Network Video Monitoring /Management Software Platform

● General Overview of the Platform

The Network Video Monitoring and Management Software Platform (hereinafter referred to as "the platform") is a platform that satisfies needs of different customers in the form of modules. With network centralized management and network transmission as its core, based on any kind of private networks, LAN, MAN and WAN, it is a full digital platform that accomplishes the overall process of information collection, transmission, regulation, management and storage. Cooperated with mainstream hardware manufacturers in the market, it is compatible with hardware products of a variety of brands. The platform truly achieves networking monitoring and centralized management. Authorized users can implement real-time monitoring on site via any computers connected to internet and receive effective, flexible and comprehensive solutions from the platform.

The platform adopts modular and plug-in technology to realize intelligent digital and networked surveillance functions perfectly including hard disk recording, images segmentation monitoring, video matrix output, electronic map providing and action with alarm. Applying H.264, an advanced standard for video compression, the platform collects high quality images, videos and network transmission, etc. while costs a low bit rate, which results in a low cost of system or network's resource usage when transmit, process and save video data.

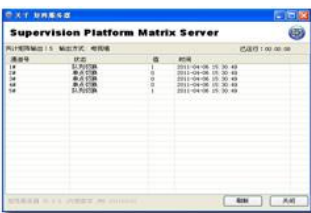| Module's Interface of the Platform	Brief Description
	Manage Server Setting up and managing video resource of front end, handling all kinds of data traffic and providing services to back-end users; unifying authentication and equipment number **WEB Server** Offering HTTP service;Enabling users to monitor and control through browsers like IE.
	User Control Panel（Client） Monitoring and regulating video source; controlling storage and matrix services as well as managing and controlling front-end video source remotely; supporting multiple graphic cards, dynamically switchable screen and virtual application of matrix

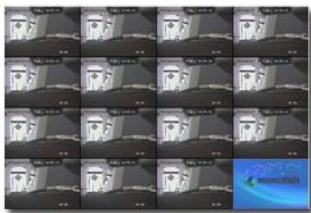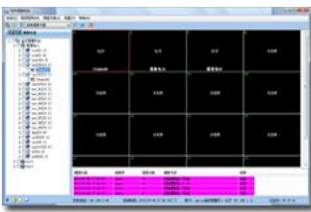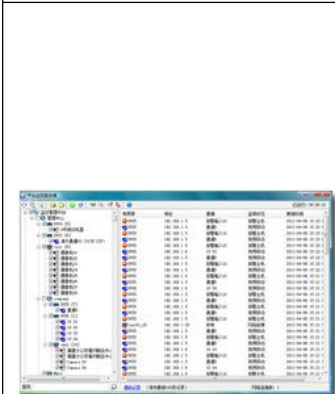|	
	Video Playback Supporting playing back, downloading and editing videos from local remote devices, central storehouse and local devices.
	Video Gateway (also known as **Streaming Server)** The hub of control centre and video sources. Receiving and processing information from video sources as well as providing data to users. Supporting dynamic domain names, users accessing concurrently and server cluster.
	AV Video Matrix AV video output. Providing video matrix services, switching digital videos to analog videos and outputting videos to video wall. Supporting multiple switched forms including single-point, queue and alarm. Supporting Stream Switching in order to accommodate situation at the site. Supporting server cluster.
	VGA Video Matrix VGA video output. Providing video matrix services, outputting videos to video wall in the form of VGA after decoding digital videos. Supporting multiple switched forms including single-point, queue and alarm. A stand-alone supports unlimited VGA output device numbers (the number of 1 to 6 devices is recommended). The users can even set up specific devices to output videos. Supporting server cluster.
	Dispatch Terminal of Network Matrix Complete simulation of video walls. Supporting user-defined screen; To control matrix, it supports methods including output one specific camera's footages to one specific screen, cyclic switching and switch multiple cameras' footages in multiple screens in the meantime; meanwhile, being compatible with three kinds of matrix-- JKB1000 、 JKB102P 、 VC3100, to control the keyboard; enable to manage and dispatch camera groups as well as real-time pull the security footage, capture images from cameras. Supporting voice talkback and configuring video sources remotely.
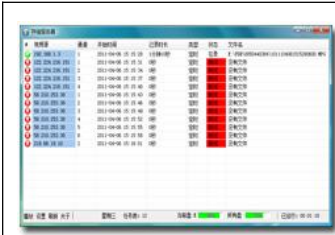
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	Storage Server Gathering videos, managing video data, offering video information for rear-end users; Supporting direct storage, transfer storage or direct and transfer storage. Supporting server cluster.
	Alarm Server Receiving and concurrent processing of real-time alarm information. Supporting various alarm strategies; Supporting ways of words, voice, synthetic speech, text, etc. to response the alarm while sent the alarm information to designated users' terminal.
	Equipment Monitoring Server For monitoring the state of video sources, including internet connections, moving of videos, loss of videos, disc anomaly, etc. 1,100% organic software. Supporting isolated operation or on-line execute with management server. 2, being compatible with the original alarm server fully, which can be registered as alarm server on the manager, as well as forwarding the orientated state. 3, multi-level tree structure can reflect states of the device and camera clearly. 4, enabling to query and export logs. Supporting to search by the day, week, month and year. 5, supporting to choose which layer, device or camera to monitor manually.

Network Frame of the Platform
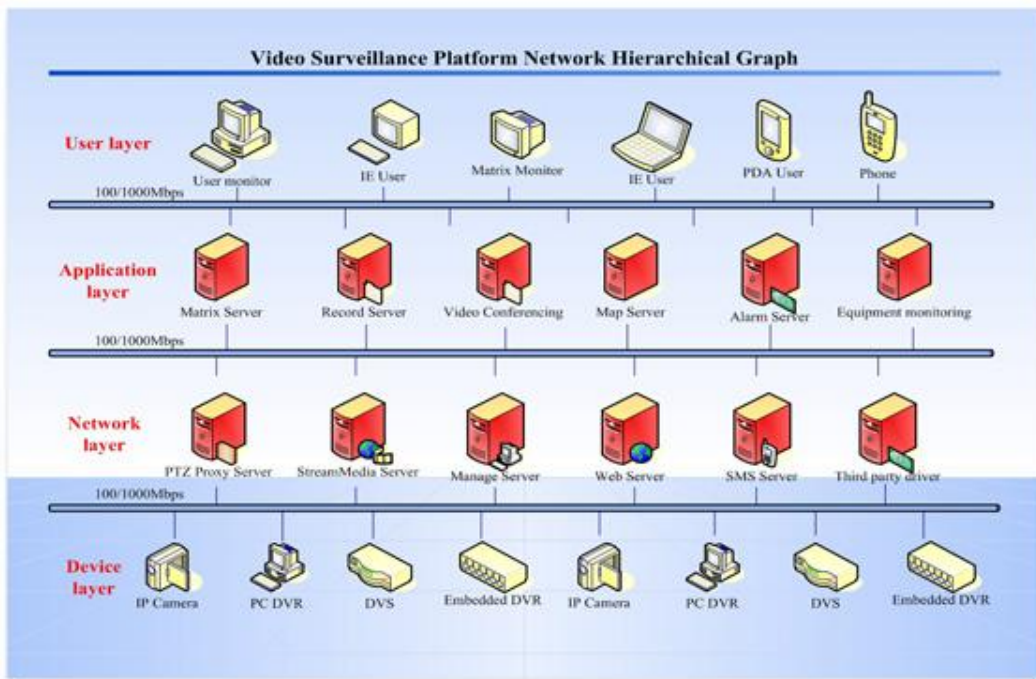
Server Structure Diagram of the Platform
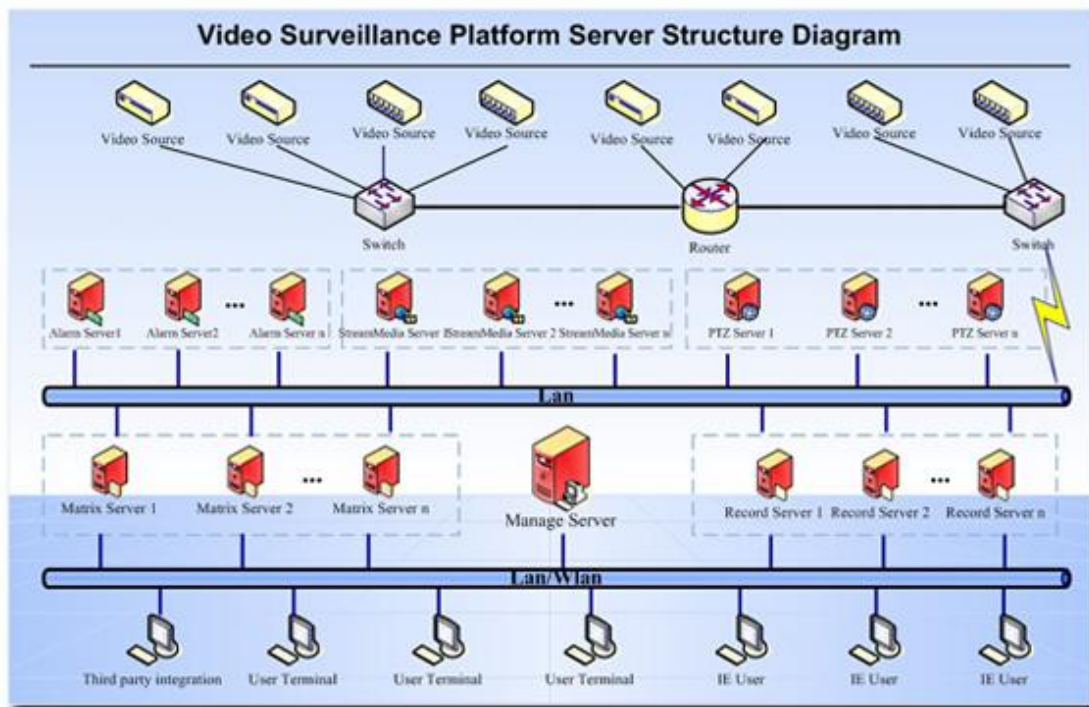
■ Performance Features

● Advanced System Architecture

Adopted C/S or B/S network monitoring platform and modularized structure, every software module has been applied massively. The platform use distributed network structure and develop based on TCP/IP/UDP protocol. With an attractive and friendly interface, the platform is easy to operate. Users can master the using of the platform quickly without any professional training.

● A Reliable Platform

The strong ability of permitting the data, device and server mistakes as well as the efficient MPEG4 video compress algorithm enable users to operate any demanding application systems with the highest performance, availability and security.

● Easy to Deploy and Upgrade

There is no large database being adopted by the platform, which save the trouble to install and manage database, therefore, ordinary operator can accomplish the deployment. Meanwhile, there is no database engine loaded in the software, which enhance execution efficiency and avoid the breakdown of the whole platform because of database damages.

It provides wizard-style setting interface as well as be able to mass increase devices. After installing servers, all of the deployments and management can be executed on the far end rather than install them one by one on the spot.

● Convenient System Expansion

Network monitoring can provide all kinds of frame rate, system scale and function's unlimited expansions for various kinds of camera at any time. It supports off-standard pan agreement to apply to video sources. With thorough standard about plug-in units, the platform's function can be extended by the third party.

● Network Video Matrix

It reserves the operating pattern of CCTV monitoring system. Supporting to decode and display videos from multi-channel video server and web camera to the video wall. The platform supports multi-picture display and control sizes of pictures. It can output only one camera footage or can be divided into 4, 9, 13 and 16 small pieces of pictures to output different surveillance footages. Output's time delay is less than one second. It supports professional matrix control keyboards including JKB1000 and JKB102P which realizes operations of direction switch, camera lens switch, presetting bit switch, matrix switch, etc. The keyboard can be developed customized. Supporting single-point and queue switch within 100ms as well as adjust the quality of videos. It supports arbitrary monitoring picture combinations of any monitoring points. It supports to output videos to video wall in ways of AV or VGA.

● Centralized Recording Remotely

If the server and network resource permit, the stand-alone device can support 1024 cameras to record at the same time with the super strong recording storage scheme. It supports retake the video if disconnections happen, to make a safer environment for the data. The dynamic file index technology enable massive document query can be done instantly.

It controls and manages video servers remotely; real-time access to look up states of footages and servers. Adopting scatter storage or consolidated storage. Supporting network direct, transit and mixed storages when using consolidated storage; supporting server cluster management with unlimited amount of storage.

Being equipped with unified playback module; supporting playback of video resource files, storage server files and terminal files, which enhance operability tremendously.

● Real-time Voice Intercom

Adopting P2P voice communication; supporting NAT penetration technology; supporting real-time conversation point to point and among multiple points, which forms a media conference system. Adopted G729 speech compress technology, the platform can be applied under inferior network bandwidth and still sustains excellent sound quality in speech. It adopted TCP+UDP protocol to transmit to resolve the insufficient of the protocol itself.

● Fully-functional Customer Terminal

The platform supports multi-picture display and control sizes of pictures. The screen can be divided into 4, 6,8,9,13,16 pictures and 64 is the maximum. Users can control pan-tilt-rotation directly on camera videos.

The color of pictures is adjustable. The quality of videos can also be adjusted according to network and system resources. It is convenient to operate since you can select with the display of the catalog tree. The platform supports multi-images switching, flip-over and cyclic switching.

The platform can capture videos and images as well as control the volume. It can query videos remotely. It can display 4, 9 or 16 different footages at the same time and can fast-forward, slow or capture the videos. It controls both main and sub channels as well as combines soft and hard decoding.

The platform supports picture division and enables to control camera lens, pan and presetting bit. Users can control the platform with multifunction monitoring keyboard. The software can login automatically and the monitoring state can automatic recover. It possesses tile map technology, enables to real-time render maps and achieves GIS network transmission.

The platform enables to manage videos remotely, control video matrix as well as control multi-user and multi-role.

- **Powerful IE Terminal**

Although some similar platforms in the market can realize operations like IE remotely viewing and pan Control, they can't meet the needs to accomplish superior operations like parameter settings and access control. However, the IE terminal of our platform has already extended those functions. As long as users pass the server's security certificate, together with limit of authority is permitted, users can setup basic parameter and authorities of all monitory points in the server, to perform video and log management.

- **Strong Fault Tolerance**

The platform can reconnect itself if there are problems like videos lost, disconnected and dysfunction. Servers have abilities of fault tolerance and hot backup. Also, the effective audio and video decoding algorithm ensures you a 7/24 ongoing operation in any demanding application system environment with the highest level of performance, usability and security.

The platform supports to on-line, motion detect devices, which save trouble of manual inspection.

- **Helping to Make a Better Decision**

The platform is an intelligent and fully functional platform with emergent linkage alarm, video retrieval and remote multichannel playback, which help users to make correct decisions and react properly. It centralized transmits alarms and can be designated specific user to receive the alarm.

- **Lower System Cost**

It is no need to arrange extra wires (a major cost in CCTV installations) if using the network architecture and it also manages data, videos, audios and other files to realize management of efficient and low cost. The IP monitoring system adopts open and standard network, server and storage devices, which helps lots of manufacturers to compete in the market and break

monopoly effectively.

- **Professional, Multifunctional Matrix Keyboard**

For professional monitoring system, pan（multi-function keyboard）is essential. Users get used to operate with the keyboard, therefore apart from using computer keyboard and mouse, the platform also provides interface and compatibility of matrix keyboard as well as distributes different control privileges to different keyboard users.

- **The Secondary Development of SDK**

Providing abundant secondary development of SDK to meet users' need of realizing more solutions in the platform; SDK adopts standard COM component interfaces and supports all popular development language of Windows. It provides detailed Engineering documentations routine to help accelerate your integrated development.

■ Core Technologies of the Platform

- Unlimited extensions of system architecture;
- Multiple servers(cluster) technology;
- Distributed network structure;
- Technology of remotely controlling functions of playing, buffering and breakpoint resuming;
- Technology of extending functions by using plug-in unit;
- Technology of real-time rendering and tile rendering map
- Combining scatter storage and consolidated storage;
- The secondary development of SDK enables the third-party system integrate rapidly;
- Strong fault tolerance ensures the continuous operation of the system.

■ Field of Application

Being able to apply to various fields as the following—banks, urban monitoring, electricity, transportation, public security organs, communication, industrial and mining enterprises, rail industry, airport, environmental industry, petrochemical enterprise, tourism industry, culture and heritage institutions, logistics industry, intelligent buildings, intelligent residential district, chain supermarket, schools, national defense, etc..

■ Software Compatibility

1、 The software is compatible with equipments like PC DVR、embedded DVR、DVS、NVR、IP Camera, etc..

2、 The software integrates other systems like security alarm system, parking lot control system and access control system, etc.

For now, the software supports all the monitoring equipments from our company as well as the whole series products of the following companies—Hikvision, Dahua Technology, Hanbang Technology, Launch Digital, Huanghe Digital, UniMAT, YAAN, Hichip Vision. Other incompatible devices can also be inserted and put into use with our platform by providing their network and decoded SDK, which would be used to develop based on our JSPA.

■ Comparisons between the Platform and Traditional Monitoring Software

Comparative Item	Monitoring Software Attached to Branded DVR or Traditional DVR Centralized Monitoring Software	Network Video Monitoring and Management Software Platform
Customized	Unsupported or customized really simply	The platform not only can be customized with specific features according to user's needs but also can be inserted ads of clients
Remote Control	Can only watch videos and control pan	Apart from videos display and control, users can perform parameter setting and user's access privileges control through IE
Multiple User Connection	Unsupported to monitor real-time images by multiple users	Realized needs of on-line monitoring and controlling by multiple users through media streaming service
Cluster Compatibility	Can afford to control, manage and storage only single	Can support to control and manage by multiple DVR cluster and distributed or consolidated storage
Video Storage	distributed storage only	Adopted centralized storage or distributed storage flexibly according to network structure
Cascading	Unsupported; point to point only	Realized needs of unified managements among multilevel systems
Load Balancing	Unsupported	Supported; functions are being performed by multiple servers.

Numbers of Devices Accessed	Can only be accessed by a small number of devices. It charges a lot if the number is exceeded	Supported unlimited number of devices within tolerance range
Matrix Keyboard	Unsupported	Supported RS485, the professional matrix keyboard
Digital Matrix	Unsupported	Supported not digital matrix but also matrix cluster
Communication Protocols Compatibility	Supported to control very few communication protocols	Performing the second development to be compatible to all protocols according to new communication protocols
Voice Intercom	Supported one to one intercom only	Supported intercom among multiple users
Development Integration	Unsupported	Integrating the third-party system according to SDK of the platform
Network Architecture	Point to point only	Multilevel, distributed multi-server clusters
Stream Transmission	Unsupported	Supported not only stream transmission but also stream cluster
Management Pattern	Managed separately which needs several software	Network unified authentication; supported multiple users and roles
Network Function	Simplex; weak expansion capacity	Completely networked; strong expansion capacity
Unified Code for Devices	Unsupported	Unified Code for monitor and cameras; easy to operate
Device Accessed	Limited number, weak compatibility	Theoretically unconstrained
Management of the Additional Screen	Unsupported	Supported, can output VGA to TV wall directly.