4300 industrial router system software has been designed to simplify initial configuration by modifying a few mandatory settings.

This section provides an overview of how to configure the router with the system software Device Manager.

## General

Upon logging into the Device Manager of the router the general tab is displayed.

The general tab in Device Manager allows you to change the host name of the router, choose from which interfaces Device Manager is accessible from, configure the date and time, enable and disable external storage device and view the system information of the router.

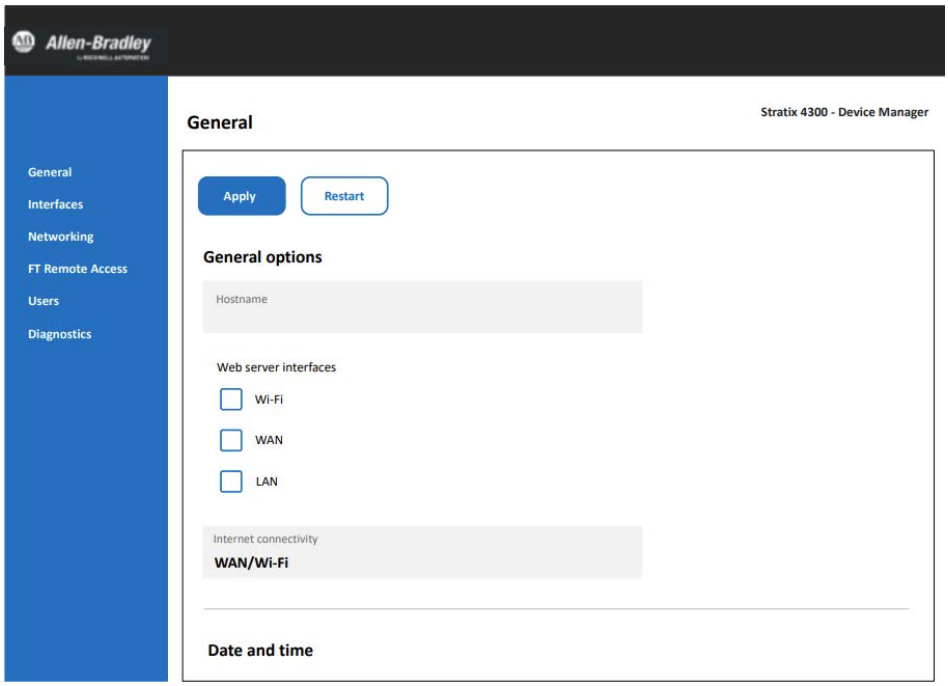
### General Options

The general options section of the general tab allows you to be able to set the device name (Hostname) of the router.

By default, both the WAN and LAN checkboxes are checked under the web server interfaces. This means that Device Manager is accessible by an Internet browser for configuration using either the WAN or LAN IP addresses that are configured on the router. Web server interfaces can be disabled by unchecking the checkboxes for the desired interface thus resulting in loss of access to the Device Manager for that interface.

Internet connectivity options are listed below.

1. Wi-Fi - access the System Manager web interface through Wi-Fi.
2. WAN - access the System Manager web interface through the WAN port.
3. LAN - access the System Manager web interface through the LAN port.

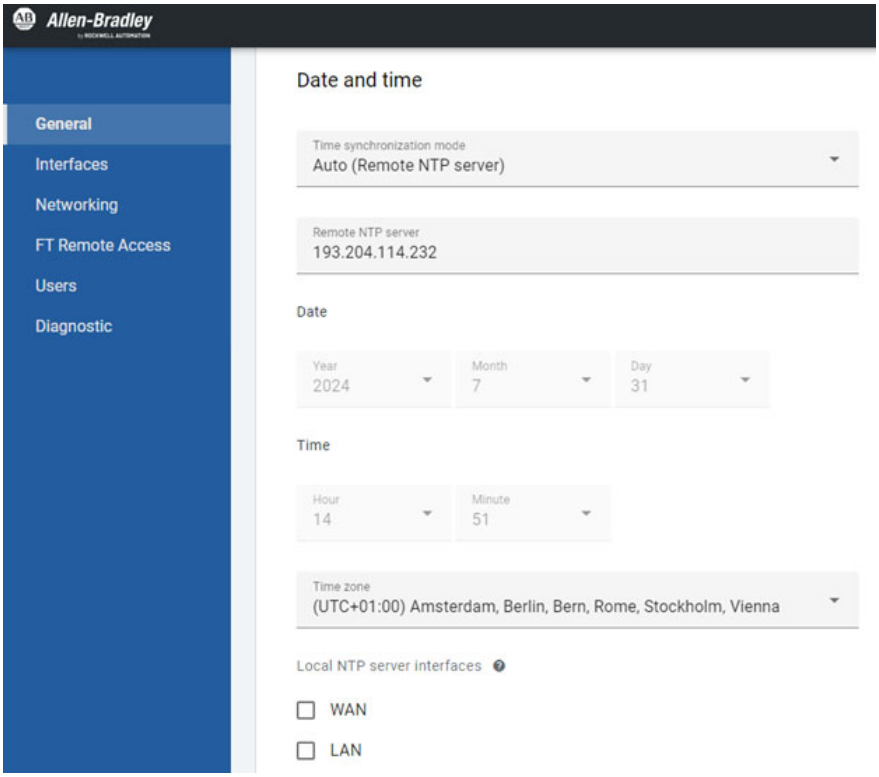


# Date and Time

The date and time section of the General tab allows you to configure the date and time automatically via an NTP (Network Time Protocol) server by specifying its IP address or name or manually setting the date and time.

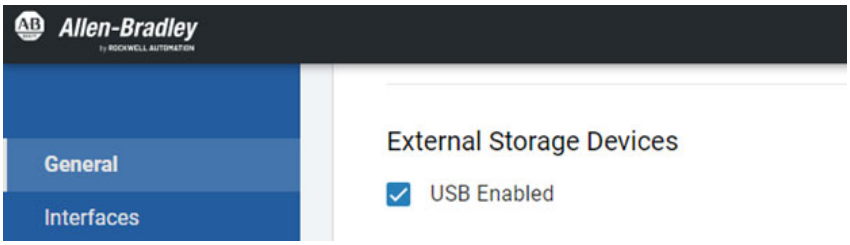
The “Set local NTP server interfaces” checkbox enables the local NTP server on the selected interfaces.

Selecting at least one interface enables a local NTP server that listens for connections on the standard UDP port 123. Selecting no interface disables the local NTP server.



## External Storage Devices

Device Manager now gives you the ability to enable and disable USB storage devices. By default this feature is enabled.

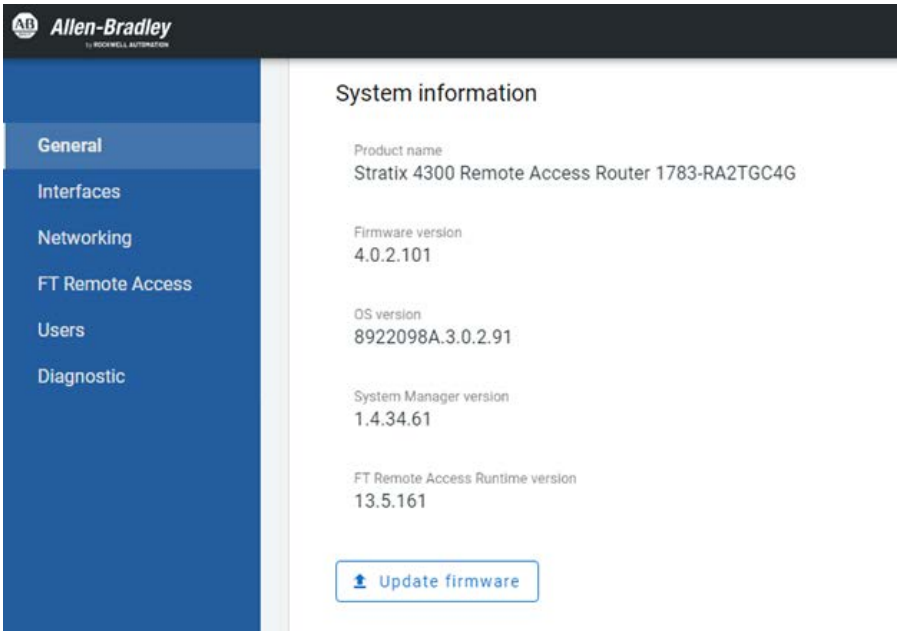



There are 2 different types of supported file systems listed below.

| Storage Type | Supported File System | Recommended Use |
|---|---|---|
| USB Memory Stick | FAT32 | Suggested if used as temporary storage. |
| | exFAT | |

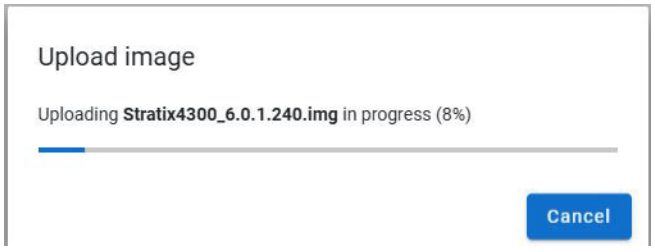
## System Information

System information about your router can also be found under the General tab.




## Upgrade Firmware

Download the latest firmware from PCDC and save it to a local location on the device. Click the Update Firmware button on the General section of Device Manager to initiate the upgrade process. Browse to the .img file that was saved from PCDC and click Open. A new dialog box appears showing the status of the upgrade. Once completed, reboot the device for the new firmware to load.



# Interfaces

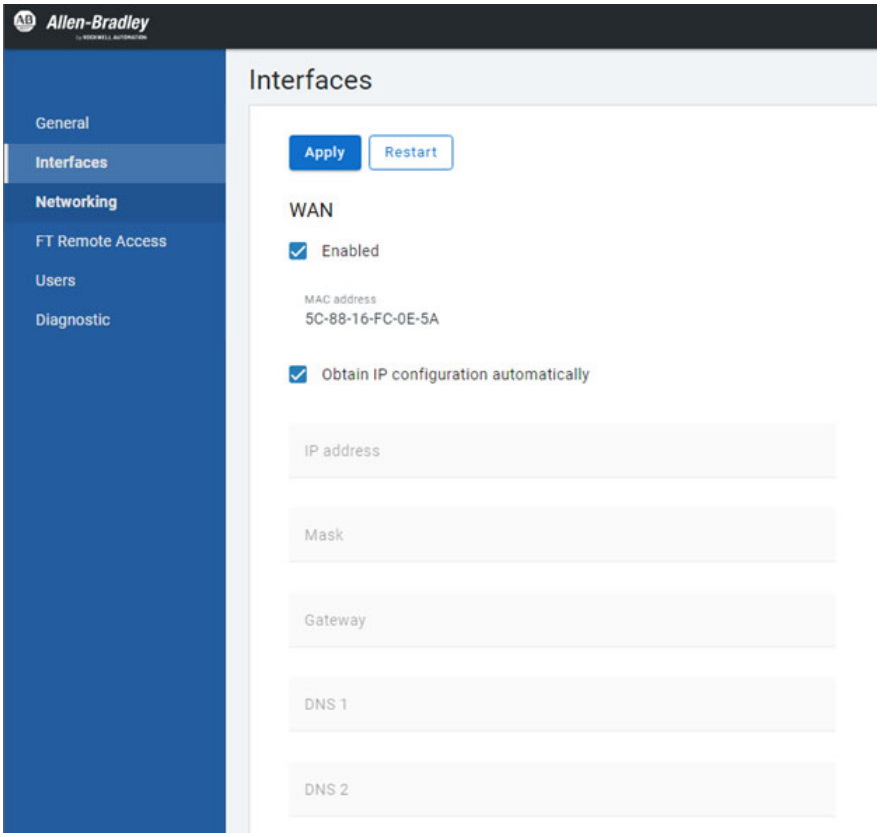
## WAN

In this section, you can configure the WAN interface that is used by the router to get Internet access.

The information that is shown at the first screen visualization correspond to the actual device parameters values.

The “Obtain IP configuration from DHCP” checkbox has to be marked if you must use the DHCP server for the IP address configuration.

If you must specify a fixed IP, remove your selection in the checkbox and complete the form below.



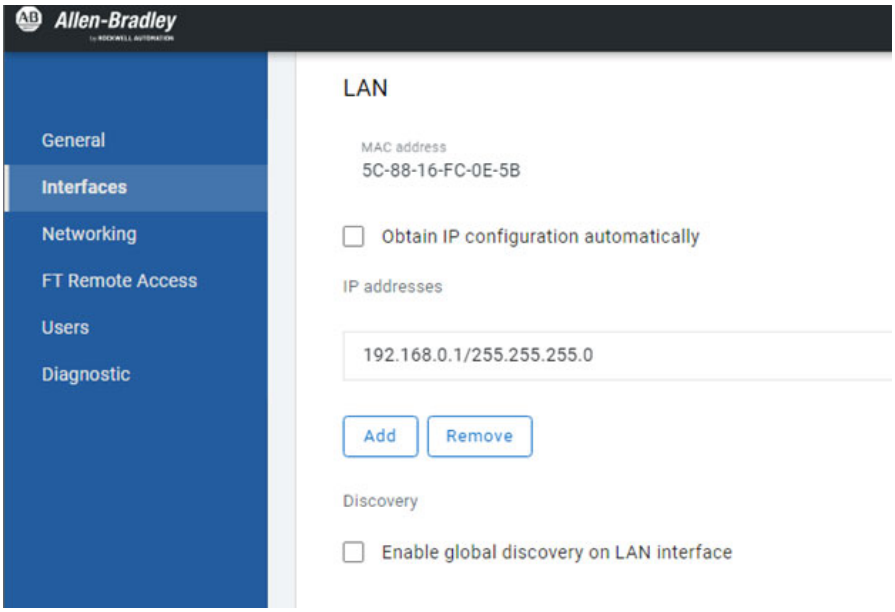
## LAN

In the interfaces section, you can configure the LAN interface parameters. This interface is connected to the machine network, which is reachable from the VPN.

The information that is shown on the first screen corresponds to the device parameter values.

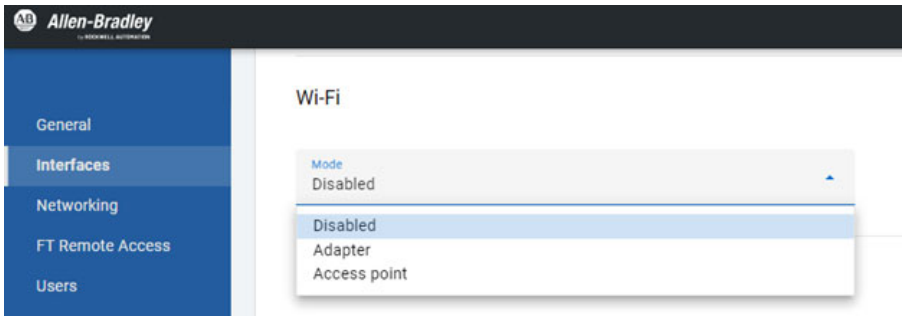
The “Obtain IP configuration from DHCP” checkbox has to be marked if you want to use the DHCP server for the IP address configuration.

The “Obtain IP configuration from DHCP” checkbox has to be marked if you want to use the DHCP server for the interface IP configuration. More common for the LAN interface is to use a fixed IP and, in this case, remove your selection in the checkbox and specify the IP with the mask. After this, click then the “Add” button. The IP is added to the list.




## Wi-Fi

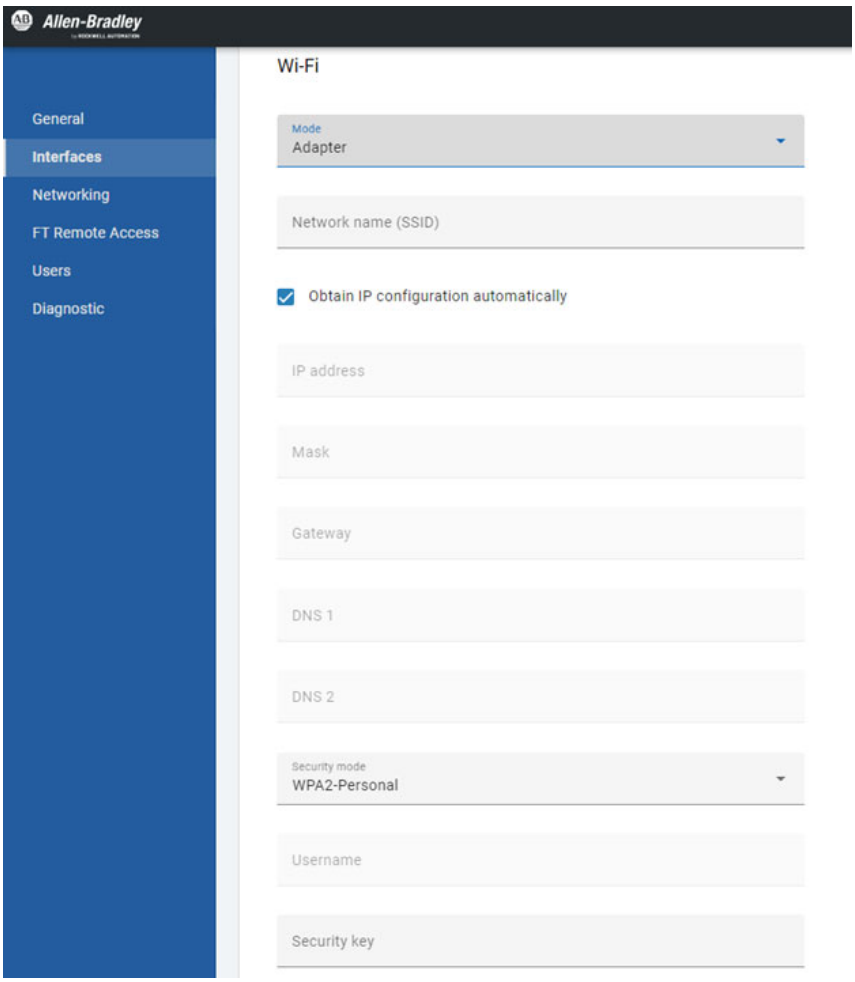
The Wi-Fi card supports three modes: Disabled (default), Adapter and Access Point. The two operating modes require a specific configuration and they are described below.



### *Wi-Fi Adapter*

The router connects to an existing Wi-Fi network. The parameters to configure are as follows:

- Network Name (SSID). Write the name of the Wi-Fi network to connect to.
- Obtain IP configuration from the DHCP server. If the option is selected (default), then the card receives the network configuration parameters from a DHCP server, otherwise they are manually specified.
- IP address, Mask, Gateway, DNS 1, and DNS 2. The configuration parameters of the Wi-Fi network to be specified if a DHCP server is not used to set them automatically.
- Security Mode - The type of the WPA2 security protocol used. It can take the values WPA2-Personal (default) or WPA2-Enterprise.
- Username - The user name to use to connect to a Wi-Fi network if WPA2-Enterprise mode is selected.
- Security Key - The security key to use to connect to the Wi-Fi network. (if WPA2-Personal is used) or the user password (if WPA2-Enterprise is used).



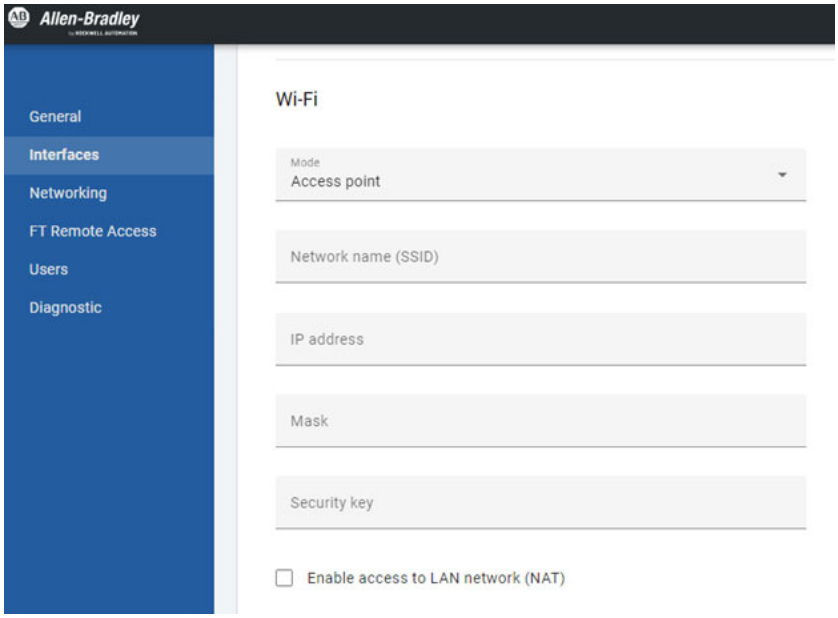
*Wi-Fi Access point*

The router becomes a Wi-Fi access point to which external devices can connect. The parameters to configure are as follows:

- Network Name (SSID). Write the name of the Wi-Fi network that you want to create.
- IP address e Mask. The IP address and the mask of the router.

The IP address must belong to a private network different from the ones that are used to configure the WAN and LAN ports. For example, if the WAN port has an address of class 172.16.0.0/12 and the LAN port has an address of class 192.168.0.0/16, then you can assign the Wi-Fi network to an address of class 10.0.0.0/8.

- Security key. The security key is used to connect to the access point. The security protocol that is used is WPA2.
- Enable access to LAN Network (NAT). Enables access to the LAN network to devices connected in Wi-Fi to the router.




In this mode, the router, through its DHCP server, assigns an IP address compatible with the one entered in the IP address field to the connecting devices. For example, if you specify an IP address of 10.0.10.1, the first device that connects is assigned 10.0.10.2 as its IP, the second are assigned 10.0.10.3 and so on. If Internet Sharing is active on the Wi-Fi network interface, the router only activates the DNS service on this interface, so the connecting devices can access the Internet network without having to manually specify DNS servers.

## Modem

This section is used to configure the integrated modem parameters.

Status can assume the following values:

- Connected - the modem is connected
- Disconnected - the modem is disconnected
- Error: <ErrorCode> - one of the following errors was detected:
  - No SIM
  - PIN required
  - PIN2 required
  - PUK required
  - PUK required
  - Wrong PIN
  - Only one PIN insertion retry left
  - No PIN insertion retry left
  - Modem not present or initialized
  - A valid APN was not found for the current operator
- Initialization - the Modem is initializing

Carrier mode shows the technology type that is used by the radio infrastructure to communicate with the Modem.

Signal strength is the power of the signal that is detected by the Modem.

The PIN code field is used to enter the SIM card PIN code, when required.

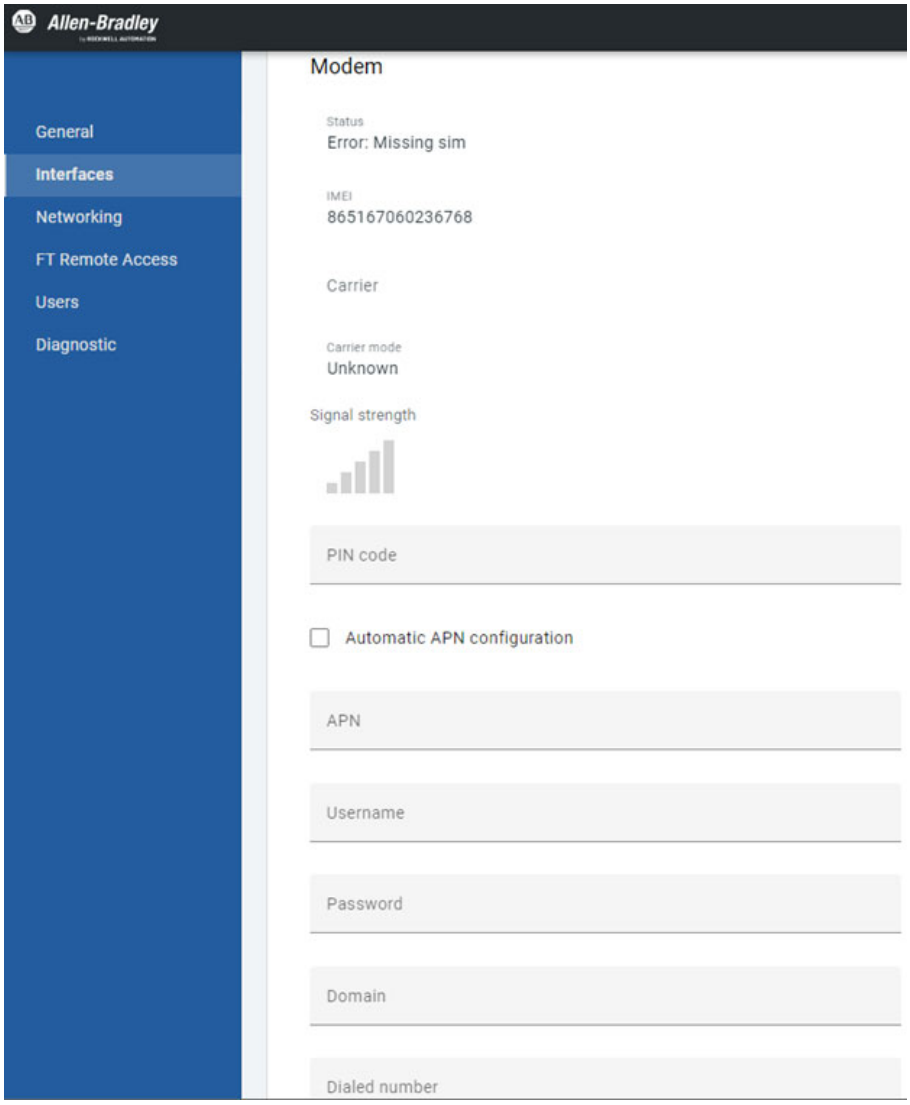
For more information on the SIM card, see Appendix C.

The Automatic APN configuration checkbox enables automatic searching of connection settings such as APN, Username, and Password. If the search is successful, the values that are found are automatically completed their respective fields, otherwise, an Error message is shown in the status field. The automatic search process is performed again when the SIM card is changed.

The APN field is used to enter the Access Point Name, required to connect the Modem to the Internet.

The Username, Password, and Domain fields are used to enter credentials that are given by the provider to connect the Modem to the Internet.

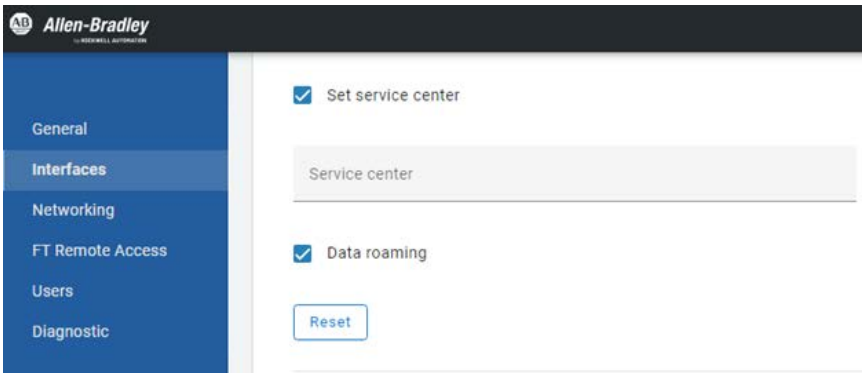
The Dialed number field is used to enter the telephone number for the Modem to call to connect.



The Set service center checkbox allows you to set the Message Service Center number on your SIM card.

The checkbox Data roaming allows you to use the data traffic in roaming.

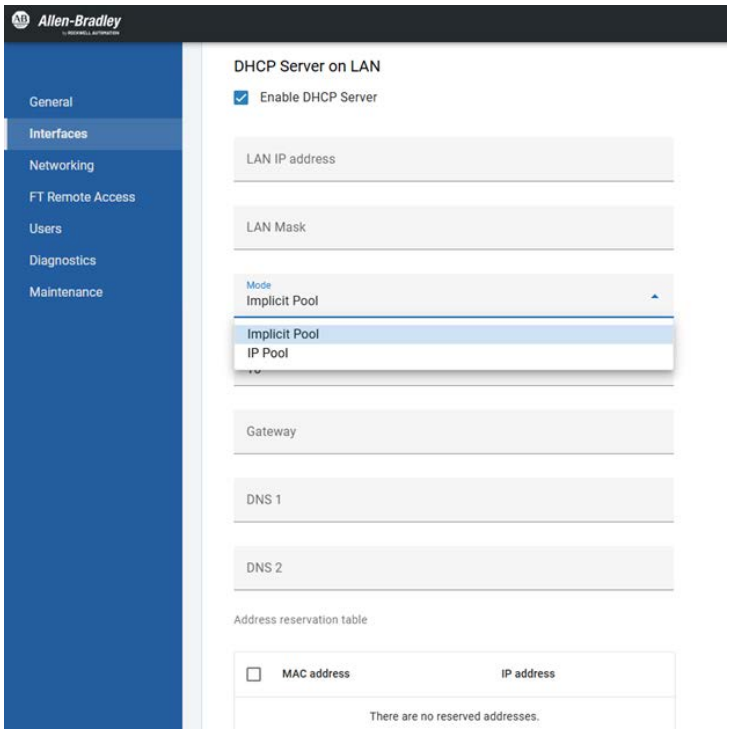
**ATTENTION:** The SIM cannot be removed or replaced while the router is operating.




## DHCP Server on LAN

The Stratix 4300 router can act as a DCHP host to provide DHCP addresses to LAN clients by configuring the option DHCP Server on LAN. This feature is disabled by default and needs to be enabled to use the feature. Configure the following options.

- LAN IP Address
- LAN Subnet Mask
- Mode - Implicit or IP Pool
- Default Gateway
- DNS 1 and 2
- Address reservation pool



DHCP automatically assigns IP addresses to devices connected to a LAN network. Configure this automatic assignment process by setting the following parameters.

- Check Enable DHCP Server to enable the DHCP server on the LAN interface. By selecting this checkbox, the following parameters become configurable.
  - LAN IP address: Copy and paste here the LAN IP address that you previously entered in the LAN> IP address section.
  - LAN Mask: Copy and paste here the LAN mask that you previously entered in the LAN> IP address section, next to the IP address.
  - Mode: Select the IP addresses assignment mode:

  Select Implicit Pool if the list of the client IP addresses available for assignment is automatically provided by the device mask subnet.

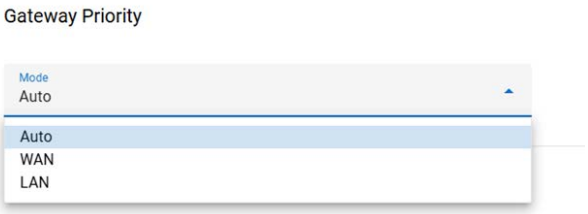
  Select IP Pool if the DHCP assigns a client IP address based on a range of IP addresses that you can define by setting IP address start and IP address end.

  The DHCP does not assign any IP address outside this set range that is among the client IP addresses provided by the Implicit Pool.

  - Lease time (in minutes): Set the time period during which the IP address that is assigned by the DHCP server is valid. Once this time period expires, the DHCP server can assign another IP address to the device, based on the assigned mode selected in Mode.
  - Gateway: Enter the static gateway that the DHCP server sends to the DHCP client.
  - DNS 1: Enter the static primary DNS that the DHCP server sends to the DHCP client of the connected device.
  - DNS 2: Enter the static secondary DNS that the DHCP server sends to the DHCP client of the connected device.
- Address reservation table: Enter any MAC address along with their corresponding static IP address to prevent the DHCP server from assigning other IP addresses. When a device with a specified MAC address requests a connection, the DHCP server automatically assigns the reserved IP address from this table.
- List of clients: View all clients on the LAN interface that have been assigned a dynamic IP address by the DHCP server. You can select Refresh to update the list of connected clients and their related Hostname, MAC address, Assigned IP address and IP address expiration time in "Valid until."

## Gateway Priority

The gateway priority feature lets you select either WAN or LAN to prioritize gateway traffic. The recommendation is to keep this feature set to the default "Auto" to allow the device to automatically select the gateway priority.

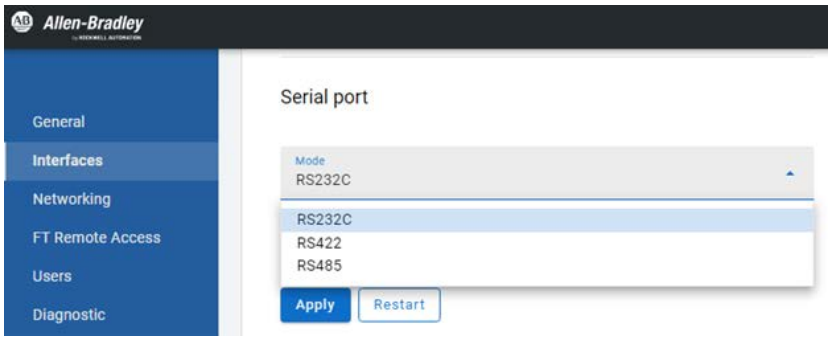


### Serial Port

This section allows you to configure the serial port for the serial pass-through.

Click the combo box to access to the available options. The options are the following:

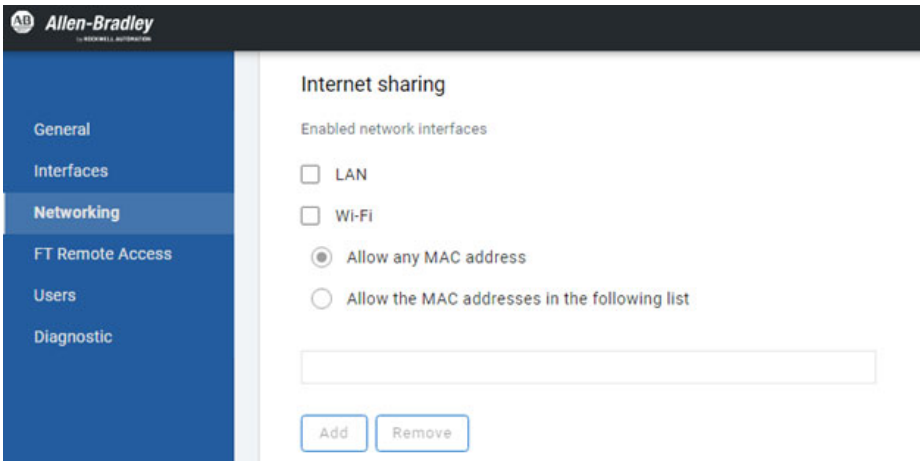
- RS-232C
- RS-422
- RS-485




## Networking

### Internet Sharing

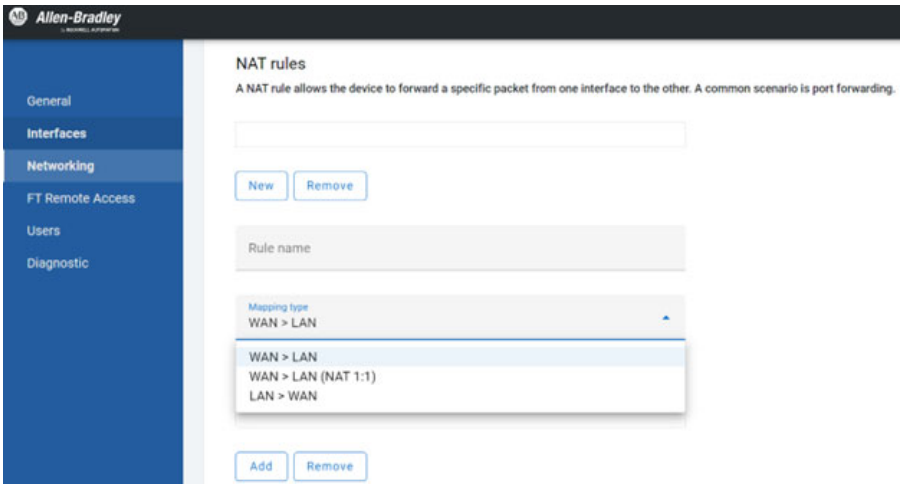
Internet sharing allows users to share the Internet connection to a device on an automation subnetwork.



## Network Address Translation (NAT) Rules

There are three mapping types of NAT Rules. The mapping types are the following:

- WAN > LAN
- WAN > LAN (NAT 1:1)
- LAN > WAN




The NAT consists of changing the IP addresses of packets in transit between the two interfaces of the router and between the communication of two hosts.

The router implements the D-NAT. This means changing the destination address of the packet that begins the new connection.

For example, the D-NAT allows the implementation of the "port forwarding", which is the operation that allows the transfer of data (forwarding) from one computer to another over a specific communications port. This technique can be used to allow an external user to reach a host with a private IP address (inside a LAN) through a port of the public IP address of the router.

The parameters in the NAT rules are listed in Table 5.

**Table 5 - NAT Rule Parameters**

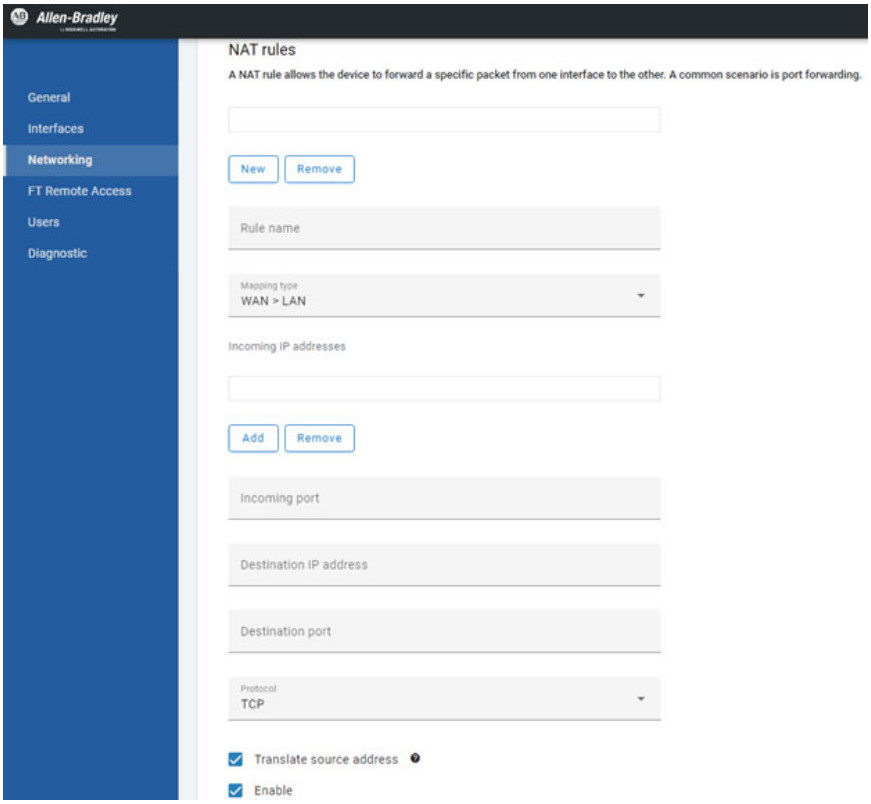
| Parameter | Description |
|---|---|
| Rule name | Name that is assigned to the rule. This name must be unique. |
| Direction | Packet direction between the interfaces. |
| Incoming IP addresses | List of IP addresses from where packets arrive. You can enter single IP addresses or ranges of IP addresses. |
| Incoming port | Port number on which the router is listening for incoming connections. |
| Destination IP address | The destination of the IP address. |
| Destination port | The destination of the port number. |
| Protocol | Ethernet protocol on which the rule applies. The possible options are the following:<br>• TCP<br>• UDP<br>• FTP<br>• HTTP |
| Translate source address | Enabled by default. The NAT rule applies the translation of the source IP address as well. |
| Enable | This enables or disables the single rule. When a rule is disabled, its name is followed by the "Disabled" label. |

To create a rule, input the parameters and click “Save”.

An existing rule can be modified by selecting it from the list, applying the changes, and then saving them with the “Save” button.

The “New” button clears the form.

The “Remove” buttons allow you to delete the selected rule.



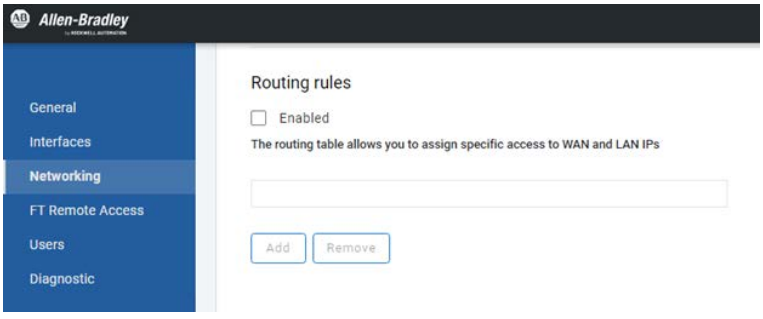

**IMPORTANT** NAT rules are limited to a maximum of 10 rules.

## Routing Rules

Routing rules are configured for static routes between the two router interfaces (LAN and WAN). Rules for routing single IP addresses or ranges of addresses can be applied.

The rules must be applied to the LAN interface and to the WAN interface indicating the addresses concerned by the routing on both interfaces.

**ATTENTION:** LAN-WAN routing is NOT supported in the following scenarios:
- Internet connection via modem
- Gateway address NOT specified for the WAN interface
- Internet sharing is enabled.



# FactoryTalk Remote Access

The FactoryTalk® Remote Access™ tab has the configuration options for remote connectivity.

The available choices can be one of the following:

Availability “mode” has three options:

- Always-on
- Digital input
- Reconnect to server on restart if left connected

When selecting the option “Always-on”, the router connects to the Domain immediately after power-up and when a working Internet connection is available; it also restores the connection if dropped for any reason.

When selecting “Digital input”, the router connects to the configured Domain only and exclusively when the proper electric input (IN0) is activated. The option "Reconnect to server on restart" can be enabled to automatically restore the connection if dropped for any reason.

## Connection Port

The “Port” dropdown menu is used to select the port that the Control Center uses to connect to the infrastructure. The available options are the following:

- Auto: use the first available port (TCP or UDP) 443, 80, 5935.
- 443: use port 443 to connect.
- 80: use port 80 to connect.
- 5935: use port 5935 to connect.

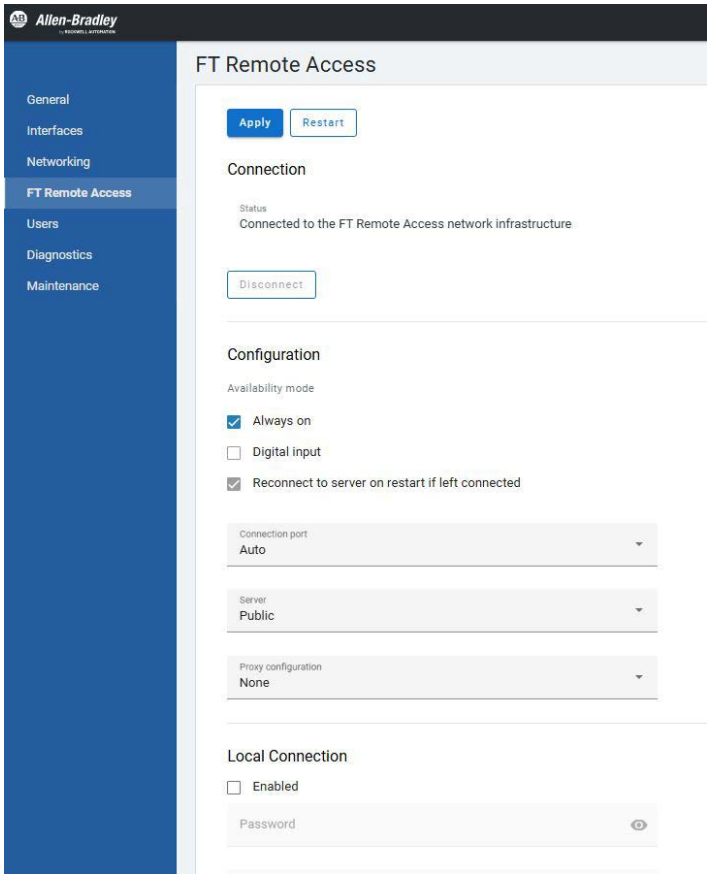
## Proxy Configuration

Type can be one of the following:

- None: no Proxy is used for the connection.
- HTTP: HTTP Proxy type supports authentication with user name and password.
- SOCKS5: SOCKS5 Proxy type supports authentication with user name and password.

## Local Connection

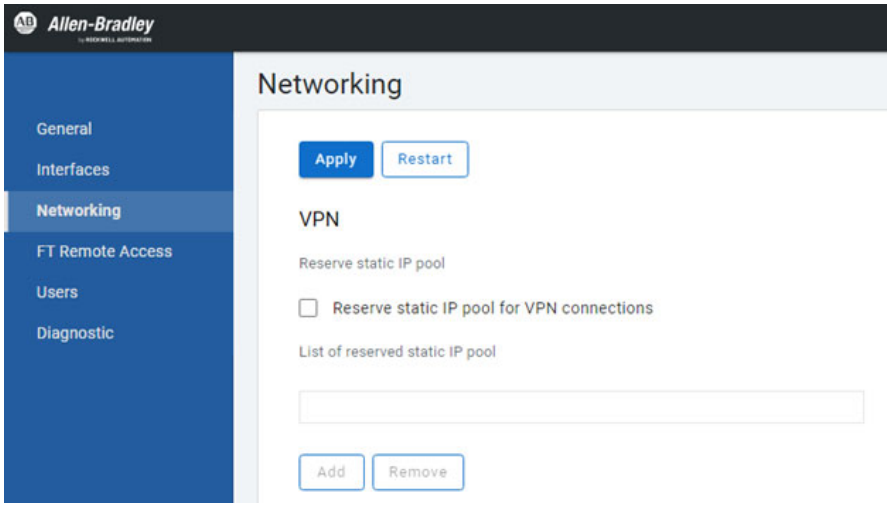
Local connection allows you to access the interactive access features connecting to a runtime on the same LAN without the need for accessing the Internet.



## VPN

The reserve static IP pool for VPN connections gives you the ability to adjust the way the IP addresses are assigned to the VPN virtual adapter during a VPN session.

**ATTENTION:** The IP addresses that are included in the pool are not subject to any check; it is under the user's responsibility to verify that there is no conflict on the subnet.



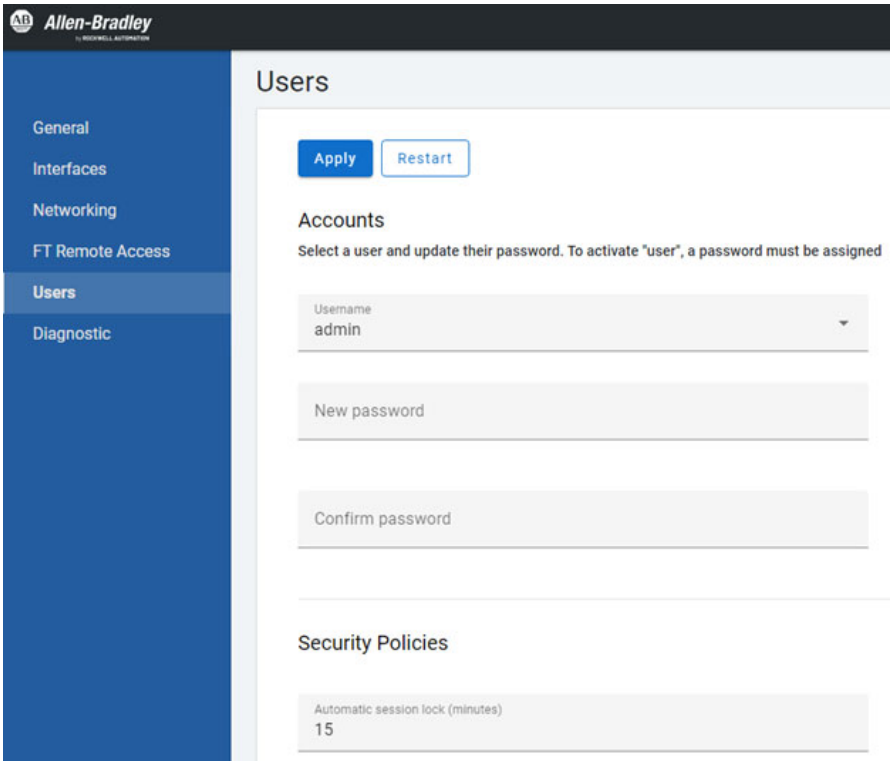

## Reserve Static IP Pool

This option can be used to configure a list of static IP addresses for the VPN connections.

## Users

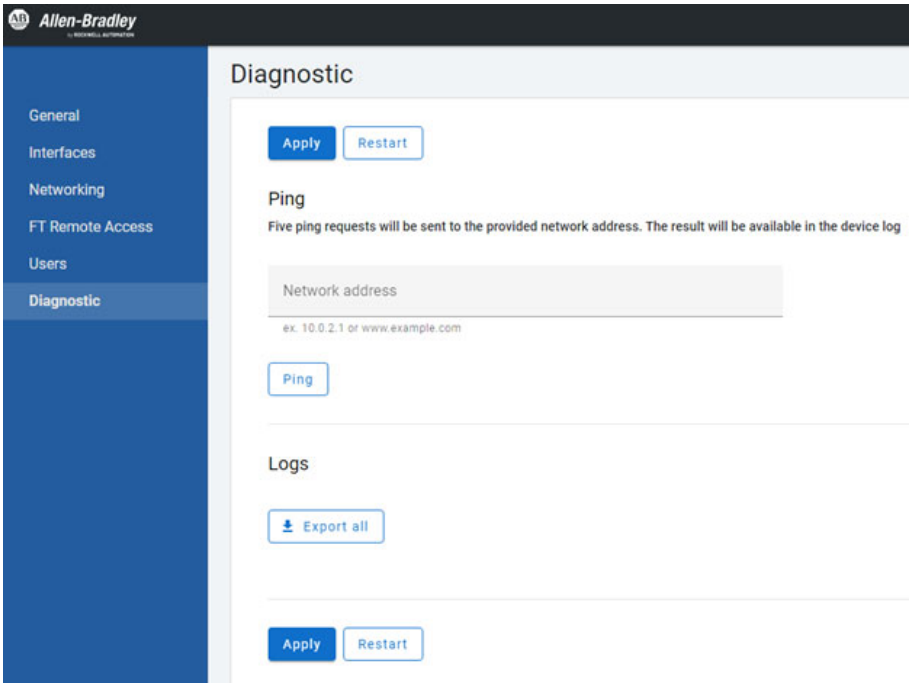
Device Manager access can be updated under the Users tab. From here users can update the admin password and create user accounts to be able to access Device Manager.

The session timeout can be changed under the user tab security policies. By default, the automatic timeout session lock is set to 15 minutes.



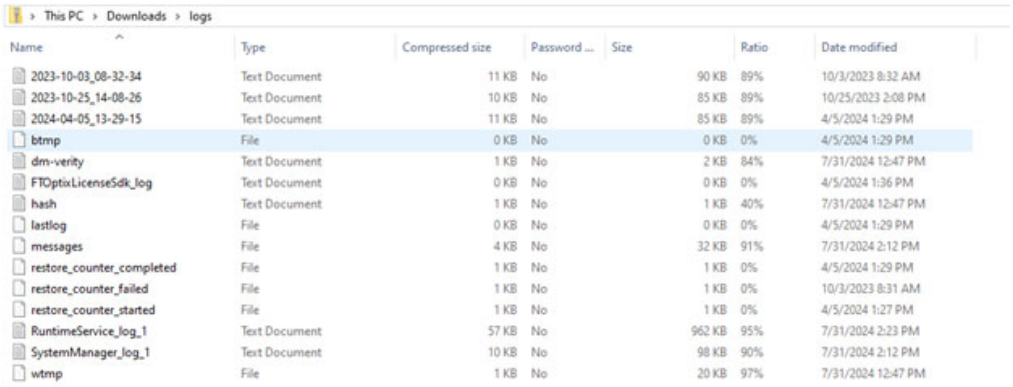

## Diagnostic

The Diagnostic tab has a ping utility that allows users to troubleshoot and verify connectivity to network devices available to the router. Five ping requests are sent to the provided network address and the results are available in the SystemManager_log.



## Logs

Users can now use the export all button to download the Device Manager logs.




The exported files are able to be viewed in File explorer as seen above. This allows users to save and view diagnostic logs to aid in troubleshooting issues.

There are two main logs:

- RuntimeService_log

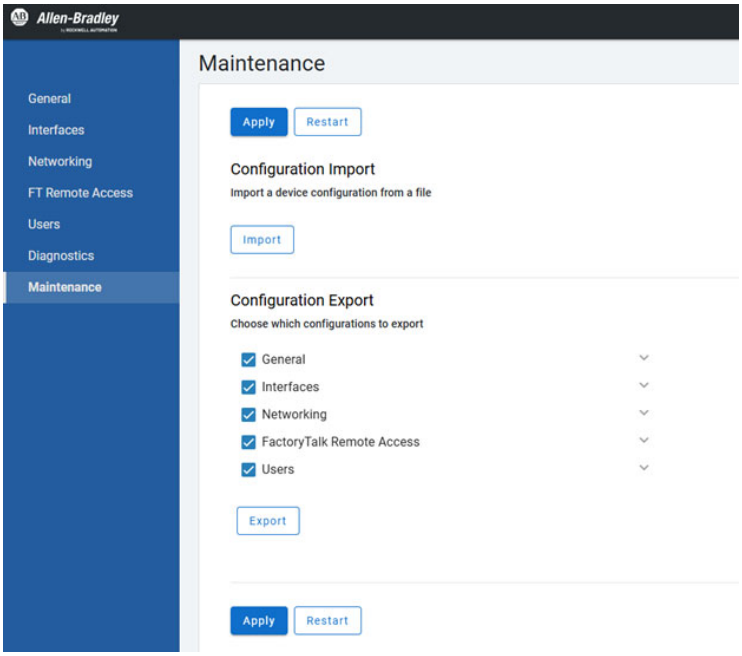
  Includes all information about the status of the Stratix service. You can find more details about the configuration of the network interfaces, and the VPN connection phase such as the chosen relay server or the use of the virtual USB port.

- SystemManager_log

  Includes everything about the status of the device. It includes the type of device, licenses activated via tags, and IP addresses assigned to Ethernet ports.

# Maintenance

The Maintenance tab allows you to import and export device configurations from one device to another to help standardize the router configuration across your organization.



# Notes:

# Update the Device Firmware

You can update your device firmware through System Manager, FactoryTalk® Remote Access™ Manager or with a USB memory stick.

The firmware image is a single file that works as a "container" for the components to be updated. The container files are identified by the .img file extension and for convenience, firmware images are available on the Product Compatibility and Download Center (PCDC) portal.

## Update Through System Manager

| | |
|---|---|
| **IMPORTANT** | The process takes approximately two minutes to complete. During this time, do not to turn off the device, nor disconnect it from the power supply. |

1. In System Manager, access General > System Information, then select Update Firmware to browse for and upload a firmware image onto the device.

   The upload process of the firmware image can stop and resume.
2. Once the firmware image upload process is complete, select Restart.
3. Restart the module. While restarting, the device detects the firmware image file, checks for its validity and starts the updating process. The MOD status indicator blinks green during the restart phase, then turns steady green, and eventually blinks red during the updating process.
4. The device restarts automatically and the MOD status indicator blinks green, then turns steady green. The firmware update is complete.

## Update Through USB Memory Stick

The firmware image contains the module firmware, Yocto Linux OS, FactoryTalk® Optix™ runtime application, and the FactoryTalk Remote Access runtime application. Firmware images are available on the Product Compatibility and Download Center (PCDC), and identified by the extension.img.

Firmware update by USB is supported only via USB Memory device with FAT32 and exFAT file systems. microSD™ Cards are not supported for firmware updates.

| | |
|---|---|
| **IMPORTANT** | The process takes approximately 2 minutes to complete. During this time, it is important NOT to turn off the device or remove power. |

To update the module:

1. Copy the file to the root folder of an empty USB Memory device.
2. Insert the USB Memory device into the USB port on the module.
3. Restart the module.

   While restarting, the module detects the USB Memory device with the firmware image file, checks if it is valid, and starts the update process. The status indicator blinks green during the restart phase, then turns steady green, and eventually blinks red during the update process while the UPDATE IN PROGRESS message scrolls across the 4-character display.
4. After the update, the device restarts.
5. After restart, the OK status indicator flashes green.
6. Once the OK status indicator is steady green, the update is complete.

# Remote Update Through FactoryTalk Remote Access Manager

You can update the device firmware remotely by moving the firmware image through FactoryTalk Remote Access Manager.

**IMPORTANT** Before you start this process, you must register your device to a FactoryTalk Remote Access Manager organization. See the FactoryTalk Remote Access Manager user manual to learn how to access FactoryTalk Remote Access Manager and register a device to an organization.

See Remote Access Manager documentation for this process.

The process takes approximately two minutes to complete. During this time, do not to turn off the device, nor disconnect it from the power supply.

1. In FactoryTalk Remote Access Manager, access the Explorer > Domain view section and select the device.
2. Click the Interactive Access (Tools) button.
3. In the Interactive Access Tool, access the Explorer section on the left menu and copy the firmware image from the local system into the folder that is shown in the table.

| Local system folder | Remote device folder |
|---|---|
| ...\<FirmwareImage>.img | persistent\data\Updates\<FirmwareImage>.img |

4. Restart the module. While restarting, the device detects the firmware image file, checks for its validity and starts the updating process. The OK status indicator blinks green during the restart phase, then turns steady green, and eventually blinks red during the updating process.
5. The device restarts automatically and the OK status indicator blinks green, then turns steady green. The firmware update is complete.

# Troubleshoot

## Status Indicators

The following graphics show the status indicators for these routers.


### Status Indicators Descriptions

**Table 6 - Status Indicators**

| Status Indicator | Status | Description |
|---|---|---|
| Restart | Red | Active when pressing the restart button or indicates a nonrecoverable hardware fault. |
| Power | Green | The router is active. |
| Server/USB | Green | The router started and connected to the server. |
| | Red | The router started and did not connect to the server. |
| | Flashing Green | The router started and is connecting to the server. |
| | Flashing Red | The router started but is not connecting to the server because it is not associated to a domain. |
| | 2 Red Flashes | An attempt to connect to a different domain than the first initial registration occurred. |
| | 2 Green Flashes | Configuration from the USB stick was successfully completed. |
| | 2 Red Flashes | User credentials for domain access are not valid. |
| | 3 Green Flashes | Represents the start and finish of a router update from the USB stick. **IMPORTANT:** During the entire update phase, the status indicator is flashing from red to green. |
| | 3 Red Flashes | The router update from the USB stick failed. |
| | 4 Red Flashes | Factory restore has started. |
| | 5 Red Flashes | An error occurred in the router runtime execution.This follows with a system restart. |
| | 6 Red Flashes | The USB stick data format is not correct or has an unknown error. |
| Remote Connection | Green | Only active when at least one control center client is connected to the router. |
| COM RX/COM TX | Green/Yellow | The indicators are directly connected to the serial port RX/TX signals and show traffic through the lines. |
| 3G/4G | Off | The modem has not detected the SIM card. |
| | Amber or Green Low Frequency Blink | The modem has detected network signal. |
| | Amber or Green High Frequency Blinking | The modem is exchanging data. |
| | Steady Red | The modem has not detected network signal. |
| | Blinking Red | The modem has not detected network signal. |
| Wi-Fi | Off | The Wi-Fi board is disabled. |
| | Green Low Frequency Blinking | The Wi-Fi board is connected to the network (Adapter mode) or is in Access Point mode. In both scenarios there is no data exchange. |
| | Green High Frequency Blinking | The Wi-Fi board is connected and is exchanging data. |
| | Red | Malfunction or incorrect configuration in Adapter mode. |

# Notes:

# SIM Card Requirements and Configuration Example

The following is an example of how to configure your SIM Card with the use of the AT&T Network. The use of the Stratix® 4300 Remote Access™ Router.

## AT&T SIM Card Requirements

AT&T SIM Card Requirements for configuration include the following:

- The Stratix 4300 Remote Access Router industrial router was tested certified for use on the AT&T Network.
- The Stratix 4300 Remote Access Router supports a 2FF or standard size SIM card, and the card must be purchased from AT&T.
- SIM Cards must use an IoT (Internet of Things) Data Plan from AT&T. A non-IoT SIM card is not supported.
- You must access the AT&T Control Center and obtain a custom APN (Access Point Name) to connect and manage AT&T SIM Cards.

### AT&T SIM Card Procurement Process

To use our IoT program at AT&T, you can go to the following site to order an IoT Data plan starter kit.

https://att.m2m.com/

The starter kit includes the following items:

- AT&T IoT SIM card with unlimited domestic connectivity.
- Unlimited data for up to 3 months.

Once you complete the form for the starter kit, you are assigned to an AT&T IoT account manager who on-boards you into the IoT program from a formal contract and billing perspective.

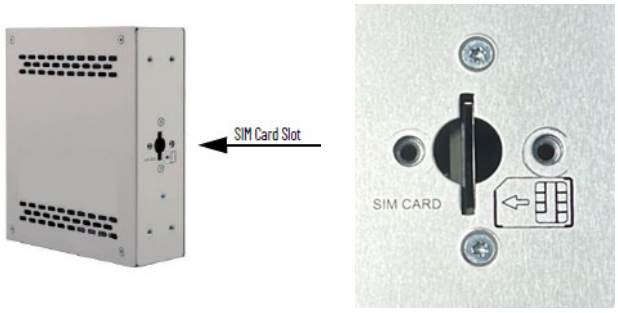
### SIM Card Installation

The SIM Card can be installed in the router using the following steps:

1. Remove power from the device.
2. Remove the router from the DIN rail mount.
3. Insert the 2FF IoT SIM card.

   The card only fits into the device one way as seen in the image below.
4. Reinstall the DIN rail mount.

5. Power on the device.




| IMPORTANT | Make sure to be careful inserting the SIM card. If you miss the slot, the SIM card can fall into the device, and the case must be removed to retrieve the SIM card. |
|---|---|

## SIM Card Configuration Example

The following steps explain how to configure the SIM Card:

1. Power off the device, and install the AT&T IoT SIM Card.
2. Power on the device, and sign in to the System Manager interface.
3. Once you are logged into System Manager, go to Interfaces and then Modem.

   The modem shows that it is initializing while going through the SIM Card connection process.

Once the initialization process is complete, the status shows that it is disconnected, but you can see the Carrier as AT&T, Carrier Mode, and Signal Strength.

If not, there is an issue with the SIM Card, and you must test the connectivity of the SIM card in the AT&T Control Center.


4. Remove the check for Automatic APN configuration and enter in the APN provided from AT&T. Your APN can be found in the AT&T Control Center.
5. Make sure Set Service Set and Data Roaming are unchecked.
6. Apply the configuration and the device reloads.
7. Once the device reloads, the SIM Card status still says disconnected.
8. Add the device to FTRA, once the device has established a connection with FTRA. The status shows it is connected.

# History of Changes

This appendix contains the new or updated information for each revision of this publication. These lists include substantive updates only and are not intended to reflect all changes. Translated versions are not always available for each revision.

## Change Log

### 1783-UM014C-EN-P, November 2024

| Change |
|---|
| Remote Access Routers |
| Remote Configuration |
| Network Address Translation (NAT) Rules |
| Status Indicators |

### 1783-UM014B-EN-P, June 2022

| Change |
|---|
| FactoryTalk® Hub™ |
| Domain Membership |
| Domain Activity |
| Set Up Your FactoryTalk Remote Access Connection |
| Firewall Policies |

# Notes:

# Notes:

## Rockwell Automation Support

Use these resources to access support information.

| | | |
|---|---|---|
| **Technical Support Center** | Find help with how-to videos, FAQs, chat, user forums, Knowledgebase, 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)** | Download firmware, associated files (such as AOP, EDS, and DTM), and access product release notes. | 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 compliance information on its website at rok.auto/pec.



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