

VxConnect

User Guide

PELCO[®]

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Installation

Prerequisites

Prior to installation, the following should be installed:

- .NET Framework 4.61 or later
- Microsoft Visual C++ 2015 Redistributables (x86)

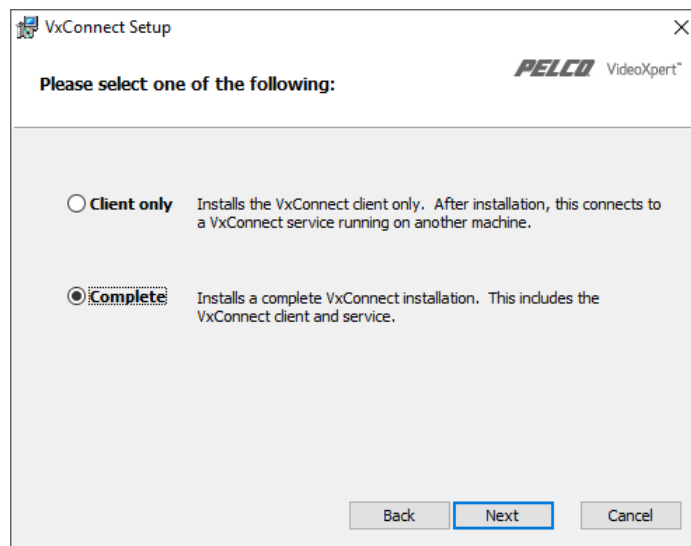
Licensing

VxConnect requires a license to be present on each VideoXpert system that will be added to it. If a VxConnect license is not present on the system when it is added, a 90 day trial period will begin on that system. VxConnect will be able to use the system normally during this period. If the system remains unlicensed when the trial period expires VxConnect will no longer be able to communicate with the system until a valid license has been applied. For assistance, contact Pelco Product Support at 1-800-289-9100 (USA and Canada) or +1-559-292-1981 (international).

Installing VxConnect

Your system must meet the minimum requirements and have all prerequisites installed before you can install the VxConnect application.

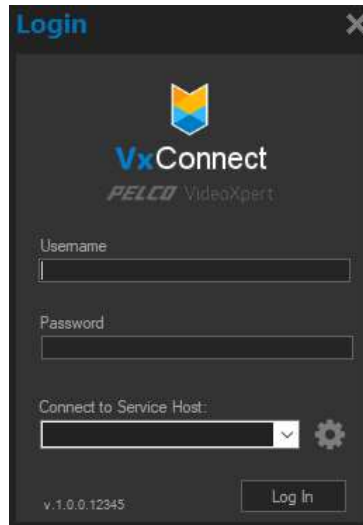
1. Run the VxConnect MSI installer.
2. Click Next.
3. Select the type of installation you wish to perform:
 - a. **Client only:** Installs the VxConnect Client for use with an existing VxConnect Service.
 - b. **Complete:** Installs the VxConnect Service and Client.





4. Click Install.

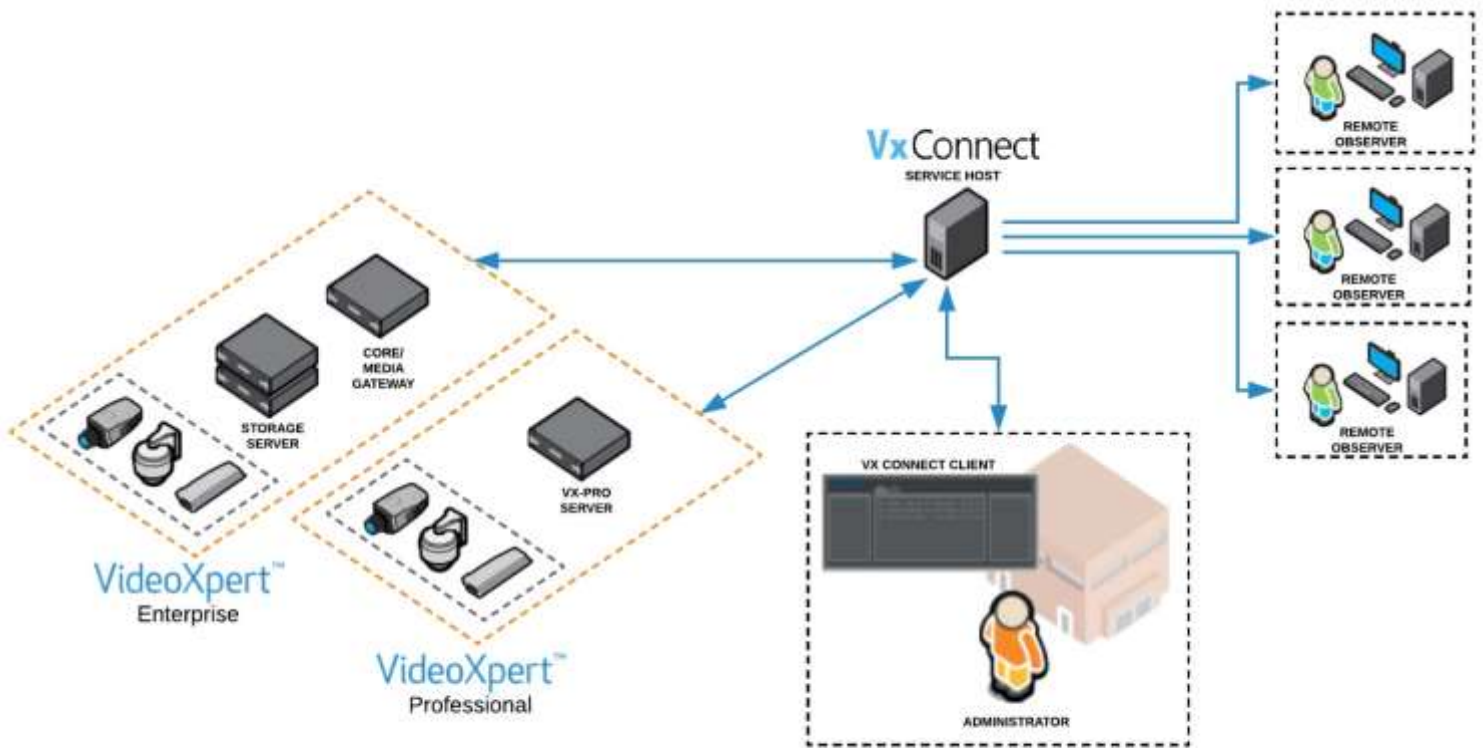
Running the VxConnect Client for the First Time

When you run the client application for the first time, you will need to add a new service host for the client to connect to.



1. Run the VxConnect Client.
2. Click  to bring up the service host configuration.
3. Click  to add a server.
4. Provide a *Display Name*. This will be the name displayed in the drop-down list on the Login screen.
5. Provide the *IP Address* of the PC running the VxConnect service, and adjust the *Port* if different from the default.
6. (Optional) Check the *Use this PC* checkbox if the VxConnect service is running on the same PC as the client application.
7. Click *OK*.
8. Click *Save*.
9. Provide the *Username* and *Password* for the selected server (Note: default username and password are "admin").
10. Click *Log In*.

VxConnect Overview



The VxConnect provides the ability to expose video streams from VideoXpert Enterprise and/or Pro systems to 3rd party clients. Once configured, the VxConnect service will provide customizable RTSP endpoints that allow a client application to connect to a stream from a VideoXpert system that is relayed via the VxConnect service.

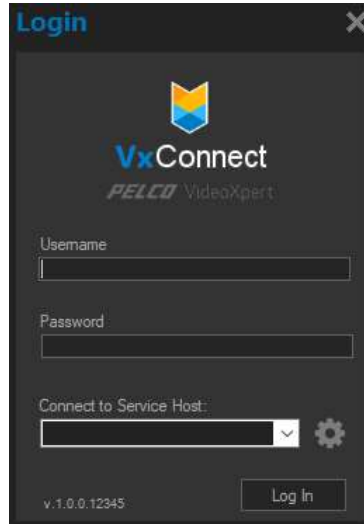
The VxConnect service can be configured using the VxConnect Client application. The client provides the ability to connect to and administer a VxConnect Service either locally or remotely. Using the client, an administrator can manage the accounts, users and streams that are provided as well as additional settings such as permissions and plugins.

The capabilities of the VxConnect service can be expanded through the use of plugins. Plugins provide additional features such as the ability to control PTZ or retrieve stream information. Currently, the VxConnect provides the following plugins:

- **REST Plugin:** Provides the ability to control PTZ devices using a RESTful interface.
- **ONVIF Plugin:** Exposes an ONVIF interface for the VxConnect Service. Allows ONVIF clients to discover and connect to streams as well as control PTZ devices.
- **NTCIP Plugin:** Provides the ability to control PTZ devices using an SNMP interface that conforms to the NTCIP standard.

Using the VxConnect Client

Logging In



1. Launch the VxConnect Client application.
2. (Optional) Select the service host you want to connect to if multiple services are available.
3. Enter your credentials.
4. Click Log In.

VxConnect Client Overview



1	Add Account: Displays a new window that allows the user to create a new account.
2	The Account panel shows all the accounts that have been added to the VxConnect service.

3	The Stream Tab will list the streams configured for a selected account. This will only be populated when an account has been selected in the account panel.
4	The Users Tab will list the users configured for a selected account. This will only be populated when an account has been selected in the account panel.
5	The Info panel shows a list of streams/users that have been added to the VxConnect service.
6	Add Stream/User: Displays the create new stream/user prompt in the settings panel.
7	The Configuration panel displays the settings specific to a new or currently selected stream/user. Through this panel, you can create or modify the settings for a stream/user.
8	Through the Configuration Menu you can reach the <i>VxConnect Settings</i> , the <i>Streaming Server Settings</i> , the <i>VideoXpert Systems</i> , and the <i>Plugin Settings</i> .
9	Logout: Disconnects the current user from the connected VxConnect service host and exits back to the login window.

Configuring the VxConnect Service

Configuring VxConnect Settings

The VxConnect Settings determine the basic behavior of the VxConnect service.

VxConnect Settings

Username: admin Password: ●●●●

Port: 8523

Network Adapter Select All

	Address	Name
<input type="checkbox"/>	192.168.1.27	Realtek PCIe GBE Family Controller

Logging Levels

VxConnect Client: Info Stream Server: Info

VxConnect Service: Info VideoXpert SDK: Off

v.1.0.0.12345 Cancel Save

1. To access these settings, select *VxConnect Settings* from the **Configuration Menu**.
2. The *Username* and *Password* fields allow you to change the credentials used to connect to the VxConnect Service through the VxConnect Client application (default credentials are: *admin/admin*). This is the global

admin user that allows the service to be configured and is unrelated to Account users. Warning: if you lose these credentials you will be unable to modify the VxConnect Service.

3. The *Port* field is the port used to connect to the VxConnect Service for configuration. Note: modifying this value will require the *Port* field the VxConnect Client uses for login to be adjusted as well.
4. If you have multiple network adapters available and would like to only allow connections to the VxConnect Service through one or more, uncheck the *Select All* checkbox. Then check each individual adapter that you wish to allow a connection through. Leave the *Select All* checkbox checked to allow connections on all adapters.
5. The logging level options can be modified to adjust the verbosity of log messages that are printed to the logs for various components of the VxConnect Service:
 - a. *VxConnect Client*: Adjusts the log level for the VxConnect Client application.
 - b. *VxConnect Service*: Adjusts the log level for the VxConnect Service.
 - c. *Stream Server*: Adjusts the log level for the Stream Server hosted by the VxConnect Service.
 - d. *VideoXpert SDK*: Adjusts the log level for the VxSDK used by the VxConnect Service.
6. Click *Save* to apply the configuration settings.

Configuring the Streaming Server

The Streaming Server hosted by the VxConnect Service relays streams from a VideoXpert system to 3rd party clients. You can adjust its behaviors through the *Streaming Server Settings*.

Streaming Server Settings [X]

Outgoing Connection (VxConnect to Client)

Port: 554 [dropdown]

Multicast IP Address: [text box] Auto

Network Adapter: Auto

	Address	Name
<input type="checkbox"/>	169.254.88.149	Juniper Network Connect Virtual Adapter
<input type="checkbox"/>	192.168.1.27	Realtek PCIe GBE Family Controller

Incoming Connection (Source to VxConnect)

Network Adapter: Auto

	Address	Name
<input type="checkbox"/>	169.254.88.149	Juniper Network Connect Virtual Adapter
<input type="checkbox"/>	192.168.1.27	Realtek PCIe GBE Family Controller

[Cancel] [Save]

1. Select *Streaming Server Settings* from the **Configuration Menu**.
2. The Outgoing Connection settings can be used to adjust the behavior of the streams that are sent from the Streaming Server to 3rd party clients. These settings include:
 - a *Port*: The port used for RTSP communication.
 - b *Multicast IP (Auto)*: When enabled, the Streaming Server will select a default multicast address to use for any outgoing multicast streams. Disabling the *Auto* setting will allow a manual address to be entered.
 - c *Multicast IP Address*: Allows the outgoing multicast IP address to be manually set when *Auto* is disabled.
 - d *Network Adapter (Auto)*: When enabled, the Streaming Server will attempt to bind to all available network adapters for outgoing streams. This will allow 3rd party clients to connect to the available streams through any network adapter (that can be reached). Disabling the *Auto* setting will allow a specific network adapter to be selected.
 - e *Network Adapter (Selection)*: If you have multiple network adapters available and would like to limit outgoing stream connections to a specific adapter, disable the *Auto* setting. Then check the individual adapter that you wish to allow a connection through.

3. The Incoming Connection settings can be used to adjust the behavior of the back-end streams that are sent from the VideoXpert system(s) to the Streaming Server. These settings include:
 - a *Network Adapter (Auto)*: When enabled, the Streaming Server will attempt to bind to all available network adapters for incoming streams. This will allow the Streaming Server to connect to VideoXpert systems through any network adapter (that can be reached) to initiate streams. Disabling the *Auto* setting will allow a specific network adapter to be selected.
 - b *Network Adapter (Selection)*: If you have multiple network adapters available and would like to limit incoming stream connections to a specific adapter, disable the *Auto* setting. Then check the individual adapter that you wish to allow a connection through.
4. Click *Save* to apply the configuration settings. *Note*: Adjusting these settings will require the Streaming Server to restart, which will disconnect any active sessions.

Managing VideoXpert System Connections

The list of *VX Systems* determines the VideoXpert systems your VxConnect Service instance can connect to. The list of available data sources for streaming will be obtained from the system connections that have been added.

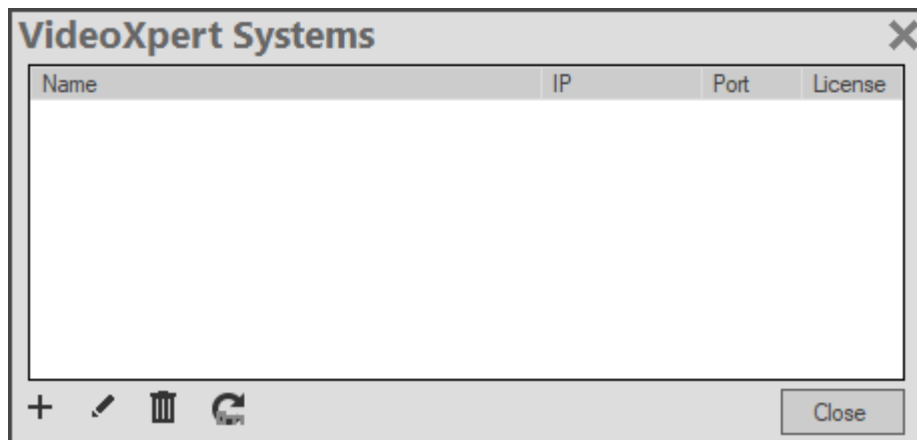


Figure 1: The VideoXpert Systems configuration dialog.

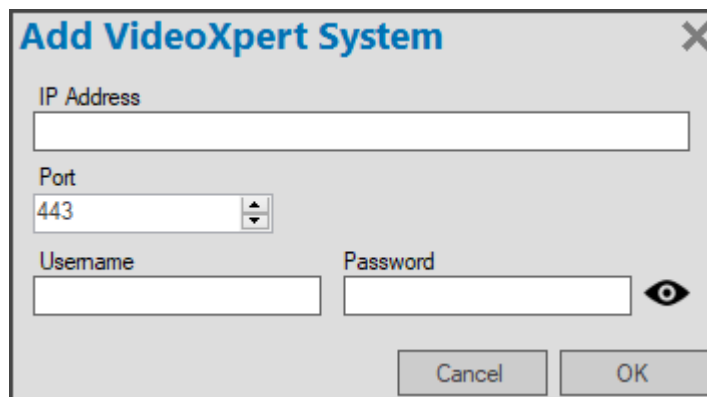






Figure 2: The Add VideoXpert System dialog.

Adding VideoXpert Systems to VxConnect

1. Select *VideoXpert Systems* from the **Configuration Menu**.
2. Click  to add a VideoXpert system connection.
3. Provide the *IP Address* of the system, and adjust the *Port* if different from the default.
4. Provide the *Username* and *Password* for the VideoXpert system. Note: The user must be set as an Administrator on the VideoXpert system.
5. Click *OK* to test the connection and add the system to the connection list.
6. Click *Close* to exit.

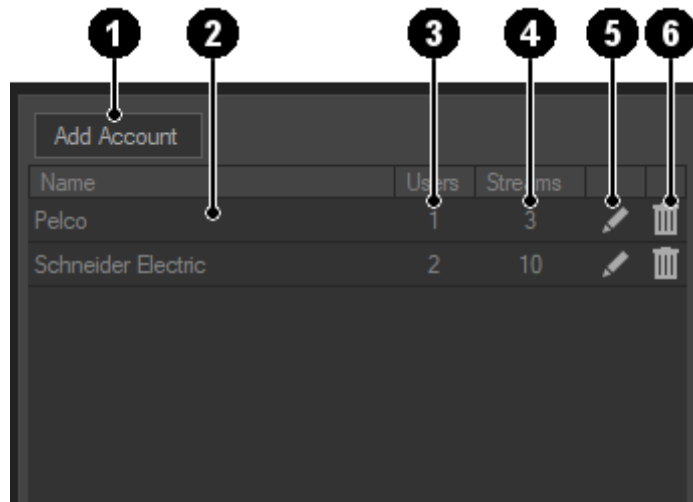
Editing or Deleting System Connections

System connections can be modified by selecting a system and clicking  to edit the system or  to remove the system. Clicking  will update the license status of all of the systems in the list.



Managing Accounts

An account represents a collection of streams and users. The streams contained within an account are only accessible by users within the same account. In this respect, an account can be viewed as a type of virtual system that is provided by the VxConnect service.

Accounts Panel Overview



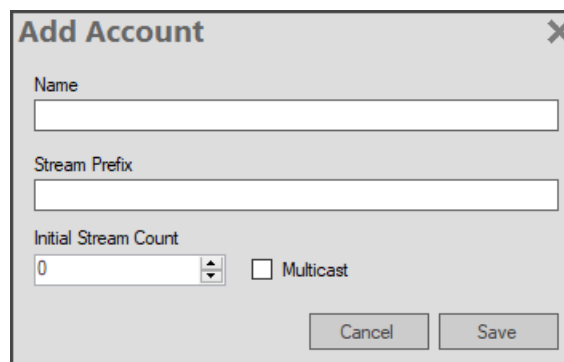
1	Add Account: Displays a new window that allows the user to create a new account.
2	The Name column displays the name of the account.
3	The Users column displays the total number of users the account contains.

4	The Streams column displays the total number of streams the account contains.
5	Clicking the  icon will display the Edit Account dialog.
6	Clicking the  icon will display the Delete Account prompt.

Adding Accounts


When adding a new Account, you will need to provide an account name and stream prefix. The account name is the name displayed in the VxConnect Client and is for informational purposes only. The stream prefix is the account identifier that is added to the RTSP endpoints contained within the account. For example, entering "pelco" as the stream prefix will result in RTSP endpoints in the form of `rtsp://{IP Address}:{Port}/pelco/{stream name}`. This value is also used as an identifier in the same way by certain plugins.

You can also populate an account with a number of default streams during creation. This provides a quick way to add a large number of streams to an account that may be configured further at a later point.




1. Click *Add Account*.
2. Enter the *Name* that will be displayed for the account.
3. Enter a *Stream Prefix*.
4. (Optional) Set the *Initial Stream Count* to automatically add streams to the account during creation.
5. (Optional) Enable *Multicast* to set the initial streams to multicast during creation.
6. Click *Save*.

Editing Accounts

1. Click  to edit the selected account.
2. Enter a new *Name* for the account.
3. Enter a new *Stream Prefix*. *Note:* Modifying this value will remove all of the current streams for this account, which will disconnect any active sessions.

4. Click *Save*.

Deleting Accounts

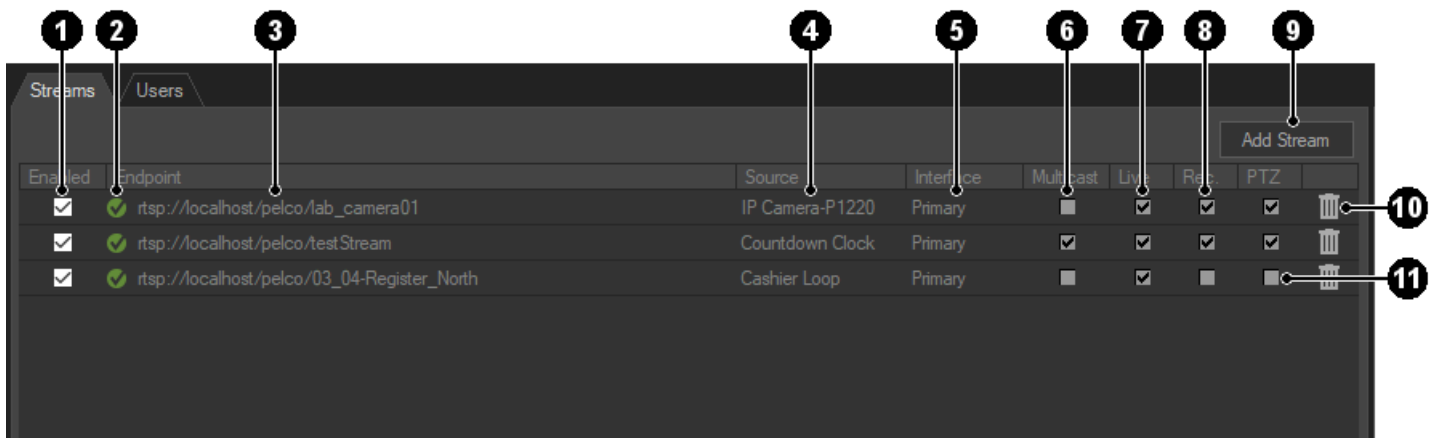
1. Click  to delete the selected account.
2. Confirm the action by clicking *OK* in the pop up window.




Managing Streams




Each Account contains a set of Streams which can be managed under the Streams tab. The streams listed here represent VxConnect streams, which can be viewed as a configurable container for a video source. VxConnect streams can be configured in different ways depending on their intended use. A few common examples are:

- Creating several dedicated stream endpoints that map to specific data sources. In this scenario, the VxConnect can act as a simple stream relay with additional levels of access control on a stream by stream level.
- Creating several fixed stream endpoints that can be assigned a data source on demand. This configuration allows an administrator to provide a user with a set of well-known stream endpoints that can be added to the user's client application. The user may then request or be assigned a data source to any of the endpoints provided to them.
- Creating streams only when needed. In this scenario, a stream may be added (perhaps with a unique, one-time name) for the user and then removed once it is no longer needed. Essentially creating a temporarily accessible stream.

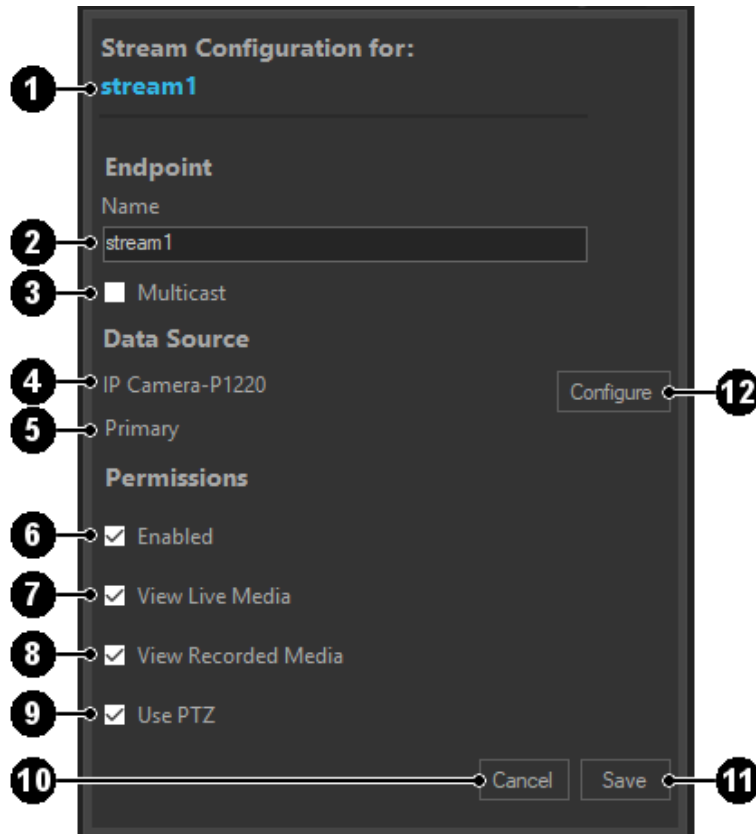
Streams Tab Overview



1	The Enabled column indicates whether the stream is enabled or disabled. The checkbox may also be toggled to quickly change this setting.
2	The Status icon shows the current status of the back-end stream (VideoXpert to VxConnect). The status of the stream is indicated with the following icons: <ul style="list-style-type: none"> ▪  Retrieving the state of the stream. ▪  Unable to connect to the selected data source. ▪  Connected to the selected data source.

	<ul style="list-style-type: none"> ▪  Connected to the selected data source that is hosted on an unlicensed system. ▪  The selected data source is unavailable due to the host system being unlicensed.
3	The Endpoint column displays the RTSP endpoint that can be used to connect to the stream. Note: if a specific network adapter has not been selected for outgoing streams, the IP address will be displayed as <i>localhost</i> due to the possibility of multiple addresses being available.
4	The Source column displays the name of the data source that the stream is forwarding.
5	The Interface column displays the name of the data interface that the stream is forwarding from the selected data source.
6	The Multicast column indicates whether the outgoing stream will be sent using multicast or unicast.
7	The Live column indicates whether the global permission for viewing live video is enabled or disabled .
8	The Rec. column indicates whether the global permission for viewing recorded video is enabled or disabled .
9	Add Stream: Loads the <i>Add New Stream</i> options in the Stream Configuration panel.
10	Clicking the  icon will display the Delete Stream prompt.
11	The PTZ column indicates whether the global permission for PTZ control is enabled or disabled.

Stream Configuration Panel Overview



1	The name of the currently selected stream.
2	Endpoint Name: Modify this value to change the name used for the stream endpoint.
3	Multicast: Check to set the stream transmission type to multicast. Uncheck to set the transmission type to unicast.
4	The friendly name of the selected data source, if any.
5	The friendly name of the selected data interface, if any.
6	Enabled: Check to enable the stream, uncheck to disable.
7	View Live Media: Check to enable the global permission for viewing live video, uncheck to disable.
8	View Recorded Media: Check to enable the global permission for viewing recorded video, uncheck to disable.
9	Use PTZ: Check to enable the global permission for PTZ control, uncheck to disable.
10	Cancel: Exit the configuration without making changes.
11	Save: Save and apply all changes made to the configuration.
12	Configure: Displays the <i>Select Data Source</i> dialog, which allows you to modify the data source and interface for the stream.

Adding Streams

It is not required that a stream be fully configured during creation. The only field that is required to create a new stream is the stream name. The stream name must be unique to the account and cannot contain any characters or formatting that would render the RTSP URL invalid. The stream name is the unique identifier that is added to the RTSP endpoints contained. For example, entering "Camera_001" as the stream name will result in an RTSP endpoint in the form of `rtsp://{IP Address}:{Port}/{stream prefix}/Camera_001`.

1. Go to the Streams tab click *Add Stream*.
2. Enter a *Stream Name*.
3. (Optional) Check *Multicast* to set the stream transport mode to Multicast, leave unchecked for Unicast.
4. (Optional) Click *Configure* to select the data source associated with the stream. See "Configuring Data Sources" for more information about configuring data sources.
5. (Optional) Select which Permissions should be enabled for the stream.
6. Click *Save*.

Editing Streams

1. Go to the Streams tab and select the stream you wish to edit. The current settings will be displayed in the Stream Configuration Panel.
2. (Optional) Change the stream settings as needed.
3. Click *Save*.

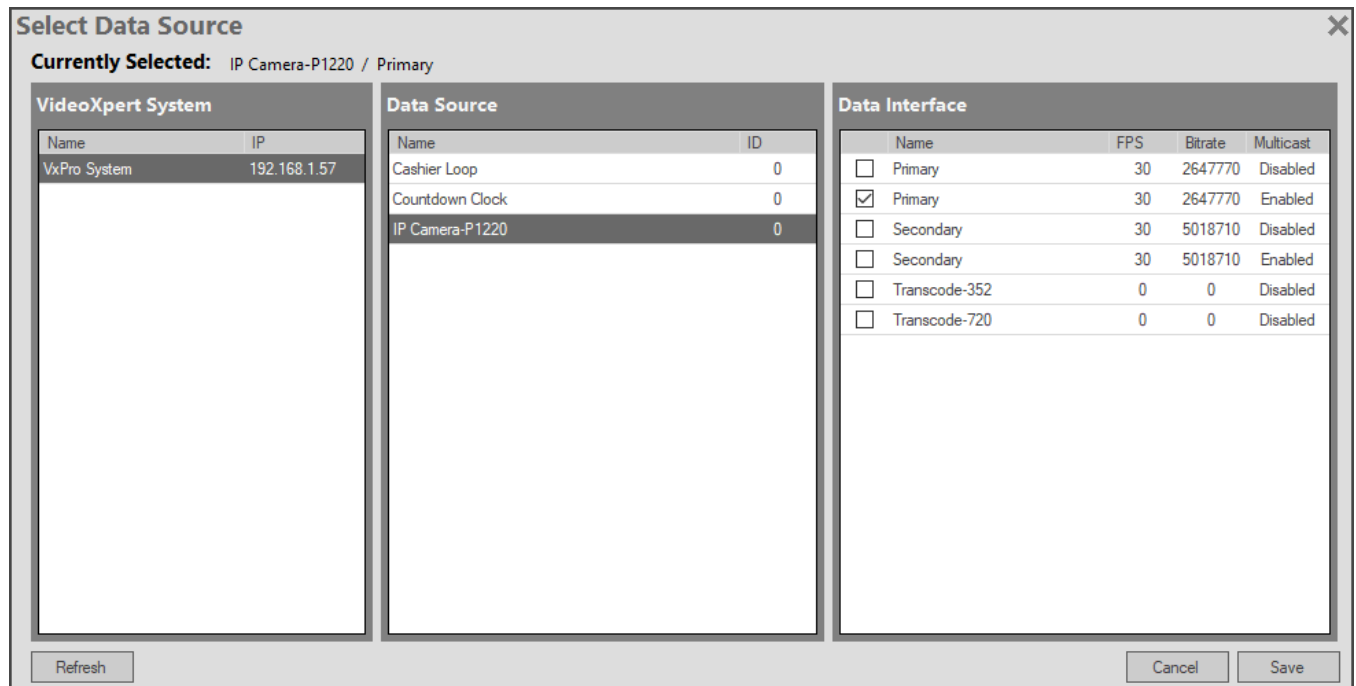
Deleting Streams

1. Go to the Streams tab and click  to delete the selected stream.
2. Confirm the action by clicking *OK* in the pop up window.

Configuring Data Sources

Clicking the *Configure* button within the *Stream Configuration Panel* will display the *Select Data Source* dialog. This dialog allows you to add or remove the video source that is associated with the stream. Before you can select a data source, you must add at least one VideoXpert system to VxConnect. See “Managing VideoXpert System Connections” for more information about adding VideoXpert systems.

Depending on the type and configuration of the data source, there will be a number of data interfaces available to choose from. These are the interfaces that are provided by the Media Gateway component of the VideoXpert system. Typically, a data interface is available for the primary and secondary streams of the data source. If the Media Gateway provides additional streams or configurations they will also be listed here. Note: The Multicast column in the Data Interface panel refers to the transport method that will be used to connect to the data source. The transport method for the outgoing stream is independent of this value.



Select Data Source ✕

Currently Selected: IP Camera-P1220 / Primary

VideoXpert System	
Name	IP
VxPro System	192.168.1.57

Data Source	
Name	ID
Cashier Loop	0
Countdown Clock	0
IP Camera-P1220	0

Data Interface				
Name	FPS	Bitrate	Multicast	
<input type="checkbox"/> Primary	30	2647770	Disabled	
<input checked="" type="checkbox"/> Primary	30	2647770	Enabled	
<input type="checkbox"/> Secondary	30	5018710	Disabled	
<input type="checkbox"/> Secondary	30	5018710	Enabled	
<input type="checkbox"/> Transcode-352	0	0	Disabled	
<input type="checkbox"/> Transcode-720	0	0	Disabled	

Refresh Cancel Save

Adding a Data Source

1. Select a system from the *VideoXpert Systems* panel.
2. Select a data source from the *Data Source* panel.
3. Select a *data interface* from the Data Interface panel.
4. (Optional) Click *Refresh* to update the data sources and interfaces for each system.
5. Click *Save*.

Removing a Data Source

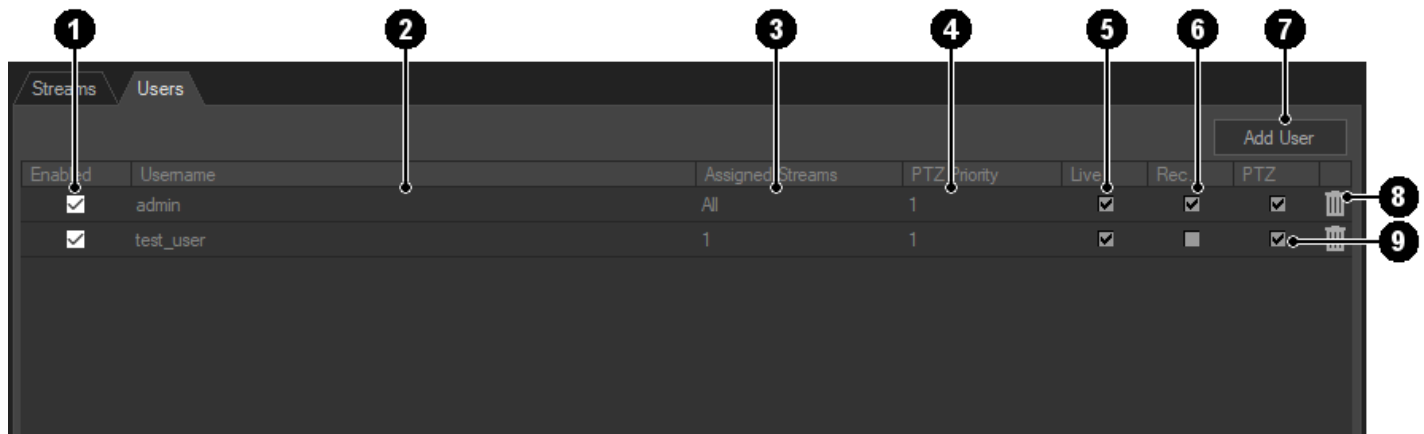
1. Uncheck the data interface that is currently selected.
2. Click *Save*.
3. Click *OK* in the warning dialog to remove the data source.

Managing Users


Each account contains a set of users which can be managed under the *Users* tab. The users within an account are limited to the streams and settings that have been configured within the same account. This means a user from account A is unable to access streams from account B. Also, there are no predefined roles for users. The permission level for each user is instead based on which features and streams they have been granted access to. There are also stream and account level permissions that may override a user's permission (*see [Permission Levels](#) for details*).

Note: VxConnect leverages the VideoXpert system to manage certain permissions (i.e. PTZ Priority). It does this by adding a new user to all VideoXpert systems that have been added to VxConnect using the format `{stream prefix}_{username}`. For example, a user with the name "user01" that belongs to an account with the stream prefix "pelco" would result in a user being created with the name "pelco_user01" on the VideoXpert system(s). It is important that you **do not** modify these users manually from another application. Any modifications made to the user from outside of VxConnect may result in the VxConnect service losing the ability to correctly utilize and manage the user.

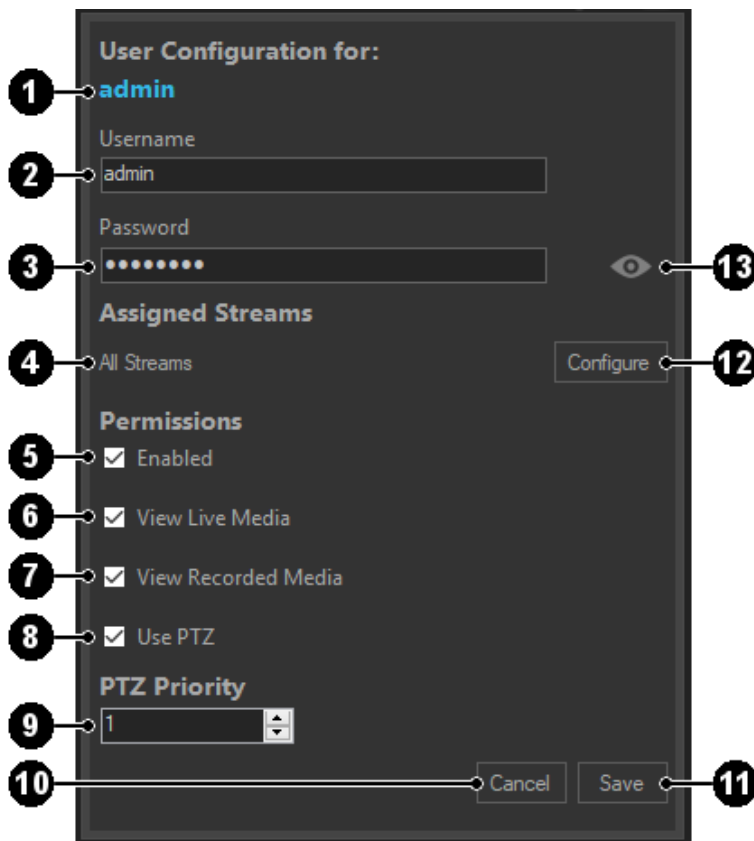
Users Tab Overview




1	The Enabled column indicates whether the user is enabled or disabled. The checkbox may also be toggled to quickly change this setting.
2	The Username column displays the name of the user.
3	The Assigned Streams column displays the total amount of streams assigned to the user.
4	The PTZ Priority column displays the users PTZ priority level; priority determines who can control a camera in the event of competing users. If two or more users attempt to control a camera, the user with the highest

	priority will take command and lower priority users will be locked out. Priority ranges from 1 to 250, where 1 indicates the highest priority, and 250 the lowest.
5	The Live column indicates whether the user has permission to view live video.
6	The Rec. column indicates whether the user has permission to view recorded video.
7	Add User: Loads the <i>Add New User</i> options in the User Configuration panel.
8	Clicking the  icon will display the Delete User prompt.
9	The PTZ column indicates whether the user has permission to perform PTZ operations.

User Configuration Panel Overview



1	The name of the currently selected user.
2	Username: Modify this value to change the name of this user.
3	Password: Modify this value to change the password for the user.
4	The total amount of streams assigned to the user.
5	Enabled: Check to enable the user, uncheck to disable.
6	View Live Media: Check to give the user permission to view live video (<i>global</i>), uncheck to deny access.

7	View Recorded Media: Check to give the user permission to view recorded video (<i>global</i>), uncheck to deny access.
8	Use PTZ: Check to give the user permission to perform PTZ operations (<i>global</i>), uncheck to deny access.
9	PTZ Priority: Modify this value to adjust the users PTZ priority level; priority determines who can control a camera in the event of competing users. If two or more users attempt to control a camera, the user with the highest priority will take command and lower priority users will be locked out.
10	Cancel: Exit the configuration without making changes.
11	Save: Save and apply all changes made to the configuration.
12	Configure: Displays the <i>Stream Permissions</i> dialog, which allows you to modify the <i>Enabled</i> , <i>View Live Media</i> , <i>View Recorded Media</i> and <i>Use PTZ</i> permission levels for individual streams.
13	Clicking the  icon will toggle the visibility of the password text.

Adding Users

1. Go to the Users tab click *Add User*.
2. Enter a *Username* and *Password*.
3. (Optional) Click *Configure* to select which permissions should be enabled for individual streams. See “Configuring User Permissions” for more information about configuring user permissions.
4. (Optional) Select which permissions should be enabled for the user at a global level.
5. (Optional) Set the PTZ priority level for this user; priority determines who can control a camera in the event of competing users. If two or more users attempt to control a camera, the user with the highest priority will take command and lower priority users will be locked out.
6. Click *Save*.

Editing Users

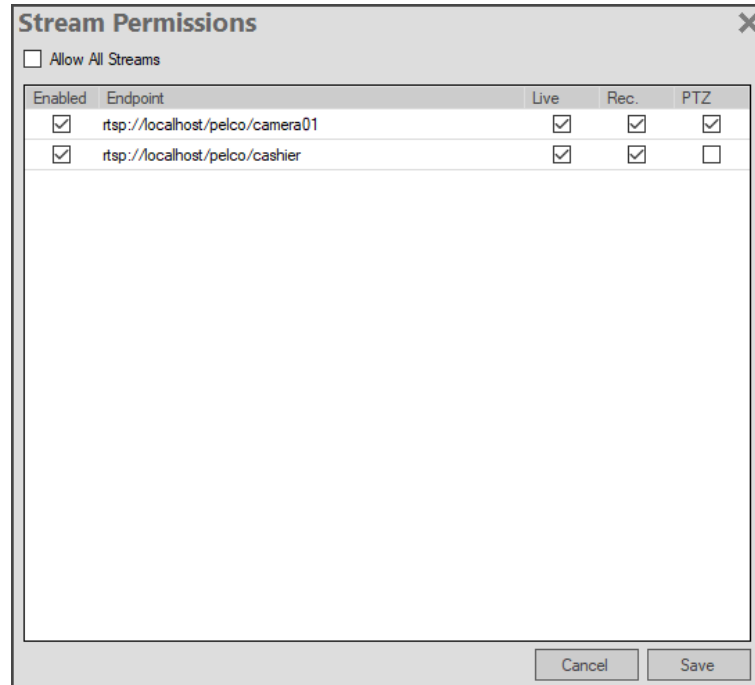
1. Go to the Users tab and select the user you wish to edit. The current settings will be displayed in the User Configuration Panel.
2. (Optional) Change the user settings as needed.
3. Click *Save*.

Deleting Users

1. Go to the Users tab and click  to delete the selected user.
2. Confirm the action by clicking *OK* in the pop up window.

Configuring User Permissions

Clicking the *Configure* button within the *User Configuration Panel* will display the *Stream Permissions* dialog. This dialog allows you to control the permission level on a per-stream basis for the user.



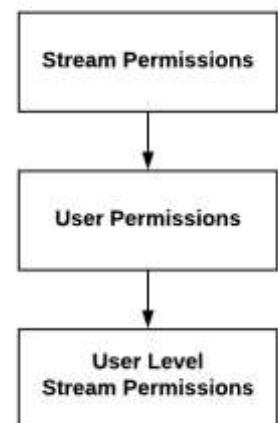
1. Uncheck *Allow All Streams* to enable editing permissions on a per-stream level, leaving this checked ignore the stream level permissions and will instead use the global permission level for the user.
2. (Optional) Select which permissions should be enabled for each stream. Note: Disabling a stream will disable all other permissions as well.
3. Click *Save*.

Permission Levels

Permissions for an account can be configured at three different levels: the stream level, the user level and on a specific stream at the user level. The permission settings on the stream level are at the highest level. For example, if the “View Live Video” setting is disabled in a streams configuration it will be disabled for all users within the account.

The next level of permissions are the user permissions. If the same settings as the previous example was set in the configuration for a user, then only that user would have the “View Live Video” permission disabled.

Finally, there are the stream permissions that can be made at the user level. These settings are at the lowest level and will be overridden by any of the settings above it if they are set to disabled. Which means that in order for a stream permission at the user level to have any effect, the same permissions must also be enabled on the levels above it.



Streaming Video

The VxConnect service provides RTSP endpoints that can be used to connect to a stream that is being relayed from a VideoXpert system. During initialization, the VxConnect service will create an RTSP connection with the VideoXpert system for each configured stream. When a client connects to one of the RTSP endpoints hosted by the VxConnect service, the service will use its RTSP connection to initiate a streaming session with the VideoXpert system and forward the data to the client. During this process, the service also verifies the credentials sent by the client for the connection are valid and that the user has the appropriate permissions to view the stream.

Watching Live Video

By default, initiating a stream using the RTSP endpoint displayed in the VxConnect configuration will provide a live stream. The endpoints created by the service use the following format: `rtsp://{IP Address}:{Port}/{stream prefix}/{stream name}`.

Watching Recorded Video

The VxConnect Service provides the ability to initiate a playback stream for data sources that are being recorded to a storage device. Playback is initiated by adding the query parameter “?time=” to the end of a streams endpoint followed by the start time. The value given for the start time needs to be in UTC using the format “yyyyMMddTHHmms.fffZ”. For example, to initiate a playback stream starting on March 27th 2018 at 3:30:55 PM (UTC) you would connect to the stream using the following format: `rtsp://{IP Address}:{Port}/{stream prefix}/{stream name}?time=20180327T153055.000Z`.

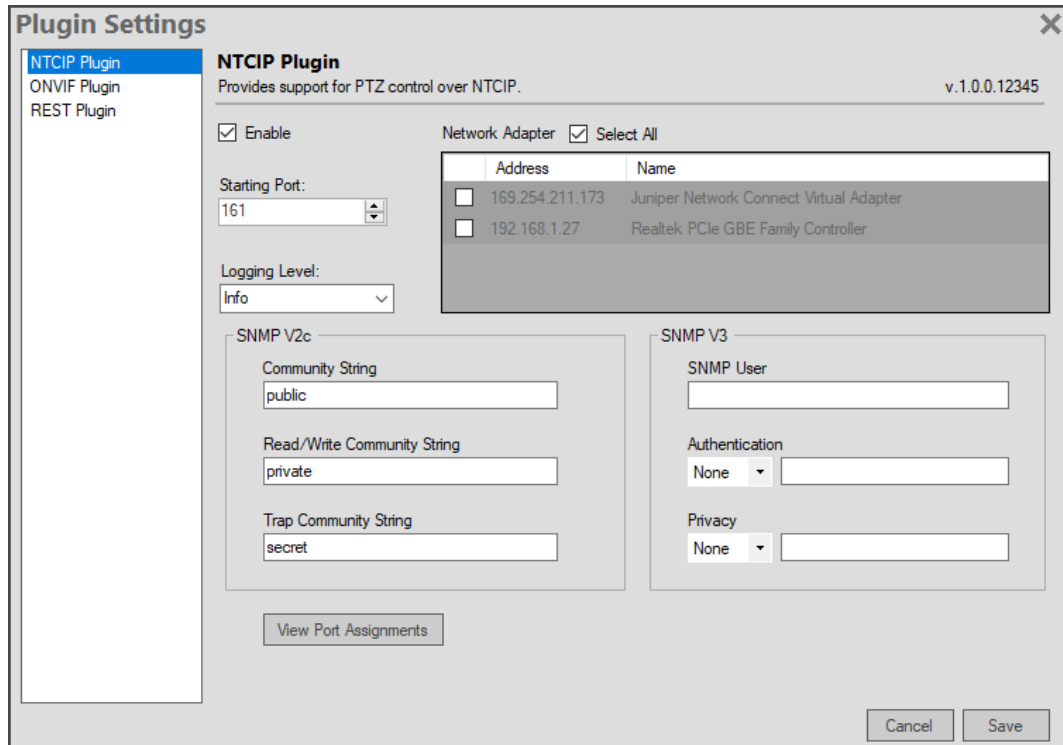
Stream Authentication

Streams require you to provide credentials before the connection will succeed. If the client that will be used to connect to the stream does not provide the option to specify credentials before or during the connection process, you may alternatively supply them within the RTSP URL using the following format: `rtsp://{username}:{password}@{IP Address}:{Port}/{stream prefix}/{stream name}`

NTCIP Plugin

This plugin provides the ability to control PTZ devices using an SNMP interface that conforms to the NTCIP standard.

Configuring the Plugin



1. Select *Plugins* from the **Configuration Menu**.
2. Select *NTCIP Plugin* from the plugin list.
3. The plugin settings can be used to adjust the behavior of the NTCIP service provided by the VxConnect service. These settings include:
 - a. *Enable*: Enables/Disables the plugin.
 - b. *Starting Port*: The first port to use when assigning NTCIP ports to streams. By default, the NTCIP plugin will assign a port sequentially for each stream using this value as the starting point.
 - c. *Logging Level*: Adjusts the verbosity of log messages that are printed to the logs for the NTCIP plugin.
 - d. *Select All*: When enabled, the NTCIP plugin will attempt to provide an NTCIP interface on all available network adapters. This will allow NTCIP clients to communicate with the NTCIP interface through any network adapter (that can be reached). Disabling will allow a specific network adapter to be selected.
 - e. *Network Adapter*: If you have multiple network adapters available and would like to limit the NTCIP interface to a specific adapter, disable the *Select All* setting. Then check the individual adapter that you wish to allow the interface to bind to.
4. The NTCIP plugin allows connections using SNMP V2c and SNMP V3. Each version provided can be configured through the specific setting group.

SNMP V2c:

 - a. *Community String*: The authentication string needed to obtain "read-only" information.
 - b. *Read/Write Community String*: The authentication string needed to obtain information and modify settings.
 - c. *Trap Community String*: The authentication string needed to subscribe to SNMP traps.

SNMP V3:

- a *SNMP User*: The SNMP user name.
- b *Authentication*: The authentication type and key to use for authentication.
- c *Privacy*: The privacy type and key to use for authentication.

5. Click *View Port Assignments* to view and manage the NTCIP ports currently assigned for each stream.

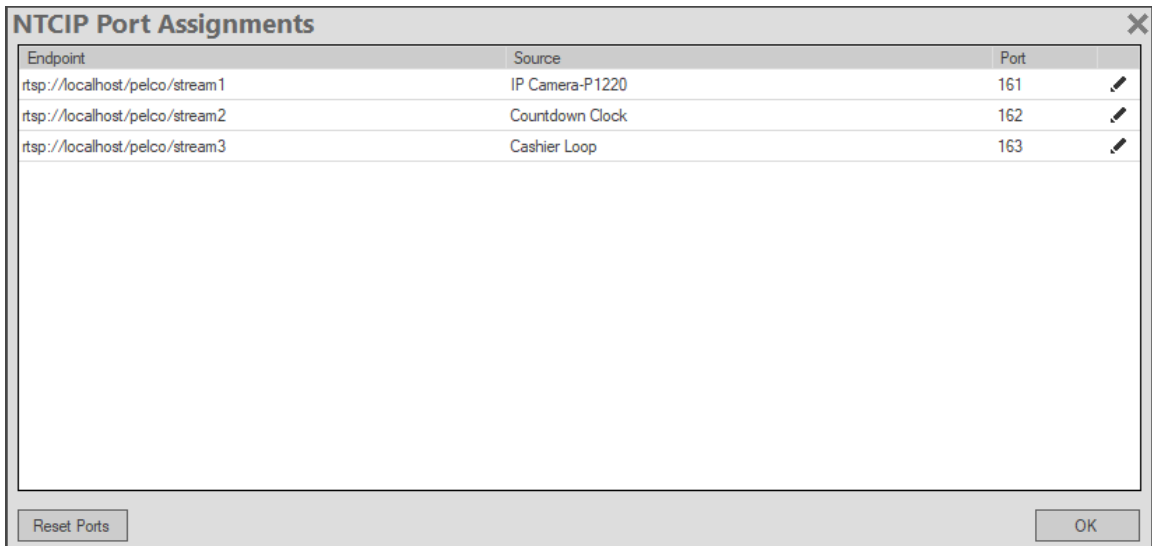


Figure 1: The NTCIP Port Assignments dialog.

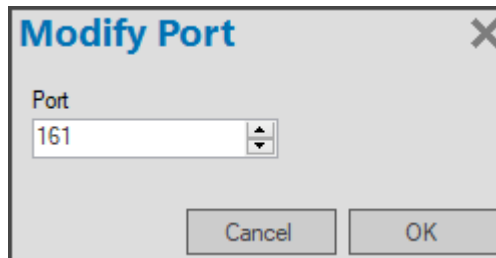



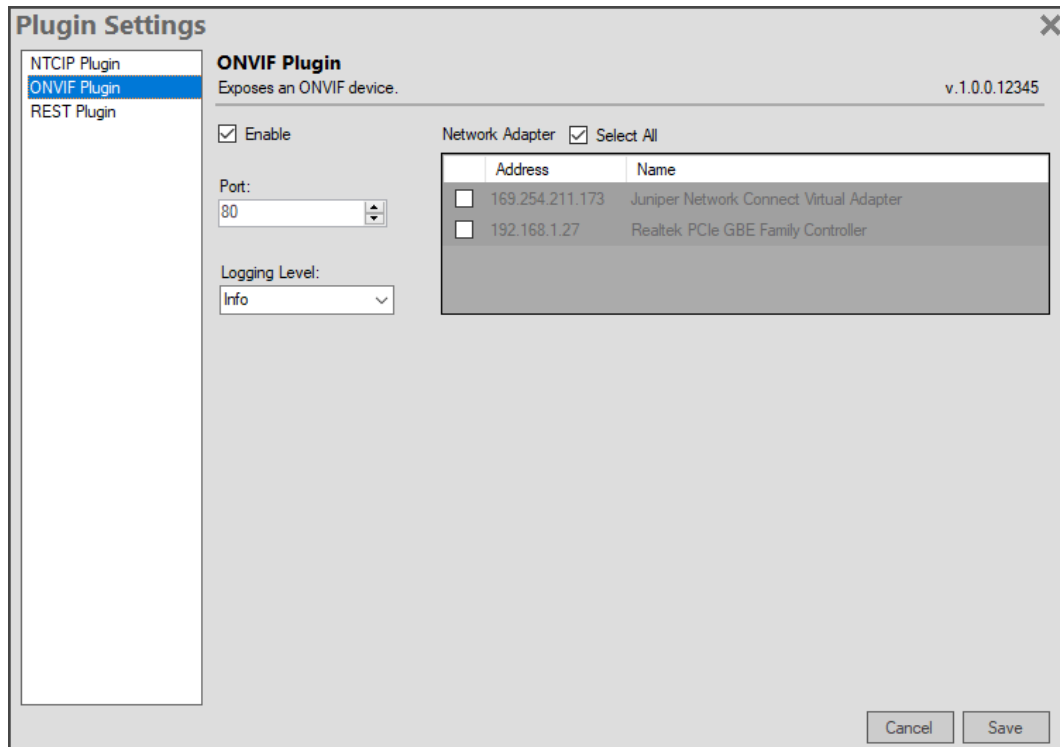
Figure 2: The Modify Port dialog.

- a Individual ports can be modified by clicking  to bring up the Modify Port dialog.
 - b Click *Reset Ports* to reset ALL ports to their default sequential order, beginning from the *Starting Port* value defined in the NTCIP plugin configuration.
6. Click *Save* to apply the configuration settings. *Note:* Adjusting these settings will require the Plugin to restart.

ONVIF Plugin

This plugin will expose an ONVIF interface for the VxConnect Service which allows ONVIF clients to discover and connect to streams as well as control PTZ devices.

Configuring the Plugin



1. Select *Plugins* from the **Configuration Menu**.
2. Select *ONVIF Plugin* from the plugin list.
3. The plugin settings can be used to adjust the behavior of the ONVIF service provided by the VxConnect service. These settings include:
 - a *Enable*: Enables/Disables the plugin.
 - b *Port*: The port used to communicate with the ONVIF endpoint.
 - c *Logging Level*: Adjusts the verbosity of log messages that are printed to the logs for the ONVIF plugin.
 - d *Select All*: When enabled, the ONVIF plugin will attempt to provide an ONVIF endpoint on all available network adapters. This will allow ONVIF clients to communicate with the ONVIF interface through any network adapter (that can be reached). Disabling will allow a specific network adapter to be selected.
 - e *Network Adapter*: If you have multiple network adapters available and would like to limit the ONVIF endpoint to a specific adapter, disable the *Select All* setting. Then check the individual adapter that you wish to allow the endpoint to bind to.
4. Click *Save* to apply the configuration settings. *Note*: Adjusting these settings will require the Plugin to restart.

Authentication

Similar to the other plugins, credentials are required in order to interact with the ONVIF service provided by the VxConnect. However, the format of the username used to authenticate with the ONVIF plugin differs from the format used for streams and other plugins. The stream prefix for the account that the user belongs to needs to precede the username, separate by a backslash: `{stream prefix}\{username}`. For example, a user with the name "user1" that belongs to an account with the stream prefix "pelco" would provide "pelco\user1" as the username when logging in to the ONVIF plugin.

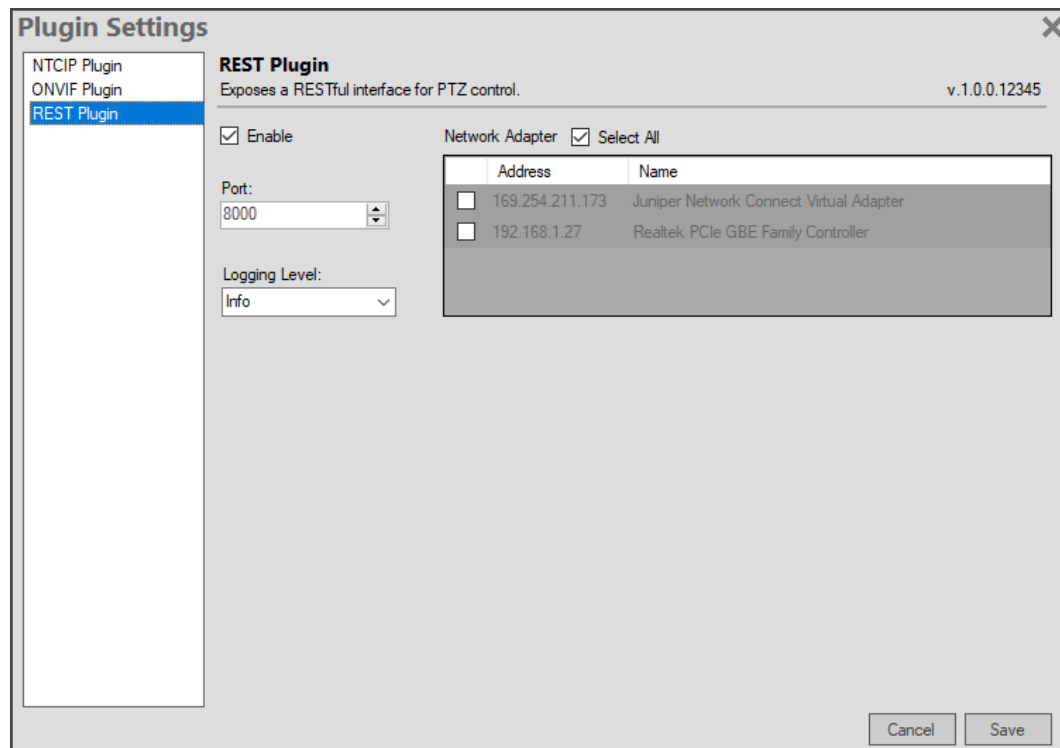
Service Address

When enabled, the ONVIF service can be found using WS-Discovery or by manually entering the endpoint address using the following format: `http://{IP Address}:{ONVIF Port}/onvif/device_service`.

REST Plugin

This plugin provides the ability to control PTZ devices using a RESTful interface.

Configuring the Plugin



The screenshot shows a 'Plugin Settings' dialog box with the 'REST Plugin' selected. The dialog has a sidebar on the left with a list of plugins: 'NTCIP Plugin', 'ONVIF Plugin', and 'REST Plugin'. The 'REST Plugin' is highlighted. The main area of the dialog is titled 'REST Plugin' and includes the following settings:

- Version: v.1.0.0.12345
- Enable:
- Port: 8000 (with a spinner control)
- Logging Level: Info (with a dropdown menu)
- Network Adapter: Select All
- A table of network adapters with columns 'Address' and 'Name':

Address	Name
<input type="checkbox"/> 169.254.211.173	Juniper Network Connect Virtual Adapter
<input type="checkbox"/> 192.168.1.27	Realtek PCIe GBE Family Controller

At the bottom right of the dialog are 'Cancel' and 'Save' buttons.

1. Select *Plugins* from the **Configuration Menu**.
2. Select *REST Plugin* from the plugin list.

3. The plugin settings can be used to adjust the behavior of the REST service provided by the VxConnect service. These settings include:
 - a *Enable*: Enables/Disables the plugin.
 - b *Port*: The port used to communicate with the REST interface.
 - c *Logging Level*: Adjusts the verbosity of log messages that are printed to the logs for the REST plugin.
 - d *Select All*: When enabled, the REST plugin will attempt to provide the REST interface on all available network adapters. This will allow REST clients to communicate with the REST interface through any network adapter (that can be reached). Disabling will allow a specific network adapter to be selected.
 - e *Network Adapter*: If you have multiple network adapters available and would like to limit the REST interface to a specific adapter, disable the *Select All* setting. Then check the individual adapter that you wish to allow the interface to bind to.

4. Click *Save* to apply the configuration settings. *Note*: Adjusting these settings will require the Plugin to restart.

Endpoint Locations

When enabled, the REST plugin will provide an endpoint that can be used to make REST calls for each stream in the service. These endpoints follow the same format as the stream they are associated with, except they use the http:// protocol instead of the rtsp:// protocol. For example, the REST endpoint for a stream with the endpoint: rtsp://{IP Address}:{Port}/pelco/camera_001 would be http://{IP Address}:{REST Port}/pelco/camera_001.

API Reference

The following table shows the methods available through the REST interface. The {root} value in the Endpoints column refers to the base endpoint described in the previous section. For example, the endpoint for calling “Trigger Preset” for a preset with the name “PRESET01” with would be in the following format: http://{IP Address}:{Port}/{stream prefix}/{stream name}/presets/PRESET01.

Method	Action	Endpoint
DELETE	Delete Preset	{root}/presets/{name}
GET	Get Lock Info	{root}/lock
	Get Patterns	{root}/patterns
	Get Position	{root}/position
	Get Presets	{root}/presets
OPTIONS	Options	{root}
PATCH	Reposition Preset	{root}/presets/{name}
POST	Continuous Focus (Near)	{root}/focus/near
	Continuous Focus (Far)	{root}/focus/far
	Continuous Focus (Stop)	{root}/focus/stop
	Continuous Iris (Open)	{root}/iris/open
	Continuous Iris (Close)	{root}/iris/close
	Continuous Iris (Stop)	{root}/iris/stop
	Continuous Move	{root}/move?speedX={speedX}&speedY={speedY}&zoom={inOut}
	Trigger Pattern	{root}/patterns/{name}
	Absolute Move	{root}/position?x={x}&y={y}&z={z}

	Trigger Preset	{root}/presets/{nameOrIndex}
	Trigger Refresh	{root}/refresh
	Stop	{root}/stop
	Relative Percentage Move	{root}/view?percentX={x}&percentY={y}
PUT	Add Preset	{root}/presets/{index}



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