

Windows 10 Operating System Upgrade for Avigilon NVR2 and AS1 Recorders

Upgrade your Avigilon NVR2 and AS1 recorders from the Windows Embedded 7 System to the Windows 10 IoT Enterprise LTSC operating system (OS) software from Microsoft.

The Avigilon Windows 10 Operating System Upgrade for Avigilon NVR2 and AS1 recorders is provided on a bootable USB upgrade device containing a copy of the Windows 10 IoT Enterprise LTSC OS software.

Product Compatibility

These instructions apply to the following Avigilon recorders:

- Avigilon HD Video Appliance (1st generation) VMA-AS1-**XPX**
- Avigilon HD Network Video Recorder (2nd generation) **X.XTB**-HD-NVR2

WARNING: ALL DATA ON THE OS DRIVE (C:) IS DELETED AS PART OF THIS UPGRADE. FOLLOW THE INSTRUCTIONS IN THIS PROCEDURE TO SAVE OR BACK UP CRITICAL DATA FILES ON THE OS DRIVE TO ANOTHER STORAGE DEVICE.

Tip: To prevent ACC data loss and Windows corruption, it is recommended to use an uninterruptible power supply (UPS). For more information on UPS and how to configure one, see the [Avigilon UPS guide](https://www.drivehq.com/folder/p12814807/16754322125.aspx) (<https://www.drivehq.com/folder/p12814807/16754322125.aspx>).

Do not make any other administrative changes to your site

During this upgrade, ensure that the IT support for the site is not planning any network changes (such as changing IP addresses), or that the ACC site administration is not relicensing any of the recorders. Any such activities can potentially disrupt the OS upgrade process at any stage.

Preparation

Regardless of the ACC software version you are using:

1. Ensure that you have a backup storage device (a network drive, USB device, etc.) accessible from the recorder with sufficient space available to store all of the data that needs to be retained for the recorder.

NOTE: You will need enough storage space on the backup storage device for all video data stored on any NVR2 recorder that has to have its RAID restructured, in addition to any data saved from the OS drive.

2. Ensure that you have administrator access on all the devices to be upgraded (administrator username and password).
3. Back up any data stored on the OS disk (the C: drive) that you want to keep (e.g. My Documents, Desktop, Downloads) to the backup storage device.

ALL DATA ON THE C: DRIVE IS DELETED AS PART OF THIS UPGRADE.

4. If the ACC Gateway software is installed on the recorder and has a customized SSL certificate, copy the following file from the OS drive to the backup storage device:

%programfiles%\Avigilon\Avigilon Control Center Gateway\cert\GatewayCertificate.pfx

5. Register yourself on the Avigilon Partner Resource Center so that you can download the latest versions of the ACC software in use at your site if you are not already registered:
 - a. Log in to <https://partners.avigilon.com>.
 - b. Click **Registration**.
 - c. Fill out the form that follows and click **Complete Registration**.
 - d. Check your email for a confirmation email with the information you need to log in.

Before upgrading the OS on any Avigilon recorder

The procedure you follow depends on several factors, which are identified in this section. Before proceeding, identify the factors that apply to your site, then read through this document and determine the steps required for the recorder (or recorders) that you plan to upgrade.

Contact Avigilon Technical Support and open a support case before you start the upgrade procedure if any of the following scenarios apply:

- You are upgrading multiple recorders connected to a single site, in a parent/child configuration with other recorders, or If participating in a failover/redundant configuration.

Each recorder needs to be removed from the site and then added back to the site during this process. Coordinating all of the steps that occur before, during, and after the recorders are removed from and added back is unique to your site.

The downtime may range from 1 to 4 hours per server depending on the number of devices, server configuration and health, network latency, and Site configuration. Expect to schedule a full 8-hour maintenance window to complete upgrading a site with multiple recorders.

- You are using any ACC 5 Release on the recorder (or recorders).

You need to obtain your license key from Avigilon:

1. Open the Admin Tool and locate the server ID.
2. Contact Avigilon Technical Support and provide them with the server ID.

3. The Technical Support representative will provide you with the license key.

- You are using a release prior to ACC 5.6 on the recorder (or recorders).

You must first upgrade to 5.6.2.28 before you can upgrade to the latest version of ACC 5. You will require assistance from the Technical Support representative to obtain the software to complete this upgrade. You need to schedule additional downtime to complete this upgrade before you start the Windows 10 upgrade procedure.

- You are upgrading an NVR2 recorder that has only 50GB allocated to the OS drive.

Some older NVR2 recorders have only 50GB allocated to the OS drive.

You need to schedule additional downtime to complete this upgrade before you start the Windows 10 upgrade procedure.

Use **My Computer** to check the size of your C: drive. If only 50GB is allocated, you will need to restructure the RAID array to allocate 100GB to the OS drive during the procedure to upgrade to the Windows 10 OS.

WARNING: Do not restructure the RAID array before starting the upgrade to the Windows 10 OS. Restructuring RAID takes a significant amount of time and destroys all the data on the entire disk array. **Only restructure the RAID array after opening a case with Avigilon Technical Support.** The Technical Support representative will assist you to estimate the required downtime for your unique site and ensure you complete the necessary preparation to back up and restore your data.

Preparing for and completing the restructuring requires a significant amount of time. Review [Restructuring the RAID array \(for NVR2 recorders with 50GB OS drive only\)](#).

Scheduling downtime

Schedule the necessary downtime for your upgrade scenario. Normally, the upgrade of a single recorder takes just under 2 hours, so it is recommended you schedule at least 2 hours per recorder. If your recorder also needs additional preparation identified in [Before upgrading the OS on any Avigilon recorder](#), include the additional downtime recommended by Technical Support.

Warning: During the downtime, none of the feeds from the cameras connected to the recorder will be recorded. If any cameras are critical for maintaining security at your location, plan for alternate coverage during the downtime.

Workflow

The workflow for upgrading the recorder is:

- On the recorder to be upgraded, use the current ACC Admin Tool software to:
 - [Check the location of the ACC site configuration data](#)

If site configuration data is stored on the OS drive, it has to be relocated.

- On a computer connected to the Internet:

- [Download the latest version of the ACC software that is installed on the recorder](#)
- On the recorder to be upgraded:
 - [Save critical ACC system data](#)
 - [Upgrade to the latest major version of the ACC software that is installed on the recorder](#)

If you need to upgrade the ACC software, allow 1 hour to upgrade it. (More time will be needed if you are upgrading to the latest release of the ACC 5 software from a release prior to 5.6.2.28. See [If you are using a release prior to ACC 5.6](#)).

- [Multi-server sites only: Remove the server from the site](#)
- [NVR2 recorders with 50GB OS drive only: Restructure the RAID array](#)

Allow 2 hours to upgrade an NVR2 or 3 hours to upgrade an AS1 recorder:

- [Upgrade the OS to Windows 10](#)
- [Restore the ACC Software](#)
- [Affix the Windows Certificate of Authentication \(CoA\) sticker to the chassis next to the existing CoA sticker](#)
- After the OS is upgraded and the ACC software restored:
 - [Verify that the recorder and the ACC software is correctly functioning](#)

1. Check the location of the ACC site configuration data

Check where your ACC site configuration data is stored, using the Admin Tool.

1. In the Admin Tool, click **Shut Down**.

The Avigilon Control Center Server must be shut down before the storage configuration can be viewed or edited.

2. In the Settings tab click **Storage**.

The Storage dialog box is displayed.

The ACC site configuration data is stored in the Config Volume of your recorder. Normally the Config Volume and the Primary Data Volume (where the video data is stored) are both located at the root of the storage volume (typically the D: disk).

3. If the Config Volume is located on the OS disk (C:), it must be copied to the storage volume. Use the Windows File Explorer and copy the AvigilonConfig folder from the root of the OS disk to the root of the storage volume while the ACC server is stopped.

Also, copy the AvigilonConfig folder to the backup storage device.

4. Restart the ACC Server.
5. Open and log in to the ACC Client software.

Tip: It is recommended that you always save your ACC configuration settings on the storage volume rather than the OS disk. The contents of the OS disk are completely erased during the upgrade process. Otherwise, ensure that you always have a current backup of your configuration settings stored in a location accessible to your Avigilon system.

2. Download the latest version of the ACC software that is installed on the recorder

From a computer connected to the Internet, download the installer for the latest version of the ACC software that is installed on the recorder from the Avigilon Partner Resource Center.

1. Log in to <https://partners.avigilon.com>

NOTE: If you are not registered, click **Registration** and fill out the form that follows. After you click **Complete Registration** on the form, you are sent a confirmation email with the information you need to log in.

2. Click **Software** on the top menu bar.
3. Under ASSET LIBRARY >> COLLECTIONS expand **Software** and click **ACC 5 (Legacy)**, **ACC 6**, or **ACC 7** as required for your recorder.

Release	Version Files to Download
ACC 5	ACC 5 Server (latest EXE version)
ACC 6	ACC 6 Server (latest EXE version)
ACC 7	ACC Server 7 (latest EXE version)

4. Copy the installer file from where it was downloaded to the storage volume (typically D:) of the recorder you are upgrading.

You must save it on the storage volume. The installer file must **not** be stored on OS disk, because it will be deleted when the OS is upgraded.

Tip: It is recommended that you also copy the installer file to the backup storage device for safekeeping.

3. Save current critical ACC system data

On the recorder you are upgrading, open and log in to the ACC Client software and complete the following tasks:

1. Start the ACC Server software if you shut it down earlier.
2. Generate a System Bug Report:
 - a. Select  > **System Bug Report...**
 - b. When the Download System Bug Report dialog box appears, click **Download**.
 - c. In the Save As dialog box, enter the location and name of the report file and click **Save**.

Save the report file to the storage volume of the recorder and the backup storage device. The report file must **not** be stored on OS disk.

- d. Once the System Bug Report has downloaded successfully, click **Close**.
3. Backup the current ACC configuration settings:
 - a. Navigate to **Site Setup** and select your site.

- b. Click **Backup Settings** in the panel to the right.
- c. Select the server from which to back up settings.
- d. Select whether you want to encrypt the backup settings file.
Note: if you encrypt the file, record the password in a secure manner in the event you need to restore the settings.
- e. Click **OK**, browse to the location you want to save the backup file, and click **Save**.

Save the backup file to the storage volume of the recorder and the backup storage device. The backup file must **not** be stored on OS disk.

4. Note the location of the System Bug Report and the ACC site configuration backup file.

4. Upgrade to the latest major version of the ACC software that is installed on the recorder

On the recorder you are upgrading, upgrade the ACC software to the latest major version that is installed on the recorder:

1. Shut down ACC Server using the Admin Tool.
2. Close the Admin Tool.

NOTE: If the installed version of the ACC system is lower than ACC 5.4.2.x, right-click on the Admin Tool icon in the System Tray (area near the computer time), and then click **Close**. Remember to upgrade to ACC 5.6.2.28 before upgrading to the latest of ACC 5.

3. Launch the server installer to upgrade the ACC Server and ACC Client.

The upgraded ACC Server automatically starts.

5. Save updated critical ACC system data

Open and log in to the upgraded ACC Client software and complete the following tasks:

1. Generate a System Bug Report for the newly upgraded version.

Save the report file to the storage volume of the recorder and the backup storage device. The backup file must **not** be stored on OS disk.

2. Back up the ACC site configuration settings for the newly upgraded version.

Save the site configuration settings backup file to the storage volume of the recorder and the backup storage device. The backup file must **not** be stored on OS disk.

3. **If you are updating a NVR2 recorder that needs its RAID restructured:** Back up all the critical data to the backup storage device:
 - All the video data stored on all drives
 - All the critical ACC system data moved to the storage volume in the previous steps (if not already copied)

6. Multiple recorders connected to a single site or in a parent/child configuration: Remove the recorder from the site

If you are upgrading multiple recorders connected to a single site or in a parent/child configuration, remove them from the site. For instructions, see [Removing a recorder or child site from a parent site](#).

7. NVR2 recorders with 50GB OS drive only: Restructure the RAID array part 1

If you are upgrading an older NVR2 that has only 50GB allocated to the OS drive, complete the first step to restructure the RAID array to allocate 100GB to the OS drive. For instructions, see [Setting the Storage Configuration](#).

8. Upgrade the OS to Windows 10

1. In the Admin Tool, click **Shut Down**.
2. Close the Admin Tool.
3. Insert the Avigilon Windows 10 Operating System Upgrade USB into the recorder.
4. Shut down the recorder from the Windows Start menu.
5. Connect a keyboard and a monitor to the recorder.

NVR2 recorders: USB 3.0

AS1 recorders: USB 2.0

6. Power on the recorder and interrupt the normal boot sequence. The steps to do so depend on the recorder:

HDVA 16/24 port

1. Disable UEFI boot
 - a. Press F2 repeatedly until BIOS menu is displayed
 - b. Go to "Boot Features"
 - c. Set "UEFI Boot" to Disabled
 - d. Press "Esc"
 - e. Go to "Exit" and select "Exit Saving Changes"
 - f. Unit will restart automatically
2. Press F5 until the boot menu is displayed.
3. Immediately select the option to boot from the USB device.

HDVA 8 port

1. Press F5 until the boot menu is displayed.
2. Select the option to boot from the USB device.

HD-NVR2

1. Press F11 to enter the Boot Manager.
 2. Select **BIOS Boot Menu** to enter the BIOS Boot Manager.
 3. Navigate to **Hard drive C:**.
 4. Select the appropriate USB port. For example, **Front USB** if you have inserted the Win10 Upgrade USB into the front of the recorder.
 5. Immediately select the option to boot from the USB device.
7. Follow the on screen instructions in the Recovery/Upgrade window to complete the upgrade. You will be prompted to remove the USB drive when the upgrade is finished.
 8. Complete the Windows 10 Out-of-Box Experience.

9. NVR2 recorders with 50GB OS drive only: **Restructure the RAID array part 2**

If you are upgrading an older NVR2 that has only 50GB allocated to the OS drive, complete the second step to restructure the RAID array to allocate 100GB to the OS drive. For instructions, see [Configuring the Data Storage Volume in Windows](#).

10. Restore the ACC Software

Upgrading the recorder to the Windows 10 IoT Enterprise LTSB OS software removed all pre-existing data. The previous configuration settings and license keys must be restored and the ACC software must be reinstalled on the recorder.

From the Windows 10 desktop on the recorder:

1. Open File Explorer.
2. Confirm that the ACC site configuration backup folder is present in the storage volume or the backup storage device.

The folder name has the format “accbackup_ dd_MM_yyyy_HH_mm_ss”
3. Copy the ProgramData folder in the “accbackup_x” folder on the storage volume or the backup storage device to the root of the C: drive.
4. Confirm that the ACC installer software that you downloaded from the Partner Resource Center is present in the storage volume.
5. Launch the server installer to upgrade the ACC Server and ACC Client.

Once the ACC software is installed, the ACC server automatically starts.
6. Open and log in to the Admin Tool.

You should see only one configuration listed.
7. Select **Use this Configuration** in the Admin Panel.

11. Multiple recorders connected to a single site or in a parent/child configuration: Add the recorder back to the site

If you are upgrading multiple recorders connected to a single site or in a parent/child configuration, add them back to the site. For instructions, see [Adding a recorder or child site to a parent site](#).

12. Affix the Windows Certificate of Authentication (CoA) sticker to the chassis next to the existing CoA sticker

13. Verify that the recorder and the ACC software is correctly functioning

Start the ACC Client software as usual and log in to the site:

1. Verify all cameras are online.
2. Verify all users are able to log in.
3. Verify recorded videos are accessible.
4. Verify customized rules, alarms, analytics, and other configurations are working.
5. Merge into multi-server or parent-child configuration, if needed.
6. Install other needed ACC components, such as:
 - o ACC Gateway
If previously installed with a customized SSL certificate, restore:
%programfiles%\Avigilon\Avigilon Control Center Gateway\cert\GatewayCertificate.pfx
from the backup storage device.
 - o Avigilon Player
 - o ACC Web Endpoint

Everything should work as expected, otherwise contact Avigilon Technical Support.

Upgrading to the ACC 7 software

Avigilon strongly recommends upgrading to the latest version of the ACC 7 software after upgrading all your NVR2 and AS1 recorders to Windows 10. For more information about the ACC 7 software upgrade, see [ACC 7 Upgrade Guide \(avigilon.com\)](#) or [ACC 7 Upgrade Guide \(beta.avigilon.com\)](#).

Removing a recorder or child site from a parent site

Important: Before removing a child site, make sure you know the password for the child ACC administrator account.

Start the ACC Client software as usual and log in to a site:

1. In the New Task menu , click **Site Setup**.
2. Click the site name, then click **Manage Site**.

3. Select the recorder or child site you want to disconnect.
4. In the bottom-right corner, click **Disconnect from Site...** or **Disconnect from Parent Site...**
5. Click **OK**.

Adding a recorder or child site to a parent site

After you complete the upgrade, start the ACC Client software as usual and log in to all sites you want to connect. Do the following to reconfigure your multi-server site or parent/site configuration:

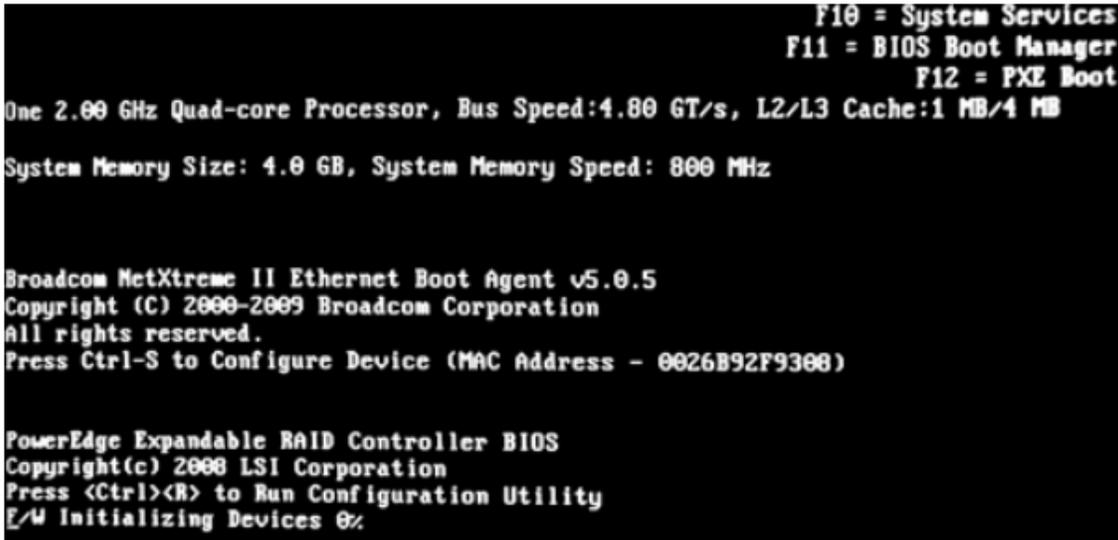
1. In the New Task menu , click **Site Setup**.
2. Click the site name, then click **Manage Site**.
3. To reconfigure a multi-server site:
 - a. Select a recorder and drag it to a different site.
 - b. Click **Yes**.
 - c. Reactivate the site license.
4. To reconfigure a parent/child site configuration:
 - a. Select a child site.
 - b. In the bottom-right corner, click **Connect to Parent Site**.
 - c. In the **Connect to:** drop-down list, select a parent site.
 - d. In the **Rank:** drop-down list, assign a rank for the child site.
 - e. Click **OK**, then **Yes**.

APPENDIX: Restructuring the RAID array (for NVR2 recorders with 50GB OS drive only)

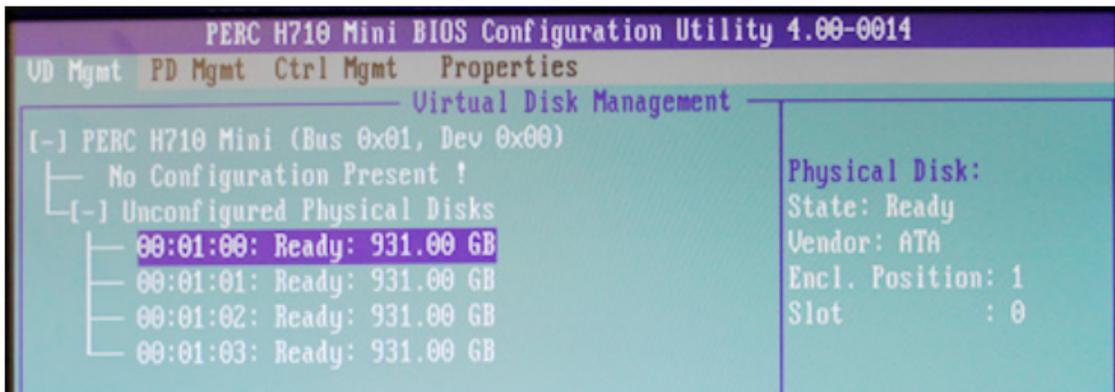
Warning: Restructuring the RAID array requires additional downtime. The procedure requires that all data on the recorder is completely wiped out. Prior to restructuring, see [Preparation](#).

Setting the Storage Configuration

1. Start the HD NVR Server.
2. When the black screen displays the PowerEdge Expandable Raid Controller BIOS message, press Ctrl + R repeatedly until the BIOS Configuration Utility appears.



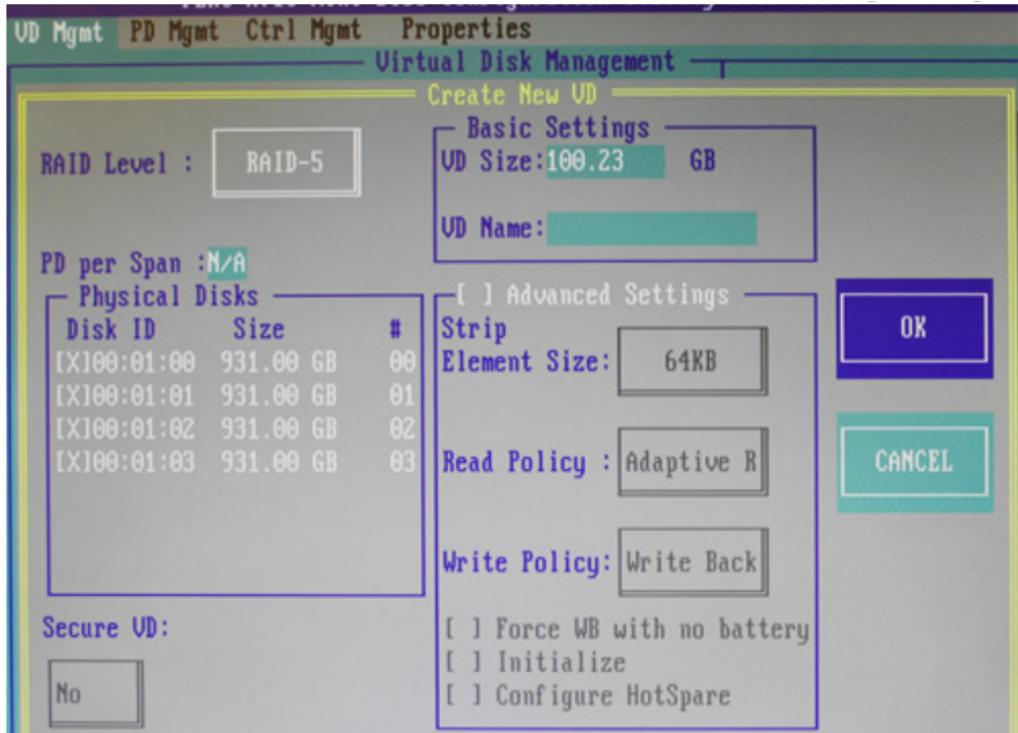
3. Ensure the VD Mgmt (Virtual Disk Management) tab is selected. Use Ctrl + N and Ctrl + P to navigate between tabs.



The VD Mgmt tab may display a disk configuration. If the Virtual Disks are highlighted in red, then the disks have been corrupted or are invalid. You will need to delete the Disk Group before you can proceed.

- a. Use the keyboard arrows to highlight **Disk Group 0**.
 - b. Press F2 and select **Delete Disk Group**.
4. Set the storage configuration.

- a. Use the keyboard arrows to highlight **No Configuration Present!**
- b. Press F2 and select **Create New VD**.
- c. In the Create New Virtual Disk screen, select the following settings.



Use the keyboard arrow keys to navigate through the screen, and press Enter to make your selections.

- **RAID Level:** RAID-5 (RAID-6 for the HD NVR Storage Expansion)
- **Physical Disks:** Select all disks.
- **Basic Settings, VD Size:** 100,230 MB
- **Basic Settings, VD Name:** OS
- Leave other settings as default.

This virtual disk (Virtual Disk 0) will be used for system configuration files.

- d. Select **OK**.
- e. When the initialization warning message appears, select **OK**.
- f. In the VD Mgmt tab, use the keyboard arrows to highlight **Disk Group 0**.
- g. Press F2 and select **Add New VD**.
- h. In the Add VD in Disk Group screen, select:
 - **Basic Settings, VD Size:** Leave as default. This size should be the size of the remaining disk storage.
 - **Basic Settings, VD Name:** Data
 - Leave other settings as default.

This virtual disk (Virtual Disk 1) will be used for video storage.

5. Perform a Full Initialization on Virtual Disk 0 and Virtual Disk 1.

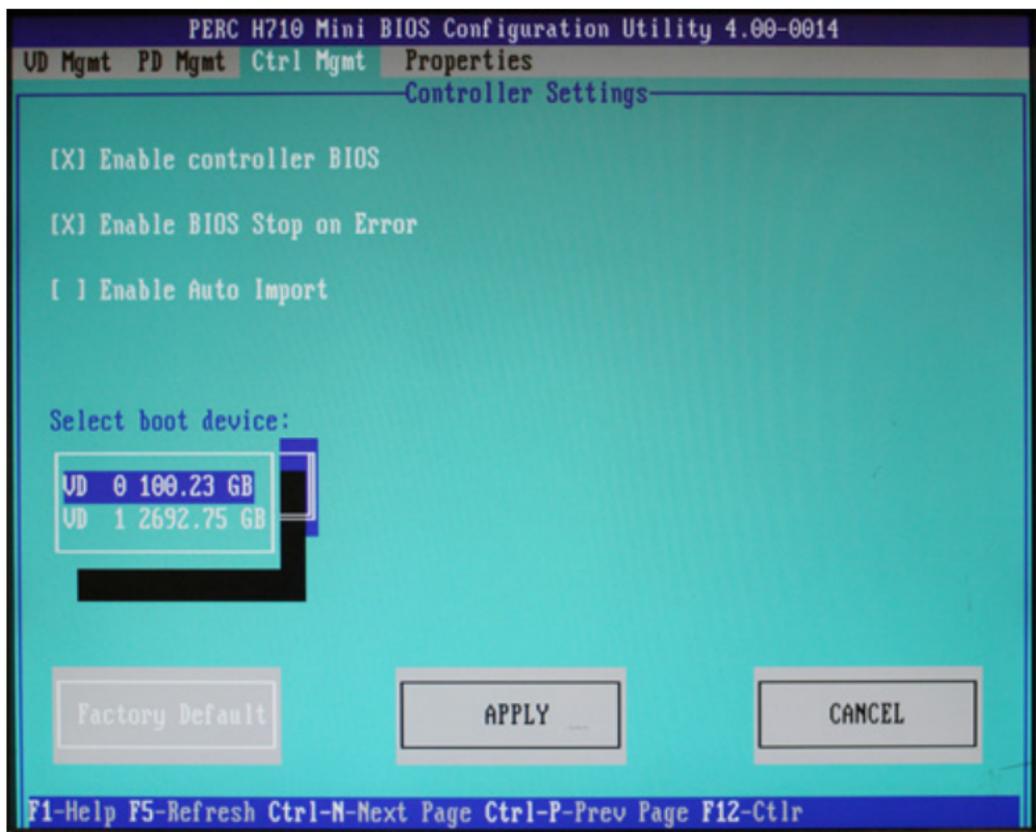
A Full Initialization cleans the virtual disk drives and checks for any errors.

If an error is found, an error message will appear during the initialization process and the hard disk light will turn orange. The hard disks may need to be replaced.

- a. In the VD Mgmt tab, highlight **Virtual Disk 0**.
- b. Press F2 and select **Initialization > Start Init**.
- c. When the warning message appears, select **Yes**.
- d. When initialization is complete, click **OK**.
- e. Repeat for **Virtual Disk 1**.

If the server automatically starts a Background Initialization, perform this step and cancel the Background Initialization when prompted.

6. Select the boot drive:
 - a. Navigate to the Ctrl Mgmt (Controller Settings) tab.



- b. In the Select bootable VD area, select **VD 0**.
 - c. Select **Apply**.

7. Press Esc to exit the BIOS Configuration Utility.
8. Reboot the HD NVR Server when prompted.

Next step: Resume the Windows 10 upgrade procedure at [Upgrade the OS to Windows 10](#).

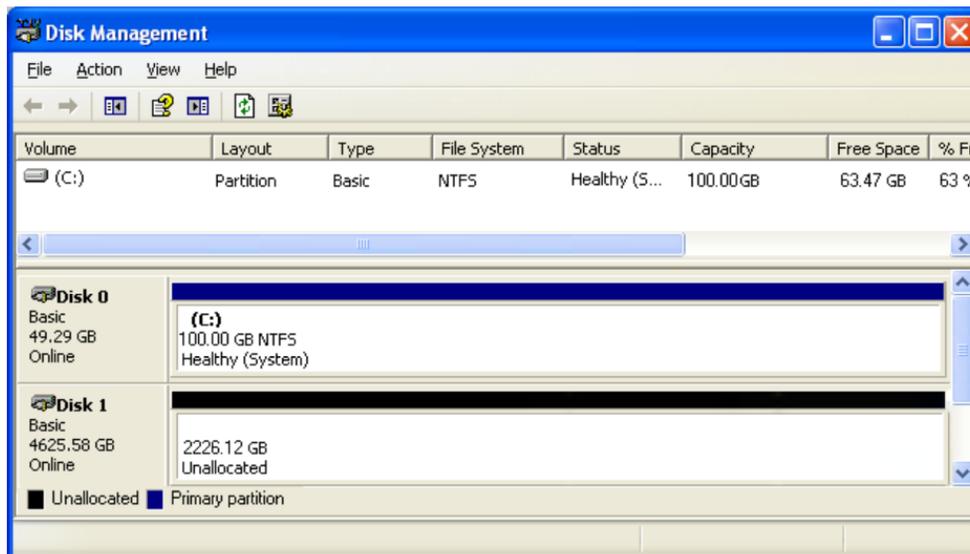
Configuring the Data Storage Volume in Windows

Complete this step after Windows 10 OS has been installed on the recorder.

When the HD NVR Server restarts, you need to initialize, partition and format the data volumes for use in Windows.

1. Open the Disk Management window.
 - a. Select **Start > Run**.
 - b. Enter `diskmgmt.msc` and click **OK**.

The Disk Management window and Initialize and Convert Disk Wizard opens.



2. Initialize Disk 1 which is the Virtual Disk 1 that was configured in [Setting the Storage Configuration on page 1](#).

- a. In the Initialize and Convert Disk Wizard, click **Next**.



- b. On the Select Disk to Initialize page, ensure Disk 1 is selected and then click **Next**.
 - c. On the Select Disk to Convert page, ensure the Disk 1 check box is clear and then click **Next**.
 - d. On the Completing the Initialize and Convert Disk Wizard page, click **Finish**.
3. Partition and format Disk 1.
 - a. In the Disk Management window, right-click the unallocated space for Disk 1 and select **New Partition**.
 - b. When the New Partition Wizard appears, click **Next**.



- c. On the Select Partition Type page, select **Primary partition** and then click **Next**.

- d. On the Specify Partition Size page, ensure the **Partition size in MB** matches the **Maximum disk space in MB** and then click **Next**.
- e. On the Assign Drive Letter or Path page, select **Assign the following drive letter** and then click **Next**.
- f. On the Format Partition page, select **Format this partition** and use the following settings:
 - **File system:** NTFS
 - **Allocation unit size:** default
 - **Volume label:** A meaningful name
- g. Click **Next**.
- h. On the final page, confirm your settings and click **Finish**.

4. When the disk partition and format is complete, close the Disk Management window.

Next step: Resume the Windows 10 upgrade procedure at [Restore the ACC Software](#).