

High Density Storage Expansion Guide

Installation Guide

NVR5-HDDS-HOT-18TB
NVR5-HDDS-INT-18TB
NVR4-HDDS-PACK-32TB
NVR4-HDDS-PACK-16TB

For

NVR5-PRM (252/288/360TB)
NVR5-STD (16/32TB)
NVR4X-STD (16/32TB)
HD-NVR4-STD (16/32TB)

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Table of Contents

Introduction	4
NVR and Hard Drive Compatibility	4
Expanded ACC™ Storage Volume Configuration	5
Required Components	5
Installing and Configuring a New Drive (iLO)	6
Rear Drive Installation	6
Internal Drive Installation	8
Configuring Extended Storage	9
Verifying Extended Storage Configuration	12
Installing and Configuring a New Drive (iDRAC 9)	13
Front and Rear Drive Installation	13
Configuring Extended Storage	13
Verifying Extended Storage Configuration	14
Initializing the Expanded Storage Volume	17
Adding Extended Storage to the ACC System	20
For More Information	25
Product User Guides	25

Introduction

This document is intended to guide Avigilon NVR customers through adding storage to their NVR system by setting up a second Avigilon Control Center (ACC) storage volume.

Note: ACC must be stopped prior to adding new storage to an array. Downtime will need to be scheduled for the ACC Server hosting the NVR. It can be resumed after the new storage has been installed and configured.

NVR and Hard Drive Compatibility

Compatible NVRs	Drive Location	Additional Drives Supported	Avigilon Part Number	Storage Management Tool
NVR5-PRM-252TB-S19	Internal Mid Bay	6	NVR5-HDDS-INT-18TB	iLO
	Rear Bay	4	NVR5-HDDS-HOT-18TB	
NVR5-PRM-288TB-S19	Internal Mid Bay	4	NVR5-HDDS-INT-18TB	
	Rear Bay	4	NVR5-HDDS-HOT-18TB	
NVR5-PRM-360TB-S19	Rear Bay	4	NVR5-HDDS-HOT-18TB	
HD-NVR4-STD-16TB	Front Bay	6	NVR4-HDDS-PACK-16TB NVR4-HDDS-PACK-32TB	iDRAC 9
NVR4X-STD-16TB				
NVR4X-STD-16TB-S16				
NVR5-STD-16TB-W10				
NVR5-STD-16TB-S19				
HD-NVR4-STD-32TB	Front Bay	6	NVR4-HDDS-PACK-16TB NVR4-HDDS-PACK-32TB	
NVR4X-STD-32TB				
NVR4X-STD-32TB-S16				
NVR5-STD-32TB-W10				
NVR5-STD-32TB-S19				

Expanded ACC™ Storage Volume Configuration

This document includes instructions for installing and configuring drives for NVR5 Premium High Density servers (252TB, 288TB, 360TB) managed with iLO and NVR4/4X/5 Standard servers (16TB, 32TB) managed with iDRAC 9.

Follow the instructions that correspond with your NVR server.

Required Components

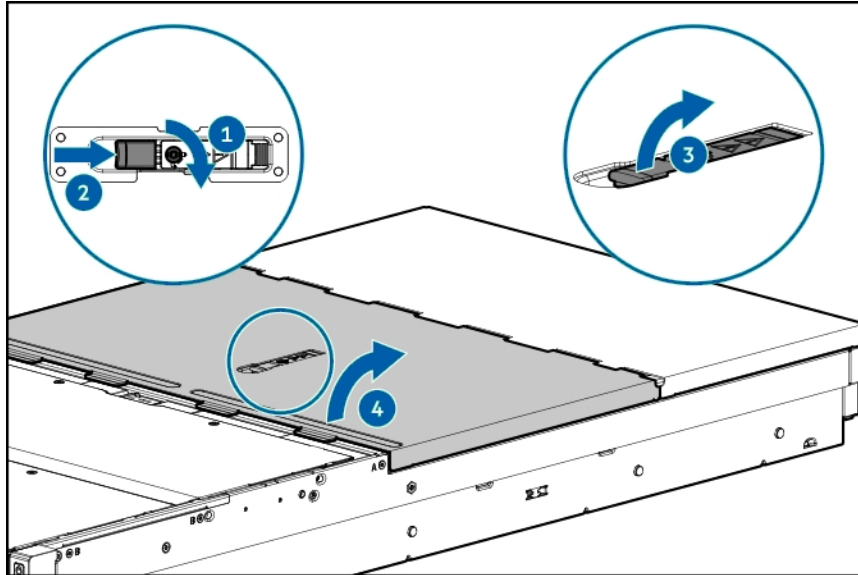
- Avigilon NVR system
- Corresponding compatible NVR storage expansion pack. See *NVR and Hard Drive Compatibility* on the previous page.

Installing and Configuring a New Drive (iLO)

Rear Drive Installation

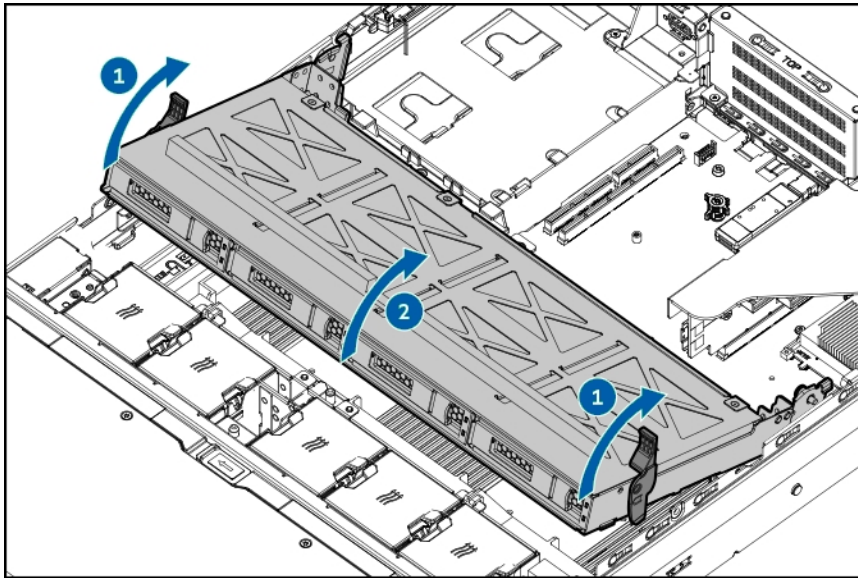
To install a hard drive in the rear of the recorder, complete the following steps:

1. Open the access panel to access drive cage 3.
 - a. Remove the access panel:

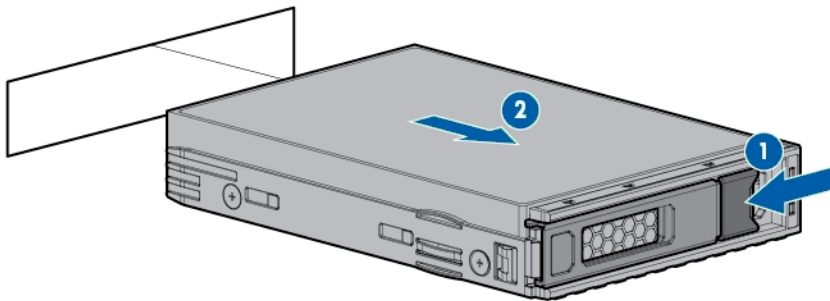


- b. If necessary, unlock the access panel latch.
 - c. Pull up the latch to disengage the access panel from the chassis.
 - d. Lift the front half of the access panel to access drive cage 3.

2. Open drive cage 3:



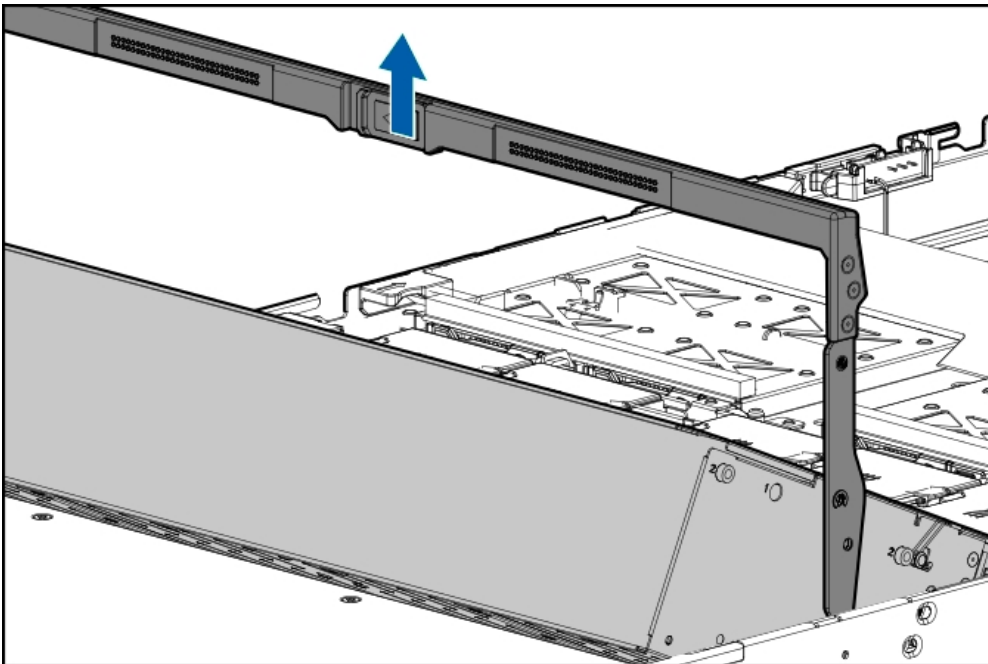
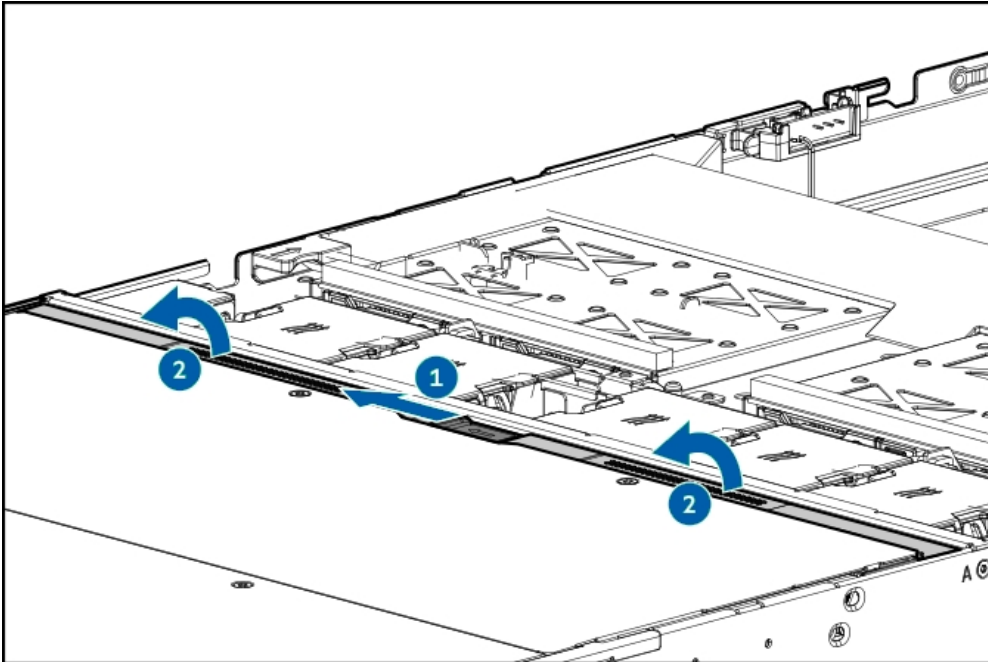
3. Locate the slot that you will be installing the new drive into.
4. To open the release lever, press the latch.
5. Pull the release lever to disengage the drive from the backplane, and then slide the drive out of the bay.



6. To install the hard drive, reverse the above steps.

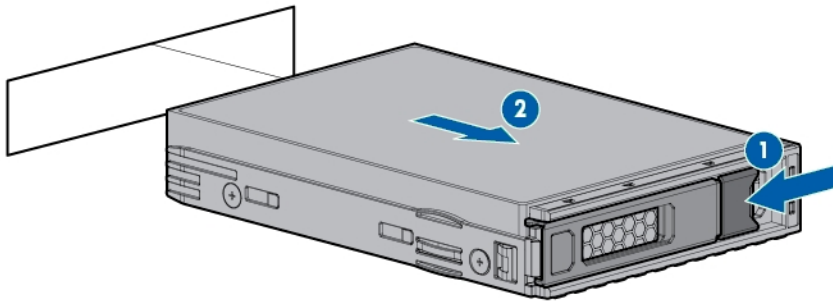
Internal Drive Installation

1. Open drive cage 2:



2. Locate the slot that you will be installing the new drive into.
3. To open the release lever, press the latch.

4. Pull the release lever to disengage the drive blank from the backplane, and then slide the drive out of the bay.



5. To install the hard drive, reverse the above steps.

Configuring Extended Storage

You must configure the extended storage using HPE Smart Storage Administrator (SSA) after you have installed all the drives. If this has not already been installed on the NVR5 as part of the Avigilon image, download the **HPE Smart Storage Administrator** .zip file, from the following page:

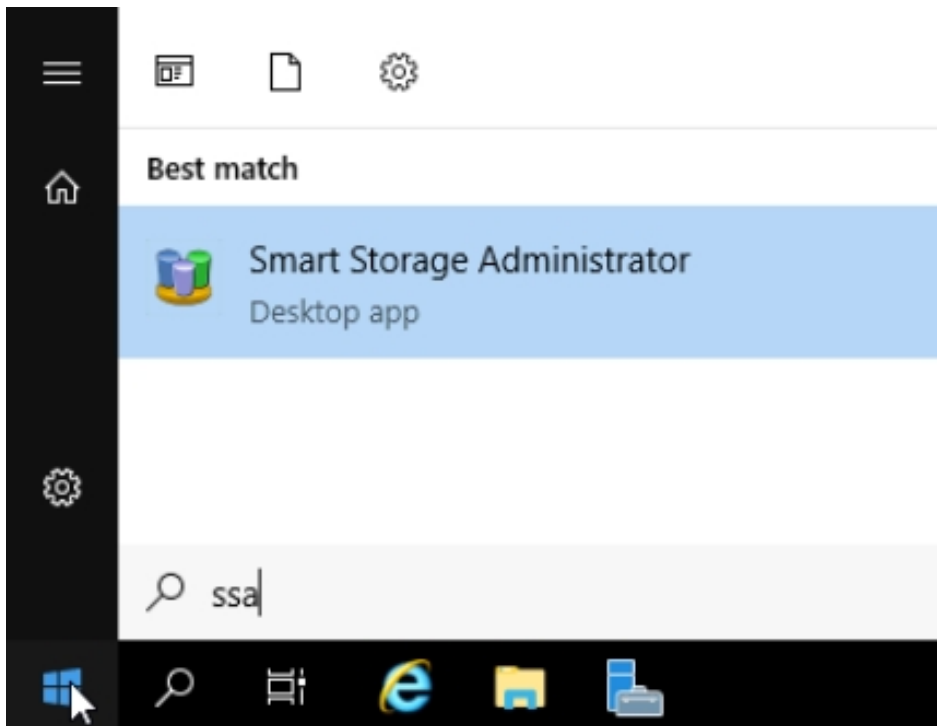
<https://buy.hpe.com/ca/en/software/server-management-software/server-management-software/smart-array-management-software/hpe-smart-storage-administrator/p/5409020>

After you have downloaded the zip file:

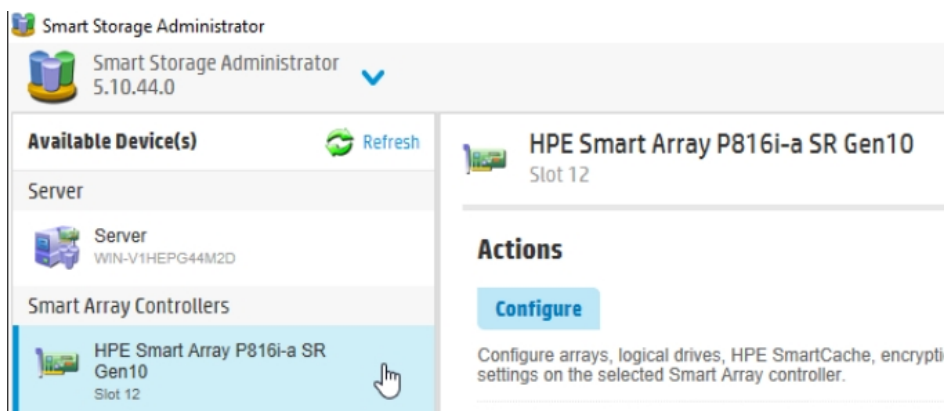
1. Extract the contents to a convenient location on the NVR system.
2. Open the extracted files and open the the **README** file.
3. Follow the instructions in the **README** file to install SSA.

Once SSA has been installed, follow these steps to configure the extended storage:

1. Using Windows search menu, search for "SSA". Click **Smart Storage Administrator** to open it.



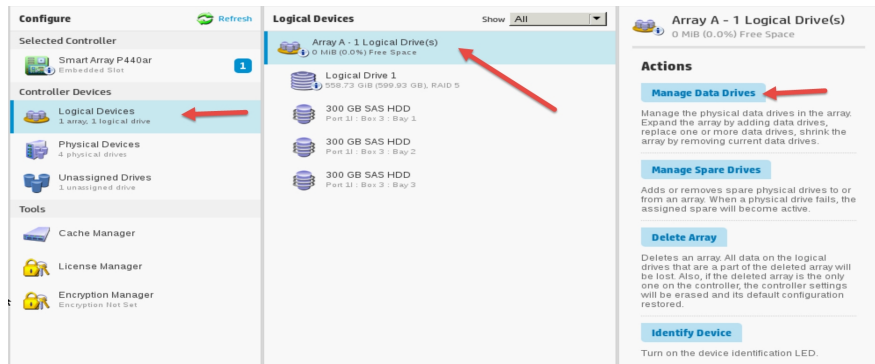
2. Click **HPE Smart Array P816i-a SR Gen10** from the sidebar. Next, click **Configure** from the **Actions** list.



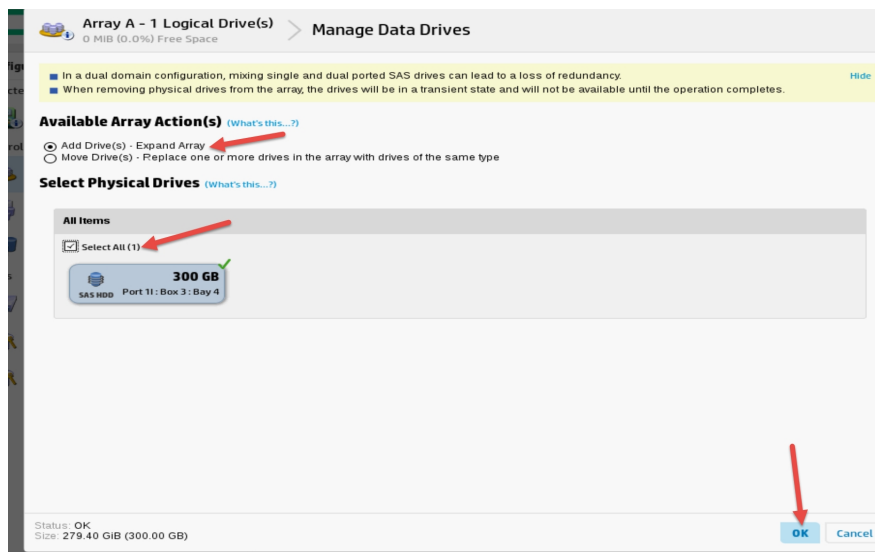
3. To extend an existing array with the expanded storage drives, follow the instructions below.

Note: ACC must be stopped prior to adding new storage to an array. It can be resumed after the RAID build has been started.

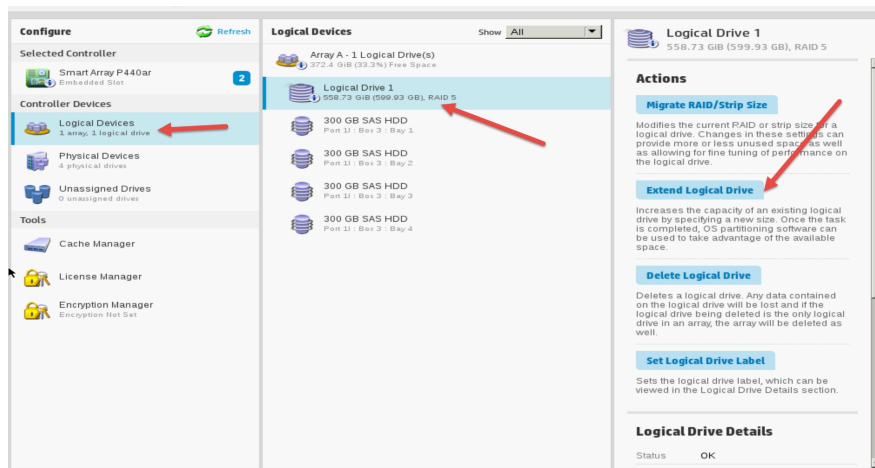
- a. Shutdown your ACC server and wait for the process to finish.
- b. Click **Logical Devices** from the sidebar. Next, select the array that will be expanded.



- c. Select **Manage Data Drives** from the **Actions** menu in the right sidebar.
- d. Select the drives you want to add to the array. Once they are all selected, click **OK** in the bottom right corner.



- e. You can now restart the ACC Server while the RAID builds. The process can take up to 14 days to complete.
- f. Once the process is complete, expand the logical drive by selecting the Logical Drive within the array. Next, click **Extend Logical Drive** from the **Actions** list.



- g. Select the **Maximum Size** option, then click **OK**.
- h. Once complete, click **Finish**.
- i. Once the RAID build is complete, follow the steps in *Verifying Extended Storage Configuration* below to confirm that the extended storage configuration is complete. Then, proceed to the next step, *Initializing the Expanded Storage Volume* on page 17.

Verifying Extended Storage Configuration

Follow these steps to verify that the extended storage is completely configured:

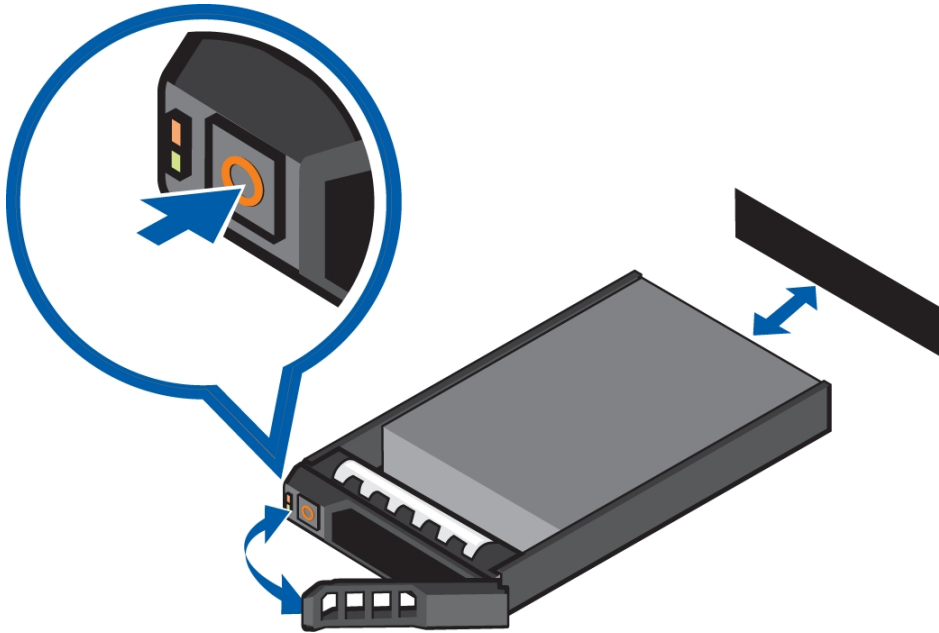
1. Using Windows search menu, search for "disk". Click **Disk Management** to open it.
2. Under **Volumes** in the Disk Management table, you will see a list of drives.
The capacity and names of the drives listed in this table should match the configuration of arrays that were created or extended.
3. Click on each drive and check the disk partition breakdown to confirm that the arrays are configured with the correct capacity, and are unallocated.
4. Once finished, close out of the **Disk Management** Window.

Proceed to the next step, *Initializing the Expanded Storage Volume* on page 17.

Installing and Configuring a New Drive (iDRAC 9)

Front and Rear Drive Installation

1. Press the release button to open the release handle for the hard drive carrier that is holding a hard drive blank.
2. Slide the hard drive carrier with the hard drive blank out until it is free of the hard drive slot.



3. The storage expansion pack's drives can now be inserted into the open drive bay.
4. Close the hard drive carrier handle to lock the expansion pack hard drive in place.

Configuring Extended Storage

You must configure the extended storage after you have installed all the drives. To configure this storage, download the **Storage Expansion Kit for NVR4X-STD and NVR4-STD** zip file, from the following page:

<https://www.avigilon.com/support/infrastructure/nvr-downloads>

After you have downloaded the zip file:

1. Extract the contents to a convenient location on the NVR system.
2. Open the extracted files and locate the file called **StorageExpansion**.
3. Right-click the *StorageExpansion* file and click **Run as administrator**.

The script will start the process of configuring the extended storage in the NVR system. This process will take approximately 24 hours.

After waiting 24 hours, follow the steps in *Verifying Extended Storage Configuration* on the next page to confirm that the extended storage configuration is complete. Then, proceed to the next step, *Initializing the Expanded Storage Volume* on page 17.

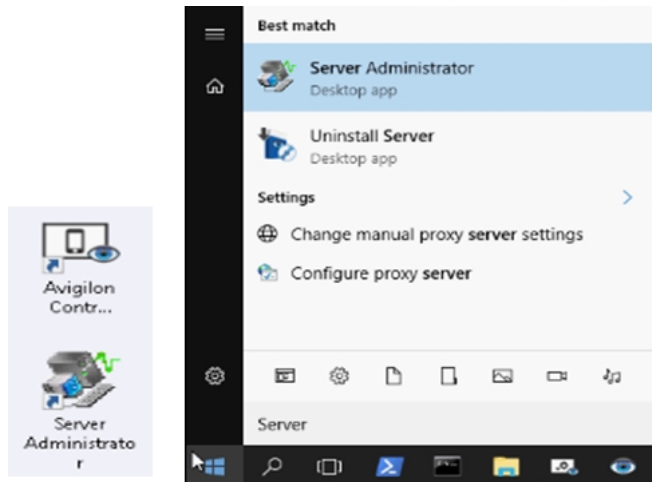


CAUTION — Risk of losing data. Data will be lost if you do not allow the initialization process to finish running. To avoid this risk, wait for the time recommended in the table above so the storage is completely initialized and follow the steps below to verify extended storage configuration before continuing with adding the storage to ACC.

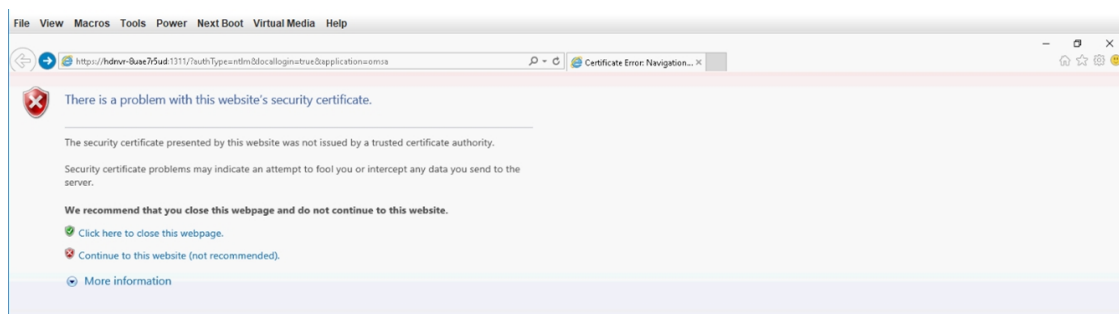
Verifying Extended Storage Configuration

After waiting the specified time, follow these steps to verify that the extended storage is completely configured:

1. Double-click the Server Administrator icon on your desktop.



2. If a Security Certificate warning opens, click **Continue to this website (not recommended)** to continue to the Server Administrator.



3. Use your windows credentials to login to the Server Administrator portal.

Login ?

HDNVR-CC1EET8RM | HD NVR

Type your username and password, then click Submit.

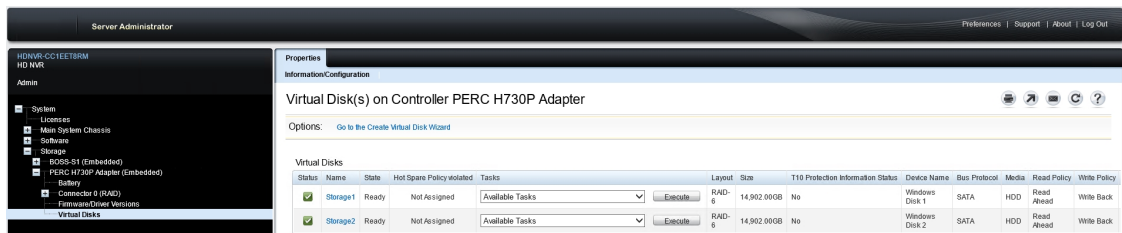
Username: Password:

Application: Server Administrator

- Use the navigation tree on the left-hand side to navigate to **Storage > PERC XXXX > Virtual Disks**. XXXX is the version of PERC controller.



- Select **Virtual Disks** and check if Storage 2 has the state set as **Ready**.



- If Storage 2 is not **Ready**, wait a few minutes and check again.
- After Storage 2 is confirmed as **Ready**, navigate to the **Alert Log (System > Logs > Alert)** to check that the storage configuration initialization is complete.

Note: If RAID Initialization is not logged as complete after the Storage 2 state is confirmed as **Ready**, contact technical support for assistance completing the RAID Initialization.

Server Administrator

HDMVR-CC1EET8RM
HD NVR
Admin

System

- Licensees
- Main System Chassis
- Software
- Storage
 - BOSS-S1 (Embedded)
 - PERC H730P Adapter (Embedded)
 - Battery
 - Connector 0 (RAID)
 - Firmware/Driver Versions
 - Virtual Disks

Properties Shutdown Logs Alert Management Session Management

Hardware Alert Command

Alert Log

Options: Clear Log Save As

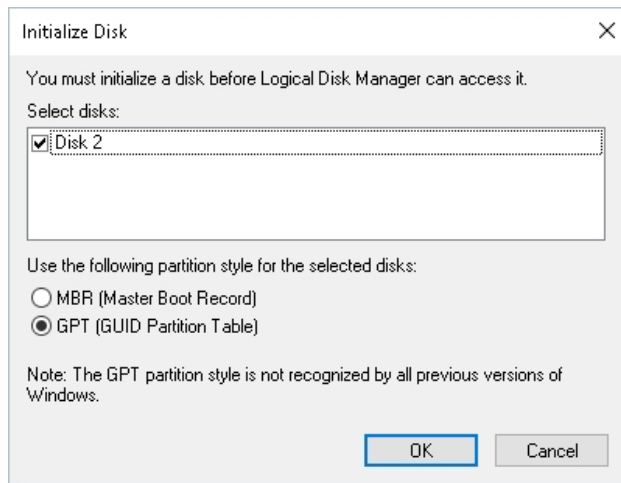
Severity	ID	Date and Time	Category	Description
✓	2389	Tue Jan 15 21:31:20 2019	Storage Service	Virtual disk bad block medium error is cleared: Virtual Disk 1 (Storage2) Controller 0 (PERC H730P Adapter)
✓	2266	Tue Jan 15 21:31:20 2019	Storage Service	Controller log file entry: Controller requests a host bus rescan: Controller 0 (PERC H730P Adapter)
✓	2088	Tue Jan 15 21:31:19 2019	Storage Service	Virtual disk initialization completed: Virtual Disk 1 (Storage2) Controller 0 (PERC H730P Adapter)
✓	2403	Tue Jan 15 14:27:54 2019	Storage Service	Virtual Disk is available: Virtual Disk 1 (Storage2) Controller 0 (PERC H730P Adapter)
✓	2199	Tue Jan 15 14:27:54 2019	Storage Service	The virtual disk cache policy has changed: Virtual Disk 1 (Storage2) Controller 0 (PERC H730P Adapter)
✓	2199	Tue Jan 15 14:27:54 2019	Storage Service	The virtual disk cache policy has changed: Virtual Disk 1 (Storage2) Controller 0 (PERC H730P Adapter)
✓	2061	Tue Jan 15 14:27:54 2019	Storage Service	Virtual disk initialization started: Virtual Disk 1 (Storage2) Controller 0 (PERC H730P Adapter)
✓	2158	Tue Jan 15 14:27:53 2019	Storage Service	Physical disk online: Physical Disk 0:1:9 Controller 0, Connector 0
✓	2158	Tue Jan 15 14:27:53 2019	Storage Service	Physical disk online: Physical Disk 0:1:10 Controller 0, Connector 0

8. Proceed to the next step, *Initializing the Expanded Storage Volume* on page 17.

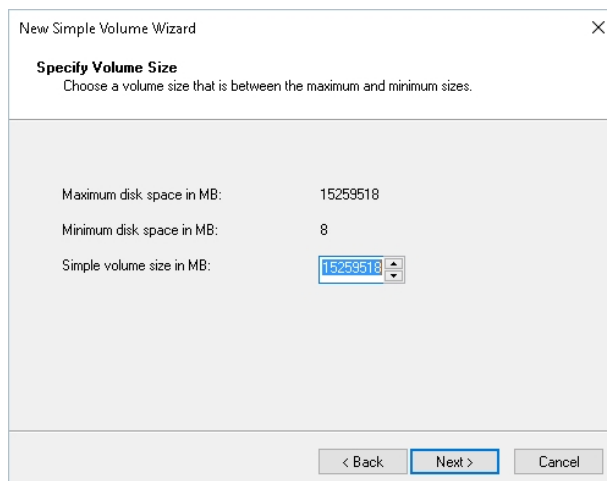
Initializing the Expanded Storage Volume

After you have created and configured the expanded storage, initialize it in the NVR.

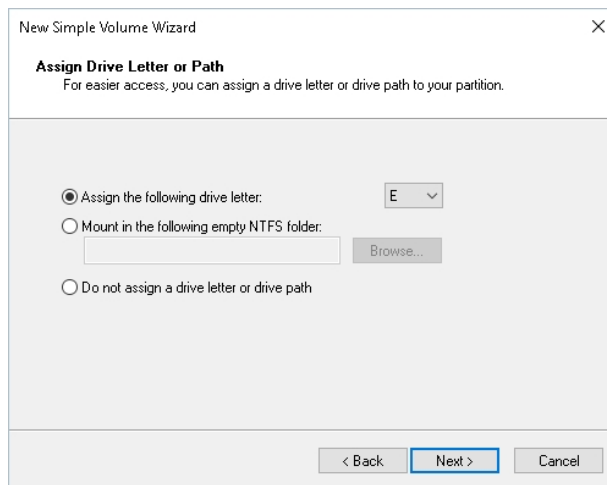
1. Use the Windows search menu to open **Disk Manager**. The expanded storage volume shows as an unallocated partition of **Disk 1** for iLO systems, or **Disk 2** for iDRAC systems.
2. If using an iLO system, skip this step and proceed to Step 3. If using an iDRAC system, **Disk 2** needs to be initialized:
 - a. Right-click the unallocated storage volume and select **Initialize Disk**.
 - b. Select the default **GPT** partition style and click **OK**.



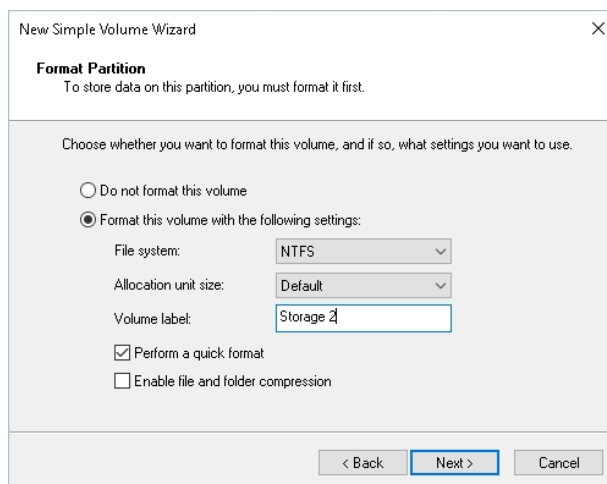
3. Right-click the unallocated storage volume and select **New Simple Volume**.
4. The New Simple Volume Wizard will open. Click **Next** to continue with the wizard.
5. When asked to specify the volume size, leave the size set to its default setting and click **Next**. This will be the maximum storage size available in the new volume.



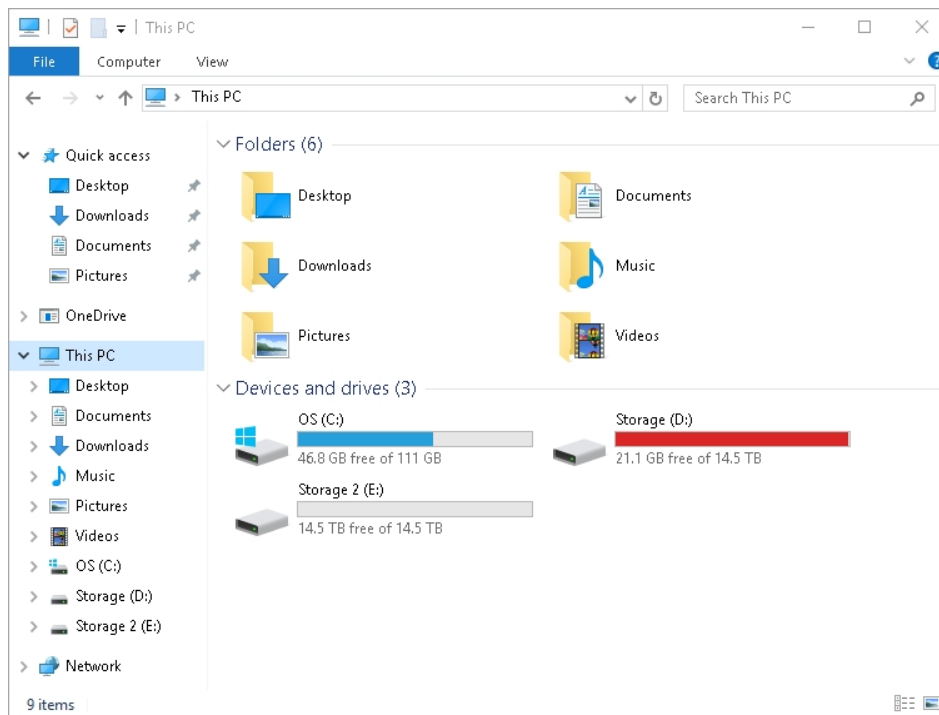
6. Select an unused drive letter to use for the new storage volume and click **Next**.



7. Configure the following settings on the Format Partition window and click **Next**:
 - a. Select the **Format this volume with the following settings** option.
 - b. Select **NTFS** from the File system drop-down list.
 - c. Select **Default** from the Allocate unit size drop-down list.
 - d. Enter the Volume label as **Storage 2**.
 - e. Select the **Perform a quick format** option.



8. Click **Finish** to complete the New Simple Volume Wizard process.
9. You can now verify that the new storage volume is setup correctly by finding it in File Explorer listed under **This PC**.

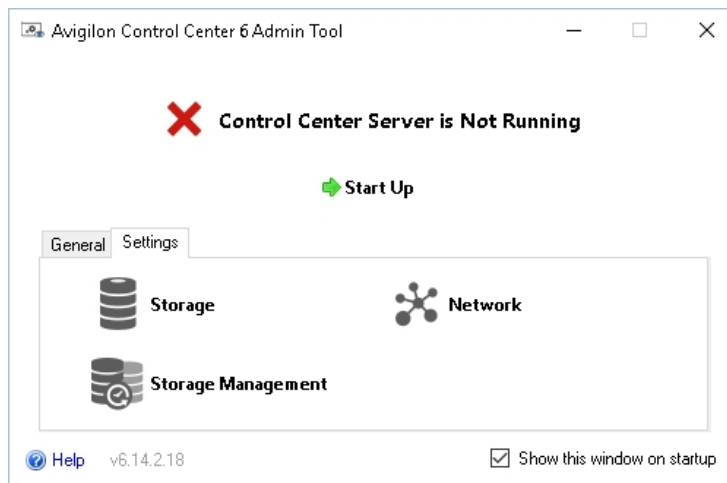



10. Proceed to the next step, *Adding Extended Storage to the ACC System* on page 20.

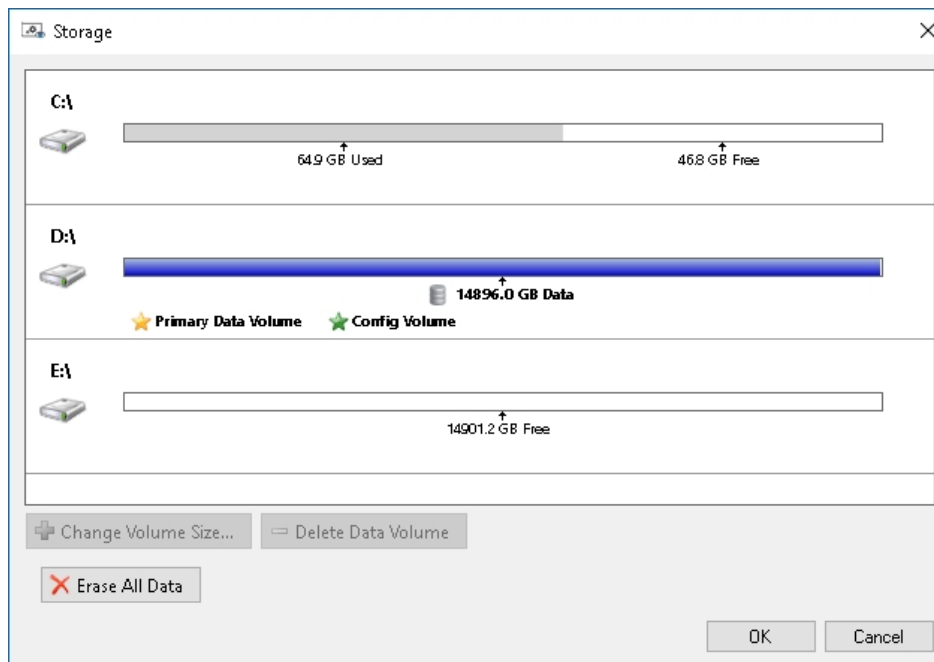
Adding Extended Storage to the ACC System

Note: The following steps are performed on your ACC Server and Admin Tool.

1. Open the ACC Admin Tool to start the process of adding the extended storage.
2. Shutdown your ACC server and wait for the process to finish.

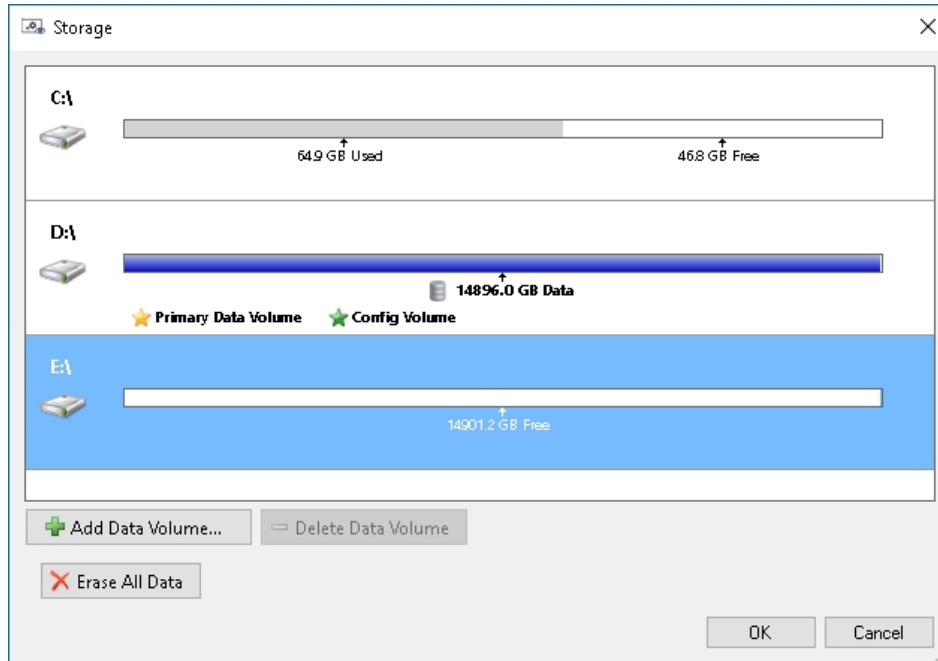


3. Click the **Storage** icon ( Storage) to see all attached storage devices.

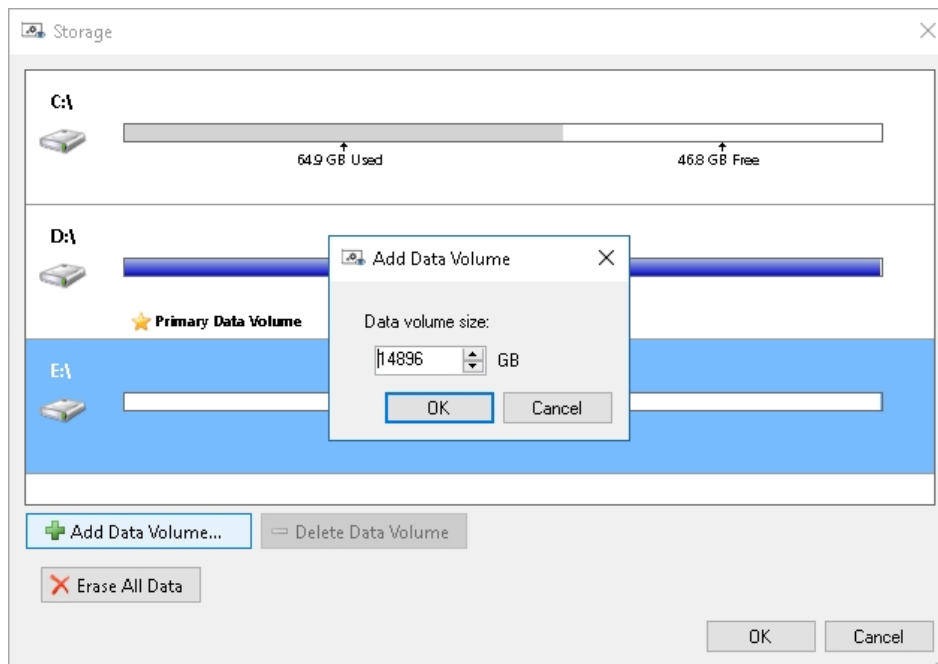


4. Click on the new storage volume in the Storage window (E:\ in this example) and click on **Add Data**

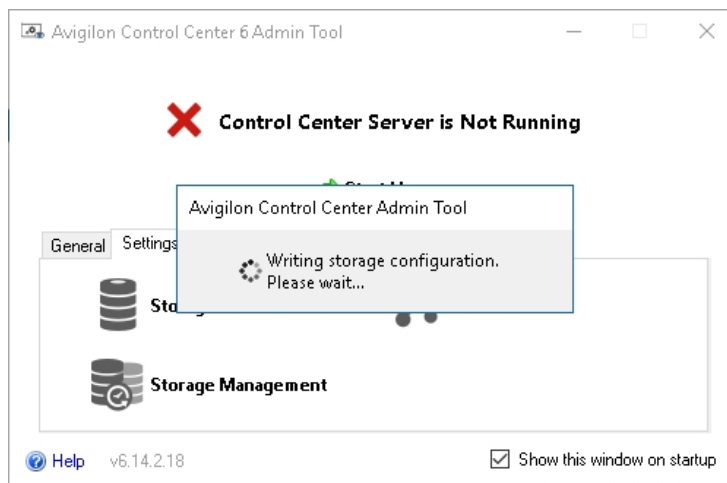
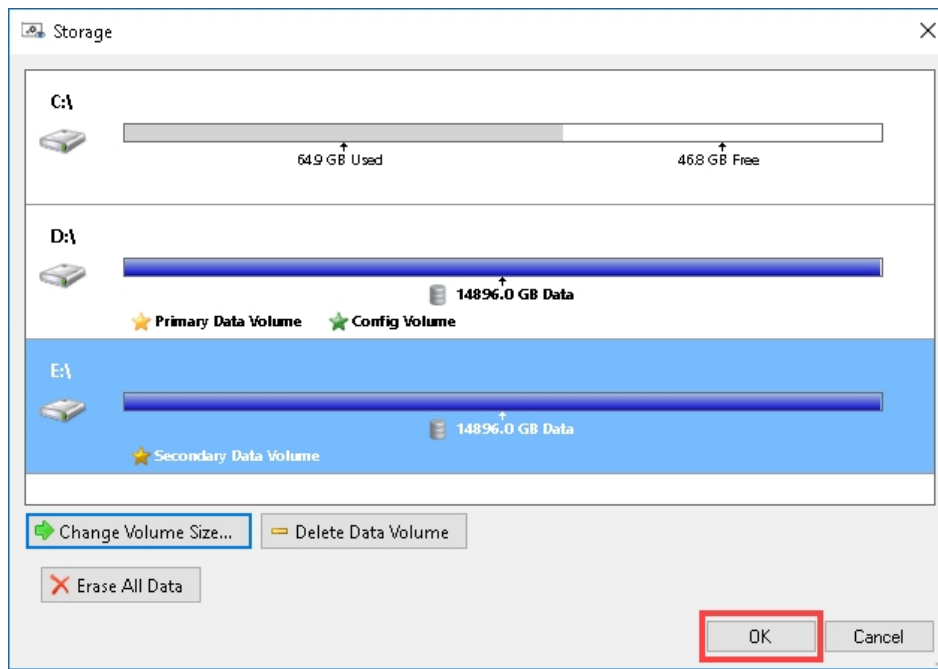
Volume.



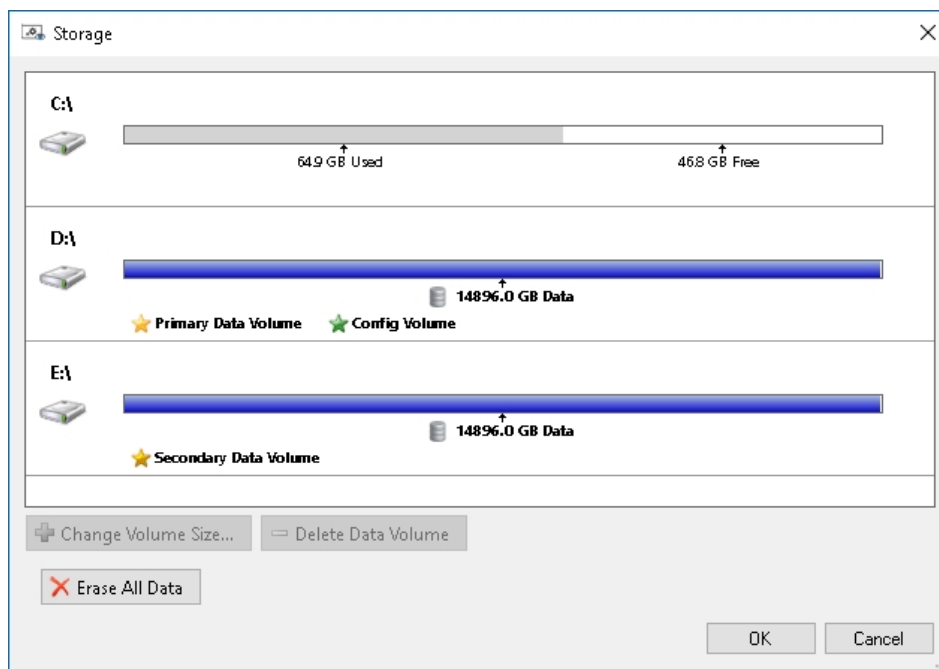
5. Click **Add Data Volume**. You are prompted to select the size of this new volume. Leave the size set to the default size and click **OK**.



6. Click **OK** on the Storage window. Wait for the ACC system to configure the new volume.



7. After configuration is finished, the new volume appears in the Storage tab of the ACC Admin tool.



8. You can now restart the ACC Server.

Limited Warranty

Avigilon warranty terms for this product are provided at [avigilon.com/warranty](https://www.avigilon.com/warranty).

For More Information

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

Technical Support

Contact Avigilon Technical Support at support.avigilon.com/s/contactsupport.

Product User Guides

For product user guides, visit the Downloads page at www.avigilon.com/support/infrastructure/nvr-downloads.