

Title:	Configuring RAID Array	Version:	v1.0	Date:	050916
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Action Required:	None, Information Only				

Summary

RAID (Redundant Array of Independent Disks) is a data storage virtualization technology that combines multiple disk drive components into a logical unit for the purpose of data redundancy or performance improvement. Most commonly used RAID levels are:

RAID Levels Table

RAID LEVEL	DESCRIPTION	EXAMPLE
RAID 0	STRIPING . Combines the capacity of individual HDDs into one. Requires 2 or more HDDs of any capacity	Two 2 TB HDDs and one 1 TB HDD Total: 5 TB
RAID 1	MIRRORING . Writes the same data identically on all HDDs. Requires an even number of HDDs of the same capacity	Four 4 TB HDDs Total: 8 TB
RAID 5	BLOCK-LEVEL STRIPING . Writes data onto all HDDs with one HDD being a spare. Requires at least three HDDs (preferably of the same capacity)	Five 3 TB HDDs Total: 12 TB
RAID 10	RAID 1 + RAID 0	

The following Hikvision NVRs and hybrids have RAID support:

- DS-9616NI-ST
- DS-9632NI-ST

• DS-96128NI-F24/H

- DS-9664NI-STDS-96256NI-F24/H
- DS-9632NI-18
- DS-9008HQHI-SH

DS-9664NI-I8DS-9016HQHI-SH

After the HDDs are installed in the NVR/hybrid, the HDDs will NOT show up in the HDD list and they will not be available for recording (Figure 1).



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In order for the NVR/hybrid to recognize the HDDs, the RAID array needs to be configured.

1. Go to **MENU > SYSTEM CONFIGURATION > RAID**. The HDDs will be shown on the list of available drives under the **PHYSICAL DISK** tab (Figure 2).

Projectad Dia Array Vultual Disk Futmendo Censeral No Canachi Atray No Canachi Atray Ypa HDD 1 931 510B No 931 510B Normal Functional ST31000520SV 2			iniguration				
Conserval No Comparely Array Type Status Model Hot Spare No Comparely Array Type Status Model Hot Spare 1 931 5108 Normal Functional ST310002505V / HDD 8 931 5108 Normal Functional ST310005205V / Tore View Exceptions User / / / TAD * * * * *		Physical L	Array Virtual Disk Firm	ware			
Nowork 1 931 510B Normal Functional 51510005/05V / HDD 3 465 /66B Normal Functional 51310005/05V / Iber View - 8 931 510B Normal Functional 51310005/05V / Iber View - <th>General</th> <th>No</th> <th>Capacity Array</th> <th>Type</th> <th>Status</th> <th>Model</th> <th>Hot Spare</th>	General	No	Capacity Array	Type	Status	Model	Hot Spare
3 495.760B Normal Functional \$735004105V / HDD 8 931.510B Normal Functional \$7310005265V / Live View Exceptions Image: Constraint of the second s	Network	1	931 51GB	Normal	Functional	ST31000526SV	/
100 8 931 5108 Normal Functional \$T3100952659 ////////////////////////////////////		3	465.76GB	Normal	Functional	ST3500410SV	. 🕖
t ve View Exceptions User RAD R	HDD	3	931.51GB	Normal	Functional	ST31000526SV	0
Exceptions User RAD •	Live View						
Coopering Cooper							
	Exceptions						
	User						
	RAID						
		-				One touch Config	Create

Figure 2, Physical Disk Tab

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- 2. Select the HDDs that will be included in the RAID array.
- 3. Press **CREATE**. A window will appear prompting for an **Array Name** and **RAID Level** and the disks that will be included in the array (Figure 3).
- 4. Enter a name for the array in the Array Name field.
- 5. Use the pull-down menu to select the array level (see RAID Levels Table, above):
 - RAID 0
 - RAID 1
 - RAID 5
 - RAID 10

Creat	e Array	
Array Name RAID Level	RAID 5	
Physical Disk 🔲 1 🛄 3	8	
Array Capacity (Estimated): 0GB		
	ок	Cancel

Figure 3, Create Array Window

- 6. Use the checkboxes to select the HDDs to include in the RAID array.
- 7. Press the **OK** button.
- 8. Go to the **ARRAY** tab on the top of the page. This tab will display all available arrays (Figure 4).



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Figure 4, Array Tab

To the array for recording, a VIRTUAL DRIVE needs to be created, because at this stage the total disk size is unallocated.

- 9. Highlight the array.
- 10. Press Create Vd button. A window will appear prompting for a name, capacity, and initialization type (Figure 5).

Create Virtual Disk				
Array		test		
Name				
Capacity(GB)				
Initialization Typ	е	Initialize	(Background)	
Information of <i>i</i>	Array Capacity			
	Delete	Apply	ок	Cancel

Figure 5, Create Virtual Disk Window



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12. Type a label for the virtual disk in the Name field.

- 13. Type how large a size (in GB) you want to allocate in the Capacity (GB) field.
- 14. Use the pull-down Initialization Type menu to select how you want the virtual disk initialized:
 - Initialization (Fast) The array will be initialized without checking the HDD sectors against each other. The HDD will be available for recording immediately.
 - Initialization (Background) The HDD sectors will be checked against each other in the background. The HDD will be available for recording almost immediately, but the NVR will continue checking the sectors in the background (depending on the HDD size, this can take up to 96 hours).
 - Initialization (Foreground) The HDD sectors will be checked against each other in the foreground. The HDD WILL NOT be available for recording until this process is finished (depending on the HDD size, this can take up to 96 hours).
 - **NOTE:** HikVision recommends choosing the **Initialization (Background)** option for both performance and reliability.
- 15. Click the **OK** button to initialize the array. After this step is complete, the HDDs will be initialized and the unit will be ready for recording.
- 16. (Optional) If an extra HDD is installed and is not included in an array, it can be used as a HOT SPARE. By clicking the HOT SPARE button next to the HDD, the HDD becomes a hot spare for the RAID (Figure 6).

Physical D	isk Array Virtual Disk Firm	ware			
No.	Capacity Array	Туре	Status	Model	Hot Spare
1					
7	931.51GB	Normal	Functional	WDC WD10EVVS-63M5B0	0

Figure 6, Physical Disk Tab, Hot Spare Button

17. Go to the **FIRMWARE** tab and check (enable) the **AUTO-REBUILD** checkbox (Figure 7).

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Physical Disk Array Virtual Disk Fir	mware	
Version	1.1.0.1950	
Physical Disk Count	8	
Array Count	8	
Virtual Disk Count	8	
RAID Level	0 1 5 10	
Hot Spare Type	Global Hot Spare, Array Hot Spare	
Support Rebuild	Yes	
Support Migration	Yes	
Auto-rebuild		

Figure 7, Firmware Tab, Auto-Rebuild Checkbox

NOTE: Having a **Hot Spare** HDD will increase the reliability of the system. If one of the HDDs in the array fails, the **Hot Spare** HDD will automatically take over and rebuild the array. During this process the recording will not be interrupted.