HIKVISION®

DEDICATED,
SUPERIOR DATA SECURITY AND
SUSTAINABILITY
HIKVISION NETWORK STORAGE PRODUCTS

HIKVISION NETWORK STORAGE PRODUCTS

For over 10 years now, Hikvision's industry-leading R&D department has provided state-of-the-art, application-specific data storage products, building a reputation for superior data security and sustainability for our customers.

With years of technological savvy, Hikvision has established an extensive and well-developed line of storage products, combining high data density, modularized design, video management, data safety, and device management technology. Together, these characteristics create the most advanced and flexible storage solutions available. Hikvision's unique support for CVR, IPSAN, FCSAN, and other models, provides customers with autonomous control, stability, and efficiency.

Demonstrating a profound understanding of video applications and technological innovations, Hikvision's storage products have won ever increasing recognition from customers worldwide. Hikvision storage products are used globally in various vertical surveillance markets including Smart cities, financial institutions, ports, military installations, and more.

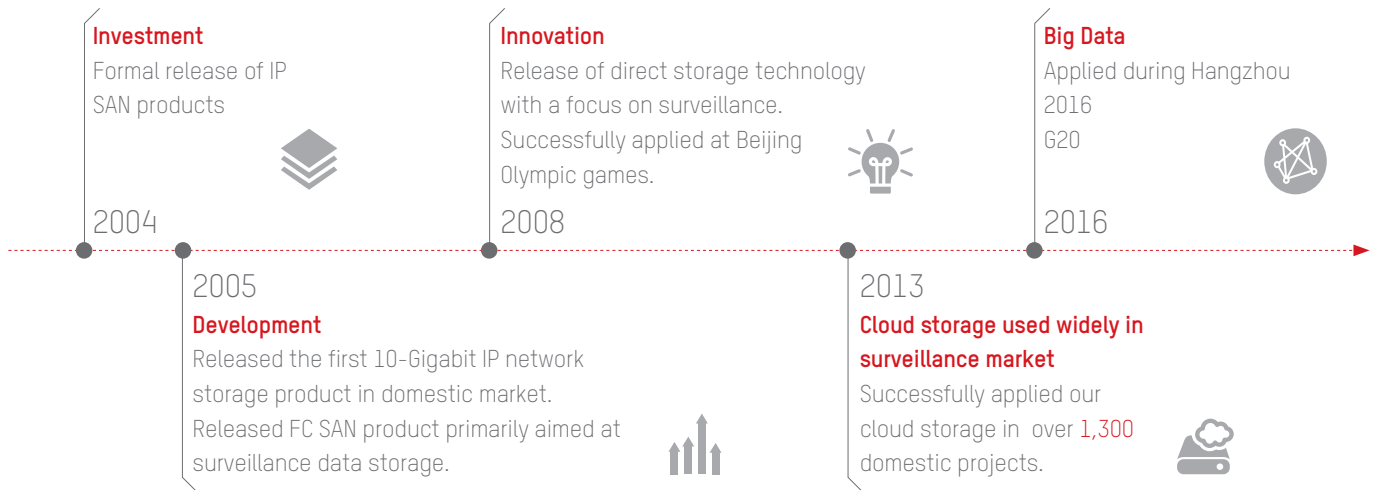Smart Cities   Financial Institutions   Ports   Military Installations   • • •

HIKVISION STORAGE PRODUCTS R&D HISTORY

Investment
Formal release of IP
SAN products

2004

2005
Development
Released the first 10-Gigabit IP network
storage product in domestic market.
Released FC SAN product primarily aimed at
surveillance data storage.

Innovation
Release of direct storage technology
with a focus on surveillance.
Successfully applied at Beijing
Olympic games.

2008

2013
**Cloud storage used widely in
surveillance market**
Successfully applied our
cloud storage in over 1,300
domestic projects.

Big Data
Applied during Hangzhou
2016
G20

2016

HIKVISION STORAGE PRODUCTS MARKETING MILESTONE

No. 1
Four consecutive quarters as **No.1** in China
external IP storage market according to **IDC**

No. 1
First
to develop direct video streaming technology
to develop direct picture streaming technology
to release CCTV cloud storage solution
to develop video+ picture direct streaming technology

50 PB
50 PB in a single, very large Safe City
project deployment

CCTV
Storage
Leader

PROS AND CONS OF GENERIC STORAGE SOLUTIONS

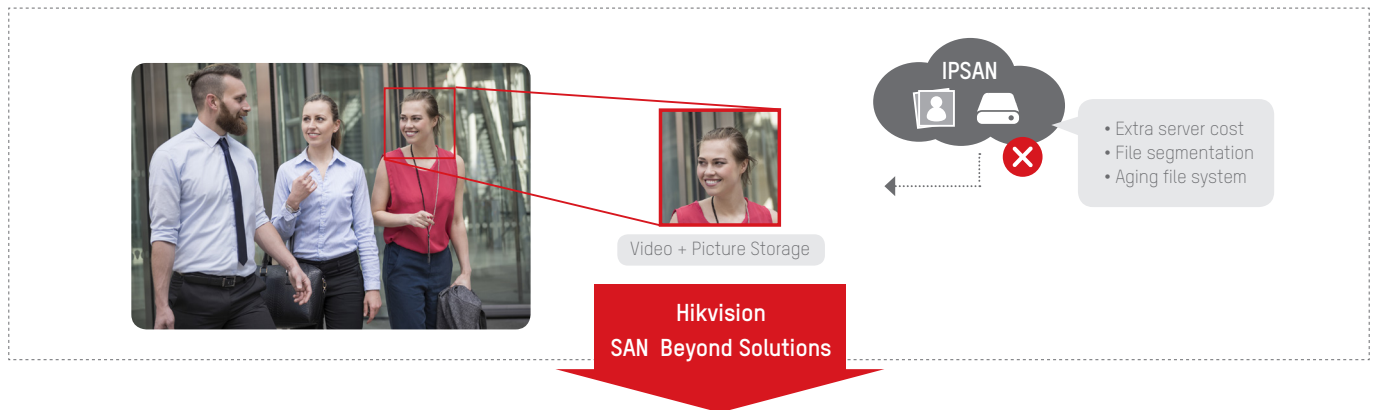|	DAS	NAS	SAN
Applications	Local storage used for DVR/NVR JBOD expansion	Generally used for file sharing and storage	Block-level data storage
Cons	Poor resource sharing ability Bandwidth limitation due to server application Limited physical distance	Speed is low and high latency Limited scalability Network dependent	Need recording server, higher cost File based storage, file segmentation will lead to poor system performance High complexity of management
Pros	Low cost Low management complexity with very small system	Easy to deploy for small and medium enterprise Low management complexity with very small system	LAN free data transfer Leverage current IP expertise

REQUIREMENT ANALYSIS OF GENERIC AND SURVEILLANCE STORAGE

Because of its unique requirements, the video surveillance industry needs dedicated storage solutions.

Project	Generic Storage		Surveillance Storage
	Database / Table	Text / Image	Image / Audio
Data Form	Unified Structure (Structured Data)	Unified Structure (Unstructured Data)	Unified Structure (Unstructured Data)
Data Update Method	Unordered Varied		Ordered Chronological Order
Data Read/Write	Unordered Multiple Random Read / Write		Multiple Concurrent Write Dominated Random Playback
Block Size	512 B - 4 KB	8 KB - 64 KB	4 KB – 1 MB
Performance Requirement	IOPS	IOPS / Bandwidth	Bandwidth of Concurrent Video

HIKVISION'S VIDEO SURVEILLANCE STORAGE SOLUTION

Hikvision Storage Solution is based on IPSAN but go beyond to support more advanced and efficient video storage mode CVR
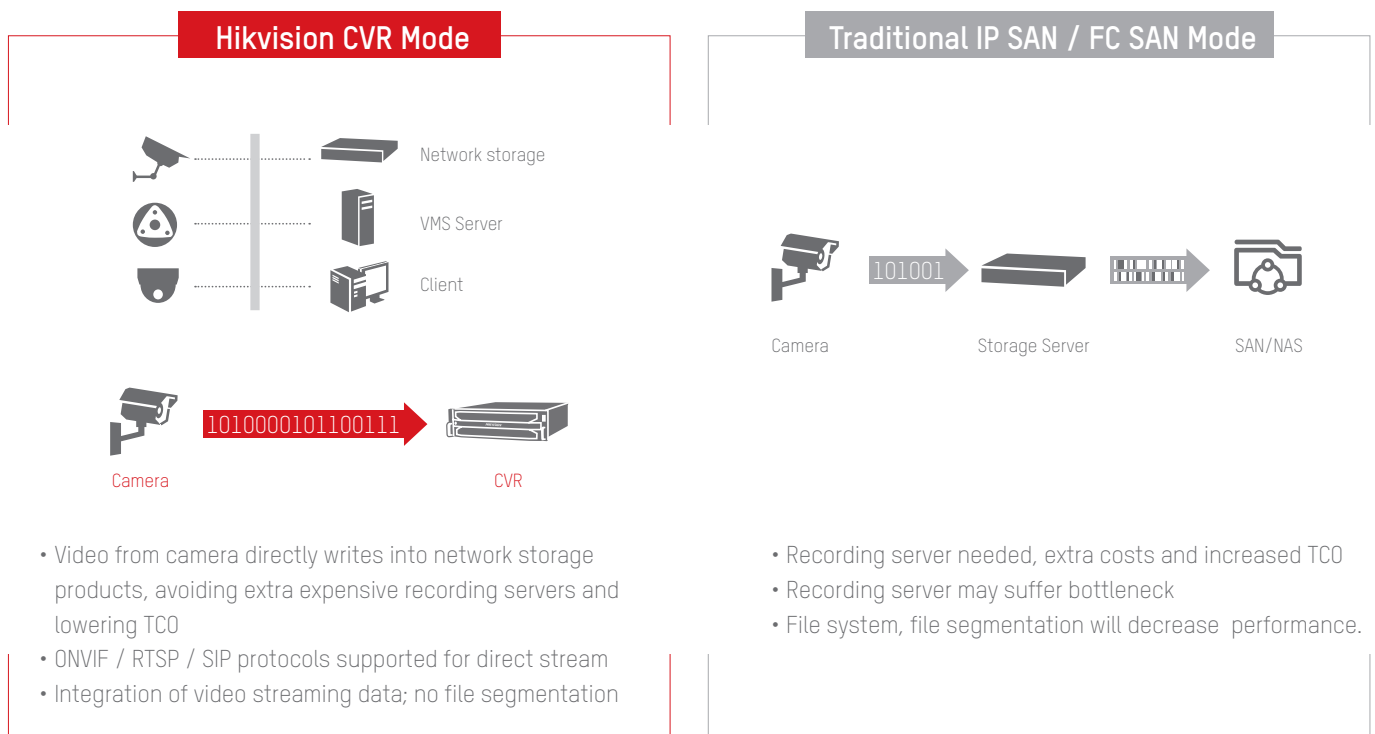

Video + Picture Storage

IPSAN
• Extra server cost
• File segmentation
• Aging file system

Hikvision SAN Beyond Solutions

Applications
Patented technology, specially designed for Video Surveillance industry massive storage and large concurrent I/O

Benefits
• No recording server need, lower TCO cost, No recoding server performance bottle neck
• Video streaming structure, no IPSAN file segmentation issue
• Direct video writing technology, higher performance
• Faster retrieval speed among mass video data
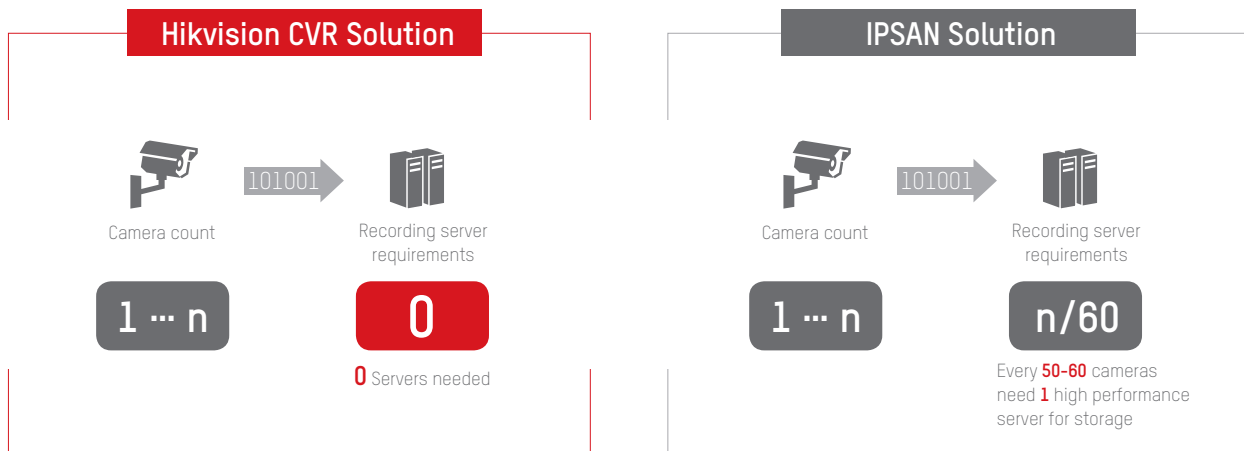
WHAT IS DIRECT STORAGE TECHNOLOGY BY HIKVISION

Hikvision CVR Mode

Network storage

VMS Server

Client

1010000101100111

Camera   CVR

• Video from camera directly writes into network storage products, avoiding extra expensive recording servers and lowering TCO
• ONVIF / RTSP / SIP protocols supported for direct stream
• Integration of video streaming data; no file segmentation

Traditional IP SAN / FC SAN Mode

101001

Camera   Storage Server   SAN/NAS

• Recording server needed, extra costs and increased TCO
• Recording server may suffer bottleneck
• File system, file segmentation will decrease performance.

HIKVISION VIDEO STORAGE HIGHLIGHTS OVERVIEW

01 Efficient & Cost effective solution

- No need for recording server
- Video stream direct write to storage
- No file system needed, no file segmentation issue, real time recording retrieval
- Video search based on recording indexing, fast retrieval
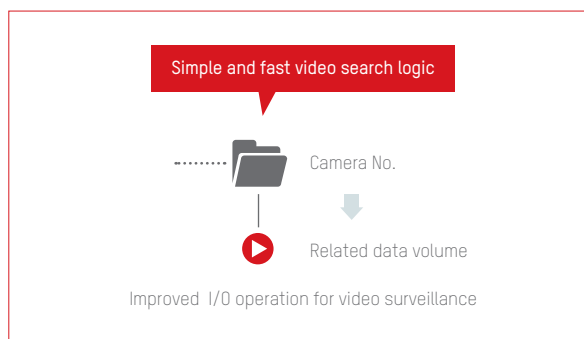
▶ Cost Effective Storage Solutions

- Third-party IP SAN solution needs 1 recording server for every 50-60 cameras; fr large projects, dozens of recording servers are needed
- Hikvision storage solution needs 0 servers
- Hikvision storage solution dramatically reduces the server cost to 0

Hikvision CVR Solution		IPSAN Solution	
Camera count	Recording server requirements	Camera count	Recording server requirements
1 ⋯ n	**0**	1 ⋯ n	n/60
	0 Servers needed		Every **50-60** cameras need **1** high performance server for storage

▶ Fast Search and Retrieval of Video

Hikvision searching method with CVR:
Fast index "Device No. > Related data volume > Offset

Simple and fast video search logic

- Camera No.
- Related data volume

Improved I/0 operation for video surveillance

Traditional file retrieval steps with IPSAN:
File system > Sub-file system > File > Location
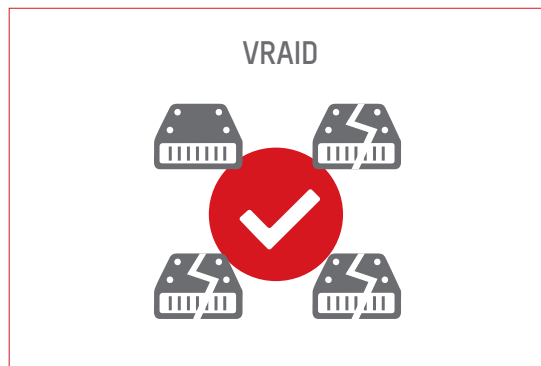
- File system
- Sub-file system
- File
- Location
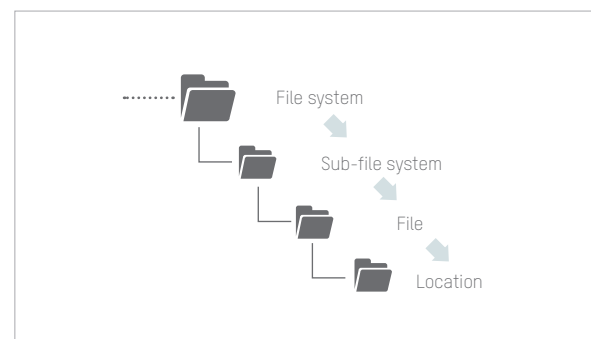
02 Enhanced video recording safety

- VRAID support
- Advanced N+1 fail-over
- Auto Network Replenishment
- Video protection to avoid rewriting
- Scheduled recording backup

▶ Core technology: VRAID

Hikvision VRAID technology work normally when there is only 1 disk operating

With generic RAID technology, when there is more than 1 disk in failure, RAID will cease functioning

VRAID

RAID 5   **RAID 6**
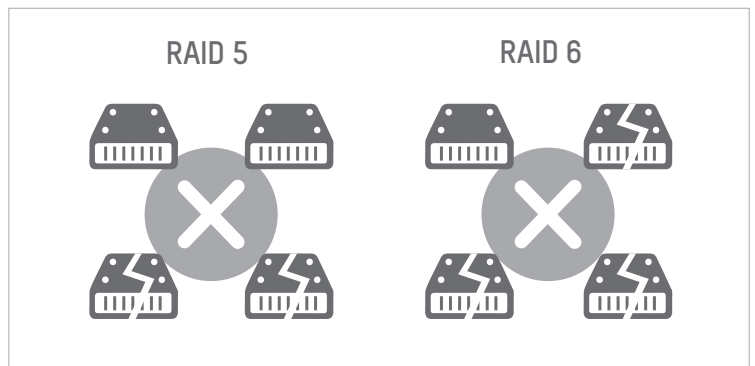
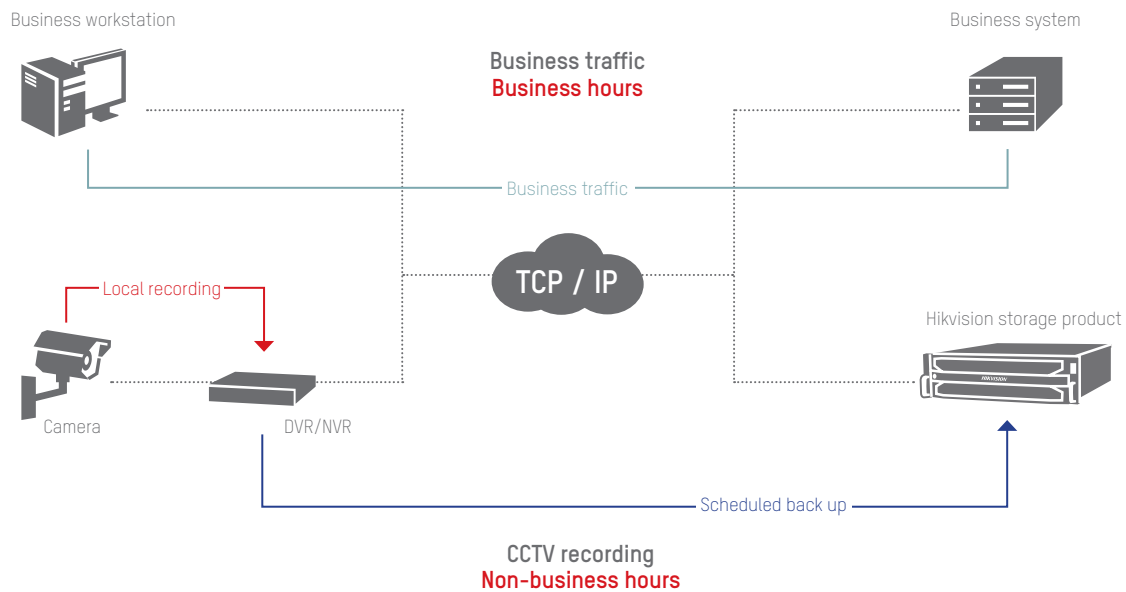Tips   VRAID is only used in single storage DS-A81016S DS-A80624S

▶ ANR Technology for Edge Storage Transfer

• Network cameras normally store recordings in Hikvision storage products
• When network is down, networked cameras begin recording on embedded SD cards
• When network connection resumes, SD cards transfer data to storage products automatically
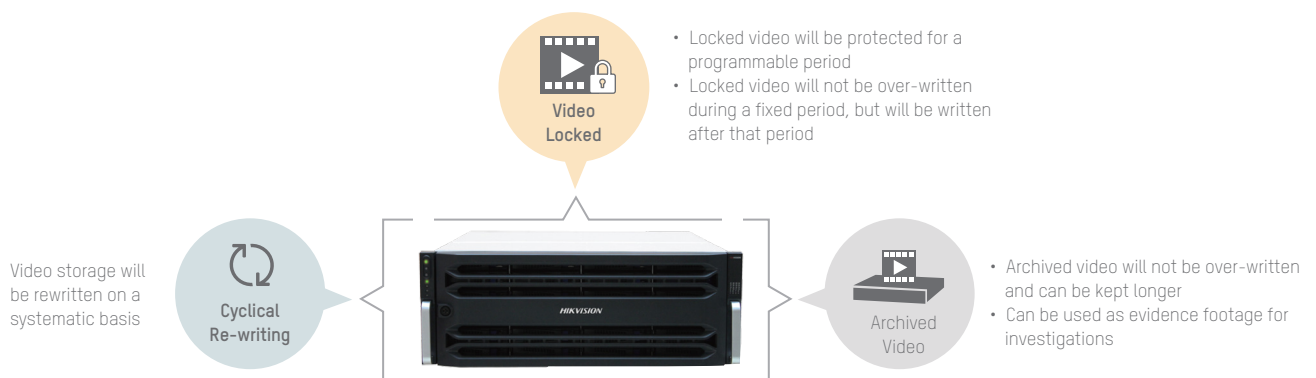
⚠ Normal recording stream breaks down

TCP / IP

Camera

Hikvision storage products

ANR Stream
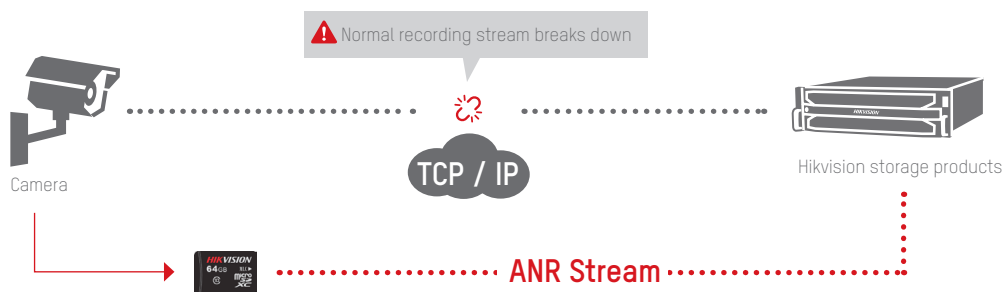
▶ Scheduled Back Up of Recording

• DVR/NVRs do local recording to ensure normal business traffic bandwidth during business hours
• Hikvision storage products recognize active and scheduled backup of recording from NVR/DVRs at nights when network bandwidth is available

Business workstation

Business system

Business traffic
Business hours

Business traffic

Local recording

TCP / IP

Hikvision storage product

Camera

DVR/NVR

Scheduled back up

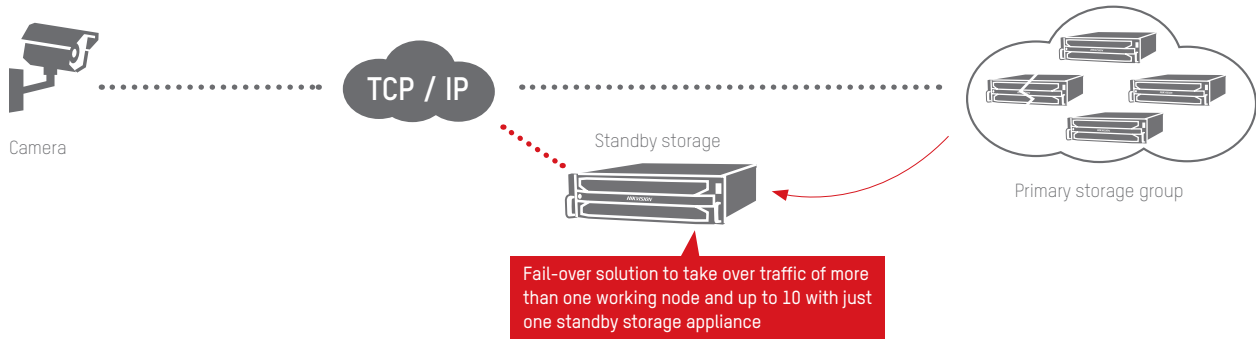**CCTV recording**
Non-business hours

▶ Flexible Video Recording Management

• Cyclical re-writing for normal video storage
• Locked video for given period protection
• Archived video for longer protection

Video Locked

• Locked video will be protected for a programmable period
• Locked video will not be over-written during a fixed period, but will be written after that period

Video storage will be rewritten on a systematic basis

Cyclical Re-writing

Archived Video

• Archived video will not be over-written and can be kept longer
• Can be used as evidence footage for investigations

▶ Advanced N+1 Fail Over

• 10+1 equipment hot backup, when more than 1 of 10 node stops functioning
• Hot spare will take over traffic of all problematic nodes

TCP / IP

Camera

Standby storage

Primary storage group

Fail-over solution to take over traffic of more than one working node and up to 10 with just one standby storage appliance

03 Easy to use

- 1 key to configure
- Easy to upgrade
- Easy to maintain
- IPSAN support

## ▶ Easy to Use and Maintain

One key to configure

• Create RAID
• Form storage pool
• Logical volumes partitions; Configure video volumes

User-friendly management interface

• User friendly system status dashboard for easy daily maintenance
• Storage device batch upgrade support to decrease large system upgrade workload
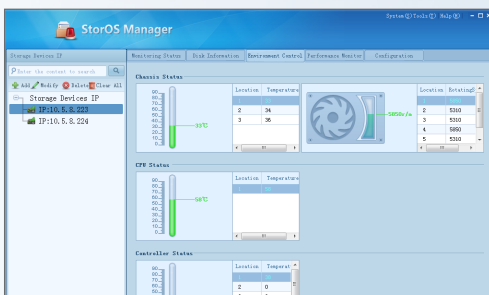
• Hardware-modularized design, easy to install and maintain
• HDD and controller hot swappable without stopping traffic ensures system availability
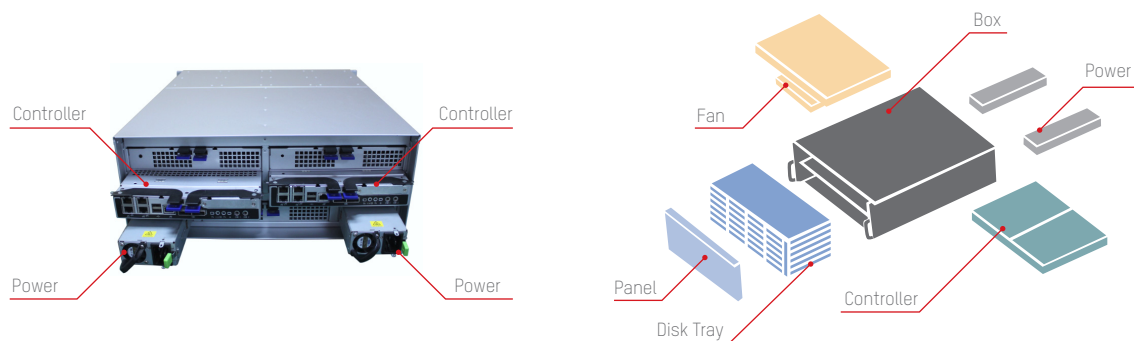
• Multiple alarm configurations to notify personnel of possible system malfunction.
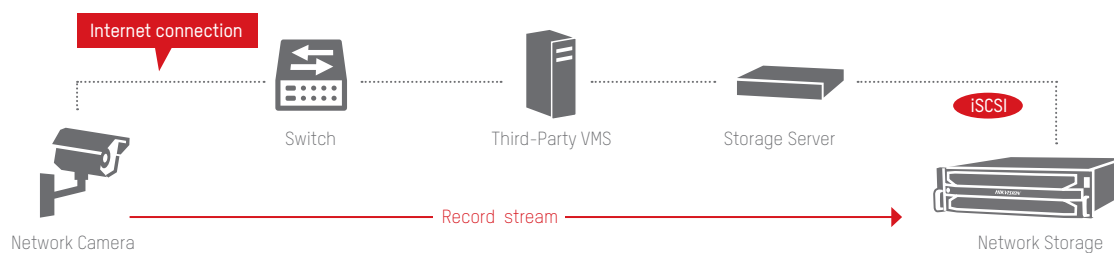

Audio and Visual Alarm

Email Alarm

Webpage Alarm

▶ Standard IP-SAN support

• Standard and Open Source – Standard iSCSI protocol to work with 3rd-party VMS systems such as Milestone and others
• Proven solution with many existing applications, operating in conjunction with leading VMS partners

▶ Energy Saving Products

CPU Load Adjustment	Fan Speed Adjustment	Disk Dormancy

The CPU changes its operating frequency and voltage corresponding to system load intelligence and lowers the power consumption without affecting operation.

Based on the temperature of the device, the system adjusts fan speed – up to 20 levels of speed (about 1℃ per level adjustment).

Depending on the workload, some or all hard disks enter sleep mode, reducing power consumption and prolonging hard disk life.

PRODUCT DATA SHEET

Model Name	DS-A81016S	DS-A80624S	DS-A81024D	DS-A82012D	DS-A82024D
Product image					
D1(2Mbps) Record+Playback	IPSAN 180-ch CVR 320-ch	IPSAN 180-ch CVR 320-ch	IPSAN 180-ch CVR 320-ch	IPSAN 256-ch CVR 448-ch	IPSAN 256-ch CVR 448-ch
Controller	Single	Single	Dual	Dual	Dual
Drive Support	SATA/1TB,2TB,3TB,4TB,6TB	SATA/1TB,2TB,3TB,4TB,6TB	SAS/1TB,2TB,3TB,4TB,6TB (SSD is optional)	SAS/1TB,2TB,3TB,4TB,6TB (SSD is optional)	SAS/1TB,2TB,3TB,4TB,6TB (SSD is optional)
Form Factor	3U16, 19" rackmount	4U24, 19" rackmount	4U24, 19" rackmount	2U12, 19" rackmount	4U24, 19" rackmount
RAID Levels	0,1,3,5,6,10,50,JBOD, Hot-Spare	0,1,3,5,6,10,50,JBOD, Hot-Spare	0,1,3,5,6,10,50,JBOD, Hot-Spare	0,1,3,5,6,10,50,JBOD, Hot-Spare	0,1,3,5,6,10,50,JBOD, Hot-Spare
Processor	64-bit Multi-core Processor	64-bit Multi-core Processor	64-bit Multi-core Processor	64-bit Multi-core Processor	64-bit Multi-core Processor
SAS Extension Interface	Support	Support	Support	Support	Support
Ethernet	7 RJ-45 100/1000Mbps (one for management)	3 RJ-45 100/1000Mbps (one for management)	5 RJ-45 100/1000Mbps (one for management) Per Controller (Can be extended to 4 GE or 2*10GE or 4*8G FC)	"4*1000M Ethernet Port per Controller, Can Be Extended to 4*GE or 2*10GE Interface"	5 RJ-45 100/1000Mbps (one for management) Per Controller (Can be extended to 4 GE or 2*10GE or 4*8G FC)
Management method	Web	Web	Web	Web	Web
Power Consumption	Two Redundant 460W	Two Redundant 875W	Two Redundant 1050W	Two Redundant 595W	Two Redundant 1050W
Dimensions (W×H×D)	440 × 132 × 480mm	445 × 175 × 746mm	447 × 172 × 550mm	486 x 87 x 570 mm	447 × 172 × 550mm
Weight	20Kg	40Kg	33.5Kg	20Kg	32Kg

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