avigilon™

OS Upgrade and Recovery Guide

Avigilon Network Video Recorder

Avigilon HD Video Appliance

Avigilon Network Video Recorder Workstation

Avigilon Remote Monitoring Workstation

NVR4-S19-COA, NVR4-S16-COA, HD-NVR3-W10UPG, HD-NVR2-W10UPG, VMA-AS1-W10UPG

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Revisions

Guide Release	Description
May 2021	Upgrade Kit, Windows Update, Windows installation updates
	• *Before You Start* on page 6
	• *Scheduling System Downtime* on page 7
	• *Windows operating system recovery and upgrade workflow* on page 13
	• *Step 3: Using a Bootable USB Device or the Onboard Avigilon Recovery Partition* on page 19
	• *Step 8: Installing Windows using the Bootable USB Device* on page 36
	• *Appendix B: OS Recovery for Discontinued Products* on page 61
March 2021	Windows Server 2019 Upgrade Kit and Windows Server 2016 updates
December 2020	Workflow diagram and note updates
October 2020	Initial release of guide

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Before You Start

Upgrade, reinstall or restore the latest version of the Microsoft Windows 10 IoT Enterprise, Microsoft Server 2016 or Microsoft Server 2019, on your Avigilon Network Video Recorder, HD Video Appliance, NVR4 Workstation, Network Video Recorder Workstation or Remote Monitoring Workstation. Also upgrade, reinstall or restore the latest version of your pre-installed Avigilon Control Center (ACC™) video management software.

WARNING — RISK OF DATA LOSS All the data on the OS drive (drive C:) will be deleted as part of this recovery or upgrade. Any major system maintenance including Windows reinstallation or upgrade has risk of data loss. Following all steps in this guide minimizes the risk of data loss but results are not guaranteed. It is recommended to back up any critical video content before proceeding.

Overview

This guide is for OS upgrade and recovery (or reinstallation). Upgrading the OS follows the same steps as reinstalling it. Consider also the following:

- If you purchase an Avigilon Windows Field Upgrade Kit, you receive a bootable USB device with the OS installation files together with the Windows Certificate of Authenticity (COA) sticker. Use the received USB instead of creating a new bootable USB device as described in *Step 3: Using a Bootable USB Device or the Onboard Avigilon Recovery Partition* on page 19.

- If you upgrade or recover a system with no data to be preserved (video recordings or other relevant files such as incidents exports, license keys files and more), you may skip Steps 2, 4, 5 and 6 in this guide. These steps are required only when data needs to be preserved during the OS recovery or upgrade process. It is strongly recommended to read this entire guide even if these steps are not required. Getting familiar with the full upgrade or recovery process may bring to your attention data that must be preserved.

- If you recover a legacy system (discontinued products), the steps in this guide are still applicable but you need to use a DVD media instead of a USB device. See *OS Recovery for Discontinued Products* on page 61 for further instructions on how to download and create the recovery media.

> **Important:**
> 1. Before you start the OS upgrade or recovery procedure.
>
>   - Read this entire guide.
>
>   - Confirm you own any installed ACC software licenses or obtain any required ACC software licenses, as described in *Software* on page 9.
>
>   - Log in to the Avigilon Partner Portal and create a new Support case. Take note of the case number. Refer to it for any calls related to this OS upgrade or recovery.

- Refer to the workflow diagram to verify that you are following the procedure in this guide.

- After reading this entire guide, if you have any questions, contact Avigilon Technical Support for assistance.

2. Ensure that your system is running the latest firmware, driver and BIOS, and has no hardware issue on the Avigilon hardware that runs the ACC Server software.

   For more information, see the first step in *Windows operating system recovery and upgrade workflow* on page 13, *Troubleshooting* on page 53 or *Appendix A* on page 55.

3. Ensure you have administrator access, username and password for all hardware to be upgraded.

   - This includes child ACC administrator access if you work with recorders deployed in a parent-child relationship.

4. Confirm and make a note of your ACC Server software details for each Avigilon Site.

   - The current version of ACC Server software in use at your Site

   - Your Site ID

   - The License Activation IDs for your ACC Server software

5. Register for an account on the Avigilon Partner Portal to ensure you can download the latest versions of the ACC software in use at your site.

   - Click **partners.avigilon.com/avigilonstore/s/login/SelfRegister**.

   - Fill out the form and click **Register**.

   - Check your inbox for a confirmation email with instructions to log in to the download website (**avigilon.com/software-downloads**).

6. Do not make any administrative changes to your site.

   - Ensure your IT support for the site is not planning any network changes, such as changing IP addresses.

   - Ensure your ACC site administration is not relicensing any of the ACC Sites.

   Any such activities can potentially disrupt the OS upgrade process at any stage.

Scheduling System Downtime

Schedule the necessary system downtime for your Windows operating system upgrade or recovery, or downtime to run Windows Update.

WARNING — During system downtime, none of the feeds from the cameras connected to the recorder will be recorded. Any cameras that are critical to maintaining security at your location requires a plan for alternate coverage during the downtime window.

Deployment	Approximate Downtime
ACC Site with 1 recorder, which is the computer running the ACC Server software	Up to 2 hours
ACC Site with multiple recorders, either connected: • To a site in a parent-child relationship with other recorders • In a failover-redundant configuration	Up to 4 hours for each recorder, depending on the number of devices, server configuration, system health, network latency and Site configuration Up to 8 hours for a complete upgrade Each recorder needs to be removed from the ACC Site and then added back. Coordinating the tasks that occur before, during and after these changes is unique to your ACC Site.
ACC 5 Sites with multiple recorders	Additional downtime to obtain your ACC 5 license key for each recorder and, if your system is running ACC 5.6.0 or older release, to proceed with an intermediate upgrade to ACC 5.6.2.28 and then the latest ACC 5 release.
HD-NVR2 with only 50GB allocated to the OS drive	Up to 2 hours Additional downtime to restructure the RAID storage configuration following the recommendations in *Step 7: Restructuring the RAID Array for HD-NVR2 with 50GB OS Drive* on page 35. **WARNING —** Do not restructure the RAID array before starting the upgrade to Windows 10 without first opening a case with Avigilon Technical Support. **Restructuring RAID destroys all the data on the entire disk array.** Therefore, additional downtime is required to export video footage.
VMA-AS1	Up to 3 hours
Windows Update	Based on the number of Windows updates and systems deployed

> **Note:** Run Windows Update. To prevent unexpected reboots, you must enable and run the Windows Update service before you can select and download Windows updates available from Microsoft. Windows updates are disabled by default on Avigilon NVRs. It is recommended to schedule maintenance downtime to install Windows updates under user supervision and once all available Windows updates are installed, disable the Windows Update service to prevent unexpected reboots until the next maintenance downtime is scheduled.

System Requirements

Product Compatibility

Avigilon Product	Model	Factory License OS	Available OS Upgrade Kit	Part Number
Network Video Recorder	NVR4X-PRM	Windows Server 2016	Windows Server 2019	NVR4-S19-COA
	NVR4X-STD	Win10 IoT Ent Windows Server 2016	Windows Server 2019	NVR4-S19-COA
	NVR4-VAL	Win10 IoT Ent	Windows Server 2019	NVR4-S19-COA
	HD-NVR4-PRM	Windows Server 2016	Windows Server 2019	NVR4-S19-COA
	HD-NVR4-STD	Win10 IoT Ent Windows Server 2016	Windows Server 2019 Windows Server 2016	NVR4-S19-COA NVR4-S16-COA
	HD-NVR3-PRM	Windows Server 2012	-	-
	HD-NVR3-STD	WES7 Win10 IoT Ent	Win10 IoT Ent	HD-NVR3-W10UPG
	HD-NVR3-VAL	WES7 Win10 IoT Ent	Win10 IoT Ent	HD-NVR3-W10UPG
	HD-NVR2	WES7	Win10 IoT Ent	HD-NVR2-W10UPG
Network Video Recorder Workstation	NVR4-WKS	Win10 IoT Ent	-	-
	HD-NVRWS3	WES7 Win10 IoT Ent	Win10 IoT Ent	HD-NVR3-W10UPG
Remote Monitoring Workstation	RM5-WKS	Win10 IoT Ent	-	-
	HD-RMWS4	Win10 IoT Ent	-	-
	HD-RMWS3	WES7 Win10 IoT Ent	Win10 IoT Ent	HD-NVR3-W10UPG
HD Video Appliance	VMA-AS3	Win10 IoT Ent	-	-
	VMA-AS2	Win10 IoT Ent	-	-
	VMA-AS1	WES7	Win10 IoT Ent	VMA-AS1-W10UPG

Software

- ACC 7, ACC 6 or ACC 5 version

> **Note:** Avigilon strongly recommends upgrading to the latest release of the ACC 7 software after upgrading or reinstalling the operating system on your device.
>
> - If ACC Server 5.6 or an older release is installed on your system, upgrade to ACC

5.6.2.28 before upgrading to the latest release of ACC 5. After upgrading to the latest release of ACC 5, if you have the license to upgrade from ACC 5 to ACC 7, upgrade your system by installing the latest release of the ACC 7 software (omitting ACC 6).

- If ACC 6 is installed, and you have the licenses to upgrade from ACC 6 to ACC 7, install the latest release of ACC Server 7.

For more information about upgrading to ACC 7 and obtaining the required installers, see *ACC 7 Software Upgrade Guide* (**avigilon.com/support/software/acc7**) and Knowledge article, *ACC - How to Upgrade Servers to ACC 7* in the Avigilon Partner Portal (**article 10085**). If you do not have access to the article, contact your integrator for licensing details.

- Avigilon Windows Field Recovery and Upgrade Images

For OS upgrade, the image is provided on a bootable Avigilon USB device, which is packaged in the upgrade kit.

For OS recovery, consult the Avigilon website (**avigilon.com/support/technical/os-recovery**) and download the image that is applicable to your system and existing OS license. You will have to create a bootable recovery USB by following the instructions in this guide.

Note: For OS upgrade, you need to purchase a Windows 10, Windows Server 2016 or Windows Server 2019 upgrade license for every system that will be upgraded. Each Windows upgrade kit contains a single Windows Certificate of Authenticity (COA) sticker, which needs to be affixed on each system to license only one OS upgrade. Contact Avigilon Sales at **avigilon.com/contact/sales** for details.

For OS field recovery, you do not need to purchase any new licenses. You can reuse the OS license included with the system from the factory. Verify that you are recovering your system using the same OS edition and version that was previously installed and licensed from the factory.

When using the OS field recovery images, do not use the ACC installers provided in the Avigilon Windows Field Upgrade image. Always use the ACC installers for the same ACC version and release currently installed on the system.

Hardware

- A computer running Windows 10, version 1703 or later, with minimum 32GB of free disk space, to create the USB bootable device
- Minimum 100GB, recommended minimum 200GB, for the Windows 7 to Windows 10 upgrade

For Windows recovery, the original Windows OS drive size can be maintained. However, it is highly recommended to allocate a minimum of 200GB for the Windows OS drive, if possible. Contact

Avigilon Technical Support for instructions and further clarification on the implications of resizing your system OS drive.

> **Note:** If your HD-NVR2 has only 50GB allocated to the Windows OS drive, see *Restructuring the RAID Array — HD-NVR2 with 50GB or 100GB OS Drive Size* on page 55.

- Minimum 32GB USB storage device for ACC configuration backups. Either 1 USB storage device, clearly labeled by server name, for each network video recorder, video appliance or workstation; or 1 larger-capacity USB storage device for creating folders for multiple servers.

- Minimum 250GB external storage device for database backup.

- Bootable USB device included with the OS upgrade kit

  Or:

  Minimum 32GB USB storage device to create the bootable recovery media

  WARNING — All data on the USB will be lost.

- Avigilon onboard recovery partition

  Using the onboard partition does not require an internet connection for the recovery process.

  To determine if your system has the onboard partition, see the table in *Step 3: Using a Bootable USB Device or the Onboard Avigilon Recovery Partition* on page 19.

- Uninterruptible power supply (UPS)

  Prevents data loss and Windows operating system corruption by ensuring the recommended UPS is installed. Also protects the server hardware. For more information, see the User Guide for the network video recorder, video appliance or workstation.

Workflow Diagram

See Figure 1 on the next page for the OS upgrade and recovery workflow.

Note: For OS upgrade, you need to purchase a Windows 10, Windows Server 2016 or Windows Server 2019 upgrade license for every system that will be upgraded. Each Windows upgrade kit contains a single Windows Certificate of Authenticity (COA) sticker, which needs to be affixed on each system to license only one OS upgrade. Contact Avigilon Sales at **avigilon.com/contact/sales** for details.

For OS field recovery, you do not need to purchase any new licenses. You can reuse the OS license included with the system from the factory. Verify that you are recovering your system using the same OS edition and version that was previously installed and licensed from the factory.

When using the OS field recovery images, do not use the ACC installers provided in the Avigilon Windows Field Upgrade image. Always use the ACC installers for the same ACC version and release currently installed on the system.

Note: For OS upgrade or recovery:

VMA-AS1-8P only. A single hard-drive contains two partitions for the Windows operating system and storage. Do not use the storage partition to back up all required files and folders. Use instead an external media, such as a USB device. Make sure to export all relevant recordings before you proceed with the OS recovery or upgrade.

WARNING — All recordings will be deleted during the OS recovery or upgrade process.

Figure 1: Windows operating system recovery and upgrade workflow

Prepare your system for
OS recovery or upgrade
on the next page

↓

Back up your ACC system
on page 15‡

↓

Create a bootable USB
device*
on page 19

Skip if using the Avigilon
Windows Field Upgrade Kit or
Avigilon onboard recovery
partition

↓

Update ACC software to
the latest release of the
installed version
on page 26‡

↓

Back up ACC
configuration settings
on page 29‡

↪
Next column

From previous column

↳

If upgrading an NVR and
ACC Server is in a multi-
server site or parent-child
connected site, remove
the NVR from the site
on page 33‡

↓

If upgrading an NVR2 with
50GB OS drive,
restructure the RAID array
on page 35

↓

Install Windows 10 or
Windows Server using the
bootable USB device
on page 36

or

Install Windows 10 or
Windows Server using the
Avigilon onboard
recovery partition*
on page 24

↪
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↳

Call Avigilon Technical
Support
on page 54

↓

Reinstall the previously
installed ACC software
version and release
on page 46

↓

Update ACC software to
the latest version
on page 50

↓

Post-installation
on page 51

* See the table on page 19 to
determine if you need a
legacy or UEFI boot mode
USB storage device, or can
use the Avigilon onboard
recovery partition.

‡ You may skip these steps if
no data needs to be
preserved.

Step 1: Preparing Your System for OS Recovery or Upgrade

Complete these steps for all systems:

1. Resolve all hardware issues, if any.

    For example, hard-drive failures.

2. Upgrade your system BIOS, and if applicable, the iDRAC with Lifecycle Controller, PERC controller and hard-drive firmware.

    For more information, see the following Knowledge articles in the Avigilon Partner Portal:

    - *Hub: Upgrade Server BIOS and Firmware* (**article 9988**)

    - *ACC - How to Upgrade BIOS of HDVA VMA-AS1-xPx* (**article 9979**)

If you are not sure which server you have, contact Avigilon Technical Support. Be ready to provide the serial number or service tag number of your server.

Step 2: Backing Up ACC Video, Configuration Settings and Other Files

WARNING — All data on the Windows operating system drive (C:) is deleted as part of the Windows OS upgrade or recovery. Save or back up critical video data files on the Windows operating system drive to another storage device.

You will need:

- Administrator access to all hardware to be upgraded

- The current version of the ACC Server software installed on each recorder

- The location of the backup of the video content and configuration settings of the ACC Server software

> **Note:** Use 2 different backup media and always create 2 copies of the relevant files and folders required during the Windows OS upgrade process.
>
> - If your system runs with independent Windows operating system drives, the storage disk (typically drive D:) can be used as one of the safe media to back up the relevant data.
>
> - *VMA-AS1-8P only*. A single hard-drive contains two partitions for the Windows operating system and storage. Do not use the storage partition to back up all required files and folders. Use instead an external media, such as a USB device. Make sure to export all relevant recordings before you proceed with the OS recovery or upgrade.
>
>   **WARNING —** All recordings will be deleted during the OS recovery or upgrade process.

Archiving or Exporting ACC Video Files

Choose one of the following:

- Archive all important video files using the ACC Client software, Storage Management on demand or continuous archive functionality. Continuous or scheduled archiving is supported only for the Enterprise Edition system.

  Avigilon Backup (`.AVK`) format

- Export ACC video, image and timeline content using the ACC Client software. Exporting takes longer than archiving.

  `.AVE` or `.AVI` format

For more information, see the *Avigilon Control Center Client User Guide*.

Backing Up Current ACC Configuration Settings

Create a backup of the site and server configuration settings using the ACC Client software.

1. In the site Setup tab, select your ACC site.

2. Click **Backup Settings** in the panel to the right.

3. Select the ACC server that you want to back up.

4. Optionally select the **Encrypt the backup file** checkbox and enter a password.

   > **Note:** If you choose to encrypt the backup settings file, *record the password in a secure manner* in the event it needs to be restored.

5. Click **OK**, browse to the USB storage device to save the Avigilon Settings File (`.avs`) file and click **Save**.

Relocating ACC Site Configuration Data

If the ACC site configuration data is stored on the OS disk (C:), the data must be moved to the storage volume disk (D:) using the ACC Admin Tool. Disk, volume and drive are used interchangeably throughout this guide.

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

   The Avigilon Control Center Server software 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.

3. Check where your ACC site configuration data is stored.

   If the **Config Volume** is on local disk (C:), it must be copied to the storage volume (typically local disk D:).

   a. Close the ACC Admin Tool application.

      > **Note:** For smooth operation, do not skip this step.

   b. Copy the `AvigilonConfig` folder from the root of the local disk (C:) to the root of the storage volume (for example, `D:\AvigilonConfig` folder) while the ACC Server software is stopped.

   c. Copy the `AvigilonConfig` folder to the USB storage device.

d. Rename `C:\AvigilonConfig` to `C:\AvigilonConfig-old`.

4. Restart the ACC Server software.

    When the ACC Server software discovers the `AvigilonConfig` folder in the storage volume and presents storage configuration options, select **Use this Configuration** in the Admin Panel.

5. Log in to the ACC Client software.

For more information about the Admin Tool, see the *Avigilon Control Center Server User Guide*.

Backing Up Current ACC System Bug Report

The System Bug Report is a ZIP file generated by the ACC Client software. It contains the ACC Server logs for each of the servers that you can access in a multi-server Site cluster.

1. Start up the ACC Server software.
2. Generate a System Bug Report.
3. Save the report to the storage volume of the recorder or USB storage device.

For more information, see the *Avigilon Server Control Center User Guide*.

Copying ACC Site Configuration Data

Copy any relevant files saved in your system OS disk (typically local disk C:) to the backup USB storage device (or devices).

1. If ACC software is running:

    a. In the ACC Admin Tool, click **Shut Down**.
    b. Close the Admin Tool. For ACC 5.4.2.x or earlier, right-click on the Admin Tool icon in the system tray (SysTray, the notification area next to the computer time) and click **Close**.

    > **Note:** For all ACC versions, open the Windows Task Manager and verify that the ACC Admin Tool is NOT running before you continue with next steps.

2. Open File Explorer or Windows Explorer.
3. Create this backup folder in the USB storage device:

    servername`_accbackup_original_`*dd_MM_yyyy_HH_mm_ss* folder.

4. Copy the following folders from the OS disk to the new backup folder in the external storage device with 250GB of free disk space:

- `C:\ProgramData\Avigilon` folder

  This folder is hidden. In File Explorer or Windows Explorer, select the **View** menu and check the **Hidden items** checkbox.

- `D:\AvigilonConfig` folder

  This folder may be in another storage volume (such as drive E:).

- `D:\AvigilonData\Db` folders, including `Appearance`, `Bookmarks` and `PointOfSale`.

  These folders may be in another storage volume (such as drive E:).

> **Note:** Copy the folders only when you have some Avigilon Appearance Search™, bookmarks, or point of sale (POS) data. Contact Avigilon Technical Support if you have any questions.

5. Verify the backup folder contents in the USB storage device by comparing the total size and number of files and folders with those on the ACC Server.

For more information, see *Relocating ACC Site Configuration Data* on page 16.

Copying Windows Desktop and System Folders

Copy any relevant files saved in the Windows desktop and system folders, such as Documents and Pictures, to the USB storage device.

Copying ACC Gateway Files

If the ACC Gateway software is installed on the device, copy the following files from the OS drive (C:) to the USB storage device:

`C:\Program Files\Avigilon\Avigilon Control Center Gateway\cert\GatewayCertificate.pfx`

`C:\Program Files\Avigilon\Avigilon Control Center Gateway\Gateway.cfg`

> **Note:** For all recorders except VMA-AS1-8P. After all above backups are done, copy the `servername_accbackup_updated_dd_MM_yyyy_HH_mm_ss` folder from the USB storage device to the storage disk (typically local disk D:\).

Step 3: Using a Bootable USB Device or the Onboard Avigilon Recovery Partition

If you purchase an Avigilon Windows Field Upgrade Kit, you receive a bootable USB device with the OS installation files together with the Windows Certificate of Authenticity (COA) sticker. Use the received USB instead of creating a new bootable USB device as described in this step. Proceed to *Step 4: Updating ACC Software To the Latest Release of the Installed Version* on page 26.

For Windows 7 OS recovery of HD-NVR, HD-NVR2, HD-NVRWS, 2MN-HD-RMWS, and 4MN-HD-RMWS models, refer to *OS Recovery for Discontinued Products* on page 61.

Complete this section for your recorder, appliance or workstation.

> **Tip:** Use a bootable NTFS-formatted USB recovery device, UEFI-formatted USB recovery device or the onboard Avigilon recovery partition depending on your system.

Avigilon Product	Model	Recovery Partition	Boot Mode
Network Video Recorder	NVR4X-PRM	Yes	UEFI
	NVR4X-STD		
	NVR4-VAL		
	HD-NVR4-PRM*	No	BIOS (NTFS)
	HD-NVR4-STD*		
	HD-NVR3-PRM		*Use UEFI format only if you are upgrading HD-NVR4-PRM or HD-NVR4-STD to Windows Server 2019.
	HD-NVR3-STD		
	HD-NVR3-VAL		
	HD-NVR2		
Network Video Recorder Workstation	NVR4-WKS	Yes	UEFI
	HD-NVRWS3	No	BIOS (NTFS)
Remote Monitoring Workstation	RM5-WKS	Yes	UEFI
	HD-RMWS4	No	BIOS (NTFS)
	HD-RMWS3		
HD Video Appliance	VMA-AS3	No	BIOS (NTFS)
	VMA-AS2		
	VMA-AS1		

Creating a Bootable NTFS-formatted USB Recovery Device

To determine if your system needs to use the bootable NTFS-formatted USB recovery device, see the table on the previous page.

Complete this section for systems recovery or upgrade using the BIOS legacy boot mode.

You will need:

- A 32GB USB storage device

  WARNING — All data on the USB will be lost.

- A computer running Windows 10, version 1703 or later, with minimum 32GB of free disk space
- Internet access
- The Avigilon Windows Upgrade Image (`.zip`) that is provided on a bootable Avigilon USB device, which is packaged in upgrade kit box content; Avigilon Windows Field Recovery Image (`.zip`) or Avigilon Windows Field Upgrade Image (`.w10e` or `.ISO`)

To create a bootable NTFS-formatted USB device:

1. Obtain the Avigilon OS Image on the OS Recovery page at **avigilon.com/support/technical/os-recovery**.

   Depending on your connection type, a 20-25GB download might take several hours.

   Or:

   Obtain the upgrade image that is provided on a bootable Avigilon USB device, which is packaged in upgrade kit box content.

2. Insert a 32GB USB storage device into any USB 2.0 or USB 3.0 port.

3. Start up the **Control Panel** for Windows.

   a. Select **Computer Management** and then **Storage** > **Disk Management**.

   b. Identify the disk number of the USB storage device you inserted.

4. On the **Start** menu for Windows, start **Command Prompt** using the Elevated (Administrator) or **Windows PowerShell** (Admin), depending on your version of Windows.

   The Command Prompt example is described below.

5. In the Command Prompt window, type:

   a. Type `diskpart` and press **Enter**.

      The `DISKPART>` prompt is displayed.

   b. Type `list disk` and press **Enter**.

   c. Type `select disk` x, where x is the disk number of your USB storage device.

      WARNING — Ensure you select the correct disk. The following commands erase **all** data on

the selected disk with no additional warnings.

d. Type `clean` and press **Enter**.

e. Type `rescan` and press **Enter**.

f. Type `create partition primary` and press **Enter**.

g. Type `select partition 1` and press **Enter**.

h. Type `active` and press **Enter**.

i. Type `format fs=ntfs quick` and press **Enter**.

   Wait until you see `DiskPart successfully formatted the volume.` before proceeding.

j. Type `assign` and press **Enter** to automatically assign the partition a drive letter.

k. Type `exit` and press **Enter** to close the DiskPart utility and return to the prompt.

l. Type `exit` and press **Enter** to close the Command Prompt window.

6. Start up a Windows file decompression utility. Unzip the Avigilon OS Image into the root of the bootable USB storage device.

   If the Avigilon OS Image file is `.ISO` format, mount the ISO file as a local drive and then copy all files and folders into the root of the bootable USB storage device.

   The recovery directories on the device are:
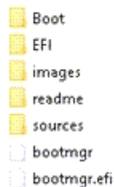
> **Note:** The above image is an example of the USB folder structure after extracting the image files to the root of the bootable USB device. Depending on your system image file content, the extracted folder structure might be different. For UEFI-based images, see the example at the end of *Creating a Bootable UEFI-formatted USB Recovery Device* below

7. In the `images` folder on the device, ensure the Avigilon OS Image (`.wim` file) is displayed. The name of the image file does not matter but should reflect the contents of the image.

Creating a Bootable UEFI-formatted USB Recovery Device

To determine if your system needs to use the bootable UEFI-formatted USB recovery device, see the table on page 19.

Complete this section for systems recovery or upgrade using the BIOS UEFI boot mode.

You will need:

- A 32GB USB storage device

  WARNING — All data on the USB will be lost.

- A computer running Windows 10, version 1703 or later, with minimum 32GB of free disk space
- Internet access
- The Avigilon Windows Upgrade Image (`.zip`) that is provided on a bootable Avigilon USB device, which is packaged in upgrade kit box content; Avigilon Windows Field Recovery Image (`.zip`) or Avigilon Windows Field Upgrade Image (`.w10e` or `.ISO`)

To create a bootable UEFI-formatted USB device with 2 partitions:

- The **1GB Fat32** partition contains the boot files.
- The **31GB NTFS** partition contains the image directory.

1. Download the Avigilon Recovery Image on the OS Recovery page at
   avigilon.com/support/technical/os-recovery.

   Or:

   Obtain the upgrade image that is provided on a bootable Avigilon USB device, which is packaged in upgrade kit box content.

2. Insert a USB storage device into any USB 2.0 or USB 3.0 port.

3. On the **Start** menu for Windows, start **Command Prompt** using the Elevated (Administrator) or **Windows PowerShell** (Admin), depending on your version of Windows.

   The Command Prompt example is described below.

4. In the Command Prompt window, type:

   a. Type `diskpart` and press **Enter**.

   b. At the `DISKPART>` prompt, type `list disk` and press **Enter**.

   c. Type `select disk` x, where x is the disk number of your USB storage device.

   WARNING — Ensure you select the correct disk. The following commands erase **all** data on the selected disk with no additional warnings.

   d. Type `clean` and press **Enter**.

   e. Type `convert gpt` and press **Enter**.

   f. Type `create partition primary size=1024` and press **Enter**.

   g. Type `format fs=fat32 quick` and press **Enter**.

   h. Type `assign` and press **Enter** to automatically assign the partition a drive letter.

   Wait until you see `DiskPart successfully formatted the volume.` before proceeding.

   i. Type `create partition primary` and press **Enter**.

   j. Type `format fs=ntfs quick` and press **Enter**.

    k. Type `assign` and press **Enter** to automatically assign the partition a drive letter.

        Wait until you see `DiskPart successfully formatted the volume.` before proceeding.

    l. Type `exit` and press **Enter** to close the DiskPart utility and return to the prompt.

    m. Type `exit` and press **Enter** to close the Command Prompt window.

5. Start up a Windows file decompression utility.

    a. Unzip the Avigilon OS Image to a local folder on your computer.

    b. Copy the `images` folder to the 31GB NTFS partition on the USB storage device.

    c. Copy all other folders to the 1GB FAT32 partition on the USB storage device.

If the AvigilonOS Image file is (`.ISO`) format, mount the ISO file as a local drive and then copy all files and folders following the same partitions allocation into the USB storage device.

The directories in the 1GB Fat32 partition on the device are:
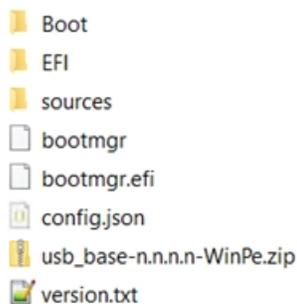
The directory in the 31GB NTFS partition on the device is:

> **Note:** The above image is an example of the USB folder structure after extracting the image files. Depending on your system image file content, the extracted folder structure might be different. For UEFI-based images, the general rule is that the 31GB NTFS partition contains the image directory and the 1GB Fat32 partition contains all remaining files and folders.

6. In the `images` folder on the device, ensure the folder name for the hardware model and the Avigilon OS Image (`.wim` file) are displayed. The name of the image file does not matter but should reflect the contents of the image.

To troubleshoot, review the following recovery log which is copied into the USB device on the first error:

- `X:\nvr_recovery.log`

Using the Onboard Avigilon Recovery Partition

To determine if your system can use the Avigilon onboard recovery partition, see the table .

If you need to recover the Windows operating system, the above systems include an onboard Avigilon recovery partition that is separate from the operating system partition. The advantage of using the Avigilon recovery partition is that you do not need an internet connection to download the recovery image and you do not need to create a bootable USB recovery device.

> **Important:** Your operating system drive will be erased and restored to factory settings. Before you proceed with operating system recovery, complete any necessary backups of custom ACC configuration and video recordings by following steps 4 to 7 in this guide.

> **Note:** Depending on when your hardware was shipped, it is recommended that you connect to the network when possible to install updates for Windows and ACC Client software after system recovery is completed.

1. Start operating system recovery in one of the following ways:
   - On your Windows desktop, select ⊞ and then hold down the Shift key and select **Restart**.
   - On your locked Windows screen, select ⏻ and then hold down the Shift key and select **Restart**.
   - During direct boot of the operating system, repeatedly press the down-arrow key and select the partition.
2. On the **Choose an option** screen, select **Use another operating system**.
3. Select the **OS Recovery** partition.
4. On the **Avigilon Recovery** window, select **Recover**.
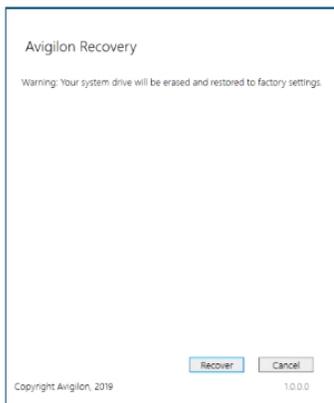
Allow up to half an hour for the recovery to complete.

5. After system reboot, complete the Windows setup process.

   For more information about setting up the Windows operating system, see *Logging into Windows 10 for the First Time* on page 42 or *Logging into Windows Server for the First Time* on page 43.

Step 4: Updating ACC Software To the Latest Release of the Installed Version

> **Important:** Do not skip Step 3 on page 19 or Step 5 on page 29 even if you have no intention of updating your ACC software. These steps preserve your ACC licenses and configurations.

You will need to:

- Update the ACC Server software to the latest release of the installed version (ACC 7, ACC 6 or ACC 5) before reinstalling or upgrading the operating system.

- Reinstall the **same ACC version and release** of the ACC Server software that was running prior to the Windows recovery or upgrade.

  If needed, contact Avigilon Technical Support to obtain the ACC installers for the version and release currently running on your system.

CAUTION — ACC Server software releases are **not backward-compatible**.

- Do not install any version of the ACC Server software that is older than the version that was installed on the system prior to the Windows 10 recovery or installation.

- If ACC Server 5.6 or an older release is installed on your system, upgrade to ACC 5.6.2.28 before upgrading to the latest release of ACC 5. After upgrading to the latest release of ACC 5, if you have the license to upgrade from ACC 5 to ACC 7, upgrade your system by installing the latest release of the ACC 7 software (omitting ACC 6).

- If ACC 6 is installed, and you have the licenses to upgrade from ACC 6 to ACC 7, install the latest release of ACC Server 7.

For more information about upgrading to ACC 7 and obtaining the required installers, see *ACC 7 Software Upgrade Guide* (**avigilon.com/support/software/acc7**) and Knowledge article, *ACC - How to Upgrade Servers to ACC 7* in the Avigilon Partner Portal (**article 10085**). If you do not have access to the article, contact your integrator for licensing details.

Downloading the Latest Release of the Installed ACC Version

From a computer connected to the internet, download the installer for the latest release of the ACC version that is installed on your system.

1. Log in to the Avigilon Partner Portal: **partners.avigilon.com**.

2. Click **Software** in the top menu bar.

3. In the **Category** field, select the version of the ACC software to download (ACC 7, ACC 6 or ACC 5).

4. In the **File Type** field, select **EXE**.

5. In the results, locate the ACC Server release to download and click the **EXE File Download** button to initiate the download.

   ```
   ACC n Server – EXE version n.n.n.n
   ```

   For more information about upgrading to ACC 7 and obtaining the required installers, see *ACC 7 Software Upgrade Guide* (**avigilon.com/support/software/acc7**) and Knowledge article, *ACC - How to Upgrade Servers to ACC 7* in the Avigilon Partner Portal (**article 10085**). If you do not have access to the article, contact your integrator for licensing details.

6. Go to the download location and copy the installer file to the storage volume (typically D:) on your recorder or your external storage device. You will use these installers again after installing the operating system.

   > **Note:** Do not use the Windows OS disk because its contents will be deleted during the upgrade process.

7. Copy the license keys for this recorder if it is NOT part of a site cluster. Site cluster refers to a multi-server ACC site.

Updating ACC Server Software to the Latest Release of the Installed ACC Version

> **Note:** Avigilon strongly recommends upgrading to the latest release of the ACC 7 software after upgrading or reinstalling the operating system on your device.
>
> - If ACC Server 5.6 or an older release is installed on your system, upgrade to ACC 5.6.2.28 before upgrading to the latest release of ACC 5. After upgrading to the latest release of ACC 5, if you have the license to upgrade from ACC 5 to ACC 7, upgrade your system by installing the latest release of the ACC 7 software (omitting ACC 6).
>
> - If ACC 6 is installed, and you have the licenses to upgrade from ACC 6 to ACC 7, install the latest release of ACC Server 7.

On your NVR, appliance or workstation, start the installer.

1. Connect a monitor, keyboard and mouse, if these are not already present.

> **Important:** Proceed to the next steps only when you have successfully completed *Backing Up Current ACC Configuration Settings* on page 16.

2. Browse for the location where you saved the downloaded ACC installer.

3. Double-click the `AvigilonControlCenterServer-n.n.n.n.exe`.

4. When prompted to allow the installer to run on the device, click **Yes**.

5. At the first window of the installation wizard, click **Control Center Server**. Wait for the contents of the setup package to be verified.

6. Click **Next** several times until the END USER LICENSE AGREEMENT is displayed. Read the agreement.

7. Check the **I accept the terms of the License Agreement** checkbox and click **Next**.

8. When prompted to choose the install folder, keeping the default install path is recommended:

   `C:\Program Files\Avigilon\Avigilon Control Center Server`

   Click **Next** to proceed.

9. Choose to install the server for all users on the computer, or only you, and click **Next**.

10. Click **Next** again to start the install.

11. After the installation is complete, click **Finish** to exit the installation.

12. By default, the ACC Server software starts automatically and prompts you to log in.

    If the ACC Client software does not start automatically, launch it manually.

13. Ensure the licenses are activated. Ensure the ACC 6 or ACC 7 licenses are not in a grace period.

14. If Site Update was used, delete all files in the `\AvigilonConfig\Blobs\Installers` folder.

Step 5: Backing Up ACC Configuration Settings and Other Files

After updating ACC software to the latest release of the installed version in the previous step, make another backup.

Copying ACC Site Configuration Data

Copy any relevant files saved in your system OS disk (typically local disk C:) to the storage disk (typically local disk D:\) and to the external storage device with 250GB of disk space.

1. If ACC software is running:
    a. In the ACC Admin Tool, click **Shut Down**.
    b. Close the Admin Tool. For ACC 5.4.2.x or earlier, right-click on the Admin Tool icon in the system tray (SysTray, the notification area next to the computer time) and click **Close**.

    > **Note:** For all ACC versions, open the Windows Task Manager and verify that the ACC Admin Tool is NOT running before you continue with next steps.

2. Open File Explorer or Windows Explorer.
3. Create this backup folder in the external storage device:

    servername`_accbackup_updated_`*dd_MM_yyyy_HH_mm_ss* folder.

    You will put all files and folders mentioned below in this folder.

4. Copy the following folders from the OS disk to the new backup folder in the external storage device:
    - `C:\ProgramData\Avigilon` folder

      This folder is hidden. In File Explorer or Windows Explorer, select the **View** menu and check the **Hidden items** checkbox.

    - `D:\AvigilonConfig` folder

      This folder may be in another storage volume (such as drive E:).

    - `D:\AvigilonData\Db` folders, including `Appearance,` `Bookmarks` and `PointOfSale`.

      These folders may be in another storage volume (such as drive E:).

    > **Note:** Copy the folders only when you have some Avigilon Appearance Search™, bookmarks, or point of sale (POS) data. Contact Avigilon Technical Support if you

have any questions.

5. Verify the backup folder contents in the USB storage device by comparing the total size and number of files and folders with those on the ACC Server.

For more information, see *Relocating ACC Site Configuration Data* on page 16.

Backing Up Updated ACC Configuration Settings

Create a backup of the site and server configuration settings using the ACC Client software.

1. In the site Setup tab, select your ACC site.

2. Click **Backup Settings** in the panel to the right.

3. Select the ACC server that you want to back up.

4. Optionally select the **Encrypt the backup file** checkbox and enter a password.

Note: If you choose to encrypt the backup settings file, *record the password in a secure manner* in the event it needs to be restored.

5. Click **OK**, browse to the USB storage device to save the Avigilon Settings File (`.avs`) file and click **Save**.

Generating ACC Site Health Report

The Site Health Report is a file generated by the ACC Client software. It contains site health information for each of the system components.

1. Start up the ACC Client software.

2. In the ☰ menu, click **Site Health**, select an ACC site and export site health information.

3. Save a copy of the Site Health Report to the location on the storage disk or USB storage device.

   `.csv` or `.pdf` file

For more information, see the *Avigilon Control Center Client User Guide*.

Backing Up and Deactivating ACC Licenses

Complete this section only if:

- You do not have your ACC License Activation IDs.
- The recorder running the ACC server is not configured in a multi-server ACC Site cluster.

> **Note:** If the recorder is configured in a Site cluster or Site family, you need to remove the recorder from the Site.

For more information, see *Step 6: Upgrading NVRs Connected to Multi-Server Sites or in Parent-Child Relationship* on page 33.

To deactivate the ACC licenses and save the Activation IDs:

1. Start up the ACC Client software.
2. Click **Site Setup** and select your ACC site.
3. Click **Connect/Disconnect Devices** and disconnect all cameras from the site.
4. Click **Rules** and deactivate any existing ACC Rules.
   - Do not delete the rules.
   - Edit each rule and remove the checkmark in the **Rule is enabled** checkbox in the last step.
5. Click **License Management** in the panel to the right.
6. Take a screen capture of the Activation IDs shown in the License Management popup window.
7. Select the Activation IDs and click **Remove License...**.
8. Use the **Copy to Clipboard** option and paste the Activation IDs in a text (`.TXT`) file. Save the text file to the same location on the storage disk or USB storage device.
9. Click **Deactivate Now**.

   The ACC licenses are deactivated and released for reactivation later in the process.

For more information, see the *Avigilon Control Center Client User Guide*.

Backing Up Current ACC System Bug Report

The System Bug Report is a ZIP file generated by the ACC Client software. It contains the ACC Server logs for each of the servers that you can access in a multi-server Site cluster.

1. Start up the ACC Server software.
2. Generate a System Bug Report.
3. Save the report to the storage volume of the recorder or USB storage device.

For more information, see the *Avigilon Server Control Center User Guide*.

Copying ACC Gateway Files

If the ACC Gateway software is installed on the device, copy the following files from the OS drive (C:) to the

USB storage device:

```
C:\Program Files\Avigilon\Avigilon Control Center
Gateway\cert\GatewayCertificate.pfx
```

```
C:\Program Files\Avigilon\Avigilon Control Center Gateway\Gateway.cfg
```

> **Note:** For all recorders except VMA-AS1-8P. After all above backups are done, copy the `servername_accbackup_updated_dd_MM_yyyy_HH_mm_ss` folder from the USB storage device to the storage disk (typically local disk D:\).

Step 6: Upgrading NVRs Connected to Multi-Server Sites or in Parent-Child Relationship

Verify if your ACC Server is part of a multi-server site or parent-child connected.

If your ACC Server is connected to other ACC Servers on the same site or connected to a Parent site, disconnect the ACC Server from the site before reinstalling or upgrading the operating system, as described below. See also *ACC Licensing* on the next page. There is no need to disconnect the multi-server site from any parent site. After the operating system installation is completed and ACC software is up and running, reconnect your ACC Server to the site as previously configured.

Removing the ACC Server from the Multi-Server Site or Parent Site

Complete the following steps before reinstalling or upgrading the operating system.

1. Obtain the password for the child ACC administrator account.
2. Start up the ACC Client software.
3. In the **New Task** menu , click **Site Setup**.
4. Click the site name and then click **Manage Site**.
5. Select the recorder or child site you want to disconnect.
6. In the bottom-right corner, click **Disconnect from Site...** or **Disconnect from Parent Site...**.
7. Click **OK**.

Backing Up ACC Server Files from the Multi-Server Site

At this point, the recorder to be restored or upgraded is already disconnected from the multi-server Site. Complete the following steps if more than 5 servers are displayed in the multi-server ACC Site.

1. Using the ACC Client:

    a. Log in to the multi-server Site.

    b. Re-activate the licenses to enable the site.

    c. Download a System Bug Report... from the ⚙ menu and rename the output file to:

    ```
    Cluster_SBR_original-file-name
    ```

    d. Download a Site Health Report from the ≡ menu and rename the output file to:

    ```
    Cluster_SHR_original-file-name
    ```

2. Select 3 recorders from the multi-server Site. On an external storage device, create the following folder for each of the 3 recorders:

    `ClusterMember_`*`servername`*`_accbackup_updated_`*`dd_MM_yyyy_HH_mm_ss`* `folder`

3. Copy these files from each of the 3 recorders to their respective folder on the external storage device:

    `C:\ProgramData\Avigilon`

    `D:\AvigilonConfig` (This may be on drive C: or another storage volume.)

ACC Licensing

Complete this section only if you disconnected your ACC Server from a *multi-server Site*.

- For ACC 5, deactivate the licenses on the ACC Server.

  For more information, see *Backing Up and Deactivating ACC Licenses* on page 30.

- For ACC 6 or later, there is no need to deactivate licenses on the ACC Server that you removed from the multi-server Site. Re-activate the licenses on the multi-server Site.

- Obtain a backup of the ACC licenses.

  For more information, see *Backing Up and Deactivating ACC Licenses* on page 30.

Step 7: Restructuring the RAID Array for HD-NVR2 with 50GB OS Drive

Use **My Computer**, iDRAC or the RAID Controller Bios Console to review the size of your local C: drive, and refer to the following recommendations to restructure your system storage configuration before proceeding with the OS restore or upgrade:

- If 50GB is allocated to the OS drive, even though it is possible to restore the WES7 operating system, it is strongly recommended to allocate 290GB to ensure all Windows updates can install.

- If 100GB is allocated to the OS drive, even though it is possible to restore the WES7 operating system or upgrade to Windows 10, it is strongly recommended to allocate 290GB to ensure all Windows updates can install.

WARNING — Restructuring the RAID array requires additional downtime and all data on the recorder to be completely wiped out. Prior to restructuring, see *Before You Start* on page 6, *Scheduling System Downtime* on page 7.

For more information, see *Setting Storage Configuration* on page 55 and *Configuring the Data Storage Volume in Windows* on page 59.

Step 8: Installing Windows using the Bootable USB Device

Windows 10, Windows Server 2016, Windows Server 2019

WARNING — When you perform the reinstall or upgrade, the Windows OS disk is completely erased and replaced with the image stored on the bootable USB device. The ACC software, including any configuration settings or files stored on the OS disk, are erased. For systems with separate storage disks, no recorded video is deleted when video is stored on separate disks. For systems running on a single hard-drive, even if partitioned, all data is erased during the upgrade process, including recorded video.

Complete this section for your Windows operating system upgrade or recovery.

1. If ACC software is running:
    a. In the ACC Admin Tool, click **Shut Down**.
    b. Close the Admin Tool. For ACC 5.4.2.x or earlier, right-click on the Admin Tool icon in the system tray (SysTray, the notification area next to the computer time) and click **Close**.

    > **Note:** For all ACC versions, open the Windows Task Manager and verify that the ACC Admin Tool is NOT running before you continue with next steps.

2. Insert the UEFI or NTFS boot USB device, which you created in *Step 3: Using a Bootable USB Device or the Onboard Avigilon Recovery Partition* on page 19, or the bootable USB device from the Windows upgrade kit, into any USB 2.0 or USB 3.0 port.

3. Shut down the recorder, appliance or workstation from the Windows **Start** menu.

4. Connect a monitor, keyboard and mouse, if these are not already present.

5. If you are upgrading an HD-NVR4-STD or HD-NVR4-PRM to Windows Server 2019, your system boot mode needs to be reconfigured:
    a. Power on your system.
    b. Press the **F2** key to display System Setup.
    c. Select **System BIOS** and then **Boot Settings**.
    d. Select **UEFI**. A notice indicates that you need to reboot to access new menus.

    > **Note:** The previous Boot Setting was **Bios**.

    e. Select **Back**.
    f. Select **Finish** and then **Yes** to reboot.

6. Power on your recorder, appliance or workstation.

7. Interrupt the normal boot sequence depending on the hardware:

> **Note:** The instructions below assume your system is running with the latest BIOS version. If your system presents any different boot options, it may be running with an older BIOS version that displays the boot options differently. Contact Avigilon Technical Support for further instructions on how to upgrade your system BIOS.

Product Family	Model	Upgrade and Recovery Boot Sequence
Network Video Recorder	NVR4X-PRM NVR4X-STD NVR4-VAL	These systems use **UEFI** boot mode. 1. During the power-on self-test (POST), press the **F11** key to enter the Boot Manager. 2. When the Boot Manager is displayed, select **One-Shot UEFI Boot Menu**. 3. Select the boot device named as **[hard-drive] Disk connected to … USB:** *device_name*. For example, if you have inserted the recovery or upgrade USB device into the front USB ports of the NVR, the boot device name is similar to `[hard-drive] Disk connected to front USB1: DataTravel 3.0`. 4. Your system will boot from the USB device and load the Avigilon Recovery Console.
	HD-NVR4-PRM HD-NVR4-STD HD-NVR3-PRM HD-NVR3-STD HD-NVR3-VAL	**Note:** If upgrading HD-NVR4-PRM or HD-NVR4-STD to Windows Server 2019, use the **UEFI** boot mode as described in the above steps. These systems use **NTFS** (**Bios**) boot mode. 1. During POST, press the **F11** key to enter the Boot Manager. 2. When the Boot Manager is displayed, select **One-Shot Bios Boot Menu**. 3. Select the boot device named as **[hard-drive] Disk connected to … USB:** *device_name*. For example, if you have inserted the recovery or upgrade USB device into the front USB ports of the NVR, the boot device name is similar to `[hard-drive] Disk connected to front USB1: DataTravel 3.0`. 4. Your system will boot from the USB device and load the Avigilon Recovery Console.

Product Family	Model	Upgrade and Recovery Boot Sequence
	HD-NVR2	This system uses **NTFS** (**Bios**) boot mode. 1. During POST, press the **F11** key to enter the Boot Manager. 2. When the Boot Manager is displayed, select **One-Shot Bios Boot Menu**. 3. Navigate to `C:\hard_drive`. 4. Select your connected recovery or upgrade USB device from the devices list. 5. Your system will boot from the USB device and load the Avigilon Recovery Console.
Network Video Recorder Workstation	NVR4-WKS	This system uses **UEFI** boot mode. 1. During POST, press the **F12** key to enter the one-time boot menu. 2. When the Boot menu page is displayed, under **UEFI-BOOT** options, select your connected recovery or upgrade USB device from the devices list. 3. Your system will boot from the USB device and load the Avigilon Recovery Console.
	HD-NVRWS3	This system uses **NTFS (Bios)** boot mode. 1. During POST, press the **F12** key to enter the one-time boot menu. 2. When the Boot menu page is displayed, under **Legacy-BOOT** options, select your connected recovery or upgrade USB device from the devices list. 3. Your system will boot from the USB device and load the Avigilon Recovery Console.

Product Family	Model	Upgrade and Recovery Boot Sequence
Remote Monitoring Workstation	RM5-WKS	This system uses **UEFI** boot mode. 1. During POST, press the **F12** key to enter the one-time boot menu. 2. When the Boot menu page is displayed, under **UEFI-BOOT** options, select **Recovery or Upgrade USB device**. 3. Your system will boot from the USB device and load the Avigilon Recovery Console.
	HD-RMWS4 HD-RMWS3	This system uses **NTFS (Bios)** boot mode. 1. During POST, press the **F12** key to enter the one-time boot menu. 2. When the Boot menu page is displayed, under **Legacy-BOOT** options, select **Recovery or Upgrade USB device**. 3. Your system will boot from the USB device and load the Avigilon Recovery Console.

Product Family	Model	Upgrade and Recovery Boot Sequence
HD Video Appliance	VMA-AS3-xxP	1. During POST, press the **F12** key to enter the one-time boot menu. 2. When the Boot menu page is displayed, select the USB device. 3. Your system will boot from the USB device and load the Avigilon Recovery Console.
	VMA-AS2-xxP	1. Press the **Esc** key repeatedly until the boot menu is displayed. 2. Immediately select the option to boot from the USB device.
	VMA-AS1-8P	1. Press the **F5** key repeatedly until the boot menu is displayed. 2. Immediately select the option to boot from the USB device.

	VMA-AS1-16P
	VMA-AS1-24P
		1. Disable UEFI boot:
		
		  a. Power on your device and press the **F2** key repeatedly until the BIOS menu is displayed.
		
		  b. Go to **Boot Features**.
		
		  c. Set **UEFI Boot** to **Disabled**.
		
		  d. Press the **Esc** key.
		
		  e. Go to **Exit** and select **Exit Savings Changes**.
		
		  f. The unit restarts automatically.
		
		2. Press the **F5** key repeatedly until the boot menu is displayed.
		
		3. Immediately select the option to boot from the USB device.

8. Follow the Avigilon Recovery Console on-screen instructions to complete the installation. Depending on your task:

- Click **Upgrade**.

- Click **Recover**.
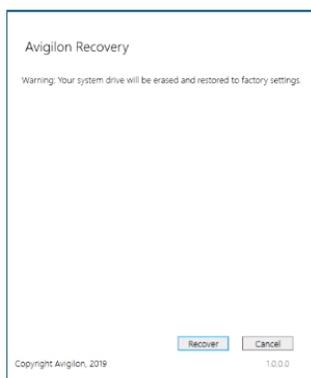
Allow up to half an hour for the upgrade or recovery to complete.

9. After the installation is completed, remove the USB device.

10. Restart your system and allow it to boot from the OS hard drive. Your system will boot from the upgraded or restored operating system.

Logging into Windows 10 for the First Time

Depending on your recorder, appliance or workstation, the hardware starts independently or you will need to start the hardware to configure the Windows operating system.

1. On the first screen, the MICROSOFT SOFTWARE LICENSE TERMS and AVIGILON CONTROL CENTER™ SOFTWARE END USER LICENSE AGREEMENT are displayed. Review the terms and click **Accept**.

2. Select **Join a local Active Directory domain**.

> **Note:** This prompt appears only if an Active Directory is present on the network. See the *Windows Help and Support* files for more information.

3. Enter a user name for the Windows administrator account.

4. Enter a password and password hint for the Windows administrator account and click **Next**.

> **Note:** Remember the Windows Administrator password. If the Windows Administrator credentials are lost, you may need to reinstall the operating system again. It is highly recommended to create a second Administrator user as a backup.

You are logged in to the Windows environment.

Proceed to *Completing Your Windows Setup* on the next page before you complete the ACC software installation.

Logging into Windows Server for the First Time

Windows Server 2016, Windows Server 2019

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.
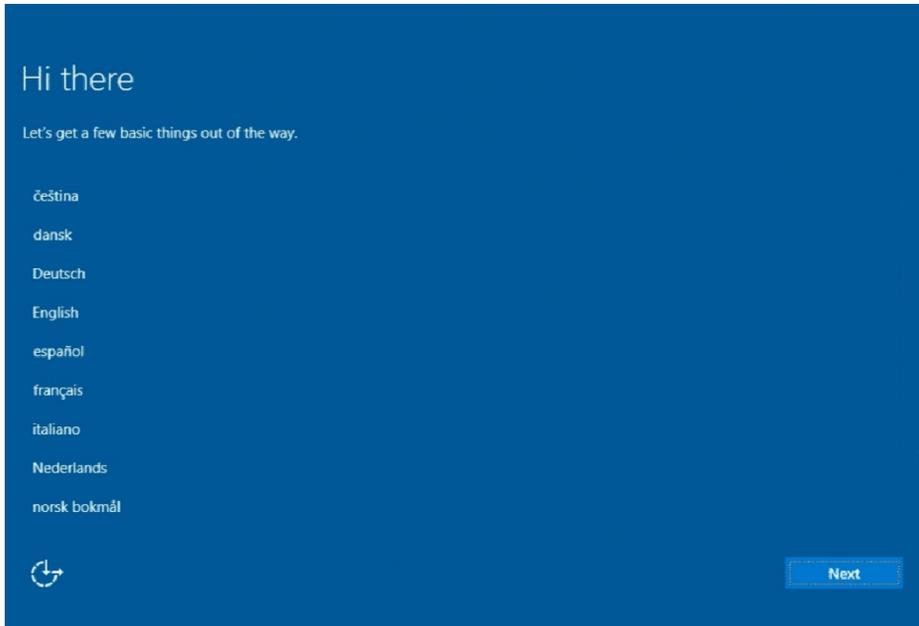
Figure 2: The language selection screen during initial Windows software set up. (Used with permission from Microsoft.)

2. Select the country/region, preferred app language and keyboard layout, and then click **Next**.
   NOTE: If a language other than English is selected, the server will restart. This is normal Windows behavior. Proceed with step 3 once the server has finished restarting.

3. If requested, enter the product key for the operating system activation. Your product key is located in the Certificate of Authenticity (COA) sticker.

4. The End User License agreements are displayed. Review the terms and click **Accept**.

5. On the Customize settings screen, set a password for the local administrator account.
   The password should:

   - 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.

6. Press Ctrl+Alt+Delete to unlock and type in the credentials created in the previous step.

   Proceed to *Completing Your Windows Setup* below before completing the ACC software installation.

Completing Your Windows Setup

Complete the setup of your Windows operating system before you re-install the ACC software.

- Customize the computer name of your recorder, appliance or workstation:

    a. Next to the Start menu, type `System Settings`.

    b. On the **Computer Name** tab, type a unique name.

       Example: NVR1 or RM-WKS1

       > **Note:** Each system must have a unique name for easy identification across the network. For recorders, the ACC Server uses the computer name as the ACC Site name by default. To change the name, use Site Setup in the ACC Client software or use the ACC Server software.

    c. Click **OK** and confirm the system reboot.

- Set up the Avigilon Analytics Kit, if applicable.

  If you are using the Avigilon Analytics Kit, you must reconfigure the GPU before installing the ACC Analytics Service software. Contact Avigilon Technical Support to obtain the required GPU Configuration Tool software. Download it to your recorder desktop or other known location, and run the software. The system will restart after the GPU is configured.

  For more information, see the *HD NVR Analytics Kit* documentation.

- Configure the network IP addresses for your system.

  For more information, see *Network Configuration* on page 53.

- Configure your system to synchronize with a network time protocol (NTP) server.

  Maintaining accurate system time is highly recommended, especially for recorders. To prevent differences in recorder time and ACC Server software time, it is recommended to set your system time to synchronize with a reliable NTP server with a pooling interval of 2 hours.

  For more information, see *Other Tasks* on page 51.

Step 9: Reinstalling the Previously Installed ACC Software Version and Release

Reinstalling or upgrading the operating system on your recorder, appliance or workstation removes all pre-existing data on the OS drive. The previous ACC configuration settings and license keys must be restored and the ACC software must be reinstalled on the recorder.

Restoring ACC Site Configuration Data and Site Health Report

Important: To avoid issues and reduce downtime, call Avigilon Technical Support to conduct a remote session to your server and to restore the backup of the ACC Site files. Files from this folder will be restored: `servername_accbackup_updated_dd_MM_yyyy_HH_mm_ss`

Allow Avigilon Technical Support to restore your backups that were previously saved in your storage disk (typically local disk D:) or USB storage device, to the following location.

1. Find the copy of the `ProgramData` folder in your storage volume or USB storage device.

2. Copy it to the root of the OS disk, typically local disk (C:).

   `C:\ProgramData\Avigilon`

Note: Do **not** restore any archived or exported videos from *Archiving or Exporting ACC Video Files* on page 15.

Reinstalling the Previous ACC Software Version and Release

Important: Proceed with this reinstallation step only after Avigilon Technical Support has completed the restoration procedure.

- If you used the storage disk (typically drive D:) to back up your files before upgrading Windows and do not have any other backup copy, copy those files to a secured USB storage device. Confirm all files are copied to the device. Delete the backup files in the storage disk. Do not delete the `\AvigilonData` folder (typically drive D:), which holds the recorded videos. Ensure each storage disk has at least 5GB of free space after deleting the backup files.

- For recorders with separate OS and storage disks, verify that the following folders are present in your system before installing the ACC Server software:

  - The OS disk must contain this folder:

    `C:\ProgramData\Avigilon`

    This folder is restored from the backups before installing the new OS.

  - The storage disk (typically drive D:) must contain these folders:

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

    These folders are kept intact during the new OS installation and contain all previous ACC configurations and recorded video.

On your recorder, appliance or workstation, start the installer.

1. Connect a monitor, keyboard and mouse, if these are not already present.

2. Go to the root of the storage volume or the USB storage device where the ACC installer is saved.

3. Double-click the `AvigilonControlCenterServer-n.n.n.n.exe`.

4. When prompted to allow the installer to run on the device, click **Yes**.

5. At the first window of the installation wizard, click **Control Center Server**. Wait for the contents of the setup package to be verified.

6. Click **Next** several times until the END USER LICENSE AGREEMENT is displayed. Read the agreement.

7. Check the **I accept the terms of the License Agreement** checkbox and click **Next**.

8. When prompted to choose the install folder, keeping the default install path is recommended:

   `C:\Program Files\Avigilon\Avigilon Control Center Server`

   Click **Next** to proceed.

9. Choose to install the server for all users on the computer, or only you, and click **Next**.

10. Click **Next** again to start the install.

11. After the installation is complete, click **Finish** to exit the installation.

12. By default, the ACC Server software starts automatically.

    If the ACC Client software does not start automatically, launch it manually.

    You should see only one configuration listed.

13. Select **Use this Configuration** in the Admin Panel.

14. If the recorder is running ACC 5, activate the licenses.

For more information about the Admin Tool, see the *Avigilon Control Center Server User Guide*.

Adding the Recorder to the Multi-server Site or Parent Site

WARNING — Multi-server sites are only possible when all recorders are on the same LAN and in compliance with specific network requirements. If the recorders are on different networks or locations, and the connectivity between them involve a WAN, VPN, and/or wireless link, only parent and child Sites can be created.

After you complete the upgrade, start the ACC Client software and log in to all sites you want to connect to.

To reconfigure your multi-server Site or parent Site configuration:

1. In the **New Task** menu , click **Site Setup**.

2. Click the site name and then click **Manage Site**.

3. To reconfigure a multi-server Site:

   a. Select the NVR and drag it to a multi-server Site.

      WARNING — RISK OF DATA LOSS if you do the reverse. Make sure that you do *not* move the main Site to the single-server Site. All the settings of the main Site will be lost. The backup file for the main Site settings may become unusable.

   b. Click **Yes**.

   c. For ACC 6 and later, 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** and then **Yes**.

Reactivating ACC Licenses and Restoring ACC Site Settings

If needed, reactivate the ACC licenses.

1. Start up the ACC Client software.

2. Click **Site Setup** and select your ACC site.

3. Click **License Management** in the panel to the right.

4. Click **Add License...**.

5. Copy and paste your Activation IDs from the text file that was saved on the storage disk or USB storage device.

6. Complete the activation process.

   If the licenses do not activate, contact Avigilon Technical Support and provide your last Site ID from your saved Site Health Report and your Activate IDs.

If needed, restore the ACC Site settings.

1. Log in to your Site using credentials with the right level of privilege (usually, the Administrator account).

2. Click **Site Setup** and select your ACC site.

3. Click **Restore Settings** in the panel to the right.

4. Browse for the Site Settings file saved in *Copying ACC Site Configuration Data* on page 17.

5. Restore all settings.

For more information, see the *Avigilon Control Center Client User Guide*.

Step 10: Updating ACC Software to the Latest Version

Upgrading to ACC 7 Software

Avigilon strongly recommends upgrading to the latest version of the ACC 7 software after reinstalling or upgrading all your recorders, appliances or workstations.

For more information about upgrading to ACC 7 and obtaining the required installers, see *ACC 7 Software Upgrade Guide* (**avigilon.com/support/software/acc7**) and Knowledge article, *ACC - How to Upgrade Servers to ACC 7* in the Avigilon Partner Portal (**article 10085**). If you do not have access to the article, contact your integrator for licensing details.

Step 11: Post-Installation

The Windows operating system reinstallation or upgrade process is now completed.

Verifying Hardware and ACC Software Operation

After you start the ACC Client software and log in:

1. Verify all cameras are online.
2. Verify all end-users are able to log in.
3. Verify recorded videos are accessible.
4. Verify customized rules, alarms, analytics and other configurations.
5. Merge into multi-server or parent-child Site configuration, if needed.
6. Install other ACC components, as needed:
   - ACC Web Endpoint
   - Avigilon Player
   - ACC Gateway

     After installation, restore the following files:
     - `C:\Program Files\Avigilon\Avigilon Control Center Gateway\Gateway.cfg`
     - `C:\Program Files\Avigilon\Avigilon Control Center Gateway\cert\GatewayCertificate.pfx`

       Restore the `.pfx` file only if the recorder has a customer SSL certificate.
7. Verify access to Avigilon Cloud Services (ACS) and ACC Mobile (if previously working).

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

Other Tasks

Note: Run Windows Update. To prevent unexpected reboots, you must enable and run the Windows Update service before you can select and download Windows updates available from Microsoft. Windows updates are disabled by default on Avigilon NVRs. It is recommended to schedule maintenance downtime to install Windows updates under user supervision and once all available Windows updates are installed, disable the Windows Update service to prevent unexpected reboots until the next maintenance downtime is scheduled.

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

- Ensure the ACC Server network ports have the correct IP addressing.

  For more information, see Knowledge article, *ACC - NIC Configuration Best Practices* in the Avigilon Partner Portal (**article 8555**).

- Load the Site Health Report and check if any network port is overloaded.

  For information about the Recording Rate limit, see the datasheet for the server.

- Ensure the UPS is configured to shut down the Windows OS when battery is low. If this configuration is not done, the ACC Server will crash when the UPS runs out of battery, which may result in hardware issues and/or loss of video.

- Configure the antivirus software on your system.

  For more information, see Knowledge article, *ACC - Will Anti-Virus Software Affect My ACC System?* in the Avigilon Partner Portal (**article 8027**).

- If third-party ONVIF® cameras are connected to ACC, configure the ACC Server as a network time protocol (NTP) server. Set the cameras to the same timezone, date and time as the server. Set them also to sync their time to the server as the NTP server.

  For more information, see Knowledge article, *Set up a server as a Time Server (NTP Server) using NetTime* in the Avigilon Partner Portal (**article 7135**).

  ONVIF is a trademark of Onvif, Inc.

- For NVRs, install OpenManage Server Administrator (OMSA), if it is not present.

  For more information, see *Installing OpenManage™ Server Administrator (OMSA)* on page 55.

Troubleshooting

If the following troubleshooting solutions do not resolve your issue, contact Avigilon Technical Support: **avigilon.com/support/technical/tech-issue**.

Network Configuration

By default, the network video recorder, video appliance or workstation 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.

See also:

- Knowledge article, *ACC - NIC Configuration Best Practices* in the Avigilon Partner Portal (**article 8555**)
- Knowledge article, *ACC - What To Do Before Changing Server Properties (Name, IP address)* in the Avigilon Partner Portal (**article 9804**)

Monitoring System Health

You can monitor the health of the system components in the Site Health in the ACC Client software. See the the Help files provided with the ACC Client for more information.

Network Video Recorder or Workstation Server Keeps Rebooting

If the NVR or Workstation server keeps rebooting with the following messages:

- "You are about to be logged off"
- "Windows will shut down in 1 minute."

Complete the following steps:

1. Open a **Command Prompt** as the administrator user.

2. Type `shutdown /a` to cancel the shutdown process.
3. Call Avigilon Technical Support.

For More Information

For additional product documentation and software and firmware upgrades, visit **avigilon.com/support**.

Technical Support

Contact Avigilon Technical Support at **avigilon.com/contact**.

Product User Guides

- *Avigilon Control Center™ Analytics Service User Guide*

Appendix A

Refer to this section for use of third-party applications.

Installing OpenManage™ Server Administrator (OMSA)

Use the following tool to monitor the system health of your network video recorder or video appliance.

Install OMSA on Avigilon Network Video Recorder servers:

1. Open a **Command Prompt** as the administrator user.

2. Type `C:\Avigilon\3rdPartyInstallers\Apps\Dell\omsa`.

3. Install OMSA in silent mode. Run `omsa_install.bat`.

4. After installation, check your Desktop for the Server Administrator icon.

5. Run **Server Administrator** to verify that it runs as expected.

6. To view server hardware information for this server in the Site Health Report, set up Simple Network Management Protocol (SNMP) services for ACC Partner Portal.

   For more information, see Knowledge article, *How to Set Up ACC to Respond to Dell SNMP Events* in the Avigilon Partner Portal (**article 7888**).

Restructuring the RAID Array — HD-NVR2 with 50GB or 100GB OS Drive Size

WARNING — Restructuring the RAID array requires additional downtime and all data on the recorder to be completely wiped out. Prior to restructuring, see *Before You Start* on page 6, *Scheduling System Downtime* on page 7.

Setting Storage Configuration

Complete this step before installing the Windows operating system on the recorder.

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.
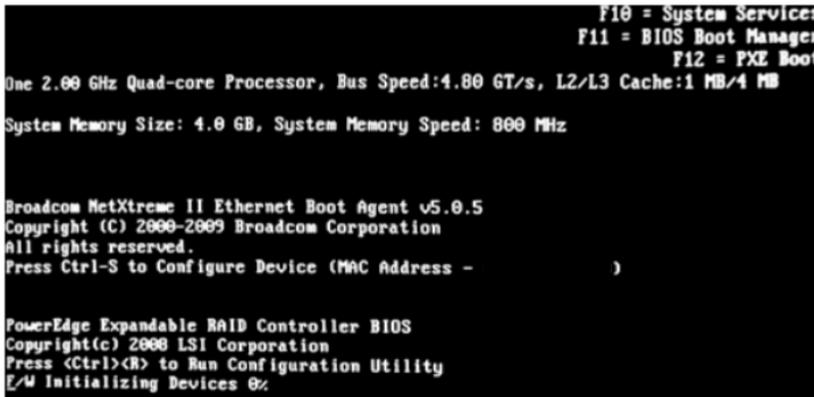
3. Select the **VD Mgmt** (Virtual Disk Management) tab. Use **Ctrl** + **N** and **Ctrl** + **P** to move between tabs.
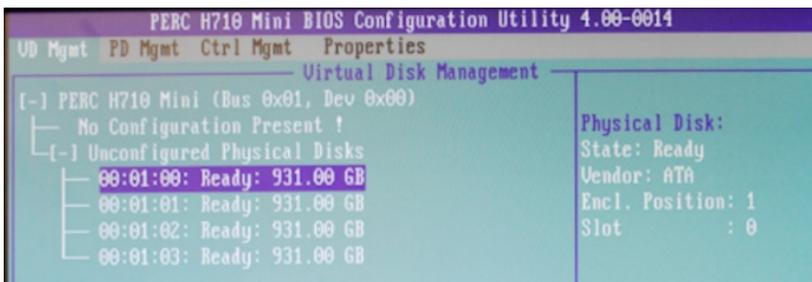
The VD Mgmt tab may display a disk configuration. If the Virtual Disks are highlighted in red, then the disks have been corrupted or are invalid. Delete the Disk Group before you can proceed.

   a. Use your arrow keys 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 VD page, select the following settings.
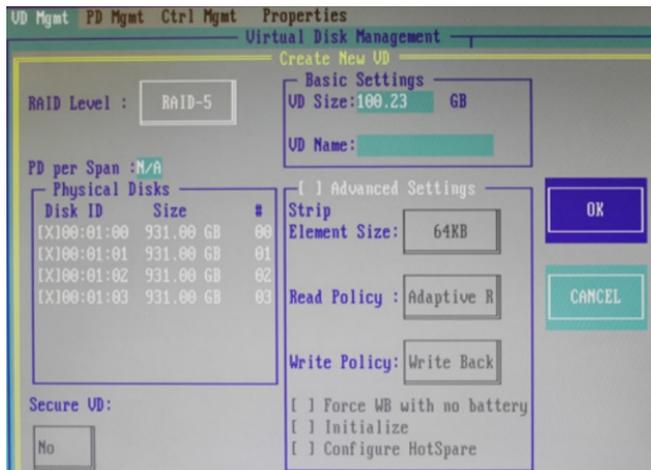
Use your arrow keys to navigate through the screen and press **Enter** to make your selections.

- **RAID Level**: RAID-5

- **Physical Disks**: Select all disks.

- **Basic Settings, VD Size**: 290,000 MB (or 290GB)

- **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 is displayed, 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

- **Advanced Settings**: Enable the advanced settings (use the spacebar):

- **Strip Element Size**: 128KB

- **Read Policy**: Leave as default (Adaptive R).

- **Write Policy**: Leave as default (Write Back).

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 the **F2** key and select **Initialization** > **Start Init**.

    c. When the warning message is displayed, 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 Management) tab.
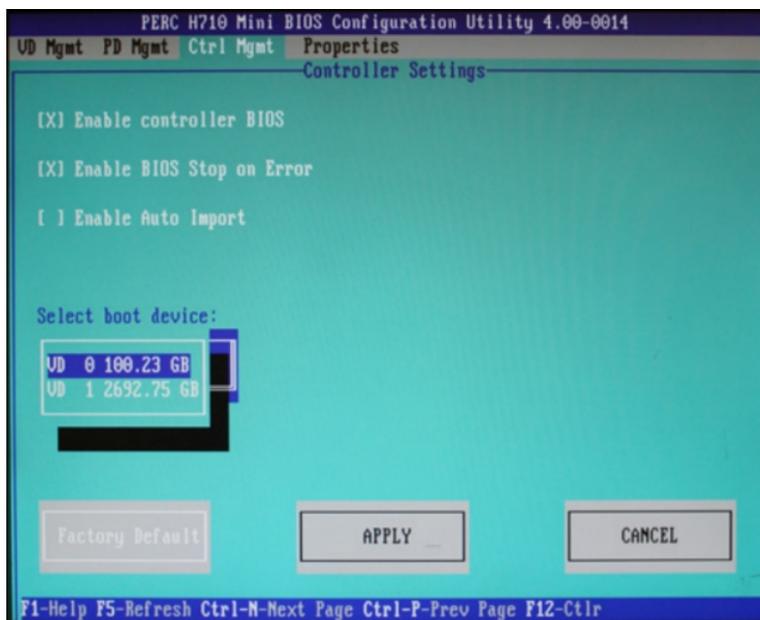
    b. In the Select bootable VD area, select **VD 0**.

    c. Select **Apply**.

7. Press the **Esc** key to exit the BIOS Configuration Utility.

8. Reboot the HD NVR Server when prompted.

Next step, see *Configuring the Data Storage Volume in Windows* below.

Configuring the Data Storage Volume in Windows

Complete this step after *Setting Storage Configuration* on page 55.

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

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.
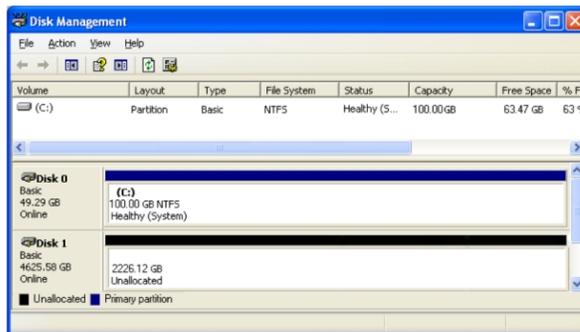
2. Initialize Disk 1 as GPT. This is the Virtual Disk 1 that was configured .

    a. Right-click on Disk 1 and then click **Initialize Disk**. Select the **GPT** option.

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

c. On the Select Disk to Initialize page, ensure Disk 1 is selected and then click **Next**.

d. On the Select Disk to Convert page, ensure the Disk 1 checkbox is clear and then click **Next**.

e. 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, see *Step 8: Installing Windows using the Bootable USB Device* on page 36.

Appendix B

OS Recovery for Discontinued Products

There is no Windows 10 Field Upgrade Kit for HD-NVR, HD-NVRWS, 2MN-HD-RMWS and 4MN-HD-RMWS models.

> **Important:** Legacy systems were packaged with the recovery media tools required for full system recovery. Customers must preserve the recovery media tools packaged with the systems.

> **Note:** After recovering legacy systems, additional software such as drivers for specific hardware may be required. While Avigilon makes all efforts to preserve copies of legacy software that may be required for discontinued products, in some exceptional cases, it may not be possible to identify and provide a copy of the missing software or drivers.
>
> For the 4MN-HD-RMWS (T5600) model with a RAID controller, specific drivers are required during the OS recovery process. For more information, see Knowledge article, *How to Re-image a 4MN-HD-RMWS T5600 with a PERC H310 RAID Controller* in the Avigilon Partner Portal (**article 7046**).

Find the OS Image

For Windows 7 recovery, you need to create a bootable DVD instead of a USB device. Refer to your system's Windows Certificate of Authenticity (COA) sticker and identify the required OS version:

- For systems running Windows Embedded Standard 7, the OS image can be downloaded from the Avigilon website:

    1. Navigate to **https://www.avigilon.com/support/technical/os-recovery**.

    2. In the **Discontinued Products** or **Network Video Recorders Gen 2 (NVR2)** sections, select the model of the system to be recovered.

    3. Follow the wizard and download the ISO file to the `Downloads` folder of your computer.

- For systems running OEM Windows 7 Professional, the recovery DVD media was packaged with the system. If you cannot locate the original recovery DVD media, contact Avigilon Technical Support for assistance.

Create a Bootable DVD Recovery Media

1. Run Windows Explorer or File Explorer, and navigate to the `Downloads` folder.

2. Right-click on the downloaded `.ISO` file.

3. Select **Open with > Burn disc image**.

4. Set the **Disc burner** information to the correct drive letter.

5. Click **Burn**.

Complete OS Recovery

On the system to be recovered:

1. Boot it up with the DVD inserted into the internal DVD Drive.

   > **Note:** Do not use an external DVD drive.

2. Press the **F2** key to display BIOS System Setup.

   - If you are upgrading an HD-NVR:

     a. System Setup > Boot Settings > Boot Sequence

     b. Select to boot from the Optical Drive.

   - If you are upgrading an HD-NVR2:

     a. System Setup > System BIOS > Boot Settings > One-Time Boot

     b. Select to boot from the Optical Drive.

   - If you are upgrading a legacy workstation:

     a. System Setup > SATA Operations > AHCI.

     b. Select **Apply**.

     c. Reboot and press the **F12** key for the one-time boot menu.

     d. Select Optical Drive.

3. Follow the instructions on the Avigilon Recovery Console wizard.

4. Select **Yes** to recover the system.

5. When finished, remove the DVD from the optical drive and reboot.

6. Complete the Windows Out of Box Experience (OOBE) steps.