

Title:	Configuring RAID Array			
Date:	12/02/2014	Version:	1.0	Pages
Product:	DS-90xxHFI-RT, DS-96xx	NI-RT units		
Action Required:	Information only			

What is **RAID**? **RAID** is a data storage virtualization technology that combines multiple disk drive components into a logical unit for the purposes of data redundancy or performance improvement. Most commonly used RAID levels are:

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

HikVision NVRs and Hybrids with model numbers ending in <u>**RT**</u> (e.g. DS-9632NI-RT) have a built in RAID controller. This is a true, hardware RAID controller and not software driven. 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**).

Syste	em Configu					
	HDD Information F	Record Informatio	n Storage Mode			
🔬 General	La Capacity	Status	Property	Туре	Free Space	Gro Edit Del
Network						
HDD >						
Live View						
A Exceptions						
👱 User						
🔒 Hot Spare						
POS	Total Capacity	OMB				
	Free Space	OMB				
					Add NetHDD	lunit
						DInit
						C

Figure 1

- 1 -Hikvision USA, Inc. 908 Canada Court, Industry, CA 91748 Phone: 909-895-0400 Fax: 909-595-0788 Email: <u>techsupport@hikvisionusa.com</u> Website: <u>http://www.hikvision.com</u>



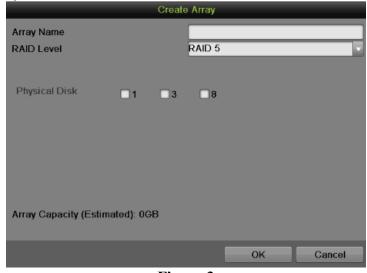
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In order for the NVR/Hybrid to recognize the HDDs the RAID array needs to be configured. Go to **MENU** $\rightarrow$ **SYSTEM CONFIGURATION** $\rightarrow$ **RAID**. The HDDs will be shown in the list of available drives under PHYSICAL DISK tab (Figure 2).



Figure 2

Select the HDDs that will be included in the RAID array and 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).





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After entering the name, and choosing the RAID level and choosing the HDDs that will be included in the RAID array press the **"OK"** button.

These steps will create the array, but it will not be initialized yet. Next, go to the **ARRAY** tab on the top of the page. This tab will display all available arrays (Figure 4).

Syster	m Configui	ration	h				•	
	Physical Disk Array	Virtual Disk Firm	ware					
Network HDD Live View	No. Name 1 r52	Free Space 0/465G	Physical Disk	Hot Spare	Status Functional	Level RAID 5	Rebuild	Delete
Lexceptions User RAID AID	<						_	>
							Create Vd	
							Greate VU	t) C

Figure 4

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

Highlight the array and press **"CREATE VD"**. A window will appear prompting for a NAME, CAPACITY and INITIALIZATION TYPE (Figure 5 (next page)).



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Create Vi	rtual Disk
Array	test
Name	
Capacity(GB)	
Initialization Type	Initialize (Background) 🗾 🗸
Information of Array Capacity	
Delete Aj	oply OK Cancel
Fier	

Figure 5

The NAME is a label for the virtual disk, and the capacity allocates the desired size to that particular virtual disk. A very important option is the **INITIALIZATION TYPE**:

INITIALIZATION TYPE determines the initialization process. There are three options for INITIALIZATION TYPE:

- **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)** 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 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)

HikVision recommends choosing the **Initialization** (**Background**) option for both performance and reliability.

After this step is complete, the HDDs will be initialized and the unit will be ready for recording.



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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 E	iisk Array Virtual Disk Firm	ware			
No.	Capacity Array	Туре	Status	Model	Hot Spare
1	931.51GB test	Array	Functional	ST31000526SV	-
7	931.51GB	Normal	Functional	WDC WD10EVVS-63M5B0	0

Figure 6

After the HDD has been added, the AUTO-REBIULD has to be enabled. Go to the **FIRMWARE** tab and enable the **AUTO-REBUILD** feature (**Feature 7**).

Physical Disk Array Virtual Dis	sk Firmware	
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		



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.