New generation high maintainability NVR

Application Notes

Version <1.1>

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Preface

NVR with large capacity and RAID protection are the trend for the megapixel CCTV projects. However, most of the SIs relay on the standard Server, or COTS solution without considering the real CCTV application scenarios, like the reliability, maintenance or installation issues. The NVR5000 series is the first NVR in the market with huge capacity, high performance RAID and many more features to fit in the CCTV applications for the megapixel surveillance trends.

This article will introduce some key megapixel RAID NVR application scenarios and will explain how Surveon NVR5000 series helps to deliver an easy maintenance for the system integrators and end-users in those scenarios.

Key scenarios of the megapixel CCTV projects

1. Installation site: Unlike the standard server product in a IDC center or server room, the CCTV or the building automation equipment are usually installed in the light current engineering room with shorter rack which has lessen space and might have dust and thermal concerns. And all the maintenance tasks would have to be done in a smaller working space.

2. Capacity requirement: A 64 channel and 30 days recording project would require 80TB of the storage capacity. This kind of project requires basic data protection but with limited budget.

3. Operation ability: Unlike the professional IT installers, the CCTV installers usually have limited IT, networking and storage knowledge.

4. Maintainability: The system might encounter software or hardware failure but the field site cannot tolerate any surveillance break.

Surveon NVR5000 Series

The NVR5000 is designed to help partners to solve problems. You can refer to the table below to see the benefits of using NVR5000. And detailed explanations will be addressed in the next page.

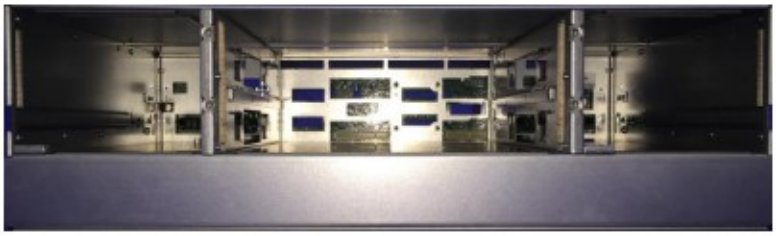
Scenario	NVR5000 Solution
Installation site	Short depth NVR chassis design Cable-less design
Capacity requirement	Large built-in disks and expandable design RAID protection
Operation ability	Installation wizard Status indicator
Maintainability	Hot swappable Modular design

1. Short depth NVR chassis design

Compared to the standard 3U NVR storage server, the NVR5000 has much lower 3U height and shorter chassis. Users can install the NVR5000 on the standard rack and avoid the long chassis compatible problems.

2. Cable-less design

When you dismantle the NVR5000, you will find its cable-less design. With this unique cable-less design, NVR5000 provides neat and professional overview, delivers good signal quality, minimizes the interference of airflow for effective system cooling and benefits system integrators with easier diagnosis and maintenance. The COTS server is not prepared for the thermal issues since it's an assembled product. Besides, the cable-less design can reduce the dust problem caused by too many cables.

Chassis front view	
Chassis rear view	

Controller and power/fan view	

3. Hot-swappable design
When the system is running and encountering some components failures, the best way is to replace the problem component and keep the system running. In order to meet this, the NVR5000 supports hot-swappable hard disk and power/fan module.
It can avoid the downtime and ensure the NVR can record 24/7.

Hot-swappable disk	
Hot-swappable power/fan module	

4. Modular design
In general, when the NVR encounters serious hardware problems, you need to send the NVR back to the vendor for repair. Since the NVR5000 is modular designed, instead of sending whole NVR, you only need to send the failure component back to the vendor. It can help system integrators to reduce the transportation fee and allow system integrators to stock spare parts to do quick repairs and lessen the NVR down time. The NVR modules are listed below:

- Power/FAN module

- Controller module
- Chassis module

Non-Modular design NVR	
Modular design NVR	  

5. System indicator

The NVR5000 has multiple system LED and beeper for indications of the severe errors. This design helps users to identify the problems and take corresponding actions.

- Power error
- Fan error
- Internal temperature error

- System error
- Disk error

6. RAID protection

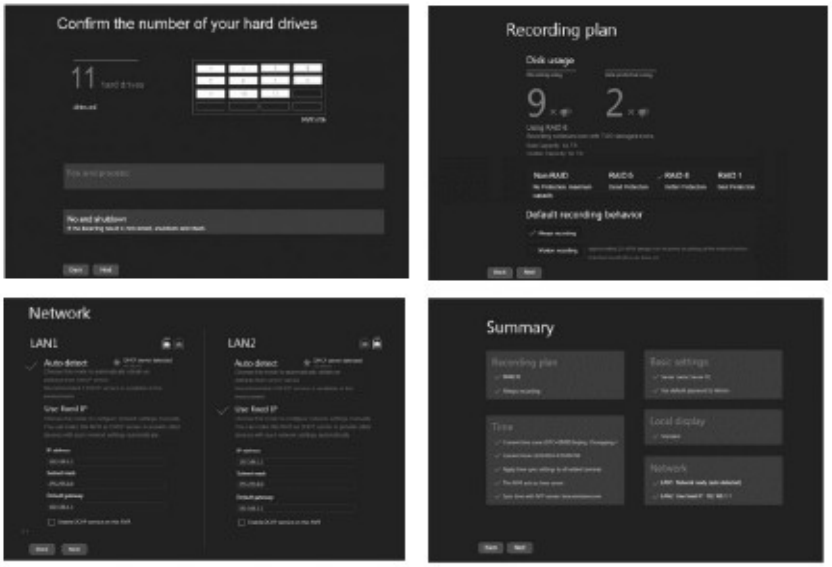
The NVR5000 supports RAID 0/1/5/6. Users can choose the preferred RAID level to protect the video data when the NVR encounters fatal disk problems.

RAID Level Comparison

Features	RAID 0	RAID 1	RAID 5	RAID 6
Minimum # Drives	2	2	3	4
Data Protection	No Protection	Single-drive failure	Single-drive failure	Two-drive failure
Read Performance	High	High	High	High
Write Performance	High	Medium	Low	Low
Read Performance (degraded)	N/A	Medium	Low	Low
Write Performance (degraded)	N/A	High	Low	Low
Capacity Utilization	100%	50%	67% - 94%	50% - 88%
Typical Applications	High end workstations, data logging, real-time rendering, very transitory data	Operating system, transaction databases	Data warehousing, web serving, archiving	Data archive, backup to disk, high availability solutions, servers with large capacity requirements

7. Installation wizard

The NVR5000 has a built-in installation wizard which can help partners to setup the RAID/Network/Time/Recording plan/Camera scan/Liveview. It can be easily done by any user.



NVR 5000 Installation wizard

8. Large built-in disks and expandable design
The NVR5000 has 16 SATA disk slots and each slot can support 6TB SATA disk. It can provide 96TB raw capacity in maximal. Besides, it has built-in two SAS expansion ports and can be expanded to 64 disks via 3 JBODs.

Built-in 16 x SATA slots	Built-in 2 x SAS expansion ports
	

Conclusion

NVR5000 series is a high maintainability system which can meet megapixel CCTV projects requirements. Users can be benefited from this high maintainability NVR to provide a non-stop recording surveillance system in every project.

Reference data

NVR5000 Datasheet:
http://www.surveon.com/doc/datasheet/NVR5316_PRN_PDS_en.pdf

NVR5000 Leaflet:
http://www.surveon.com/doc/Leaflet/NVR5000-leafet_en.pdf

NVR5000 AE Spec:
http://www.surveon.com/doc/AE/NVR5000_VMS_AESpec_20141219.docx

NVR5000 QIG:
http://www.surveon.com/doc/QIG/NVR_5000_Series_QIG_v1.0.pdf

NVR5000 brochure:
http://www.surveon.com/doc/NVR_brochure_en.pdf

NVR5000 Sales kit:
http://www.slideshare.net/Surveon/surveon-enterprise-nvr5000-introduction