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User Manual

Avigilon HD Network Video Recorder

HD-NVR4-PRM-64TB, HD-NVR4-PRM-96TB, HD-NVR4-PRM-128TB and HD-NVR4-PRM-157TB

Avigilon Corporation
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PDF-NVR4PRM-A

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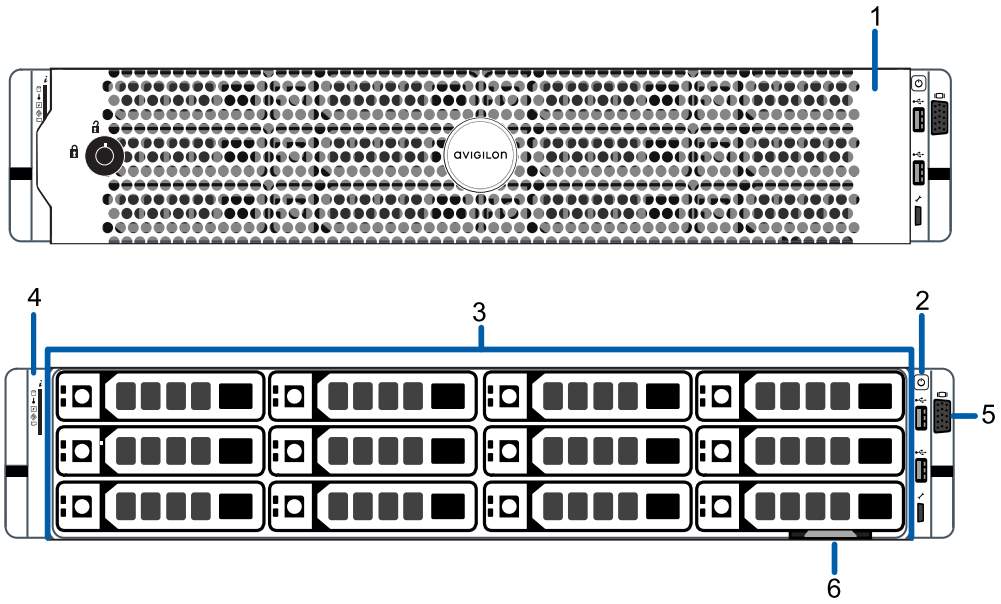
Introduction

The Avigilon HD Network Video Recorder is preloaded with the Avigilon Control Center software and is configured for maximum performance and reliability. The HD Network Video Recorder can be easily integrated into any existing Avigilon surveillance system, or act as the base of a new site.

Overview

Front View



1. **Bezel**

   Protects against unauthorized physical access to the hard drives.

2. **Power button**

   Controls the power supply to the recorder.

3. **Hard drives**

   Provides access to hot-swappable hard drives. There are LED indicators on each hard drive.

   Some drives may contain an empty hard drive tray.

4. **Diagnostic indicators**

   Provides information about system operations.

   For more information, see *LED Indicators* on page 23.

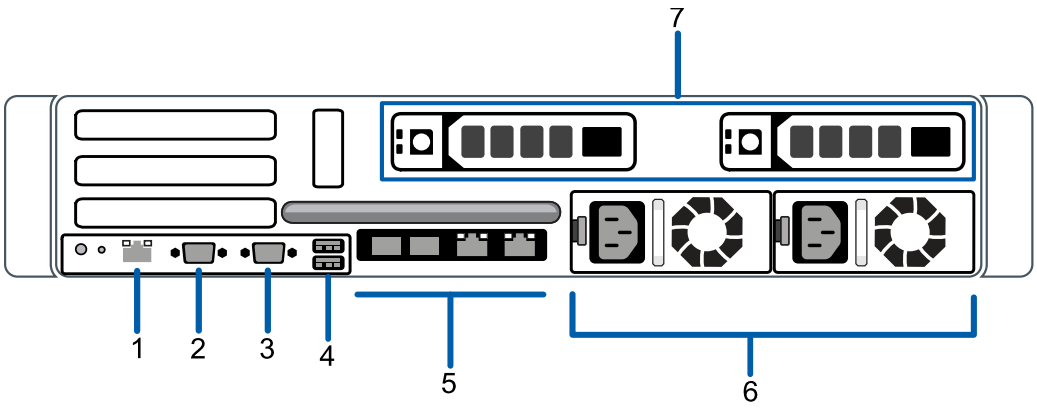
5. **Video connector**

   Accepts a VGA monitor connection.

6. **Information tag**

   Provides the product service details and support information.

Back View



1. **Out-of-Band Management (OOBM) connector**

   Accepts an OOBM RJ-45 connection.

2. **Serial connector**

   Accepts connections to serial devices.

3. **Video connector**

   Accepts a VGA monitor connection.

4. **USB connectors**

   Accepts USB connections to external devices.

5. **Two(2) SFP+ 10 Gbps and Two(2) RJ-45 1 Gbps Ethernet ports**

   Accepts Ethernet connections to multiple networks.

6. **Power supply**

   Two hot swappable redundant power supply.

7. **Hot-swappable hard drives**

   Two hot-swappable hard drives that are part of the storage array.

Installation

Package Contents

Ensure the package contains the following:

- Avigilon HD Network Video Recorder
- Rack sliding rail assembly kit
- Cable management arm assembly kit
- Bezel and key
- Power cables

Installing the Rack Rails and Cable Management Arm

If the recorder will be kept in a server rack, install the Rack Sliding Rails and the Cable Management Arm provided in the recorder package. Follow the procedures outlined in the *Rack Installation Instructions* and the *CMA Installation Instructions* provided in the assembly kits.

NOTE: The supplied Rack Sliding Rails are compatible with square and round hole racks.

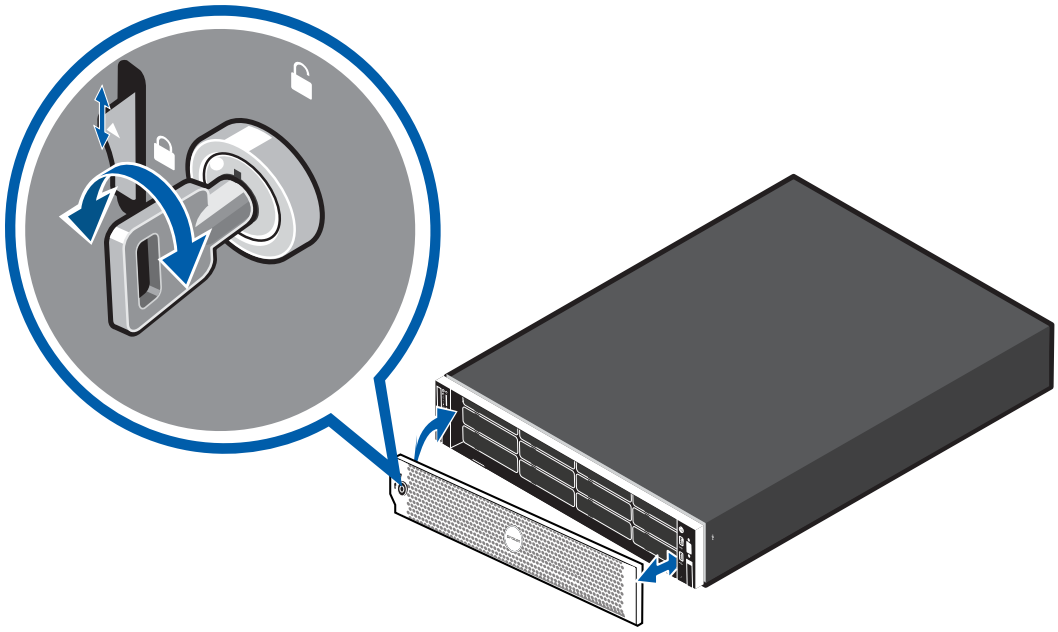
Connecting Cables

Refer to the diagrams in the Overview section for the location of the different connectors. Make the following connections as required:

1. Connect a KVM switch or separate keyboard, mouse and monitor to the recorder.
    - The keyboard and mouse can be connected to any USB port on the recorder.
    - The monitor can be connected to any video connector at the front or back of the recorder.
2. Connect the recorder to your network using an Ethernet cable.
3. For out-of-band management access and functionality, connect Ethernet cable to the OOBM connector.
4. Connect a power cable to each power supply at the back of the recorder.
5. Press the power button on the front of the recorder. Check that the recorder LED indicators display the correct status.

Installing the Bezel

The bezel can be installed on the front of the recorder to help protect the power button and hard drives against unauthorized access.



1. Align and insert the right end of the bezel onto the recorder.
2. Push the left end of the bezel against the recorder until it clicks into place.
3. Use the provided key to lock the bezel.

Logging into Windows Server for the First Time

After the recorder powers up, you will need to configure the Windows operating system for the first time

1. On the first screen, scroll through the list and select your preferred language.

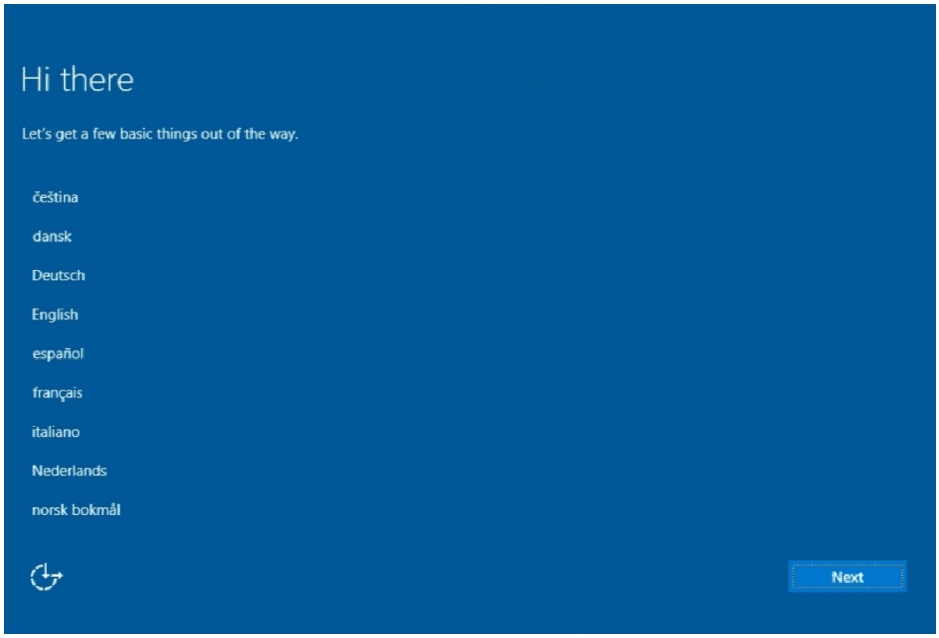


Figure 1: The language selection screen during initial Windows software set up. (Used with permission from Microsoft.)

2. Select the country/region, preferred app language, and keyboard layout, then click **Next**.
   NOTE: If a language other than English is selected, the server will restart. This is a normal Windows behavior, please proceed with step 3 once the server has finished restarting.
3. The "MICROSOFT SOFTWARE LICENSE TERMS" for the "MICROSOFT WINDOWS SERVER 2016 STANDARD AND DATACENTER" is displayed. Review the terms then click **Accept**.
4. On the Customize settings screen, set a password for the local administrator account.
   The password must:
   - Have a minimum length of 7 characters.
   - Meet complexity requirements. See https://technet.microsoft.com/en-ca/library/cc956977.aspx for details.

   You cannot reuse your last 24 passwords.

   The password will expire in 42 days.
5. Press Ctrl+Alt+Delete to unlock and input the login password created in the previous step.
6. Once logged in, the recorder will go through initial system setup.
7. The Setup dialog will start configuring the system storage. This process may take up to 5- 10 minutes depending upon the size of the storage volume.
8. After the storage is configured, Avigilon Control Center End User License Agreement will be displayed. Review the terms and click **Accept**.
   NOTE: User must click **Accept** after reviewing the terms otherwise the system will not be configured properly.
9. The Avigilon Control Center Software will start running automatically and GPU will be configured.
10. Once the setup procedure is complete, the system will restart.

Proceed to activate the license for the Avigilon Control Center software on your HD Network Video Recorder.

Activate the Avigilon Control Center™ Software

Downgrading to the ACC 5 Software:

The HD Network Video Recorder is pre-installed with ACC 6 software. You can use the ACC 6 software or the ACC 5 software. **Do not activate the ACC 6 software if you plan to use the ACC 5 software.** See *Downgrading to the ACC 5 Software* on the next page.

Before you can configure cameras and monitor live or recorded video, you will need to activate your ACC software license. The license is provided with the recorder. If you don't have a license, you will need to purchase one.

Other parts of the ACC system may start while you perform this procedure, but you will not be able to use any of the features until after license activation is complete.

Licensing the ACC™ 6 Software

The first time you connect to the new appliance with the ACC Client, you must activate a license for the new ACC software. After the license is activated, you can immediately use the licensed features.

1. Start the ACC Client.
2. The Select one or more sites to log in dialog box is displayed. If you are connected only to the new recorder, one site is listed in the left navigation panel. The default name is **HDVA**.
3. Double-click the new recorder name to log in. There is no user name or password set on the recorder.
4. In the top-left corner, click to open the New Task menu, then click .
5. In the site Setup tab, click .
6. In the License Management dialog box, click **Add License...**.
7. In the following dialog box, select one of the following tabs:
   - If you have internet access, select the **Automatic** tab. Go to *Automatic License Activation* below.
   - If you do not have internet access, or you plan to keep the system on a private intranet, select the **Manual** tab. Go to *Manual License Activation* below.

Automatic License Activation

In the **Automatic** tab:

1. In the Enter Product Keys section, enter the license key.
2. In the Activate and License Site section, click **Activate now**.

Manual License Activation

In the **Manual** tab:

1. In the **Enter Product Keys** section, enter the license key.
2. In Generate Activation File section, click **Save File...**.
3. In the Save As window, select where you want to save the `.key` file that is generated by the system. You

can rename the file as required.

4. Click **Save**.
5. Copy the `.key` file to a computer with internet access.

Open a web browser and go to **http://activate.avigilon.com**.

1. Click **Choose File** and select the `.key` file, click **Upload**. The generated license file (`.lic`) will download automatically. If it does not, allow the download to occur when you are prompted.
2. Copy the downloaded `.lic` file to a location that would be accessible to the ACC Client software.
3. Complete the product registration page to receive product updates from Avigilon, then click **Register**.

Return to the ACC Client:

1. In the Apply License File section, click **Apply...**.
2. Locate the downloaded `.lic` file and click **Open**.
3. In the Confirm Licenses dialog box, click **OK**.

Modifying Licenses

You can use the the License Management dialog box to add, remove, deactivate, and reactivate licenses for the ACC 6 software. For more information, see the *Avigilon Control Center Client User Guide*.

Downgrading to the ACC 5 Software

1. Open Windows **Settings** > **Apps** > **Features** and uninstall the ACC 6 software.
2. In Windows explorer, open the **D:** drive and delete the following directories:

   ```
   D:\AvigilonConfig
   D:\AvigilonData
   ```

3. In Windows Explorer, go to **C:\Avigilon\Control Center Installation Files\5.10**.
4. Install each application by double-clicking the installers in the following order:

   ACC 5 Server
   ACC 5 Client
   ACC 5 Player
   ACC 5 Gateway

5. To activate your license, see the *Avigilon Control Center Server User Guide* for the ACC 5 software, available on **http://avigilon.com**.

Networking

By default, the HD Network Video Recorder acquires an IP address on the network through DHCP. If you need to set up the recorder to use a static IP address or any specific network configuration, see the *Windows Help and Support* files for more information.

Configuring the Avigilon Control Center Software

After you set up and license the HD Network Video Recorder, complete the following steps to configure the ACC software.

For more information about any of the following procedures, see the Help files provided with the Avigilon Control Center Client software.

Starting Up and Shutting Down the Avigilon Control Center Client Software

After you install the ACC Client software, start the application and access the HD Network Video Recorder.

Starting Up the Client Software

Perform one of the following:

- In the Start menu, select **All Programs** or **All Apps** > **Avigilon** > **Avigilon Control Center Client**.
- Double-click  or  desktop shortcut icon.

When you are prompted, log in to your site. You can only access cameras and video after you log in.

Once the application has started, it will automatically display a list of all the sites that are connected to the same network. You will be prompted to log in to all sites.

Shutting Down the Client Software

1. In the top-right corner of the Client software, select  > **Exit**.
2. When the confirmation dialog box appears, click **Yes**.

Logging Into and Out of a Site

After you start the ACC Client software, you are immediately asked to log in to a site. By default, the HD Network Video Recorder is automatically added to the system as a server within a site of the same name.

The default username is *administrator* with no password.

Logging In

1. Open the Site Login tab. The Site Login tab is automatically displayed if you are launching the Client software for the first time.

   To manually access the Site Login tab, do one of the following:

   - From the top-right corner of the window, select > **Log In...**.
   - From the top-left corner of the application window, click to open the New Task menu, then click .

2. On the left side of the Site Login tab, select one or more sites.

   If the site you want to log into is not shown, click **Find Site...** to discover the site.

3. Enter your username and password for the selected sites.

   Or, select the **Use current Windows credentials** check box to automatically use the same username and password as your computer.

   NOTE: If you are unable to login using your current Windows credentials, your system may be using Kerberos as a network authentication protocol. Contact your network administrator for help.

4. Click **Log In**.

   You are logged into the selected sites.

If you want to be notified when new or disconnected sites come online, select the **Notify me when additional sites become available** check box.

If you want to see the login page each time you launch the Client software, select the **Show this tab on startup** check box. If you prefer not to login each time, you can disable this option and configure automatic login from the Client Settings dialog box.

Logging Out

You can log out of one or all sites at any time.

To...	Do this...
Log out of one or select sites	• In the System Explorer, select one or more sites then right-click and select **Log Out**.
Log out of all sites	1. In the top-right corner of the Client, select > **Log Out**. 2. In the confirmation dialog box, click **Yes**.

Changing the Administrator Password

After you log in to the ACC software for the first time, it is recommended that you change the default administrator password.

1. After you login, the Change Password dialog is displayed.
2. Enter a new password and then confirm the new password.

   The password must meet the minimum strength requirements.

   - ✔ — password meets the strength requirements.
   - ✖ — password does not meet the strength requirements, enter a new password.

   The password strength is defined by how easy it is for an unauthorized user to guess. If your password does not meet the strength requirements, try entering a series of words that is easy for you to remember but difficult for others to guess.
3. Click **OK**.

Tip: If you forget the default administrator password, resetting the password requires restoring the factory default settings on every server in the site. To avoid this issue, it is highly recommended that you create at least one other administrator level user as a backup.

Connecting Cameras to the Avigilon Control Center Software

After all the cameras in your system have been physically connected to the network, you need to connect the cameras to the ACC software so that video can be recorded and indexed for search.

1. In the site Setup tab, click  .

   The Connect/Disconnect Devices... tab is displayed.
2. In the Discovered Devices area, select one or more devices then click **Connect...**.

   Tip: You can also drag the device to a server on the Connected Devices list.
3. In the Connect Device dialog box, select the server you want the device to connect to.

   NOTE: If you are connecting multiple devices, all the cameras must use the same connection settings.
4. If you are connecting a third-party device, you may choose to connect the device by its native driver. In the **Device Type:** drop-down list, select the device's brand name. If there is only one option in the drop-down list, the system only supports one type of driver from the device.
5. If the camera supports a secure connection, the **Device Control:** drop-down list is displayed. Select one of the following options:

   NOTE: The setting may not be displayed if the camera only supports one of the options.

   - **Secure** — The system will protect and secure the camera's configuration and login details. This option is selected by default.
   - **Unsecure** — The camera's configuration and login details will not be secured and may be accessible to users with unauthorized access.

     Cameras with a secure connection are identified with the 🔒 icon in the Status column.

6. If it is not displayed, click to display the Site View Editor and choose where the device appears in the System Explorer.
    - In the site directory, drag devices up and down the right pane to set where it is displayed.
    - If your site includes folders, select a location for the device in the left pane. The right pane updates to show what is stored in that directory.
    - If you are connecting multiple devices at the same time, the selected devices must be assigned to the same location.

    Tip: If the site you want is not listed, you may need to connect the device to a different server. Make sure the selected server is connected to the site you want.
7. Click **OK**.
8. If the device is password protected, the Device Authentication dialog box appears. Enter the device's username and password, then click **OK**.

Setting the Recording Schedule

Once all the cameras have been connected, you can set when you want each camera to record video.

By default, all connected cameras are set to record when events are detected by the system. You can skip this procedure if you prefer to keep the default settings.

Before you can assign a recording schedule, you must create a template. The template allows you to assign the same schedule to multiple cameras.

Creating a Recording Template

The events that can be selected for the template depend on the licensed features in your system.

1. In the server Setup tab, click  . The Recording Schedule dialog box is displayed.
2. Click **Add Template** below the Templates: list.
3. Enter a name for the **New Template**.
4. Click the **Set Area** button, then click or drag the cursor across the **Recording Mode:** timeline to set the types of events that the cameras will record throughout the day. Individual rectangles on the Recording Mode: timeline are colored when they have been selected.

    The **Recording Mode:** options include:

    - **Continuous** — record video constantly.
    - **Motion** — only record video when motion is detected.
    - **POS Transactions** — only record video when a point of sale (POS) transaction is made.
    - **License Plates** — only record video when a license plate is detected.
5. To disable recording in parts of the template, click the **Clear Area** button, then click or drag the cursor across the timeline to remove the set recording areas.

6. If cameras are *not* recording in Continuous mode all day, you can set cameras to record reference images between events in the recording schedule.
    - Select the **Record a reference image every:** check box, then set the time between each reference image.

Setting Up a Weekly Recording Schedule

You can set up a weekly recording schedule by applying templates to cameras for each day of the week.

1. In the server Setup tab, click  . The Recording Schedule dialog box is displayed.
2. Select a template from the Templates: list.
3. In the Default Week area, click the days of the week this template applies to for each camera.

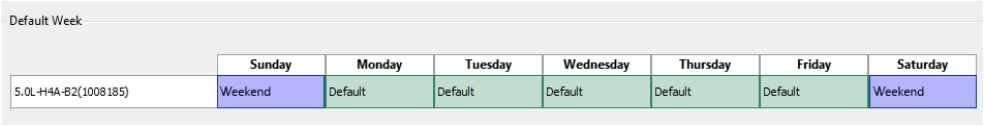


Figure 2: The Recording Schedule dialog box: Default Week

4. Click **OK**.

Setting Data Aging

Data aging defines how long recorded video is stored and the quality of the video as it ages over time. In the ACC software, the recorded image rate is slowly reduced so that recorded video can be viewed over a longer period of time while still making room for new recordings. You can adjust how long the full image rate video is kept, so that you have the best quality video when you need it.

The amount of data aging that is available depends on the camera you have connected to your system:

- For JPEG2000 or JPEG compression cameras, data aging is available at three rates:
    - **High Bandwidth** keeps recordings at their original quality.
    - **Half Image Rate** discards half of the recorded data to make room for new recordings.
    - **Quarter Image Rate** keeps 1/4 of the original recorded data so that you can still see older video.
- For H.264 cameras that support data aging, data aging is available at two rates:
    - **High Bandwidth** keeps the original high quality video and the secondary stream of low resolution video.
    - **Low Bandwidth** only keeps the secondary stream of low resolution video.

  NOTE: The data aging can only occur when the secondary stream is enabled.
- For H.264 cameras that *do not* support data aging, only the **High Bandwidth** video is kept.

By default, the system is set to keep recorded video for the maximum amount of time based on the available storage.

At the bottom of the Recording and Bandwidth dialog is the following statement:

Total record time estimate is based on constant recording

The retention time is determined by the **Max. Record Time** setting and the average camera data rate. Since the system can only provide an estimate of the data rate for the full retention period, the actual retention time may exceed the Max. Record Time setting by 5 minutes.

NOTE: The time shown in the Total Record Time column is an estimate only.

1. In the server Setup tab, click  .

   The Recording and Bandwidth dialog box is displayed.

   The Data Aging column shows an estimate of the recording time that is available at each image rate, given the amount of space on the recording device.

2. In the Data Aging column, move the sliders to adjust the amount of time video is stored at each image rate.
   - To change the data aging settings for all linked cameras, move the slider for one linked camera and all linked cameras will be updated.
   - To change the data aging setting for one camera, break the camera's link to other cameras by clicking the icon to the left of its name, then make your changes.
3. In the **Max. Record Time** column, manually enter a maximum record time or select one of the options from the drop-down list for each camera.

   NOTE: If the time estimated in the Total Record Time column is significantly shorter than what is set in the Max. Record Time column, the camera's actual recording time will be closer to the Total Record Time estimate.

4. Click **OK**.

Adding Users and Groups

If there will be other people using the system, you may want to add them as separate users rather than giving them access through the default administrator account.

Before you can add individual users, you will need to add permission groups that define what users have access to. By default, the system has the following groups:

- **Administrators** — has access to everything in the system.
- **Power Users** — has access to most features in the system except for the ability to import and export settings.
- **Restricted Users** — has access to live video only and can control audio and digital outputs.
- **Standard Users** — has access to live and recorded video, but cannot make any Setup changes.

It is highly recommended that the Administrators group includes at least two users. In the event one administrator user forgets the default administrator password, the second administrator user can be used to reset the password. If you do not have a second administrator user, you may need to completely reset the system.

Adding Groups

1. In the site Setup tab, click  .
2. In the following dialog box, select the Groups tab and click **Add Group**.
3. In the pop-up dialog box, select an existing group to use as a template for your new group, then click **OK**.
4. In the Edit Group dialog box, complete the following:
    a. Give the new group a name.
    b. Select a rank for the group from the **Rank:** drop-down list. To edit or view the entire Corporate Hierarchy, click  .
    c. Move the **Min Password Strength:** slider to define how strong the password used by each user in the group must be.

        The password strength is defined by an algorithm that anticipates how easy a password is to guess. There is no defined character minimum, but the stronger the setting, the harder it should be for an unauthorized user to crack the password.

        Tip: If users are expected to change their passwords frequently, you may want to select a weaker setting to ensure users do not have difficulty choosing new passwords.

    d. Select the required **Group Privileges:** and **Access Rights:** for the group. Clear the check box of any feature or device that you do not want the group to have access to.
5. Click **Edit Groups** to enable the Dual Authorization feature.

    When you enable Dual Authorization, users in this group cannot review recorded video without permission from a user in the authorizing group.

    a. In the following dialog box, select the groups that can grant authorization to users in this group.
    b. To disable the feature, click the toggle at the top of the dialog box.
    c. Click **OK**.
6. Select the Members tab to add users to the group.

    If a user is added to the group through the Add/Edit User dialog box, the user is automatically added to the group's Members list.

    a. Click  .
    b. Select the users that should be part of this new group. Only users that have been added to the site are displayed.

        Tip: Enter the name of a user in the **Search...** field to locate specific users.

    c. Click **Add**. The users are added to the Members list.
7. Click **OK** to save the new group.

Adding Users

1. In the site Setup tab, click  .
2. In the Users tab, click **Add User**.
3. When the Add/Edit User dialog box appears, complete the User Information area.
4. If you don't want this user to be active yet, select the **Disable user** check box. Disabled users are in the system but cannot access the site.
5. In the Login Timeout area, select the **Enable login timeout** check box to set the maximum amount of time the Avigilon Control Center Client software can be idle before the user is automatically logged out of the application.
6. Select the **Member Of** tab to assign the user to a group.
    a. Select the check box beside each access group the user belongs to.

       The other columns display the permissions that are included in the selected groups.

    b. Return to the **General** tab.
7. In the Password area, complete the following fields:
    - **Password:** — enter a password for the user.
    - **Confirm Password:** — re-enter the password.
    - **Strength:** — indicates the strength of the password. The strength is defined by the group the user is assigned to. If the user is a member of more than one group, the user must meet the strongest password requirement.

      The password must meet the minimum strength requirements.

        -  — password meets the strength requirements.
        -  — password does not meet the strength requirements, enter a new password.

      The password strength is defined by how easy it is for an unauthorized user to guess. If your password does not meet the strength requirements, try entering a series of words that is easy for you to remember but difficult for others to guess.
    - **Require password change on next login** — select this check box if the user must replace the password after the first login.
    - **Password Expiry (Days):** — specify the number of days before the password must be changed.
    - **Password never expires** — select this check box if the password never needs to be changed.
8. Click **OK**. The user is added to the site.

Repeat this procedure to add all the users that are required.

Advanced Settings

After you've set up all the required settings in the ACC Client software, the system can start running.

The following list provides some advanced settings you can use to further customize your system. See the application Help files for details about how to configure each setting.

- Adjust camera settings
    - If camera video looks slightly blurry or unclear, you can adjust the camera's Image and Display settings.
    - If you want the camera to record at a different image rate, you can adjust the camera's Compression and Image Rate settings.
    - To reduce the amount of ambient motion detection for a specific camera, you can adjust the Motion Detection settings.
    - To maintain the privacy of certain areas, you can set Privacy Zones in the camera's field of view so that private spaces are never recorded.
- Corporate Hierarchy
    - If you are setting up an enterprise system that includes large, physically dispersed sites, you can use the Corporate Hierarchy feature to define system access at different levels of the organization.
- Alarms
    - Use the Alarms dialog box to create and manage alarms. Once an alarm has been created, you can monitor alarm events in the Alarms tab and in the ACC Mobile App.
- Self-Learning Video Analytics
    - If you have an Avigilon self-learning video analytics device, use the Analytic Events dialog box to configure classified object motion detection or UMD. Once configured, you can receive events, trigger alarms, define rules, and record video when classified object motion requires your attention.
- Avigilon Appearance Search™ Technology
    - Avigilon self-learning video analytic cameras can be used with the AI search engine provided by Avigilon Appearance search technology. In the device setup tab, click the Setting Dialog and select the Appearance Search check box if you want to use the camera with the Avigilon Appearance Search feature. Once configured, you can quickly search recorded video to find instances of people, faces and vehicles across an entire site.
- External notifications
    - You can set up an SMTP email server to send you email notifications when system events occur.
    - If you have a Standard or Enterprise Edition licensed system, you can set up detailed rules to receive email notifications when specific events occur.
    - If you have a Central Monitoring Service, you can configure the ACC site to send notifications via SMTP or IP.
- Setup the Gateway
    - The ACC Gateway software allows you to access video from a remote web browser or mobile device. If the Gateway software is not set up, you cannot access video outside of your local network.
    - Install the ACC Mobile app on your mobile device so that you can remotely monitor live and recorded video.

Advanced Features

Checking System Health

The Server Administrator software is pre-installed on the recorder. The software provides information about the recorder's system operation status, and gives you remote access to the recorder for recovery operations.

If one of the LED indicators on the recorder is flashing an error warning, the Server Administrator will display details about the problem. For more information about the LED indicators, see *LED Indicators* on page 23.

1. Open the Server Administrator.
   - To open the Server Administrator locally, double-click the **Server Administrator** shortcut icon on the desktop.
   - To open the Server Administrator remotely, open a web browser and enter this address: `https://<recorder IP Address>:1311/`.

     For example: `https://192.168.1.32:1311/` or `https://localhost:1311/`.

   If you are using an intranet connection, your browser may display an error message. Allow the browser to ignore the certificate warnings.
2. If asked to log in, enter the Windows software administrator username and password that was configured for the recorder.
3. On the Server Administrator home page, the health of the system components are displayed in the workspace on the right.
   - To see the health of other system components, expand and select a different component from the System Tree on the left.
   - The table displayed in the workspace lists system components and their status:

	The system component is running normally.
	The system component has a non-critical warning.
	The system component has a critical failure.
	The system component status is unknown.

   - To see the details of a system component, select the system component from the workspace.

The Server Administrator is also used to customize the Redundant Array of Independent Disks (RAID) settings, assign a hot spare and remotely monitor the system health. For more information about the features in the Server Administrator, see the Help system provided in the software.

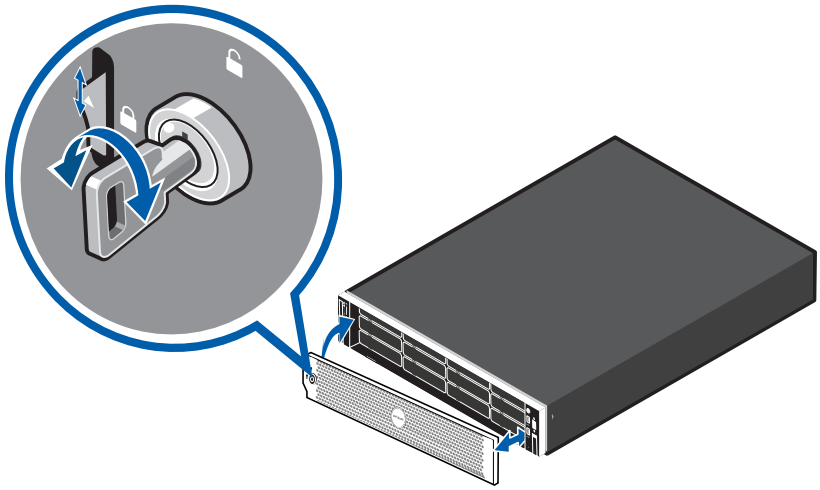
Replacing a Hard Drive Blank

The hard drives on the HD Network Video Recorder are set up in a RAID configuration. This allows information to be recorded across several hard drives.

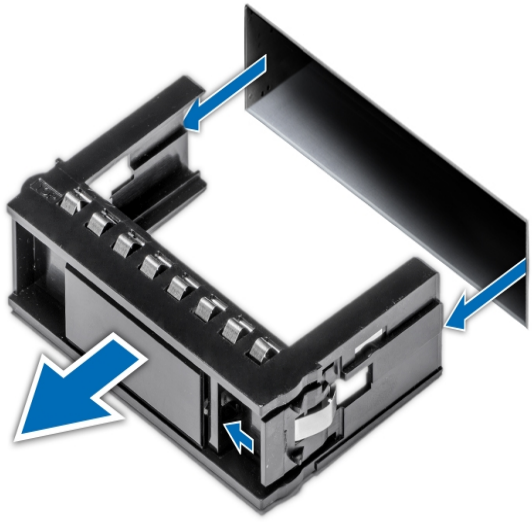
If one or two hard drives fail, there is enough information on the other hard drives for the recorder to continue recording video.

Depending on the recorder model, there may be hard drive blanks at the front of the recorder. You can replace the blanks with hard drives as required.

1. Remove the bezel.



   a. Unlock the bezel.
   b. Push the release button next to the lock.
   c. Pull the left end of the bezel then unhook the right end to remove the bezel.
2. Press the release button and slide the blank out of the hard drive slot.



3. Insert the hard drive all the way into the recorder then push the handle against the hard drive to lock it into place.

4. Open the Server Administrator application and expand the System Tree.

   The new hard drive should be automatically added to the Physical Disks list. The list is typically available here: **System > Storage > PERC H740P Mini (Embedded) > Connector 0 (RAID) > Enclosure (Backplane) > Physical Disks**.

5. Assign a task to the new hard drive or allow it to exist as an extra storage drive.

   It is recommended to use the new hard drive as a hot spare. Hot spares are hard drives that are available on standby in the event of a hard drive failure in the RAID. If that occurs, you can configure the system to automatically redirect recording to the unused hard drive.

   To assign the new hard drive as a hot spare:

   a. In the Task list, select **Assign and Unassign Global Hot Spare**.
   b. Click **Execute**.

If the new hard drive is not displayed in the Server Administrator, try one of the following:

- Refresh the browser.
- Reboot the recorder.

Replacing Hard Drives

The operating system and the Avigilon Control Center software are mirrored on two hard drives at the back of the recorder. If one of the hard drives fail, you can replace the failed drive while the recorder continues to run from the other.

If your recorder is still under warranty, contact Avigilon Technical Support to replace the failed hard drive.

If more than two hard drives fail at the same time, contact Avigilon Technical Support immediately for recovery instructions.

Important: Only replace a hard drive if the hard drive LED indicator and the Server Administrator displays an error.

1. Open the Server Administrator.
2. Check which hard drive has failed, then disconnect the drive through the Server Administrator software.

   Hard drives are installed at the front, back and in the middle of the recorder. Be sure you can identify which hard drive needs to be replaced.

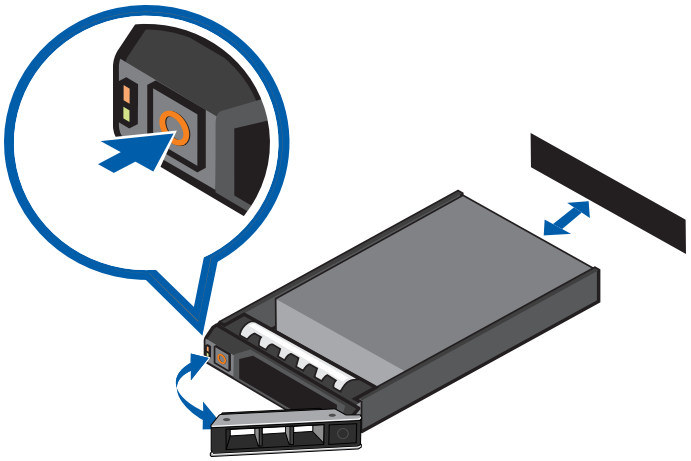
3. If you are replacing a hard drive at the center of the recorder, shut down the recorder then disconnect all cables.

   NOTE: Skip this step if you plan to hot-swap a hard drive at the front or back of the recorder.

4. Remove the bezel.
5. Depending on where the hard drive is located, perform one of the following procedures:

Replacing Front or Back Hard Drives

1. Locate the failed hard drive at the front or back of the recorder.



2. Press the release button on the front left of the hard drive.
3. When the handle is released, pull the hard drive out of the recorder.
4. Remove the four screws from the side of the hard drive carrier.
5. Lift the failed hard drive out of the carrier.
6. Insert a new hard drive into the carrier then screw it into place. The hard drive connectors should face the back.
7. When the hard drive is secured in the carrier, insert the hard drive back into the recorder.
8. Once the hard drive is inserted all the way in, push the handle against the hard drive to lock it into place.

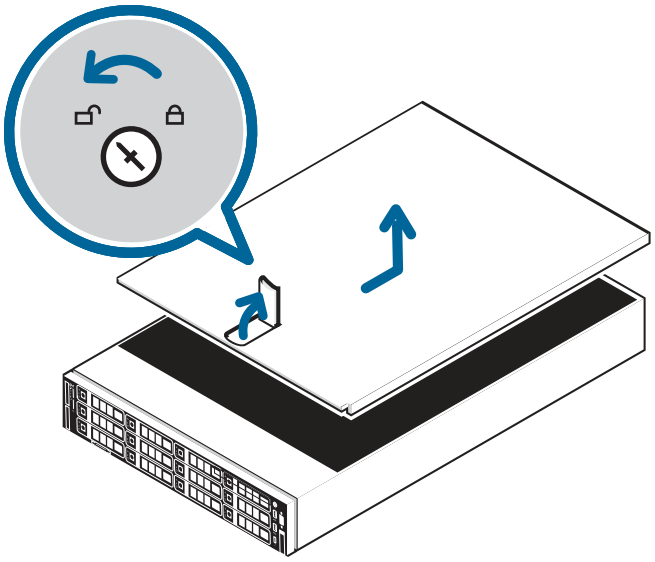
The recorder immediately starts rebuilding the hard drive. The progress is displayed in the Server Administrator. This may take several hours.

Replacing Center Hard Drives

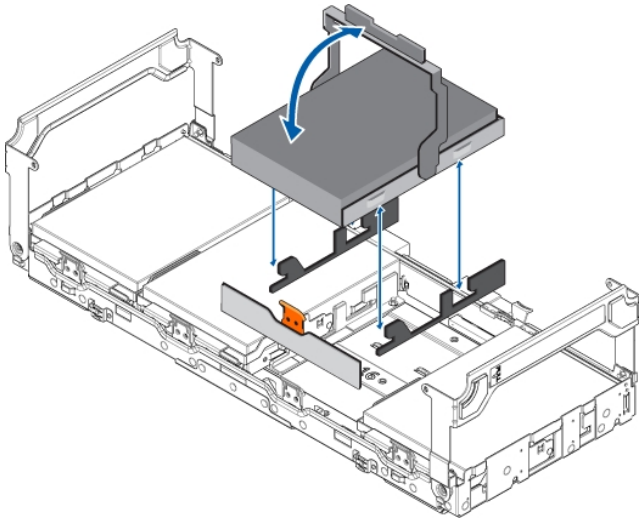
To replace a hard drive stored in the middle of the recorder, complete the following steps:

1. At the top of the recorder, unlock the latch release then lift and rotate the latch towards the back of the recorder.

   The cover slides back and is released from the recorder body.



2. Hold the cover from both sides and lift it off the recorder.
3. Locate the failed hard drive on the center hard drive tray.
4. Lift the handles on either side of the hard drive tray.



5. Press the orange release tab on the hard drive tray then lift up the hard drive carrier handle to release the hard drive.
6. Hold the handle and lift the hard drive out of the tray.
7. While holding the handle, pull the edges of the carrier away from the hard drive to remove the failed hard drive from the carrier.
8. Align the slots on the new hard drive to the tabs on the hard drive carrier.
9. Pull the edges of the carrier over the slots on the hard drive.

10. Place the new hard drive into the tray and push the handle down until the hard drive clicks into place.
11. Fold down the handles on the hard drive tray. Close and lock the recorder cover.
12. Reconnect all the cables to the recorder and power it.

After the operating system starts up, the recorder immediately starts rebuilding the hard drive. The progress is displayed in the Server Administrator. This may take several hours.

LED Indicators

The following tables describe what the LEDs on the recorder indicate.

Diagnostic Indicators

The diagnostic indicators on the front of the recorder highlight system issues during system startup.

NOTE: The diagnostic indicators only light-up when the recorder is powered.

LED Indicator	Description
 **Hard drive**	• Blinks orange — the hard drive is experiencing an error.

 **Temperature**	• Blinks orange — the recorder is experiencing a thermal error.
	Errors include:
	  • temperature out of range
	  • fan failure
	Check that the recorder fan is functioning correctly and the air vents are not blocked.

 **Electrical**	• Blinks orange — the recorder is experiencing an electrical error.
	Errors include:
	  • voltage out of range
	  • failed power supply
	  • voltage regulator
	Check the power status indicator to confirm if it is an issue with the power supply.

 **Memory**	• Blinks orange — the recorder is experiencing a memory error.
 **PCIe**	• Blinks orange — the recorder is experiencing a PCIe card error. Restart the recorder then update the drivers for the PCIe card.
System health and System ID	• Blue — the recorder is powered and is in good health. • Blinking blue — System ID mode is active. • Orange — the recorder is in fail-safe mode. • Blinks orange — the recorder is experiencing an error.

Power Status Indicators

The power button on the front of the recorder lights up when power is on.

Additional information about the power supply is provided by the power status indicator on the back of the recorder. The following table describes what the LEDs indicate:

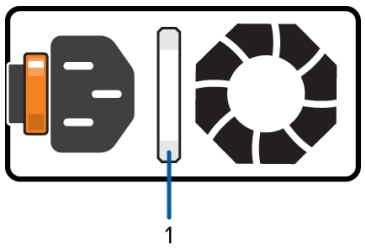


Figure 3: (1) The power status indicator.

LED Indicator	Description
Off	The power is not connected.
Green	The power is supplied to the recorder.
Flashing green	The firmware update is being applied to the power supply unit.
Flashing green then turns off	The redundant power supply is mismatched. This only occurs if you have a secondary redundant power supply installed.
Flashing orange	There is a problem with the power supply.

Network Link Status Indicators

When the recorder is connected to the network, the recorder's connection status LEDs above the Ethernet port display the recorder's connection status to the network. The following table describes what the LEDs indicate:

Figure 4: (1) Link LED. (2) Connection activity LED.

LED Indicator	Description
Off	The recorder is not connected to a network.
Link LED — green **Connection Activity LED — blinking green**	The recorder is connected to a network at the maximum port speed.
Link LED — orange **Connection Activity LED — blinking green**	The recorder is connected to a network at less than the maximum port speed.
Link LED — green **Connection Activity LED — off**	The recorder is connected to a network at the maximum port speed and data is not being sent or received.
Link LED — orange **Connection Activity LED — off**	The recorder is connected to a network at less than the maximum port speed and data is not being sent or received.

Hard Drive RAID Status Indicators

Each hard drive has its own set of LED indicators to show its activity and status.

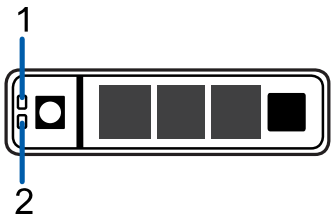


Figure 5: (1) Status LED. (2) Activity LED.

The Activity LED flashes green when the hard drives are working. The following table describes what the Status LEDs indicate:

LED Indicator	Description
Green	The hard drive is online.
Off	The hard drive is disconnected from the recorder.
Two short green flashes every second	The system is identifying a new hard drive, or preparing a hard drive for removal.
Flashes green, orange, then off	The hard drive is predicted to fail.
Four short orange flashes per second	The hard drive has failed.
Flashes green slowly	The hard drive is rebuilding.
Blinks green for three seconds, orange for three seconds, and off for six seconds	The hard drive rebuild has been aborted.

Specifications

System	
Avigilon Control Center Software	Enterprise, Standard and Core
Operating System	Microsoft Windows Server 2016
Hard Disk Drive Configuration	Near-line SAS, hot swappable, RAID 6
Mechanical	
Dimensions with bezel (LxWxH)	714.6 mm (28.13") x 482 mm (18.97") x 86.8 mm (3.41")
Weight	44.5 kg (98.1 lbs) when fully populated with hard drives
Form Factor	2U rack
Electrical	
Power Input	100 to 240 VAC, 50/60 Hz, auto-switching
Power Consumption	750 W
Power Supply	Dual-redundant, hot swappable
Environmental	
Operating Temperature	10 °C to 35 °C (50 °F to 95 °F)
Storage Temperature	–40 °C to 65 °C (–40 °F to 149 °F)
Humidity	10% to 80% relative humidity with 29°C (84.2°F) maximum dew point
Operating Vibration	0.26 G_{rms} at 5 Hz to 350 Hz (all operation orientations)
Storage Vibration	1.88 G_{rms} at 10 Hz to 500 Hz for 15 min (all six sides tested)
Operating Shock	Six consecutively executed shock pulses in the positive and negative x, y, and z axes of 6 G for up to 11 ms
Storage Shock	Six consecutively executed shock pulses in the positive and negative x, y, and z axes (one pulse on each side of the system) of 71 G for up to 2 ms
Operating Altitude	3048 m (10,000 ft).
Storage Altitude	12,000 m (39,370 ft)
Certifications	
Certifications	UL, cUL, CE, BIS, BSMI, CCC, EAC, KC, NOM, NRCS, VCCI, RCM
Safety	EN 60950-1:2006 / A11:2009 / A1:2010 / A12:2011 / A2:2013

	UL/CSA/IEC 60950-1, 2 Ed + Am 1: 2009 + Am 2: 2013
Electromagnetic Emissions	US CFR Title 47, FCC Part 2, 15 Canadian ICES-003(A) Issue 6 EN 55032:2012/ EN 55032:2015/ CISPR 32:2012/ CISPR 32:2015 (Class A) EN 61000-3-2:2014/ IEC 61000-3-2:2014 (Class D) EN 61000-3-3:2013/ IEC 61000-3-3:2013
Electromagnetic Immunity	EN 55024:2010+A1:2015/CISPR 24:2010 + A1:2015
Energy	Commission Regulation (EU) No. 617/2013
ROHS	EN 50581:2012

Limited Warranty and Technical Support

Avigilon warranty terms for this product are provided at **avigilon.com/warranty**.

Warranty service and technical support can be obtained by contacting Avigilon Technical Support: **avigilon.com/contact-us/**.