





## INTRODUCTION TO VIDEO SURVEILLANCE

It's all about your security. Whether property, assets, or even people's lives, we at PROMISE understand that you sell security – and in video surveillance security means 100% reliability. This can only be achieved by finding the right solution for the right customer. So, how do you ensure that you deliver the best packages? It's a big question when dealing with a bewildering array of surveillance packages that include host recording systems like DVR or NVR, cameras, storage arrays and operating software with technical support. There are so many choices that finding an answer can seem impossible. What kind of camera is good for home use? And how many cameras do we need in the office? Is H.264 or MPEG4 compressed video evidence recognized by law? And which protocol best fits video recording? SCSI? Gigabit Ethernet? eSATA? Or USB?



## READY TO GO IP?

It's a hot topic right now. IP based cameras are blushing under the attention. Currently, on seminars, forums, webinars and blogs, the question rings out on whether it's worth the initial investment for businesses to go IP. But they're the future and they know it. Frost & Sullivan, a leading business research and consulting firm, estimated the IP surveillance market at \$1.4 billion in 2008 and \$6.5 billion in 2012 with a compound annual growth rate of 47 percent for 2005-12, and this trend shows no signs of abating. As in all technological walks of life, digital is rapidly taking over analogue in the surveillance industry. IP-based cameras are gaining popularity. H.264/AVC has already become the mainstream data compression technology. And network infrastructure is set to be king. Choosing an IP based solution means finding a better way in the beginning.



## VIDEO RECORDING

Whether choosing standalone or PC-based video recorders, PROMISE's RAID products can promise you all-in-one flexible storage with failsafe protection that can handle continuous streaming input without video frame drop under live playback conditions.





## YOUR RELIABLE STORAGE FOR SURVEILLANCE

Video surveillance's goal is to help people safeguard their properties, assets, and life safety. The common challenge in all video surveillance deployments, either large or small, is not only to decide proper interconnecting components required for recording but also find appropriate data storages where all surveillance video can be kept in a secured database for later retrieval and review. Once an incident strikes, a well-preserved video archive can provide enough analytical visibility to the viewers to profile and detail all possible security threats that had occurred in widespread surveillance check points. It is therefore important to realize that storage is not simply a space provided to store video stream, but a safe data center in which reliability and capability greatly matters when it comes to surveillance video protection.

# HOW MUCH STORAGE?

A number of factors drive video frame size change.  
But when it comes to the calculation of how much capacity required for recording, there are several factors to be taken into account. These are:

**( Resolution**

**x**

**FPS**

**x**

**Retention Period )**

**÷**

**CODEC**

**=**

**Drive Size**

How high a resolution?  
(Which affects the picture quality)

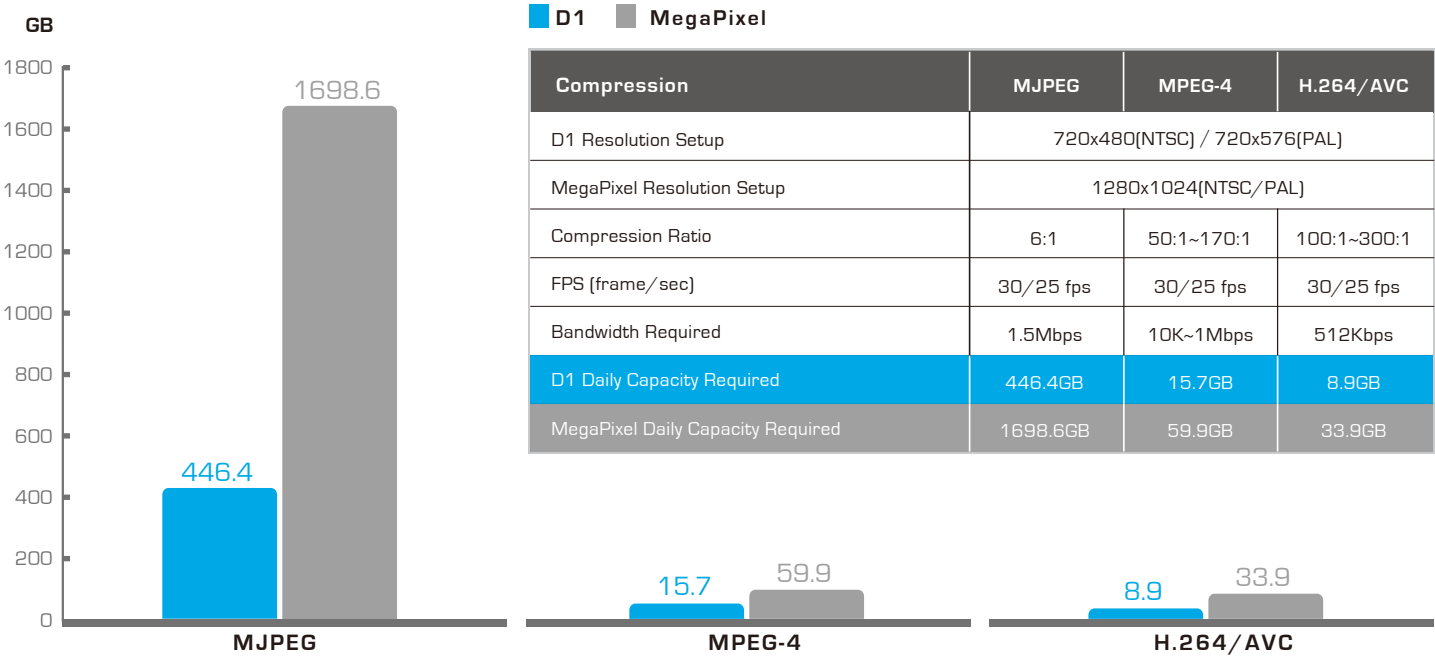
How many frames per second?  
(Which affects the playback quality)

What's your retention period?  
(How long are you recording and keeping the data?)

What CODEC best shrinks data without compromise?

Drive size needed  
(Which affects cost)

## Daily Capacity Required in Video Recording

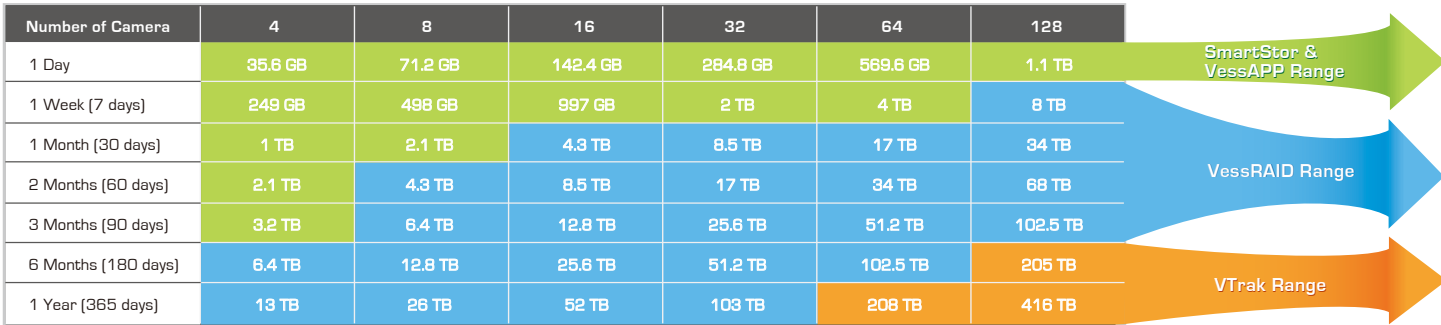


# DEPLOYMENT SCALE

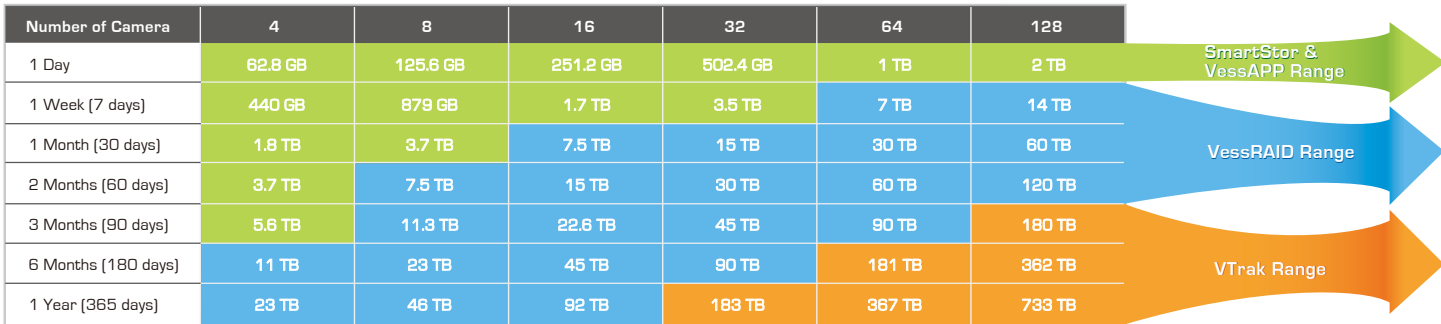
In video surveillance deployment, there are two basic factors that determine the size of system needed. There are the number of cameras needed and the amount of recording time needed. System sizes come in three basic entirely scalable ranges: midrange and large. Since most DVRs are typically embedded with one to two hard drives by default, the need of using external storage arrays is reliant on the two factors mentioned above. Using a 720 x 480p resolution with 30 frame-per-second rate recording produces around 31MBs of data per second, meaning that from one camera we can obtain a whopping 2.6 TBs of uncompressed capacity in a straight 24-hour non-stop operation. And thanks to modern CODECs, we can reduce the size significantly to either accommodate more cameras or keep a longer retention period. The Compression Range chart illustrates the correlation between the number of cameras installed and the resultant retention period while using the H.264 and MPEG-4 compression format.

## The Compression Range

• D1 (NTSC/PAL), 30/25 fps, H.264 Daily Capacity Required=8.9GB



• DI (NTSC/PAL), 30/25 fps, MPEG4 Daily Capacity Required=15.7GB



The total amount of information per second and capacity required is the same in both NTSC and PAL standards.

SmartStor & VessAPP Range

VessRAID Range

VTrak Range

From The Compression Range chart without taking into account retention period, if you want to record continuously for more than thirty days on a 16-camera setup using a DVR or NVR, even with two default drives installed giving a maximum of 4TB available space for archiving, after that period you're going to need external storage. If a four-camera setup has to keep six months data safe for security requirements, we still can't categorize it as a small, midsize or large range. Although usually video data preservation periods vary depending on different locations and security levels, in our notes we'll take one month to be the leading indicator to identify the deployment scale because a thirty days storage seems to be video surveillance standard practice.

Therefore, for entry video surveillance applications we can define one to sixteen cameras to be the typical number needed depending on budget and the required recording characteristics. This package fits homes, retail shops, laundry stores, family clinics and restaurants requiring entry level video surveillance installation. In the midrange set-ups with 16 to 256 cameras tend to be performance driven from a storage perspective. A decent storage bandwidth allows concurrent video input from various locations and enables users to gain a better stability during live and playback controls. Large scale installations of over 256 cameras usually require performance features such as real-time multi-thread recording and rate scalability that can extend capacity on an ad hoc basis. Also, here cameras are generating data in volume so quickly that the ability and flexibility to provide immediate capacity expansion is also vital.



DAS, NAS, OR SAN?

Small Range Solutions

How do you pick the right storage architecture at the entry level? You need a layout that requires instant or remote access to the archive, and plug and play convenience. A direct or network attached storage system ranging from two to four bays is the ideal choice. These utilize USB, eSATA, and Gigabit Ethernet connectivity, are simple to install and require a minimum of support. See our SmartStor & VessAPP range for more details.

Small Properties

Solution by Size

- Home
- Retail Shops
- Laundry Store
- Family Clinic

Way of Deployment

- 1~16 Analog Camera
- Video Server/DVR/Hybrid
- 1~16 IP Camera
- NVR/Hybrid

Analog Camera

DAS Recording

IP Camera

NVR Recording

SmartStor Series

NS2600

- ▶ 1 to 4 Camera
- ▶ Basic
- RAID 0, 1
- Gigabit Ethernet
- Software Based NVR

SmartStor Series

NS4600/DS4600

- ▶ 1 to 16 Camera
- ▶ Live Playback
- RAID 0, 1, 5, 10
- Gigabit Ethernet
- Software Based NVR

SmartStor & VessAPP Series

NS x700/1x10i

- ▶ 16 to 32 Camera
- ▶ Popular
- RAID 0, 1, 5, 6, 10
- iSCSI/GbE/eSATA/USB
- Tower or Rackmount

Midsize Range Solutions

Midsized arrangements with 32 to 512 cameras have to cope with a number of concurrent video streams in seconds. This means that sufficient connecting bandwidth is the first priority when choosing storage. Speed is essential to avoid hitting a live playback bottleneck. So whatever choice is finally made, performance is the key and a SCSI or SAS interfaced DAS storage, or an iSCSI SAN lock-up will provide a better throughput guarantee for all types of applications at this level. Please see our VessRAID and VTrak ranges for more details.

Midsize Properties

Solution by Size

- Office
- Banks
- Buildings
- Museum

Way of Deployment

- 16~64 Analog Camera
- Video Server/DVR/Hybrid
- 16~64 IP Camera
- NVR/Hybrid

Analog Camera

DAS Recording

IP Camera

iSCSI Recording

VessRAID Series

1000i Series

- ▶ 32 to 64 Camera
- ▶ Cost-Effective
- RAID 0, 1, 1E, 3, 5, 6, 10, 30, 50, 60
- iSCSI
- IP SAN Storage

VessRAID Series

1000i Series

- ▶ 64 to 128 Camera
- ▶ Performance
- RAID 0, 1, 1E, 3, 5, 6, 10, 30, 50, 60
- iSCSI
- IP SAN Storage

VessRAID Series

1000s Series

- ▶ 128 to 256 Camera
- ▶ Scalability
- RAID 0, 1, 1E, 3, 5, 6, 10, 30, 50, 60
- SAS
- DAS Storage

Large Range Solutions

Large-scale installations, such as public transportation sites, city surveillance, and worldwide organizations, require expansion flexibility, trustworthy reliability, cost-effectiveness, centralized storage management and onsite vendor support. Our VessRAID and VTrak ranges can handle data from hundreds or even thousands of cameras. Storage here means being able to provide a lot of drive spaces for recording, support on-demand expansion while extending the retention period, offer reliable and high throughput for immediate read and write access, and solve any unexpected technical glitches in real time, because video downtime is unacceptable in high-level security environments. Under such circumstances, DAS storage, either SCSI or SAS, and a trunked iSCSI or FC SAN architecture with huge expansion capabilities, is the only solution.

Large Scale Properties

Solution by Size

- Campus
- Shopping Mall
- City Surveillance
- Manufacture Plant

Way of Deployment

- 64 ↑ Analog Camera
- Video Server/DVR/Hybrid
- 64 ↑ IP Camera
- NVR/Hybrid

Analog Camera

CMS

DAS Recording

IP Camera

iSCSI Recording

CMS

VessRAID Series

1000f Series

- ▶ 256 to 512 Camera
- ▶ Professional
- RAID 0, 1, 1E, 3, 5, 6, 10, 30, 50, 60
- Fiber Channel
- FC SAN Storage

VTrak Series

Ex10 Series

- ▶ 512 ↑ Camera
- ▶ Dual Controller
- RAID 0, 1, 1E, 5, 6, 10, 50, 60
- SAS/Fiber Channel
- Redundancy

VTrak Series

Ex30 Series

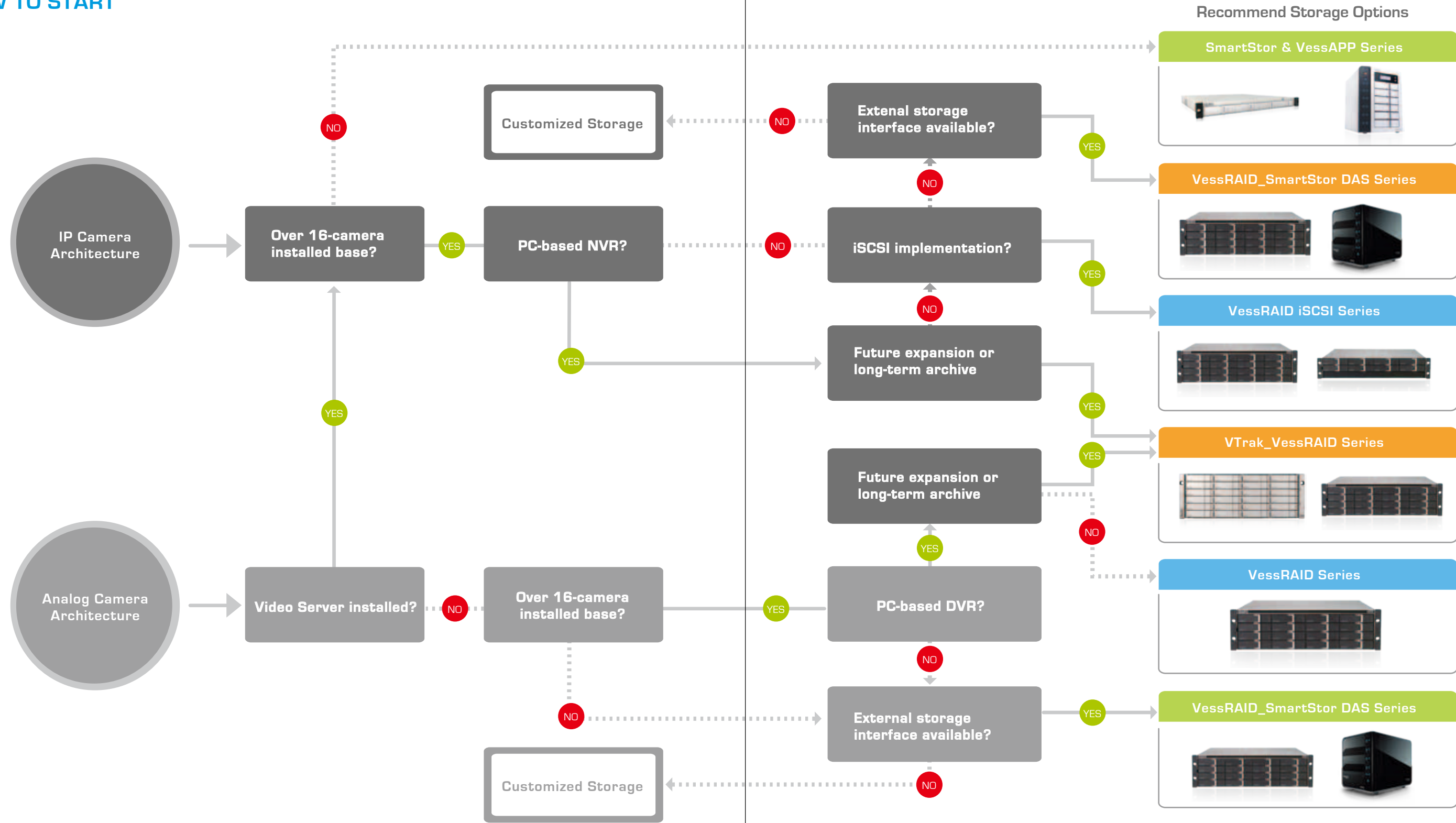
- ▶ 1024 ↑ Camera
- ▶ Enterprise Level
- RAID 0, 1, 1E, 5, 6, 10, 50, 60
- Fiber Channel
- High Availability

MAPPING PROMISE SOLUTIONS

Increased video data means a growing demand for storage. With the right storage you can safeguard days or months of video surveillance records operating on optimal drive utilization that combines maximum cost efficiency and security effectiveness. With our distinguished technical expertise in the storage industry and extensive experience in video surveillance, PROMISE promises to help you find the perfect surveillance storage solution for your customers. To build the perfect storage solution for various video surveillance environments, please follow the "How to Start" chart to quickly find the most suitable products for your deployment.

HOW TO START

There are so many storage products available in the market that it can be confusing. The How to Start Chart aims at giving installers a convenient guide to quickly and easily select the best storage solution from PROMISE. For example, if you're a regional integrator looking for a new video surveillance portfolio that includes storage capable of fitting in a retail shop needing eight IP-based cameras, you'll find that the SmartStor NAS series immediately pops up as the best choice. Or if you have a mid-sized installation using purely analog cameras that requires a simple extension of the retention period in response to local governing laws, you'll see that the VTrak and VessRAID SAS series are the options.



Recommend Storage Options

SmartStor & VessAPP Series



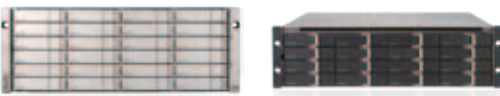
VessRAID\_SmartStor DAS Series



VessRAID iSCSI Series



VTrak\_VessRAID Series



VessRAID Series



VessRAID\_SmartStor DAS Series



# COMPREHENSIVE PRODUCT COVERAGE FOR VIDEO SURVEILLANCE



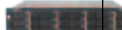




PROMISE Technology has designed and manufactured sophisticated RAID solutions for more than 23 years. Catering to small, midsize, and large scale video surveillance requirements, our profound knowledge and dedication means that we can produce storage requirements for all levels of need. For entry level users we can provide comprehensive storage solutions, including NAS and DAS appliances for 1 to 32 camera installation bases. For SMBs, we offer a simple, reliable, and very good price performance value single-controller based VessRAID storage subsystem solutions for video connections from 32 to 512 cameras. And for large scale enterprises we can deploy high available standalone RAID subsystems for more than thousands of networked cameras. As such surveillance integrators and installers who want to have a single umbrella storage solution able to streamline a control of video data management, PROMISE can promise to meet all your needs.

## One Stop Shop for All Your Needs





PROMISE STORAGE FOR SURVEILLANCE LINEUP

	SMALL RANGE SOLUTIONS						MIDSIZE RANGE SOLUTIONS						LARGE RANGE SOLUTIONS							
Product Family	SmartStor Series					VessAPP Series	VessRAID Series						VTrak Series							
	NS2600	NS4600	DS4600	NS4700	NS6700	1x10i	1720i+	1830i+	1840i+		1830s+	1840s+	1840f+	E310sS/E310sD	E610sS/E610sD	E310fS/E310fD	E610fS/E610fD	E330fS/E330fD	E630fS/E630fD	E830fS/E830fD
Product Models																				
Camera Range	1 to 4	1 to 16	1 to 16	16 to 32	16 to 32	16 to 32	32 to 64	64 to 128	64 to 128		128 to 256	128 to 256	256 to 512	512 to 1024	512 to 1024	512 to 1024	512 to 1024	1024 above	1024 above	1024 above
Form Factor	Desktop	Desktop	Desktop	Desktop	Desktop	1U Rackmount	2U rackmount	2U rackmount	3U rackmount		2U rackmount	3U rackmount	3U rackmount	2U rackmount	3U rackmount	2U rackmount	3U rackmount	2U rackmount	3U rackmount	4U rackmount
Number of Drives	2	4	4	4	6	4	8	12	16		12	16	16	12	16	12	16	12	16	24
Drive Interface	SATA 3.0Gb/s	SATA 3.0Gb/s	SATA 3.0Gb/s	SATA 3.0Gb/s	SATA 3.0Gb/s	SATA 3.0Gb/s	SAS/SATA 6Gb/s or 3Gb/s	SAS/SATA 6Gb/s or 3Gb/s	SAS/SATA 6Gb/s or 3Gb/s		SAS/SATA 6Gb/s or 3Gb/s	SAS/SATA 6Gb/s or 3Gb/s	SAS/SATA 6Gb/s or 3Gb/s	SAS/SATA 3.0Gb/s	SAS/SATA 3.0Gb/s	SAS/SATA 3.0Gb/s	SAS/SATA 3.0Gb/s	SAS/SATA 6.0Gb/s	SAS/SATA 6.0Gb/s	SAS/SATA 6.0Gb/s
Max. Drives Supported	2	8	12	8	12	8	8	108	112		108	112	112	240	320	76	80	180	184	192
Host Interface	1x Gigabit Ethernet	1x Gigabit Ethernet	1x eSATA 1x Firewire400 2x Firewire800 1x USB 2.0	2x Gigabit Ethernet	2x Gigabit Ethernet	2x Gigabit Ethernet	4x 1Gb iSCSI	4x 1Gb iSCSI	4x 1Gb iSCSI		2x 3Gb/s SAS (x4)	2x 3Gb/s SAS (x4)	2x 8Gb FC 2x1Gb iSCSI	4x 3Gb FC(x4) (per controller)	4x 3Gb FC(x4) (per controller)	2x 4Gb FC (per controller)	2x 4Gb FC (per controller)	4x 8Gb FC (per controller)	4x 8Gb FC (per controller)	4x 8Gb FC (per controller)
Expansion Links	USB 2.0	eSATA 3Gb USB 2.0	FireWire 800	2 x eSATA 3Gb 5 x USB 2.0	2 x eSATA 3Gb 5 x USB 2.0	2 x eSATA 3Gb 5 x USB 2.0	N/A	mini-SAS (SFF-8088)	mini-SAS (SFF-8088)		mini-SAS (SFF-8088)	mini-SAS (SFF-8088)	mini-SAS (SFF-8088)	mini-SAS (SFF-8088)	mini-SAS (SFF-8088)	mini-SAS (SFF-8088)	mini-SAS (SFF-8088)	mini-SAS (SFF-8088)	mini-SAS (SFF-8088)	mini-SAS (SFF-8088)
RAID Levels	0, 1	0, 1, 5, 10	0, 1, 5, 10	0, 1, 1E, 5, 10	0, 1, 1E, 3, 5, 6, 10, 30, 50	0, 1, 1E, 5, 10	0, 1, 1E, 3, 5, 6, 10, 30, 50, 60	0, 1, 1E, 3, 5, 6, 10, 30, 50, 60	0, 1, 1E, 3, 5, 6, 10, 30, 50, 60		0, 1, 1E, 3, 5, 6, 10, 30, 50, 60	0, 1, 1E, 3, 5, 6, 10, 30, 50, 60	0, 1, 1E, 3, 5, 6, 10, 30, 50, 60	0, 1, 1E, 5, 6, 10, 50, 60	0, 1, 1E, 5, 6, 10, 50, 60	0, 1, 1E, 5, 6, 10, 50, 60	0, 1, 1E, 5, 6, 10, 50, 60	0, 1, 1E, 5, 6, 10, 50, 60	0, 1, 1E, 5, 6, 10, 50, 60	0, 1, 1E, 5, 6, 10, 50, 60
UPS Monitor	○	○	○	○	○	○	○	○	○		○	○	○	○	○	○	○	○	○	○
Online Capacity Expansion	○	○	○	○	○	○	○	○	○		○	○	○	○	○	○	○	○	○	○
RAID Level Migration	○	○	○	○	○	○	○	○	○		○	○	○	○	○	○	○	○	○	○
Predictive Data Migration (PDM)	-	-	-	-	-	-	○	○	○		○	○	○	○	○	○	○	○	○	○
Disk Roaming	-	-	○ (SmartStor DS series)	○ (SmartStor NSx700 & VessAPP series)	○ (SmartStor NSx700 & VessAPP series)	○ (SmartStor NSx700 & VessAPP series)	○ (VessRAID series)	○ (VessRAID series)	○ (VessRAID series)		○ (VessRAID series)	○ (VessRAID series)	○ (VessRAID series)	○ (VTrak Ex10 series)	○ (VTrak Ex10 series)	○ (VTrak Ex10 series)	○ (VTrak Ex10 series)	○ (VTrak Ex30 series)	○ (VTrak Ex30 series)	○ (VTrak Ex30 series)
Auto Restart	○	○	○	○	○	○	○	○	○		○	○	○	○	○	○	○	○	○	○
MAID 2.0	-	-	-	○	○	○	○	○	○		○	○	○	-	-	-	-	○	○	○
Smart FAN Control	○	○	○	○	○	○	○	○	○		○	○	○	○	○	○	○	○	○	○
Power Redundancy	-	-	-	-	-	1810i	-	○	○		○	○	○	○	○	○	○	○	○	○
LCD Module	-	-	-	○ (Built-in LCD Panel)	○ (Built-in LCD Panel)	-	Optional	Optional	Optional		Optional	Optional	Optional	-	-	-	-	-	-	-
Battery Backup Unit	-	-	-	-	-	-	Optional	Optional	Optional		Optional	Optional	Optional	○	○	○	○	○	○	○
Warranty	2 years	2 years	2 years	2 years	2 years	2 years	3 years	3 years	3 years		3 years	3 years	3 years	3 years and EW plans	3 years and EW plans	3 years and EW plans	3 years and EW plans	3 years and EW plans	3 years and EW plans	3 years and EW plans

The camera range indicates a reference camera number supported to each Promise product based on the capacity required in The Compression Range chart. There are still many factors driving the supporting number changes such as system upgrade, video streaming variable, recording conditions, or configuration parameter, etc.

• Specifications may change without notice.

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