VideoXpert® Professional v3.23
Operations Manual

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Installing VideoXpert® Professional

Caution: Your system must meet the minimum requirements before you can install the VideoXpert Professional (VxPro) application.

To install VxPro:

1. Run the VideoXpert Professional exe installer.
2. Read and accept the terms of the End User License Agreement.
3. Click **Begin Installation**.
4. Follow the instructions in the Installation Wizard to complete the installation.
5. Do one of the following:
   - (Optional) To configure VxPro, to the right of *Open VxToolbox?*, click **Open**. See the section titled *Configuring VideoXpert System Settings* for instructions.
   - To end the installation now and configure VxPro later, click **Close**.

If you are reinstalling VideoXpert Professional, uninstall the previous version:

1. Run the VideoXpert Professional exe installer.
2. Click to select and deselect the checkboxes under *Uninstall Applications*.
3. Click **Uninstall**.
4. When prompted, click **Close**.

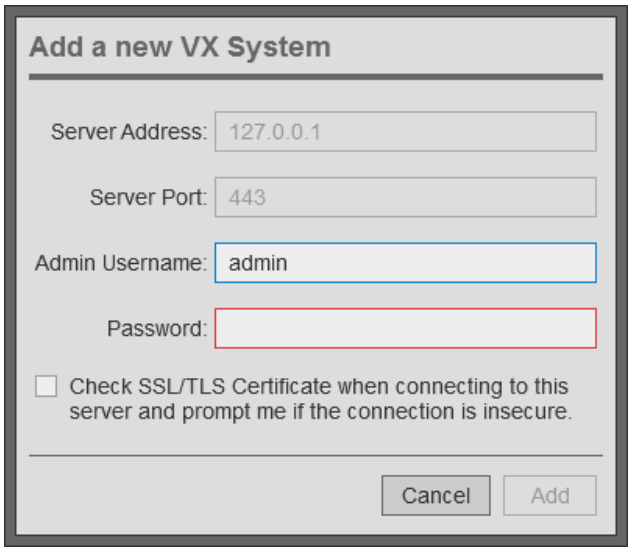
Using VideoXpert Toolbox

Performing Initial VideoXpert Server Configuration Using VxToolbox

VideoXpert Professional comes with a time-limited trial license. During this trial, you have access to all VideoXpert features, and you can ignore the **Licensing** tab within VideoXpert.

To use VideoXpert beyond the trial, you must apply a license to the server. Licensing requires either an Internet connection on the VideoXpert server itself, or access to a separate computer with Internet access.

1. After installing VideoXpert, click *Configure* or run VxToolbox for the first time on your VideoXpert (VX) System.
2. For VideoXpert Professional systems, in the *VideoXpert Basic System Setup* dialog box, type values in the *Company Name* and *Name Your System* fields, and then click **Save**.
3. Perform the steps in the section titled *Configuring General Settings for VideoXpert Professional Systems*.
4. Perform the steps in the section titled *Adding a VX System*.
5. To set the VxToolbox password:
   a. Click the menu icon (☰), and then click **Set VxToolbox Password**.
   b. Type a value in the *Password* and *Reset Password* fields.
   c. Click **Save**.
6. To set the VxToolbox password and login requirements:
   a. Set the password for the *admin* user on your system.



Note: The default user name is admin. You must set a new password.

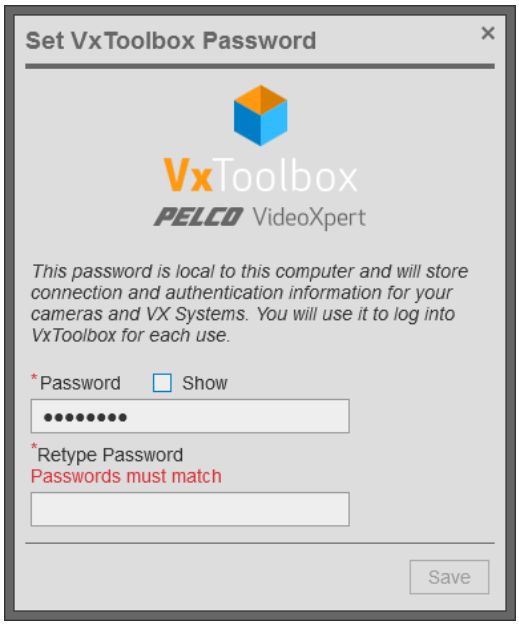
   b. (Optional) Click to select the checkbox to ensure that the system checks the SSL/TLS Certificate when connecting to the server.

Enable this feature if your organization uses signed HTTPS certificates and the certificate has already been loaded using VxToolBox.

c. Click **Add**.

d. In the *VxToolbox Password Confirmation Window*, click **Set Password** (recommended) or **No Thanks**.

e. If you clicked **Set Password**, in the *Set VxToolbox Password* dialog box, enter a password in the *Password* and *Retype Password* fields, and then click **Save**.

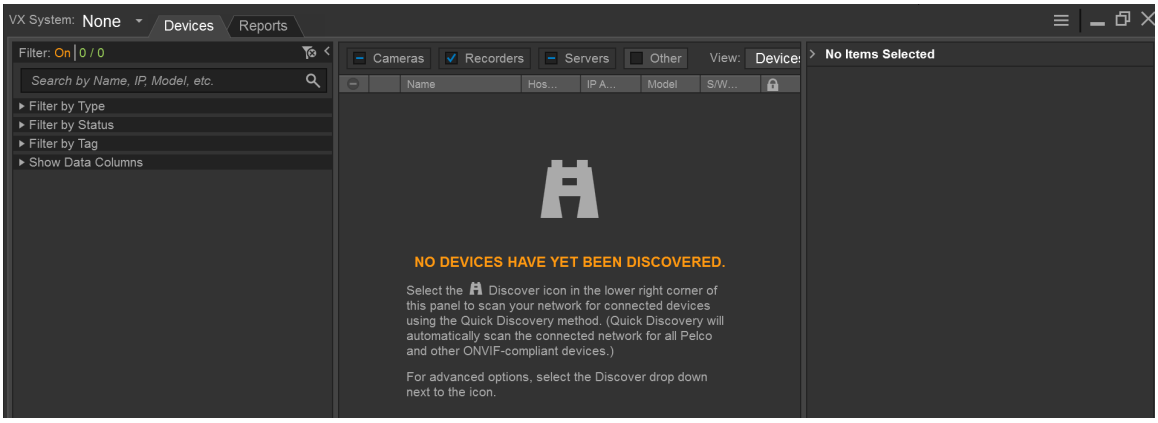


f. In the *Configure VxToolbox* dialog box, click **OK**.

g. If you enabled SSL/TLS Certificate checking, you might be required to interact with more dialog boxes. If so, follow the prompts.

h. In the *Configuration Required* dialog box, enter a *Company Name*. This is the name by which the Pelco licensing portal will recognize your VX server. The name cannot be changed later.

i. Click **Save & Continue**.
The VxToolbox application opens.



Logging Out

1. Click the menu icon (☰), and then click **Exit**.
2. In the *Exit* confirmation dialog box, click **Exit**.

Changing the VxToolbox Password

When starting VxToolbox, the application requests credentials. These credentials are local to the workstation and your VxToolbox installation; they do not log you in to any system or camera. Rather, your VxToolbox credentials protect your settings and the credentials for the individual cameras and systems you want to access from other users on the same workstation.

After logging in to VxToolbox, you can add systems with independent credentials, and pass credentials to cameras requiring them (closed authentication or third-party cameras).

Because your local VxToolbox environment may connect you to multiple systems and cameras, it is recommended that you protect your credentials and log out when you have finished using the application.

To change your VxToolbox password:

1. Click the menu icon (☰), and then select **Change VxToolbox Password**.
2. In the *Account Settings* dialog box, enter a new password in the *New Password* and *Confirm New Password* fields, and then click **Save Changes**.

Licensing Your System

VideoXpert is licensed for the system, for upgrades, and by channel—the video streams you view and record. It comes with one (1) license to start. A Lite license (VideoXpert Professional only) has four (4) channels. The demo license provides unlimited channels that are active for a period of 60 days. These are active only the first time you install the software, or if the software was pre-installed, the first time you start up the system. In order for the system to function beyond the evaluation period, add the appropriate quantity of licenses to the system.

You can license the system automatically or manually.

- Manual licensing allows you to license a system that does not have an Internet connection. See the section titled *Manually Activating Licenses*
- Automatic licensing requires your VideoXpert system to be connected to the Internet and have access to the Pelco licensing server. See the section titled *Automatically Activating Licenses*.

Note: If one or more licenses associated with the VideoXpert system are nearing or past the expiration date and require renewal, their status is indicated on the Licensing page. See section titled *Viewing the License Summary*.

For assistance, contact Pelco Product Support at 1-800-289-9100 (USA and Canada) or+1-559-292-1981 (international).

Viewing the License Summary

Entitlements are associated with licenses. A license might be a consolidation of several entitlements. To view licenses:

1. Open VxToolbox and click the **Licensing** tab.
2. In the *License Summary* table (bottom panel), view the list of licenses. For each license:
   - The license *Name* is listed. Unactivated *Entitlements* are listed as one license with the name *Pending*. The names in the *License Summary* table correspond to the names in the *Entitlements* table.
   - The *Total* column lists how many licenses and channels (sources) are included.
   - The *In Use* column identifies how many of the licenses and channels are in use.
   - The *Remaining* column identifies how many of the licenses and channels are not currently in use.
   - The *Expiration Date* column identifies when the licenses will expire.
3. Click on a license in the *License Summary* table. In the *[Name] Transaction History* (bottom right) panel, one of these is displayed:
   - *This license does not track transaction history*
   - License information including:
     - Current *Projected Expiration* information.
     - The *Date* of each transaction.
     - Each *Action* taken (for example: commissioning, adding, and decommissioning channels) as part of the transaction.
     - The *Balance* of licenses remaining in channel-years as a result of the transaction.
     - The date of the *Projected Expiration* at the time of the transaction.

If one or more licenses are nearing expiration, warning icons appear in the *Licensing Summary* area of the *Licensing* page:

- In the left panel of the *License Summary* area, to the left of the license *Name*
- When the license is selected, in the top of the *Transaction History* (right) panel of the *License Summary* area

Hover over any of these warning icons to display relevant information.

Click **Details**, if present, to display *License Extension Details for [license name]*:

- View the current SUP expiration information, the number of channels on the VX System, and information about extending the SUP.
- If the SUP is expiring soon, instruct the system to use existing information to build an estimated price quote. If the necessary system variables cannot be retrieved, a default message is displayed instead of a quote.
- Click **OK** to close the dialog box.

For assistance, contact Pelco Product Support at 1-800-289-9100 (USA and Canada) or +1-559-292-1981 (international).

Adding and Renewing Licenses

When you see the warnings in the *License Summary* area of the *Licensing* page that one or more licenses are expiring or have expired, purchase a Software Update Plan (SUP).

- SUPs are purchased in units of "channel-years".
- One channel-year represents the use of one (1) licensed channel for one (1) year.
- Channel-years are usually purchased in such a way as to allow each channel on the system to be licensed for a period of several years.
  For example: a system with 40 channels will need to purchase 80 channel-years to extend the SUP by two (2) years.
- Integration licenses are combined to provide the longest time before expiration.
  For example: where appropriate, two one-year integration licenses will be recognized as a single license that expires in two (2) years.
- Adding channels to or removing channels from the system adjusts the expiration date of the licenses to reflect how long it will take the connected channels to use the remaining channel-years.
- If your licenses expired before you renew them, part of your SUP is used to backfill the period of time when the previous SUP/licenses had lapsed.

When licenses expire, all associated features are disabled until new licenses are installed or until the existing licenses are renewed. If the SUP has expired, you cannot upgrade the system until the SUP is purchased or renewed.

For assistance, contact Pelco Product Support at 1-800-289-9100 (USA and Canada) or +1-559-292-1981 (international).

Manually Activating Licenses

For manual licensing, you must have your activation ID and a separate computer with access to the licensing server at http://licensing.pelco.com. During the manual licensing process, you will need to transfer your Licensing Request File to a computer with Internet access during the activation process. If you received multiple activation IDs for VideoXpert products, you must complete the process below for each individual activation ID.

As a part of this process, you will download an Entitlement Request File and a Entitlement File; both files are specific to the product for which they were requested. It is recommended that you rename both files to reflect the system for which they are intended to prevent confusion during the licensing process.

1. Open VxToolbox and click the **Licensing** tab.
2. At the lower right corner of the *Entitlements* table (top panel), click the *Add License* icon (+).
3. Enter your activation ID in the *Activation ID* box.
4. If necessary, click to deselect the checkbox to *Automatically activate online*.
5. You will be prompted to save an activation request .bin file. Select a folder (optional) type in a file name, and then click **Save**.
   An Entitlement Request File (named either what you typed in or the same name as the *Activation ID*) with a .bin extension is downloaded to your computer.
6. Click **Enter**.
   - The *Entitlement Pending* status message appears at the top of the *Entitlements* table.
   - An entitlement named *Pending* will be listed in the table. At the far right of the *Pending* entitlement row will be two icons: *Download a new request (.bin) file* ( ) and *Remove this activation ID* ( ).
7. On a system connected to the Internet, open a new browser window or tab and go to the Pelco licensing server at http://licensing.pelco.com.
8. Under *Login*, click to select logging in **With User Name**, **With Entitlement Id**, or **With Activation Id**. You can also register as a **New User**.
9. Enter your credentials, and then click **Login** to access the Pelco licensing server.
10. Click the **Manage Devices** tab, and then click **Generate License**. Upload the request bin file to the licensing web site. The Entitlement File, named *response.bin*, will be downloaded to your computer.
11. Click the **Licensing** tab to return to the *Licensing* page within VxToolbox.
12. Click **Choose file** under the *Entitlements* section.
13. Select your Entitlement File (response.bin), and then click **Open**.
14. Click **Import License File**.

When the process is complete, VxToolbox will display the installed license(s) in the *Entitlements* table.

Automatically Activating Licenses

If your system has an active Internet connection with access to http://licensing.pelco.com, you can automatically activate licenses for your system.

1. Open VxToolbox and click the **Licensing** tab.
2. At the lower right corner of the *Entitlements* table (top panel), click the *Add License* icon ( ).
3. Enter your activation ID in the *Activation ID* box.
4. If necessary, click to select the checkbox to *Automatically activate online*.
5. Click **Enter**.
   The system logs in to the Pelco licensing server and performs several tasks. Do not navigate away from this page until you see the *Add License* dialog box.
6. Click **OK**.

VxToolbox will display the installed license(s) in the *Entitlements* table.

Installing Entitlements After Restoring Your System

Pelco highly recommends that you back up your system and save the response file used to apply your initial entitlement.

- If restoring your system after uninstalling VideoXpert, you can re-apply your initial entitlement or license.
- If you re-image your system, you cannot apply your previous entitlement. If you have re-imaged your system, contact Pelco Product Support at 1-800-289-9100 (USA and Canada) or+1-559-292-1981 (international) for assistance.

Managing the System

VxToolbox provides a single interface from which to manage and configure both cameras and your VideoXpert Systems. From VxToolbox, you can manage any system that you can access by IP address or hostname.

Selecting a system (by name) from the *VX System* menu allows you to configure that system; the settings you see are relevant to the system, and any discovery operations you perform are issued directly from that system.

Use the *VX System* menu to switch between various VideoXpert systems.

Adding a VX System

VxToolbox allows you to administer systems remotely. To add a system to VxToolbox, you must have network access to the system and your user account must be assigned the administrative role.

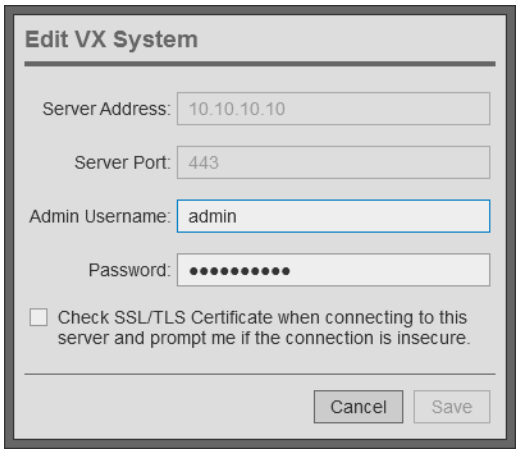
1. Access the *Add a new VX System* dialog box by one of these methods:
   - If the *Add a new VX System* dialog box opens automatically, and the *VxToolbox Password Confirmation Window* also opens automatically, click **Set Password**, enter the new password in the fields, and then click **Save**.
   - Click the menu icon ( ) at the upper right corner of the window, click **Manage VX System Connections**, and then click the *Add a new VX System* icon ( ).
   - At the upper left corner of the window, use the *VX System* drop-down menu to select *Add a VX system*.
2. Enter an IP address in the *Server Address* field.
3. Enter a value in the *Server Port* field, or use the default port.
4. Enter the *Admin Username* and *Password* for the system you are adding.
5. If an SSL/TLS certificate has been uploaded and configured, click to select the checkbox for *Check SSL/TLS Certificate...* to validate the certificate.
6. Click **Add**.
7. If necessary, click the at the top left of the *Manage VX System Connections* window to close it.

Editing the System Validation

You can change whether the SSL/TLS certificate is validated when connecting to a system from VxToolbox. Editing a system only affects your settings within your local VxToolbox installation.

1. Click the menu icon ( ) at the upper right corner of the window, and then click **Manage Vx System Connections**.
2. Select the system you want to edit.
3. In the right panel of the *Manage Vx System Connections* window, view the system connection information.
4. Click the *Edit VX System* icon ( ) to edit system settings.
   a. Enter the *Admin Username*.
   b. Enter the *Password*.

c. Click to select or deselect the checkbox for *Check SSL/TLS Certificate...*



5. Click **Save**.
6. If the VxToolbox Password Confirmation dialog box opens:
   a. Click to select the checkbox for *Do not show this warning again*, or leave it deselected.
   b. (Optional) Click **Set Password**, type a password into the *Password* and *Retype Password* fields, and then click **Save**.
   c. (Optional) Click **No thanks** to keep the existing or no password.
7. In the *Update* dialog box, click **OK**.
8. Click the ✕ at the top left of the *Manage VX System Connections* window to close it.

Removing a System

You can remove a system from VxToolbox. It can be re-added at any time.

1. Click the menu icon (☰) at the upper right corner of the window, and then click **Manage Vx System Connections**.
2. Select the system you want to remove.
3. Click the *Delete* icon (🗑) to remove the system.
4. In the *Delete System* dialog box, click **OK** to confirm the deletion.
5. Click the ✕ at the top left of the *Manage VX System Connections* window to close it.

Discovering Devices

When connected to a VideoXpert System, you can use VxToolbox to search the connected system for devices, or you can add devices manually to the VxToolbox list. The device list shows only devices that have been discovered on the network to which the VideoXpert System is connected.

When not connected to a VideoXpert System (**None** is selected), you can use VxToolbox to search for devices that are accessible on the same network as the computer that is running VxToolbox; the device list shows only locally discovered devices.

Through VxToolbox, you can manage device settings for all the devices on the network, without having to use individual device interfaces.

VxToolbox can discover Pelco cameras or third-party cameras supporting ONVIF.

Note: To support a third-party fisheye camera that is not already recognized by VideoXpert, contact Pelco Customer Support.

Finding Devices (Quick Discovery)

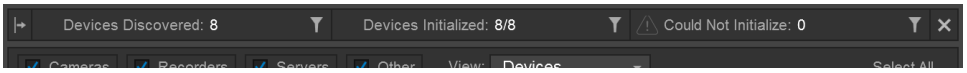
Use Quick Discovery to discover and initialize devices.

To use Quick Discovery, click **Devices**, and then do one of the following:

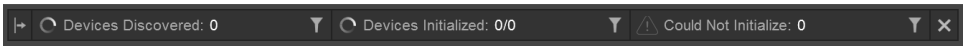
- Click the *Quick Discovery* icon ( ) to perform a quick search for devices.
- Click the *Advanced Discovery Options* icon ( ) to the right of the *Quick Discovery* icon, and then click **Quick Discovery**.
- Click the *Advanced Discovery Options* icon ( ) to the right of the *Quick Discovery* icon, and then click **Advanced Discovery**. In the *Discover Network Devices* dialog box, in the *Discovery Method* field, select **Quick Discovery** from the drop-down menu. Click to select or deselect the checkboxes for *SSDP* and *WS-Discovery*, and then click **Discover**.

If you are connected to a VideoXpert System (the *VX System* field is not set to **None**), the device discovery banner opens at the top of the window:

- It indicates the number of *Devices Discovered*, *Devices Initialized*, and devices that the system *Could Not Initialize*.



- As device discovery and initialization is occurring, progress spinners are displayed to the left of the *Devices Discovered* and *Devices Initialized* field names.



- Hover over the *Batch started* icon ( ) at the far left of the banner to see the date and time the device discovery was started.
- To filter by *Devices Discovered*, *Devices Initialized*, and devices that the system *Could Not Initialize*, click the filter icon ( ) to the right of the field name. To clear the filter, click the clear filter icon ( ) to the right of the field name.

- To hide the banner, do one of the following:
  - At the far right of the banner, click the close icon ( ).
  - In the left panel under *Filter by Status*, click to deselect the checkbox for *Show Discovery Results*.
  - Click on another tab, and then click on the **Devices** tab again. The checkbox for *Show Discovery Results* is deselected, therefore the banner is hidden.
- To restore the banner (unhide), in the left panel under *Filter by Status*, click to select the checkbox for *Show Discovery Results*.

Finding Devices (Advanced Discovery)

Using Advanced Discovery, you can search for devices by protocol type or you can add individual devices by IP address. You can also add devices that do not support ONVIF or Pelco discovery methods using the IP address.

1. Click **Devices**, and then click the *Advanced Discovery Options* icon ( ) to the right of the *Quick Discovery* icon.
2. Click **Advanced Discovery**.
3. To discover devices by IP address or hostname:
   a. From the *Discovery Method* drop-down menu, select *Discover by IP or Hostname*.
   b. Enter a value in the *Host* field.
   c. (Optional) Enter a value in the *HTTP Port* field.
   d. (Optional) Enter values in the *Username* and *Password* fields.
   e. (Optional) Click to select a value from the *Driver* drop-down menu.
   f. (Optional) Click **Add Another**, and enter values in the fields.
4. To discover devices by IP range:
   a. From the *Discovery Method* drop-down menu, select *Discover by IP Range*.
   b. Enter start and end values in the *IP Range* fields.
   c. (Optional) Enter a value in the *HTTP Port* field.
   d. (Optional) Enter values in the *Username* and *Password* fields.
   e. (Optional) Click to select a value from the *Driver* drop-down menu.
   f. Click **Discover**.
5. To use Quick Discovery, but specify using either SSDP (Simple Service Discovery Protocol) or WS-Discovery (Web Services Dynamic Discovery):
   a. From the *Discovery Method* drop-down menu, select *Quick Discovery*.
   b. Click to select or deselect the checkbox for *SSDP*.
   c. Click to select or deselect the checkbox for *WS-Discovery*.
6. Click **Discover**.

Note: This feature adds devices to the system, but it does not commission them. To commission the devices, see the section titled *Commissioning Devices that were Discovered Previously*.

Adding an RTSP Device

To add a device that uses RTSP:

1. Click **Devices**, and then click the *Advanced Discovery Options* icon ( ) to the right of the *Quick Discovery* icon.
2. Click **Add RTSP Device**.
3. Type a value in the *Device Name* field.
4. (Optional) Click to select the checkbox for *Set Credentials*, and then enter values in the *Username* and *Password* fields.
5. Enter a value in the *URI* field.
6. (Optional) Click **Add Another URI to this Device**, and then enter a value in the *URI* field.
7. When you have added all URIs, click **Create**.

Note: VideoXpert supports both UDP and TCP streaming from RTSP devices, and will automatically choose the streaming protocol based on the devices configuration.

Recognizing Device Credentials

Some devices require credentials for you to access their video or change their settings. The *Authentication Status* column provides the status of each device.

Table 1: Icons in the Authentication Status column

Icon	Description
	Device requires authentication.
	Device does not require authentication.
	VxToolbox has authenticated to this device.
	The user must be created on the camera before accessing the camera.

Adding Credentials for Devices that Require Authentication

To add credentials to a device:

1. Click **Devices**.
2. Click to select the device requiring credentials.
3. Enter credentials in the appropriate fields.
4. If necessary, click to select a *Driver* from the drop-down menu.
5. Click **Submit**.

Creating a Default User on Cameras That Have No User

For security purposes, cameras require a user to be created on the camera before the VideoXpert system can access the camera.

1. Add a camera using *Quick Discovery* or *Advanced Discovery*. See *Finding Devices (Quick Discovery)* or *Finding Devices (Advanced Discovery)*.

2. In the main panel of the *Devices* page, locate any cameras on the VideoXpert System that have a warning icon ( ) to the left of the camera *Name* and the locked camera icon ( ) in the *Authentication Status* column.
3. If necessary, refer to the camera instructions and add the user to the camera.
4. Select the camera for which a user must be created.
5. Enter credentials in the appropriate fields, and then click **Submit**.
6. Add and commission the camera. See *Commissioning Devices*.

Resetting the Password on a Storage Device

You must reset a password on a storage device before you can use it.

1. Add a storage device using *Quick Discovery* or *Advanced Discovery*. See *Finding Devices (Quick Discovery)* or *Finding Devices (Advanced Discovery)*.
2. In the list of devices, find a storage device with a locked server icon ( ) to the left of the device name and a warning icon ( ) in the *Authentication Status* column, and then click to select the device.
3. In the right panel, enter the credentials to reset the password, and then click **Reset Password**.
   A password must be at least eight characters long.

You can now add and commission the storage device. See *Commissioning Devices*.

Configuring a Camera for Analytics

When you discover a camera that supports advanced analytics, you must commission the device before you can use advanced analytics.

Use the appropriate tool to configure each camera, as described in the section titled *Using VxToolbox to Configure the Camera for the Pelco Advanced Analytics Suite* or the section titled *Using the MSI Camera Configuration Tool (CCT) to Configure the Camera for the Pelco Smart Analytics Suite*.

Note: For cameras with firmware version 3.7 and later, no analytics license is required to use the Pelco Advanced Analytics Suite. If a camera is running firmware earlier than version 3.7, upgrade to camera firmware 3.7 or later.

Using VxToolbox to Configure the Camera for the Pelco Advanced Analytics Suite

As a prerequisite to this procedure, ensure that you have commissioned the device. See the section titled *Commissioning Devices*.

To configure a camera:

1. Click the **Devices** tab.
2. Click the Edit icon ( ) to the right of *ADVANCED ANALYTICS* in the right panel to open the *Configure Advanced Analytics for [device name]* dialog box.
3. (Optional) For a PTZ camera, in the left panel, click to select a PTZ preset from the drop-down menu.
4. (Optional) Set a *Confidence Threshold*, by either using the slider bar, or typing a value in the *%* field.
   A confidence threshold filters out object detections that have a confidence percentage lower than the threshold value. This is useful for filtering out detections that are not people or vehicles, or to

help better detect objects at further distances. To filter objects out you can increase the threshold. To increase the distance of detections you can decrease the threshold.

5. To create a *New analytic rule*, in the *Configure Advanced Analytics for [device name]* dialog box, in the *Analytic Rules* (left) panel, click the add icon ( ), and then select the type of zone or counter to add.

   Note: If you are configuring a Counterflow zone, see the section titled *Understanding Counterflow zones (VxToolbox-only)*.

6. To configure a *Person in Zone* or a *Vehicle In Zone* area, in the center panel:
   - To reshape, expand, and/or move the zone (polygon with a blue or orange border—blue for person, and orange for vehicle), click and drag it or its points.
   - To create a new point on the box, place the cursor on the box where the new point will be added, click the left mouse button, and then drag the point to the appropriate location.
   - To delete a point on the box, click the right mouse button on the point, and then click **Delete Point**.
   - If there is a detection issue (for example: the analytics do not detect a person in the zone), change the size, shape, and position of the zone until detection is working as expected.

7. To configure a *Person Counterflow* or a *Vehicle Counterflow* area, in the center panel:
   - To reshape, expand, and/or move the zone (polygon with a blue or orange border—blue for person, and orange for vehicle), click and drag it or its points.
   - To create a new point on the box, place the cursor on the box where the new point will be added, click the left mouse button, and then drag the point to the appropriate location.
   - To delete a point on the box, click the right mouse button on the point, and then click **Delete Point**.
   - If there is a detection issue (for example: the analytics do not detect a person in the zone), change the size, shape, and position of the zone until detection is working as expected.

8. To configure a *Person Counter* or a *Vehicle Counter*, in the center panel:
   - Drag the counter line (blue or orange line—blue for person, and orange for vehicle) from the upper left corner of the center panel to the appropriate location.
   - To shorten, lengthen, and or/move the line, click and drag it or its end points.
   - If there is a detection issue, change the size, angle, and position of the line until detection is working as expected.

9. To name or rename a zone, click to select the zone name in the right panel, and then enter a new string in the *Zone Name* field in the left panel.

   Note: Do not use quotation marks in the zone name.

10. In the right panel, enable or disable the zone by clicking to select or deselect the checkbox for *Zone is Enabled*.
11. For counterflow zones, select the *Counterflow Angle*, either by typing in a number or by selecting it using the slider bar.
12. For counter lines, click to select the appropriate type of line from the *Counter Type* drop-down menu. This applies only to the line currently selected.

- An **Uni-Directional Line** counts objects that cross the line in the configured direction. It has one or more white arrows on the line pointing in one direction.
- A **Bi-Directional Line** maintains two separate counts—one for each direction that an object crosses the line. For example they can be used for a building entrance to differentiate between the number of people entering and exiting a building. It has one or more white arrows pointing in one direction; each is paired with a black arrow on the line pointing to the opposite direction.
- An **Omni-Directional Line** counts when objects cross the line from any direction that is not parallel to the line. It has one or more white diamonds—two white arrows pointing in opposite directions from the line.

To configure counter lines:

a. (Optional) If you clicked **Bi-Directional Line**, you can either maintain the *Direction Labels* as they are, or type in new labels for each arrow type. This applies only to the line currently selected.

b. Click to select or deselect the checkbox for *Generate Event*. If you select this option, use the fields and radio buttons to configure the event.

13. (Optional) In the right panel, click to select the checkbox for *Override Default Severity*, and then set a new severity value, either by moving the slider bar or typing a number in the field.
14. To save current settings before making more modifications or adding another zone, click **Apply Changes**.
15. To edit a zone or counter, click to select the zone or counter in the left panel; and then change any of the setting that are available in the right panel.
16. (Optional) To delete a zone, do one of the following:
    - Right-click the zone name in the left panel, click **Delete**, and then click **OK** in the *Delete Analytic Rules* confirmation dialog box.
    - Click to select the rule name(s) in the left panel, click the *Delete selected analytic rules* icon (🗑), and then click **OK** in the *Delete Analytic Rules* confirmation dialog box.
    - Right-click the zone border or the counter line, click **Delete Analytic Rule**, and then click **OK** in the *Delete Analytic Rules* confirmation dialog box.
17. Click **Save & Close**.

You can disconnect from a VX System and still configure the zones.

Using the MSI Camera Configuration Tool (CCT) to Configure the Camera for the Pelco Smart Analytics Suite

To configure a camera:

1. Download CCT from https://www.pelco.com/camera-configuration-tool, and then install it.
2. Launch CCT.
3. Use CCT to discover analytic cameras (for example: the Pelco Fisheye camera) on your network.
4. Click the *Analytics* tab in CCT, and configure the analytics on the camera. See the *Configuring Analytics* section of the current version of the *Camera Configuration Tool User Guide*.

5. Add and configure new analtyic events. See the *Adding Video Analytics Events* section of the current version of the *Camera Configuration Tool User Guide*.

Follow these guidelines when configuring a camera and analytic events:

- New events in VideoXpert will automatically correspond to the friendly names in CCT.
- Some existing VideoXpert events have new default friendly names that are consistent with CCT event friendly names.
  - "No Object in Zone" is changed to "Object Not Present In Area".
  - "Object Count Limit Exceeded" is changed to "Objects Crossing Beam".
  - "Objects In Zone" is changed to "Objects In Area".
  - "Counterflow" is changed to "Direction Violated".
- Some VideoXpert events have been deprecated.
  - Instead of "Loitering", use "Object Loitering".
  - Instead of "No Loitering", use "No Object Loitering".

After the events have been configured, the event description field in the VxToolbox *Event* page will list information about the renamed or deprecated events and situations.

Understanding Counterflow zones (VxToolbox-only)

Counterflow alarms are triggered when the angle between an object's trajectory and the wrong direction is greater-than 110 degrees.

In *Figure 1: Counterflow at 90 degrees*, the Counterflow arrow is pointing at 90 degrees. Alarms trigger when the angle is between 20 and 160 degrees.

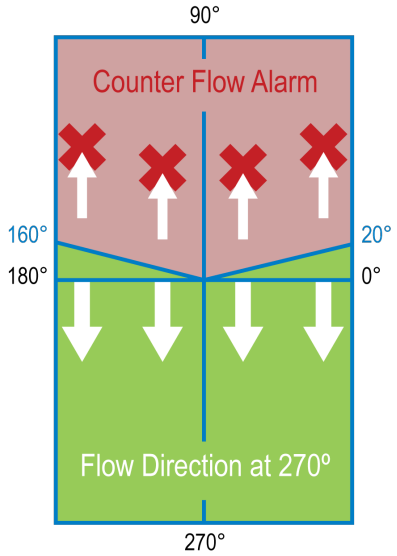


Figure 1: Counterflow at 90 degrees

In *Figure 2: Counterflow at 135 degrees*, the Counterflow arrow pointing at 135 degrees. Alarms trigger when the angle is between 155 and 245 degrees.

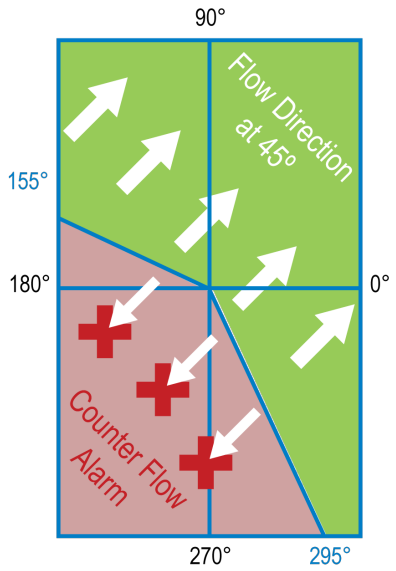


Figure 2: Counterflow at 135 degrees

Managing Devices on a System

VxToolbox enables you to add a device or change device settings.

You must commission a device to view its video or to use its video or resources within VideoXpert. VideoXpert typically commissions devices automatically when you add them to the system. In many cases, commissioning a device requires a license; the type of license required depends on the type of device you are commissioning.

Add or commission operations are available from the **Devices** tab for the selected system. Commissioning information is shown in the Added/Commissioned ( ) column; you can expose this column by selecting *Commissioning Status* from *Show Data Columns* in the filtering panel.

Table 2: Icons in the Commissioning Status column

Icon	Status
	Not commissioned
	Commissioned

Commissioning Devices

VxToolbox will only provide commissioning options applicable to the camera(s) you have selected. Commission operations are relevant to the system you have selected from the *VX System* menu.

1. In the center panel of the *Devices* tab, select the devices to commission.
2. Perform one of the following steps:
   - Right-click the device, and then select **Commission**.
   - Click to select the device, and then click the *Commission and Assign Cameras to a Recorder* icon ( ) at the lower right of the center panel.
   - Click to select the device, click the *Commission and Assignment Options* icon ( ), and then click **Commission**.
3. If the *Authentication Notice* dialog box opens, follow the instructions in the dialog box.
4. If the *Recorder Assignment* dialog box opens, select a recorder from the drop-down menu, and then click **Add**.
   The icon for the device changes from *Not commissioned* ( ) to *Commissioned* ( ).

Commissioning Devices that were Discovered Previously

VxToolbox will only provide commissioning options applicable to the camera(s) you have selected, and which were already discovered. Commission operations are relevant to the system you have selected from the *VX System* menu.

1. In the center panel of the *Devices* tab, select the devices to commission.
2. Perform one of the following steps:
   - Right-click the devices, and then select **Commission**.
   - Click the *Commission and Assignment options* icon ( ), and then click **Commission**.

   The icons for the devices change from *Not commissioned* ( ) to *Commissioned* ( ).

Decommissioning Devices

VxToolbox can decommission the camera(s) you have selected, on system you have selected from the *VX System* menu.

1. In the center panel of the *Devices* tab, select the devices you want to decommission.
2. Perform one of the following steps:
   - Right-click the devices, and then select **Decommission**.
   - Right-click the devices, click the *Commission and Assignment Options* icon (▼), and then click **Decommission**.

   The icons for the devices change from *Commissioned* (Vx✓) to *Not commissioned* (Vx*).

Replacing a Camera

If you are upgrading from an existing camera to a new one, or replacing a broken camera, VxToolbox enables you to select the existing and new cameras, and make the replacement. Replacing a camera allows you to transfer preconfigured settings (including camera name, tags, and recording schedules) from one camera to another.

1. If you have not already done so, ensure that the existing camera is offline (for example: turn off the camera).
2. If you have not already done so, discover and commission the replacement camera. See the chapter titled *Discovering Devices*.
3. Click the **Devices** tab.
4. In the center panel of the *Devices* tab, select the camera that you will replace.
5. Right-click the camera, and then click **Replace Camera**.
6. In the *Select Replacement Camera for* dialog box, (optional) use the search field to help you locate the replacement camera, click to select the replacement camera, and then click **Replace**.
7. Read the information in the *Replace Camera* confirmation dialog box, and then click **OK**.

Removing Devices

After a device is discovered, it will persist in the system's device registry until it is removed, even if the device no longer exists on the network.

Removing a device will prevent you from retrieving any associated recordings through VideoXpert Storage. To preserve access to recordings on VideoXpert Storage devices, decommission the devices until video for the device has expired or you are sure you will no longer need to access recordings for the device, then remove the device.

From VxToolbox, you can remove the device(s) you have selected, on the system you selected from the *VX System* menu.

1. Click the **Devices** tab.
2. In the center panel of the *Devices* tab, select the devices you want to remove.
3. Perform one of the following steps:
   - Right-click the devices, and then click **Remove**.
   - Right-click the devices, and then click the *Remove device(s) from VxToolbox and/or VX System* icon (🗑) at the bottom right of the center panel.

- Click the devices, click the *Commission and Assignment Options* icon ( ), and then click **Remove**.

4. In the *Remove Device(s)* confirmation dialog box, click **OK**.
   The devices are removed from the list. They can be discovered again at any time.

Adding Video Associations

You can associate an audio data source with a video data source on another device.

For example, if you have a microphone on a camera near a cash register, but you want that audio to be associated with a different camera that has a better view of that cash register, you can use **Add Video Associations** to make this configuration.

1. Click the **Devices** tab.
2. In the center panel of the *Devices* page, select the device with audio data source that you want to associate with a different video data source.
3. Right-click the device, and then click **Add Video Associations**.

   In the *Associate Data Sources with Audio "[camera name] - Audio"* dialog box, the *All Data Sources* panel will list the name of the data sources already associated with the device.
4. (Optional) In the *Associate Data Sources with Audio "[camera name] - Audio"* dialog box, use the filter to narrow the list of available devices.
5. In the *Associate Data Sources with Audio "[camera name] - Audio"* dialog box, in the *Associated to* panel, click to select and deselect the checkboxes to indicate which of the available video data sources to associate with the audio data source.
6. Click **Save**.

Viewing Devices, Data Sources, Alarms & Relays, or Access Points

The audio and video sources produced by a device (for example, a camera) are referred to as data sources.

A device can have more than one data source. For example, a multi-channel encoder may have multiple cameras connected to it, each with its own data source; a camera may have a microphone, producing audio and video data sources.

A device can have one or more alarms and relays, depending on the device. For example: an encoder typically has one alarm and one relay per device channel; a camera might have only one alarm and one relay for the device. Alarms are configured and relays are enabled on the *Devices* page.

- To view all devices on the system, in the *View* field drop-down menu, at the top of the center panel, select **Devices**.
- If a device and its data sources are distinguishable, you can see the individual data sources, alarms, and relays. To see the data sources, alarms, and relays that are associated with a specific device:

  a. In the *View* field drop-down menu, select **Devices**.

  b. Click the expand icon ( ) to the left of the device.

  Data sources, alarms (if any), and relays (if enabled), are listed directly below the device.

- To view all data sources on the system, in the *View* field drop-down menu, at the top of the center panel, select **Data sources**.
- To toggle the view to show only the devices and not the data sources, alarms, and relays, right click anywhere in the device list, and then click **Collapse All**.
- To view the list of alarms and relays on the system, in the *View* field drop-down menu, at the top of the center panel, select **Alarms & Relays**.
  You can determine the status of an alarm or relay by the icons in the *State* column.

  Table 3: Icons in the State column

Icon	State
	Alarm is active
	Alarm is inactive
	Relay is active
	Relay is inactive

  You can determine whether an alarm or relay is enabled or disabled by the icons in the *Enabled* column.

  Table 4: Icons in the Enabled column

Icon	Enabled
	Yes
	No

- To view the list of access points on the system, in the *View* field drop-down menu, at the top of the center panel, select **Access Points**. If there are no devices with access points, the window will display the message *NO DEVICES HAVE YET BEEN DISCOVERED*.

Finding and Filtering Existing Sources

Use filtering options to show the devices and data sources relevant to you within the system or environment you have selected. Filters appear in the left-most panel of the *Devices* tab and in some other tabs. Click the **Devices** tab. Then use the filter, as appropriate:

- Enter a value in the filter field to filter by criteria including the device name, ID, model, IP address, serial number, vendor, or software version.

  Note: To search only by camera number, type the pound sign (#) before the camera number. For example: type "#12" (without the quotation marks) to filter the results to cameras with 12 in the camera number.

- Click to expand, and then click to select and deselect checkboxes in, the *Filter by Type* area.
- Click to expand, and then click to select and deselect checkboxes in, the *Filter by Status* area.
- Click to expand, and then type in or select a tag in the *Filter by Tags* field. Tags are set in VxOpsCenter. See the VxOpsCenter section of this manual for more information.
- Click the *Clear the current filter settings* icon ( ) to clear the filters.

Controlling the Columns Displayed in the Devices Window

1. Click the **Devices** tab.
2. Include columns in or exclude them from the display by one of the following methods:
   - In the left panel, below the filter areas, click to expand the *Show Data Columns* area, and then click to select and deselect checkboxes in the area.
   - Right-click the column header, and then click to select and deselect the column titles in the drop-down menu.

Viewing the License Summary

1. Click the **Devices** tab.
2. In the left panel, below *Show Data Columns*, click to expand **License Summary**. View the system license information.

Viewing and Configuring Device Information

If you have the proper credentials, from VxToolbox, you can view information for and configure some settings on a device that you have selected, on the system you selected from the *VX System* menu.

1. Click the **Devices** tab.
2. In the center panel of the *Devices* tab, select the device you want to configure. Information specific to the device is presented in the right panel. If the device has been authenticated in VxToolbox, you will see the current view from the device, and status information.
3. (Optional) Click the *Web View* icon ( ) to the right of the device name to view the device control panel in a web browser, and make changes there.

   Note: You must have permissions for the device in order to make any changes.

4. If necessary, to authenticate the device, enter correct values in the *Username* and *Password* fields, and then click **Submit**.

   Note: You must provide a valid username and password in order to update the device configuration using VxToolbox.

5. (Optional) To view and update Device Information in VxToolbox:
   a. Click to expand **Device Information**. All available device information is listed, and might include: name, hostname, IP address, port, MAC address, vendor, and model. Information varies based on the device type.
   b. If present, click the *Edit* icon ( ) to the right of *Device Information*.

      If the *Edit* icon ( ) is not present, you cannot update Device information. Continue to step 6.

   c. In the *Settings Editor* dialog box, enter correct values into the fields. For example: Type values into the *Name*, *Hostname*, *IP Address*, and *Port* fields (if available); and click to select or deselect the checkbox for *Apply name to Data Sources*.
   d. Click **Save Changes**.

6. (Optional) To create a User, log out, or change your password, if the option is present:
   a. Click to expand **User**.
   b. To create a new user, type values in the *Username*, *New Password*, and *Re-type Password* fields, and then click **Save**.
   c. To change the password, click **Change Password**, type values in the *New Password* and *Re-type Password* fields, and then click **Save**.
   d. To log out, click **Log Out**.

7. (Optional) To view and update the Video Configuration, if present:
   a. Click to expand **Video Configuration**.
   b. Continue clicking to expand the items listed under *Video Configuration*, and then the primary stream, secondary stream, tertiary stream or smart compression settings to view. Depending on the device:
      - The smart compression information includes: the compression level, and whether each stream has dynamic GOP enabled.
      - If there are primary, secondary, and tertiary streams, the stream information might include: device name, encoding, profile, GOP, resolution, maximum bitrate, frame rate, multicast address, and multicast port.

   c. Click the *Edit* icon ( ) to the right of the smart compression, primary, secondary, or tertiary stream listing.
   d. If you are updating the smart compression settings, in the *Settings Editor* dialog box:
      - Click to select or deselect the checkbox for *Smart Compression Enabled*.
      - Select the appropriate value from the drop-down menu in the *Level* field.
      - Click to select or deselect the *Primary Stream Dynamic GOP Enabled* checkbox. If you selected this checkbox, enter a value in the *Primary Stream Max GOP Length* field—either by typing-in a number or selecting one using the up and down arrows.

- Click to select or deselect the *Secondary Stream Dynamic GOP Enabled* checkbox. If you selected this checkbox, enter a value in the *Secondary Stream Max GOP Length* field—either by typing-in a number or selecting one using the up and down arrows.
- Click to select or deselect the *Tertiary Stream Dynamic GOP Enabled* checkbox. If you selected this checkbox, enter a value in the *Tertiary Stream Max GOP Length* field—either by typing-in a number or selecting one using the up and down arrows

e. If you are updating the primary, secondary, or tertiary stream, in the *Settings Editor* dialog box, enter correct values into the fields. For example: Type in or select from the drop-down menus a stream *Name*, *Encoding*, *Profile*, *GOP*, *Resolution*, *Max Bitrate*, *Frame Rate*, *Multicast Address*, and *Multicast Port*.

f. Click **Save Changes**.

8. (Optional) To view and update basic Analytics (motion detection, etc.), if present:

   a. Click to expand **Analytics**.

   b. Continue clicking to expand individual items listed under *Analytics*.

   c. If there is a setting to edit, click the *Edit* icon ( ) to the right of the information.

   d. In the *Edit [analytics name] Settings for [device name]* dialog box:

      – Select the appropriate radio buttons. If you chose *On Camera*, click **Edit camera settings in browser**, make the appropriate changes, exit the browser window, and then click **Done**.

      – If you chose *On Server*, use the slider bar to select a value for *Contrast Sensitivity*; use the icons under the device image to view information **Live**, *Jump Back 30 Seconds* ( ), *Jump to Specific Date/Time* ( ), or *Jump to Now* ( ).

      – If you chose *Off*, the analytics will be disabled.

      – When you are finished in this dialog box, click **Done**.

9. (Optional) To view and update the Pelco Advanced Analytics Suite, if present on the camera:

   a. In the right panel, click to expand **Analytics**,and then to the right of *ADVANCED ANALYTICS*, click the *Edit* icon ( ).

   b. In the *Configure Advanced Analytics for [device name]* dialog box, configure the zones. See the instructions in the section titled *Configuring a Camera for Analytics* to update the configuration.

10. (Optional) To view and update Alarms, if present:

    a. Click to expand **Alarms**.

    b. Continue clicking to expand individual items listed under *Alarms*. All available alarm information is listed, and might include: state, name, description, ID, and type. Information varies based on the alarm type.

    c. Click the *Edit* icon ( ) to the right of the alarm item to update.

    d. In the *Settings Editor* dialog box, enter all appropriate values. For example: type values in the *Name* and *Description* fields, and then select a value from the drop-down menu in the *Type* field.

    e. Click **Save Changes**.

11. (Optional) To view and update Relays, if present:
    a. Click to expand **Relays**.
    b. Continue clicking to expand individual items listed under *Relays*. All available relay information is listed, and might include: status, state, name, description, and ID. Information varies based on the device type.
    c. To activate or deactivate the relay, click **Activate** or **Deactivate** under *STATE*.
    d. Click the *Edit* icon ( ) to the right of the relay item to update.
    e. In the *Settings Editor* dialog box, enter all appropriate values. For example: select a value from the drop-down menu in the *Status* field, and then type values in the *Name* and *Description* fields. You cannot update the ID from this dialog box.
    f. Click **Save Changes**.
12. (Optional) To view and update Recording and Retention, if present:
    a. Click to expand **Recording and Retention**.
    b. Continue clicking to expand individual items listed under *Recording and Retention*. All available recording and retention information is listed, and might include: full-framerate retention limit and the associated assigned recorders, and the standard retention limit and associated assigned recorders.
    c. Click the *Edit* icon ( ) to the right of *Recording and Retention*.
    d. In the *Recording Retention Limits* dialog box, click to select the radio button for the appropriate retention limit.
    e. If you selected *Manual Retention Limit*:
        - Click to select or deselect the checkbox for *Reduce framerate for video*, and then click to select the radio button for either *After [#] days* or *Never*. If you selected *After [#] days*, enter a value in the field, either by typing-in a number or selecting one using the up and down arrows.
        - Click to select or deselect the checkbox for *Delete unlocked recordings after [#] days* field, and then enter a value in the field, either by typing-in a number or selecting one using the up and down arrows.
    f. Click **Save**.
13. (Optional) To view and update System information, if present:
    a. Click to expand **System**.
    b. Continue clicking to expand individual items listed under *System*. All available system information is displayed, and includes firmware version and time settings.
    c. To backup or restore the system, click to expand *BACKUP & RESTORE*, and then click either **Backup** or **Restore**.
    d. To reboot the system, click to expand *MAINTENANCE*, click **Reboot**, and then click **OK**.
    e. To update the firmware, click to expand *FIRMWARE*; click **Update Firmware**; in the *Update Firmware* dialog box, navigate to and double-click the firmware file.

    Note: For some cameras (for example: cameras that support Pelco Smart Analytics) the option to update camera firmware is not present in VxToolbox. Configure firmware for these camera using either the camera web page or the Motorola Solutions, Inc.

Camera Configuration Tool (CCT). Download and install CCT from https://www.pelco.com/camera-configuration-tool.

f. To update the time settings, click the *Edit* icon ( ) to the right of *TIME SETTINGS*, type-in or select values for each field, and then click **Save Changes**.

14. (Optional) To view Tags, if present:
    a. Click to expand **Tags**.
    b. Continue clicking to expand individual items listed under *Tags*.
15. (Optional) To view and update the device Driver, if present:
    a. Click to expand **Driver**.
    b. Click the *Edit* icon ( ) to the right of *Driver*.
    c. In the *Settings Editor* dialog box, select a value from the drop-down menu in the *System Driver* field.
    d. Click **Save Changes**.

Disabling and Enabling Data Sources

You can conserve license seats by disabling data sources that are not in use:

1. Click the **Devices** tab.
2. In the center panel of the *Devices* page, select the device with data sources that you want to disable.
3. Perform one of the following steps:
   - Right-click the devices, and then click **Disable/Enable Data Sources**.
   - Click the device, click the *Addition, Commission and Assignment options* icon ( ), and then click **Disable/Enable Data Sources**.
4. In the *Disable/Enable Data Sources* dialog box, click to deselect the data sources to disable.
5. Click **Save Changes**.

To enable the data sources, follow the steps above, but click to select the data sources to enable.

Configuring the Rules Engine

The *Rules* tab allows you to configure events generated by a source to trigger a response. Rules can have one or more triggers, zero or more schedules, and one or more responses. There can be multiple rules on the system.

Managing Rules

Use VxToolbox to create, duplicate, edit, or delete rules in the rules engine.

Creating a Rule

1. Click the **Rules** tab.
2. In the left panel, click the *Create a new Rule* icon ( ). The *Edit Mode* (right) panel is activated.
3. Enter a value in the *Name of Rule* field.
4. Click to select the radio button for *Active* or *Inactive*.
5. Add one or more triggers for the rule. See the section titled *Adding a Trigger*.
6. (Optional) Add one or more schedules to the rule. See the section titled *Adding a Schedule*.
7. Add one or more responses to the rule. See the section titled *Adding a Response*.
8. When you have finished configuring triggers, schedules, and responses, click **Save**.

Duplicating a Rule

To use an existing rule as a starting point to create a new rule:

1. Click the **Rules** tab.
2. (Optional) In the left panel, enter a value in the *Search Rules* field to filter the rules.
3. Click to select the rule to duplicate.
4. Click the *Duplicate the selected Rule* icon ( ). The *Edit Mode* (right) panel is activated.
5. Enter a value in the *Name of Rule* field.
6. Click to select the radio button for *Active* or *Inactive*.
7. (Optional) Add, duplicate, edit, or delete one or more triggers for the rule. See the sections titled *Adding a Trigger*, *Duplicating a Trigger*, *Editing a Trigger*, and *Deleting a Trigger*.
8. (Optional) Add, create a copy of, edit, or delete one or more schedules for the rule. See the sections titled *Adding a Schedule*, *Creating a Copy of a Schedule*, *Editing a Schedule*, and *Deleting a Schedule*.
9. (Optional) Add, duplicate, edit, or delete one or more responses for the rule. See the sections titled *Adding a Response*, *Duplicating an Existing Response*, *Editing a Response*, or *Deleting a Response*.
10. When you have finished configuring triggers, schedules, and responses, click **Save**.

Editing an Existing Rule

1. Click the **Rules** tab.
2. (Optional) In the left panel, enter a value in the *Search Rules* field to filter the rules.
3. Click to select the rule to edit.
4. Click the *Edit the selected Rule* icon ( ). The *Edit Mode* (right) panel is activated.

5. Click to select the radio button for *Active* or *Inactive*.
6. (Optional) Add, duplicate, edit, or delete one or more triggers for the rule. See the sections titled See the sections titled *Adding a Trigger*, *Duplicating a Trigger*, *Editing a Trigger*, and *Deleting a Trigger*.
7. (Optional) Add, create a copy of, edit, or delete one or more schedules for the rule. See the sections titled *Adding a Schedule*, *Creating a Copy of a Schedule*, *Editing a Schedule*, and *Deleting a Schedule*.
8. (Optional) Add, duplicate, edit, or delete one or more responses for the rule. See the sections titled *Adding a Response*, *Duplicating an Existing Response*, *Editing a Response*, or *Deleting a Response*.
9. When you have finished editing triggers, schedules, and responses, click **Save**.

Deleting a Rule

1. Click the **Rules** tab.
2. In the left panel (list of rules), click the rule to delete.
3. Click the *Delete the selected Rule* icon ( ).
4. In the confirmation dialog box, click **Delete**.

Managing Triggers

Add, duplicate, edit, or delete triggers from a rule to control the type of events that will trigger one or more responses.

Adding a Trigger

To add an entirely new trigger to a rule:

1. Click the **Rules** tab.
2. Click to select the rule to edit.
3. Click the *Edit the selected Rule* icon ( ). The *Edit Mode* (right) panel is activated.
4. In the *Triggers* panel, click the *Add New Rule Trigger* icon ( ).
5. (Optional) In the *Select an Event to trigger this Rule* dialog box, narrow the list of events. To do so, select a category from the *Show* drop-down menu, or type a value in the *Search* field.
6. In the *Select an Event to trigger this Rule* dialog box, click to select an event, and then click **Save**.
7. In the *Select Event Sources to limit this Trigger for Rule* dialog box, click to select the appropriate radio button. The options vary depending on the trigger you have chosen. If you are prompted to do so, make any other necessary selections, and then click **Save**.
8. When you have finished configuring the rule, click **Save**.

Duplicating a Trigger

To use an existing trigger as a starting point to create a new trigger:

1. Click the **Rules** tab.
2. Click to select the rule to edit.
3. Click the *Edit the selected Rule* icon ( ). The *Edit Mode* (right) panel is activated.
4. In the *Triggers* panel, click to select a trigger to duplicate.

5. Click the *Duplicate Rule Trigger* icon ( ).
6. (Optional) Edit the *When this event* settings, associated with the duplicate trigger:
   a. In the *When this event* column, click the edit icon ( ) in the appropriate trigger.
   b. (Optional) In the *Select an Event to trigger this Rule* dialog box, narrow the list of events. To do so, select a category from the *Show* drop-down menu, or type a value in the *Search* field.
   c. Click to select the event.
   d. Click **Save**.
7. (Optional) Edit the *is generated by* settings, associated with the duplicate trigger:
   a. In the *is generated by* column, click the edit icon ( ) in the appropriate trigger.
   b. In the *Select Event Sources to limit this Trigger for Rule* dialog box, click to select the appropriate radio button. The options vary depending on the trigger you have chosen. If you are prompted to do so, make any other necessary selections, and then click **Save**.
8. When you have finished configuring the rule, click **Save**.

Editing a Trigger

To edit an existing trigger:

1. Click the **Rules** tab.
2. Click to select the rule to edit.
3. Click the *Edit the selected Rule* icon ( ). The *Edit Mode* (right) panel is activated.
4. In the *Triggers* panel, click the trigger to edit.
5. (Optional) Edit the *When this event* settings:
   a. In the *When this event* column, click the edit icon ( ) in the appropriate trigger.
   b. (Optional) In the *Select an Event to trigger this Rule* dialog box, narrow the list of events. To do so, select a category from the *Show* drop-down menu, or type a value in the *Search* field.
   c. Click to select the event.
   d. Click **Save**.
6. (Optional) Edit the *is generated by* settings:
   a. In the *is generated by* column, click the edit icon ( ) in the appropriate trigger.
   b. In the *Select Event Sources to limit this Trigger for Rule* dialog box, click to select the appropriate radio button. The options vary depending on the trigger you have chosen. If you are prompted to do so, make any other necessary selections, and then click **Save**.
7. When you have finished configuring the rule, click **Save**.

Deleting a Trigger

If a trigger is no longer needed, delete it.

1. Click the **Rules** tab.
2. Click to select the rule to edit.
3. Click the *Edit the selected Rule* icon ( ). The *Edit Mode* (right) panel is activated.

4. In the *Edit Mode* panel, click to select the trigger to delete.
5. Do one of the following:
   - Click the ✕ at the right of the trigger entry.
   - Click the delete icon ( ).
6. When you have finished configuring the rule, click **Save**.

Managing Schedules

You can set one or more schedules to limit the times during which an event triggers a response; or you can leave the *Schedules* panel unpopulated to allow the trigger/response combination at all times.

Adding a Schedule

To create an entirely new schedule:

1. Click the **Rules** tab.
2. Click to select the rule to edit.
3. Click the *Edit the selected Rule* icon ( ). The *Edit Mode* (right) panel is activated.
4. At the bottom of the *Schedules* panel, click the *Edit Rule Schedules* icon ( ).
5. Click to select the *Add a new schedule* icon ( ).
6. In the *Create Schedule* dialog box, enter a value in the *Display Name* field.
7. Click to select the radio button for the appropriate increments of time (for example: *30 Minutes*).
8. Click to select or deselect the checkbox for *24-Hour Time*.
9. Indicate the times and days that the recording/rule is active by clicking to select boxes corresponding to a days and times. You can also click and drag to select a contiguous range of times and days. Click to deselect any days and times that you do not want the recording/rule to be active.

   Note: Schedules are shared between Recording Schedules and Rule Schedules. Any schedule that you create, modify, or delete in either location is reflected in both locations.
10. (Optional) Click the checkbox to select or deselect *Within limited date range*. If you select *Within limited date range*, enter dates in the *Start on* and *End after* fields, either by selecting the dates from the calendars or by typing in a date using the mm/dd/yy format. Deselect the checkbox to make the schedule unlimited by date.
11. Click **Add**.
12. In the *Select Schedules for Rule* dialog box, click to select the checkbox for the schedule to apply to the rule. If there is another schedule applied to the rule, you can deselect the checkbox to disable that schedule. If you select *No Time Restriction*, all other schedules are automatically deselected. Also, you cannot edit or copy the *No Time Restriction* schedule.
13. When you have finished configuring schedules, click **Save Changes**.
14. When you have finished configuring the rule, click **Save**.
15. (Optional) To quickly view the scheduled times, click to select the schedule, and then click the *View selected Rule Schedule* icon ( ). Click outside the calendar to close it.

Creating a Copy of a Schedule

To use an existing schedule as a starting point to create a new schedule:

1. Click the **Rules** tab.
2. Click to select the rule to edit.
3. Click the *Edit the selected Rule* icon ( ). The *Edit Mode* (right) panel is activated.
4. Click the *Edit Rule Schedules* icon ( ).
5. Click to select (highlight) the schedule to copy.
6. Click the *Create a copy of the selected Schedule* icon ( ).
7. In the *Duplicate Schedule* dialog box, enter a new value in the *Display Name* field. If you do not enter a new value, the schedule will be saved as *[Original name] - Copy*.
8. Click to select the radio button for the appropriate increments of time (for example: *30 Minutes*).
9. Click to select or deselect the checkbox for *24-Hour Time*.
10. Indicate the times and days that the recording/rule is active by clicking to select boxes corresponding to a days and times. You can also click and drag to select a contiguous range of times and days. Click to deselect any days and times that you do not want the recording/rule to be active.

    Note: Schedules are shared between Recording Schedules and Rule Schedules. Any schedule that you create, modify, or delete in either location is reflected in both locations.

11. (Optional) Click the checkbox to select or deselect *Within limited date range*. If you select *Within limited date range*, enter dates in the *Start on* and *End after* fields, either by selecting the dates from the calendars or by typing in a date using the mm/dd/yy format. Deselect the checkbox to make the schedule unlimited by date.
12. Click **Add**.
13. In the *Select Schedules for Rule* dialog box, click to select the checkbox for the schedule to apply to the rule. If there is another schedule applied to the rule, you can deselect the checkbox to disable that schedule. If you select *No Time Restriction*, all other schedules are automatically deselected. Also, you cannot edit or copy the *No Time Restriction* schedule.
14. When you have finished configuring schedules, click **Save Changes**.
15. When you have finished configuring the rule, click **Save**.
16. (Optional) To quickly view the scheduled times, click to select the schedule, and then click the *View selected Rule Schedule* icon ( ). Click outside the calendar to close it.

Editing a Schedule

To edit an existing schedule:

1. Click the **Rules** tab.
2. Click to select the rule to edit.
3. Click the *Edit the selected Rule* icon ( ). The *Edit Mode* (right) panel is activated.
4. Click to select (highlight) the schedule to edit.
5. At the bottom of the *Schedules* panel, click the *Edit Rule Schedules* icon ( ).

6. In the *Select Schedules for Rule* dialog box, click to select the checkbox for the schedule to apply to the rule. If there is another schedule applied to the rule, you can deselect the checkbox to disable that schedule. If you select *No Time Restriction*, all other schedules are automatically deselected. Also, you cannot edit or copy the *No Time Restriction* schedule.
7. Click the *Edit the selected Schedule* icon ( ).
8. (Optional) In the *Edit the Schedule* dialog box, enter a new value in the *Display Name* field. If you do not enter a new value, the schedule will be saved with the original name.
9. Click to select the radio button for the appropriate increments of time (for example: *30 Minutes*).
10. Click to select or deselect the checkbox for *24-Hour Time*.
11. Indicate the times and days that the recording/rule is active by clicking to select boxes corresponding to a days and times. You can also click and drag to select a contiguous range of times and days. Click to deselect any days and times that you do not want the recording/rule to be active.

    Note: Schedules are shared between Recording Schedules and Rule Schedules. Any schedule that you create, modify, or delete in either location is reflected in both locations.

12. (Optional) Click the checkbox to select or deselect *Within limited date range*. If you select *Within limited date range*, enter dates in the *Start on* and *End after* fields, either by selecting the dates from the calendars or by typing in a date using the mm/dd/yy format. Deselect the checkbox to make the schedule unlimited by date.
13. Click **Save**.
14. In the *Select Schedules for Rule* dialog box, click to select the checkbox for the schedule to apply to the rule. If there is another schedule applied to the rule, you can deselect the checkbox to disable that schedule. If you select *No Time Restriction*, all other schedules are automatically deselected. Also, you cannot edit or copy the *No Time Restriction* schedule.
15. When you have finished configuring schedules, click **Save Changes**.
16. When you have finished configuring the rule, click **Save**.
17. (Optional) To quickly view the scheduled times, click to select the schedule, and then click the *View selected Rule Schedule* icon ( ). Click outside the calendar to close it.

Deleting a Schedule

1. Click the **Rules** tab.
2. Click to select the rule to delete.
3. Click the *Edit the selected Rule* icon ( ). The *Edit Mode* (right) panel is activated.
4. Click the *Edit the selected Schedule* icon ( ).
5. In the *Edit the Schedule* dialog box, click to select the schedule to delete.
6. Click the *Delete Schedule* icon ( ).
7. In the *Delete Schedule* confirmation dialog box, click **Delete Schedule**.
8. When you have finished configuring schedules, click **Save Changes**.
9. When you have finished configuring the rule, click **Save**.
10. (Optional) To quickly view the scheduled times, click to select the schedule, and then click the *View selected Rule Schedule* icon ( ). Click outside the calendar to close it.

Managing Responses

Set one or more responses to the events in the rule.

Adding a Response

To add a new response for a trigger:

1. Click the **Rules** tab.
2. Click to select the rule to edit.
3. Click the *Edit the selected Rule* icon ( ). The *Edit Mode* (right) panel is activated.
4. If necessary, click to select the appropriate trigger, and then click to select the appropriate schedule for which to add the response.
5. In the *Responses* panel, click the edit icon ( ) to the right of *then this will happen*. The *Edit the Responses triggered by Rule* dialog box opens.
6. Click the *Add a new Response* icon ( ).
7. Click to select an option from the *Response Category* drop-down menu.
8. Select or enter the appropriate options requested in the dialog box. These will vary depending on the *Response Category* chosen earlier.
9. (Optional) If you selected a response type that is not Custom Script, you can change it to a custom script. To do so, click **Convert to Custom Script**, and then click **Convert** in the confirmation dialog box. The name of the response is changed to *Custom Script*, and the code is displayed. In some cases, a response type *Notification - VX Internal* might not be converted to a Custom Script type.
10. When you have finished configuring responses, click **Save**.
11. When you have finished configuring the rule, click **Save**.

Duplicating an Existing Response

To use an existing response as a starting point to create a new response:

1. Click the **Rules** tab.
2. Click to select the rule to edit.
3. Click the *Edit the selected Rule* icon ( ). The *Edit Mode* (right) panel is activated.
4. In the *Responses* panel, click the edit icon ( ) to the right of *then this will happen*. The *Edit the Responses triggered by Rule* dialog box opens.
5. Click to select the response to duplicate.
6. Click the *Duplicate the selected Response* icon ( ).
7. With the duplicate highlighted, select the appropriate options requested in the dialog box. These will vary depending on the *Response Category* of the response you duplicated.
8. (Optional) If you selected a response type that is not Custom Script, you can change it to a custom script. To do so, click **Convert to Custom Script**, and then click **Convert** in the confirmation dialog box. The name of the response is changed to *Custom Script*, and the code is displayed. In some cases, a response type *Notification - VX Internal* might not be converted to a Custom Script type.

9. When you have finished configuring responses, click **Save**.
10. When you have finished configuring the rule, click **Save**.

Editing a Response

To edit an existing response:

1. Click the **Rules** tab.
2. Click to select the rule to edit.
3. Click the *Edit the selected Rule* icon ( ). The *Edit Mode* (right) panel is activated.
4. In the *Responses* panel, click the edit icon ( ) to the right of *then this will happen*. The *Edit the Responses triggered by Rule* dialog box opens.
5. Click to select the response to edit.
6. Select or enter the appropriate options requested in the dialog box. These will vary depending on the *Response Category* chosen earlier.
7. (Optional) If you selected a response type that is not Custom Script, you can change it to a custom script. To do so, click **Convert to Custom Script**, and then click **Convert** in the confirmation dialog box. The name of the response is changed to *Custom Script*, and the code is displayed. In some cases, a response type *Notification - VX Internal* might not be converted to a Custom Script type.
8. When you have finished configuring responses, click **Save**.
9. When you have finished configuring the rule, click **Save**.

Deleting a Response

To delete a response:

1. Click the **Rules** tab.
2. Click to select the rule to edit.
3. Click the *Edit the selected Rule* icon ( ). The *Edit Mode* (right) panel is activated.
4. In the *Responses* panel, click the edit icon ( ) to the right of *then this will happen*. The *Edit the Responses triggered by Rule* dialog box opens.
5. Click to select the response to delete.
6. Click the *Delete the selected Response* icon ( ).
7. In the confirmation dialog box, click **Delete**.
8. When you have finished configuring responses, click **Save**.
9. When you have finished configuring the rule, click **Save**.

Configuring an SMS Messaging Response

Administrators can configure a rule to send SMS notifications. To send SMS notifications, you must create a Twilio account for the system and then configure the notification in VxToolbox.

To configure the VideoXpert system to send SMS messages:

1. Log in to VxToolbox.
2. Click the **System** tab.
3. Click **SMS**.

4. Click to select the checkbox for *Enable SMS messaging via Twilio*.
5. Click **info**, follow the instructions in the *SMS Account Configuration* dialog box to set up a Twilio account, and then click **OK**.
6. Enter the values from the Twilio account in the *Phone Number to Send From*, *Twilio Account SID*, and *Twilio Auth Token* fields.
7. Click **Send Test Message**. If there is an error, check the values entered in the fields, and then try to send the test message again.
8. After the test message was successfully sent, click **Save Settings**.

To configure a rule to send an SMS message, follow the instructions in the sections titled *Creating a Rule* and *Adding a Response*. Use the response type **Notification - External**, select checkbox for *Send SMS*, and then add the appropriate information in each of the fields.

Configuring Recording

The *Recording* tab allows you to assign data sources (video and audio) to the recorder within the *VX System* you have selected.

You can assign devices to the recorder and create recording schedules through VxToolbox and VxStorage Portal; assigning data sources to a recorder without creating a schedule will prevent data sources from recording. You can perform advanced VxStorage configuration by connecting to the recorder using its IP address on port 9091.

Configuring a Recorder

1. Click the **Recording** tab.
2. At the top of the left panel, click **Recorders**.
3. Click to select the recorder to configure.
4. If available at the bottom of the left panel, click the *Edit selected recorder's configuration* icon ( ).

   Not every recorder has configurable settings. Update recorder configuration settings, depending on which are available for the recorder type.

   a. (Optional) To change the recorder name, enter a new value in the *Name* field.

   b. (Optional) To preserve recorder space, click to select the checkbox for, and then enter a number in the *Reduce framerate for video after [#] days* field, either by typing-in a number or selecting one using the up and down arrows
   When enabled, this option removes P-frames from all recordings older than the specified number of days, leaving only the I-frames. This cannot be set further back than the retention limit.

   c. (Optional) If available, under *Maximum Retention Limit*, click to select the checkbox for, and then enter a number in the *Discard video after [#] Days* field, either by typing-in a number or selecting one using the up and down arrows.

   d. If available, click to select the radio button for the *Transmission Method* field: *Multicast* or *Unicast*.

   e. If available, in the *Stream to Record* area, in the left-most field, select **Primary**, **Secondary**, or **Tertiary** from the drop-down menu; in the right-most field, select **None** or one of the other streams that are available from the drop-down menu.
   Specifically, if you selected Primary in the left-most field, Secondary and Tertiary will be available in the right-most field; if you selected Secondary, Primary and Tertiary will be available; if you selected Tertiary, Primary and Secondary will be available.

   f. (Optional) If available, for cameras that have local recordings, click to select the checkbox for *Auto-backfill recording gaps using on-camera storage*.
   When selected, if there is a gap in recording of a camera (an edge device), the recorder will query the camera for recordings, and automatically download video and audio (if present) to fill the gap.

   If you select this checkbox, you must also:

   - Type or select a number from the drop-down menu in the *Download data from up to [#] cameras at a time* field.
     Downloading from more cameras uses more bandwidth, which will slow the data transmission rate.

- Select a time-interval from the drop-down menu in the *Attempt to download every* field. If edge devices (cameras) and the recorder lose communication, the VX System will attempt to connect to the edge device again at the time-interval specified in this field.
- Type or select a value in the *Stop trying to download after [#] failed attempts* field.

g. (Optional) If available, click to expand **Advanced Options**, and then select the *Maximum Bitrate* from the drop-down menu.

h. Click **Save**.

Viewing Cameras Assigned to a Recorder

The recorder and cameras you see in the *Recording* tab are relevant to the *VX System* you have selected.

To view the cameras assigned to the recorder on a VxPro System:

1. Click the **Recording** tab.
2. At the top of the left panel, click **Recorders**.
3. (Optional) Use filters to see specific categories of sources that are assigned to the recorder.

Adding a Recording Group to a Recorder

1. Click the **Recording** tab.
2. At the top of the left panel, click **Schedules**.
3. In the *What to Record* (left) panel, click the *Create new Recording Group* icon ( ), or click to select a recording group similar to the one you will create, and then click the *Duplicate selected Recording Group* icon ( ).
4. Enter a value in the *Name of Recording Group* field of the *New Recording Group* or *Duplicate Recording Group* dialog box.
5. Click to select the radio button for *All Resources* or *Selected Resources*.
6. If you selected *Selected Resources*, in the *Add / Remove Cameras from Group* table, click to select the checkboxes for the sources to include in the recording group; click to deselect the checkboxes for the sources to exclude from the recording group.
   (Optional) Use the filter to find the sources you want to add to the group. You can also sort on the *Name* and # columns in the *Add / Remove Cameras from Group* table.
7. Click **Save**.

Creating a Recording Schedule for a Recording Group

1. Click the **Recording** tab.
2. At the top of the left panel, click **Schedules**.
3. In the *What to Record* (left) panel, click to select the recording group for which create a recording schedule.
4. In the *When to Record* (center) panel, click the *Edit the Recording Schedules* icon ( ) to open the *Select Schedules for Recording Group* dialog box.
5. In the *Select Schedules for Recording Group* dialog box, click to select and deselect the checkboxes to build the schedule you want to apply to the recording group.

6. (Optional) To create and select a schedule that is not in the list:
   a. Click the *Add a new Schedule* icon (+); or click the *Create a copy of the selected Schedule* icon ( ) to start with a schedule that is close to what you want.
   b. Enter a value in the *Display Name* field.
   c. Click to select the radio button for the appropriate increments of time (for example: *30 Minutes*).
   d. Click to select or deselect the checkbox for *24-Hour Time*. Deselecting the checkbox results in 12:00-11:59 AM and 12:00-11:59 PM recording timestamps.
   e. Indicate the times and days that the recording/rule is active by clicking to select boxes corresponding to a days and times. You can also click and drag to select a contiguous range of times and days. Click to deselect any days and times that you do not want the recording/rule to be active.

      Note: Schedules are shared between Recording Schedules and Rule Schedules. Any schedule that you create, modify, or delete in either location is reflected in both locations.

   f. (Optional) Click the checkbox to select or deselect *Within limited date range*. If you select *Within limited date range*, enter dates in the *Start on* and *End after* fields, either by selecting the dates from the calendars or by typing in a date using the mm/dd/yy format. Deselect the checkbox to make the schedule unlimited by date.
   g. Click **Add**.
   h. In the *Select Schedules for Recording Group* dialog box, click to select the checkbox for the schedule you just created.
   i. Click **Save Changes**.
7. (Optional) You can quickly view a recording schedule by selecting the schedule and then clicking the *View selected Recording Schedule* icon ( ) at the bottom left corner of the center panel. Click outside the calendar to close it.
8. Click to select one of the *Recording Schedules*.
9. In the *Recording Behaviors* (right) panel, click the *Create a new Recording Behavior* icon ( ).
10. Click to select the radio button for either *Continuous Recording* or *Event-Triggered Recording (Full Frame Rate)*.
11. If you selected *Continuous Recording*, click to select the radio button for either *Full Frame Rate* or *Reduced Frame Rate*.
12. If you selected *Event-Triggered Recording (Full Frame Rate)*:
    a. Select a value in the *Start recording* field, either by typing-in a number or selecting one using the up and down arrows.
    b. Click to select the event associated with the recording.
    c. In the *Stop recording* table, enter a value in the *seconds* field, either by typing-in a number or selecting one using the up and down arrows, and then click to select the radio button for *Event that triggers recording* or *Next opposite event*.
13. Click **Add & Create Another** or **Add**.
14. If you clicked **Add & Create Another**, repeat steps 9-13.
15. Repeat steps 7-14 for each recording schedule created.

Creating a Bump on Alarm Recording Schedule

A Bump on Alarm records continuous reduced frame rate (I-Frame only) video during normal situations, and records full frame rate video during an alarm or event. The video timeline for cameras set to record using a Bump on Alarm schedule shows a small green bar for continuous recording and a larger blue bar during event- or alarm-driven recording.

To configure a Bump on Alarm schedule:

1. Click the **Recording** tab.
2. At the top of the left panel, click **Schedules**.
3. In the *What to Record* (left) panel, click to select the recording group for which create a recording schedule.
4. In the *When to Record* (center) panel, click to highlight the schedule to which you will add the bump on alarm behavior.
5. Create a schedule for an alarm- or event-triggered recording:
   a. In the *Recording Behaviors* (right) panel, click the *Create a new Recording Behavior* icon (+). The *Recording Mode and Trigger* will already be set to *Event-Triggered Recording (Full Frame Rate)*.
   b. Select a value in the *Start recording* field, either by typing-in a number or selecting one using the up and down arrows.
   c. Click to select the event associated with the recording.
   d. (Optional) If present, click to select or deselect the checkbox for *Record all cameras in the Recording Group*.
   e. In the *Stop recording* table, enter a value in the *seconds* field, either by typing-in a number or selecting one using the up and down arrows, and then click to select the radio button for *Event that triggers recording* or *Next opposite event*.
6. Click **Add & Create Another** or **Add**.
7. If you clicked **Add & Create Another**, repeat steps 5-6.
8. Repeat steps 3-7 for each recording schedule to create.

Editing a Recording Group

1. Click the **Recording** tab.
2. At the top of the left panel, click **Schedules**.
3. In the *What to Record* (left) panel, click to select the recording group to edit.
4. Click the *Edit selected Recording Group* icon ( ) to open the *Edit Recording Group* window.
   a. (Optional) Enter a new value in the *Name of Recording Group* field.
   b. Click to select the radio button for *All Resources* or *Selected Resources*.
   c. If you selected *Selected Resources*, in the *Add / Remove Cameras from Group* table, click to select the checkboxes for the sources to include in the recording group; click to deselect the checkboxes for the sources to exclude from the recording group.
   d. Click **Save**.

Editing a Recording Schedule

1. Click the **Recording** tab.
2. At the top of the left panel, click **Schedules**.
3. In the *What to Record* (left) panel, click to select the recording group for which to configure the schedule.
4. In the *When to Record* (center) panel, click to select the schedule to edit, and then click the *Edit the Recording Schedules* icon ( ).
5. In the *Select Schedules for Recording Group* dialog box, click to select and deselect the checkboxes for schedules to associate with the recording group.
6. Click **Save Changes**.
7. If you removed a schedule, the *Remove Schedule from Recording Group* dialog box opens. Click **Delete**.
8. (Optional) To create and select a schedule that is not in the list:
   a. In the *When to Record* (center) panel, click the *Edit the Recording Schedule* icon ( ).
   b. Click the *Add a new Schedule* icon ( ); or click the *Create a copy of the selected Schedule* icon ( ) to start with a schedule that is close to what you want.
   c. Enter a value in the *Display Name* field.
   d. Click to select the radio button for the appropriate increments of time (for example: *30 Minutes*).
   e. Click to select or deselect the checkbox for *24-Hour Time*. Deselecting the checkbox results in 12:00-11:59 AM and 12:00-11:59 PM recording timestamps.
   f. Indicate the times and days that the recording/rule is active by clicking to select boxes corresponding to a days and times. You can also click and drag to select a contiguous range of times and days. Click to deselect any days and times that you do not want the recording/rule to be active.

      Note: Schedules are shared between Recording Schedules and Rule Schedules. Any schedule that you create, modify, or delete in either location is reflected in both locations.

   g. (Optional) Click the checkbox to select or deselect *Within limited date range*. If you select *Within limited date range*, enter dates in the *Start on* and *End after* fields, either by selecting the dates from the calendars or by typing in a date using the mm/dd/yy format. Deselect the checkbox to make the schedule unlimited by date.
   h. Click **Add**.
   i. In the *Select Schedules for Recording Group* dialog box, click to select the checkbox for the schedule you just created.
   j. Click **Save Changes**.
9. (Optional) To quickly view the scheduled times, click to select the schedule, and then click the *View selected Rule Schedule* icon ( ). Click outside the calendar to close it.
10. In the *Recording Behaviors* (right) panel, click to select an existing trigger.
11. Click the *Edit Selected Recording Behavior* icon ( ).

12. In the *Edit Recording Behavior for Recording Group [group name]* dialog box, click to select the radio button for the *Recording Mode and Triggers*: *Continuous Recording* or *Event-Triggered Recording (Full Frame Rate)*.
13. If you selected *Continuous Recording*, click to select the radio button for either *Full Frame Rate* or *Reduced Frame Rate*.
14. If you selected *Event-Triggered Recording (Full Frame Rate)*:
    a. Select a value in the *Start recording* field, either by typing-in a number or selecting one using the up and down arrows.
    b. Click to select the event associated with the recording.
    c. (Optional) If present, click to select or deselect the checkbox for *Record all cameras in the Recording Group*.
    d. In the *Stop recording* table, enter a value in the *seconds* field, either by typing-in a number or selecting one using the up and down arrows, and then click to select the radio button for *Event that triggers recording* or *Next opposite event*.
15. Click **Save & Create Another**, or click **Save**.

Deleting a Recording Group

Deleting a Recording Group will also delete the associated Recording Schedules and Recording Behaviors.

1. Click the **Recording** tab.
2. At the top of the left panel, click **Schedules**.
3. In the *What to Record* (left) panel, click to select the recording group to delete.
4. Click the *Delete selected Recording Group* icon ( ).
5. In the *Delete [recording group name]* dialog box, click **OK**.

Deleting a Recording Schedule

This will delete the selected *Recording Schedule*, and the associated *Recording Behaviors*.

1. Click the **Recording** tab.
2. At the top of the left panel, click **Schedules**.
3. In the *What to Record* (left) panel, click to select the recording group for which to delete the schedule.
4. In the *When to Record* (center) panel, click to select the schedule to delete.
5. At the bottom of the *When to Record* (center) panel, click the *Remove selected Recording Schedule* icon ( ).
6. In the *Remove Schedule from Recording Group* dialog box, click **Delete**.

Deleting a Recording Behavior (Trigger)

If you delete all *Recording Behaviors* for a *Recording Schedule*, the *Recording Schedule* is also deleted.

1. Click the **Recording** tab.
2. At the top of the left panel, click **Schedules**.
3. In the *What to Record* (left) panel, click to select the recording group for which to delete the trigger.

4. In the *When to Record* (center) panel, click to select the recording schedule for which to delete the trigger.
5. In the *Recording Behaviors* (right) panel, click to select the *Trigger* to delete.
6. At the bottom of the *Recording Behaviors* (right) panel, click the *Delete selected Recording Behavior* icon ( ).
7. In the *Delete [behavior name]* dialog box, click **OK**.

Managing Users and Roles

A role is a group of permissions defining abilities and responsibilities within a system. A user must be assigned at least one role to perform actions within the system.

If you are authenticating using LDAP, you are not required to manage users and roles, but you can in order to control settings that are not specified in LDAP.

Understanding Internal and Restricted User Accounts

VideoXpert contains some hard-coded user accounts that are integral to the system. You cannot edit, disable, or delete these accounts, nor can you change roles or permissions for these users. You can, however, change the password for these accounts in the case of the admin and aggregator accounts, it is recommended that you change the password from the default.

User	Description
admin	This is the basic administrative user for VideoXpert. This user account possesses the “administrator” role, so is granted all available permissions within the system.
internal	This role is used internally within the system to perform server-side tasks. It is not visible in the *Users* page, under the *Users* tab.
rule_engine	This role supports the rules engine.
snmp	This role is used to collect diagnostic information for the SNMP service that is available on the product.

Creating a Role

There are four default roles within VideoXpert:

- **Administrator** has full rights to the system.
- **Manager** has all Supervisor rights and the ability to configure recorder and devices within the system, including tags, recorder assignment, etc. Managers can also assign roles to users. (This role is available on VxPro Systems only.)
- **Supervisor** has advanced access to live and recorded video including investigations, PTZ control, and plug-ins. Supervisors can use plug-ins, configure events, and access workspaces configured by other users. (This role is available on VxPro Systems only.)
- **User** has basic rights to view live and recorded video. (This role is available on VxPro Systems only.)

Custom roles can also be created and assigned. To create a custom role:

1. Click the **Users** tab, and then click **Roles & Permissions** at the top left of the window.
2. Click the *Add a new role* icon ( ).
3. In the *Create a new Role on the VX system* dialog box, enter a value in the *Role Name* field.
4. (Optional) Add one or more permissions individually for the role:
   a. In the *Enabled Permissions* section of the window, click **Add a Permissions Category**.
   b. Click to select a permissions category from the available categories.
   c. Click to select the radio button to *Allow ALL [Category] Permissions* or *Allow Selected [category] Permissions*.

d. If you selected *Allow Selected [Category] Permissions*, click **Add a Permission**; click to select a permission from the drop-down list (including **Select All [Category] Permissions**); if a confirmation dialog box opens, click **OK**.

e. (Optional) To delete a permission from the category, click the *Delete* icon ( ) corresponding to the permission to delete.

f. (Optional) Click **Add Another Permission**, and repeat the process.

5. (Optional) Add all available permissions to the role:

Note: This is available only if you have not already added all available permissions to the role.

a. In the *Enabled Permissions* section of the window, click **Add a Permissions Category**.

b. Click to select **Add All Categories**.

c. Click to expand one of the categories, and then click the radio button to *Allow ALL [Category] Permissions* or *Allow Selected [Category] Permissions*.

d. If you selected *Allow Selected [Category] Permissions*, click **Add Another Permission**; click to select the permission (including **Select All [category] Permissions**).

e. (Optional) In the permissions table that is displayed beneath *Allow Selected [Category] Permissions* click the *Select Resource* icon ( ) to change the resource restrictions for the permission. In the *Manage Resource Restriction for* window, select **Match Parent Resources** (if present); **Allow All Resources**; **Allow Selected Resources**, and then select the resources to allow; or **Allow All Resources Except Selected**, and then select the resources to disallow.

The table provides the list of permission, resources allowed for each permission, and the number of devices that are allowed.

f. (Optional) To delete a permission from the category, click the *Delete* icon ( ).

g. (Optional) Repeat steps c through f for each of the categories.

6. To delete a category from the *Enabled Permissions* area, click the *Delete* icon ( ) in the category title.

7. Click **Save**.

Editing a Role

Renaming a role does not affect the users to whom the role is assigned.

1. Click the **Users** tab, and then click **Roles & Permissions** at the top left of the window.
2. Click to select the role to edit.
3. Click the *Edit the selected Role* icon ( ).
4. In the *Edit the Role* dialog box, change the role name and/or permissions as needed.
5. For detailed instructions, see the section titled *Creating a Role*.
6. Click **Save**.

Duplicating a Role

By default, a duplicate role retains the permissions of the original role. You can edit the permissions.

1. Click the **Users** tab, and then click **Roles & Permissions** at the top left of the window.
2. Click to select the role to duplicate.
3. Click the *Create a copy of the selected Role* icon ( ).
4. Enter a name for the duplicated role and edit the permissions as needed.
5. For detailed instructions, see the section titled *Creating a Role*.
6. Click **Save**.

Deleting a Role

1. Click the **Users** tab, and then click **Roles & Permissions** at the top left of the window.
2. Click to select the role to delete.
3. Click the *Delete Role* icon ( ).
4. In the confirmation dialog box, click **Delete**.

Viewing Details of a Role

To quickly view the permissions assigned to a specific role:

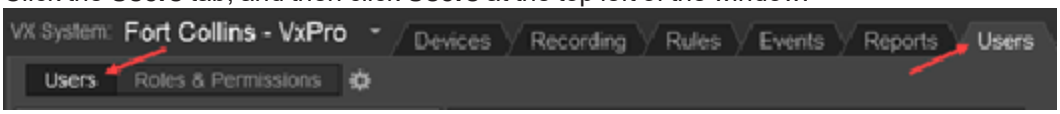
1. Click the **Users** tab, and then click **Roles & Permissions** at the top left of the window.
2. In the right panel, click to select the role to view.
3. In the *Permissions of Role: [Role]* (right) panel, view the permissions for each category.
   The information in the *Permission of Role: [Role]* panel is the same information displayed in the permission tables when you created or edited a role.
4. (Optional) To see the users who are assigned to the role, click the expand icon ( ) to the left of the role to display the list of users. To view the user's information in the *Users* page, hover over the user's name, and then click the change view icon ( ) to the right of the name.

Adding Users

When adding users to the system, you give them a temporary password.

You can also provide additional user information, to make it easier to associate user names with personnel; *Name* fields appear anywhere the system provides a user name.

1. Click the **Users** tab, and then click **Users** at the top left of the window.



2. Click the *Create a new User* icon ( ).
3. Enter a value in the *Username* field.
4. (Optional) Enter values in the *First Name* and *Last Name* fields.

5. If the *Password* field is enabled:
   a. Enter a value in the *Password* and *Confirm Password* fields.
   b. (Optional) To require a user to change the password the first time the user logs in, click to select the checkbox for *Must change password on first login with new password*.

   Note: The password can only be set if the system or the specific user is using VideoXpert authentication. To change the authentication method from Authenticate using LDAP/AD to Authenticate using VideoXpert, see the section titled *Setting the User Password Expiration Policy*

6. Choose a *Role* for the user from the drop-down menu.
7. (Optional) Click **Add another role**, and then choose a role for the user from the drop-down menu.
8. (Optional) To delete a role, click the *Remove this role from the selected user* icon ( ). This option is only available if more than one role is assigned to the user.
9. (Optional) Enter a value in the *User ID#*, Email Address, *Phone*, and *Notes* fields.
10. (Optional) Click to expand **Advanced Settings**.
    - Click to select or deselect the checkbox for *Allow this user to be used for Aggregation*.
    - Click to select or deselect the checkbox for *This user's password never expires*. This overrides the global user setting for password expiration.
11. Click **Add**.

Editing Users

To edit a user:

1. Click the **Users** tab, and then click **Users** at the top left of the window.
2. Click the *Edit the selected User* icon ( ).
3. (Optional) Enter new values in the *First Name* and *Last Name* fields.
4. (Optional) Click to select the radio button for *Active* or *Inactive*.
5. Update other settings as needed. For detailed instructions, see the section titled *Adding Users*.
6. Click **Save**.

Searching for Users

1. Click the **Users** tab, and then click **Users** at the top left of the window.
2. Enter a value in the *Search Users* field.

   The search applies to user name, first name, and last name values.

   The search begins as soon as you enter the first character; results are further refined as you enter more characters.
3. Add or delete characters to change the search results.
4. (Optional) To clear the search field, either delete all characters or click the *Clear* icon ( ) at the right of the *Search Users* field.

Assigning Roles

VideoXpert contains pre-defined roles that you can assign to users. You cannot change these roles but you can create new roles (see *Creating a Role*); each user must be assigned a role to use VideoXpert. Any locking features or competing actions performed by users are prioritized by user level.

To assign roles to an existing user:

1. Click the **Users** tab, and then click **Users** at the top left of the window.
2. Click to select the user to whom you are assigning a role, and then click the *Edit the selected User* icon ( ).
3. Click to select a *Role* from the drop-down menu.
4. (Optional) To add another role to the user, click **Add another role**, and then select a *Role* from the drop-down menu.
5. (Optional) If appropriate, edit additional user information from this dialog box. See sections titled *Editing a Role* and *Resetting Passwords*.
6. Click **Save**.

Resetting Passwords

Users with appropriate permissions can either reset users' passwords or force users to change their passwords.

Resetting a user's password will allow you to grant the user a temporary password. You may want to reset a user's password if a user does not remember his or her password, or the user is locked out of the system because of failed login attempts or because of letting the password change timer lapse.

Users with appropriate permissions can also reset other users' passwords and force users to change their passwords.

1. Click the **Users** tab, and then click **Users** at the top left of the window.
2. Select the user whose password you want to reset, and then click the *Edit the selected User* icon ( ).
3. Click **Change Password**
4. Enter a new value in the *New Password* and *Re-Enter New Password* fields.

   If you decide not to change the password, you must click **Do Not Change Password** in order to continue.
5. (Optional) If appropriate, edit additional user information from this dialog box. See sections titled *Editing a Role* and *Assigning Roles*.
6. Click **Save**.

Setting the User Password Expiration Policy

For users who are not using *Authenticate using LDAP/AD* single sign-on (SSO), you can set passwords to expire at specific intervals, or to never expire.

To set the global (all users) expiration policy:

1. Click the **Users** tab, and then click the *Global User Settings* icon ( ) above the left panel, to the right of the page tabs.
2. In the *Global User Settings* dialog box, click to select the radio button for *Passwords never expire* or *Passwords expire every [#] days*.

3. If you selected *Passwords expire every [#] days*, enter a value for the number of days, either by typing-in a number or selecting one using the up and down arrows.
4. Click **Done**.

For users who are using *Authenticate using LDAP/AD*, the password expiration does not apply. You can change the authentication method for a user from LDAP/AD to VideoXpert Authentication, so that you can set a password expiration policy for a specific user.

1. Click the **Users** tab, and then click **Users** at the top left of the window.
2. Click to select the user whose authentication method you will change.
3. Click the *Edit* icon ( ) at the bottom right of the left panel.
4. If the User was configured for *Authenticate using LDAP/AD* when the User was created, you must now provide password information for the User.
   a. Enter a value in the *Password* and *Confirm Password* fields.
   b. Click to select or deselect the checkbox for *Must change password on first login with new password*.
   c. Click to expand **Advanced Settings**.
   d. Click to select or deselect the checkbox for *The user's password never expires*.
5. Click **Save**.

Deleting Users

1. Click the **Users** tab, and then click **Users** at the top left of the window.
2. Click to select the user you want to remove.
3. Click the *Delete User* icon ( ).
4. In the confirmation dialog box, click **Delete**.

Configuring VideoXpert System Settings

From VxToolbox, you can configure most settings on the VX System to which you are connected. Setting types include General Settings, Aggregation, LDAP, Backup, and SMTP settings. These are described in the following sections.

The VX System settings also includes SMS settings, described in the section titled *Configuring an SMS Messaging Response*.

Configuring General Settings for VideoXpert Professional Systems

1. Click the **System** tab.
2. Click **General Settings**.
3. Enter a value in the *VideoXpert System Name* field.
4. Complete the *System Configuration*:
   a. Specify an *RSTP Port*, either by typing-in a number or selecting one using the up and down arrows.
   b. Specify an *HTTPS Port*,either by typing-in a number or selecting one using the up and down arrows.
   c. (Optional) Click to select or deselect the checkbox for *Prefer Hostnames*. When the feature is selected, the server will try to resolve the IP addresses into hostnames.
5. (Optional) In the *Miscellaneous* area:
   a. Click to select or deselect the checkbox for *Show previous camera names througout VX System*.
   When selected, if you have changed the name of the camera within the last 12 months, the camera details window in VxOpsCenter will show the current name, a list of the previous names (up to 10), and the date that each name was changed.
   b. (Optional) Click to select or deselect the checkbox for *Force encryption on all exports*
   c. (Optional) If you selected *Force encryption on all exports*, click to select the checkbox for *Use preset password for all encrypted exports*.
   d. If you will use a preset password, type a value in the field. Click the checkbox to select *Show* to see the password entered.
   When forced encryption is selected, all exports to the standard locations are encrypted by default and automatically use the same password. This does not apply to exports to alternate locations.
6. (Optional) In the *Bookmarks* area:
   a. Under *Automatically Delete Bookmarks*, click to select the radio button for *When corresponding recording is deleted*, *Never* or *After [###] days*. If you select *After [###] days*, select the number of days, either by typing-in a number or selecting one using the up and down arrows.
   b. Under *Automatically Unlock Clips*, click to select the radio button for *Never* or *After [###] days*. If you select *After [###] days*, select the number of days, either by typing-in a number or selecting one using the up and down arrows.

Note: Locked bookmarks will not be automatically deleted. Pelco recommends that you automatically unlock clips after a specified duration and delete bookmarks after the

retention period.

7. (Optional) In the *HTTPS Certificate* area:
   a. Click **Show current certificate details** to view information including *Issued to*, *Issued by*, and *Period of Validity*. To close this field, click **Hide current certification details**.
   b. (Optional) On VideoXpert Professional systems only, click **Export current certificate to .pfx**; enter the password in the *Authenticate Certificate* dialog box, *Password* field; click **OK**; in the *Select SSL/TLS Certificate* window, browse to the appropriate folder, enter a name for the file, and then click **Save**.
   c. On VideoXpert Professional systems only, click **Install New Certificate**, browse to and select the certificate, click **Open**; in the *Install SSL/TLS Certificate* dialog box, in the *Password* field, enter the password, and then click **OK**. Click **OK** again in the *Install SSL/TLS Certificate* confirmation dialog box.
8. (Optional) To cancel any changes you have made before saving the settings, click **Revert** at the bottom of the panel.
9. Click **Save Settings**.

Configuring Authentication

You can select the authentication method and parameters used.

- VideoXpert Authentication—see the section titled *Enabling VideoXpert Authentication*
- LDAP authentication using simple bind authentication—see the section titled *Configuring LDAP Authentication: Simple Bind*.
- LDAP authentication using two-stage binding—see the section titled and *Configuring LDAP Authentication: Two-Stage Bind Authentication*.
- If you select LDAP authentication, you can also (optional) use synchronize users and roles from LDAP—see the section titled and *Configuring LDAP Authentication: Synchronizing Users and Roles From LDAP*.
- If you select LDAP authentication, you can also (optional) use Single Sign-On—see the section titled *Configuring LDAP Authentication: Using Single Sign-On*.

Enabling VideoXpert Authentication

VideoXpert Authentication uses the internal VX system authentication instead of LDAP.

1. Click the **System** tab.
2. Click **LDAP/AD**
3. Click to select the radio button for *VideoXpert Authentication*.
4. Click **Save Settings**.

Configuring LDAP Authentication: Simple Bind

LDAP authentication using simple bind authentication requires only the LDAP server name, port, Base DN, and search attributes.

1. Click the **System** tab, and then click **LDAP/AD**.
2. Click to select the radio button for *LDAP*.
3. If necessary, click to deselect the radio buttons for *Two-Stage Binding Authentication* and the checkbox for *Synchronize users and Roles From LDAP*.

4. Enter the host name or IP address of the LDAP server in the *LDAP Server* box.
5. (Optional) Click the *SSL/TLS* box if your LDAP server requires SSL/TLS authentication.
6. (Optional) Edit the server *Port* if the LDAP server is not on the default port (389, or 636 if you selected SSL/TLS).
7. Type a distinguished name (DN) in the *Base DN* box.
8. Type an attribute key name in the *Search Attributes* box. When inputting multiple entries in a box, separate entries with commas only (no spaces).
9. Click *Test Connection* to verify that your LDAP connection and search settings are correct.
10. Click **Save Settings**.

Here is an example of a simple bind request.

- In the *Base DN* box, the administrator has entered "CN=Users,DC=example,DC=com".
- In the *Search Attributes* box, the administrator has entered "CN".
- The user has signed on using "Joe" as the login name and "Pword" as the password.
- VideoXpert sends to LDAP a bind request with the specified parameters.

This is different from what happens in a two-stage bind. See *Configuring LDAP Authentication: Two-Stage Bind Authentication*.

Configuring LDAP Authentication: Two-Stage Bind Authentication

Two-stage bind authentication uses the parameters of simple bind, but adds a superuser distinguished name and password.

1. Click the **System** tab, and then click **LDAP/AD**.
2. Click to select the radio button for *LDAP*.
3. Click to select the radio button for *Two-Stage*.
4. Enter the host name or IP address of the LDAP server in the *LDAP Server* box.
5. (Optional) Click the *SSL/TLS* box if your LDAP server requires SSL/TLS authentication.
6. (Optional) Edit the server *Port* if the LDAP server is not on the default port (389, or 636 if you selected SSL/TLS).
7. Type a distinguished name (DN) in the *Base DN* box.
8. Type an attribute key name in the *Search Attributes* box. When inputting multiple entries in a box, separate entries with commas only (no spaces).
9. Type a value in the *Superuser DN* field.
10. Type a value in the *Superuser DN Password* field.
11. Click *Test Connection* to verify that your LDAP connection and search settings are correct.
12. Click **Save Settings**.

Here is an example of a two-stage bind request.

- In the *Base DN* box, the administrator has entered "CN=Users,DC=example,DC=com".
- In the *Search Attributes* box, the administrator has entered "sAMAccountName,CN".
- The user has signed on using "Joe" as the login name and "Pword" as the password.
- VideoXpert first searches for an LDAP entry that has either sAMAccountName or CN set to "Joe".
- After finding the entry, VideoXpert sends to LDAP a bind request with the DN set to the DN of the entry that it found during the search, and that has the password set to "Pword".

Configuring LDAP Authentication: Synchronizing Users and Roles From LDAP

Synchronizing Users and Roles From LDAP uses the parameters of two-stage binding, but adds a root VX DN and a VX system DN. These enable your system to use the LDAP server to synchronize User and Role assignments.

To synchronize users and roles from an LDAP server, you must first configure users and roles on that server. For example, if you are using an Active Directory LDAP server:

1. Access the *Active Directory Users and Computers* window.
2. Create a folder structure that is appropriate to the planned permissions structure (for example: to mirror the geographic locations of systems).
3. Within that folder structure, create groups with names that match the names of roles in VideoXpert.
4. Add users or other groups to these groups.
5. Save the settings and close Active Directory.

To configure LDAP authentication in VxToolbox to synchronize users and roles from LDAP:

1. Click the **System** tab, and then click **LDAP/AD**.
2. Click to select the radio button for *LDAP*.
3. Click to select the radio button for *Two-Stage*.
4. Click to select the radio button for *Synchronize Users and Roles From LDAP*.
5. Enter the host name or IP address of the LDAP server in the *LDAP Server* box.
6. (Optional) Click the *SSL/TLS* box if your LDAP server requires SSL/TLS authentication.
7. (Optional) Edit the server *Port* if the LDAP server is not on the default port (389, or 636 if you selected SSL/TLS).
8. Type a distinguished name (DN) in the *Base DN* box.
9. Type an attribute key name in the *Search Attributes* box. When inputting multiple entries in a box, separate entries with commas only (no spaces).
10. Type a value in the *Superuser DN* field.
11. Type a value in the *Superuser DN Password* field.
12. (Optional) Type a value in the *Root VideoXpert DN* field.
    - If you are setting up only one VX System, you can leave this field blank.
    - If you are setting up multiple systems, this is the LDAP container under which all of the VX System information is stored for all of the systems. When determining which roles should be assigned to a user, the VX System will look for group entries within the VideoXpert System DN sub-container, and navigate up the LDAP tree until it reaches the Root VideoXpert DN container.
13. Type a value in the *VideoXpert System DN* field.

    This is the LDAP container for the VideoXpert System. It can be nested inside sub-containers in any configuration. When determining which roles should be assigned to a user, the VX System will look for group entries within the VideoXpert System DN sub-container and navigate up the LDAP tree until it reaches the Root VideoXpert DN container.
14. Click *Test Connection* to verify that your LDAP connection and search settings are correct.
15. Click **Save Settings**.

Note: Permissions for each role must still be configured in the *Roles and Permissions* tab of VxToolbox.

Here is an example of configuring LDAP authentication in VxToolbox to synchronize users and roles from LDAP.

The following users exist in your Active Directory system:

- Joe Jones (username=joe)
- Mary Smith (username=mary)—belongs to the AD group “Directors – West Region”

You have these four systems:

- Log Angeles
- San Francisco
- New York
- Boston

You want to ensure that:

- All Directors for the West Region can log in to systems in the West Region, with permission to view live and recorded video for all cameras
- Joe Jones can log in to the New York system ONLY, and add devices and users to that system

You create the following roles with the following permissions on their VX systems, using VxToolbox:

- Directors: “View Video Sources” and “View Recorded Video”
- SysAdmins: “Manage User Acocunts” and “Manage Cameras & Recorders”

You decide to store information about all of your VideoXpert systems under the following Root DN in AD:

- OU=VideoXpert,DC=example,DC=com

Under the root DN in AD,you create the following container entities:

- OU=New York,OU=East Region,OU=VideoXpert,DC=example,DC=com
- OU=Boston,OU=East Region,OU=VideoXpert,DC=example,DC=com
- OU=Los Angeles,OU=West Region,OU=VideoXpert,DC=example,DC=com
- OU=San Francisco,OU=West Region,OU=VideoXpert,DC=example,DC=com

Next, you create the following group entities:

- CN=Directors,OU=West Region,OU=VideoXpert,DC=example,DC=com
  - You add the existing AD group “Directors – West Region” to this group.
- CN=SysAdmins, OU=New York,OU=East Region,OU=VideoXpert,DC=example,DC=com
  - You add user “Joe Jones” to this group.

Finally, in VxToolbox, you:

- Enable “LDAP users and roles” on all 4 VX systems.
- Set the root DN to OU=VideoXpert,DC=example,DC=com on all 4 VX systems.
- Set the system DN to:
  - OU=New York, etc. on the New York system
  - OU=Boston, etc. on the Boston system

  - OU=Los Angeles, etc. on the Los Angeles system
  - OU=San Franscisco, etc. on the San Francisco system

With this configuration:

- Mary Smith can log in to both the Log Angeles and San Francisco systems, using “mary” as her username and her AD password as the password. When Mary logs in:
  - The VX system creates a user account with name “mary” in VX (if it doesn’t already exist).
  - The VX system adds user mary to the Directors role.
- Joe Jones can log in to the New York system only. When Joe logs in:
  - The VX system creates a user account with name “joe” in VX (if it doesn’t already exist).
  - The VX system adds user joe to the SysAdmins role.

Configuring LDAP Authentication: Using Single Sign-On

Single Sign-On (SSO) allows users to log in to multiple systems using a single set of login credentials. SSO can be used with either Single-Stage or Two-Stage binding, and can be used with the Synchronize Users and Roles From LDAP option.

Note: If VxOpsCenter is running on the same server as the VxPro or Core system, SSO will not be available. This is due to MS Windows limitations.

To configure authentication to use SSO:

1. Ensure that you have created a DNS entry for the cluster virtual IP address on the SSO domain. Include the Forward Lookup Zone and Reverse Lookup Zone entries. (Instructions for this operation are beyond the scope of this document.)
2. Click the **System** tab, and then click **LDAP/AD**.
3. Click to select the radio button for *LDAP*.
4. Click to select the radio button for *Two-Stage* and the checkbox for *Synchronize users and Roles From LDAP*.
5. Click to select the checkbox for *Use Single Sign-On*.
6. Enter the host name or FQN of the LDAP server in the *LDAP Server* box.
   - If the host name (IP address) is used, this points to a single Active Directory Domain Controller (DS). This creates a single point of failure; if the DC goes offline, authentication will break.
   - If the FQDN is used, any DC in the AD will respond to the authentication request. This provides fault tolerance for LDAP authentication.
7. (Optional) Edit the server *Port* if the LDAP server is not on the default port (389, or 636 if you selected SSL/TLS). if the LDAP server is not on the default port (636—SSL/TLS is required for SSO).
8. Type a distinguished name (DN) in the *Base DN* box.
9. Type an attribute key name in the *Search Attributes* box. When inputting multiple entries in a box, separate entries with commas only (no spaces).
10. Type a value in the *Superuser DN* field.
11. Type a value in the *Superuser DN Password* field.

12. (Optional) Type a value in the *Root VideoXpert DN* field.
    - If you are setting up only one VX System, you can leave this field blank.
    - If you are setting up multiple systems, this is the LDAP container under which all of the VX System information is stored for all of the systems. When determining which roles should be assigned to a user, the VX System will look for group entries within the VideoXpert System DN sub-container, and navigate up the LDAP tree until it reaches the Root VideoXpert DN container.
13. Type a value in the *VideoXpert System DN* field.

    This is the LDAP container for the VideoXpert System. It can be nested inside sub-containers in any configuration. When determining which roles should be assigned to a user, the VX System will look for group entries within the VideoXpert System DN sub-container and navigate up the LDAP tree until it reaches the Root VideoXpert DN container.
14. Type a value in the *Active Directory Domain* field.
    This step does not test the SSO login; that was tested in an earlier step.
15. Click *Test Connection* to verify that your LDAP connection and search settings are correct.
16. Click **Save Settings**.

Note: Permissions for each role must still be configured in the *Roles and Permissions* tab of VxToolbox.

Note: If SSO is supported, VxPortal defaults to using it.

Note: If the VxPro or Core server is not part of the AD, or if you are using a core cluster, a service account will be created in your AD for the server. If the service account is not created, the value entered in the *LDAP Server* box (step 6) will be ignored.

For further assistance, contact Pelco Customer Support.

Configuring System Backups

Pelco recommends that you back up your system after initial setup, when you have configured a significant number of users and devices, and after significant changes to your system configuration.

A system backup contains the system database, including the previous 30 days' events. Backups do not capture exported video or any settings that you might have changed outside of VxToolbox (for example: changes made directly to configuration scripts). The speed of each backup depends on the size of the VideoXpert database, network bandwidth, and other variables.

To configure system backups:

1. Click **System**, and then click **Backup**.
2. In the *Location* area:
    a. Enter a value in the *Specify a Path* field.
    b. (Optional) Enter values in the *Username* and *Password* fields.
    c. Click **Test Connection**.
        - If the *Test Successful!* dialog box opens, click **OK**.
        - If the *Test Failed* dialog box opens, click **OK**, correct the information in the *Location* fields, and then click **Test Connection** again.

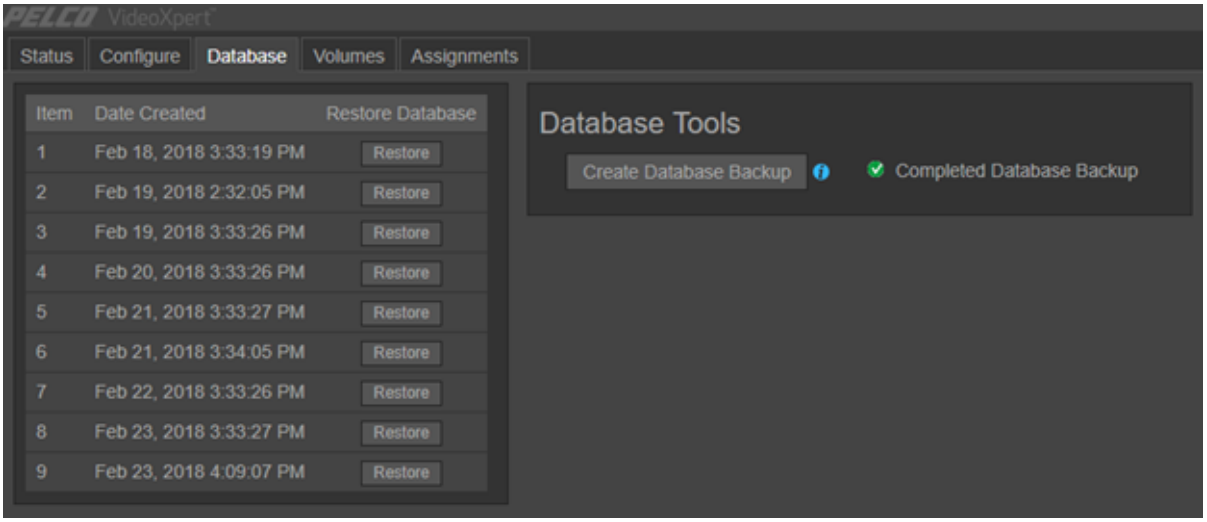
3. Enter a value in the *Retain (# of Backups)* field, either by typing-in a number or selecting one using the up and down arrows.
4. (Optional) To trigger backups automatically:

   Note: Ensure that you have correctly configured the backup location before you attempt to schedule backups.

   a. Click to select the checkbox for *Backup Automatically*.
   b. Enter a value in the *Time of Day* field, either by typing-in the time or selecting it using the clock icon ( ).
   c. Enter a value in the *Expiration (Days)* field, either by typing-in a number or selecting one using the up and down arrows.
5. (Optional) To cancel the changes and return to the previously saved settings, click **Revert**.
6. Click **Save Settings**.
7. (Optional) After you have correctly configured backups, you can make a backup immediately. To do so, click **Backup Now**.
   a. At the top of the window, a caution triangle and “Backup is currently in progress...” message is displayed. When the backup is complete, a green checkmark and *Most recent backup at [date and time] SUCCESSFUL* is displayed. If the backup fails, an error message is displayed.
   b. To delete the backup, click the trash bin icon ( ) to the right of the backup message.

Backing Up and Restoring the Database on VideoXpert Professional Systems

VideoXpert Storage takes database recovery points daily, and stores these points for eight days. You can also initiate a manual backup, an example of which is shown as *Item 9* in the screen capture below. If your database enters an error state, you can restore to one of the available points from the VideoXpert Portal *Database* page.



Manually Backing Up the Database on VideoXpert Professional Systems

1. Launch VideoXpert Storage Portal.
   a. Login to VxPortal.
   b. Click **[user name]** (for example: **admin**) in the upper-right of the window to access the pull-down menu.
   c. Click **Configure Server**.
   d. Enter the *Username* and *Password*, and then click **Log In**. The default *Username* and *Password* are both “admin”.
2. Click the **Database** tab.
3. In the *Database Tools* area, click **Create Database Backup**.
4. In the *Backup Database* confirmation dialog box, click **Backup**.

When the backup is complete, *Completed Database Backup* will be displayed in the *Database Tools* area of the window.

Restoring the Database on VideoXpert Professional Systems

Restoring the database restores camera associations (provided the camera still exists within the VideoXpert environment) and storage settings. Restoring the database will not affect video directly; you will not lose video when restoring to an earlier time. However, if you have added cameras to the recorder after a backup was taken, and restore to that backup, you will lose access to video for any cameras the database restore process removes from the database.

Note: The NTP server address is not recovered during backup or restore. The NTP address must be reset manually after the backup or restore is complete.

1. Launch VideoXpert Storage Portal.
   a. Login to VxPortal.
   b. Click **[user name]** (for example: **admin**) in the upper-right of the window to access the pull-down menu.
   c. Click **Configure Server**.
   d. Enter the *Username* and *Password*, and then click **Log In**. The default *Username* and *Password* are both “admin”.
2. Click the **Database** tab.
3. In the table, locate the backup to be restored, and then click the corresponding **Restore** button.
4. In the *Backup from [identifier]* confirmation dialog box, click **Restore**.

   Note: Restoring can take several minutes, and there is no way to cancel a restoration that is in progress.
5. After you are automatically logged out, log back in.

When the restore operation is complete, *Completed Restore for Backup [#]* is displayed in the *Database Tools* area of the window.

Configuring the SMTP Server

You can configure the SMTP server to send email from the host to an email address. To do so:

1. In VxToolbox, click **System**, and then click **SMTP**.
2. If the *Mail From* field is not already populated with the correct value, enter a valid email address in the field.
3. Enter a value in the *SMTP Host* field.
4. Enter a number in the *SMTP Port* field.
5. (Optional) Click to select the checkbox for *Enable SMTPS*.
6. (Optional) Click to select the checkbox for *Enforce validation of the server's certificate*.
7. Enter a value in the *Username* field.
8. Enter a value in the *Password* field.
9. Click **Send Test Email**, enter an email address in the *Send Test Email* dialog box, in the *Send to Email* field, and then click **Send Email**.
   - If the *Send Test Email* dialog box returns "Test email sent successfully!", click **OK**.
   - If the *Send Test Email* dialog box returns "Test email failed...", click **Try Again**, either correct the email address, and then click **Send Email**; or click **Cancel**, correct any errors in the SMTP configuration, and then try to send a test email again.
10. (Optional) To cancel the changes and return to the previously saved settings, click **Revert**.
11. Click **Save Settings**.

Controlling Memory Usage

VxToolbox memory usage defaults to 1 GB. To expand the amount of memory available to 4 GB:

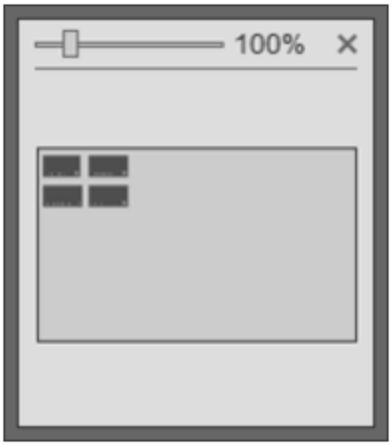
1. Create a file titled "user_runtime.txt".
2. In the file, type "-Xms4g".
3. Save the file to C:\ProgramData\Pelco\VxToolbox.
4. Restart the VxToolbox service so that the change will take effect.

Configuring Monitor Walls

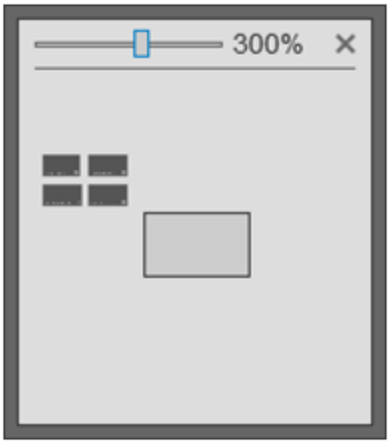
You can use existing monitors to configure several monitor walls.

Creating a Monitor Wall

1. Click the **Monitor Walls** tab.
2. At the bottom of the left panel, click the *Add a new Monitor Wall* icon ( ).
3. In the *Add a Monitor Wall* field at the upper left corner of the monitor wall window, enter a name for the monitor wall.
4. In the *Drag Monitors to assign* (right) panel, click and drag a monitor to the location you would like it to appear on the monitor wall. Repeat this step for each monitor that you want to add.
   - To refresh the list of monitors, in the upper right corner of the *Drag Monitors to assign* (right) panel, click the *Refresh* icon ( ).
   - To filter the list of monitors, in the *Drag Monitors to assign* (right) panel, enter a value in the *Search Monitors* field.
5. (Optional) To delete a monitor from the monitor wall, in the left panel, click the *Delete* icon ( ) in the monitor to delete.
6. (Optional) Scale the monitors:
   - To resize the monitors individually, click on a monitor and drag a corner to resize it.
   - To zoom in and out on all monitors by the same percentage, in the preview window, drag the selector bar to the appropriate magnification level. The images below show the monitor wall preview at 100% magnification and at 300% magnification. Notice that the monitors are no longer included in the frame.



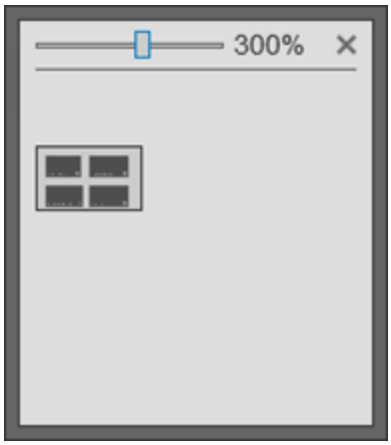
100% Magnification



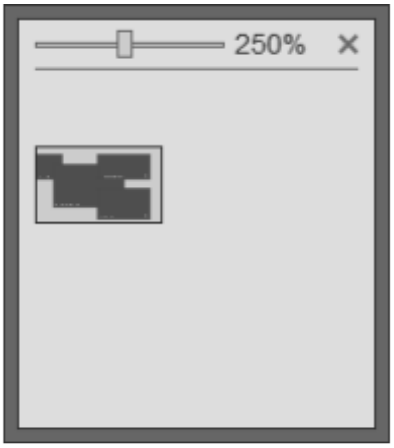
300% Magnification

7. (Optional) If necessary, move the monitors into the monitor wall frame:
   - Use the scroll bars at the bottom and right edges of the monitor wall window to bring the monitors into view.
   - In the preview window, drag the monitor wall frame so that the appropriate monitors are in the frame. The image below shows the monitors at 300% magnification, but they are now

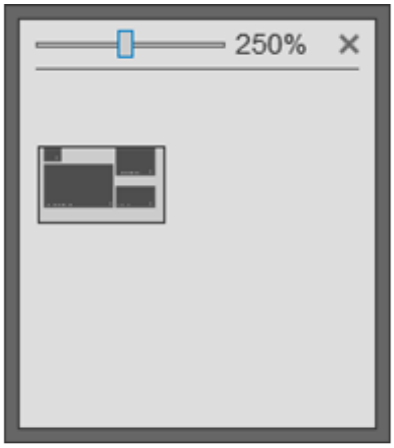
included in the monitor wall frame.



8. (Optional) Rearrange the monitors in any configuration by dragging them to the desired locations on the monitor wall. The image below shows the monitor wall with overlapping monitors and without overlapping monitors.



With Overlapping Monitors



Without Overlapping Monitors

9. When you are satisfied with the look of the monitor wall, click **Save**.

Editing a Monitor Wall

1. Click the **Monitor Walls** tab.
2. In the left panel, click to select the monitor wall to edit.
3. At the bottom of the left panel, click the *Edit the selected Monitor Wall* icon ( ).
4. Update the monitor wall as needed, using the steps in the section titled *Creating a Monitor Wall*.
5. When you are satisfied with the look of the monitor wall, click **Save**.

Deleting a Monitor Wall

1. Click the **Monitor Walls** tab.
2. In the left panel, click to select the monitor wall to delete.

3. At the bottom of the left panel, click the *Delete the selected Monitor Wall* icon ( ).
4. In the confirmation dialog box, click **Delete**.

Using Send Video Permissions

The *Send Video* permission enables a user to send video to a remote monitor wall based on the user's role and permissions.

Note: You can only send video to a monitor that has a number assigned to it.
See the *Configuring Monitors* section of this manual.

Using the instructions in the section titled *Creating a Role*, in the In the *Edit Role* window:

1. If *Surveillance* is not in the *Enabled Permission* area, click **Add a Permissions Category**, and then click **Surveillance**.
2. Click to expand **Surveillance**.
3. Click to select the checkbox for *Allow Select Surveillance Permissions*.
4. If the *Send Video* permission is not listed, click **Add a Permission**, and then click **Send Video**.
5. If necessary, in the *Allow Resources* column of the *Send Video* permission row, click the *Select Resource* icon ( ).
6. In the *Manage Resource Restriction for* window, use the drop-down menu to click one of the following:
   - **Allow All Resources**
   - **Allow Selected Resources**
   - **Allow All Resource Except Selected**
7. If you chose *Allow Selected Resources* or *Allow All Resources Except Selected*, in the list of resources in the right panel, click to select and deselect the checkboxes for the appropriate resource names.
8. Click **OK**.
9. Continue using the instructions for creating a role.

Using Reports

From the *Reports* page, you can create and generate reports, and export them from the system. Reports are exported in CSV format.

Report Types available in VxToolbox include:

- Camera Report
- Camera Role Access Report
- Device Report
- Event History
- Counting Lines Report
- Recording Gap Report
- Role Report
- Storage Report
- System Status Report
- User Report
- User Action Report

Create a new report template and edit the template details to include only the information needed.

Generating reports containing a large number of events might take some time. You can navigate away from the *Reports* page while the system generates your report. If your report parameters are too large, the request might time-out and the system might ask you to narrow your search.

Creating a Report Template

To create a new template.

1. Click the **Reports** tab.
2. In the *Report Templates* list in the left panel, create a new report template using one of the following methods:
   - To start with a blank template, click the *Create a new Report Template* icon ( ). A *New Unsaved Template* is added to the list.
   - To make a copy of an existing template from the *Report Templates* panel, select the template in the *Report Templates* panel, and then click the *Create a copy of the selected Report Template* icon ( ). A new template (named the same as the original template - *Copy*) is added to the list.
   - To make a copy of an existing template from the *Template Details for [template name]* panel, select the template, and then click the **Save as New Template** button at the lower left of the *Template Details for [template name]* window (upper left panel). In the *Save New Template* dialog box, enter a value in the *Template Name* field, and then click **Save**.
3. If you made a copy of an existing template, click to select the new report template.
4. If the *Report Type* drop-down menu is available, select from the report type.

   The report type can only be selected if you started with a blank template; if you copied an existing template, the copy is assigned the same report type as the original.

5. If the *Include [report type] (rows)* field is displayed:
   a. Click to select **All** or **Selected** from the drop-down menu.
   b. If you clicked *Selected*, click the *Select report filter sources* icon ( ) under the drop-down menu; in the *Select [report type]* window, click to select and deselect the appropriate options, and then click **OK**.
6. If the *Report Type* is **Counting Lines Report**, in the *Counting Lines (rows)* field, from the drop-down menu, click to select the appropriate duration.
7. In the *Include Info (columns)* field, click to select and deselect the checkboxes for information to include in the report template.

   As you select and deselect this information, you can preview the report in the *Column Preview for [report template name]* panel in the (vertical) center of the window.
8. If the *Time Range* field is displayed, select an option from the drop-down menu. If you select *Custom*, set start and end dates and times in the *Date & Time* fields, either by typing-in values (mm/dd/yy and hh:mm AM or PM formats) or by using the selectors available by clicking the date icon ( ) or the time icon ( ).
9. (Optional) To generate a report for this template automatically:
   a. Click to select the checkbox for *Automatically Generate this Report*.
   b. From the drop-down menu below the option, select the day of the week on which the report will be generated.
   c. Type or click to select a time in the *at* field.
   d. (Optional) Click to select the checkbox for *Automatically Export to .csv*. If you select this, enter a *Network Storage Location*, *Username*, and *Password*. The user name and password are optional.
10. Depending on how you created the template and what you want to do, click **Save**, **Save template changes**, or **Save as new template**.
11. If the *Save New Template* dialog box is displayed, type a new name in the *Template Name* field, and then click **Save**.

Editing a Report Template

If appropriate, you can edit an existing template.

1. Click the **Reports** tab.
2. In the *Report Templates* list in the left panel, click to select the template to edit.
3. In the *Template Details for [template name]* (right) panel, make any changes needed to the template, except for the *Report Type*. The *Report Type* cannot be edited.
4. To save this over the existing template, click **Save template changes**.

   If you do not want to overwrite the existing template, you can click **Revert** to cancel the changes, or click **Save as new template** to save the settings as a new template.

Deleting a Report Template

If appropriate, delete a template.

1. Click the **Reports** tab.
2. In the *Report Templates* list in the left panel, click to select the template to delete.

3. Click the *Delete Template* icon ( ).
4. In the confirmation dialog box, click **OK**.

Generating a Report Manually

Even if a report is generated automatically, you can generate the report manually, as needed.

Note: You can run camera and device reports for locally discovered devices (*VX System* is **None**).

1. Click the **Reports** tab.
2. In the *Report Templates* list in the left panel, click to select the report to generate.
3. In the *Column Preview for [report template name]* panel (vertical center of the window), at the right of the panel:
   a. Type a value in the *Name your report* field, or keep the default report name.
   b. Click **Generate Report**.
      The report is listed in the *Generated Reports* table at the bottom of the window.

Exporting a Generated Report

To export a report from the *Generated Reports* table:

1. Click the **Reports** tab.
2. In the *Generated Reports* table at the bottom of the window, click to select the report to export.
3. Click **Export to .csv**.
4. Browse to a file location and, if appropriate, type a new value in the *File name* field.
5. Click **Save**.

Deleting a Generated Report

To delete a report from the *Generated Reports* table:

1. Click the **Reports** tab.
2. In the *Generated Reports* table at the bottom of the window, click to select the report to delete.
3. Click the *Remove report file* icon ( ).
4. In the confirmation dialog box, click **OK**.

Managing Events

From the *Events* tab, you can configure event details and notifications to ensure that the right users are notified when the system records a particular action or alarm.

Finding and Filtering Events

Use filtering options to show the events relevant to you. Filters appear in the left-most panel of the *Events* tab and in some other tabs.

1. Click the **Events** tab.
2. Click the expand the *Filter* panel, and then do one or more of the following.
   - Enter values in the *Situation Filter* field to filter by name, ID, model, IP address, serial number, vendor, or software version.
   - Click to select an event *Category* from the pull-down menu
   - Click to select an option from the *Requires Acknowledgment* pull-down menu.
   - Click to select an option from the *Pop-Up Banner* pull-down menu.
   - Click to select an option from the *Audio Alert* pull-down menu.
   - Enter a range in the *Severity* fields, either by typing-in a number or selecting one using the up and down arrows
   - Click to select the *Users* from the pull-down menu.
   - Click to select the event *Roles* from the pull-down menu.
   - Click the *Clear the current filter settings* icon ( ) to clear the filters.

The events matching the filter criteria are listed in the main panel.

Viewing and Configuring Event Details

1. Click the **Events** tab.
2. In the center panel, click to select the event you want to view or modify. You can use the filter, as described in the section titled *Finding and Filtering Events*.
3. Event details are shown in the right column. If necessary, click to expand **Event Details**.
4. To edit the event details settings, access the *Event Details for* dialog box by one of these methods:
   - In the right panel, click the edit icon ( ) to the right of *Event Details*.
   - Right-click the event name, and then click **Edit Event Details**.
5. In the *Event Details for* dialog box, change event settings as necessary.
   - Click to select or deselect the checkbox for *Enable logging and notification* to determine whether VideoXpert will report the event. If you select *Enable logging and notification*, VideoXpert will report the event.
   - Click to select or deselect the *Use Custom Display Name*.
   - If you selected *Use Custom Display Name*, enter a name in the corresponding field. The *Custom Display Name* is how VideoXpert will represent the event.

- (Optional) If you selected *Enable logging and notification*, change the *Severity*, if necessary, either by moving the slider bar or typing a number in the field. The severity might help users determine whether or not they need to act on an event.

6. Click **Save**.

Viewing and Configuring Event Notifications

1. Click the **Events** tab.
2. In the center panel, click to select the event you want to view or modify. You can use the filter, as described in the section titled *Finding and Filtering Events*.
3. Event notification settings are shown in the right column. If necessary, click to expand **Notification Settings**, and view the notification information.
4. To edit the event notification settings, access the *Notification Settings* dialog box by one of these methods:
   - In the right panel, click the edit icon ( ) to the right of *Notification Settings*.
   - Right-click the event name, and then click **Edit Notification Settings**.
5. Click to select the checkbox for the appropriate *Notification Behavior*.

   Note: You can select more than one *Notification Behavior*. If you do, all settings in the *Notification Details* section of the dialog box will be configurable as described below.
6. If you selected *Generate a Pop-Up Banner*, configure these notification settings:
   a. In the *Roles and Users to Notify* section of the dialog box:
      - Click in the *Roles* field, and then click to select one or more roles.
      - Click in the *Users* field, and then click to select one or more users.

   b. Scroll to the *Notification Details* section of the dialog box.
   c. Click to select or deselect the checkbox for *Auto-Acknowledge After*. If you select this option, also set a time interval, either by typing-in a number or selecting one using the up and down arrows in the first field, and then selecting the units (for example: **Minutes**) from the drop-down menu.
7. If you selected *Require Acknowledgment*, configure these notification settings:
   a. In the *Roles and Users to Notify* section of the dialog box:
      - Click in the *Roles* field, and then click to select one or more roles.
      - Click in the *Users* field, and then click to select one or more users.

   b. Scroll to the *Notification Details* section of the dialog box.
   c. Click to select or deselect the checkbox for *Do Not Hide Cell Alerts*. Events associated with individual video sources provide alerts within VxOpsCenter cells; these alerts hide after three seconds. Select this option to prevent the alert from hiding.
   d. Click to select or deselect the checkbox for *Auto-Acknowledge After*. If you select this option, also set a time interval, either by typing-in a number or selecting one using the up and down arrows in the first field, and then selecting the units (for example: **Minutes**) from the drop-down menu.

e. (Optional) Click to select the checkbox for *Allow Snooze (And Set Snooze Time)*, and then click to select and deselect the checkboxes for the available intervals.

8. If you selected *Generate an Audio Alert*, configure these notification settings:

   a. In the *Roles and Users to Notify* section of the dialog box:

      - Click in the *Roles* field, and then click to select one or more roles.
      - Click in the *Users* field, and then click to select one or more users.

   b. Scroll to the *Notification Details* section of the dialog box.

   c. Click to select the radio button for either *Standard Chime* or *Custom Sound*. If you select *Custom Sound*, browse to the *Audio File*, and then click **Open**.

   d. Type or select a value for the *Play Sound [#] times* field.

   e. Type or select a value in the *Delay Sound Playback For [#] seconds between iterations* field.

Using Maps

The *Maps* tab in VxToolbox is used to import and use AutoCAD 2013 DWG files and raster maps (jpeg or png), and to use ESRI Street) maps, allowing customers to use their pre-existing building maps with Maps in VideoXpert.

- In VxToolbox, ensure that your system is set up for Maps. You can then create a new map, view or edit an existing map, manage permissions for maps, and remove an existing map.
- In VxOpsCenter, the operator can launch Maps, select a map file, add cameras to a map, manage available maps, set user preferences for mapping, and view an existing map. Refer to the *VideoXpert OpsCenter* section of this manual.

Preparing Your System for Maps

Maps requires the following prerequisites to function properly:

- Ensure that Visual C + + Redistributable for Visual Studio 2015 is installed. It can be found at https://www.microsoft.com/en-us/download/details.aspx?id=48145. This is installed by the VxToolbox or VxOpsCenter installer. If this was not installed, reinstall VxToolbox or VxOpsCenter.
- Install VideoXpert v 3.5 or later, and the latest version of VxToolbox.
- AutoCAD files must use the 2013 format.

Creating a New Map

1. If you have not already done so, start VxToolbox, and then click the **Maps** tab.
2. In the left panel, click the *Add a Map* icon (+), and then click to select one of the following:
   - For an outdoor map, select *Add a World Map (ESRI Street Map)*.
   - To use a jpeg or png file, select *Add a Raster Map (jpeg or png)*.
   - For an indoor map, select *Add a DWG Map*.
3. If you selected *Add a World Map (ESRI Street Map)*:
   a. Type a value in the *Name* field.
   b. Click **Save**.
4. If you selected *Add a Raster Map (jpeg or png)*:
   a. Type a value in the *Name* field.
   b. Click **Browse**, navigate to and select the file, and then click **Open**.
   c. Click **Save**.
5. If you selected *Add a DWG Map*:
   a. In the *Add a DWG Map* dialog box, type a value into the *Name* field.
   b. Under *Select a map file*, click **Browse**, select all files (including all xref dwg files), and then click **Open**.
   c. Click **Save**.

Viewing an Existing Map

1. If you have not already done so, start VxToolbox, and then click the **Maps** tab.

   Ensure that the user logging in is assigned the “administrator” role or has all of the maps permissions assigned.

2. From the list of maps in the left panel, click the map to preview.

   The selected map is displayed in the right panel.

Editing an Existing Map

1. If you have not already done so, start VxToolbox, and then click the **Maps** tab.
2. In the left panel) click to select the map to edit.
3. Click the *Edit map* icon ( ).
4. (Optional) To change the name of the map, type a new value in the name field to the right of *Edit Map*.
5. (Optional) To add cameras to the map, click the **Cameras** tab in the left panel, and from there, drag the camera name to the appropriate location on the current map.
6. (Optional) To add a link from the current map to another map, click the **Maps** tab in the left panel, and from there, drag a map name to the appropriate location on the current map.
7. (Optional) To add doors, alarms, and other devices, click the **Other** tab in the left panel, and from there, drag an item to the appropriate location on the map.
8. (Optional) To move a camera, linked map, or other item on the map, click the item to be moved, and drag it to the appropriate location.
9. To rotate a camera, right-click it, and then select a value in the *Set Rotation* window, either by using the slider bar or by typing a value in the field. Click anywhere in the map to close the window.
10. To remove a camera, drawing, or device from the map, right click it, and then click **Remove From Map**.
11. At the lower right of VxToolbox, click **Save**.

Deleting an Existing Map

1. If you have not already done so, start VxToolbox, and then click the **Maps** tab.
2. In the left panel, click to select the map to delete.
3. At the lower right corner of the left panel, click the *Delete map* icon ( ).
4. In the confirmation dialog box, click **Delete**.

Managing Permissions for Maps

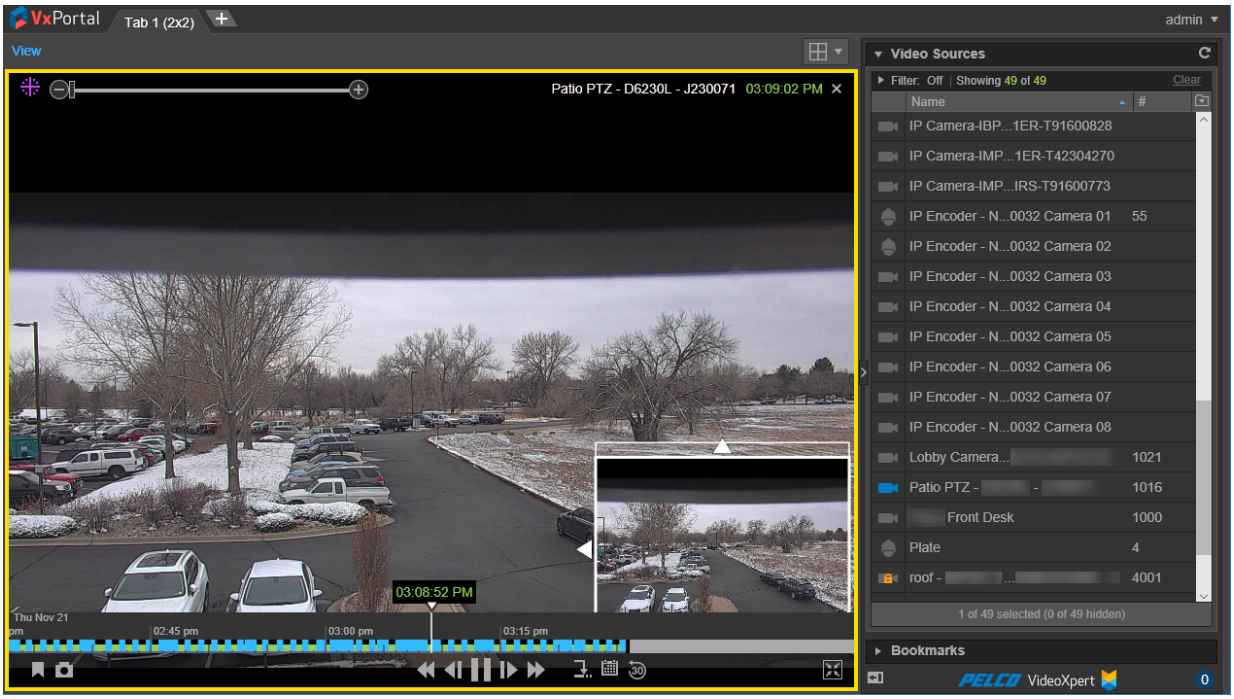
After you have created maps, use VxToolbox to assign map permissions to different roles.

1. If you have not already done so, start VxToolbox, and then click the **Maps** tab.
2. Refer to the section titled *Managing Users and Roles* for instructions to add, edit, and assign roles.

Using VideoXpert Portal and VideoXpert Storage Portal

Using VideoXpert® Portal

VideoXpert Portal (VxPortal) is a Web interface that enables you and other users to view live and recorded video from your VxPro system without using VxOpsCenter client.



VideoXpert Portal requires:

- Supported browsers are the current versions of Google Chrome, Mozilla Firefox, or Microsoft Edge

VxPortal operates as a simplified version of VxOpsCenter.

- To view cameras:
  - Double-click or drag a camera into the cell you want to view it in.
  - Select multiple cameras and drag them to a tab to view each of the selected cameras in a separate cell. If you select more cameras than there are cells in the tab, another tab will open to display the additional cameras.
- Roll over a cell to engage playback controls.
- Hover over the timeline to see a thumbnail of recorded video corresponding to the time.
- Change layouts, use filters, create bookmarks, and perform other operations as you would in VxOpsCenter. See the VxOpsCenter section of this document. If you change the layout of the desktop, the layout is saved and will be loaded again the next time you access VxPortal.

Accessing VxPortal

1. Launch VxPortal by one of the following methods:
   - Click the *VxPortal* icon on the desktop.
   - Open a web browser and go to the IP address of VxPortal (for example: https://[ip address of VxPro]); if you are using Single Sign-ON (SSO), go to the domain name that you used during system configuration.

   Caution: If you are using SSO, you must access VxPortal using the same domain name as was added in the configuration steps. If you do not, SSO will not be enabled.

   Note: If the server(s) on which the VideoXpert system is installed are configured for FIPS mode, VxPortal might not work in Chrome and Firefox browsers. Use Microsoft® Edge.
2. Enter your *Username* and *Password*, and then click **Log In**.

Configuring a Browser to Enable Single Sign-On in VxPortal

Single Sign-On (SSO) allows users to log in to multiple systems using a single set of login credentials. SSO can be used with either Single-Stage or Two-Stage binding, and can be used with the Synchronize Users and Roles From LDAP authentication options.

SSO is selected and configured in VxToolbox. To use SSO in VxPortal, if you are using Mozilla Firefox or Microsoft Edge as the browser, configure the browser as described in the sections below.

Caution: If you are using SSO, you must access VxPortal using the same domain name as was added in the configuration steps. If you do not, SSO will not be enabled.

Configuring Mozilla Firefox to Enable Single Sign-On in VxPortal

If you are using Mozilla Firefox to access VxPortal, and you need to enable Single Sign-On (SSO), configure the browser as follows:

1. Launch Firefox.
2. Type about:config into the *Search or Enter Address* field, and then press Enter or click the right-arrow at the right of the field.
3. If a warning appears, click **I accept the risk!**.
4. In the window that lists preference information, type "negotiate" in the search field.
5. Double-click **network.negotiate-auth.trusted-uris**.
6. In the *Enter string value* dialog box, enter the Fully Qualified Domain Name (for example: "my-VxPro-system.com"), and then click **OK**.
7. Close the browser or navigate to another page.

Configuring Microsoft Edge to Enable Single Sign-On in VxPortal

If you are using Microsoft Edge to access VxPortal, and you need to enable Single Sign-On (SSO), configure the browser as follows:

1. In the Windows Explorer search field, type "Internet Options", and then click to open **Internet Options**.
2. In the *Internet Properties* window, click the **Security** tab, click **Local Intranet**, and then click **Custom level**.

3. Under *User Authentication*, click to select the radio button for *Automatic logon only in Intranet zone*, and then click **OK**.
4. Click **Sites**.
5. In the *Local intranet* dialog box, click to deselect the checkbox for *Automatically detect intranet network*, click to select the remaining checkboxes, and then click **Advanced**.
6. In the next *Local intranet* dialog box, in the *Add this website to the zone* field, enter the Fully Qualified Domain Name (for example: "my-VxPro-system.com"), and then click **Add**.
7. Verify that the Fully Qualified Domain Name is listed in the *Websites* field, and then click **Close**.
8. Click **OK**.
9. Click **Apply**, and then click **OK**.

Changing the System Password in VxPortal

For security purposes, you should change the default password for your system. To change it using VxPortal:

1. Click **[user name]** (for example: **admin**) in the upper-right of the window to access the pull-down menu.
2. Click **Change Password**.
3. In the *Change Password* dialog box, enter the requested information in the fields, and then click **Change Password**.

Viewing Video Sources and Bookmarks in VxPortal

VxPortal behaves much like VxOpsCenter in that you can:

- Create and configure tabs.
- Open video sources in cells and interact with them.
- Create, edit, and delete bookmarks, and open them in cells.
- View the Event Counter.
- Move Mission Control to the right or left panel.

See the *VxOpsCenter* section of this manual.

When you are viewing a video source or bookmark in VxPortal, you can select a maximum video quality for all cells in the tab.

1. At the upper left corner of the tab, above the cells, click **View**.
2. Hover over **Max Video Quality**.
3. Click to select the appropriate option from the drop-down menu.

   Note: If you select **Highest Available Quality**, the video quality matches the highest quality of the video source. For example: if your video source supports H264, that is the quality displayed by VxPortal.

4. Click anywhere in VxPortal.

Managing Exports

1. Click **[user name]** (for example: **admin**) in the upper-right of the window to access the pull-down menu.
2. Click **Manage Exports**.

3. In the *Export Archive* window, view the list of exports in the table.
   - (Optional) Click on any column title (except *Action*), to sort by the values in that column.
   - (Optional) Click to expand **Filter**, and then do one of the following: enter a file name or creator; select *From* and *To* start and end dates and times; and/or select a *Status* to view a subset of all exports. Click **Clear All** to clear the filter fields.
4. (Optional) To download a record from the Export Archive, click **Download** in the *Action* column for the archive row, and then click **Open**.
5. (Optional) To edit the export name, click the pencil icon ( ) in the *Action* column for the archive row; in the *Edit Export Name* dialog box, type a value in the *New Name* field, and then click **Save**.
6. (Optional) To delete an export, click the trashcan icon ( ) in the *Action* column for the archive row; in the confirmation dialog box, click to select or deselect the checkbox to *Delete Permanently*, and then click **Yes**.
   - If you did not select *Delete Permanently*, the archive is removed from the current list, and is added to the *Export Trash Bin*.
   - If you did select *Delete Permanently*, the archive is deleted, but not added to the *Export Trash Bin*.
7. If you want to view deleted exports, click the down arrow to the right of *Export Archive*, and then select **View Trash Bin**.
   - To move an export from the *Export Trash Bin* to the *Export Archive* window, click the export **Restore** button.
   - To delete one item in the *Export Trash Bin*, click the export **Delete** button. In the confirmation dialog box, the checkbox for *Delete Permanently* is already selected. Click **Yes**.
   - To delete all items in the *Export Trash Bin*, click the down arrow to the right of *Export Trash Bin*, and then click **Empty Trash Bin**. In the confirmation dialog box, the checkbox for *Delete Permanently* is already selected. Click **Yes**.
   - To return to the *Export Archive* window, click the down arrow to the right of *Export Trash Bin*, and then click **Close Trash Bin**.
8. If you want to delete failed exports, click the down arrow to the right of *Export Archive*, and then click **Delete All Failed Exports**. In the confirmation dialog box, click to select or deselect the checkbox for *Delete Permanently*, and then click **Yes**.
9. To exit the window, click the ✕ in the upper-right corner of the window or click outside the window.

Configuring the Server

To configure the VideoXpert Server:

1. Click **[user name]** (for example: **admin**) in the upper-right of the window to access the pull-down menu.
2. Click **Configure Server**.
   This launches VideoXpert Storage Portal.
3. Log in to the server, and see the section titled *Configuring Advanced Storage Using VideoXpert Storage Portal* of this manual for instructions on using the interface.

Viewing Keyboard Shortcuts

To view a list of keyboard shortcuts for VxPortal:

1. Click **[user name]** (for example: **admin**) in the upper-right of the window to access the pull-down menu.
2. Click **Keyboard Shortcuts**.
3. To exit the window, click the **X** in the upper-right corner of the window, or click outside the window.

Logging Out

To properly exit VxPortal:

1. Click **[user name]** (for example: **admin**) in the upper-right of the window to access the pull-down menu.
2. Click **Log Out**.

Configuring Advanced Storage Using VideoXpert Storage Portal

VideoXpert Storage Portal provides advanced settings and status that can help you fine-tune and monitor your VideoXpert Storage devices.

Accessing the VideoXpert Storage Portal

1. Login to VxPortal.
2. Click **[user name]** (for example: **admin**) in the upper-right of the window to access the pull-down menu.
3. Click **Configure Server**.
4. Enter the *Username* and *Password*, and then click **Log In**. The default *Username* and *Password* are both “admin”.
5. If you are prompted to do so, reset the password.

Checking VideoXpert Storage Status

The *Status* page provides basic status information about your storage/recorder to help you determine whether you are under-utilizing or over-burdening the recorder.

1. In VideoXpert Storage Portal, click the **Status** tab.
2. View the available information.

Generating and Downloading Storage Logs

Storage logs can provide insight to an anomaly with the recorder or one of the sources recording to it. When requesting support from Pelco, a Pelco technician might request logs from the recorder. To generate and download Storage logs:

1. In VideoXpert Storage Portal, click the **Status** tab.
2. Click **Generate Log Archive**.
3. In the *Generate Logs* dialog box, click **Generate**.
4. When the log has been successfully generated, click **Download Log Archive** (to the left of the *Generate Log Archive* button).
5. Save the zip file to an appropriate location.

Configuring the Server in VideoXpert Storage Portal

Use the *Configure* page to change the transmission method and retention period for the recorder.

1. In VideoXpert Storage Portal, click the **Configure** tab.
2. Enter an appropriate number of days in the *Maximum Retention Period* field.
3. In the *Transmission Method* field, click to select the radio button for *Multicast* or *Unicast*.
4. Click **Save**.

Managing Database Backups

You can backup your storage database and restore the backups. You can also recover recording that were written to disk, even if the database was lost:

1. In VideoXpert Storage Portal, click the **Database** tab.
2. (Optional) To restore the database from an existing backup, in the *Database Backups* panel:
   a. Identify the backup to restore, and then click **Restore** to the right of the backup.
   b. Click **Restore** in the *Backup from [backup name]* dialog box.
   c. If you are prompted to do so, log out and then log in again.

      The *Recovering recordings* massage is displayed to the right of the *Recover Recordings* button, and then the *Recovery successful* message is displayed. Depending on the amount of video being recovered, this process can take up to a few hours.
3. (Optional) To create a new backup:
   a. In the *Database Tools* panel, click **Create Database Backup**.
   b. In the confirmation dialog box, click **Backup**.
      When the backup has been created, the *Completed Database Backup* message is displayed to the right of the *Create Database Backup* button.
4. (Optional) To recover video recordings:
   a. In the *Database Tools* panel, click **Recover Recordings**.
   b. In the *Recover Recordings* dialog box, select the *Recover from Volume* from the drop-down menu, specify a *Date/Time Range to Recover* in the *Start* and *End* fields, and then click **Recover**.
      When the recovery is complete, the *Recovery successful* message is displayed. Depending on the amount of video being recovered, this process can take up to a few hours.

Using Volume Groups and Volumes

You can organize your device video storage by creating and managing Volumes and Volume Groups.

- A volume is a logical directory in which you want to store video.
- A volume group is a group of volumes to which cameras are assigned and distributed. You can use volume groups to:
  – Separate types of storage (like internal vs. external)
  – Set different retention parameters for different sets of drives.
  – Write video to more than one volume. When all volumes are full, the system will overwrite volume containing the oldest stored video.

- The system ships with a volume group called *Default Volume Group*. You can rename or delete this volume group.
- An archive volume group is a volume group to which the recorder will move the oldest video from the other volume groups, instead of deleting the oldest video. See the section titled *Using External NAS Storage (Archive Volume Group)* for more information about the archive volume group.

Using External NAS Storage (Archive Volume Group)

By connecting an external volume (network storage/NAS), you can extend your retention time for VideoXpert Storage recorder. When your VideoXpert Storage recorder achieves its maximum capacity and would normally begin to delete the oldest video, it will send video to the NAS instead. Video will still adhere to retention parameters, even when moved to external storage. The experience in accessing video is the same, whether a recording is served from a the VideoXpert Storage recorder or an external server.

Note: VideoXpert supports SMB1 NAS servers when using anonymous access. For systems that require a username/password for NAS access, you must use SMB2 or higher.

The external storage server must reside on the VideoXpert network. You can select whether to require login credentials. If the server requires and is provided login credentials, NAS Authentication is enabled.

As video transfers from a VideoXpert Storage recorder to an external storage server, bandwidth of your incoming cameras is equal to the bandwidth out to external storage. When using external storage, you should plan storage distribution to ensure bandwidth availability for incoming cameras, storage overflow, and user impact in viewing recorded video.

Note: While each VideoXpert Storage recorder can only have a single archive group, multiple VideoXpert Storage recorder can use the same NAS server. In this case, **each VideoXpert Storage recorder must point to a different path/folder on the NAS server**; pointing multiple VideoXpert Storage recorder to the same archive group network path will cause video to expire earlier than expected and without warning. You can individually select whether each path uses NAS Authentication.

Creating a New Volume Group

1. In VideoXpert Storage Portal, click the **Volumes** tab.
2. At the bottom-right of the *Volume Groups* panel, click the plus sign icon ( ).
3. In the *Create New Volume Group* dialog box:
   a. Enter a value in the *Name* field.
   b. Click to select or deselect the checkbox for *Designate this Volume Group as the Archive Volume Group*.
   c. Click **OK**.
4. If you selected this volume group to be the archive volume group, and there is already a designated archive volume group, the *Attention* dialog box will inform you of this, and instruct you to remove the current archive volume group. To proceed:
   a. Click **OK**
   b. Identify the current archive volume group by the *Archive Volume Group* icon ( ) to the left of the volume group name.

c. Select the volume group that is the current archive volume group, click the pencil icon ( ), deselect the checkbox, and then click **Save**.
d. Add the new volume group, and select the checkbox to set it as the *Archive Volume Group*.
e. Click **Save**.

Editing a Volume Group

1. In VideoXpert Storage Portal, click the **Volumes** tab.
2. Click to select the volume group to edit.
3. At the bottom-right of the *Volume Groups* panel, click the pencil icon ( ).
4. In the *Edit Volume Group* dialog box:
   a. (Optional) Enter a value in the *Name* field.
   b. (Optional) Click to select or deselect the checkbox for *Designate this Volume Group as the Archive Volume Group*.
   c. Click **Save**.
5. If you selected this volume group to be the archive volume group, and there is already a designated archive volume group, the *Attention* dialog box will inform you of this, and instruct you to remove the current archive volume group. To proceed:
   a. Click **OK**
   b. Identify the current archive volume group by the *Archive Volume Group* icon ( ) to the left of the volume group name.
   c. Select the volume group that is the current archive volume group, click the pencil icon ( ), deselect the checkbox, and then click **Save**.
   d. Add the new volume group, and select the checkbox to set it as the *Archive Volume Group*.
   e. Click **Save**.

Deleting a Volume Group

1. In VideoXpert Storage Portal, click the **Volumes** tab.
2. Click to select the volume group to be deleted.
3. At the bottom-right of the *Volume Groups* panel, click the trashcan icon ( ). The trashcan icon turns red when you hover over it.
4. In the *Delete Volume Group* dialog box, click **OK**.
5. If you deleted the archive volume group, edit another volume group and select the checkbox to set it as the *Archive Volume Group*.

   Note: If there is no designated archive volume group, the system will not archive video.

Creating a New Volume

1. In VideoXpert Storage Portal, click the **Volumes** tab.
2. In the *Volume Groups* panel, click to select a *Volume Group* to which the new Volume will be assigned.

3. At the bottom-right of the *Volumes* (center) panel, click the plus sign icon ( ).
4. In the *Create New Volume Group* dialog box:
   a. Enter a value in the *Path* field.
   b. Click to select or deselect the checkbox for *Requires credentials*. If you select this checkbox, enter values in the *Username*, *Password*, and *Domain* fields.
   c. Enter a value in the *Buffer Size* field.
   d. Click to select or deselect the checkbox for *Reserve bandwidth for this volume*.
   e. Click **OK**.

Editing a Volume

1. In VideoXpert Storage Portal, click the **Volumes** tab.
2. In the *Volume Groups* (left) panel, click to select the volume group that contains the volume you will edit.
3. In the *Volumes* (center) panel, click to select the volume to edit.
4. At the bottom-right of the *Volumes* panel, click the pencil icon ( ).
5. In the *Edit Volume Path* dialog box:
   a. (Optional) Type a new string in the *Path* field.
   b. (Optional) Click to select or deselect the checkbox for *Requires credentials*.If you select this checkbox, enter values in the *Username*, *Password*, and *Domain* fields.
   c. (Optional) Enter a value in the *Buffer Size* field.
   d. Click to select or deselect the checkbox for *Reserve bandwidth for this volume*.
6. Click **Save**.

Deleting a Volume

1. In VideoXpert Storage Portal, click the **Volumes** tab.
2. In the **Volumes** (center) panel, click to select the volume to be deleted.
3. At the bottom-right of the *Volumes* panel, click the trashcan icon ( ). The trashcan icon turns red when you hover over it.
4. In the *Delete Volume* dialog box, click **OK**.

Associating Devices With a Volume

If you have more than one non-archive volume group, you can associated devices (cameras) with specific volume groups.This enables you to control data streams between the system and the volume groups.

1. In VideoXpert Storage Portal, click the **Volumes** tab.
2. In the *Volume Groups* (left) panel, click to select the volume group with which you will associate devices.
3. In the *Associated Devices* (right) panel, click the pencil icon ( ).

4. In the *Edit Devices in Volume Group "[group name]"* dialog box:
   a. Click to select or deselect the checkboxes for the devices to associate with the volume group, or click the checkbox to the left of *Name* to select or deselect all devices. Selected devices are shown immediately in the *Associated Devices* (left) panel.
   b. Click **Save**.
5. (Optional) Use the filter to show a subset of the devices in a volume group:
   a. In the *Volume Groups* (left) panel, click to select the volume group.
   b. In the *Associated Devices* (right) panel, in the *Filter* field, type in a value (for example "IP").

Viewing Storage Assignments

You can check the status of individual streams and whether or not they are recording from the VideoXpert Storage Portal Assignments page.

1. In VideoXpert Storage Portal, click the **Assignments** tab.
2. In the *Recorders* (left) panel, click to select a recorder.
3. Scroll through the device list to see the *Name*, *ID*, *IP* address, and *Status* of each device.
4. Hover over a device name or ID to see the full text.

Changing the Password

If a password expiration policy is in place (for example: your password expires every 90 days), you will see a warning dialog box when your password must be changed.

Note: Password expiration is not used with Single Sign-On (SSO). If your system is configured to use SSO, or if the expiration policy is set to *Passwords never expire*, then you will never see the warning dialog box.

1. In the warning dialog box, click **Change Password**.
2. In the *Change Password* dialog box, enter the current password and new password in the appropriate fields.
3. Click **Save**.

You can also change your password at any time.

1. In VideoXpert Storage Portal, in the upper-right corner of the window, click **Change Password**.
2. Enter the current password and new password in the appropriate fields.
3. Click **Change Password**.
4. In the *Success* dialog box, click **OK**.
5. Login to VideoXpert Storage Portal using the new password.

Logging Out

To log out of VideoXpert Storage Portal, in the upper-right corner of the window, click **Logout**.

Using VideoXpert OpsCenter

Configuring VideoXpert® OpsCenter

You must configure VideoXpert OpsCenter (VxOpsCenter) before use.

Running the Application for the First Time

When you run the application for the first time, you will create your user account, configure basic VxOpsCenter and video behaviors, and, most importantly, point VxOpsCenter to the VideoXpert System (s) you will use. Some steps in initial setup are optional; you only need to access these options if your workstation and network differ from default settings. The general work flow is as follows:

1. If VxToolbox is open, close it.

   Note: Do not run VxToolbox and VxOpsCenter at the same time. Doing so might cause memory-related issues.

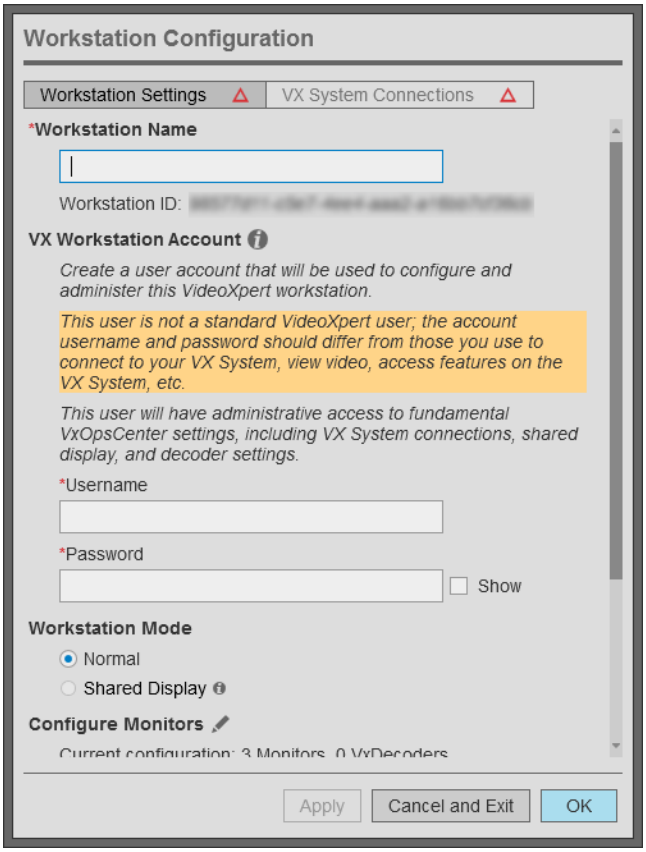
2. Run VxOpsCenter.

   Note: If you are using single sign-on (SSO) and are accessing the VideoXpert system through a browser, use the Fully Qualified Domain Name (FQN) instead of the IP address.

3. Create your *Workstation Configuration* account.
   - This account is local to the workstation and preserves your configuration and your VideoXpert system credentials from other users who might access your workstation.
   - Your workstation configuration account credentials may be the same as your VideoXpert user credentials, though you may want to use different credentials for your workstation configuration account to maximize security.
4. Configure your workstation, including your monitor layout. See the section titled *Setting Up Your VideoXpert Workstation*.
5. Configure *System Server Connections*. See the section titled *Configuring VX System Connections*.
6. Indicate whether or not to allow multi-system access. See the section titled *Enabling or Disabling Multi-System Access (Simultaneous Server Connections)*.
7. Login to VideoXpert with your standard credentials (not the Workstation Configuration credentials) to begin using VideoXpert.

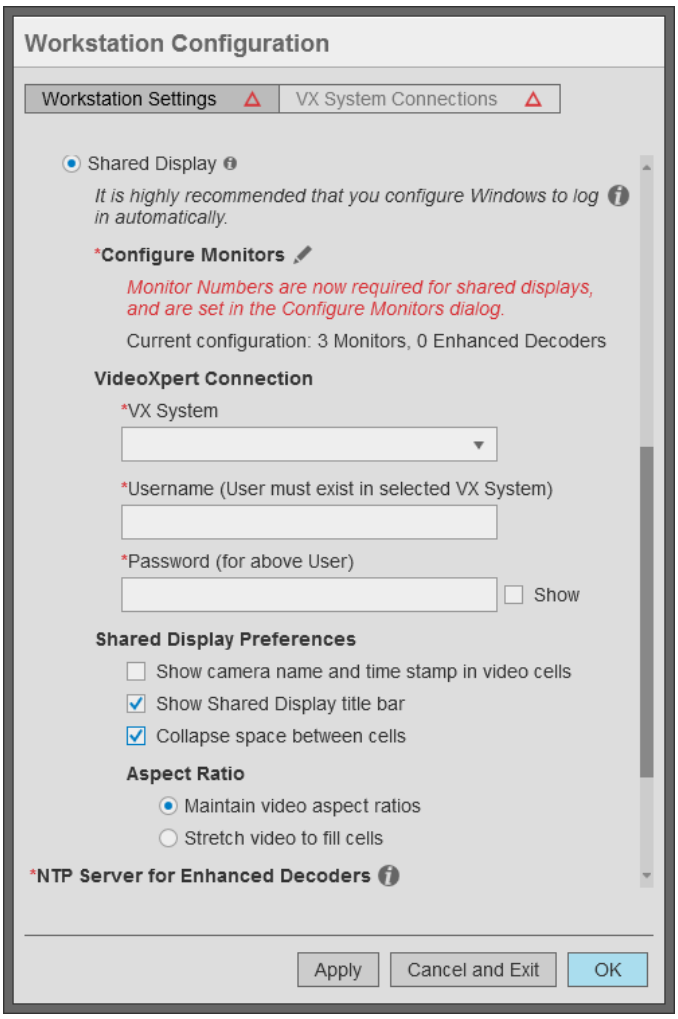
Setting Up Your VideoXpert Workstation

VideoXpert Workstation settings determine the basic behavior of the system. These instructions apply to the initial configuration only. You can re-configure the workstation at any time using the instructions in the section titled *Reconfiguring Your VideoXpert Workstation*.



Note: This screen will look different after initial configuration. If you do not see the red triangles on the **Workstation Settings** and **VX System Connections** buttons, see the instructions in the section titled *Reconfiguring Your VideoXpert Workstation*.

1. Enter a *Workstation Name*. This is the name by which VideoXpert Core will recognize the workstation and the name by which other users will recognize the workstation when sending video, responding to workstation-related events, etc.
2. Enter values in the *Username* and *Password* fields under *Vx Workstation Account*.
3. Under, *Workstation Mode*, select *Normal* or *Shared Display* mode. *Shared Display* mode provides monitor-wall functionality for one or more monitors. See the section titled *Configuring Shared Display Mode* for more information about *Shared Display* mode.



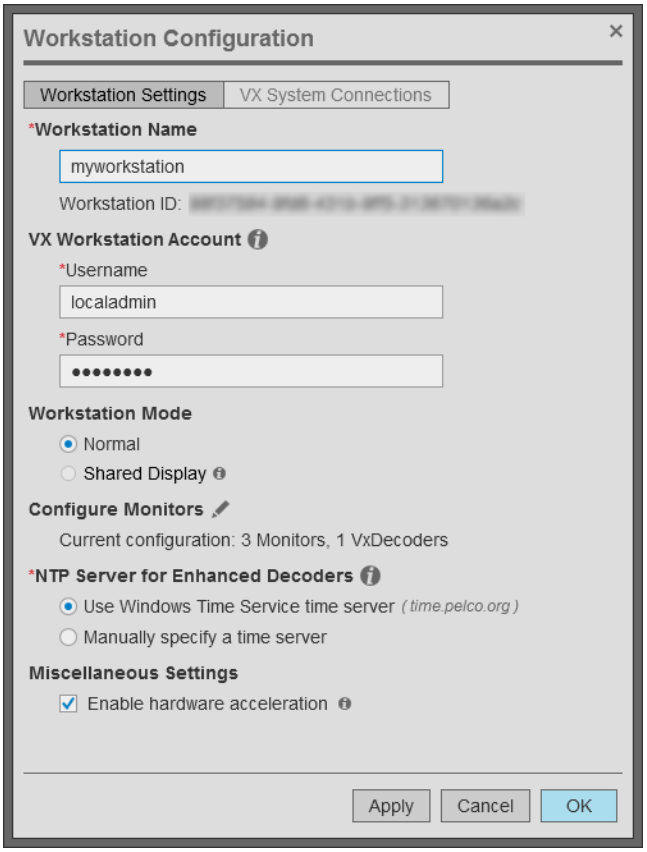
4. If you are going to control a monitor remotely, assign a number to the monitor. To do so:
   a. Click the *Configure Monitors* icon ( ) to the right of *Configure Monitors* to open the *Configure Monitors* window for the workstation.
   b. Follow the instructions for assigning a number to each monitor to control. For example: assign a number to any monitor that will be included on a shared display.
5. (Optional) Click the checkbox to select or deselect *Enable hardware acceleration*. Hardware acceleration is enabled by default and should only be disabled if your workstation uses an unsupported graphics chipset, or if you need to troubleshoot graphics issues that may result from your graphics drivers and chipset.

   Note: Hardware acceleration of H.265 is supported on the Shared Displays VX-A3-SDD and newer, and Enhanced Decoders VX-A3-DEC and newer.
6. (Optional) Click the checkbox to select or deselect *Multi-System Access opens without initial credentials* (MSA). In MSA mode, VxOpsCenter will open with no VX Systems connected. Credentials will be required when you connect to a VX system.
7. Click **Apply** to save your workstation configuration settings.

8. Click **VX System Connections** and follow the instructions in the section titled *Configuring VX System Connections*.

Reconfiguring Your VideoXpert Workstation

Workstation settings determine the basic behavior of the system. These instructions help you reconfigure the system. If this is the initial setup, see *Setting Up Your VideoXpert Workstation*.



1. In the VxOpsCenter *Login* window, from the *Connect to System* drop-down menu, select **None - Configure Workstation**; enter values in the *Username* and *Password* fields; and then click **Log In**.
2. Launch the *Workstation Configuration* dialog box: In Mission Control, click the *User Menu* icon (▼), and then select **Configure Workstation**.
3. (Optional) Enter a new string in the *Workstation Name* field. This is the name by which VideoXpert Core will recognize the workstation and the name by which other users will recognize the workstation when sending video, responding to workstation-related events, etc.
4. (Optional) Enter new values in the *Username* and *Password* fields under *Vx Workstation Account*.
5. (Optional) Under *Workstation Mode*, select *Normal* or *Shared Display* mode. *Shared Display* mode provides monitor-wall functionality for one or more monitors. See the section titled *Configuring Shared Display Mode* for more information about *Shared Display* mode.
6. (Optional) click the checkbox to select or deselect *Enable hardware acceleration*. Hardware acceleration is enabled by default and should only be disabled if your workstation uses an unsupported graphics chipset, or if you need to troubleshoot graphics issues that may result from your graphics drivers and chipset.

Note: Hardware acceleration of H.265 is supported on the Shared Displays VX-A3-SDD and newer, and Enhanced Decoders VX-A3-DEC and newer.

7. (Optional) Click the checkbox to select or deselect *Multi-System Access opens without initial credentials* (MSA). In MSA mode, VxOpsCenter will open with no VX Systems connected. Credentials will be required when you connect to a VX system.
8. Click **Apply**.
9. To change the VX System Connections, click **VX System Connections**, and then see the section titled *Configuring VX System Connections*.
10. When you are done with the reconfiguration, click **OK**.

Configuring VX System Connections

The list of *VX System Connections* determines the VideoXpert environments to which your VxOpsCenter can connect. When users log in with their VideoXpert system credentials, VxOpsCenter will connect them to relevant VideoXpert environments. If a server is not in the list of system server connections, users will not be able to connect to it using VxOpsCenter.

Only the Workstation Configuration account can define system server connections. When you add systems using the Workstation Configuration account, and you are working in MSA mode, you can elect to provide credentials. If you add credentials for systems, then your Workstation Configuration account will also immediately connect you with your systems. If you do not provide credentials, then you must manually enter credentials for each system after you log in as the workstation configuration user. If you are using Single Server Access mode (non-MSA mode), you must always provide the credentials when logging in.

When setting up a connection to a server, you can determine streaming performance to the system. By default, system connections use the best possible streaming options, but you may need to disable settings or adjust your connection speed to account for the network between the workstation and the system to which you will connect. See the section titled *Understanding System Streaming Performance Settings*.

Working With Systems

Note: The *Systems* section is only present in Mission Control when you are using multi-system access (MSA) mode.

The *Systems* section of Mission Control shows the list of systems you are authorized to access.

1. In Mission Control, click to expand **Systems**.
   The *Systems* panel lists the systems that are available and whether sources, maps, and plugins from the systems are being included in the *Content* list (selected or deselected checkbox). It also enables you to filter the systems, view the systems list in a standalone window, and edit the systems.
2. To use the System List *Filter*:
   a. Click **Filter** to expand the filter panel.
   b. Type a value in the *Filter by* field.
   c. To clear the filter, do one of the following:
      - Click the clear filter icon (✕) at the right of the *Filter by* field.
      - Click **Clear** at the upper right of the *Systems* panel.

3. To see more details about each system, click the *Open as standalone window* icon ( ) to the right of *Systems*.
   Settings in the standalone window are reflected in the *System* panel.
4. To change the systems for which you are showing content (sources, maps, and plugins) in the *Systems* panel or standalone window:
   a. In the *System* list, click to select and deselect the checkbox for each system.
   b. If the *Enter User Credentials for the System* dialog box opens, enter values in the *Username* and *Password* fields for the appropriate system, and then click **OK**.
   c. If you see a *Time Synchronization Error*, acknowledge it by clicking **OK**.
5. To change the columns displayed in the System List:
   a. In the standalone window, if necessary, click to expand **Show Columns** in the left panel.
   b. Click to select and deselect the checkboxes for the columns to include and exclude.
6. In the standalone window, click the up or down arrow in the column heading to sort the systems by in ascending or descending order.
7. To edit the system list:
   a. Click the Edit icon ( ) at the lower right of the *Systems* panel or standalone window.
   b. In the *Authenticate for Administrative Access* dialog box, enter values in the *Username* and *Password* fields for the appropriate system, and then click **Authenticate**.
8. To add a system:
   a. Click the *Add System Connection* icon ( ) at the lower right of the window.
   b. Use the *Configure System Connection* window as described in *Adding Servers to VxOpsCenter*
   c. Click **Save**.
9. In the standalone window, to export a System List.
   a. Click the menu icon ( ) at the lower left of the standalone window.
   b. Click **Export System List**.
   c. In the *Export System List* dialog box, enter a value in the *System List File Name* field.
   d. In the *To Location* field, click *Browse*, and then browse to the location to which the file will be saved.
   e. Click **Export**.
10. In the standalone window, to import a System List:
   a. Click the menu icon ( ) at the lower left of the standalone window.
   b. Click **Import System List**.
   c. Click **Browse**, and then select the appropriate file.

d. Review the information in the *Import System List* window, and do one of the following:
   - Click to select the radio button for *Replace List*.
   - Click to select the radio button for *Merge Lists*, and then click to select the checkboxes for each system that you want to replace with the imported information.

e. Click **Import**.

11. To delete a system from the System List:
    a. Click to select the system to delete.
    b. Click the trash bin icon ( ) at the lower right corner of the window.
    c. In the confirmation dialog box, click **OK**.
12. At the lower right of the standalone window, click **Save**.
13. To close the standalone window, click the close window icon ( ) at the upper left corner of the window.

Enabling or Disabling Multi-System Access (Simultaneous Server Connections)

Multi-system access (MSA) allows you to access multiple VideoXpert systems simultaneously using your VideoXpert system credentials. This can be enabled when you log in; however, you can also enable it during system configuration.

Note: The multi-system access option is available if you have more than one server connection added to VxOpsCenter.

To enable multi-system access:

1. If you have not already done so, access the *Configure Workstation* window:
   a. Log into VxOpsCenter with the Workstation Configuration account.
   b. In Mission Control, click the *User Menu* icon ( ), and then select **Configure Workstation**.
2. In the *Workstation Configuration* window, click **VX System Connections**.
3. (Optional) To use a shared system list:
   a. Click to select the checkbox for *Use and manage a shared Systems List*.
   b. Click **Browse**, browse to a file to enter in the *System List Location* field, and then click **Open**.
   c. If required, enter values in the *Username* and *Password* fields.
   d. Click **Load Systems**.
4. To add a server (if you are not using a shared system list):
   a. Click the *Add System Connection* icon ( ) at the lower right of the *Workstation Configuration* window.
   b. (Optional) Enter information about the server in the *Notes* field. The notes are only available to the Workstation Configuration account.
   c. Provide the IP of the server, or the FQN of the server if you are using single sign-on (SSO), in the *Server Address* field, and adjust the HTTPS *Port* value if different from the default.

d. (Optional) Adjust *System Streaming Performance* settings. See the section titled *Understanding System Streaming Performance Settings*.

e. (Optional) Click to select or deselect the checkbox for *Validate SSL/TLS Certificate*.

f. (Optional) If there are custom fields, enter a value in each field.

g. (Optional) To add custom fields (columns) to the *System List* by which you can sort, in the *Configure System Connections* window, below *Custom Fields*, click *Add Another Custom Field (Column)*, enter a value in the *Enter a new header name* field (for example: City), enter an appropriate value for the system (for example: Denver) in the field below the new header name, and then click **Save**. The column and the value are shown in the *System List*.

h. (Optional) Type values in the *Username* and *Password* fields.

i. Click *Test Connection* to verify that you have provided the correct server address; testing the connection will require you to provide credentials to the server.

j. Click **Save**.

5. Click **OK**.

When multi-system access is enabled, the *Systems* section is available within VxOpsCenter. You can select or deselect systems to show or hide sources belonging to your various systems.

Adding Servers to VxOpsCenter

1. If you have not already done so, access the *Configure Workstation* window:

   a. Log into VxOpsCenter with the Workstation Configuration account.

   b. In Mission Control, click the *User Menu* icon (▼), and then select **Configure Workstation**.

2. In the *Workstation Configuration* window, click **VX System Connections**.

3. To import an existing system list:

   a. Click to select the checkbox for *Use and manage a shared Systems List*.

   b. Click **Browse**, browse to a file to enter in the *System List Location* field, and then click **Open**.

   c. If required, enter values in the *Username* and *Password* fields.

   d. Click **Load Systems**.

4. To export the current system list:

   a. At the lower left of the *Workstation Configuration* window, do one of the following, depending on which icon is present:

      - If you are not using a shared system list, click the menu icon (≡), and then click **Export System List**.
      - If you are using a shared system list, click the export system list icon (↗).

   b. In the *Export System List* dialog box, enter a value in the *System List File Name* field, click **Browse**, browse to the location to which you will save the file, click **OK**, and then click **Save**.

5. To add a server (if you are not using a shared system list):
   a. Click the *Add System Connection* icon (+) at the lower right of the *Workstation Configuration* window.
   b. (Optional) Enter information about the server in the *Notes* field. The notes are only available to the Workstation Configuration account.
   c. Provide the IP of the server, or the FQN of the server if you are using single sign-on (SSO), in the *Server Address* field, and adjust the HTTPS *Port* value if different from the default.
   d. (Optional) Adjust *System Streaming Performance* settings. See the section titled *Understanding System Streaming Performance Settings*.
   e. (Optional) Click to select or deselect the checkbox for *Validate SSL/TLS Certificate*.
   f. (Optional) If there are custom fields, enter a value in each field.
   g. (Optional) To add custom fields (columns) to the *System List* by which you can sort, in the *Configure System Connections* window, below *Custom Fields*, click *Add Another Custom Field (Column)*, enter a value in the *Enter a new header name* field (for example: City), enter an appropriate value for the system (for example: Denver) in the field below the new header name, and then click **Save**. The column and the value are shown in the *System List*.
   h. (Optional) Type values in the *Username* and *Password* fields.
   i. Click *Test Connection* to verify that you have provided the correct server address; testing the connection will require you to provide credentials to the server.
   j. Click **Save**.
6. When you have added all appropriate connections, click **OK**.
7. If the *Log Out Required* dialog box opens, click **OK**. You will be logged out. The configuration changes are applied when you log back in.

Editing a System Connection

1. If you have not already done so, access the *Configure Workstation* window:
   a. Log into VxOpsCenter with the Workstation Configuration account.
   b. In Mission Control, click the *User Menu* icon (▼), and then select **Configure Workstation**.
2. In the *Workstation Configuration* window, click **VX System Connections**.
3. Click to select the system connection to be edited.
4. Click the *Edit System Connection* icon (✎) at the lower right of the *Workstation Configuration* dialog box.
5. In the *Configure System Connection* dialog box, make all necessary updates, and then click **Save**.
6. In the *Workstation Configuration* dialog box, click **OK** to save the settings.
7. If the *Log Out Required* dialog box opens, click **OK**. You will be logged out. The configuration changes are applied when you log back in.

Deleting a System Connection

1. If you have not already done so, access the *Configure Workstation* window:
   a. Log into VxOpsCenter with the Workstation Configuration account.
   b. In Mission Control, click the *User Menu* icon (▼), and then select **Configure Workstation**.
2. In the *Workstation Configuration* window, click **VX System Connections**.
3. Click to select the system connection to be deleted.
4. Click the *Delete System Connection* icon (🗑) at the lower right of the window to delete the connection to the server.
5. In the *Delete System Server Connection* dialog box, click **OK** to confirm the deletion.
6. In the *Workstation Configuration* window, click **OK** to save the settings.
7. If the *Log Out Required* dialog box opens, click **OK**. You will be logged out. The configuration changes are applied when you log back in.

Understanding System Streaming Performance Settings

System streaming performance settings determine the quality of streams you receive or, in some cases, whether you receive a stream at all from a particular system. These settings affect frame rate and latency of video, typically for the better with each subsequent setting. However, these options may not be available for your network. VxOpsCenter uses the deepest selected option that is provided by the server.

If you deselect all Streaming Performance options, you will engage JPEG Pull streaming. JPEG Pull streaming is always available and works on virtually all network types (anywhere a TCP connection is available). It works even on slow connections, in part because of its lower quality (low frame rate and high latency).

To set the *System Streaming Performance*, log in with the Workstation Configuration account and add or edit a system.

- **Allow RTSP/RTP** is recommended for most system configurations. Select this to enable RTSP streaming over TCP (or Unicast or Multicast UDP, depending on subsequent settings). This option provides a higher quality stream than JPEG Pull on all but the slowest networks.
- **Allow UDP** is recommended for most LAN configurations. This setting enables Unicast streaming over UDP. Streaming over UDP is more efficient and has lower latency than streaming over TCP. However, UDP traffic is blocked by some WAN networks, and by fewer LAN networks. If you encounter streaming problems, try deselecting it.
- **Allow Multicast** is recommended for most enterprise-level networks whose switches allow multicast traffic. This setting enables Multicast streaming over UDP. Multicast UDP streaming is even more efficient than unicast UDP streaming. However, multicast traffic is blocked by most WAN networks, and by some LAN networks.
- **Maximum Buffer Size** limits the size of the buffer allocated to streaming.
  - This setting is only applicable to live UDP streams while not in PTZ control mode.
  - Larger values minimize packet loss and provide the smoothest possible frame-rate on the display; larger values also result in longer end-to-end latency, and require more memory per stream.
  - The default *Variable buffer size* setting allows VxOpsCenter to automatically find the lowest buffering level that yields high-quality presentation on a per-stream basis.

  - The *Fixed buffer size* setting is for customers who want tighter control over per-stream memory usage and/or end-to-end latency of live streams.

- **Connection Speed** determines the type and resolution of video available to you; at slower connection speeds, you will receive video transcoded into lower resolutions. When streaming JPEGs, your connection speed determines the compression of JPEG images (the lower the speed, the greater the compression).
  - 512k restricts you to JPEG streaming.
  - 1 Mbps restricts video to CIF resolution (352 x 240) or smaller.
  - 5 Mbps restricts video to D1 resolution (720 x 480) or smaller.
  - 10 Mbps restricts video to secondary streams when available.
  - Connection speeds greater than 10 Mbps can access full resolution video. Options are 50 Mbps, 100 Mbps, 1 Gbps, and 10 Gbps.

Configuring Shared Display Mode

A **Shared Display** is a workstation that provides monitor wall functionality within VideoXpert. In this mode, local controls are disabled; you will not control the application locally. Rather, you and other users will send tabs and video to the shared display and control the shared display remotely.

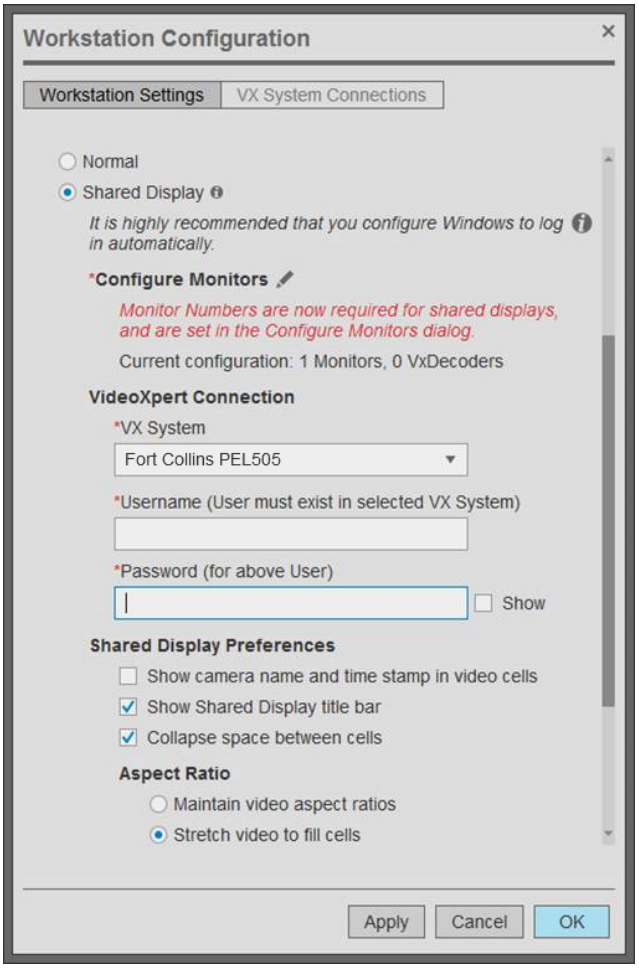
Your workstation must have one or more, locally-connected monitor(s) to support Shared Display mode. Putting the VxOpsCenter in Shared Display mode causes the VxOpsCenter application to start and log-in automatically when Windows starts. Because the workstation is intended to start without user interaction, it is recommended that you configure Windows to start and log-in automatically for shared displays.

The user account you provide when setting up Shared Display mode must have the *Setup Edge Devices* and *Manage Display Devices* permissions. The account should also have rights to view and control any cameras you send to the monitors; the shared display cannot display cameras it does not have permission to access, even if the user sending something to the shared display has permission to view those cameras.

Note: Shared display is not available if multi-system access is enabled.

To configure an VxOpsCenter for Shared Display mode:

1. If you have not already done so, access the *Configure Workstation* window:
   a. Log into VxOpsCenter with the Workstation Configuration account.
   b. In Mission Control, click the *User Menu* icon (▼), and then select **Configure Workstation**.
2. Click the **Workstation Settings** tab.
3. At the top of the window, click to select the checkbox for *Shared Display*.



4. Click the *Configure Monitors* icon ( ), and then configure the monitors.

   a. Click to select the monitor.
   b. Click to select the radio button for *Direct*.

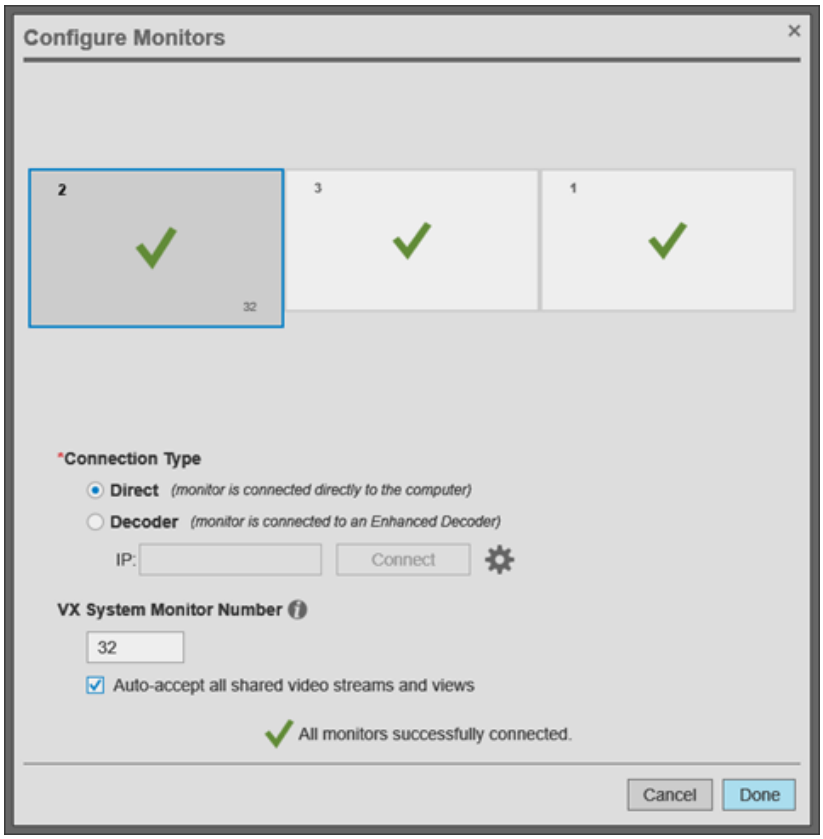


Figure 3: Connecting Monitors

c. If you are going to allow remote control of a selected monitor, assign a number to the monitor. To do so: enter a number in the *VxSystem Monitor Number* field, and then click to select or deselect the checkbox for *Auto-accept all shared video streams and views*. When *Auto-accept all shared video streams and views* is selected, the monitor will automatically accept video streams and views that have been sent by another workstation or shared display; when it is not selected, a user must manually accept shared video streams and views on the monitor.

Note: You must assign a unique number to a monitor (workstation or shared display) if you will send video to it remotely. However, Pelco recommends that you do so *only* under these circumstances. When you set a monitor number, every change made to that window will be sent to the server. This is an unnecessary load if you are not using the monitor as part of a monitor wall.

The example above shows the assigned monitor number (32) in the lower right corner of the monitor.

5. Provide a number for the monitor. The number will allow you to set rules to send video to your shared display, or to send video to the shared display by number.
6. (Optional) Enter or select a *VX System* to create a VideoXpert Connection. Selecting this option opens a dialog to configure system server connections.
7. Provide the user name and password of an account with credentials to view video; the account provided must have access to cameras and functions you want to use through the shared monitor, and must have the *Manage Display Devices* permission enabled (via VxToolbox in > **Users** > **Users** > *Device Management* > *Manage Display Devices*).

8. (Optional) Click the checkbox to select or deselect *Show camera name and time stamp in video cells.* Whether the user sharing video has names and timestamps enabled, the shared display uses this preference to determine whether or not to display overlays.
9. (Optional) Click the checkbox to select or deselect *Show Shared Display title bar*.
10. (Optional) Click the checkbox to select or deselect *Collapse space between cells*.
11. In the *Aspect Ratio* area, click to select the radio button to either *Maintain video aspect ratios* or *Stretch video to fill cells*.
12. (Optional) click the checkbox to select or deselect *Enable hardware acceleration*. Hardware acceleration is enabled by default and should only be disabled if your workstation uses an unsupported graphics chipset, or if you need to troubleshoot graphics issues that may result from your graphics drivers and chipset.

    Note: Hardware acceleration of H.265 is supported on the Shared Displays VX-A3-SDD and newer, and Enhanced Decoders VX-A3-DEC and newer.

13. (Optional) Click the checkbox to select or deselect *Multi-System Access opens without initial credentials* (MSA). In MSA mode, VxOpsCenter will open with no VX Systems connected. Credentials will be required when you connect to a VX system.
14. Click **Apply**.
15. Click **OK**.

Configuring VxOpsCenter Kiosk Mode (Optional)

You can run VxOpsCenter in kiosk mode, so that only VxOpsCenter Client will be run without access to any other Windows applications.

- The launcher and script are not included in the default installer of VxOpsCenter.
- To run in kiosk mode, install VxOpsCenter on a machine with Windows 10 operating system using VxOpsCenter 2.5 or later.

Caution: If not done properly, this process might result in a loss of critical data. In addition, the process has several complex steps that, if not done properly, might result in unforeseen results. Before beginning this process, ensure that all important data is backed up. If you are uncertain of this process or are unfamiliar with the requirements, contact Product Support Services for assistance.

To install and configure VxOpsCenter to run in kiosk mode:

1. Install VxOpsCenter v 2.5 or later on a Windows 10 PC.
2. Refer to the white paper Configure VxOpsCenter Kiosk mode.
3. From the white paper, download OpsCenterLauncher.zip and kiosk_mode_script_v2.ps1.
4. Unzip OpsCenterLauncher.zip and copy the files to the VxOpsCenter directory at c:\Program Files\Pelco\VideoXpert\VxOpsCenter.

   Note: The path must be the same as the path specified in kiosk_mode_script_v2.ps1.

   Note: If the OpcCenter Client kiosk mode is updated to a newer version, copy the contents of OpsCenterLauncher.zip to the folder again.

5. Create a local standard user account called “Operator”.

   Note: The account must be the same as the account specified in kiosk_mode_script_v2.ps1.

6. Run kiosk_mode_script_v2.ps1 as the Windows Administrator.

Logging In

Open the VxOpsCenter application.

1. (Optional) If VxOpsCenter is configured to connect to a single system at a time, select the system you want to access. See the section titled *Understanding User Account Types*.
2. (Optional) If VxOpsCenter is configured for multi-system access, select **Multi-System Access Mode** from the drop-down list in the *Connect to System* field.
   - The first time you login to the system using *Multi-System Access Mode*, you will be asked to select a system for authentication.
   - When you log in subsequently using *Multi-System Access Mode*, you will be connected to the systems to which you've connected before.
   - If *Mutli-System Access opens without initial credentials* is enabled in VxToolbox, you can log in using *Multi-System Access Mode* without using any credentials, but you will not be connected to a VX system. When you connect to a VX system, credentials are required.
3. Enter your credentials.
4. Click **Log In**.

Understanding User Account Types

VxOpsCenter supports two types of users:

- The Workstation Configuration account provides access to VxOpsCenter settings and allows you to configure connections to VX systems. The configuration account should be reserved for administrators, especially if multiple users will share the same workstation.
- Logging in as a standard VX system user provides access to standard VX features - viewing video, controlling cameras, etc.

Note: If multi-system access is enabled, only Workstation Configuration accounts are supported.

If your user account is both the Workstation Configuration account and a VX system user, VxOpsCenter will log you into applicable VX systems and allow access to workstation configuration settings.

When you log in as a standard VX system user, the system will only populate sources and options you have permissions to see (determined by the roles assigned to your user account). If a system or camera does not appear when you log in, then the system or camera might be offline, or you might lack the appropriate permissions.

Setting Your Display Language

The localization presented by the VxOpsCenter client is based on the Region and Language settings within Windows.

Note: You must have the appropriate Windows language pack to expose display languages in the VxOpsCenter Client.

To set or change your VxOpsCenter display language:

1. Close the VxOpsCenter software if it is already running.
2. Click **Start** (if necessary), and then search for and click to open **Language settings**.

   Note: These steps might be different, based on the operating system you are using.

3. Click to select a language from the *Windows display language* drop-down menu.
4. If the appropriate language is not present, click **Add a windows display language in Microsoft Store**. Follow the prompts to add the appropriate language, and if appropriate, click to select the checkbox for *Set as my Windows display language*.
5. Close the **Settings** window.
6. Run the VxOpsCenter Client.

Changing Your Workstation Account Password

If a password expiration policy is in place (for example: your password expires every 90 days), you will see a warning dialog box when your password must be changed.

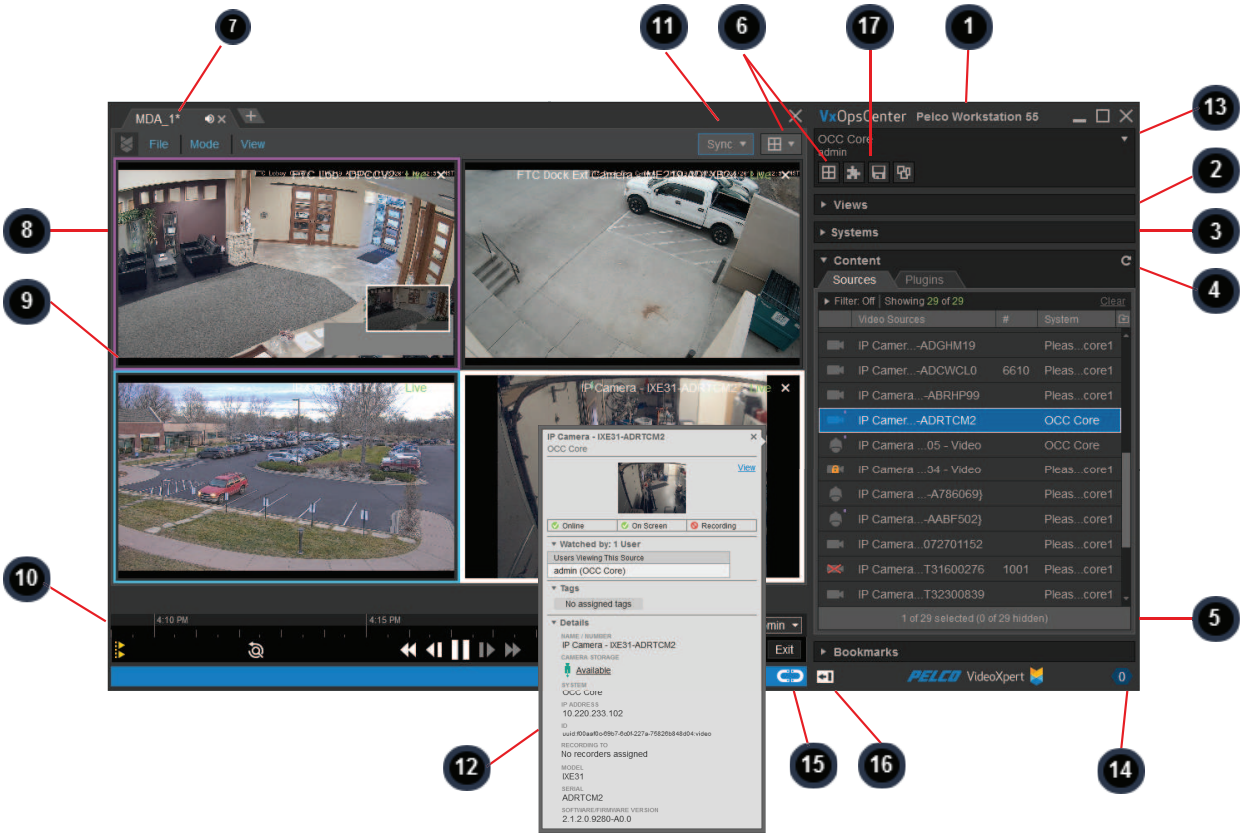
Note: Password expiration is not used with Single Sign-On (SSO). If your system is configured to use SSO, or if the expiration policy is set to *Passwords never expire*, then you will never see the warning dialog box.

1. In the warning dialog box, click **Change Password**.
2. In the *Change Password* dialog box, enter values in the *Current Password*, *New Password*, and *Retype New Password* fields.
3. Click **Save**.

If you are resetting the password, and are not doing so from the password expiration warning dialog box:

1. In Mission Control, click the *User Menu* icon (▼), and then select **Configure Workstation**.
2. If necessary, enter an administrative *Username* and *Password*, and then click **Authenticate**.
3. Click **Workstation Settings**.
4. In the *VX Workstation Account* area, in the *Password* field, enter a new password.
5. Click **Apply**.
6. Click **OK**.

Using the VxOpsCenter Interface



1	**Mission Control** contains settings, and all the items with which you may populate workspaces.
2	The **Views** panel provides access to **New Tabs**, **Saved Tabs**, and **Workspaces**. Your workspace consists of tabs and monitors populated with cameras or plugins. You may have one active workspace at a time containing some number of tabs (typically one tab per monitor, but that is not a limitation); each tab contains some number of video streams or plugins.
3	The **Systems** panel enables you to add or edit system connections. It also provides access to the Systems List window, which enables you to filter and sort the systems to which you are connected. This panel is available only when running in multi-system access (MSA) mode.
4	The **Content** panel provides access to the **Sources** tab, which shows all the video sources that the current user can access. Use the filters in the panel to sort the list in real time. The **Maps** tab provides access to Maps that are available on the system. The **Plugins** tab contains content and overlay plugins. Some plugins consume a cell, like the **Image Viewer** plugin. **Overlay** plugins operate in the same cell as video, providing additional information about the video in question.
5	The **Bookmarks** panel shows clips of video that you or other users have bookmarked. Use the filters in the panel to sort the list in real time.
6	The **Select Grid Layout** controls or the **New Tabs** panel determine the number of cells in a tab.
7	A **Tab** is a window of the VxOpsCenter containing cells.

8	A **Cell** displays a single camera or plugin within VideoXpert. Cell highlights and borders indicate whether a cell is selected, playing-back video, or is in PTZ mode.
9	**Playback Controls** and the timeline in a selected cell applies to that cell only.
10	**Playback Controls** and the timeline at the bottom of the tab applies to all synchronized cells within the tab.
11	**Synchronous Play** enables you to select cells for which playback is synchronized.
12	**Tooltips** show additional information about your video sources. Hover over entries in the *Sources* and *Bookmarks* panels to reveal tooltips.
13	The **User Menu** contains preferences and controls specific to the current user. Through this menu, you can open application *Preferences*, the *Export Archive*, the *View Launcher*, and other user options.
14	The **Event Counter** shows how many active events that require response from you or someone with similar permissions.
15	The *Undock Mission Control* icon ( ) undocks Mission Control from its current location. When it is undocked, the *Dock Mission Control* icon ( ) docks it to any tab in the workspace.
16	The *Move Mission Control to the Left* ( ) icon is visible when Mission Control is in the default position (right panel), and moves it to the left panel. The *Move Mission Control to the Right* icon ( ) is visible when Mission Control is in the left panel, and moves it to the right panel.
17	Quick access to frequently used tools are provided in Mission Control, just above the *Views* panel. Click the corresponding symbol to get to *New Tabs* ( ), *Plugins* ( ), *Saved Tabs* ( ), and *Workspaces* ( ).

Note: Camera-sensitive information is not available to users without the necessary View Full Camera Details permission. Camera-sensitive information includes data source and device IP addresses; device hostname, port, serial number, version, and VIP; and target recorders.

Adding Quick Access Icons to Mission Control

Quick access to frequently used tools are provided in Mission Control, just above the *Views* panel. They can be added and removed. To add or remove the quick access icons:

1. In Mission Control, right-click in the space above *Views*.
2. Click to select (to add) or deselect (to remove) tools icons.

Using Context Menus

Right-click entries in the source list or cameras in your active workspace to reveal additional options available to your user and the devices you want to use. VxOpsCenter provides users with only the options available to you at any given time; availability may be limited by factors including your user permissions, the types of cameras you use, and whether or not PTZ mode is engaged. Options include the following.

- **Send To** enables you to choose a view to send (a saved tab, saved investigation, or workspace), a destination for the view, and whether to force acceptance of the sent view. See the section titled *Sending Views to Workstations or Shared Displays*.

- **Quick Export** lets you export a recording of the **Previous 5 minutes**, the **Previous Minute**, or a **Custom** start and end date and time, from either the item in the *Sources* panel for from a cell timeline. From the timeline, you can also export a recording of the **Next minute** and the **Next 5 minutes**. See the section titled *Using Quick Export*.
- **Edit Source** enables you to assign the selected source a new name or number.
- **Manage Tags** shows you what tags are assigned to the selected camera(s), system, and folders; and lets you filter which tags to show. See the section titled *Managing Tags*.
- **Open Camera Configuration in Browser** opens the camera Web UI, and enables you to login and make changes to the camera configuration. Refer to the camera operations manual.
- **Open in VxToolbox** opens VxToolbox to the corresponding system, and highlights the source in the *Devices* (center) panel. Refer to the VxToolbox section of this manual.
- **Rotate** lets you select the default rotation, 180 degrees, or plus or minus 90 degrees. See the section titled *Rotating the Camera*.
- **Analytic Overlays**, **Simple & Enhanced** lets you toggle **Simple Motion Detection** and **Analytic Drawing Data** on and off to display or hide analytics overlays on some Pelco cameras. See the section titled *Viewing Analytics Overlays*.
- **Analytic Overlays**, **Advanced** lets you toggle **Object Bounding Boxes**, **Object Detection Zones**, and **Counting Lines** on and off to display or hide these analytics on some Pelco cameras. If you toggle **Counting Lines** on, you can also toggle **Display Counts** on and off. See the section titled *Viewing Analytics Overlays*.
- **Diagnostics** lets you toggle:
  - **Statistics** to display or hide camera statistics including such things as bitrates, mode, source, and call-up time. See the section titled *Displaying Statistics*.
  - **Measure Latency** to determine the end-to-end latency of the source. See the section titled *Measuring Latency*.
- **Relays & Aux** activates or deactivates auxiliary options and functions on the device, including: relay functions, IR illumination, washer and wiper functions, and other options and functions, depending on the camera model.
- **Home Preset** returns the camera to the home position. See the section titled *Executing PTZ Presets and Patterns*.
- **Presets** lets you select an existing preset position, edit an existing preset position, and create a new preset position. See the section titled *Executing PTZ Presets and Patterns*.
- **Pattern** enables you to run an existing pattern. Patterns must be created on the camera. Refer to the camera operations manual.
- **Refresh Presets and Patterns** retrieves the list of presets and patterns from the camera. It does not overwrite or delete any patterns created from VxOpsCenter.
- **Send Preset Number** will send a preset to a specified cell in a specified monitor; and can display the data source, jump to a specified time, and trigger a preset. See the section titled *Sending Views to Workstations or Shared Displays*
- **Search Recordings for Motion (Pixel Search)** is available in VideoXpert Professional only, and allows you to quickly find search for motion in a camera recording. See the section titled *Using Pixel Search*.

Using Tooltips

Hover over any bookmark in a cell or in the *Bookmarks* panel to reveal additional information about the bookmark. This information might include:

- The name of the bookmark
- The name(s) of the device or data sources
- The date and time at the middle of the bookmark recording time
- The type of event received (if any)
- An image from the recorded bookmark

Hover over the device symbol on any source in the *Sources* panel to reveal additional information about the source, including:

- The name of the source
- The current image of the source (if enabled)
- Whether or not the camera is *Online*, *On Screen*, and *Recording*, and whether PTZ is locked (if the camera has PTZ)
- *Watched by* information
- *Tags* associated with the source (if any)
- Technical *Details* such as: previous names (if there are any and the feature is enabled), whether or not there is camera storage, the IP address, the camera ID, the target location for recording (if any), the camera model, the camera serial number, and the camera software version

Click on **View**, if present, to display the source in a cell.

Using Watched By

If you have the “Multiview” permission, you will see a *Watched by* field in tooltips throughout the VxOpsCenter interface. The *Watched by* field shows users watching live video from a particular video source; the *Watched by* field does not show users playing back video recorded from a video source.

If the users listed in the *Watched by* field are viewing video from a different site than you, the tooltip will also attempt to indicate the site from which other users are watching video. If users are watching video from an aggregated site, the tooltip will state the site name in parenthesis. If you are watching video from an aggregated site, and the users listed in the *Watched by* field are accessing VideoXpert from the Aggregation (parent) site, then the tooltip will simply list *parent site*.

Using Previous Camera Names

If *Show previous camera names* is enabled in VxToolbox, the VideoXpert System can list the current name and up to nine previous names assigned to the camera during the last one year. For each name, the system also lists the dates on which the names were changed.

If your system uses previous camera names, users can view the list of names for a specific camera. To do so:

1. Hover over the device symbol on the camera in the *Sources* panel.
2. In the device information window, click to expand **Previous Names**.

VxOpsCenter identifies a camera by the name it was assigned at the time period matching the action. For example, a camera that was previously named "Hall SW" but is now named "Hall SE" will be identified as "Hall SW" in bookmarks taken before the name was changed.

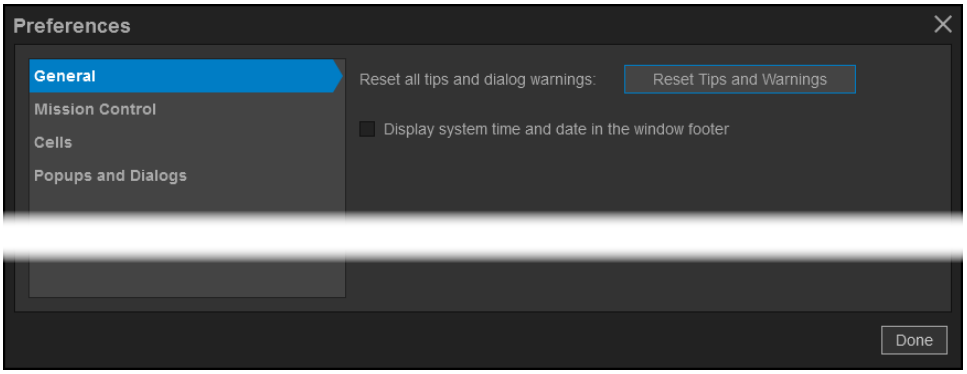
- In **Normal** mode, the camera names at the time of the action are identified as follows:
  - During playback, the name is displayed at the upper right corner of the cell, corresponding to the name of the camera at the time of the recording.
  - A snapshot file name defaults to include the camera name at the time that the snapshot was taken. You can change the file name.
  - An export file name defaults to include the camera name at the time that the recording was taken. You can change the file name.
  - A bookmark identifies the camera name at the time that the bookmark was created.
- In **Investigation** mode, the camera names at the time of the recording are identified in the same locations as in **Normal** mode, but also in the following additional locations:
  - Timeline ribbon
  - Retrim window
  - Clip in a playlist (the name of the camera at the start of the recording)

Setting User Preferences

When logged in to VideoXpert, you can set some basic preferences for behaviors within the VxOpsCenter application.To access the *Preferences* window:

1. In Mission Control, click the *User Menu* icon ( ).
2. Click **Preferences**.

   The *Preferences* window opens.



Updating General Settings

1. In Mission Control, click the *User Menu* icon ( ).
2. Click **Preferences**.
3. In the *Preferences* window, click **General**.
4. (Optional) Click to select the checkbox to enable *Display system time and date in the window footer*.

5. (Optional) In the *When creating snapshots* area:
   a. Click to select the radio button for *JPG* or *PNG*.
   b. Click to select or deselect the checkbox for *Show overlays on snapshot*. If you select this option, also configure the following settings:
      - Under *Text Size*, click to select the radio button for either *Use default fixed size* or *Scale text as a percentage of snapshot height*. If you select scaling the text, enter a percentage in the field, either by typing-in a number or selecting one using the up and down arrows.
      - Select a *Position* from the drop-down menu.
      - Use the slider bar or type in a value to select the *Opacity of Text Background*.
      - In the *Text color* area, click to select the radio button for *Use default colors* or *Use white for both camera name and timestamp*.
      - Click to select or deselect the checkbox for *Auto-save snapshots*. If you select this option, use the default folder location to which the snapshots will be saved, or enter the folder location either by typing in the path or using the **Browse** button.
6. (Optional) Click **Reset Tips and Warnings**, and then click **OK** in the *Reset Warnings* confirmation window.
7. (Optional) Click **Change Password**, complete all fields in the *Change Password for [user]* dialog box, and then click **Change Password**.
8. Click **Done** to exit the *Preferences* window.

Updating Mission Control Settings

1. In Mission Control, click the *User Menu* icon (▼).
2. Click **Preferences**.
3. In the *Preferences* window, click **Mission Control**.
4. (Optional) Click to select and deselect radio buttons in the *When double-clicking a source...* area, to control how a source is opened.
5. (Optional) Click the checkbox to select or deselect *Allow docking Mission Control via drag-and-drop*.
6. (Optional) Click the checkbox to select or deselect *Highlight source of the selected cell in the source list*. If you select this option, you can also select *Automatically scroll source list to reveal highlighted source*.
7. (Optional) Click the checkbox to select or deselect *Show video thumbnails on hover in the source list*.
8. Click **Done** to exit the *Preferences* window.

Updating Cells Settings

1. In Mission Control, click the *User Menu* icon (▼).
2. Click **Preferences**.
3. In the *Preferences* window, click **Cells**.
4. In the *Display camera info in video cells as* section, click to select the radio button for *Camera Name*, *Camera Number*, *Camera Name / Camera Number*, or *Camera Number / Camera Name*.

5. (Optional) Click to select or deselect the checkbox for *Always show camera info in cell*. If you select this option, you can also select *Show overlay behind persistent camera info in cell*.
6. (Optional) Click to select or deselect the checkbox for *Display "Live" rather than timestamp in cell when showing live video*.
7. (Optional) Click to select or deselect the checkbox for *Automatically enter PTZ mode upon loading source in cell*.
8. (Optional) Click to select or deselect the checkbox for *Display in-cell feedback for playback controls*.
9. (Optional) Click to select or deselect the checkbox for *Collapse space (gutters) between cells*.
10. (Optional) Click to select or deselect the checkbox for *Display timestamp above timeline playhead*.
11. In the *When placing multiple cameras* area, click to select the radio button for *Replace video content and create new tabs as needed* or *Only fill empty cells and create new tabs as needed*.
12. (Optional) Click to select or deselect the checkbox for *Automatically play audio when available*.
    - If you selected it, click to select the radio button for *From selected cell only* or *From all visible cells*.
    - If you deselected it, the *From selected cell only* or *From all visible cells* radio buttons are not available.
13. (Optional) In the *Advanced Analtyics* area, click to select or deselect the checkbox for *Always show zones in alarm state*. This option will always show zones that are in an alarmed state, for all video cells that are streaming configured Advanced Analytic cameras.
    For example: when this preference is checked, any detection-zone that is occupied will show up as an overlay in an alarmed state and will disappear when the zone is no longer occupied. If a user selects the *Show Object Bounding Boxes* and/or the *Show Object Detection Zones* context-menu items in a video cell, those selections take precedence over this setting, and will show all overlays for the user-selected options in that cell. If these cell-based options are deselected, this will return the cell to the configured user preference.
14. (Optional) In the *Video aspect ratio* area, click to select the radio button for *Maintain video aspect ratios* or *Stretch video to fill cells*.
15. (Optional) For PTZ cameras, in the *Immersive/Panoramic Video* area:
    a. Click to select or deselect the checkbox for *Show immersive PTZ reference on panoramic image*.
    b. If there are Optera® cameras on your system, the *Start Optera streams as* option is displayed. Click to select the radio button for *Immersive only*, *Panoramic only*, or *Panomersive*. This sets the default streaming state.
16. Click **Done** to exit the *Preferences* window.

Updating Streaming Settings

1. In Mission Control, click the *User Menu* icon ( ).
2. Click **Preferences**.
3. In the *Preferences* window, click **Streaming**.
4. Click to select or deselect the checkbox for *Decrease video buffer for live streams when in PTZ mode*.

5. In the *When playing back over a low-bandwidth connection* area, click to select the radio button for *Decrease frame-rate to match the network capability* or *Play at full frame-rate, but stop playback to buffer as needed*.
6. Click **Done** to exit the *Preferences* window.

Updating Popups and Dialogs Settings

1. In Mission Control, click the *User Menu* icon ( ).
2. Click **Preferences**.
3. In the *Preferences* window, click **Popups and Dialogs**.
4. Click to select or deselect the checkbox for *Sort alerts by severity level instead of timestamp*.
5. Click **Done** to exit the *Preferences* window.

Updating Shortcut Keys

1. In Mission Control, click the *User Menu* icon ( ).
2. Click **Preferences**.
3. In the *Preferences* window, click **Shortcut Keys**.
4. Select a profile to view and edit from the *Selected Profile* drop-down menu.
   - Click **Personal** to view and edit the shortcuts that apply to your user login. After the *Personal* profile has been modified, it does not inherit changes made to the *Global* profile.
   - Click **Global** to view and edit the shortcuts available to all users on the system. Any user that has not modified the *Personal* profile will use the *Global* profile. Editing the *Global* profile can be done only by system administrators or to users who have the *Manage Views & Global Shortcuts* permission.

   Note: If you logged in with Multi-System Access, the only profile available is Workstation; custom shortcuts will apply only to the current workstation.
5. For each shortcut to update:
   a. If necessary, click to expand the category list (for example: click **General**).
   b. In the left column of the table, click to select the action for which to set the keystrokes (for example: click **Iris close**).
   c. In the field in the right column of the table, type the keystrokes (for example: type Shift + X). When you complete the keystrokes, an orange square ( ) is displayed at the far right of the left column of the table, to the left of the updated keystrokes. This indicates that the *Shortcut has been reassigned but not saved*.
   d. If VxOpsCenter detects a conflict with one or more existing shortcuts, the *Reassign Shortcut* dialog box opens and identifies the action(s) currently using the keystrokes. Do one of the following:
      - Click **Reassign** to close the dialog box, bind the keystroke to the current action, and display an empty cell as the keystrokes for the previously-assigned action.
      - Click **Close** to close the dialog box and retain the current keystrokes for the current and already-assigned action.

e. (Optional) To undo changes that have not been applied, click **Cancel** at the lower-left corner of the window.

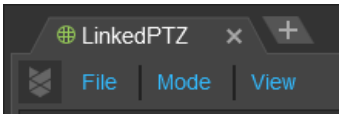
6. To save the changes, click **Apply Changes** in the lower-right corner of the window.
   - A green square (■) is displayed at the far right of the left column of the table, to the left of the updated keystrokes. This indicates that the *Shortcut has been reassigned from the default*.
   - The green square persists after you close the window. This indicates that the keystrokes are not the default.
7. (Optional) To remap a personal profile to the current global profile, or to remap the global profile to the VideoXpert defaults:
   a. Click **Restore Defaults** at the upper-right corner of the window, and then click **Restore**. For each shortcut that is being remapped to the default, an orange square (■) is displayed at the far right of the left column of the table, to the left of the updated keystrokes. This indicates that the *Shortcut has been reassigned but not saved*.
   b. Click **Apply Changes**.
8. Click **Done** to exit the *Preferences* window.

Using Tabs and Workspaces

A workspace is comprised of tabs; each tab consists of a layout populated with sources and plugins. You can save your entire workspace or individual tabs for easy access later. Users with appropriate permissions can even make their workspaces or tabs arrangements available to other users. The server automatically saves your workspace when you log out, and recalls it when you log in again.

Using Tab View Options and Modes

For each tab, use the *Mode* and *View* menus to control the display.



Configuring Tab View Options

To update view options for a tab, select the tab (in the image above, the tab is named LinkedPTZ), click **View**, and then select one or more of the following options:

- (Optional) Select whether to display the tab in **Full Screen** mode--the tab controls and outer borders vanish, maximizing the size of video and cells.
- (Optional) Set the **Max Video Quality** within the tab. Unless the tab is in collaborative mode, video quality settings affect video locally; they will not determine the behavior of a tab displayed on another user's workspace or a shared display.
  - **Highest Available Quality** sets the tab to behave normally; it will display the camera's primary stream when possible, as dictated by cell size and system resources.
  - **Secondary Stream** forces the tab to display a maximum video quality of secondary for all cameras.
  - **Tertiary Stream** forces the tab to display a maximum video quality of tertiary for all cameras. (The cameras can display tertiary or the highest available video quality below tertiary.)
  - **D1 (720 x 480)** displays video at 720 x 480 resolution.
  - **SIF (352 x 240)** displays video at 352 x 240 resolution.
  - **JPEG Stream** sets the tab to have all streams transcoded into JPEG frames. The rate of the JPEG stream is dependent on network bandwidth and Media Gateway availability; this setting can be stressful on your Media Gateway.
  - **Thumbnails** sets the tab to images that refresh roughly every 30 seconds, rather than video. This mode uses few resources and significantly reduces the impact of the tab on your workstation. Use this mode for large areas in which a low frame rate is still enough to capture activity within the scene.

  If necessary, the system will downgrade one or more video streams that are displayed in the cells. When this happens, the orange downgraded stream icon ( ) is displayed to the right of *View* in the tab task bar. Click the icon to allow the system to attempt to restore the initial video quality to each cell.
- (Optional) Click to select either **Stretch video to fill cells** or **Maintain video aspect ratios**, whichever is not currently selected.
- (Optional) Click to select either **Collapse space between cells** or **Show space between cells**, whichever is not currently selected.

Changing Tab Modes

Tab modes determine the features available to you within a tab. Changing tab modes without saving the current tab will cause you to lose your settings. Modes are exclusive; for example: a tab cannot support a sequencing mode and also the collaborative mode. Putting the tab in either mode will remove the abilities granted by the previous mode. To change the mode, click **Mode**, and then click to select one of these options:

- **Normal** mode sets the tab to behave normally.
- **Collaborative** mode allows you and other users to view and affect changes in the tab simultaneously; use this mode to collaborate with other users.
  - Collaborative tabs do not support plugins and are not available when multi-server access is enabled.
  - Collaborative tabs are always public tabs; you cannot restrict the users who have access to the collaborative tab.
  - Tabs marked with the *Collaborative Tab* icon ( ) are collaborative, and allow multiple users to view and affect changes in the tab simultaneously. User commands against the collaborative tab are performed on a first-come, first-served basis. Users should account for latency and the total number of collaborative users when affecting the tab to coordinate efforts.
- **Live Sequence** mode allows you to add more cameras to a tab than the layout would traditionally support, and to rotate cameras through the tab at a particular interval. See the section titled *Creating a Live Sequence Mode*.
- **Alarm Sequence** mode allows you to designate cameras that you want to watch only when a meaningful event occurs. See the section titled *Creating an Alarm Sequence Mode*.

Creating a New Tab

Creating a tab allows you to recall the complete tab, including all cameras, viewing states (live or recorded video), and plugins. Save tabs that you or other users will recall frequently.

1. Select a layout for a new tab by one of the following methods.
   - At the top of the workspace, to the right of all open tabs, click the *New Tab* icon ( ), and select a layout.
   - In Mission Control, in the quick access icons area, click the *New Tabs* icon ( ), and then click to select a layout.
   - In Mission Control, in the *Views* panel, click **New Tabs**, and then click to select a layout.
2. Populate the tab with sources or plugins. Use the filter function, if necessary, in Mission Control to find cameras to add to your workspace:
   a. Click **Filter** to expand the view.
   b. Type a value in the *Filter by* field.
   c. Double-click a source or drag it to an empty cell.

   Note: You can also drag cells to rearrange your workspace.

3. While viewing the tab to be saved, click **File** at the upper left corner of the window, and then click **Save As**.
4. Enter the following information:
   a. A *Name* for the tab.
   b. (Optional) Select a keyboard *Shortcut*.
   c. (Optional) To make the tab available to all users in the VideoXpert environment, click to select the checkbox for *Save as public tab*.
   d. (Optional) If you have the correct permissions, to make the tab globally available and allow multiple users to view and simultaneously manipulate the contents of the tab, click *Save as collaborative tab*.
5. Click **Save**.

Opening a Saved Tab

To open a saved tab:

1. In Mission Control, click to expand the *Views* area.
2. Click **Saved Tabs**.
3. Double-click the tab you want to open, or drag a tab into the monitor in which you want it to open.

Updating an Existing Tab

You can make changes to an existing tab and then save the changes.

1. In the tab you wish to update, make all necessary changes.
2. Click **File** at the upper left corner of the window, and then click **Save**.

Changing Tab Layouts

The grid icon in any tab shows your current layout. Click it to select a new layout option. If you select a layout with fewer cells than your current layout, the client will retain camera-cell assignments and repopulate cells accordingly if you return to the original layout or a layout with more cells than the original.

1. Select the tab to be changed.
2. Click the *Select Grid Layout* menu next to the grid icon ( ) in the top right of the tab task bar.
3. Select the new layout for the tab.

   Note: If you are using a 6 x 6 (36 streams) or an 8 x 8 (64 streams) layout, Pelco recommends that secondary streams are set to a maximum resolution of 640 x 480 and a maximum framerate of 30 fps. For more information, see the current version of the *VideoXpert System Design Guide*, section titled *Understanding VxOpsCenter 6 x 6 and 8 x 8 Layout Requirements*.

   Note: For a VideoXpert Professional system, the 8 x 8 (64 streams) layout is only supported if VxOpsCenter and the VideoXpert Professional system are running on different computers.
4. (Optional) Click **File**, and then click **Save** to update the existing tab layout.
5. (Optional) To create a new tab layout, click **File**, click **Save As**, update information in the *Save Tab As* dialog box, and then click **Save**.

Editing the Metadata of an Existing Tab

To edit the name, hotkey, or description for tabs:

1. In Mission Control, under *Views*, click **Saved Tabs**.
2. Do one of the following to open the Edit Tab dialog box:
   - Click to select the tab to edit, and then click the *Edit Tab* icon ( ).
   - Right-click the tab to edit, and then click **Edit Tab**.
3. In the *Edit Tab* dialog box, edit the values as appropriate.
4. When complete, click **Save**.

Deleting a Saved Tab from the System

1. In Mission Control, under *Views*, click **Saved Tabs**.
2. Do one of the following:
   - Click to select the tab, and then click the *Delete Tab* icon ( ).
   - Right-click the tab, and then click **Delete Tab**.
3. In the *Delete Tab* dialog box, click **OK**.

Creating a New Workspace

Creating a workspace allows you to recall the complete workspace, including all cameras, viewing states (live or recorded video), and plugins. Save workspaces that you or other users will recall frequently.

1. In Mission Control, click **Views**, and then click **Workspaces**.
2. Double-click the workspace that is similar to the one you are creating.
3. To delete tabs from the workspace, click the **X** at the right of each tab that you do not want (to close the tab). Leave at least one tab open.
4. Make appropriate changes to each remaining tab, if necessary.
5. Add more tabs, as appropriate, using one of the following methods:
   - To add a new tab, see the section titled *Creating a New Tab*.
   - To add an existing tab: in Mission Control, under *Views*, click **Saved Tabs**, and then double-click the tab name.
6. Make any other changes to the workspace. For example: undock, dock, or move Mission Control; change the mode; or change the view.
7. Save the new workspace:
   a. If necessary, click the **Workspaces** tab again.
   b. Click the *Save Workspace As* icon ( ).
   c. Enter a value in the *Name* field.
   d. (Optional) Select a value in the *Shortcut* field from the drop-down menu.
   e. (Optional) If you have the correct permissions, to make the workspace available to all users in the VideoXpert environment, click to select the checkbox for *Save as public workspace*.
   f. Click **Save**.

Opening a Saved Workspace

Opening a saved workspace will close your current workspace; you can save your current workspace before you open a new one. If you set a shortcut for a saved item, you can also recall it using keyboard shortcuts. To open a saved workspace:

1. In Mission Control, click **Views**, and then click **Workspaces**.
2. Double-click the workspace to open.
3. If the *Recall a saved workspace* dialog box opens, click to select **Keep Open Windows** or **Close Your Open Windows**.

Updating a Saved Workspace

You can update a saved workspace if the workspace is not a global workspace, or if you have permission to edit/update the workspace.

1. In Mission Control, click **Views**, and then click **Workspaces**.
2. Open the workspace to update.
3. To delete tabs from the workspace, click the **X** at the right of each tab that you do not want (to close the tab).
4. Make appropriate changes to each remaining tab, if necessary.
5. Add more tabs, as appropriate, using one of the following methods:
   - To add a new tab, see the section titled *Creating a New Tab*.
   - To add an existing tab: in Mission Control, under *Views*, click **Saved Tabs**, and then double-click the tab name.
6. Make any other changes to the workspace. For example: undock, dock, or move Mission Control; change the mode; or change the view.
7. If this is not a global workspace, or if you have permission to edit/update the workspace, save the updated workspace:
   a. If necessary, click the **Workspaces** tab.
   b. Click the *Save Workspace* icon ( ).
   c. In the *Save Workspace* confirmation dialog box, click **Save**.

Editing the Metadata of an Existing Workspace

You can edit the name or shortcut of a workspace, or change whether it is saved as a global workspace at any time.

1. In Mission Control, click **Views**, and then click **Workspaces**.
2. Click to select the workspace to edit, and then click the *Edit Workspaces* icon ( ), or right-click the name of the workspace and then click *Edit Workspace*.
3. In the *Edit Workspace* dialog box, make any needed changes, and then click **Save**.

Deleting a Workspace from the System

1. In Mission Control, click **Views**, and then click **Workspaces**.
2. Do one of the following:
   - Click to select the workspace, and then click the *Delete Workspace* icon ( ).
   - Right-click the workspace, and then click **Delete Workspace**.
3. In the *Delete Workspace* dialog box, click **OK**.

Viewing a Monitor Wall

Monitor walls are specific groups of monitors that are frequently viewed or used together, and have been configured in VxToolbox as a tab so that users can easily access them.

The monitor wall is used to send cameras or streams to workstations or shared displays. The user opens the monitor wall and makes changes to the monitors in the wall. The changes are sent to the monitors instantaneously.

To access and use a monitor wall:

1. Open a workspace to which you would like to add a monitor wall.
2. Open a the monitor wall tab by one of the following methods:
   - In Mission Control, click the *New Tabs* quick access button (), and then double-click or click and drag the monitor wall tab icon ().
   - In Mission Control, click to expand the *Views* area, click **New Tabs**, and then double-click or click and drag the monitor wall tab icon ().
   - At the tab bar at the top of the window, click the *New Tab* icon (), in the *Open New Tab* area click the monitor wall tab icon ().
3. At the upper left corner of the monitor wall tab, select a pre-configured monitor wall from the drop-down menu.
4. For each monitor in the wall, you can:
   - Drag sources into a monitor cell.
     Only monitors for which you have permission can receive camera streams.
   - Change the tab grid layout by selecting an option from the *Select Grid Layout* drop-down menu or by dragging and dropping them from the *New Tabs* panel to the monitor.
   - Click on the source name to display the tooltip for the source.
   - Remotely control a cell in live and playback modes, using a standard keyboard, a KBD500 keyboard, and/or a 3D spacemouse.
   - When you are controlling a cell:
     - The numeric keypad on either keyboard (standard or KDB5000) brings up the call-up dialog. In a monitor wall, the call-up dialog is at the lower center of your monitor instead of in the cell you are controlling.
     - More than one user (VxOpsCenter) can control cells in the monitor wall at one time. The cells outlined in green are being controlled by another user. The cell outlined in white is being controlled by you.

     You cannot select cells on a monitor for which you do not have permissions.
   - To refresh the tab, click the *Refresh* icon () at the upper right of the tab.

Working with Maps

Maps provides an interface to arrange cameras according to their physical locations on a map, making it easier to find the right camera and view to suit your needs.

Note: Maps supports world drawings, DWG, JPEG (raster), and PNG (raster) images.

Before you use Maps, configure Maps in VxToolbox. Refer to the VxToolbox section of this manual.

Understanding Maps Permissions

Maps uses the View Maps permission within the VX system. Camera permissions are applied to maps as well. If a user lacks permissions to a particular camera, it will not appear on the map or in the list of cameras the user can add to a map.

Viewing a Map

To view a map:

1. In Mission Control, click **Content**, and then click **Maps**.
2. (Optional) Filter the maps that are displayed. To do so, enter a value in the *Filter* search box. To reset the filter, click the clear filter icon ( ) or **Clear**.
3. Select the map by one of the following methods:
   - Click and drag a map from the *Maps* panel to a cell.
   - Double-click the map in the *Maps* panel.

Working In a Map

To use the map:

1. View a map as described in the section titled *Viewing a Map*
2. (Optional) Move the field of view of the map. To do so, click on the map and drag it until the appropriate view is displayed.
3. (Optional) Use the scroll wheel on your mouse to zoom in and out.
4. (Optional) Hover over a camera to view the camera name and a thumbnail.

   If the hover option is not working, it has been disabled. Enable it in the *Preferences* panel. See the section titled *Setting User Preferences for Maps*.
5. (Optional) Hover over a map to view the map name.
6. (Optional) Click on a camera in the map to view data for the camera. This opens a panel on the right of the cell. Data includes: the camera name, status, *Watched by* information, *Tags*, and *Details* (IP address, ID, recording data, model and serial numbers, and software/firmware version).
7. (Optional) Notice the status of the icons on the map.
   - An plain icon (gate, door, alarm, etc.) is online, with no events in progress.
   - An icon that has additional or different symbols—for example: it has a red X through it or a question mark over it; or it has been replaced by another symbol (alarm symbol, open door or gate, etc.)—indicates special status. View device data for details.
8. (Optional) Open a camera from the map. Double-click a camera icon to open it in a new cell.

9. (Optional) Press Ctrl and then double-click on a linked map icon ( ) to open the map in a new cell.
10. (Optional) Click a linked map icon ( ) to open the map in the current cell.
11. (Optional) If you have more than one map available, you can select a different map to view in the current Map cell. In the *Map* field at the upper left of the cell, select a map from the drop-down list.

Setting User Preferences for Maps

At any time, you can change the user preferences for Maps.

1. View a map as described in the section titled *Viewing a Map*
2. At the upper right of the Maps cell, click the gear icon ( ).
3. (Optional) Under *Automatic Map Display*:
   a. Click to select or deselect the checkbox for *Center on Alarm*.
   b. If you selected *Center on Alarm*, click to select or deselect *Switch map on alarm*.
   c. If you selected *Switch Map on Alarm*, click to select the checkbox for either *Ask every time* or *Automatically switch*.
   d. Change the *Map zoom level* by clicking and dragging the slider bar (if present).

      Note: You cannot change the *Map zoom level* for world maps.

4. (Optional) Under *Appearance of this map*:
   a. Click to select or deselect *Show camera numbers*.
   b. If you selected *Show camera numbers*, select a *Camera number color* from the drop-down menu.
   c. Adjust the *Map Background Color* by selecting a color from the drop-down menu.
   d. Change the *Scale of Icons* by clicking and dragging the slider bar.
   e. (Optional) Click **Restore Defaults** to return to the default settings for the map.
5. Click to select or deselect the checkbox for *Show video thumbnail on hover*. On the VxProfessional systems, the thumbnail is always shown on hover.
6. Click outside the *Preferences* panel to close it.

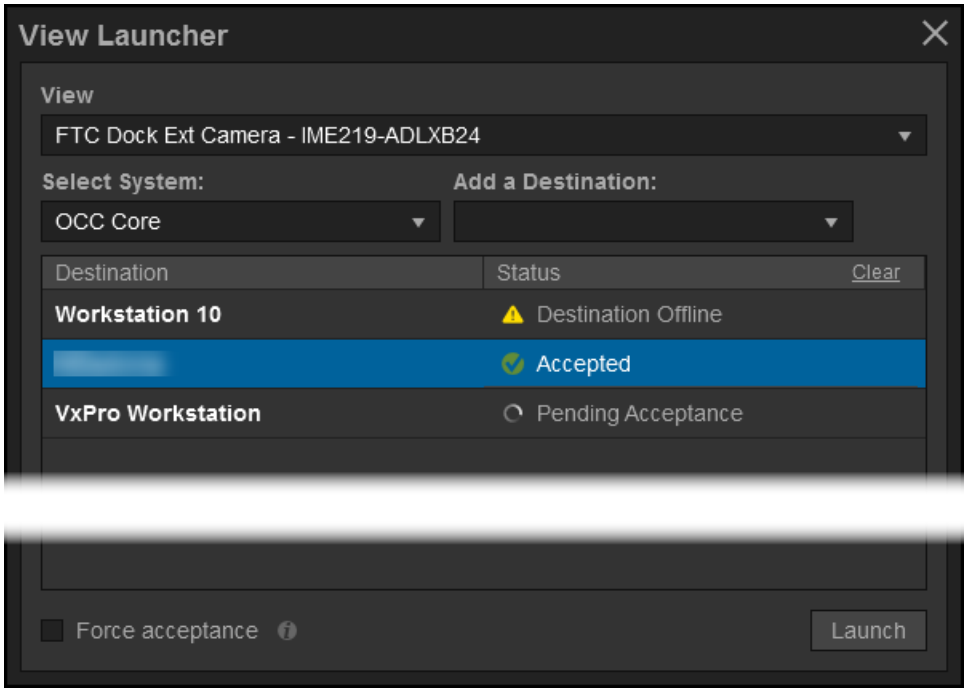
Sending Views to Workstations or Shared Displays

You can send cameras or tabs to other workstations or shared displays (destinations) in your VideoXpert network using *View Launcher* or *Quick Launch*.

Using View Launcher to Send Views to Workstations or Shared Displays

To use the **View Launcher** to send cameras or tabs to other workstations or shared displays in your VideoXpert network:

1. Open the *View Launcher* using one of the following methods:
   - In Mission Control, click the *User Menu* icon (▼), and then select **View Launcher**.
   - Click the source in the active cell, click **File**, and then click **Send To**.
   - Right-click the source in the active cell, and then select **Send To**.
   - Right-click the device icon in of the appropriate source in the *Sources* list, and then select **Send To**.



2. Use the drop-down menu to select the *View* that you want to send if it is not already selected. If present, you can also select *Saved Tabs*, *Saved Investigations*, or *Workspaces*.
3. If present, use the drop-down menu under *Select System* to select the system on which resides the destination for the view you want to send.
4. Use the drop-down menu under *Add a Destination* to select destination for the view you want to send; destinations marked by are shared displays. You can select multiple destinations. When you have added all appropriate destinations, click outside the drop-down menu.
5. (Optional) To clear a single destination from the list, click the **x** at the right of the destination row.
6. (Optional) To clear the destination list, click **Clear**.

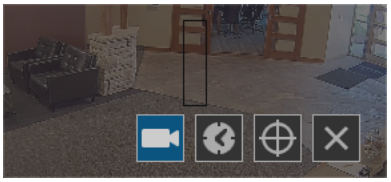
7. (Optional) Select *Force Acceptance* to automatically launch the view in the active window of the destination.
   The destination user might have to manually accept the view you send, the destination might be set to accept the view automatically, or you can force the destination to accept the view.
8. Click **Launch**.
9. The disposition of the sent view is listed in the *Status* column.
10. Click the close window icon ( ) to exit the *View Launcher*.

Using Quick Launch to Send Cells to Workstations or Shared Displays

Note: The *Quick Launch* dialog box has other functionality, which is explained in the tasks associated with those functions.

To use the quick launch feature, your shared displays must be assigned numbers. See the section titled *Configuring Shared Display Mode*

1. (Optional) If you are sending the currently streaming camera (you will click to select the cell to be sent), put the camera in the mode you would like to send. That is, you can leave the camera in live mode, select playback mode, and select a specific time in the recording to begin playback. When the cell is sent, the destination will appear as you set it now.
2. To access *Quick Launch*, click the cell to be sent, and then press the Insert key.



3. In the black box at the center of the dialog box:
   - Enter the target monitor number and then **m** to indicate the destination.
   - (Optional) Enter the target cell number and then **c**. If you want the stream to appear in the 1st cell of the destination, you do not have to specify the cell number.
   - If you want to specify a source other than a currently streaming camera in which you have clicked before opening Quick Launch, enter the camera number. If you specify the camera number, the destination will receive the cell in live mode.

   Entering *6m3c222* would send camera 222 to cell 3 of monitor 6; entering 6m would send the currently selected camera to cell 1 of monitor 6.
4. Click the *Call Up Camera* icon ( ) or press the Enter key.
5. To close the *Quick Launch* dialog box, click the *Cancel* icon ( ).

Watching Video

The *Sources* section of Mission Control shows the list of video and audio sources you are authorized to access.

If a particular source is online but does not appear in your source list, try refreshing the list. Sources that come online after you log in or perform a search will not appear until you refresh the list. If the source still does not appear, request access to the source from your administrator.

When watching live video, cells 1/4 the size of the tab or larger will use the primary stream from a video source. Cells smaller than 1/4 the size the tab will use the secondary or tertiary video stream. In a 2x2 layout, for example, all cells will use the primary stream. In a 1+12 tab, the largest cell will use the primary stream and the other twelve will use the secondary or tertiary stream.

All-frame reverse playback enables frames to be displayed at up to eight times the normal speed. This will make the playback smoother.

When playing forward or reverse at high speeds (greater than +/-8X), only iFrames will be shown. At lower speeds, all frames will be shown whenever possible, but for reverse playback, some additional limitations apply:

- For systems that use enhanced decoders, this is available for up to four streams per monitor.
- For systems with multiple monitors on a single host, this is available for up to four streams total on the host PC.
- Reverse playback may be noticeably choppy for cameras configured with dynamic-GOP-length (a smart-compression feature) or for cameras with fixed-length, but unusually long GOPs. All cameras should work well with fixed-length GOPs up 15, or up to 30 for cameras with resolution less than 4K.

To watch live or recorded video, in Mission Control:

1. (Optional) If VxOpsCenter is configured for multi-system access, you can shorten the list of sources available in the *Content* panel, and then limit the systems with which you are working:
   a. In Mission Control, click **Systems**.
   b. Click **Filter** to expand the filter panel.
   c. If there is an active filter, clear it.
   d. Click to select and deselect the systems to access.
      The items in *Sources* page of the *Content* panel are updated immediately.

      See the section titled *Working With Systems*.
2. Click **Content**, and then click **Sources**.
3. Find the source you want to watch. To use the *Filter* to search for sources:
   a. Click **Filter** to expand the filter panel.
   b. Type a value in the *Filter by* field or select a saved filter from the *Advanced Filter Options* drop-down menu.
   c. (Optional) Click to expand **Advanced Filter Options**, and then refine the filter using the *Tags*, *Online*, *Recording*, *On Screen*, and *Storage* filters.
   d. (Optional) To save a filter, under *Advanced Filter Options*, in the *Saved Filter Sets* drop-down menu, click **Save Filter**.

4. Add the camera to your workspace.
   - Drag a camera to the cell in which you want it to appear.
   - Double-click a camera to add it to the next available cell in the current tab.

Note: If you add a PTZ camera that is offline, the cell displays the *PTZ controls are currently unavailable* error message. Click **OK** to acknowledge the message. The cell will display *Video source is offline* until the source comes back online.

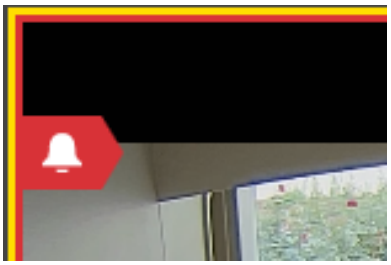
Understanding Cell Borders

The color of the inner and outer border of a cell indicates the status of the cell.

- A white outer border indicated that the cell is active (selected); a black outer border indicates that the cell is not active.
- A white inner border indicates that the cell is in live mode.
- A yellow border indicates that the cell is in playback mode.
- A purple border indicates that the cell is in Digital PTZ mode.
- A blue border indicates that the cell is in PTZ mode.
- A flashing red border indicates that there is a notification for the device. To close the flashing red border, respond to the event notification.
- In monitor walls only, a green border indicates that the cell is being controlled by another instance of VxOpsCenter.

Responding to an Alarm in a Cell

If your workspace has been configured do to so, it will display a red alarm symbol for each active alarm at the left margin of a cell for a camera you are viewing. The inner cell border will flash red.



Hover over the alarm symbol to see the alarm type.

To respond to the alarm:

1. The event notifications pop-up window will display. If it does not, click the event counter at the bottom right corner of the VxOpsCenter window. When there are one or more active alarms, the event counter is red.
2. Click on **Event Log** in the *Event Notification* window.
3. Use the *Event Notification* dialog box or the *Event Viewer* cell to manage the alarm(s). To do so, see the section titled *Using the Event Notifications Dialog Box*.

Rotating the Camera

You can rotate the view of PTZ cameras. To do so:

1. Right-click in the cell in which the camera is streaming, and then click **Rotate**.
2. Click to select one of the following options:
   - Maintain the **Default Rotation**
   - **Rotate 90°**
   - **Rotate 180°**
   - **Rotate -90°**

Viewing Analytics Overlays

Pelco's Sarix cameras provide for an overlay of analytics on live and recorded video that can be displayed in VxOpsCenter. The types of analytics overlays are **Simple & Enhanced** and **Advanced**.

Simple & Enhanced overlays are as follows.

- **Simple Motion Detection** shows a red-tinted shape overlaying the video where motion is present.
- **Analytic Drawing Data** shows lines, boxes, and text to track areas of motion within the scene.

Advanced overlays are as follows.

- **Object Bounding Boxes** outlines and follows persons detected in the configured Person Detection Zones or vehicles detected in the configured Vehicle Detection Zones. Bounding boxes are shown for any object (person/vehicle) that is detected in the camera's view.
- **Object Detection Zones** shows the configured Person Detection Zones and Vehicle Detections Zones, and Counterflow zones (person or vehicle).
  - **Person In Zone** bounding boxes are outlined in blue; when occupied, the corners of the bounding boxes will be red, as will the zone border. An event will be named *Person in Zone " [name of zone]"*.
  - **Vehicle In Zone** bounding boxes are outlined in orange; when occupied, the corners of the bounding boxes will be red, as will the zone border. An event will be named *Vehicle in Zone " [name of zone]"*.
  - A **Person Counterflow** or **Vehicle Counterflow** zone has green and red arrows in the center of the zone to show correct and wrong directions. The zones for person detection are outlined in blue; the zones for vehicle detection are outlined in orange. When one or more people or vehicles are moving in the wrong direction, the bounding boxes for each person or vehicle change to red and will show the full rectangular border. An event will be named *Person Counterflow in "[name of zone]"* or *Vehicle Counterflow in "[name of zone]"*.
- **Counting Lines** shows directional traffic across a defined line.
  - Enabled **Person Counter** lines are blue.
  - Enabled **Vehicle Counter** lines are orange.
  - A counter can be uni-directional, bi-directional, or omni-directional, such that any person or vehicle crossing the line in the selected direction(s) will be detected. The direction is indicated by arrows along the line.

- **Uni-Directional** lines record one count for each crossing of the line in the selected direction of the line.
- **Bi-Directional** lines record two separate counts, one for each crossing of the line in both directions of the line.
- **Omni-Directional** lines record one count for each crossing of the line in any direction.
- Click to select or deselect **Display Counts** to display or hide the line count—how many people or vehicles have crossed the line in the appropriate direction(s).
- Users with Admin permissions can right-click a counter line to reset the counter to zero (for that line only).

  Note: Users can perform counter resets for streams running on VxOpsCenter client (the local decoder); users cannot perform counter resets for streams running on an Enhanced Decoder.

A cell containing a detection zone in which an appropriate object is detected will have an yellow border around the cell.

Object detection events are shown in VxPortal, but the overlays are not.

Note: For PTZ cameras, these are in presets that contain analytic configurations.

Note: Overlays are not available in exported recordings.

Overlays are configured at the camera level. Configuration parameters include the type of overlays that are enabled, the shape of each overlay in the overlay type, and sensitivity to motion. Refer to the operations manual for the camera to configure simple-motion data analytics and analytics drawing data. Refer to the current version of the *VideoXpert® Toolbox Operations Manual* or the VxToolbox section of this operations manual to configure Advanced overlays.

Analytics overlays can be enabled on a per-cell basis. That is, you can have more than one cell streaming video for the same camera, and set each cell to display (or not display) different analytics.

Viewing Analytics Overlays in a Cell

To view an analytics overlay in a cell:

1. Open the camera in a cell.
2. Right-click the cell, click **Analytic Overlays**, click **Enhanced**, and then click to select **Object Bounding Boxes**, **Object Detection Zones**, and/or **Counting Lines**. If you select **Counting Lines**, you can also click to select **Display Counts**.

   A check mark is displayed to the left of the option you select, indicating that the overlay is enabled.
3. If appropriate, repeat the previous step and select another overlay.
4. (Optional) To disable an analytics overlay, perform the steps above, but click to deselect the overlay(s) that you do not want to display.

   Note: Overlays will still be recorded even when they are disabled, so you can view them in playback mode.

   Note: Enhanced and Advanced Analytic Overlays can not be used in the same cell at the same time. Selecting one type of overlay will deselect the other.

Enabling and Disabling Audio

Video sources marked with a small blue or gray dot (•) are associated with an audio source. In any cell containing or associated with an audio source, click the *Mute/Unmute* icon ( ) to enable or disable audio within a cell; you can control volume through Windows' standard audio controls.

To change the audio preferences on one or more cells:

1. In Mission Control, click the *User Menu* icon ( ).
2. Click **Preferences**.
3. In the *Preferences* dialog box, click **Cells**.
4. Click to select or deselect the checkbox for *Automatically play audio when available*.
5. Click to select *From selected cell only* or *From all visible cells*.
6. Click **Done**.

Expanding a Cell to Full-Screen

In the source cell, double-click the cell or click the *View Video in Full-Screen* icon ( ) to expand a cell to the full-screen. Click the same icon (now labeled *Exit Full Screen*), double-click the cell, or press the Esc key to exit full-screen mode.

Watching Recorded Video With VideoXpert

Users with sufficient permissions can access recorded video from any video source in a workspace. Placing the pointer on a cell containing a source with recorded video will reveal playback controls.

1. Place your cursor over the cell containing the source with recordings that you want to watch.
2. Navigate to the date and time in the recording that you want to view using one of the following methods:
   - Click the *Jump to Specific Date/Time* icon ( ), specify or select the date and time, and then click **Go**.
   - Click in the cell with the recording to playback, enter a value in military time (for example: for 9:45PM, enter 2145). As you do this, the *Quick Launch* dialog box opens. When the time is displayed in the black box at the center of the *Quick Launch* dialog box, click the *Jump to Time* icon ( ) or press Alt+Enter.
   - Click at the appropriate spot in the timeline to quickly navigate to a different time in the recording. Green areas on the timeline represent recorded video.
   - Drag the timeline into position to navigate to a different time in the recording. Green areas on the timeline represent recorded video.
   - Use the playback controls to direct video playback.
   - Click the *Jump Back 30 Seconds* icon ( ) to jump back 30 seconds from the currently selected spot in the timeline.
   - Click the *Jump to Now* icon ( ) to jump to live video.

Note: If a user changes a camera from http to https settings or the opposite, there might be a recording gap of between five seconds and five minutes.

The timeline shows the date and time in the top row. The bottom row is color-coded.

- A green bar indicates a scheduled recording.
- An orange bar indicates an event recording.
- A red bar indicates an alarm recording.
- A blue bar indicates a motion recording.
- A yellow bar indicates a manual recording.
- A checkered blue bar indicates the results of a requested pixel search that detected motion.
- A cyan bar indicates that an analytic was triggered.
- A purple bar along the very bottom of the timeline indicates an audio recording.
- A full-height bar indicates standard-quality recording.
- A half-height bar indicates an iframe/low-quality recording.
- No bar (all black) indicates that there is no recording for that date and time.
- A gray bar indicates a future time.

Watching Recorded Video with Edge Storage

If your camera or video source is recording video locally (using a micro SD card or in concert with ONVIF Profile G), and you have the correct permissions, the timeline will display the camera storage icon ( ); the device tooltip will also alert you to multiple recording locations.

Click on the camera timeline to display the camera storage icon ( ), and then click the icon to open an investigation tab showing the camera's various recording locations as separate timelines.

You cannot view video while it is stored on the camera; you must push video from the camera to a VideoXpert Storage recorder, to view video stored on a camera. See the section titled *Using Investigation to View Video Stored on a Camera's Local Storage*.

Using Pixel Search

Pixel Search enables you to quickly access motion detection events on a specific camera for a selected range of time in a recording.

1. For the specific camera (one at a time) that has the events you want to view, ensure that you have set the Motion Detection analytic, *Detect Motion* setting to *On Server* in VxToolbox. See the current version of the *VideoXpert® Toolbox Operations Manual* for instructions.
2. Display the camera in a cell in VxOpsCenter; expand the cell, if appropriate.
3. Right-click the cell, and select **Search Recordings for Motion (Pixel Search).**
4. In the dialog box, click to select the checkbox for *Don't show again* (if appropriate), and then click **OK**.
5. In the grid that now overlays the camera view in the cell, select one or more zones (squares) in the grid, using one of these methods:
   - Click to select a single zone.
   - Click and drag to select multiple adjoining zones in a rectangular pattern.

- Hold down the Shift key on your keyboard, and click to select each zone. These do not need to be adjoining zones.
- Hold down the Shift key on your keyboard, click individual zones, and click and drag to also select groups of adjoining zones.
- To clear the selected zones, click the *Clear Selected Zones* icon ( ) at the upper left of the cell.
- To search in the zones that you did not choose, instead of the zones you chose, click the *Invert Selected Zones* icon ( ) at the upper left of the cell.

6. To select a different date and time range than what is currently selected, click the edit icon ( ) at the upper right corner of the cell, to the right of the date range; in the *Set Time Range* window, select a start date, start time, end date, and end time; and then click **Set**.
7. The length of time included in the default time range is based on the current time bar selection. For example, if **1hr** is selected in the time bar drop-down menu at the bottom of the workspace, then one hour will be the default time included in the search range. To change the length of time included, in the default time range, click the drop-down menu for the current time bar selection, and then click the appropriate time range.
8. (Optional) To exit the Pixel Search, click the *Cancel* icon ( ) at the upper left of the cell.
9. In the upper right of the cell, click **Search**.
   - The first event (chronologically) plays immediately.
   - Clips with motion events detected are indicated by blue bars in the timeline in the playback controls area.
   - The blue pixel search bars are half-height; motion is full-height.
   - To jump to the next event, click the Alt key, and then click the *Next Clip* icon ( ) in the playback controls area.
   - To jump to any event, select an event from the *Jump to Event* drop-down menu at the top of the window, or click the blue bar associated with the event in the playback controls area.
10. When finished, click **Done** in the top right corner of the window.

Using Bookmarks

When watching recorded video, you can create a private or public bookmark to note a moment in video to reference later. Bookmarks appear in a section in Mission Control. Public bookmarks are global resources; all users can see the public bookmarks you create. Within Mission Control, bookmarks behave like cameras; you can add a bookmark to a tab or workspace to recall the portion of video captured by the bookmark.

Creating Bookmarks

To create a bookmark:

1. While watching a recorded video, click the *Create Bookmark* icon ( ).
2. Provide a *Title* for the bookmark. The title can be searched within Mission Control.
3. (Optional) Enter information in the *Notes* field.
4. Click to select the checkbox to make this a *Private* or *Public* bookmark.

5. (Optional) Apply a lock to segments of video/audio recordings, called clips, to prevent them from being deleted unless they are purposely unlocked. To do so:
   a. Click to select the checkbox for *Lock Video*.
   b. Use the date and time selectors to set the start and end parameters for the lock.
6. Click **Save**.

Finding and Recalling Bookmarks

Bookmarks behave like any other camera or video source. Adding a bookmark to a workspace adds the camera to the workspace in playback mode, paused at the date and time specified by the bookmark.

1. Click *Bookmarks* in Mission Control to expand bookmark resources.
2. (Optional) Use the filters to search for a bookmark. The list of results only displays the source, date, and time for the bookmark in question, but you can also search by the plain-text note attached to the bookmark. Hover the cursor over a bookmark to get more information about it.
3. Add the bookmark to a tab or workspace.
4. To see the lock on the timeline, scroll to a time within the lock, and notice the white bar at the top of the timeline, with arrows pointing down to indicate the start and stop times.

Editing, Unlocking, and Deleting Bookmarks

To edit the plain text for the bookmark or to lock or unlock the bookmark, select the bookmark in Mission Control and click the *Edit Bookmark* icon ( ) at the lower right of the panel, you cannot change the date, time, or camera.

To delete a bookmark, select it in Mission Control, click the *Delete Bookmark* icon ( ) at the lower right of the panel, and then click **Delete**.

Synchronizing Video Playback

You can synchronize playback across multiple cells within a tab to provide different perspectives for a single recording event.

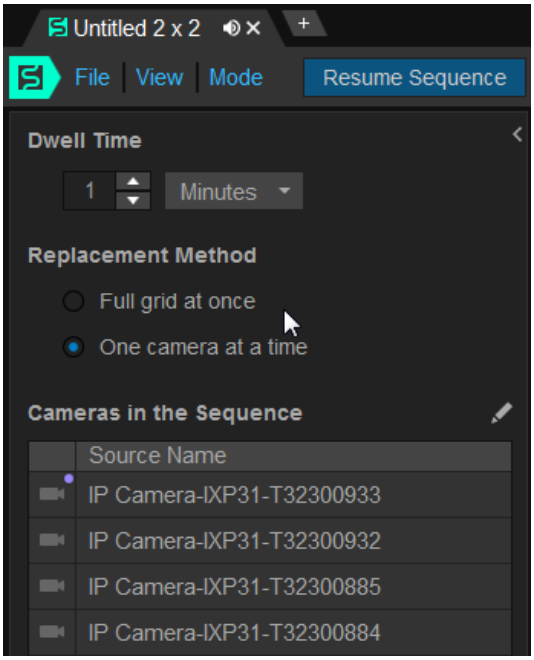
1. Click **Sync** in the tab containing the cells to synchronize.
2. Select the cells you want to synchronize, and then click **Sync**, or select **Sync All** to select all cells in the tab.
3. If necessary, click the *Play* icon ( ) to playback video. Cells will remain synchronized until you click **Sync** again or click **Unsync All**, even if you jump to live video and re-engage playback.
   - When using sync playback on any of your current monitors, click the *Activate Synchronous Play for This Cell* icon ( ) in the bottom left corner of the tab to add a tab to the sync group. The icon turns yellow when the cell is added to a sync group. The controls in any monitor belonging to the sync group will affect playback for all cells and tabs in the group.
   - Click the *Add to Multi-Tab Sync Group* icon ( ) to add cells in a tab to the global sync group.
   - To add individual cells in a monitor to the global sync group, click **Sync** to open the *Select Cells for Synchronized Playback* box, select the cells to add to the group, and then click **Sync**.
   - To remove a cell from the group, click the *Deactivate Synchronous Play for this Cell* icon ( ). The icon returns to white when it is removed from a sync group.

Creating a Live Sequence Mode

A video sequence, indicated by the sequence symbol ( ), is a series of cameras set to rotate through a tab at a user-defined period of time. When you configure a sequence, you can determine which cameras appear in the sequence; how often the cameras rotate; and whether or not to rotate an entire set of cameras, or just one at a time. A sequence may be helpful when you have more locations to track than you have monitors or attention.

To create a sequence:

1. In any tab, click *Mode* and select **Live Sequence**.



2. Set the *Dwell Time* period. This is the length of time that the tab will dwell on cameras before advancing to the next camera(s) in the sequence.
3. In the *Replacement Method* area, click to select the radio button for *Full grid at once*, or *One camera at a time*. This determines how many cameras you want to replace at the end of each dwell period. When replacing a single camera at a time, the cameras rotate through the grid, left-to-right, top-to bottom. (The next camera in the sequence moves into the top-left cell; the camera formerly in the top-left cell moves to the right, and so on. The bottom-right cell is bumped off the grid, until it re-enters the sequence.)
4. To add cameras to the **Live Sequence**:
   a. To the right of *Cameras in the Sequence*, click the edit icon ( ) to enter the *Edit Mode*.
   b. Either double-click cameras, or drag cameras into the *Cameras in the Sequence* box.
5. To delete cameras from the **Live Sequence**, click the **x** to the right of the name of the camera to delete in the *Cameras in the Sequence* box.
6. Click **Save**.
7. Click the *Resume Sequence* icon ( ).

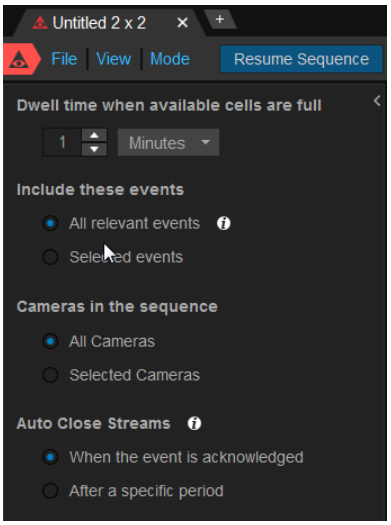
Creating an Alarm Sequence Mode

Alarm Sequence mode, indicated by the alarm symbol ( ), allows you to designate cameras that you want to watch only when meaningful events occur, so that you never miss activity relevant to your surveillance operations.

By default, the sequence will any camera-associated events that have been configured to provide a notification for your user account and role. You can refine the sequence to a subset of system cameras and a subset of camera-associated events that you want to watch.

To create an alarm sequence:

1. In any tab, click **Mode** and then click **Alarm Sequence**.



2. If the *Tab Mode Change Confirmation* dialog box opens, click **OK**.
3. Type in a value or select a value using the up and down arrows for *Dwell time when available cells are full*. This indicates how quickly video rotates through the sequence when you have more current events than available cells in the sequence.
4. (Optional) In the *Include these events* area, click to select the radio button for *Selected Events* if you only want to use a subset of events in your sequence, click the *Edit* icon ( ), click to select or deselect checkboxes for the *Event Types* to include, and then click **Save**; otherwise, leave the *All relevant events* radio button selected.
5. (Optional) In the *Cameras in the Sequence* area, click to select the radio button for *Selected Cameras* if you want the sequence to follow a specific subset of cameras, drag cameras into the sequence (the order does not matter for alarm sequences), and then click **Save**; otherwise, leave the *All Cameras* radio button selected.
6. (Optional) In the *Auto Close Stream* area, click to select the radio button for *After a specific period*, and then enter or select the time period; otherwise, leave the *When the event is acknowledged* radio button checked.
7. Click the *Resume Sequence* icon ( ).

Editing Sequences

Click the *Edit* icon ( ) to edit the cameras, events, and other settings belonging to a sequence.

You do not need to pause the sequence to edit the cameras in the sequence.

Pausing and Resuming Sequences

Click the *Pause Sequence* icon ( ) to stop cameras from rotating in or out of the sequence. The cameras in the tab will continue to play until you click the *Resume Sequence* icon ( ).

Setting up Snapshots

You can automatically save snapshots in a folder of your choosing.

1. In Mission Control, click the *User Menu* icon ( ).
2. Click **Preferences**.
3. Click *General*.
4. In the *When creating snapshots* area:
   a. Click to select the radio button for *JPG* or *PNG*.
   b. Click to select or deselect the checkbox for *Show overlays on snapshot*. If you select this option, also configure the following settings:
      - Under *Text Size*, click to select the radio button for either *Use default fixed size* or *Scale text as a percentage of snapshot height*. If you select scaling the text, enter a percentage in the field, either by typing-in a number or selecting one using the up and down arrows.
      - Select a *Position* from the drop-down menu.
      - Use the slider bar or type in a value to select the *Opacity of Text Background*.
      - In the *Text color* area, click to select the radio button for *Use default colors* or *Use white for both camera name and timestamp*.
      - Click to select or deselect the checkbox for *Auto-save snapshots*. If you select this option, enter the folder location to which the snapshots will be saved either by typing in the path or using the **Browse** button.
5. Click **Done** to exit the *Preferences* window.

Taking Snapshots

1. Click the *Take Snapshot* icon ( ) to take a snapshot of the current frame.
2. If you have not set up a location for saved snapshots, provide a location and file name for the snapshot, and then click **Save**.
3. If you have set up a location for saved snapshots using the instructions in the section titled *Setting up Snapshots*, the snapshot will be saved to that location without further interaction.

Displaying Statistics

To display camera statistics over live video in the pane, right-click the cell for which you want to see statistics, click **Diagnostics**, and then click **Statistics**. Perform this step again to hide the information.

Most statistics presented are self-explanatory; but a few statistics require some explanation:

- *Call-up Time* is a measure of how long it took between launching a stream and displaying the first frame.
- *Pipeline Latency* is the amount of buffering used by the client. This directly adds to the end-to-end latency between the camera and the display.

For example: If you have a camera with a 3-second GOP that does not force out iFrames upon new client connections, it might take 3 seconds to call up the first frame, but you could still have very low end-to-end latency thereafter.

Pipeline Latency is independent of *Call-up Time*.

- *Displayed Frame Rate* is the average number of frames displayed over a small time period. If frames are dropped by the client, the value could be lower than the camera's configured frame-rate. Because of those differences and because actual frame-rates are rarely whole numbers, the rate is displayed to the second decimal point.
  For example: the NTSC standard is 29.7fps, not the 30fps typically shown in a camera configuration UI. If the measured frame-rate is reporting higher than expected, it might be due to a short averaging window. That is, it could be slower or faster at different points in time, but still at the expected average rate over a longer time period.
- *Display Jitter* is a measure of "jittery" (unsmooth) is the frame presentation. Ideally, frames are displayed smoothly (no jitter) at the exact frame interval of the camera.

  For example: Frames from a 30fps source should be displayed at 1/30 second intervals, but if the display is jittery, you will see a noticeable pattern of slow/fast, long/short intervals even though the average frame-rate is still 30.

  On many systems, client-side buffering is customer-configurable. Customers can hand-tune the buffering by starting with the smallest value and increasing until visible jitter is minimized. VideoXpert performs this configuration automatically; streams typically start with a small *Pipeline Latency* value, and then the value will increase during the first few seconds of playback to reduce jitter. Entering PTZ input mode forces the latency back to the minimum value, so that PTZ control latency is minimized, potentially at the expense of presentation smoothness.

Measuring Latency

Note: This feature is available to Admin users only. It is used to measure the performance (latency) of your system using a camera on the system. You must have access to the camera and a monitor to which you can point the camera.

To measure end-to-end latency[1] of the system using any camera:

1. Right-click the cell for the camera to view.
2. Click **Diagnostics**, click to select **Measure Latency**, and then click in the cell.
3. (Optional) Open the same camera in another cell, but do not dislpay the *Measure Latency* view. This helps you better aim the camera at the barcode.
4. Point the camera at the barcode on the VxOpsCenter screen.
   When the camera is able to read the barcode, the *Scanning Success* progress bar (green) begins to fill in.
5. Slightly adjust the camera position as needed to get the progress bar to 100%, and then read the *Average end-to-end latency* measurement above the bar.

6. To exit the *Measure Latency* feature:
   a. Right-click the cell, click **Diagnostics**, and then click to deselect **Measure Latency**.
   b. Click the play icon (▶) in the cell.

[1]US patent pending, docket number CLO-0186-US-NP/1005700.785US1.

Viewing and Filtering Sources

In Mission Control, click to expand **Content**, and then click the **Sources** tab to see a list of all video and audio sources that you are authorized to access.

- Click to expand the *Filter* area, and use it to shorten the list of sources.
  - Enter a Source Name, Model, Number or IP address in the *Filter by* field.
  - In the *Advanced Filter Options* field, select a filter from the *Save and Recall Source List Filter Sets* pull-down menu.
  - Click to expand *Advanced Filter Options* to reveal additional options; you can find cameras by *Tags*, whether they are *Online*, whether they are *Recording*, whether they are *On Screen*, and whether they are equipped with *Storage*.

    When you use two or more tags, the filter will find only those sources that have all of the tags assigned to them.
- To find a filter, click to expand *Advanced Filter Options*, click **Saved Filter Sets**, and then click the appropriate filter.
- To save a filter, click to expand *Advanced Filter Options*, populate the filter, click **Saved Filter Sets**, and then click **Save Filter**.
- To toggle between the *Folder View* and the *Video Sources* view, click the *Show Folder View* icon ( ) or the *Show List View* icon ( ), whichever is visible. These are located at the far right of the window, below the *Filter*.

See the section titled *Managing Tags* to create and manage folders.

Managing Tags

The *Manage Tags* window enables you to see information about a selected camera or cameras, create tags in the system, and organize cameras in a folder structure. Folders behave like tags in that you can use them to filter and search.

To access the *Manage Tags* window, do one of the following:

- In Mission Control, click the *User Menu* icon (▼), and then select **Manage Tags**.
- Right-click a video source, either in a cell or in the *Sources* list, and then select **Manage Tags**.

Viewing Tags in the Selected Camera(s) Panel

The *Selected Camera(s)* panel in the *Manage Tags* window displays folder tag information. It also allows you to create new tags.

1. In Mission Control, in the *Content* area, in *Sources* list, select the sources for which to manage tags.
2. Access the *Manage Tags* window.
3. Click the **Selected Camera(s)** tab.
4. Click to select or deselect the checkboxes in the *Show* field, for *My tags*, *Global tags*, and *Personal Tags*. Not all of these will be present for all cameras.
   - Global tags are signified by the *Global* icon (). These tags are available to all users within the system. All users can filter sources, exports, and bookmarks according to the listed tags.
   - Personal tags created by you are indicated by the *My Tag* icon (). These tags are only available to you and administrator-level users. You can use your personal tags to assign and sort resources in a way that best reflects how you use VideoXpert.
   - Folder tags are indicated by the *Folder Tag* icon ( ).
5. In the *Show tags applicable to selected camera(s)*, select **Any** or **All**.
   - **Any** shows tags that are assigned to any of the selected cameras.
   - **All** shows only those tags that are assigned to all of the selected cameras.
6. (Optional) To clear the tag(s) from the selected camera(s), do one of the following:
   - Remove a single tag by clicking the **x** at the right of the tag itself.
   - Remove all tags by clicking **Remove All**, and then click **Clear** in the confirmation dialog box.
7. Click **Done** to exit the window.

Creating and Assigning Tags in the Selected Camera(s) Panel

You create tags while assigning them.It is important to have a strategy for tags and camera organization before you begin creating and assigning tags.

1. Click to select one or more cameras for which to create and apply a tag.
2. Access the *Manage Tags* window.
3. Click within the tag field and type the name of the tag you want to assign; if the tag exists, you can select it and it will autofill.

4. If the tag does not exist, do one of the following:
   - Click **Create this tag (personal)** to create a tag that is private to your user account.
   - Click **Create this tag (global)** to create a tag that other users can see and use.
5. Click **Done** to exit the window.

Deleting Tags in the System Panel

Through OpsCenter, users with sufficient rights can delete global tags.

1. Access the *Manage Tags* window.
2. Select the **System** tab.
3. (Optional) Click to select the checkboxes in the *Show* field to enable or disable *My tags*, *Global tags*, or *Personal tags*.

   In addition to the tags included in the *Selected Camera(s)* panel, you will also see *Personal tags* which are indicated by the personal tag icon ( ).These tags are only visible to the creator and to administrator-level users.For this reason, there might not be any *Personal Tags*.
4. Do one of the following:
   - Select the tag you want to delete, and then click the *Delete* icon ( ).
   - Right-click the tag you want to delete, and then click **Delete**.
5. In the confirmation dialog box, click **Delete**.
6. Click **Done** to exit the window.

Creating Folders in the Folders Panel

A folder is a tag that enables you to group other tags to view in a directory-like structure; you can filter and search using a folder, as you would any other tag.

1. Access the *Manage Tags* window.
2. Access the *Create New Folder* dialog box by doing one of the following:
   - Click the **Folders** tab, right-click in the *Folder View* area, and then click **Add**.
   - Click the **Folders** tab, and then in the *Folder View* area, click the *Add New* folder icon ( ).
3. In the *Create New Folder* dialog box, enter a folder name in the *Name* field.
4. In the *Create as* field, click to select either the *Top-level folder* or *Child of* radio box. If you select *Child of*, use the drop-down menu to select the appropriate parent folder.
5. Click **OK**.
6. In the *Drag Cameras To and From Folders* area:
   a. (Optional) Use the filter to find the appropriate camera(s).
   b. Click and drag the camera(s) to the new folder.

      A camera can be assigned to only one folder at a time.
7. To remove a camera from the folder, do one of the following:
   - Click and drag it to the *Drag Cameras To and From Folders* area.
   - Click to select the camera, click the *Delete* icon ( ), and then click **OK**.

- Right-click the camera, click **Delete**, and then click **OK**.

8. To assign a camera to a different folder, click and drag it to the appropriate folder in the *Folder View* area.
9. Click **Done** to exit the window.

Renaming a Folder in the Folders Panel

1. Access the *Manage Tags* window.
2. Click the **Folders** tab.
3. To rename a folder, do one of the following:
   - Right-click the existing folder, click **Edit**. In the *Edit Folder* dialog box, enter a new value in the *Name* field, and then click **Save**.
   - Click to select the existing folder, click the *Edit* icon ( ). In the *Edit Folder* dialog box, enter a new value in the *Name* field, and then click **Save**.
4. Click **Done** to exit the window.

Deleting a Folder in the Folders Panel

1. Access the *Manage Tags* window.
2. Click the **Folders** tab.
3. To delete a folder, do one of the following:
   - Right-click the existing folder, click **Delete**, and then, in the *Delete Folder?* dialog box, click **OK**.
   - Click to select the existing folder, click the *Delete* icon ( ), and then, in the *Delete Folder?* dialog box, click **OK**.
4. Click **Done** to exit the window.

Playback Controls

Playback controls appear when you hover over a cell containing recorded video.

Table 5: Playback controls (from left to right)

Icon	Description
	Click (when white) to activate or (when yellow) to deactivate synchronous play for a cell; select in all cells that you want to synchronize within a tab.
	Create a bookmark.
	Take a snapshot of the current frame.
	Enter investigation mode for all selected cells.
	Mute or unmute audio on a source. If there is no audio for the source, the icon is not shown.

Icon	Description
	Rewind video. Click again to increase speeds from 2x, 4x, 8x, 16x, 32x, 64x, or 128x.
	Play video at normal speed.
	Fast-forward video. Click again to increase speeds from 2x, 4x, 8x, 16x, 32x, 64x, or 128x.
	Rewind video 30 seconds and initiate playback.
	Select the date and time of video you want to watch.
	Forward video to live playback.
	View video in full-screen or exit the full-screen and return to the tab view.

Controlling Cameras (PTZ)

Engaging PTZ control changes the color of the border around the cell containing the source (camera) you want to control: blue indicates native PTZ control, and purple indicates digital PTZ mode.

- **PTZ mode** functions when PTZ cameras are operating in live mode.
- **Digital PTZ** engages when you:
  - Engage PTZ controls for cameras.
  - Attempt to place PTZ cameras in playback mode; return to live video to engage native mode for supported cameras.
  - Press Alt+Enter to force digital PTZ mode.

In **Digital PTZ** mode, all PTZ controls affect their digital equivalents. Pan or tilt commands to a camera in digital PTZ mode cause the camera to digitally zoom in the requested direction (as opposed to physically moving the camera's field of view). Zoom commands will digitally zoom the camera from the center of the field of view. Digital PTZ enhancements may affect video quality.

Table 6: PTZ mode icons

Icon	Description
	If present, activates Linked PTZ. (Pelco Camera Link)
	If present, deactivates Linked PTZ. (Pelco Camera Link)
	Locks or unlocks PTZ controls for other users. If present, this icon is located in the cell heading.
	The *Zoom In* icon is located in the cell heading.
	The *Zoom Out* icon is located in the cell heading.
	If present, the *Cell Layout Menu Options* icon is located in the cell heading, to the right of the *Zoom In* and *Zoom Out* icons. When you click the icon, you can then click to select **Panoramic**, **Immersive**, or **Panomersive** views.

Icon	Description
	If present the system connection icon is located in the cell heading, to the left of the IP address and/or date and time. When present, the icon indicates that your connection to the system is configured to allow only MJPEG video.
	In the cell video, this icon engages the click-to-center mode. • Click to center video. • Double-click to center video and zoom in.

1. Select the cell you want to control.
2. Engage PTZ controls by one of the following methods:
   - In the upper left corner of the cell, click the *Activate Digital PTZ Mode* icon (or) or the *Activate PTZ Mode* icon ( ), whichever is present.
   - Press Alt+Enter to force digital PTZ mode, or enter PTZ mode when standard PTZ controls are unavailable.

   The cell border will turn blue or purple depending on the PTZ mode supported by the source.
3. If necessary for some wall-mounted fisheye cameras, manually switch the orientation in VxOpsCenter from the **Ceiling (default)** mount setting to the **Wall** mount setting. To do so, right-click the camera cell, click **Orientation**, and then click **Wall**.
4. Control the camera by one of the following methods. Use the joystick or mouse to affect broad motions, and the keyboard to perform more precise movements.
   - Move the joystick up and down to tilt the camera; press the up and down arrows to nudge the camera vertically.
   - Move the joystick left and right or press to pan the camera; press the left and right arrows to nudge the camera laterally.
   - Twist the joystick right to zoom in and left to zoom out; press + or Page Up to zoom in and - or Page Down to zoom out. When zooming the camera in, video may jump briefly when the camera switches from physical to digital zoom; to prevent this behavior, disable the camera's digital zoom feature.
   - Use the mouse to pan and zoom. Click on the region to which you want to pan, and double-click to zoom in to the region.
5. To exit PTZ mode, click the *Deactivate Digital PTZ Mode* icon (or) or the *Deactivate PTZ Mode* icon ( ), whichever is present.

Using Click-to-Center PTZ

When PTZ mode is enabled, you can click within the cell to center a camera's field of on any point on which you click, within the cell. Click-to-center functionality is not supported for all cameras.

When PTZ mode is enabled within a cell:

- Click in the cell to center the camera's field of view on the location that you clicked.
- Double-click to center video and zoom in on the location that you clicked.
- Hold Alt and double-click, to zoom out.

Using PTZ Zoom to Box

When PTZ mode is enabled, you can draw a box to which the camera will recenter and will zoom in so that the box fills the entire cell that contains the camera stream. Zoom to Box functionality is not supported for all cameras.

When PTZ mode is enabled within a cell:

1. Click the *Zoom to Box* icon ( ) to the right of the PTZ and lock icons.

   This icon is only available if the camera supports Zoom to Box.

2. In the cell, draw a box to indicate the area to which you will zoom.

To exit the *Zoom to Box* view, click the *Zoom to Box* icon again.

Executing PTZ Presets and Patterns

A PTZ preset is a defined PTZ position; you can send the camera to the defined position by calling the preset. A PTZ pattern (or a preset tour) is a series of presets; you can configure most patterns to dwell at each preset for a specific period of time.

If a pattern or preset exists on the camera, to execute it:

1. Click the cell in which the camera video is being displayed.
2. (Optional) Execute a preset using one of the following methods:
   - Right-click the cell displaying the camera, select *Presets*, and then select the preset you want to execute.
   - Click the cell displaying the camera, begin entering the preset number. As you do this, the *Quick Launch* dialog box opens. When the preset number is displayed in the black box at the center of the *Quick Launch* dialog box, click the *Trigger Preset* icon ( ) or press Ctrl + Enter.
3. (Optional) To execute a pattern, right-click, select *Pattern*, and then select the pattern you want to execute.
4. To exit a preset or a pattern:
   - To stop a preset or a pattern, click the *Deactivate Digital PTZ Mode* icon (or) or the *Deactivate PTZ Mode* icon ( ), whichever is present.
   - To stop a pattern only, right-click the cell, select **Pattern** and then select **Stop Pattern**.

Creating Presets

VideoXpert does not store presets. Any presets or patterns you create through VxOpsCenter are created and stored camera-side. When you create a preset through VideoXpert, you will assign the preset a numerical value; the preset will appear in the camera or encoder interface as “Preset <value>”. Some cameras and encoders have limitations—a maximum value for presets or reserved values that you cannot change.

If you want to assign a non-numerical, friendly name to a preset, you must change the name of the preset from within the camera interface.

Note: For Pelco NET5500 and NET5400 series encoders, you can edit presets, but you cannot create new ones.

1. In the upper left corner of the cell, click the *Activate Digital PTZ Mode* icon (or) or the *Activate PTZ Mode* icon ( ), whichever is present.
2. Move the camera to the position you want to mark as a preset.
3. Right click, select *Preset*, and then click **Add Preset**.
4. Enter or select a number for the preset. The maximum number for the preset is determined by the camera or encoder on which you are creating a preset. Some cameras have reserved values that you cannot use to set a new preset.
5. Click **OK**.

Editing Presets

Some presets are pre-defined by the camera or encoder; you cannot edit these presets.

Note: For Pelco NET5500 and NET5400 series encoders, you can edit presets, but you cannot create or delete presets.

1. In the upper left corner of the cell, click the *Activate Digital PTZ Mode* icon (or) or the *Activate PTZ Mode* icon ( ), whichever is present.
2. Position the camera to the location that you will make the preset.
3. Right-click in the cell, click **Presets**, and then hover over the preset you want to change.
4. Click the *Reposition the preset to the current PTZ spacial coordinates* icon ( ).
5. Click **OK**.

Deleting Presets

Some presets are pre-defined by the camera or encoder; you cannot delete these presets.

Note: For Pelco NET5500 and NET5400 series encoders, you can edit presets, but you cannot create or delete presets.

1. In the upper left corner of the cell, click the *Activate Digital PTZ Mode* icon (or) or the *Activate PTZ Mode* icon ( ), whichever is present.
2. Right click in the cell, click **Presets**, and hover over the preset you want to delete.
3. Click the *Delete* icon ( ).
4. Click **Delete**.

Using Quick Export

Use Quick Export to export a recording of one or more sources using predefined or custom dates and times.

To use Quick Export from the *Sources* panel:

1. Right-click the source, and then click **Quick Export**.
2. Click to select **Previous 5 minutes**, **Previous Minute**, or **Custom**.
3. If you selected **Custom**, in the *Custom Quick Export* dialog box, enter clip start and end dates and times either by typing them in or selecting them from the calendar and/or clock in each field. As you change the dates and times, the export size estimate below the start and end times fields is updated. After you have entered the correct dates and times, click **OK**.

4. In the *Export Playlist As* dialog box:
   a. (Optional) Enter a new string in the *Export Name* field.
   b. View the export size estimate and verify that you have enough space on the location to which you are exporting the clip.
      - The maximum clip size estimate is 11 GB; the size of the clip itself is not limited to 11 GB.
      - Playlists with multiple clips will be the estimated sum of the clips.
      - The export size estimate does not include VxPlayer. If you are downloading VxPlayer, add the size of the player to the estimate.
   c. (Optional) If present, click to select the checkbox for *Export to alternate location*. If you select this option:
      - Type a valid network path in the *Export Location* field.
      - If necessary, type in a *Username* and *Password* in the appropriate fields.
      - If appropriate and available, click **Copy VxPlayer to This Location**.
   d. (Optional) If the *Encrypt this export* is not already selected, and it is appropriate to do so, click to select the checkbox and then type a value in the *Password* and *Confirm Password* fields.

      Note: If forced export encryption is enabled (in VxToolbox), this option will be selected and grayed-out. All exports are encrypted, unless you export to an alternate location.
   e. Click **Start Export**.
5. In the *Export Playlist As* dialog box, click **View Exports** to locate the export in the *Export Archive*, or click **Close**.

To use Quick Export from a timeline:

1. Right-click timeline for a cell or for synchronized cells, and then click **Quick Export**.
2. Click to select **Previous 5 minutes**, **Previous minute**, **Next minute**, **Next 5 minutes**, or **Custom**.
3. If you selected **Custom**, in the *Custom Quick Export* dialog box, enter clip start and end dates and times either by typing them in or selecting them from the calendar and/or clock in each field. As you change the dates and times, the export size estimate below the start and end times fields is updated. After you have entered the correct dates and times, click **OK**.
4. In the *Export Playlist As* dialog box:
   a. (Optional) Enter a new string in the *Export Name* field.
   b. View the export size estimate and verify that you have enough space on the location to which you are exporting the clip.
      - The maximum clip size estimate is 11 GB; the size of the clip itself is not limited to 11 GB.
      - Playlists with multiple clips will be the estimated sum of the clips.
      - The export size estimate does not include VxPlayer. If you are downloading VxPlayer, add the size of the player to the estimate.

c. (Optional) If present, click to select the checkbox for *Export to alternate location*. If you select this option:

- Type a valid network path in the *Export Location* field.
- If necessary, type in a *Username* and *Password* in the appropriate fields.
- If appropriate and available, click **Copy VxPlayer to This Location**.

d. (Optional) If the *Encrypt this export* is not already selected, and it is appropriate to do so, click to select the checkbox and then type a value in the *Password* and *Confirm Password* fields.

Note: If forced export encryption is enabled (in VxToolbox), this option will be selected and grayed-out. All exports are encrypted, unless you export to an alternate location.

e. Click **Start Export**.

5. In the *Export Playlist As* dialog box, click **View Exports** to locate the export in the *Export Archive*, or click **Close**.

Using Investigation Mode

Investigation mode provides a more detailed interface for synchronized playback and video search in a single window, making it easier to investigate a scene. From investigation mode, users can also trim and export video clips from the system's network video recorder for evidentiary safe keeping.

As you add cameras to the investigation window, the cameras appear in a detailed timeline at the bottom of the tab populated with recording information for each camera. You can use the timeline to navigate the composite recording.

In the timeline:

- A green bar above the recording indicates continuous recording.
- A blue bar above the recording indicates a motion detection recording.
- A red bar above the recording indicates an alarm or analytics recording.
- A thin purple bar under the video recording bar indicates audio recording.

Entering Investigation Mode

Investigation mode provides robust, synchronized playback controls with any number of cells, allowing users to fully investigate an incident across multiple cameras simultaneously. Investigation mode always opens in a new tab.

1. Synchronize the cells you want to investigate. To investigate a single cell, do not synchronize any cells; if there cells are already synchronized, then apply **Sync** to only the cell that you want to investigate.
2. Click in a cell in the **Sync** group, and then click the *Investigate* icon ( ).
3. (Optional) Add cameras to the layout. As you add cameras, they will appear in the cells of the investigation tab, and in the camera list at the bottom of the workspace. A timeline is included in the playback controls area, indicating the availability of recorded video for all cameras.

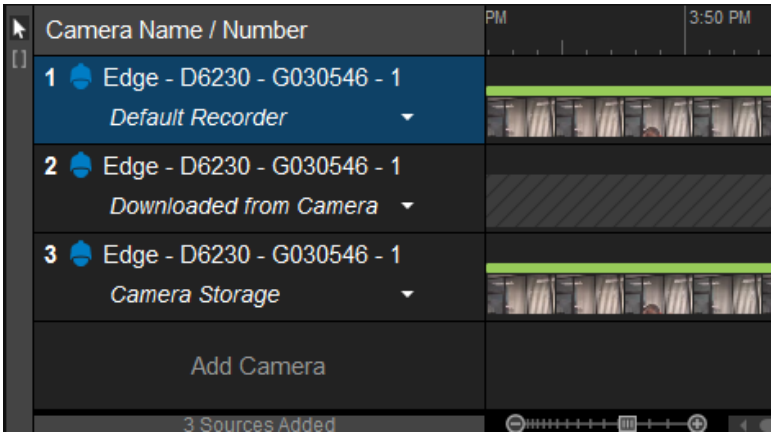
Using Investigation to View Video Stored on a Camera's Local Storage

If your camera or video source is recording video locally (using an SD card or in concert with ONVIF Profile G), and you have the correct permissions, the timeline will display the ; the device tooltip will also alert you to multiple recording locations. You cannot view video while it is stored on the camera; you must first push video from the camera to a VideoXpert Storage recorder in order to view a camera's local recordings.

Note: Refer to documentation for your camera to enable and setup local recording. The process to enable and use local recordings may differ by camera model.

Click to open an investigation tab showing the camera's various recording locations as separate timelines. On VideoXpert Professional systems, the timelines are labeled as follows:

- **Default Recorder**: Video recorded by your VideoXpert Storage recorder. These are the recordings you would normally see when you playback video.
- **Downloaded from Camera**: Video pushed from the camera to the recorder does not overwrite video already stored on the recorder; the video recorded on the camera and the video recorded on the VXS recorder coexist. This timeline shows video that has been pushed from the camera to the recorder. You can only view these recordings when in the multi-recording investigation tab.
- **Camera Storage**: Displays thumbnails representing video stored on the camera. You must use the timeline to create and push video clips to default storage to view it.



Pushing Video From the Camera to Storage

This process assumes your camera is recording video locally.

1. Click to enter an investigation with timelines representing VideoXpert Storage, the camera's local storage, and video pushed from the camera to the recorder.
2. Within the *Camera Storage* timeline, click and drag along the section of the Camera Storage timeline to indicate the clip or section of video that you want to view.
3. Click on the clip to expose the down arrow symbol ( ), and then select **Add to Default Recorder**.
4. Click **OK**.

You can now play video that was moved from the camera to storage; it will appear in the *Downloaded from Camera* timeline.

Playing Back Video After Moving it to Storage

Video that has been copied from the camera to Storage will appear in the second timeline, title *Downloaded from Camera*. Select the section of video you want to play from here and play back. Video is synchronized between your default recorder and the *Downloaded from Camera* timeline.

Using Auto-backfill Recording Gaps

For cameras on your VideoXpert system that have Edge Storage, Auto-backfill Recording Gaps functionality detects when a gap in recording occurs, queries the camera for recordings, and automatically downloads video and audio (if present) to fill the gap.

Note: This feature must be enabled in order to work. It is enabled and disabled in VxToolbox.

When the recording server has been down, either due to a hardware/software fault or for maintenance, there can be a gap in the recording. When the recording server is online again, the VideoXpert system queries the SD card on the camera for missing video. Recordings are retrieved automatically for the down period.

To use this feature:

1. Click on the camera timeline to display the camera storage icon (), and then click the icon to open an investigation tab showing separate timelines for the camera:
   - Default Recorder—on VxStorage only
   - Downloaded from Camera—on the camera (Edge Recording)
   - Camera Storage—on the camera's SD card
2. If necessary, add cameras of interest to the investigation.
   When you add a camera to an investigation by dragging and dropping from the *Source* panel in Mission Control, the **All Recordings** option is selected by default.
3. For the appropriate timeline listed in the *Camera Name / Number* list, click the down arrow icon () to access the drop-down menu, and then click **All Recordings**.

Creating Clips

Operators can create clips of recorded information, trim video clips, save them to a playlist for safekeeping, or delete them.

The trim tool [] enables users to select a portion of a recording and save it to a within an investigation as a clip. Clip selections persist in the timeline, even if you choose not to add the clip to the playlist. Once you've selected a clip, you can resize or delete the selection using the time-box controls on the timeline.

1. When in Investigation Mode, click on the timeline where you want to select a clip.
2. Drag to select the start and end time of the clip you want to add to a playlist.
3. To add a clip to a playlist, click on the clip you want to select to expose the down arrow symbol (), and then select **Add to Playlist**.
4. To delete a clip, click on the clip to expose the down arrow symbol (), and select **Delete**.
5. When you delete the clip, it will be removed from any playlists that you have not exported.
6. If you have changed a clip, but would like to undo the change, click on the clip to expose the down arrow symbol (), and then select **Revert Changes**.

Creating a Playlist

A **playlist** is a series of recorded clips. Operators can trim video clips and save them to a playlist for safekeeping. Playlists are saved locally. You can reference your playlist later, but if you absolutely want to be sure that you don't lose the clips or video in your investigation playlist, you should export the playlist to your Core server.

1. When in Investigation Mode, click the selection arrow () above the clip symbol.
2. On the timeline, click on the clip to expose the down arrow symbol (), and select *Add to Playlist*. Repeat as necessary.
3. Refer to the following sections to preview, edit, or export the playlist.

Previewing and Editing Playlists

- You can preview your playlist at anytime to ensure that it adequately captures your investigation. If it does not, you can reorganize the clips in the playlist or re-trim clips to refine the action captured by each clip.
- Click and drag clips in the playlist to reorder them.

- Click the playlist tools icon (), and then click **Preview Playlist** to playback your playlist. Clips are stitched together in the order that they appear in the playlist.
- Re-trim a clip by either of the following methods:
  - In the playlist, right-click a clip, select **Re-trim clip**, and then adjust the start and/or end times of the clip. Click **Apply** when complete to save your changes back to the clip and playlist.
  - In the playlist, click to select a clip, click the playlist tools icon (), click **Re-trim clip**, and then adjust the start and/or end times of the clip. Click **Apply** when complete to save your changes back to the clip and playlist.
  - In the timeline, click and drag the start time and/or end time of the clip, click the down arrow symbol (), and then select **Apply To Playlist**. This updates the listing that is already in the playlist.
- Delete a clip from the playlist and from the timeline by one of the following methods:
  - In the playlist, click to select one or more clips, right-click one of the selected clips, and then click **Delete selected clips**.
  - In the playlist, click to select one or more clips, click the playlist tools icon (), and then click **Delete selected clips**.
  - In the timeline, click on a clip to expose the down arrow symbol (), and then select **Delete**.

Exporting a Playlist

Exporting a playlist allows you to save a collection of video clips, so that you can easily find and download your investigation later. Exporting video from network storage to your Core allows you to store video independently of your VideoXpert recorder for quick access later. The system exports unencrypted files in the MKV format, and encrypted files in ZIP format.

If you do not have permission to export video for the video sources in your investigation video, or the recordings saved to your playlist are no longer available from network storage, you will not be able to export a full playlist. You can still export a playlist with missing clips.

If you are logged in as an administrator or have been granted the necessary permissions, you can export a playlist to an alternate location, such as a USB thumb drive or network share. You can view the export in the *Export Archive* window, but you cannot download the export from the *Export Archive* window.

You must have created a playlist and be in the investigation mode to export a playlist.

1. At the upper right corner of the playlist (left) panel, click the *Export Playlist* icon ().
2. In the *Export Playlist As* dialog box, enter a value in the *Export Name* field.
3. (Optional) If present, click to select the checkbox for *Export to alternate location*. If you select this option:
   - Type a valid network path in the *Export Location* field.
   - If necessary, type in a *Username* and *Password* in the appropriate fields.
   - If appropriate and the available, click **Copy VxPlayer to This Location**.
4. (Optional) If the *Encrypt this export* is not already selected, and it is appropriate to do so, click to select the checkbox and then type a value in the *Password* and *Confirm Password* fields.

   Note: If forced export encryption is enabled (in VxToolbox), this option will be selected and grayed-out. All exports are encrypted, unless you export to an alternate location.

5. Click **Start Export**.
6. (Optional) Click **View Exports** to view the status of your export and view the *Export Archive* window.
7. (Optional) When your export is complete, you can download it locally:
   a. In the *Export Playlist As* dialog box , click **View Exports**.
   b. In the entry for the export, click **Download**.
   c. Navigate to the folder in which you want to save the export; enter a new value in the *File name* field, or accept the default; and then click **Save**.
   d. (Optional) After the file is saved, click **Show File** to open the file location, and then open the file.
8. At any time, you can view, edit, download, and delete exports from the *Export Archive*. See the section titled *Using the Export Archive*.

Encrypting Export Files

When you export a playlist, the VxOpsCenter gives you the option to encrypt the file. Encrypting the file ensures that no one can tamper with your exported video. To decrypt and playback an export, you must have the password used when generating the export and the **VideoXport Player**; you cannot playback encrypted exports with another video player.

Encrypted exports appear as ZIP archives containing the playlist file, video clips (MKV) and a signature file. When you attempt to open an encrypted export, it will prompt you for the password. The password will allow the player to decrypt the export. The player will then use the signature file and public key (within the signature) to validate the export and verify that it has not been tampered with. It will then playback the file.

If you lose or forget the password to an export, your administrator can recover it for you by returning to the export archive and selecting the export for which you need a password.

Note: If forced export encryption is enabled (in VxToolbox), all exports will be encrypted unless they are exported to an alternate location.

Using the Export Archive

From the *Export Archive* window, you can download, edit the name of, or delete exports. to access the window:

- If you are still in the *Export Playlist As* dialog box, click **View Exports**.
- In Mission Control, click the *User Menu* icon (▼), and then select **Show Export Archive**.

Previewing Exports

You can preview exports without downloading them from the *Export Archive*, which appears automatically when you export a playlist. You can also access the *Export Archive* at any time. See the section titled *Using the Export Archive*.

Unencrypted exports use the MKV format. Encrypted exports are ZIP files; if the export file has been encrypted, you must use the VideoXpert Player to decrypt and playback the file.

To preview the export

1. Access the *Export Archive*.
2. (Optional) Use the filters or sort the list of available exports by camera tag or other data associated with the export (camera name, ID, exporting user, etc).
3. To preview the archive:
   a. In the right column (untitled), to the right of *Download*, click the *Export Archive Menu* icon (▼).
   b. Click **Stream Export**.
   The export opens in a new window. Exports that are not still in storage might take a few minutes to access.

Downloading Exports

You can download exports from the *Export Archive*, which appears automatically when you export a playlist. You can also access the *Export Archive* at any time. See the section titled *Using the Export Archive*.

Note: If you are using VxOpsCenter on a VxPro server, you do not need to download exports; you can browse to the exports directory on your data drive to access exports.

Unencrypted exports use the MKV format. Encrypted exports are ZIP files; if the export file has been encrypted, you must use the VideoXpert Player to decrypt and playback the file.

1. Access the *Export Archive*.
2. (Optional) Use the filters or sort the list of available exports by camera tag or other data associated with the export (camera name, ID, exporting user, etc).
3. To download the archive without VideoXpert Player:
   a. Click **Download** for the archive row.
   b. Browse to a location and type a value in the *File name* field.
   c. Click **Save**.
   d. (Optional) When the archive has been downloaded, click **Show File** to open the browser to the file location.

4. To download the archive and the VideoXpert Player executable:
   a. In the right column (untitled), to the right of *Download*, click the *Export Archive Menu* icon ( ).
   b. Click **Download with VideoXpert Player**.
   c. Browse to a location and type a value in the *File name* field.
   d. Click **Save**.
   e. (Optional) When the archive has been downloaded, click **Show File** to open the browser to the file location.

Getting the Password for an Encrypted Export

1. To access the *Export Archive*, click the *User Menu* icon ( ) in mission control, and then select **Show Export Archive**.
2. (Optional) Use the filters to sort the list of available exports by camera tag or other data associated with the export (camera name, ID, exporting user, etc).
3. In the right column (untitled), to the right of *Download*, click the *Export Archive Menu* icon ( ).
4. Click **Get Password**.
5. In the *Test Export* dialog box, click **Copy to Clipboard**.
   The dialog box closes, and you can paste the password to another location.

Editing an Export Name

1. To access the *Export Archive*, click the *User Menu* icon ( ) in mission control, and then select **Show Export Archive**.
2. (Optional) Use the filters to sort the list of available exports by camera tag or other data associated with the export (camera name, ID, exporting user, etc).
3. Click the pencil icon ( ) in the left column for the archive row.
4. In the *Edit Export Name* dialog box, type a value in the *New Name* field.
5. Click **Save**.

Deleting One or More Exports

Deleting an export from the *Export Archive* sends it to the Trash Bin; you must delete an export from the Trash Bin to permanently remove it from the system. This two-step process prevents users from inadvertently removing exported files from the system.

1. To access the *Export Archive*, click the *User Menu* icon ( ) in mission control and select **Show Export Archive**.
2. In the *Export Archive* window, view the list of exports in the table.
   - (Optional) Sort by any column title.
   - (Optional) Click to expand **Filter**, type a value in the search field; and/or click in the *Camera Tags* field, and then click to select the tags. Click **Clear** in the *Camera Tags* field to clear the tags, or click **Clear Filters** at the upper right of the *Export Archive* window to clear both of the filter fields.

3. (Optional) To delete an export, click the trashcan icon ( ) in the left column for the archive row; in the confirmation dialog box, click to select or deselect the checkbox to *Delete Permanently*; and then click **Yes**.
   - If you did not select *Delete Permanently*, the archive is removed from the current list, and is added to the *Export Trash Bin*.
   - If you did select *Delete Permanently*, the archive is deleted, but not added to the *Export Trash Bin*.
4. (Optional) To delete multiple exports:
   a. Click to select the exports to delete (use the Ctrl or Shift keys).
   b. Click the trashcan symbol ( ) in one of the selected rows.
   c. Click to select or deselect the checkbox to *Delete Permanently*, and then click **Yes**.
      - If you did not select *Delete Permanently*, the archive is removed from the current list, and is added to the *Export Trash Bin*.
      - If you did select *Delete Permanently*, the archive is deleted, but not added to the *Export Trash Bin*.
5. If you want to view deleted exports, click the down arrow to the right of *Export Archive*, and then select **View Trash Bin**.
   - To move an export from the *Export Trash Bin* to the *Export Archive* window, click the export **Restore** button.
   - To delete multiple exports from the trash bin, click to select the exports (use Ctrl or Shift), click the *Export Archive Menu* icon ( ), click **Delete Selected Exports**, and then click **Delete Permanently** in the confirmation dialog box.
   - To return to the *Export Archive* window, click the **X** symbol in the upper right corner of the *Export Trash Bin* window.
6. If you want to delete failed exports, click the down arrow to the right of *Export Archive*, and then click **Delete All Failed Exports**. In the confirmation dialog box, click to select or deselect the checkbox for *Delete Permanently*, and then click **Yes**.
   If there are no failed exports, the option will not be present.
7. To exit the window, click the **X** in the upper-right corner of the window, or click outside the window.

Working with Plugins

Plugins are components that enhance the capabilities of VxOpsCenter Client. VxOpsCenter Client supports two types of plugins:

- **Overlay** plugins provide information supplemental to video and audio sources, and are meant to be used in conjunction with a source; both a source and overlay plugin will populate the same cell.
- **Content** plugins consume a cell by themselves; adding a content plugin to a cell that is already populated will replace whatever was in the cell.

Installing Plugins

Close the VxOpsCenter application before installing plugins.

To install a plugin, run the plugin installer, typically an MSI file.

Plugins install under C:\ProgramData\Pelco\OpsCenter\Plugins. VxOpsCenter searches this directory recursively on start-up to populate the plugins available to it.

Note: The Access Control System Viewer plugin is not automatically available. Obtain the installer from PartnerFirst.pelco.com, and see the installation instructions in the current version of the *VideoXpert® Installation Manual*.

Adding a Plugin to Your Workstation

To add a plugin to your workspace:

1. (Optional) Select the cell in which you want to add a plugin.
2. Access the available plugins by one of the following methods:
   - In Mission Control, click to expand *Content*, and then click **Plugins**.
   - In Mission Control, click the *Plugins* icon ( ).
3. If necessary, click to expand **Content Plugins** or **Overlay Plugins**.
4. If the plugin you need is not present in the *Plugins* panel, install it. See the section titled *Installing Plugins*.
5. Double-click the plugin to add it to the selected cell (if you selected a cell), or drag the plugin to a different cell. Double clicking a plugin will open the plugin in a manner that is consistent with video sources, as defined by the *When double-clicking a source* setting, available under *Preferences*.
6. If a dialog box opens, respond to any prompts.

Installing and Using the BriefCam Plugin

The BriefCam Plugin converts unstructured video into structured data that is searchable, actionable, and quantifiable. It performs object tracking and assigns metadata. It enables you to quickly review only video that is relevant, based on the metadata.

To use the BriefCam Plugin:

1. Install BriefCam Plugin. To do so, launch the plugin installation wizard, and follow the prompts in the *BriefCam Plugin By Pelco Setup* window.
2. Launch and log in to VxOpsCenter.
3. Click to expand the *Content* area, click **Plugins**, and then click **BriefCam Plugin by Pelco**.

4. In the *BriefCam Settings* dialog box, enter the appropriate values in the *Web Host*, *Username*, and *Password* fields, and then click **Save**.

The *BriefCam Insights* window opens. See the instructions for BriefCam Insights created and maintained by BriefCam.

Using the Event Viewer Plugin

The Event Viewer plugin allows you to view all events, and filter and sort the events. To use Event Viewer:

1. Click **Event Log** or open the *Event Viewer* plugin to open the *Event Viewer* in a cell of the workspace.
2. (Optional) In the Filter (left) panel of the cell, make one or more of the following selections:
   - Click in the *Event Source* area of the panel, and then click the source from the drop-down menu. Add event sources to the filter, as needed. To remove a source from the list, click the remove icon ( ) to the immediate right of the source name; to remove all sources from the list, click the *Clear the current filter settings* icon ( ) to the right of *Event Source*.
   - Enter or select a *From* date, *From* time, *To* date, and *To* time.
   - In the *Show events with status* area, click to select or deselect checkboxes for *Needs Attention*, *In Progress*, *Acknowledged*, and/or *No Action Needed*.
   - Enter or select a *Range* for the *Severity* of events to display.
   - Select a *User* from the drop-down menu. To show only those actions related to the selected user, click to select the checkbox for *Only show user related actions*.
   - In the *Type* area, select an event category from the drop-down menu, and then select the event type from the drop-down menu below *-AND-* (if present).
   - To clear the filter, click **Clear**.
3. (Optional) Click to select the *Pause Events* checkbox to stop the list from updating. To allow the list to update, click to deselect the checkbox.
4. (Optional) To sort, select the criterion from the drop-down menu to the right of *Sort by*, and then select **Ascending** or **Descending** order from the drop-down menu.
5. (Optional) To view details about an event, click to select the event from the list in the center panel. The event details panel (right panel of the *Event Viewer*) provides event information.
   - Click to expand **Event** to see basic information, which can include event name, date and time of the event, severity, notification type(s), and actions.
   - Click to expand **Event Source** to see source device information, which can include the IP address, device name, device type, and other event type-specific details.
   - Click to expand **Event Specifics** to see information for exported clips, which can include the camera name, start and end times, and the clip length for each clip. It also provides the total export length for all of the clips listed.
6. (Optional) To change an event from *Needs Attention* to *In Progress*, click to select the event, and then click to select the checkbox for *In Progress* at the upper upper left corner of the event details (right) panel. To change an event from *In Progress* to *Needs Attention*, click to deselect the checkbox for *In Progress* at the upper upper left corner of the event details (right) panel.

7. (Optional) To acknowledge one or more selected events that are identified with *Needs Attention*, click to select the event(s), and then click **Acknowledge** at the upper right corner of the event details (right) panel.
8. (Optional) To copy details of an event to paste into another application, click **Copy Details** at the bottom of the *Event Details* panel, and then click **Copy all to clipboard**. Navigate to the target application and paste the content.

Using the Image Viewer Plugin

The Image Viewer Content plugin allows you to display a directory of images within a cell of the Ops Center Client. The images rotate at a designated interval, or you can manually tab through the images. You can use the Image Viewer to scroll through important snapshots from your VxOpsCenter, or to display a series of important images (persons of interest, etc) in the same workspace that you use for video.

Note: The Image Viewer path is stored on the Core, and will follow your account across workstations; if you set a path local to a particular workstation, you will not be able to view your images on another workstation.

1. Open the *Image Viewer* plugin.
2. (Optional) Select an existing picture directory containing the images you want to view; this directory can be local or a network location. To do so:
   a. Click the menu icon ( ) and then click **Select picture directory**.
   b. Navigate to the folder.
   c. Click **OK**.
3. (Optional) If there is no directory, or if you want to save images to a new directory, create one. To do so:
   a. Click the menu icon ( ) and then click **Select picture directory**.
   b. Browse to an appropriate location, and then click **Make New Folder**.
   c. Type in a name for the folder, and then click **OK**.
4. (Optional) To select the speed at which to scroll through the images, click the menu icon ( ), click **Cycle images every...**, and then click one of the options.
5. (Optional) Click the menu icon ( ), and then click to select or deselect **Show Date/Time**.
6. (Optional) Click the menu icon ( ), and then click to select or deselect **Show Title**.
7. (Optional) Click the menu icon ( ), and then click to select or deselect **Fade between images**.
8. (Optional) Control scrolling through the images by using the back icon ( ), the pause icon ( ), and the forward icon ( ) at the lower right of the Image Viewer plugin.

Using the Web Browser Plugin

The Chromium web browser plugin provides a means to access web resources from within VxOpsCenter.

To add the plugin to your workspace:

1. Click to expand the *Content* area, click **Plugins**, and then drag the **Web Browser** plugin into a cell.

2. You can also double-click **Web Browser** to open a new single-cell tab containing the plugin.
3. Type a value into the search field (a keyword by which to search or a known URL).
4. (Optional) To select the whole URL, triple-click in the cell.

Using the Access Control System Viewer Plugin (Optional)

Note: This plugin is not automatically available. Obtain the installer from PartnerFirst.pelco.com, and see the installation instructions in the current version of the *VideoXpert® Installation Manual*.

The Access Control System Viewer Plugin enables the communication and data exchange from various Access Control Systems to the VideoXpert System. A server component, called an Access Control Server, communicates directly to the Access Control System and relays information to the Access Control System Viewer while relaying events between the Access Control System and VideoXpert. While the ACS Server handles events, it also provides other information to the Access Control System Viewer, such as user images that the Access Control System Viewer may display in association with events injected by the ACS Server.

An Access Control Server will provide value without the use of the Access Control System Viewer. Events may be passed to/from the ACS and VX and these events may be viewed with the Event Viewer OCC Plugin or the Admin Portal Events Tab, however, user images, door controls and enhanced Event filters are provided through the Access Control System Viewer Plugin.

Launching the Access Control System Viewer Plugin

1. Double-click the plugin or drag and drop it into a cell.
2. If an Info dialog box opens, make note of the information, and then click **OK** to close the box.

Filtering the Events in the Access Control System Viewer

1. Click the **Filter** tab.
2. Use the following filter settings to control which events are displayed in the Viewer.
   - (Optional) Enter start and end dates and times:
     - Select or type in a date and time in the *End Time* fields--the time before which you want to see filter results.
     - Select or type in either the the number of *Minutes Before* to include in the filtered time range OR select or type in a date and time in the *Start Time* fields.
     - To select a different *End Time*, click **Clear End**.
   - In the *Show events with status* area, click to select or deselect checkboxes for *Needs Attention*, *In-Progress*, *Acknowledged*, and/or *Logged*.
   - (Optional) Select a *Property Display Filter* from the drop-down menu. This selects what is displayed for an event when it is expanded (center panel). Selecting **None** displays all properties, selecting **Remove IDs** displays all properties except those IDs that are unnecessary for the users to see, and **Minimal** displays only minimal details about the event.
   - (Optional) Enter or select a *Range* for the *Severity* of events to display.
   - (Optional) Select a user from the *VMS Users* drop-down menu. To show only those actions related to the selected user, click to select the checkbox for *Only show user related actions*.
   - (Optional) In the *Events* area, select an event category from the drop-down menu, and then

select the event type from the drop-down menu below *-AND-*.

- (Optional) To clear the filter, click **Reset Filter**.

Configuring Access Control

From the Access Control tab, you can configure communication to an Access Control Server and display information that is not available elsewhere in VideoXpert.

Adding, Editing, and Deleting Access Control Servers

1. Click the **Access Control** tab.
2. If you do not see the *Access Control Server* list, click the gear icon ( ).
3. To add an access control server:
   a. Click the *Add access control system* icon ( ).
   b. Type a descriptive string in the **Server Name** field.
   c. Type in the *IP Address* of the server to add.
   d. Enter or select the *Port* number of the server to add.
   e. (Optional) Click to select the checkbox for *Auto Select Events*. When selected, the most recently added event in the event window is automatically selected and expanded.
   f. Click **Save**.
   g. (Optional) Repeat this procedure to add another server.
4. To edit an existing access control server:
   a. Click the *Edit access control system* icon ( ).
   b. (Optional) Type a new descriptive string in the **Server Name** field.
   c. Type in the *IP Address* of the server to add.
   d. Enter or select the *Port* number of the server to add.
   e. (Optional) Click to select the checkbox for *Auto Select Events*. When selected, the most recently added event in the event window is automatically selected and expanded.
   f. Click **Save**.
5. To delete an access control server, click the *Delete access control system* icon ( ), and then click **Yes**.
6. When you have finished configuring the servers, click **Close**.

Filtering on Access Points

An access point can be anything that the Access Control Server reports as an access point, whether it is a door, gate, or other entryway. All *Access Points* are listed along with the current known state of the each. The *Lock/Unlock* button shows the current state and allows the user to toggle Lock/Unlock the door by dragging the button – left for lock, right for unlock. The unlock state appears with a green background.

1. Click the **Access Control** tab.
2. Click to expand **Access Points**.
3. Select one or more Access Points from the *Access Point* list.
4. Click to select the checkbox for **Add Access Points to Filter**.

5. In the Event Window, click to select an event that has an access point.
   - Only events with that access point ID will be included in the Event Window.
   - The associated access point(s) are added to the *Access Points* list in the *Access Control* panel.

Filtering on Access Control Users

The *Access Control Users* section contains a list of known users of the Access Control System. A user may be selected at any time to display their associated image (if available).

1. Click the **Access Control** tab.
2. Click to expand **Access Control Users**.
3. From the drop-down menu, click to select an access control user.
4. (Optional) Click to select the checkbox for one of the following:
   - **Add Access Control User to Filter** will display only those events that are associated with the selected *Access Control User*.
   - **Update User on Event Selection** will cause the selected Access Control user to change when an event is selected that has a user associated with it. To choose an event, double-click the event in the Event Window. If you did not deselect the checkbox for Auto Select Events when you configured an Access Control Server, the event will be chosen automatically.

Using the Access Control System Viewer Event Window

The Event Window is the list of events that meet the criteria of the filter and Access Control configuration.

1. Click the **Access Control** tab.
2. Use the following options to find the information you need:
   - (Optional) Click to select or deselect the checkbox to *Pause events*. Deselect this checkbox to automatically display events as they are received by the VideoXpert System.
   - (Optional) In the *Sort by* field, select **Time** or **Severity** from the drop-down menu, and then select **Descending** or **Ascending** order from the drop-down menu.
   - Click an event to expand it.
   - To copy details of an event to the clipboard: click **Copy Details**, and then click **Copy all to clipboard**.You can then paste the information into another application.
   - View video associated with the event by dragging the viewer icon ( ) to a cell.

Using the VideoXpert® Plates ALPR Plugin

The VideoXpert Plates ALPR Plugin is a software-based Automatic License Plate Recognition system for video streams. It provides detection and capturing of vehicle license plates, and then compares the captured plates against lists of license plates to provide identification of suspect vehicles, VIPs, parking lot access, authorized vehicles, or unauthorized vehicles; or to identify unknown vehicles.

The plugin is distributed as a compiled binary, and is dependent on the following being present and running:

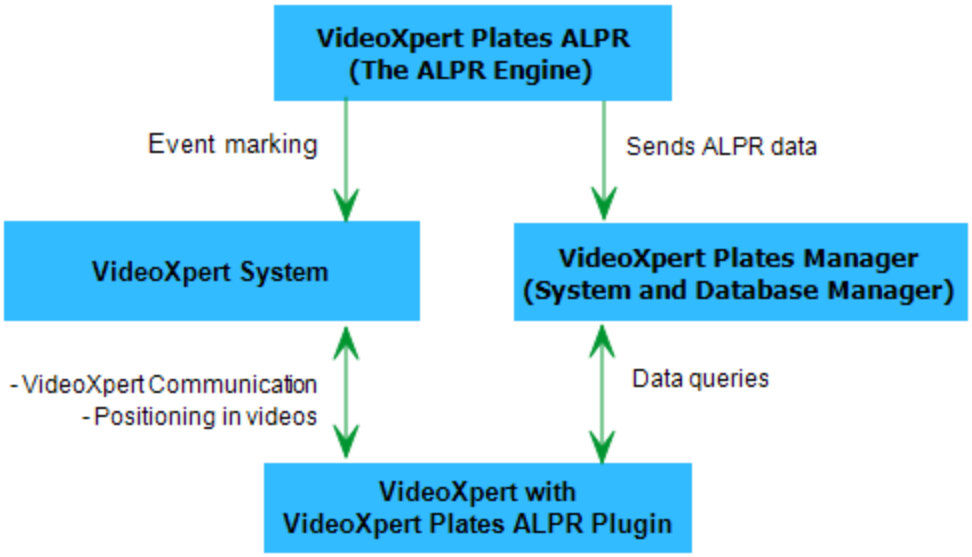
- Pelco VideoXpert software
- VideoXpert Plates ALPR and VideoXpert Plates Manager applications

To properly install the components of the VideoXpert Plates APLR plugin, follow the instructions in the current version of each of these documents, available on Pelco.com:

- *VideoXpert Plates™ Software Installation Manual*
- *VideoXpert Plates™ Quick Start Guide*
- *VideoXpert Plates™ ALPR User Manual*
- *VideoXpert Plates™ Manager User Manual*

Understanding VideoXpert Plates ALPR Plugin Architecture

The flow of information between the software components involved in using VideoXpert Plates is shown in the diagram below.



- VideoXpert Plates ALPR recognizes license plates, and then sends information to the VideoXpert Plates Manager. The event (plate capture) is also sent to and marked in the VideoXpert System.
- VideoXpert Plates Manager returns data to VideoXpert Plates ALPR Plugin, based on the search criteria. This accesses the requested VideoXpert video fragment at the timestamp associated with the license plate capture.
- Meta-data is stored and retrieved via the VideoXpert Plates Manager System.

Launching the VideoXpert Plates ALPR Plugin

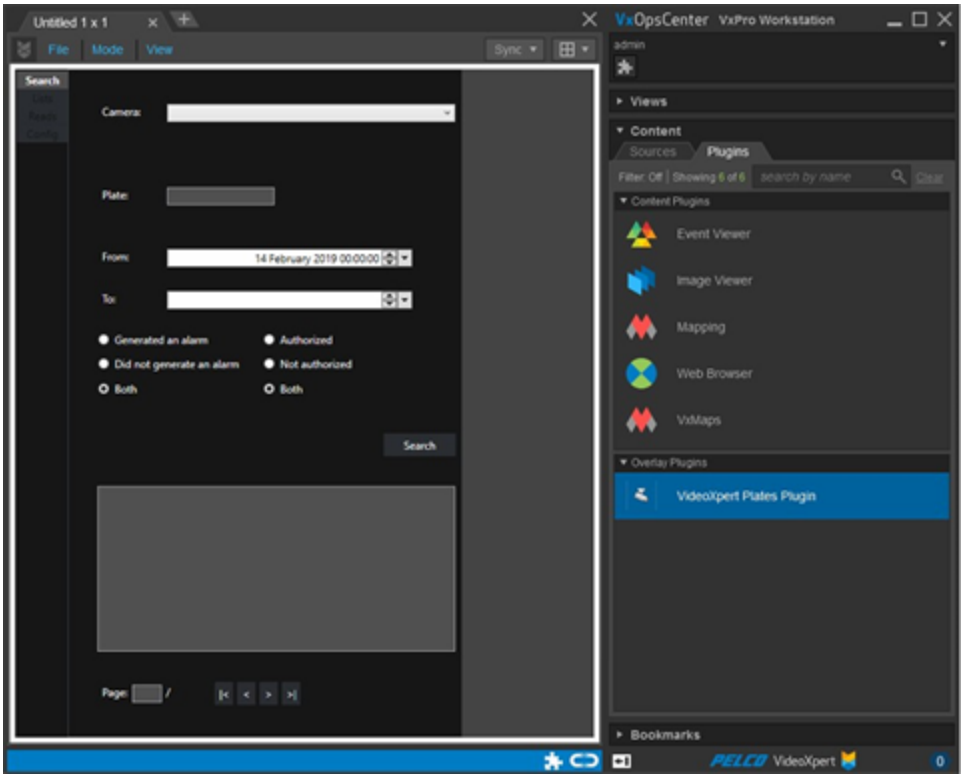
To begin using the plugin:

1. In VxOpsCenter, open *VideoXpert Plates Plugin*.
2. When you first run the plugin:
    a. Enter a valid string in the *VideoXpert Plates Manager URL* field.
        - The URL must refer to the location where the VideoXpert Plates Manager service is installed.
        - The format will be similar to "http://ipaddress:portnumber/VideoXpertPlates".

b. Enter a valid string in the *ApiKey* field:

- This is the key used to validate communication with the VideoXpert Plates Manager service.
- Obtain the key in the VideoXpert Plates Manager user interface. Access the **Settings** menu, and then access the *Users* window. In the *API Key* field, copy the key. Paste it into the *ApiKey* field in the VideoXpert Plates ALPR Plugin. For more information, see the current version of the *VideoXpert Plates™ Manager User Manual*.

3. Click **Login**.
   A new window opens, showing that *VideoXpert Plates Plugin* is running.



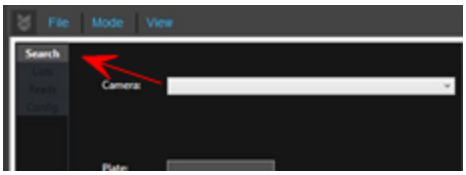
If you see the error message "Error connecting to VideoXpert Plates Manager", it means that communication between the two programs is corrupt. To fix the problem:

- If you are prompted to enter new credentials, enter the API key as instructed above.
- If you did not receive the prompt, or entering the key did not work:
  1. Return to VideoXpert Plates Manager.
  2. Access the **Settings** menu, and then access the *Users* window.
  3. Use the slider *Rest API Key*, and copy the new key.
  4. Return to the plugin, stop it, and then restart it by closing the plugin window.
  5. When prompted, paste the new key into the *ApiKey* field, and then click **Login**.
     A new window opens, showing that *VideoXpert Plates Plugin* is running.

Searching Plates

After launching the VideoXpert Plates ALPR Plugin, you can search for plates. To do so:

1. At the upper left of the plugin window, click the **Search** tab.



   The *Search* panel will open. It contains search criteria fields, the **Search** button, and the plate list area.

2. In the *Search* panel, enter the following search criteria:

   a. Use the drop-down menu in the *Cameras* field so select a specific camera or to click **All** cameras.

      - If you have a dual-camera (Infrared and color environmental camera), and would like to view an image of the plate in color, select the color camera.
      - Cameras are available in this field if they have been linked between VideoXpert Plates and VideoXpert, and if they are also active in VideoXpert Plates.

   b. Type a partial or complete plate number in the *Plate* field.
   You can use the "?" as a wildcard for a single character, or the "*" as a wildcard for multiple characters. For example: type "?J*" to get a list of all plates in the correct time range that have a "J" as the second character.

   c. In the *From* and *To* fields, specify a date and time for the search period, either by using the up and down arrows or the calendar.

   d. Click to select the appropriate radio button for the *Alarm* flag. Select *Generated an alarm* to show only plates that generated an alarm, *Did not generate an alarm* to show only plates that did not generate an alarm, or *Both* to show all plates that meet the rest of the search criteria.

   e. Click to select the appropriate radio button for the *Authorized* flag. Select *Authorized* to show only plates that are allowed in a specific zone, *Not authorized* to show only plates that are not allowed in a specific zone, or *Both* to show all plates that meet the rest of the search criteria.

3. Click **Search**.
4. View the list of plates that match the search criteria in the plate list area. The following information is shown:

   - A list of the plate capture records—Each capture in the list includes the date and time of the capture, the plate number, an image of the plate, and the authorization flag.
   - The current page and total number of pages (50 results per page)
   - Navigation buttons to move through the pages
   - The total number of records that match the search criteria—If no records matched, you will see the message *No records found*.

5. (Optional) To display a larger image of the vehicle and plate and to access the video clip associated with the plate read,click the capture in the plate list.

- Access the video clip by moving the cursor to an appropriate time in the green video timeline beneath the capture image, and then click **Play**.
- To increase the length of the video that is displayed before the point of capture, see the section titled *Configuring User Preferences*.

Managing the Black and White Lists

The VideoXpert Plates ALPR plugin includes a List Manager for White and Black lists.

- A Black List is a list of license plates (vehicles) that can cause an alarm to be triggered if the plate is seen. For example, if a company has a list of ex-staff, the security manager might want to receive an email or see an alarm on his screen when any of these vehicles are seen by a camera.
- A White List is a list of license plates that are permitted to enter an area or zone. The system might be set up so that when one of these plates is seen at a camera, a relay device is triggered to open a barrier to let them enter the site.

These lists must be initially created in the VideoXpert Plates Manager program. They will then automatically appear here. However, once they have been created, they can be edited from this menu. The user can also add plates to a list, with notes and *From* and *To* dates and times during which the lists will be active—when they are allowed in, or when they will trigger an alarm.

To use the Black and White Lists:

1. In the upper left corner of the plugin window, click the **Lists** tab.
2. In the *List* field, click to select a list from the drop-down menu.
3. (Optional) Type a partial or complete plate number in the *Plate* field.
   You can use the "?" as a wildcard for a single character, or the "*" as a wildcard for multiple characters. For example: type "?J*" to get a list of all plates in the correct time range that have a "J" as the second character.
4. Click **Search**.
5. View the list of plates that match the search criteria in the plate list area. If matches are found, the following information is shown:
   - A list of the plate capture records
   - The current page and total number of pages (50 results per page)
   - Navigation buttons to move through the pages
   - The total number of records that match the search criteria—If no records matched, you will see the message *No records found*.
6. (Optional) Click a record to diplay and/or edit the vehicle details, or to delete the item.
   - If you edit the details, click **Save changes**.
   - To delete the item, click **Delete item**.
7. (Optional) To add a vehicle to the list:
   a. Click **New Item**.
   b. Enter information into the following fields:
      - *List name*
      - *Plate number*

- *Description*
- *Comments*
- *Active from*
- *Active to*

c. Click **Add item**.

For more advanced list options, such as importing preexisting lists from .csv files, see the current version of the *VideoXpert Plates™ Manager Operations Manual*.

Viewing Reads

To veiw plate captures as soon as they are read, click the **Reads** tab in the upper left corner of the plugin window. The following information is displayed in the panel:

- Capture details, including:
  - Time and date
  - Camera ID
  - Plate number with a plate patch image
  - Status (authorized or not)
- List of recently captured plates, with the most recent at the top of the list

Click on a plate from the list to diplay the vehicle image on the right of the screen.

Configuring User Preferences

Each user can configure and save preferences for what to display when a capture is selected/viewed. These preferences are associated with the current user, and will be saved for for the user's next session. To configure preferences:

1. In the upper left corner of the plugin window, click the **Config** tab.
2. (Optional) If you will view license plate captures as video, in the *Video prebuffer (sec)* field, type in a number of seconds that will be included in video before the point of plate capture.
   For example: Enter a value of 3 to start the video three seconds before the plate was captured. The default value of zero (0) starts the video at the moment that the plate was captured.
3. (Optional) If you will view license plate captures as still images, click to select the checkbox for *Enable image mode*.

Logging Out

To log out of *VideoXpert Plates Plugin*:

1. In the upper left corner of the plugin window, click the **Config** tab.
2. Click **Logout**.

Using the Occupancy Counting Plugin

Occupancy Counting is available as a plugin to VideoXpert or as a standalone application, allows you to configure regions within the VideoXpert system, count traffic into and out of the regions, and calculate the number of occupants within the regions. It also sends real-time information to a web browser so that

people who want to enter the region can see the current occupancy count and know whether they can enter the region.

To launch Occupancy Counting and connect it to a VideoXpert System:

1. Ensure that you have created counting lines on the VideoXpert system to mark entrance and exit points of each region for which the system will be counting occupancy. Refer to the section titled *Configuring a Camera for the Pelco Advanced Analytics Suite* in the VxToolbox section of this manual.
2. Launch **Occupancy Counting** to open the *Occupancy Counting Configuration* window.
3. Connect to a VideoXpert system. To do so:
   a. Enter the appropriate values in the *Host*, *Port*, *Username*, and *Password* fields.
   b. Click **Save**.
   c. If any of the information is incorrect, an error message displays. Correct the information, and then click **Save**.
   d. When the *Connected* message is displayed, click **Continue**.

To create a new region:

1. In the *Regions* (left) panel, click the *Create a new region* icon ( ).
2. In the [region name] (right) panel:
   a. Type a string in the *Region Name* field.
   b. Under *Counters*, click the *Edit the "in" counters* icon ( ).
   c. In the *Edit "In" Counters for Region* dialog box, click to select the checkboxes for the *Available Lines* (right panel) to add to the *Selected Lines* (left panel), and then click **Save**.
   d. Under *Counters*, click the *Edit the "out" counters* icon ( ).
   e. In the *Edit "Out" Counters for Region* dialog box, click to select the checkboxes for the *Available Lines* (right panel) to add to the *Selected Lines* (left panel), and then click **Save**.
   f. Under *Event Thresholds*, click the *Edit the regions' thresholds* icon ( ).

      A threshold is used to trigger an event that will be injected into VideoXpert. This allows you to set up associated rules.
   g. In the *Edit Event Thresholds for Region* dialog box:
      i. Click the *Create a new threshold* icon ( ).
      ii. Click to select **Over** or **Under** in the *Trigger if capacity is* drop-down menu.
      iii. Type in a number for the capacity trigger.
      iv. Type a string in the *Event label* field.
      v. Create any other thresholds needed for the region.
      vi. Click **Save**.
   h. (Optional) View the *Total In* and *Total Out* values. Click **Reset Totals** to reset both the *Total In* and *Total Out* to zero.
   i. (Optional) View the maximum *Occupancy*. The denominator is the maximum capacity of the region, and is shown on the web page.

- Type a new value in the denominator field to change the maximum capacity of the region.
- Click **Reset Occupancy** to change the numerator to zero.

j. Under *Browser Images*:

   i. To the right of the *Under Capacity* field, click **Browse**, navigate to and click on an image file to use when the region is under capacity, and then click **Open**.

   ii. To the right of the *Over Capacity* field, click **Browse**, navigate to and click on an image file to use when the region is over capacity, and then click **Open**.

k. (Optional) To cancel changes to the region, click **Cancel**.

l. Click **Save Changes**.

m. (Optional) Click **Open Browser** to view the current occupancy and the image you associated with the corresponding threshold.

   Note: Each region generates a unique URL, so that users can have web pages open for more than one region at a time.

n. When you have finished adding, editing, or deleting the *Regions*, click **Done**, and then click **OK** in the *Confirm* dialog box. This will restart the system using the configured settings.

o. Click the ☒ in the upper right corner of the *Occupancy Counting Configuration* window to close it.

p. Click **Back** to enter *VideoXpert System Credientials* for the same or another system.

To view information for or edit an existing region:

1. In the *Regions* (left) panel, click to select the name of the region.
2. In the [region name] (right) panel, view the existing settings.
3. (Optional) Edit the settings as described above in "To create a new region".
4. When you have finished adding, editing, or deleting the *Regions*, click **Save Changes**, click **Done**, and then click **OK** in the *Confirm* dialog box. This will restart the system using the configured settings.
5. Click the ☒ in the upper right corner of the *Occupancy Counting Configuration* window to close it.
6. Click **Back** to enter *VideoXpert System Credientials* for the same or another system.

To delete a region:

1. In the *Regions* (left) panel, click to select the region to delete.
2. Click the *Delete the selected region* icon (🗑).

   Caution: There is no confirmation dialog box. When you click the*Delete the selected region* icon (🗑), the region is immediately deleted.

3. When you have finished adding, editing, or deleting the *Regions*, click **Save Changes**, click **Done**, and then click **OK** in the *Confirm* dialog box. This will restart the system using the configured settings.
4. Click the ☒ in the upper right corner of the *Occupancy Counting Configuration* window to close it.
5. Click **Back** to enter *VideoXpert System Credientials* for the same or another system.

Closing a Plugin

If you close a plugin without saving your changes, you will lose the changes.

Close a plugin by one of the following methods:

- Click the ( ) icon in the upper right corner of the plugin.
- Click the *Close Plugins* icon ( ) to the immediate left of the *Dock/Undock Mission Control* icon at the bottom of the window, and then click the close icon ( ) associated with the plugin you are closing.

Responding to Events

Events in VxOpsCenter are reported in several locations of the UI, depending on how each alarm is configured. Notification methods include:

- The cell that displays the camera for which there is an event will have a flashing red inner border and a red alarm bar at the upper left of the cell.
- In the *Content* area, in the *Sources* list, the source item will display with a red background.
- The *Event Notifications* window enables you to research, snooze, and acknowledge current events.
- The *Event Viewer* lists all events, and allows you to filter and sort the full list of events to include only those that you want to view.
- Recorded alarm events that are triggered by the *Rules Engine* will show up in the timeline. The color indicates the type of alarm.

Using the Event Viewer

The *Event Viewer* lists events on the system. To use Event Viewer, see the section titled *Using the Event Viewer Plugin*.

Using the Event Notifications Dialog Box

Note: This section only applies to events that are configured with notifications.

When an event occurs that is pertinent to your user account and has a notification configured, an event notification dialog box will pop-up on your monitor and present ways in which you can respond to the event. Event notifications requiring acknowledgment persist until you or other users with the same role acknowledge them. Other notifications persist based on the configuration of the alarm. See the current version of the VxToolbox section of this manual.

The events icon in the lower-right corner of your workspaces also shows the number of active events that require your attention.

1. Access an event notification by one of the following methods:
   - Click the notification icon ( ) at the lower right of the window, and then click to select the notification. Click again to close the list of notifications.
   - Click **Event Log** to open the event(s) in the *Event Viewer* window.
   - If there is more than one notification, click the *Expand* icon ( ) in the bottom left corner of the event notification window that pops-up on your screen, and then click to select the notification on which to act. Click the icon again, now labeled *Collapse*, to close the window.

     The event notification includes the type of event, the severity of the event, the device (for example, the specific camera) on which the event occurred, and the date and time of the event.
2. (Optional) If the alarm is set with snooze enabled, click **Snooze** to temporarily remove the visual notifications, but have them reappear at the preconfigured interval.
3. (Optional) Click **In-Progress** to indicate that you are either investigating the event or are in the process of correcting an event condition.
4. Click **Acknowledge** to indicate that the event is no longer relevant; or that the event condition has been accounted for or corrected. Acknowledging an event clears the event notification.

5. To copy details of an event to the clipboard: click **Copy Details**, and then click **Copy all to clipboard**.You can then paste the information into another application.
6. (Optional) If you accessed an event from the event notification pop-up window, you can click **Acknowledge Selected**, and then click **OK** in the confirmation dialog box, to clear the selected event from the event notification window.

Logging Out

When you log out, the application saves your desktop configuration, including video stream and plugins.

1. In Mission Control, click the *User Menu* icon (▼).
2. Click **Log Out**.
3. In the *Log Out* confirmation dialog box, click **Log Out**.

Closing the Application

It is important to close the application gracefully. Attempting to close the application through the start bar or by other means will leave the application processes open, continuing to consume resources.

All plugin processes must be closed before the application itself can close. When you attempt to exit the application, the application will first save and close all plugin applications before it can close. Depending on the number of plugins populating your workspace, this may take a few moments; do not attempt to forcefully close the application while it is shutting down, or you may lose unsaved workspace information or leave plugins and application processes open.

1. In Mission Control, click the *User Menu* icon (▼).
2. Click **Exit VxOpsCenter**.
3. In the *Exit VxOpsCenter* dialog box, click **Exit**.

Appendix A: Working With Permissions

Permissions define the actions a user can perform within the system. Where necessary, permissions are defined in a parent-child hierarchy; to assign a child permission, you must first define the parent permission.

Some features are not mapped to an obvious permission; in some cases, a feature might require compounding permissions. For example, users may have the “Place Cameras on Map” permission. However, users must also possess the “View Video Sources” permission for cameras they want to place in order to view video thumbnails and verify that they are placing cameras in the right locations on the map. Pay attention to compound or complex cases listed below to ensure that your users have the permissions they require to perform their surveillance roles within VideoXpert.

Understanding Permission Resource Restrictions

Permissions grant access to resources. Some permissions allow all-or-nothing access, using the **Allow All Resources** setting; some permissions allow you to select the resources to which a user has access using the **Allow Selected Resources** or **Allow All Resources Except Selected** settings. Some permissions can Match Parent Resources.

- If available and selected, **Match Parent Resources** assigns the same resource to the selected permission as is assigned to its parent.
- **Allow All Resources** indicates that all resources are accessible by the permission. If the permission does not support restrictions, but is an “on/off” permission, it is the only resource option.
  For example, selecting **Allow All Resources** for the *View Video Sources* permission grants a user access to view live video from all video sources within VideoXpert. If that same user was restricted to **Allow Selected Resources** for the *Use PTZ Mode* permission, then the user would be able to view video from all cameras but could only initiate PTZ controls for the cameras to which he or she had access.
- **Allow Selected Resources** indicates that the user can access all selected resources covered by that permission.
- **Allow All Resources Except Selected** indicates that the user can access all resources covered by that permission except those that are selected.

Using Supervision and Reports Permissions

Supervision and Report permissions provide access to supervisors checking user activities auditing the system. These permissions are not hierarchical.

Permission	Description
Multiview	Enables a supervisor to see users that are viewing a camera in real time.
Define PTZ Presets	Allows for the creating of PTZ presets and pattens for cameras.
Manage Camera Tours	This permission currently has no function.
View Private & Public Views	View all private and public shared views/workspaces.

Permission	Description
Manage Views & Global Shortcuts	Allows full access (create, update, and delete) to all public shared views and global shortcuts.
Audit User Activity	Allows users to export User Actions reports.

Using Device Management Permissions

These permissions grant users the ability to edit devices on the devices page, or tags at the system level.

Permission	Description
Manage System Tags	Provides the ability to create, edit, delete, and assign System/Public tags. This permission does not apply to personal tags created or assigned through VxOpsCenter; personal tags only appear to the creating user and only the creating user can assign, modify, or delete his or her own personal tags.
Manage Device Licenses	Provides the ability to view, add, and update VX device licenses.
Manage I/O	Provides full access to add, remove, and update alarm and relay devices.
Manage Cameras & Recorders	Provides full access to add, remove, and update camera and recorder devices.
Manage Display Devices	Provides full access to add, remove, and update monitor devices.
Configure Monitor Wall Decoders	Provides full access to add, remove, and update monitor walls on VideoXpert Enterprise systems.

Using User Management Permissions

These permissions grant users the ability to manage user account settings.

Permission	Description
Manage User Accounts	Grants the ability to create, update, or delete user accounts.
Assign Roles to Users	Grants the ability to assign roles to users.
Reset User Passwords	Grants the ability to change the password for the user account.
Manage Roles	Grants the ability to create, delete, and assign permissions to roles.

Using Event Management Permissions

Event management permissions enable users to view, act on, and configure event notifications. There is no hierarchy for these permissions, but in most cases, a user that can configure events should have access to the event log and be able to handle events.

Permission	Description
View Event History	Allows users to view the event history. **Note:** This permission does not include user audit events. The "Audit User Activity" permission is needed to view those events.
Handle Events	Allows a user to act on event notifications, marking them as “in progress” or acknowledging them. **Note:** This permission does not guarantee that a user will receive events, only that the users with this permission can act on event notifications the receive. Event notifications are defined within each event; the ability to modify events is granted by the “Configure Events” permission.
Configure Events	Provides the ability to configure events.

Using System Management Permissions

System Management permissions should be reserved for administrators. Users with these permissions can modify system configuration settings; these changes should be carefully planned by administrators to ensure that they do not interfere with video recording or interrupt surveillance operations.

Permission	Description
Manage System Licenses	Provides the ability to view, add, and update VideoXpert system licenses.
Set System Locale Options	Allows configuration of the VideoXpert System time.
Define System Shortcuts	This permission currently has no function.
Configure Recording	Allows configuration of recording, including recording schedules, camera assignments, and retention periods; this permission does not affect access to the VXS Recorder interface.
View System Health	Allows the user to view VideoXpert system diagnostic information, including hardware and network status, temperatures, loads, and recording gaps.
Manage System Servers	Provides the ability to edit settings.
Manage Member Systems	Provides the ability to add, edit, and remove aggregated VideoXpert systems.

Using Surveillance Permissions

Surveillance permissions are common permissions required by operators in your VideoXpert environment. These permissions grant access to view live or recorded video and to control cameras.

Permission	Description
View Video Sources	Enables users to access live video or audio. Audio sources are tied to video sources; granting access to a video source automatically grants access to associated audio sources.
View Full Camera Details	Allows a user to access sensitive camera information (for example: data source IP address, device hostname, device IP address, device mac address, device port, device serial, device, version, device VIP, and target recorders).
Use PTZ Mode	Provides the ability to pan, tilt, and zoom a camera. This permission includes a priority; 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.
Lock PTZ Mode	Provides the ability to lock a camera into a particular PTZ position. PTZ locks may be overridden by users with higher priority than the user who set the lock.
Send Video	Allows a user to send video to a remote monitor, rather than all monitors, to monitor walls, and to shared displays.
Access Alarms	Allows a user to view system alarm devices.
Access Relays	Allows a user to view and activate system relay devices.

Using Investigation Permissions

Investigation permissions grant access to recorded video and the ability to export video from the system. Typical setups will want to assign the same access level to “view recorded video” permissions as to “view video sources”.

Permission	Description
View Recorded Video	Enables users to access live video or audio. Audio sources are presently tied to video sources; granting access to a video source automatically grants access to associated audio sources.
Access Edge Storage	Grants permission to view and download camera SD card recordings.
Create Exports	Allows a user to create exports.
Manage My Exports	Allows a user to edit or delete entries in the “Manage Exports” window.
Download My Exports	Allows users to download exports that they have created.
Stream My Exports	Allows users to stream exports that they have created.

Permission	Description
Create Exports in Alternate Locations	Enables users to save exports to locations other than the default.
View All Exports	Allows a user to view all users' exports.
Manage All Exports	Allows a user to edit or delete all users' exports.
Download All Exports	Allows a user to download all users' exports.
Stream All Exports	Allows a user to stream all users' exports.
Create System Bookmarks	Allows a user to create system bookmarks
Lock System Bookmarks	Allows a user to lock system bookmarks.

VideoXpert® Professional v3.23 Operations Manual

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