QVR
Professional Video Management System

QNAP SECURITY

QNAP Security, headquartered in Taiwan, is the world's first Linux-embedded NVR developer that has leveraged its award-winning storage and RAID technologies to offer the reliable and high performance NVR (VioStor NVR). QNAP Security's spirit of continuous innovation makes it provide professional surveillance solutions with various market-fresh applications, such as HD local display, browser-based multi-server remote monitoring and playback IVA.

To fulfill the market's growing surveillance needs, QNAP Security launched its easy turnkey Central Management System solution (VioStor CMS) that is designed for centralized event & device management and flexible central monitoring with large-scale VioStor NVR deployment.

QNAP surveillance solutions are widely applied in various industries such as retail, home offices, banking, hotels, industrial, government and educational institutions. To provide better services globally, QNAP Security has sales representatives, regional offices, support centers and warehouses in more than 10 countries.
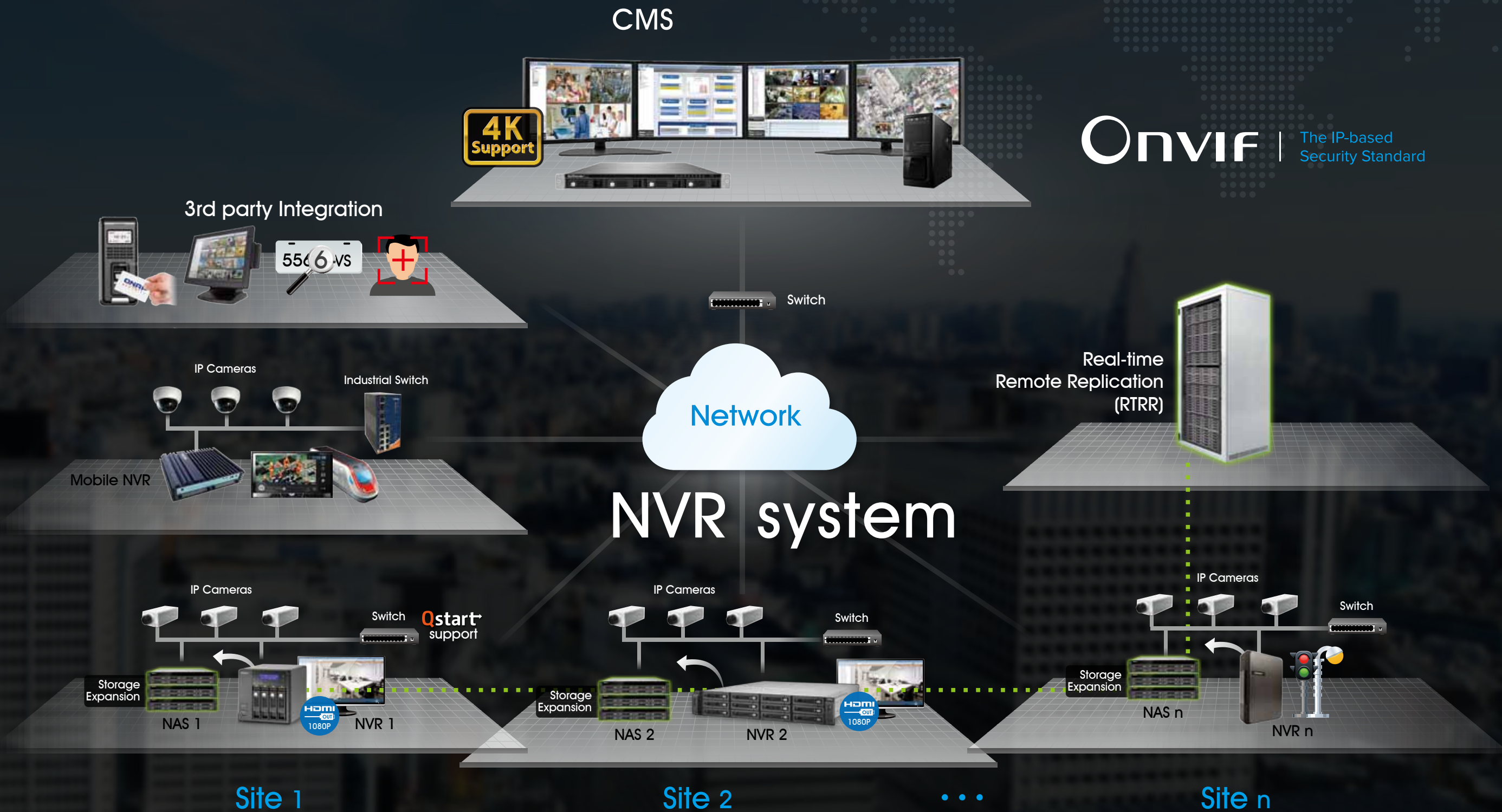
What is QVR ?

With its next-generation interface, QVR redefines the GUI concept of Video Management Software (VMS). QNAP Security is a leading Network Video Recorder (NVR) manufacturer that provides you with a professional video management system preloaded with intuitive, easy-to-use, and versatile QVR software that allows real-time monitoring, recording, playback, alarm notifications, and other management tools to safeguard assets and property when used with supported IP cameras.

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Live View

Maintaining accessible and reliable live surveillance feeds is essential for properties such as retail stores, hotels, construction sites, offices, and at home. With the QVR , you can easily manage & monitor multiple IP cameras on a real-time basis through web browsers, and attain the first-hand status of monitored corners, such as building gates, office entrances, or emergency exits, safeguarding your staff and property.

Intelligent Video Analytics(IVA)

Each IVA event users define can be assigned to trigger 7 actions provided by the QNAP event engine. These include recording, sending an email, sending an SMS, and more.

IVAManager supports rule functions, including motion detection, foreign object, missing object, loitering object, camera occlusion and focus loss.

Visual aid by E-map

The E-map function helps visualize the layout of the deployment of IP cameras enabling you to quickly identify the location of each IP camera, especially when an alarm occurs. Just upload the pictures of the monitoring locations and drag and drop the IP camera icons to the right place on the E-map. Once an alarm event happens, the camera icons will flash to indicate the event type for you to be alerted immediately and take necessary actions.

Cross-platform support

QVR works with all major web browsers such as Google Chrome, Mozilla Firefox and Internet Explorer. With QNAP QVR Client for Mac, users can also enjoy a similar experience on their Macs.

Various remote monitoring modes

QVR supports various monitoring modes to display 4, 6, 8, 9, 10, 12, 16, 20, 25, 36, 42, 64 channels on a single screen and 128 channels on dual monitors. Users can also choose to sequentially display each channel or use dual displays to have a wider view.

Interactive control buttons

Whenever you move the mouse cursor over a camera channel, the supported function buttons of the camera will show up for quick access. The interactive control buttons will disappear when not in use, helping you watch the IP camera feeds without any distractions.

Layout Enhancement

Users can customize view cell aspect ratio to fit various display requirements from specific IP camera sources, such as panoramic or corridor format video feeds.

PTZ (Pan/Tilt/Zoom) control

On QVR web interface, you can directly adjust the PTZ (Pan/Tilt/Zoom) functions of supported cameras, greatly enhancing the convenience in remote monitoring of desired corners.

Instant Playback

On the Live-view page, whenever you want to look back to check suspicious events of a camera channel you just missed, just hit 'Instant Playback' button to bring up the window to review recent feeds. While you don't have to switch to the playback page to do so, you can still have full live views of other channels simultaneously.

Preset positions and auto-cruising

You can set up preset positions and auto-cruising for PTZ cameras to automatically adjust the camera angle to preset positions by the time interval you define. To gain more flexibility, you can click the corresponding number buttons of an IP camera's preset positions to have an instant view at that position

## Same-screen IP camera configurations

On the Live-view page, you can directly configure IP camera recording schedules when needed without leaving the Live-view page, maintaining a seamless monitoring so you won't miss any suspicious event.

Recording

QVR provides flexible options to set up IP camera recording, including video format, frame rates, schedules, smart recording, and more.

High quality codec recording

QVR supports H.264, MPEG-4, M-JPEG, and MxPEG recording, ensuring high-quality recording videos for future playback and reference.
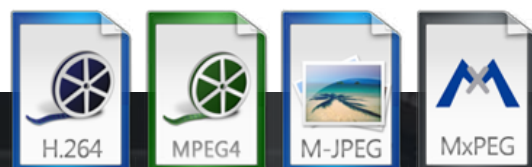

Manual recording

On the Live-view panel, you can click the record button to start recording the live camera feeds and click the stop button whenever you want to finish recording. Manual recording helps you to capture critical moments on a real-time basis.

Smart recording

Smart recording intelligently records standard resolution videos in regular recording, and switches to high resolution automatically when alarms are triggered. This greatly saves your cost spent on hard drives and provides you with high resolution video evidence when needed.
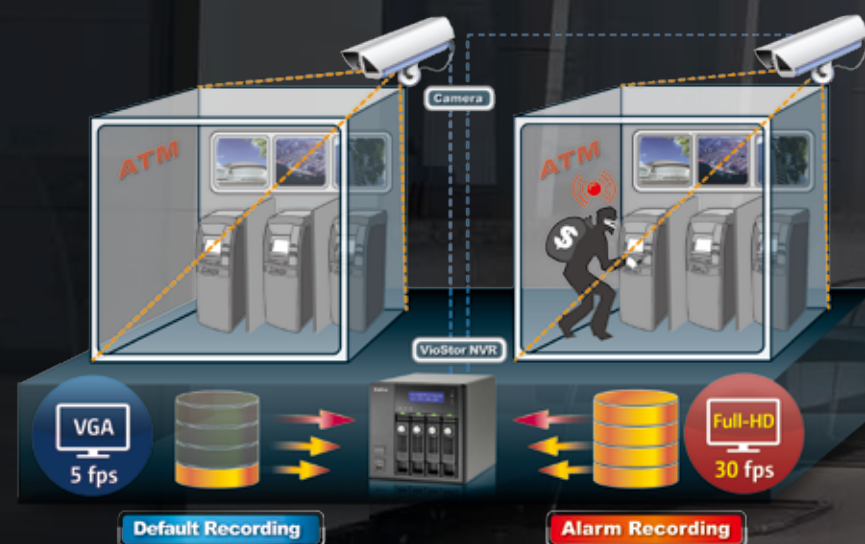
Scheduled recording

With the intuitive drag-n-drop scheduled recording panel, you are able to define the time to record feeds for each IP camera, allowing you to flexibility set up a suitable recording plan with your existing VioStor NVR storage capacity.

Event Management

With event management, the recording will only be triggered when motion detections and camera input events occur. Event management ensures the critical events are properly saved for future use and saves storage capacity usage.
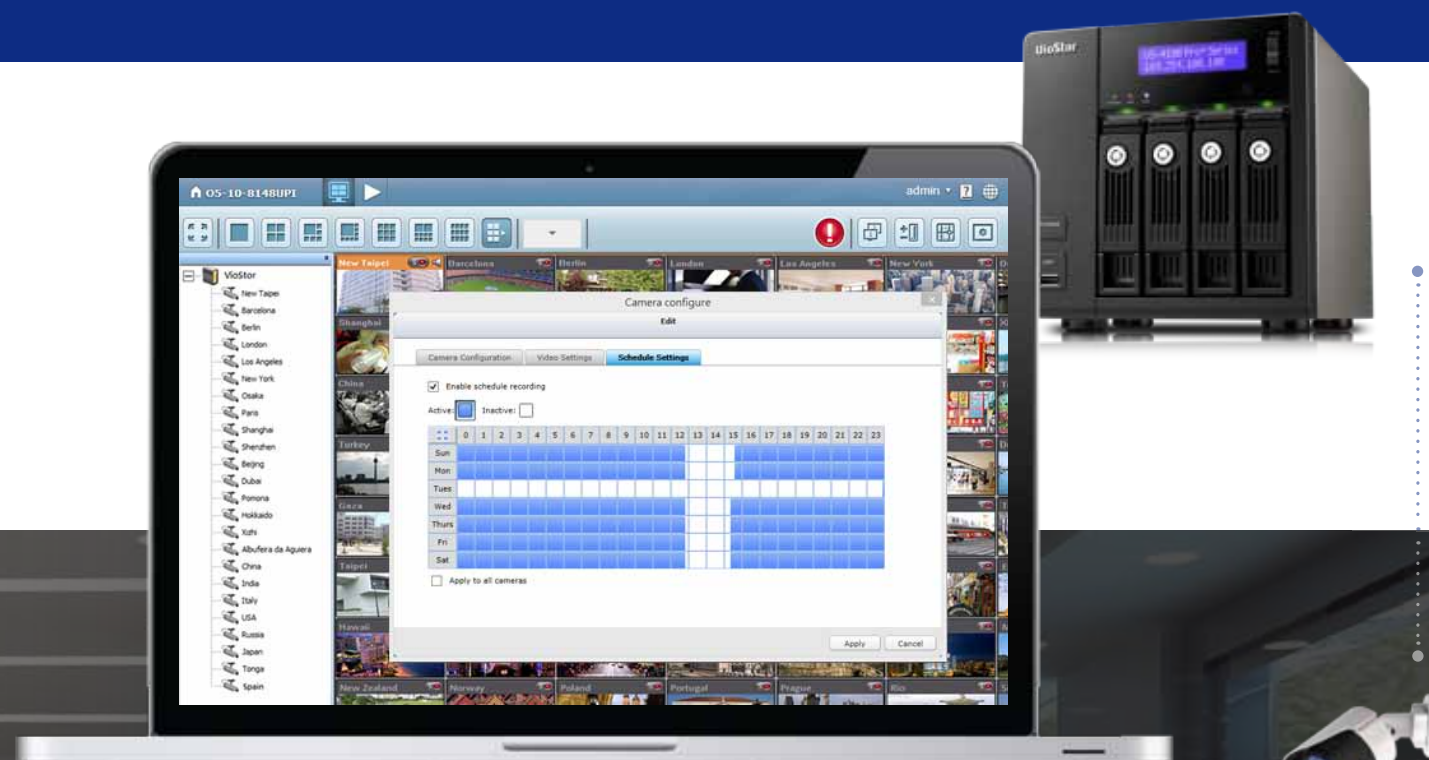
Edge Recording

This technology provides convenient usage of local on-board storage redundancy and flexibility of adjustable retrieval time. With this feature you can always get valuable recordings and evidence back to your recording server even if you have an unstable network environment. QVR significantly reduces the risk of losing important videos and ensures a seamless and well-protected surveillance environment.
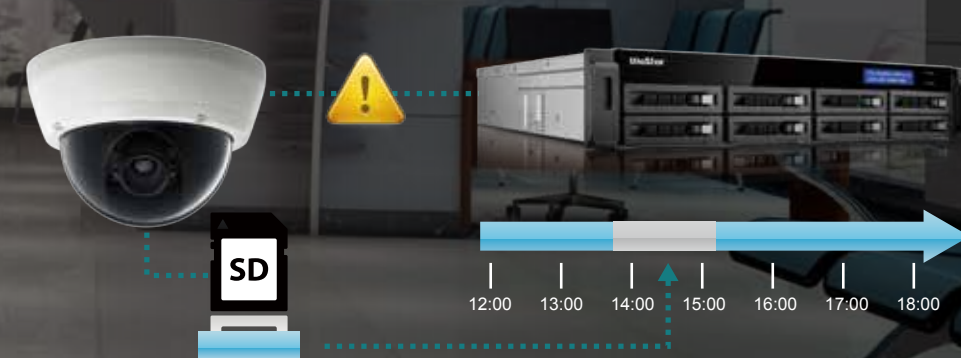
Playback

QVR provides various ways for you to search and analyze recordings so you can efficiently look up the desired events.
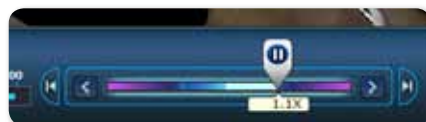
Internet ·······▶ **< VGA**
Low bandwidth

LAN ·······▶ **> HD**

Zoom in to see details

Mega pixels camera had become mainstream with larger recording zone and higher resolution. By right-clicking the mouse and dragging an area on the screen, that area will be enlarged with a more clear view.

Transcoding

In order to solve the problem of low-bandwidth playback, transcoding allows users a practical option of watching videos stored in centralized locations via the internet.

This feature adapts to bandwidth limits and/or devices that lack the hardware or codecs to play video files by converting a video file to a lower resolution before transferring it across the internet. The original high definition live video is still retained without any changes being made, balancing the whole surveillance system with local recordings and remote playback.

Identify events easily

On the intuitive playback interface, you can easily distinguish regular recording and alarm recording in the timeline bar.
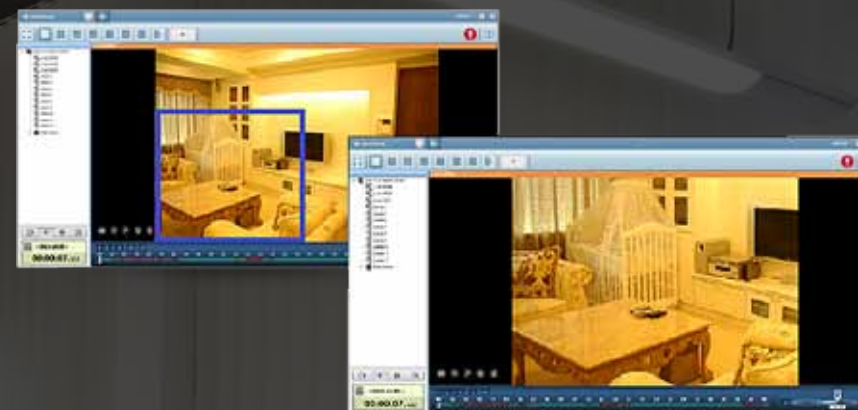
Preview recordings by thumbnails

You can move the mouse cursor over the timeline to preview the video thumbnails to quickly identify and search the event. No need to play the video from the start and wait long just to find a short video clip.

Playback and speed control by shuttle bar

With the speed control shuttle bar, you are able to fast-forward the video playback by dragging the button to the right and rewind to the left at the speed you like, helping you quickly find the desired screenshots.

Intelligent Video Analytics (IVA)

IVA is an advanced way to quickly search videos corresponding to particular modes, greatly saving the time & effort of manually screening out matching videos. For example, in search of a missing car in a parking lot, the "missing object" mode can help quickly locate the section in which the car disappears in the video.

Real-time watermarking

In need of exporting videos or snapshots, the concern of authenticity might occur. The support of digital watermarking helps prove that the exported videos and snapshots are genuine without any falsification. The Watermark Proof utility developed by QNAP can verify the credibility of the exported videos and snapshots by showing the exact recording date and time, camera name and the VioStor NVR model name. This is rather useful when the videos could be raised as evidence in a relative investigation or in court.

Management

QVR provides flexible options for you to set up a surveillance system that is fully customized for you.

Web-based user interface

QVR offers an innovative desktop design to compliment smooth working efficiency. The multi-window design allows concurrent multi-tasking, and enables administrators to easily switch between tasks to increase productivity.

Expandable license management

QVR comes with different kinds of free IP camera licenses for each VioStor NVR, and based on your needs, you can expand the number of channels by purchasing additional licenses. This provides a flexible and cost-effective way of scaling your surveillance operations.

Flexible camera access control

You can create to 32 user accounts on the QVR and flexible assign them to different rights for monitoring, playback, PTZ and audio monitoring.

Advanced Event Management

The QVR allows you to configure 5 types of events, including motion detection, alarm input of camera or NVR1, connection failure, recoding failure and user-defined events. Every event can be assigned to 8 types of event actions, including recording, PTZ Control, alarm output of camera or NVR2, email notification, SMS notification, buzzer notification, and user-defined actions, helping you to be alerted immediately.

* Alarm input of NVR is only supported by VS-4100U-RP Pro+ series NVR.
  Alarm output of NVR is only supported by VS-4100U-RP Pro+ series NVR.

Choose from over 3,000 IP cameras

The QVR is compatible with over 3,000 IP camera models of over 100 brands and ONVIF specifications, including those support advanced features such as multi-streaming and fisheye-dewarping. The wide range of supported IP cameras provides great flexibility in IP camera selection.

Central Management

QSCM Lite is a free app provided by QVR that allows you to easily manage up to 16 QNAP NVRs and 256 cameras. This pioneering, powerful and free App, which can be directly downloaded from QNAP NVR UI - App Center, is supported by firmware QVR 5.0 and above.
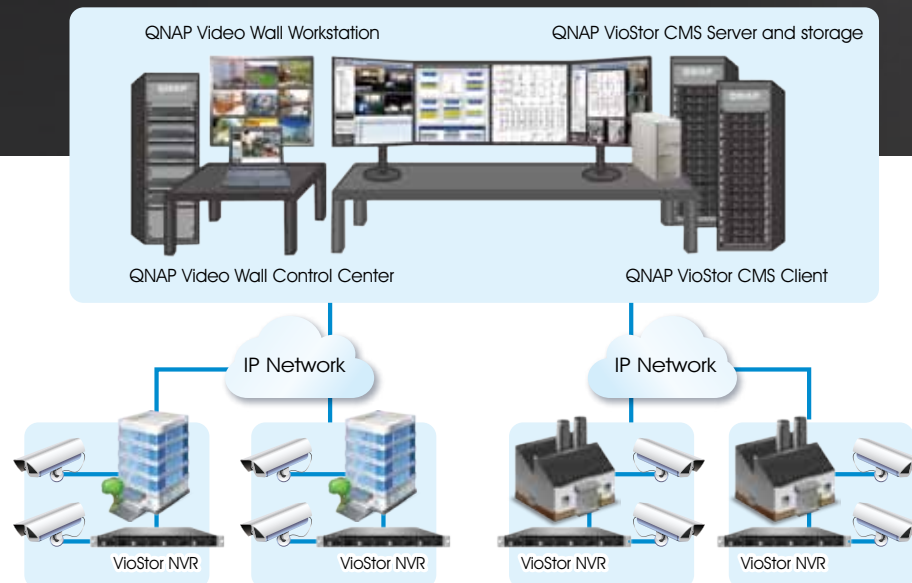
Revolutionary NVR App Center

QNAP introduced an App Center to their NVRs. The App Center is a digital platform for distributing apps that extend the functionality and add new features to the NVR. Users can, install, remove and update new apps developed by QNAP and third parties apps quickly & easily through the App Center. QNAP App Center is as intuitive and easy to use as the iOS App Store and Google Play.

Free 256-channel central management

Economic – embed free 256 channels
Powerful – support up to 16 NVR evolutionary multi-server central monitoring, playback, and management.

QNAP Video Wall Workstation QNAP VioStor CMS Server and storage

QNAP Video Wall Control Center QNAP VioStor CMS Client

IP Network IP Network

VioStor NVR VioStor NVR VioStor NVR VioStor NVR

Easily turn your QNAP NVR into a CMS server

• Easy –Download QSCM Lite from the QNAP NVR App Center, install it, and your QNAP NVR is now a ready CMS server.

• Economic – No extra server hardware required for a CMS solution

• Convenient – Keep using the existing IP network structure, no re-design needed, and a CMS solution can be online

• Flexible –Choose to have both the NVR & CMS service running at the same time, or have just one service running at one time

* [Note] The NVR's throughput may be influenced when receiving multitude of events at the same time.

Centralized Device Management for quicker configuration

Synchronize settings across NVRs & cameras of the same model by "Apply All" settings.

Flexible View Management for fast focusing

Logically group related E-maps and cameras into a View, and manage Views via an intuitive tree structure.

Centralized Event Management for overall security control

Alarm mode provides instant event handling on each event's snapshot & log with Live View, Event Playback, View, and E-map.

* QSCM Lite's client specification is designed based on and mostly like VioStor CMS, a standalone CMS server solution. For more information about VioStor CMS, please refer to VioStor CMS.

* QSCM Lite is not supported by L series.

Leading Edge Hardware Design

Industrial level performance supports 24/7 surveillance recording

Industrial level hardware

With 24/7 IPC level system hardware design and certificates, the VioStor NVR series can simultaneously sustain heavy-duty recording workloads and enhance various video management functions.

High performance

The Linux-embedded VioStor NVR series leverages award-winning storage and RAID technologies for high performance and data protection.

Full product spectrum

VioStor standalone and rack-mount NVR series demonstrate well-rounded surveillance solutions catering to enterprises, SMBs and SOHO users.

Full HD Local Display

Easily build up a local monitoring solution

Easy to use with no learning required

Unlike with traditional NVR software that can be hard to use, with QNAP there is an intuitive interface that is free from complicated options and terminology. Anyone can setup and use the surveillance system, with no need for dedicated administrators or engineers.

Reduces costs, not functionality

Using local display, users can fully manage their NVR without the need for additional remote PCs or servers.

Reliable and powerful

Features high-performance Intel-based hardware for smooth, lag-free live videos and an industrial-strength design ensures constant operation.

Architecture of Local and Remote Monitoring

Internet

LAN — Office 1
LAN — Office N
Head Office

Viostor NVR
HDMI OUT 1080P
Viostor NVR

Camera 1   Camera 2 ... Camera N   Camera 1   Camera 2 ... Camera N

HDMI OUT 1080p
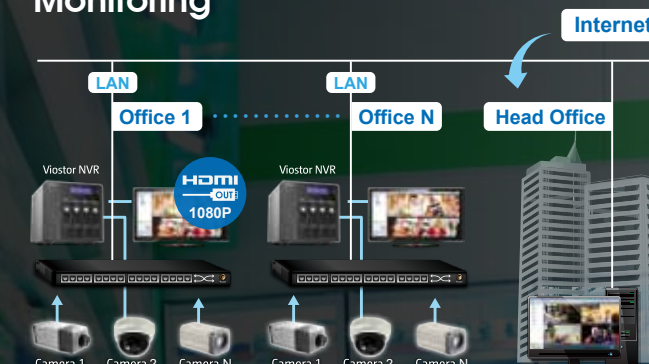
* Applied to all pro+ models.

RAID Management

Proactive Data Protection

Easy configuration

The VioStor NVR supports comprehensive RAID types providing IT administrators with great flexibility in arranging adequate data protection. Based on the number of hard drives installed, administrators can choose from RAID 0, 1, 5, 6, 10, 5+hot spare, 6+hot spare and 10+hot spare configurations.

Flexible volume expansion

The VioStor NVR makes RAID volume expansion convenient and easy. When initially setting up the VioStor NVR, IT administrators can create RAID volumes by using small-sized hard drives. As their business grows, the VioStor NVR storage capacity can be expanded by replacing existing hard drives with larger ones without the system being interrupted. All it takes is to replace the hard drives one by one and rebuild the RAID for each hard drive replacement, ensuring ongoing business operations.

## Customized level migration

The importance of stored data can change over time. At first, administrators can start using the VioStor NVR using single disk mode. When the stored data gets more important, administrators can migrate the system from single drive mode to RAID 1, RAID 5, RAID 6, or even RAID 10 by adding additional hard drives. All of these actions can be carried out online without turning off the VioStor NVR and with all the data retained.

RAID 5　→　**RAID 6**　　　**RAID 5**　→　**RAID 5**

Storage Expansion

VioStor NVR + Turbo NAS Surveillance Storage Expansion Solution
Easily scale up your video storage capacity

Storage Expansion Architecture
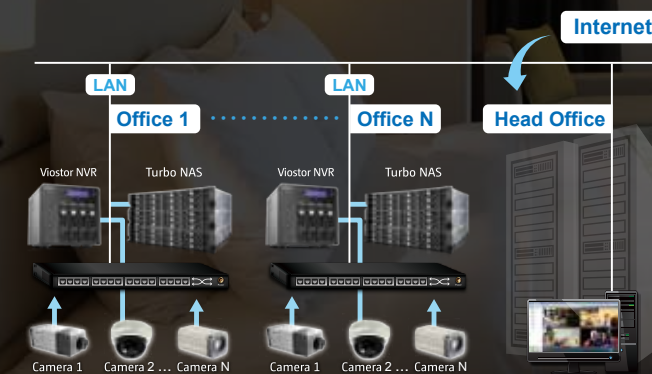
Customized Storage

Customer is able to grow capacity as they want with flexible system structure.

Reducing Investment

Customer can save by buying what they need for today's storage needs, and grow system later.

Highly Scalable

Highly flexible system architecture for storage expansion in future.

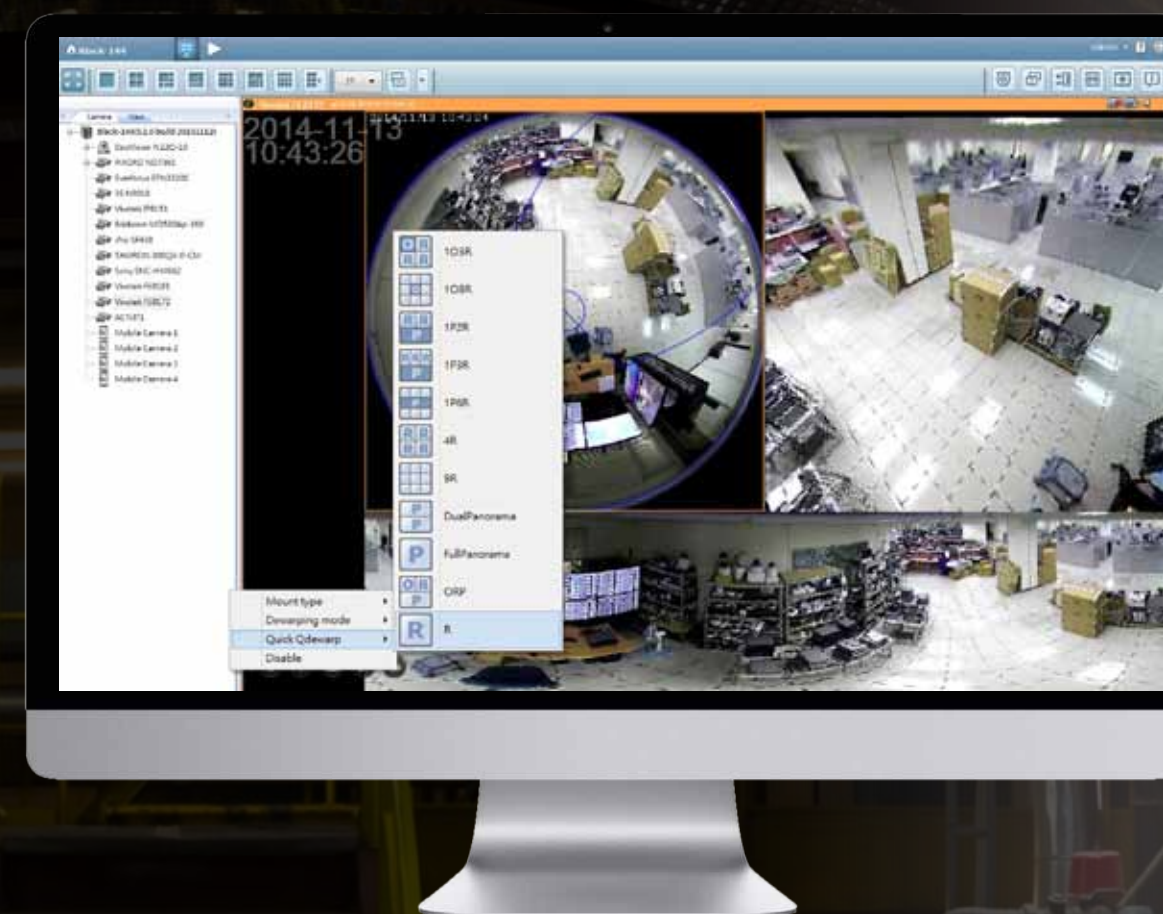* Max external storage capacity up to 200TB for all NVR models.

Real-time Intelligent Video Analytics (IVA)

Smartly protects what you care

Protect what you care about with a guard that never sleeps

Imagine the QNAP IVA as a smart and always-active guard that maintains a constant watch on user-defined regions of interest, and reacts to events based on your requirements. With the QNAP IVA you can be at ease even when there is no-one constantly monitoring your videos.

Smartly use your bandwidth and storage

Recording videos requires a lot of bandwidth and storage, with most of the recorded footage usually being normal day-to-day activities. Applying QNAP's real-time IVA solution can help record only essential and event-related footage, and by doing so enhance your investment CP value on your surveillance installation.

Compatible with the QNAP event engine for 7 actions

Each IVA event you define can be assigned to trigger 7 actions provided by the QNAP event engine. These include recording, sending an email, sending an SMS, and more. This ensures that each event will be well notified and taken care of, no matter where the events occur.

No impact to the NVR's performance

Analyzing videos can require a lot of CPU resources, but with the QNAP IVA's special design no NVR resources are used when detecting events. So when using the QNAP IVA service, there is no need to compromise the NVR's recording quality and stability.

Qdewarp

Cutting-edge fisheye dewarping technology

Powerful

Qdewarp consolidates various dewarping technologies and allows users to easily access versatile fisheye dewarping functions.

Compatible

Qdewarp is compatible with standard panoramic IP cameras, allowing users to use their existing panoramic cameras and saving them from integrating SDKs from different vendors.

Flexible

Qdewarp provides various quick dewarping layouts to demonstrate wide area coverage surveillance views, and users can also customize the dewarping mode and settings.

Qstart

Innovative one-click auto configuration

Efficient initial setup process

Qstart simplifies system initialization by automatically assigning default settings with a single click. Users can enable the DHCP server function of VioStor NVR and proceed to quickly set up everything with just one click. Qstart saves time and effort while providing a refreshing NVR installation experience.

Effective network switch and devices control

By integrating supported switches, Qstart provides comprehensive network topology and a device list for users to fully manage network health and device status. Qstart integrates the major functions of PoE switches so users can easily carry out troubleshooting, manage PoE status and monitor traffic flow from the VioStor QVR 5.1 software. The intuitive GUI allows for precise failure detection and efficient troubleshooting.

Camera 1   Camera 3

Channel 1   Channel 3
Channel 4
Channel 6

Camera 1   Camera 3   Camera 4   Camera 6

1   3   4

01   02   Power

6

Camera 6   Camera 4

Mobile Apps

Vmobile - Anytime anywhere surveillance

The Vmobile mobile app enables you to monitor QVR anytime and anywhere using iOS and Android devices. It provides camera live-view, PTZ control, instant event notifications, video snapshot, video playback, and video search by date and time.

Available on the App Store   ANDROID APP ON Google play

Vcam - Turn your mobile device into camera

The Vcam mobile app can turn your mobile device into a network camera. With the Vcam mobile app, you could record any moment around you to your VioStor NVR. The Vcam solution provides a great way to deploy a home surveillance system without purchasing expensive IP cameras.

Available on the App Store   ANDROID APP ON Google play

Education — QNAP VioStor NVR & CMS secures the wide campus of Chinese Culture University

Organization : Chinese Culture University
Location : Taipei, Taiwan
Product Solution : VioStor NVR (VS-8140 Pro+)
VioStor CMS (VSM-4000U-RP)

VS-8140 Pro+

.. x 21 NVR,
.. x 630 Cameras

VSM-4000U-RP

Customer Profile

Founded in 1962, and located close to the Yangmingshan National Park, Chinese Culture University (CCU) has its educational vision to grow and prosper the Chinese culture, particularly the tradition Chinese arts, and physical education. After over forty years, it can well be say that the original disciplines concentrated in the arts that have played a leading role in the academic world remain culturally and professionally relevant and in the forefront among Taiwan universities.

Background

In order to manage a 115-heatare wide campus, and to keep its students in a safe educational environment, CCU had installed about 650 cameras around the campus to keep an eye on each educational building, the stadium, and the open space, etc. When speaking of the video recording solution, CCU used to use the PC based recording software solution; however, "the PC based solution isn't stable enough. The PC shut down from time to time." said Mr. Chen, the leader of the CCU Surveillance Dept. Therefore, CCU looked for a Linux-based standalone NVR. Also, CCU required a central management system (CMS) to put in the main control center, and to centrally monitor and manage the whole campus. Wergen Technology Co., Ltd., the long-term cooperated SI of CCU, recommended QNAP surveillance solution as the upgraded solution.

Solution

CCU has several buildings that have mini monitoring room to monitor the nearby cameras. QNAP VioStor NVR, which provides the HDMI local display, is put in each mini monitoring room for easy monitoring. Cameras videos with the resolution of D1, 1.3M, and 2M are recorded for 1 month. They also use QNAP embedded RAID 5 to protect the footage from the risk of HDD crash.

At the main control center, all the camera videos from the NVRs are centralized to be monitored and managed by QNAP VioStor CMS. By having the flexibility of choosing the smaller video stream, the bandwidth consumption between each mini monitoring room and the main control center can be effective.

All the surveillance devices are connected by a dedicated giga LAN environment, ensuring no network interruption from other network services occurs.

Benefit

"The management of a big wide campus becomes possible and easy. Thus, almost no student violence occurred after the surveillance system was built." said Mr. Chen. "There're other benefits for the structure planning, such as the local display at each mini monitoring room eliminates the need to purchase another PC, saving a great amount of money. Most importantly, QNAP Linux-embedded solution brings us the stable and reliable surveillance environment than ever before."

Banking & Finance — Mongolian Bank Fully Covers 530 Branches with a Complete QNAP Security Surveillance Solution

Organization : Khan Bank
Location : Mongolia
Product Solution : VioStor NVR (VS-2104 Pro+/VS-2108L)
Turbo NAS (TS-469 Pro)

VS-2108L   VS-2104 Pro+   TS-469 Pro

Customer Profile

With over 530 branches throughout the country, Khan Bank is one of the largest commercial banks in Mongolia and provides banking services to an estimated 70% of Mongolian households. The Khan Bank was established in 1991 as the Agricultural Cooperative Bank in connection with the dissolution of the State Bank of Mongolia's monopoly. The Bank assumed most of the assets and businesses of the State Bank in rural Mongolia.

Background

Each of Khan Bank's 530 branches handles large amount of transactions and customer enquiries every day. Khan Bank requires a reliable surveillance solution to safeguard their customers and staff in their branches and ATM areas. However, the existing CCTV system was insufficient for meeting their heavy surveillance recording requirements, and Khan Bank planned to improve the safety of their ATM centers by deploying network cameras to deter robberies and other criminal incidents. In the meantime, for bigger branches, Khan Bank planned to upgrade their storage appliances to networked storage devices.

Solution

Khan Bank decided to replace their analog CCTV systems with a digital surveillance solution and install 156 units of the QNAP® VioStor VS-2104 Pro+ NVR, 98 units of the VS-2108L NVRs, and 20 units of the TS-469 Pro Turbo NAS in their branches and ATM areas. Khan Bank upgraded their surveillance infrastructure to an all-IP solution featuring network cameras.

"With QNAP VioStor NVR solutions, we can easily fulfill customer requirements through the compatibility between NVRs and selected network cameras" said the local system integrator. "The main purpose of this IP surveillance system is to access high-quality video feeds from megapixel network cameras deployed in banks and ATM areas."

The three-stages of IP surveillance deployment starts from Khan Bank's central office to all branch banks in the capital city and then to the branches in rural areas. Based on branch scale, Khan Bank implements one VioStor NVR with four to eight network cameras to build up an IP surveillance system. With the Turbo NAS storage expansion solution, the VioStor NVR storage can be extended to meet the mandated data archiving period.

Benefit

After deploying the standalone VioStor NVRs, Khan Bank saved a great deal on system maintenance and technical consultation fees. The VS-2104 Pro+ and the VS-2108L NVRs run stably and reliably. Whenever bank branches need technical support, the security staff can always get instant assistance from QNAP Security's responsive customer service team. Besides, with smart recording feature, VioStor NVR records high resolution video when events happen, and it saves Khan Bank much cost spent on hard drives. Moreover, Khan Bank is planning to install VioStor CMS turnkey solution in the next stage to manage NVRs, network cameras and surveillance events efficiently.

Help me Choose a VioStor NVR

The VioStor NVR comes in a full range of product spectrum from 2-bay to 12-bay, supporting from 4 to 64 channels . The VioStor NVR fulfills all kinds of surveillance deployment needs.

To learn more about QNAP VioStor NVR, please feel free to contact us by email.

NVR Selector

QNAP provides an easy-to-use NVR Selector to help you choose an ideal VioStor that meets your requirement of storage capacity and bandwidth.

Compatible IP Camera

QVR is compatible with over 3,000 IP camera models of over 100 brands and ONVIF specifications. Please check the compatibility of any IP camera models in our compatibility list.

Purchase Camera License

You can add extra recording channels, please contact authorized distributors for detail. Or, you can contact QNAP Security (http://www.qnapsecurity.com/SalesInquiry.aspx) for information on authorized distributors*.

More QNAP Products

To learn more about QNAP VioStor products, please visit www.qnapsecurity.com

Helpdesk

If you encounter any problems when using QNAP VioStor products, please contact our helpdesk.

* If contacting an authorized reseller, please provide the following part numbers for the respective license :
1 channel license : LIC-CAM-NVR-1CH, 2 channel license : LIC-CAM-NVR-2CH, 4 channel license : LIC-CAM-NVR-4CH

Comparison of VioStor NVR Series

NVR Model	VS-12164U-RP/12156U-RP/12148U-RP/12140U-RP Pro+	VS-8148U-RP/8140U-RP/8132U-RP/8124U-RP Pro+	VS-8148/8140/8132/8124 Pro+	VS-6120/6116/6112 Pro+	VS-4116U-RP/4112U-RP/4108U-RP Pro+
Operation System	Linux-embedded	Linux-embedded	Linux-embedded	Linux-embedded	Linux-embedded
Number of supported IP cameras (recording) (1)	64/56/48/40 (Max. 64CH)	48/40/32/24 (Max. 48CH)	48/40/32/24 (Max. 48CH)	20/16/12 (Max. 20CH)	16/12/8 (Max. 16CH)
Video server support	Yes	Yes	Yes	Yes	Yes
High-definition local display	HDMI/ VGA output	HDMI/ VGA output	HDMI/ VGA output	HDMI output	HDMI output
Total Frames Per Second (FPS) (2)	1920FPS / 1080P	1440FPS / 1080P	1440FPS / 1080P	600FPS / 1080P	480FPS / 1080P
Video compression (IP camera)	H.264, MPEG-4, M-JPEG & MxPEG (depending on the camera models)	H.264, MPEG-4, M-JPEG & MxPEG (depending on the camera models)	H.264, MPEG-4, M-JPEG & MxPEG (depending on the camera models)	H.264, MPEG-4, M-JPEG & MxPEG (depending on the camera models)	H.264, MPEG-4, M-JPEG & MxPEG (depending on the camera models)
Max. network throughput tested (3)	450 Mbps	400 Mbps	400 Mbps	330 Mbps	250 Mbps
Megapixel recording	Yes (up to 10-megapixel)	Yes (up to 10-megapixel)	Yes (up to 10-megapixel)	Yes (up to 10-megapixel)	Yes (up to 10-megapixel)
Multi-view playback	16-view	16-view	16-view	16-view	16-view
Intelligent video analytics (IVA)	Motion detection, missing object, foreign object, out of focus, and camera occlusion	Motion detection, missing object, foreign object, out of focus, and camera occlusion	Motion detection, missing object, foreign object, out of focus, and camera occlusion	Motion detection, missing object, foreign object, out of focus, and camera occlusion	Motion detection, missing object, foreign object, out of focus, and camera occlusion
Advanced event management	Yes	Yes	Yes	Yes	Yes
Max. number of hard drives supported (4)	12 x 3.5-inch SATA	8 x 3.5-inch SATA	8 x 3.5-inch SATA	6 x 3.5-inch SATA	4 x 3.5-inch SATA
Max. raw capacity	72TB (12 x 6TB hard drives)	48TB (8 x 6TB hard drives)	48TB (8 x 6TB hard drives)	36TB (6 x 6TB hard drives)	24TB (4 x 6TB hard drives)
RAID	RAID 0, 1, 5, 5+hot spare, 6, 6+hot spare, 10, 10+hot spare	RAID 0, 1, 5, 5+hot spare, 6, 6+hot spare, 10, 10+hot spare			RAID 0, 1, 5, 5+hot spare, 6, 10
Processor	Quad-core Intel® 3.7GHz CPU	Dual-core Intel® 3.3GHz CPU	Dual-core Intel® 3.3GHz CPU	Dual-core Intel® 2.6GHz CPU	Dual-core Intel® 2.6GHz CPU
Number of Gigabit LAN ports	4	4	2	2	2
Number of USB ports	2 x USB 3.0 / 4 x USB 2.0	2 x USB 3.0 / 4 x USB 2.0	2 x USB 3.0 / 4 x USB 2.0	2 x USB 3.0 / 5 x USB 2.0	2 x USB 3.0 / 3 x USB 2.0
Redundant power supply	Yes	Yes	---	---	Yes
Hardware dimensions (HxWxD)	88 x 439 x 520 mm/ 3.46 x 17.28 x 20.47 inch	88 x 439 x 520 mm/ 3.46 x 17.28 x 20.47 inch	217.5 x 327 x 321.2 mm/ 8.56 x 12.8 x 12.65 inch	175 x 257 x 235 mm/ 6.89 x 10.12 x 9.25 inch	44 x 439 x 499 mm/ 1.73 x 16.97 x 19.65 inch
Gross weight	22.92Kg /50.53lb	20.76Kg /45.78lb	13.98Kg /30.79lb	6.96Kg /15.34lb	13.5Kg /29.76lb

NVR Model	VS-4116/4112/4108 Pro+	VS-2212/2208/2204 Pro+	VS-2112/2108/2104 Pro+	VS-2108L/2104L	VS-S2212/S2208/S2204 Pro+
Operation System	Linux-embedded	Linux-embedded	Linux-embedded	Linux-embedded	Linux
Number of supported IP cameras (recording) (1)	16/12/8 (Max. 16CH)	12/8/4 (Max. 12CH)	12/8/4 (Max. 12CH)	8/4 (Max. 8CH)	12/8/4 (Max. 12CH)
Video server support	Yes	Yes	Yes	Yes	YES
High-definition local display	HDMI output	HDMI output	HDMI output	---	HDMI output
Total Frames Per Second (FPS) (2)	480FPS / 1080P	360FPS / 1080P	360FPS / 1080P	240FPS / 1080P	360FPS / 1080P
Video compression (IP camera)	H.264, MPEG-4, M-JPEG & MxPEG (depending on the camera models)	H.264, MPEG-4, M-JPEG & MxPEG (depending on the camera models)	H.264, MPEG-4, M-JPEG & MxPEG (depending on the camera models)	H.264, MPEG-4 & M-JPEG (depending on the camera models)	H.264. MPEG-4, M-JPEG&MxPEG (depending on the camera models)
Max. network throughput tested (3)	250 Mbps	180 Mbps	180 Mbps	40 Mbps	180 Mbps
Megapixel recording	Yes (up to 10-megapixel)	Yes (up to 10-megapixel)	Yes (up to 10-megapixel)	Yes	Yes(up to 10-megapixel)
Multi-view playback	16-view	16-view	16-view	16-view	16-view
Intelligent video analytics (IVA)	Motion detection, missing object, foreign object, out of focus, and camera occlusion	Motion detection, missing object, foreign object, out of focus, and camera occlusion	Motion detection, missing object, foreign object, out of focus, and camera occlusion	Motion detection, missing object, foreign object, out of focus, and camera occlusion	Motion detection, missing object, foreign object, out of focus, and camera occlusion
Advanced event management	Yes	Yes	Yes	Yes	Yes
Max. number of hard drives supported (4)	4 x 3.5-inch SATA	2 x 3.5-inch SATA	2 x 3.5-inch SATA	2 x 3.5-inch SATA	2 x 2.5-inch SATA
Max. raw capacity	24TB (4 x 6TB hard drives)	12TB (2 x 6TB hard drives)	12TB (2 x 6TB hard drives)	12TB (2 x 6TB hard drives)	8TB(2 x 4TB hard drives)
RAID	RAID 0, 1, 5, 5+hot spare, 6, 10	RAID 0, 1	RAID 0, 1	RAID 0, 1	RAID 0,1
Processor	Dual-core Intel® 2.6GHz CPU	Quad-core Intel® 2.0GHz CPU	Dual-core Intel® 2.6GHz CPU	Marvell 1.6 GHz	Quad-core Intel 1.9GHz CPU
Number of Gigabit LAN ports	2	2	2	1	2
Number of USB ports	2 x USB 3.0 / 5 x USB 2.0	3 x USB 3.0	1 x USB 3.0 / 4 x USB 2.0	1 x USB 2.0 / 2 x USB 3.0	3 x USB 3.0
Redundant power supply	---	---	---	---	---
Hardware dimensions (HxWxD)	177 x 180 x 235 mm/ 6.97 x 7.09 x 9.25 inch	150 x 102 x 216 mm/ 5.91 x 4.02 x 8.5 inch	150 x 102 x 216 mm/ 5.91 x 4.02 x 8.5 inch	165.5 x 85 x 218.4 mm/ 6.52 x 3.35 x 8.60 inch	200 x 136 x 39 mm
Gross weight	5.58Kg /12.30lb	2.92 kg /6.44lbs	3.68Kg /8.11lb	1.9Kg /4.19 lb	0.95Kg/2.09lb

Notes:
(1) Based on the model, the VioStor NVR comes with a different number of free channels. To add extra recording channels, please contact authorized distributors for detail. Or, you can contact QNAP Security (http://www.qnapsecurity.com/SalesInquiry.aspx) for information on authorized distributors.
(2) The result is based on resolution 1280 x 720.
(3) Based on QNAP's laboratory tests. Actual performance may vary depending on the network environments.
(4) The standard system is shipped without hard disk drives.

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