MultiVision
Intelligent Surveillance

# DIGITAL VIDEO SURVEILLANCE APPLICATIONS FOR VERTICAL MARKETS

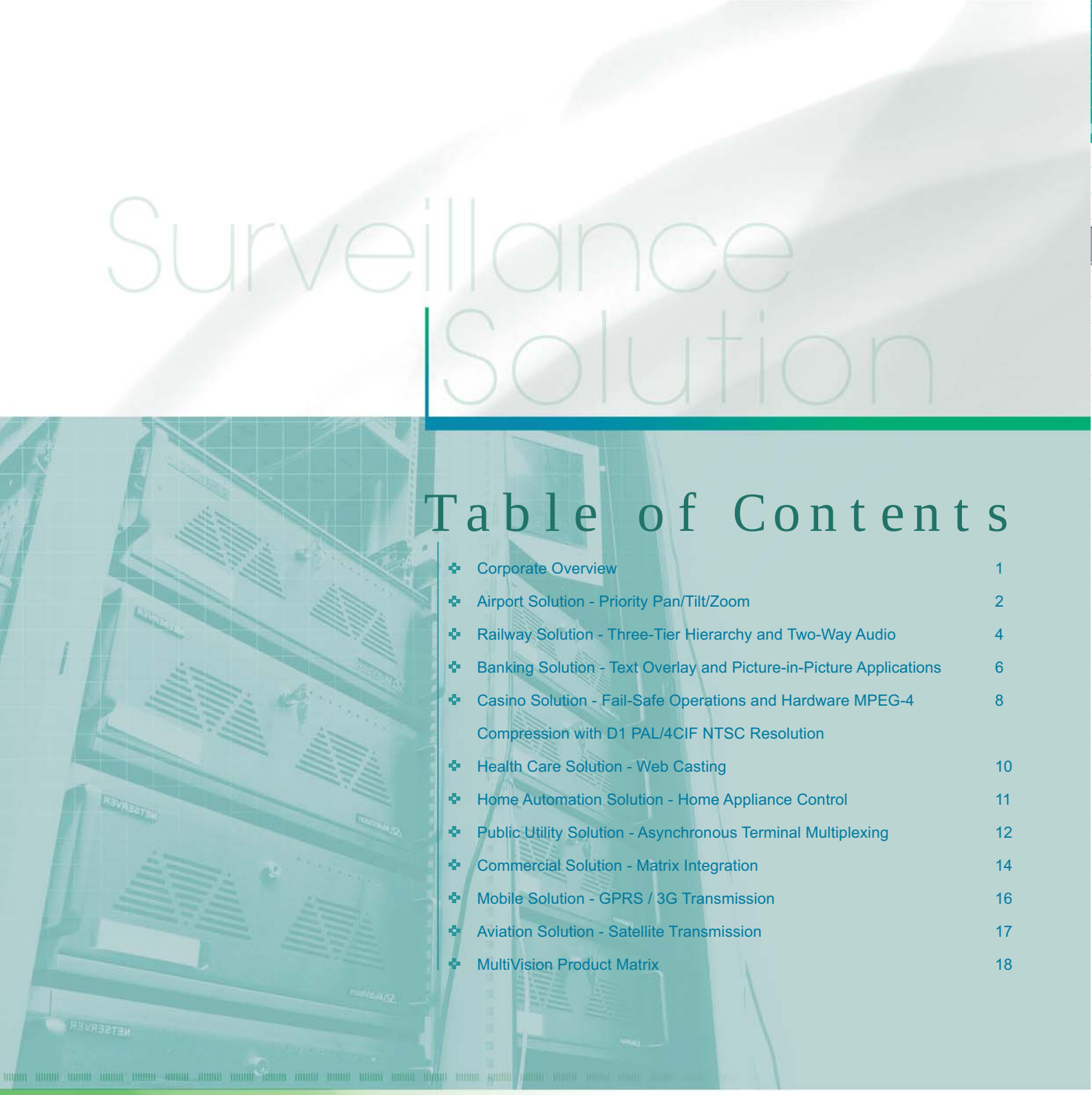


Fail-Safe Solution









Surveillance Solution

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# Corporate Overview

Digital video surveillance is the latest trend and development in the security industry. Customers are demanding for more advanced surveillance systems for more secure and effective security monitoring. With today's technologies and high speed data transmission made possible via the internet, surveillance technology can now offer real-time transmission and monitoring from almost anywhere at anytime.

MultiVision was established in 1986 by a group of entrepreneurial CCTV engineers with an aim to develop technologically advanced products and undertake major surveillance projects in the region. Major milestones achieved include the ISO 9001 certification in July 2002 and our public listing on the mainboard of the Singapore Stock Exchange in December 2002. MultiVision has since 1997 began our research and development in digital video surveillance products and we continue to engage heavily in the development of these products for the local and international markets.

MultiVision Intelligent Surveillance has designed and developed products based on an open systems architecture with unique and powerful surveillance functionalities. MultiVision's flagship products are the NetServer and NetCorder series which feature high-resolution, real-time image recording, display and transmission. We have also developed the Unet Client Workstation (UCW) and NetViewer series which allow users to control cameras and manage surveillance activities from a remote location. We ensure that we stay at the forefront of the technology curve and that our products adopt the latest innovations.

MultiVision has successfully bid and implemented projects globally. Our reference projects include the Chek Lap Kok International Airport and the Tsing Ma Bridge Crossing in Hong Kong SAR, the Entry-Exit Administration at the Beijing Airport and the Hunan Postal Services in the People's Republic of China, the State Rail Authority of New South Wales in Australia, the Bangkok Transit System in Thailand, the Sociedade de Jogos de Macau casinos in Macau, and the London Lines in the United Kingdom.


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MultiVision Intelligent Surveillance Limited

2003

How did we achieve these major projects? All these are made possible through the use of an open architecture and our ability and expertise in customizing our products to meet the project requirements. Also, the enhanced features of MultiVision products which ensure smooth integration with existing analog matrix systems give MultiVision the winning edge over our competitors.

This booklet will detail the projects MultiVision has executed for our customers in the different vertical industries. It includes the specific customization jobs we have carried out in these major projects. As all customer requirements are unique, why should their digital video surveillance systems be the same?

***How does your current CCTV system measure up?***

# Airport Solution

## Challenges

Hong Kong's Chek Lap Kok International Airport is the largest covered infrastructure in Hong Kong with 80 departure gates and a capacity to handle over 70 million travellers a year. The CCTV system has to be deployed over such an extensive area but yet remain simple to operate by all users.


There are a total of 13 control centers including the airport operation control center, airport emergency center, airport police control room, immigration control center, area wardens office, baggage reclaim control room, baggage handling control room, technical service division, technical service division in police station, customs control center, ground transportation center, airfield control center and fire control center. All the centers access the same video sources. As such, priority control becomes a challenging issue. In an emergency situation, which user should have the control of the camera so that the proper course of action can be determined?

## Solution

MultiVision developed a priority pan/tilt/zoom algorithm where each individual user is assigned a priority level over the cameras in the airport. This pre-fixed hierarchy that will determine who will have the ultimate control of the respective cameras and be able to position them accordingly so that a proper response can be coordinated in case of an emergency.

**Figure 1 - Hong Kong Airport Surveillance Systems Architecture**

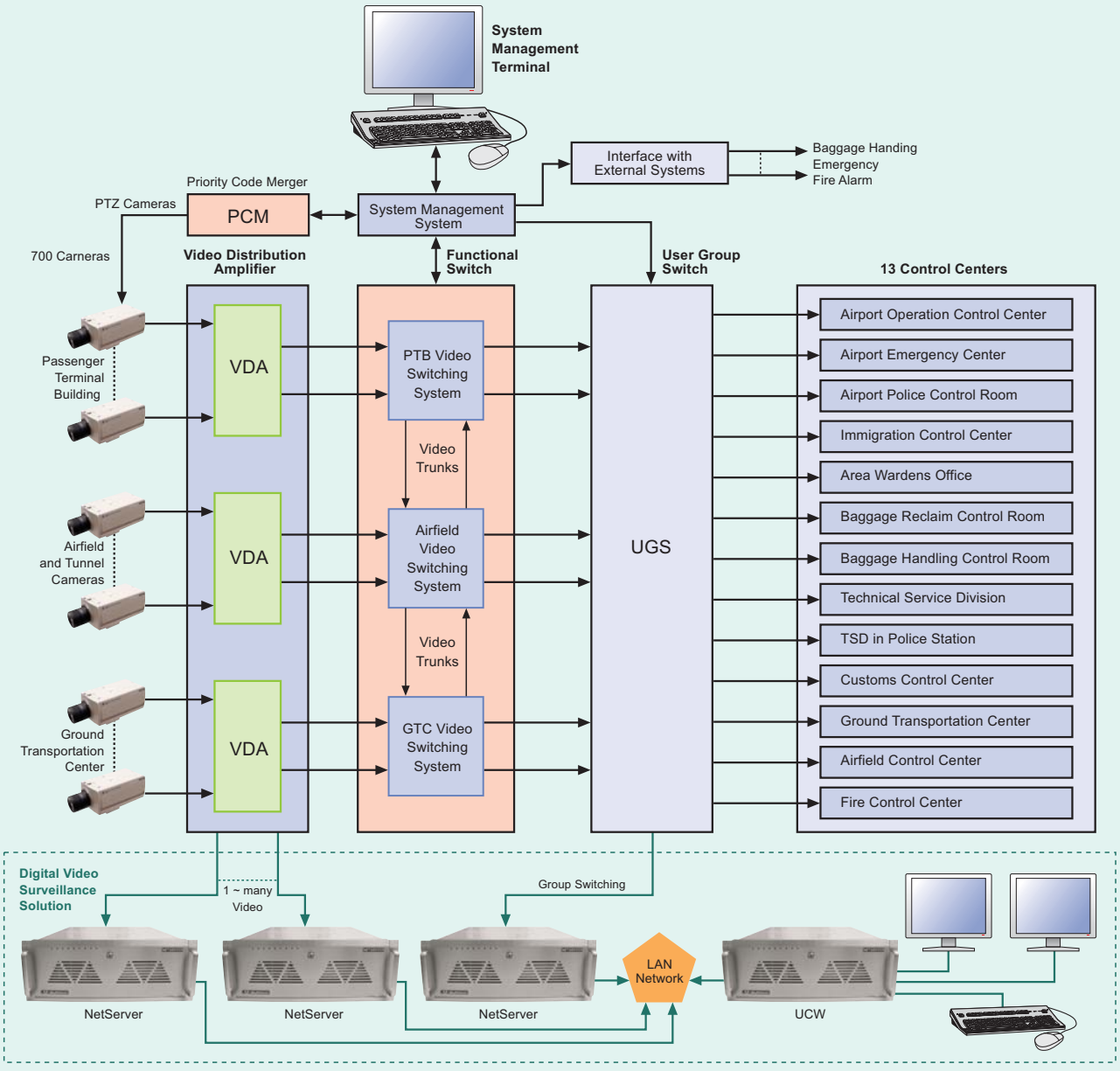



Figure 1 shows 3 analog matrix switches and a digital surveillance solution deployed to distribute the video to additional workstations without disrupting the existing system. The left side of the diagram shows the cameras connected to the video distribution amplifiers which are in turn passed through 3 matrix switches. They in turn converge at a "User Group Switch" which distributes the video to each control center and determines the operator's access to the respective video. The MultiVision digital solution along with our UCW is used as the control center monitoring device at each of the 13 centers throughout the airport to enforce the priority pan/tilt/zoom algorithm.

## Challenges

The State Rail Authority (SRA) of New South Wales in Australia handled over 300 million passengers in 2001 in its 302 train stations. Enhancing customer relationships is key to the organization. It has to date deployed a surveillance system with over 5,700 cameras in its train stations. In a bid to improve customer satisfaction level, it decided to enhance its surveillance system with a Help Point (HP) system installed at the platforms so that passengers can call the control room operators for help in cases where they need assistance. With some of the train stations unmanned and that the stations span across a huge geographical area, how can the help point requests be centralized for quicker and more effective responses and management?

## Solution

For the help-point function to be effective and facilitate communications between the control room operator and a passenger in need of assistance, a two-way audio communication channel need to be established and video images have to be made available to the control room operator. Many digital video surveillance solutions in the market cannot provide audio, let alone two-way audio for each camera in the system. MultiVision's NetServer was customized to provide for this application. Making the task even more daunting was the need to centralize requests from all the 750 help points for immediate action. A three-tier hierarchy architecture was established with the 17 regional centers of SRA. The help-point requests are therefore either handled by the local station or one of the 17 Group Remote Monitoring Location (GRML) operators at one of the regional centers or escalated to the next-level Central Group Remote Monitoring Location (CGRML). This arrangement ensures that passenger requests are responded promptly, raising the customer satisfaction level.


**Figure 2 - Remote Monitoring Network**

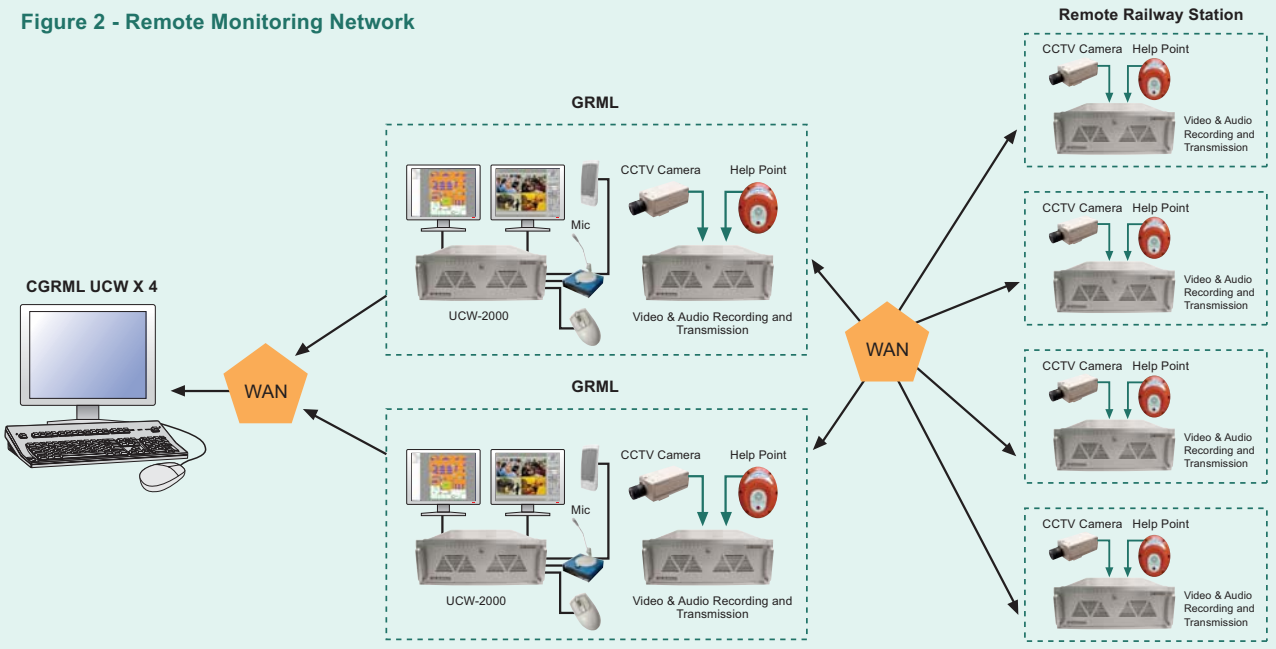



Figure 2 illustrates how easily the MultiVision digital solution was expanded for the scale of such a project. The remote railway stations in the diagram above can be either manned or un-manned sites. Apart from managing the help points, the GRML operators can monitor any of the cameras and at the same time, receive alarms/alerts indicating instances such as video loss, camera tamper and help-point tamper, etc, as well as allow the play-back of any alarm and recorded images at the help points. The CGRML operators are also able to access any of the 5,700 cameras in the network.

**Figure 3 - Station Solution**

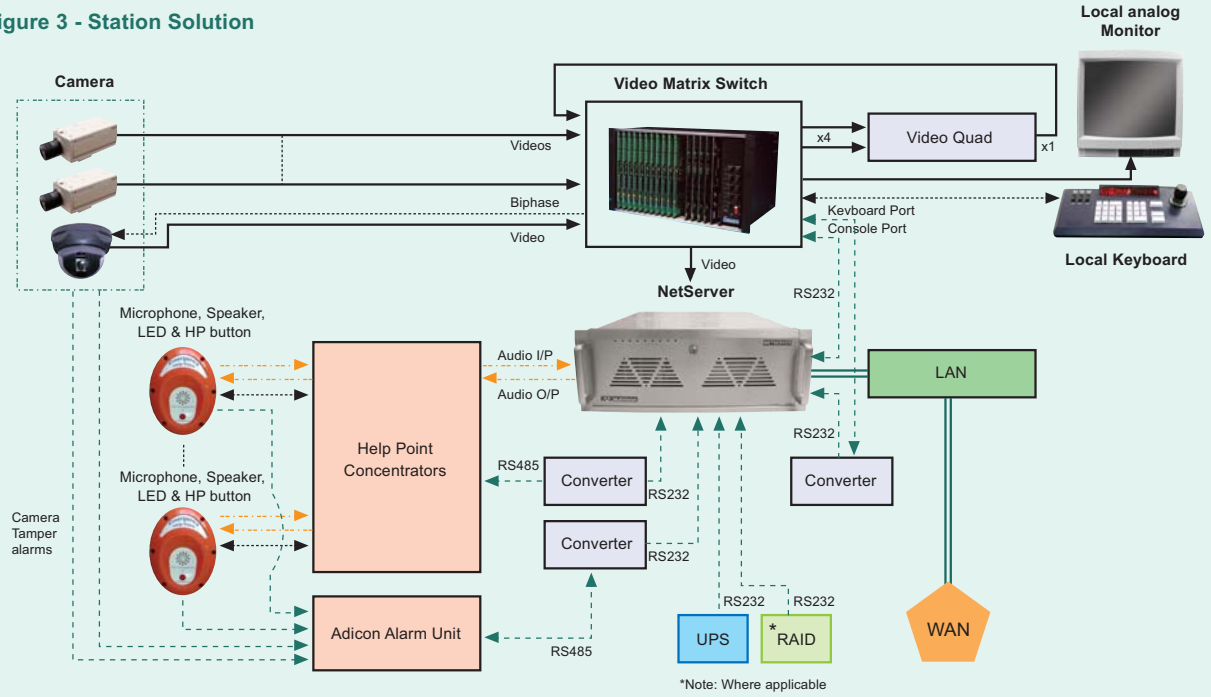
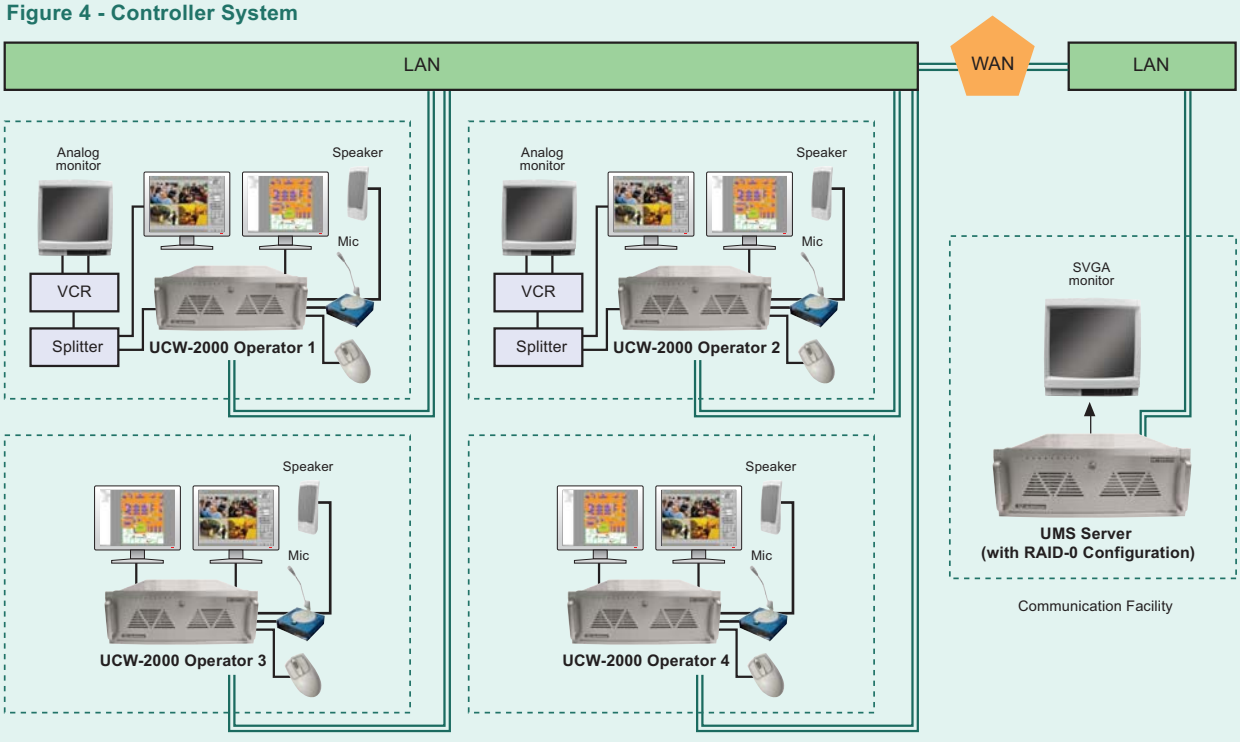



Figure 3 shows the video images from the station cameras being fed straight into a video matrix system. This is controlled by a NetServer. The help point concentrator provides the audio streams and alarms to the NetServer. The NetServer in turn provides video streams to the GRML/CGRML via the LAN. It also monitors the inputs and status of the matrix, RAID controllers and UPS systems at each station.

**Figure 4 - Controller System**




The heart of the system is the UCW. Using this software, all station maps including camera locations, help points and other required locations are within the easy reach of the various central station controllers who are managing the security of the State Rail Authority network.

# Banking Solution

## Challenges

Working with the leading ATM manufacturer NCR in China, MultiVision identified that banking customers will require quick and accurate identification matching, particularly in cases where cards are reported missing and fraudulent transactions have taken place. With over 50,000 ATMs installed and 1 million transactions executed each day, how can the bank retrieve information promptly and efficiently and at the same time, safeguard itself from ATM fraud?


## Solution

In order to provide the positive identification of a customer who is performing a transaction, a surveillance camera is installed within the limited space available inside a typical ATM to capture the image of that person. At the same time, as soon as the ATM card is inserted, the account holder's number is captured by the surveillance application together with the branch number, ATM number and date and time of the day of the transaction. The information is then superimposed on the video image as a text overlay for the whole duration of the transaction, allowing positive identification of the transaction and the individual using the machine.

Furthermore, the account number is used as the file name for cataloging and retrieval. In the retrieval program, a filter is provided so that different parameters including the account number can be used as the search criteria. In order to minimize the search time, a maximum of 1,000 records is returned if no parameter is specified.

Due to the sensitivity of the data, the system records the text as a string of numbers along with date and time in 100th's of a second. The text can be adjusted to various locations around the screen in the set-up of the software, offering users flexibility when applying the system to suit their needs.

ATM fraud is yet another key issue that banks face. ATM personal indentification numbers (PINs) are stolen from the ATM card owners through different methods ranging from peeping at the customer's PIN while he is making the transaction at the ATM kiosk to more sophisticated methods such as using key capture machines. The picture-in-picture application captures and integrates both foreground and background pictures -- of the customer at the kiosk, as well as, the customers queuing behind or standing near him. Given the more extensive coverage of the transaction surroundings, banks are empowered with more information for investigation and video images to be used as evidence, in the event of ATM fraud.

**Figure 5 - NetServer Interfaces with the ATM**

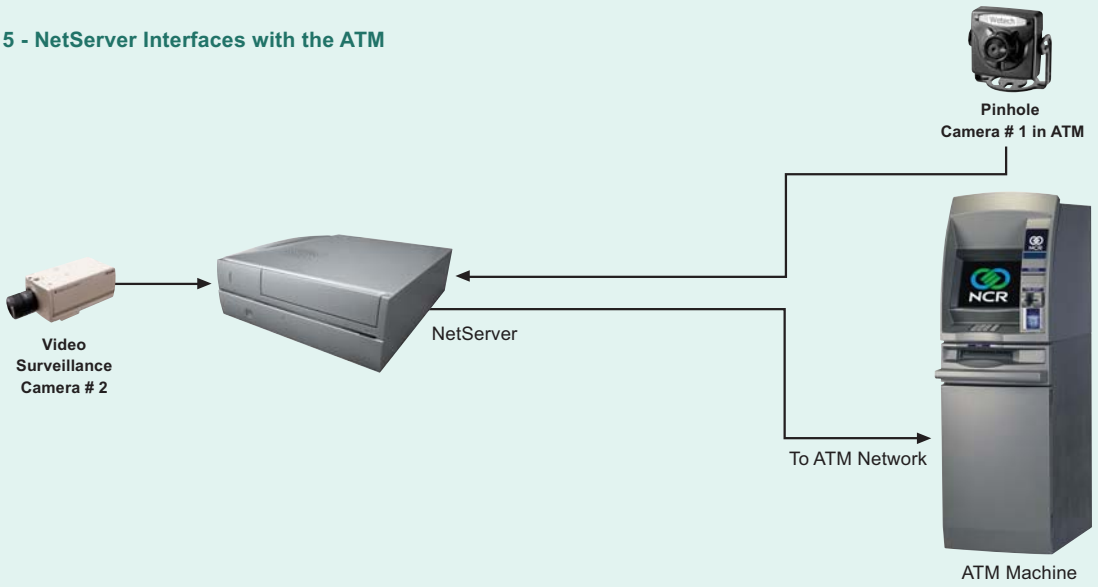



Figure 5 illustrates how the cameras and the NetServer are installed in the ATM to provide end-to-end digital video surveillance.

**Figure 6 - ATM Network with UCW**

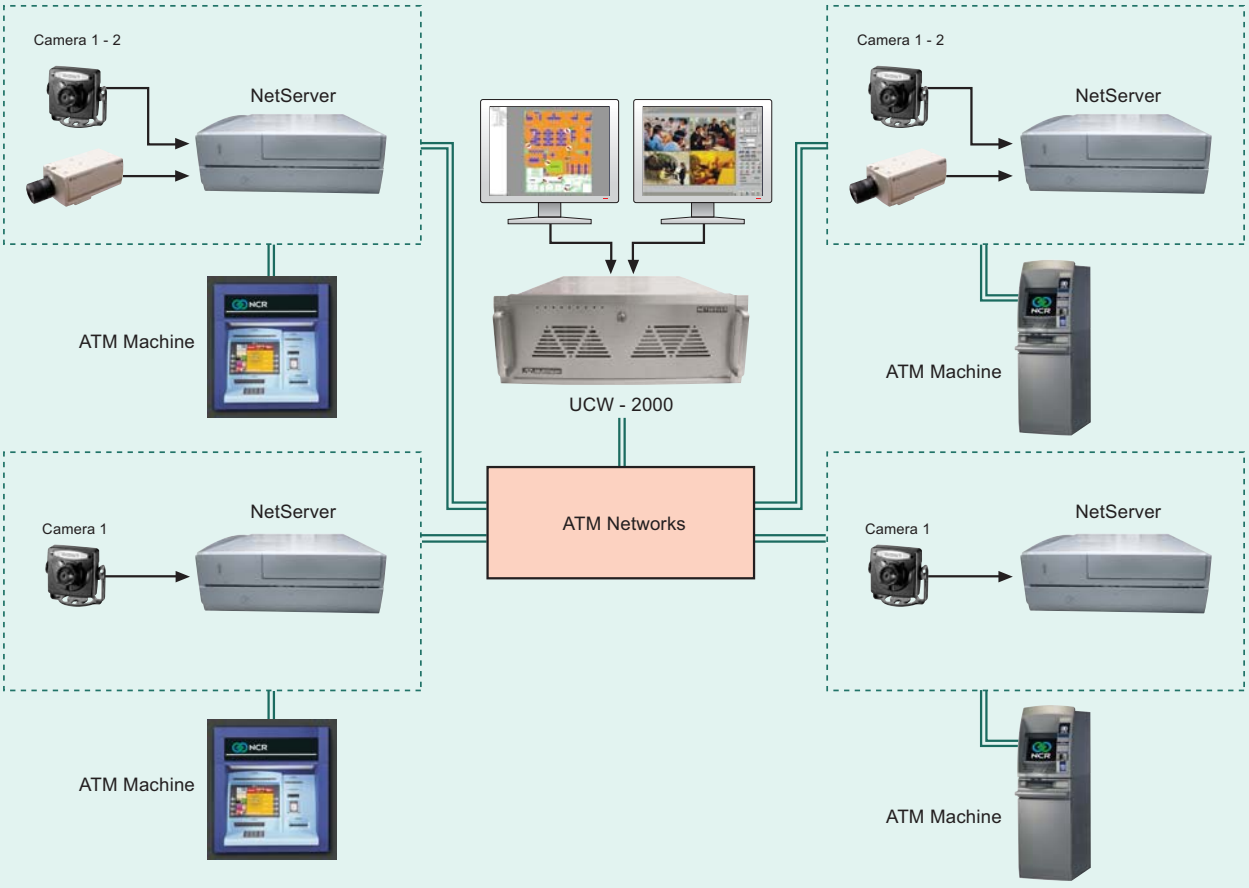



Figure 6 shows the use of MultiVision's UCW to allow remote access to each ATM via either the existing bank network or a separate network infrastructure.

# Casino Solution

## Challenges

The ex-Portuguese colony of Macau is famous for its casinos. The Sociedade de Jogos de Macau (SJM) operates 16 casino facilities in Macau and contribute US$1.3 billion in tax revenue to the Macau SAR government in 2003. The surveillance application is a mission-critical component of the gaming business as the governing board will not allow the casino to operate if no video images are recorded and available for review.

It was also pertinent for the casino operator to migrate from recording on the old analog VCR-based system to a digital platform as it was becoming more and more difficult to manage the huge number of tapes used for recording images from the 2,500 plus cameras in the casinos. With zero down time for the platform migration, how did SJM successfully and instantly transfer its video images from more than 2,500 cameras to live operation while ensuring that the video footages are either of equal or higher quality than the existing ones?

## Solution

In order to minimize the disruption of the analog recording process, a new matrix switch was introduced so that the camera inputs could be directed to the newly-introduced digital recording system. The new digital video recording system (based on the MultiVision NetServer Legend) is equipped with MPEG-4 hardware compression chipset which provides a real-time frame rate of 25 fps and D1 PAL/30 fps and 4CIF NTSC resolution. Backup NetServers were installed at each site with heart-beat monitoring so that should any primary NetServer fail, operations could be failed-over to the secondary NetServer in less than 1 second. The fail-safe operations and high quality image recording are unique capabilities of MultiVision, unmatched in the industry.

Another value-added application included in the casino solution is camera touring. The application allows the NetServer systems to be set up such that they control the cameras to magnify and focus on the gaming table and especially at the designated areas where the gambling chips are placed. The cameras will do a routine capture of the video images of the chips placed by each player. This helps to counter any dispute that should arise on the amount of bet placed for any specific game.

**Figure 7 - Casino Network**

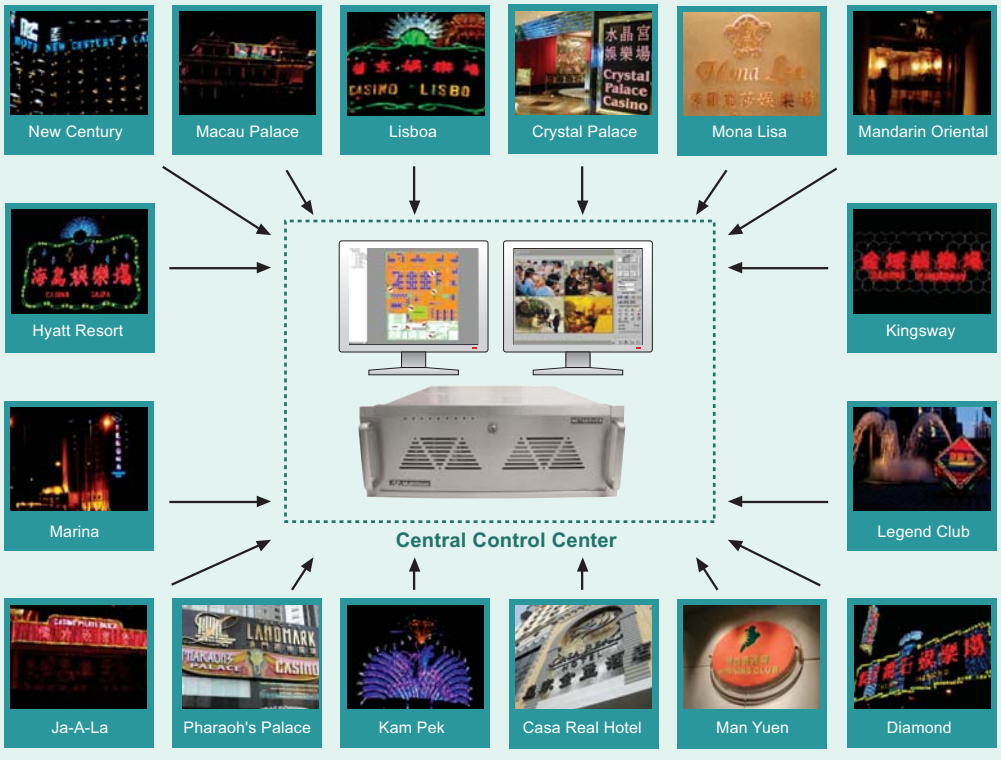


Figure 7 shows the layout of the central control room of the casino network. In this case, the 16 remote casinos are controlled from a central location. Each casino has its own operator which is able to bring up audio and video images from its local site. In the event of a failure, they can be recovered from the backup system.

**Figure 8 - Casino Systems Architecture**

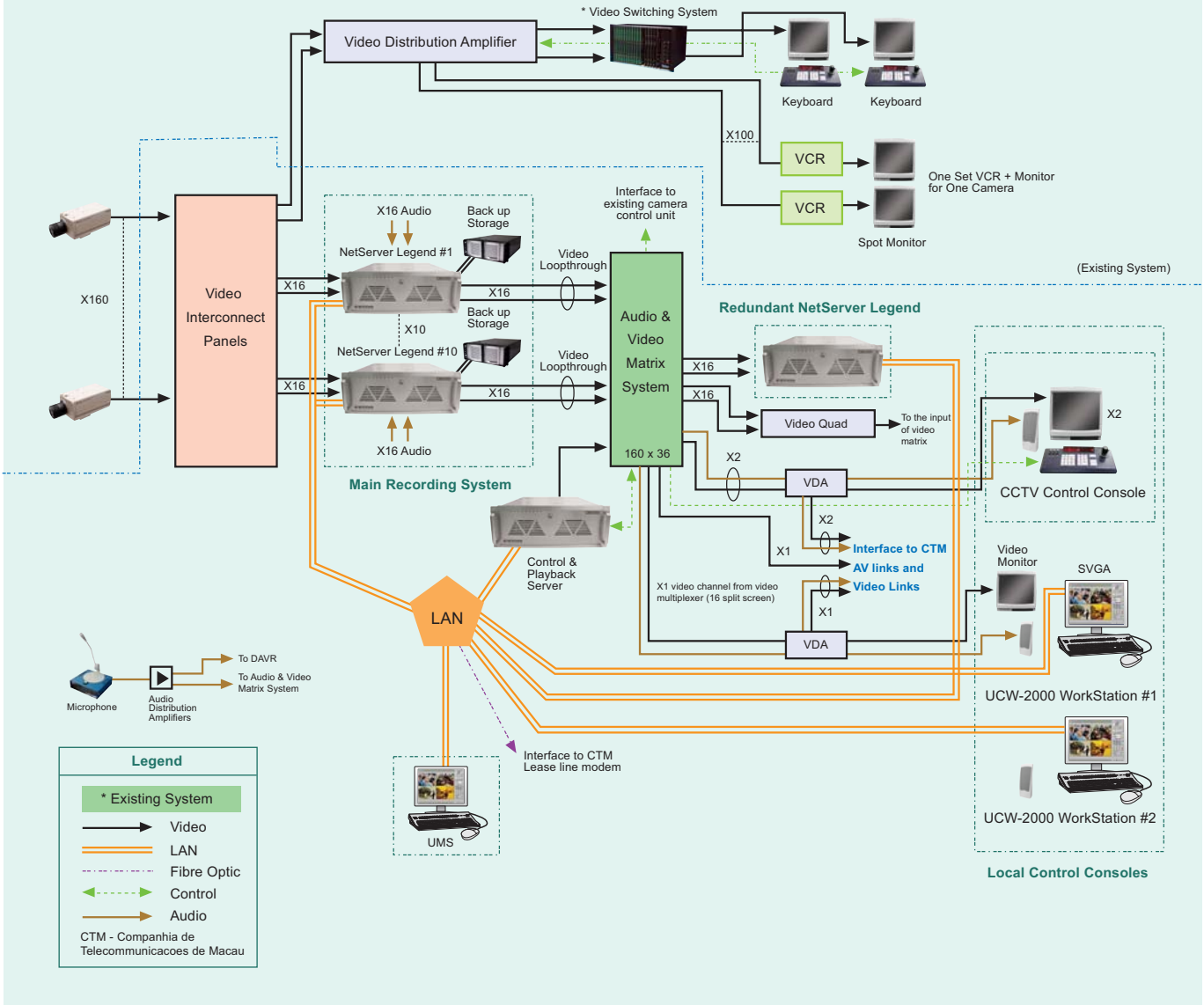



Figure 8 shows the casino network solution that was deployed by MultiVision. The key feature of the solution is the use of a redundant NetServer system via the Unet Management Server (UMS). Within a split second where a fault is detected on a machine, the UMS would automatically switch video and audio to the redundant system and alert the staff of the fault which may have occurred in either the NetServer or the backup device. The combination of high resolution (D1 at 704 X 576) image, analog real-time display, digital real-time recording (25 fps PAL), the fail-safe operations where the system initiates a fail-over to a backup system within 1 second and remote monitoring using fiber optic cable transmission for a mission-critical environment with a fail-safe operation are firsts in the digital video surveillance industry.

# Health Care Solution

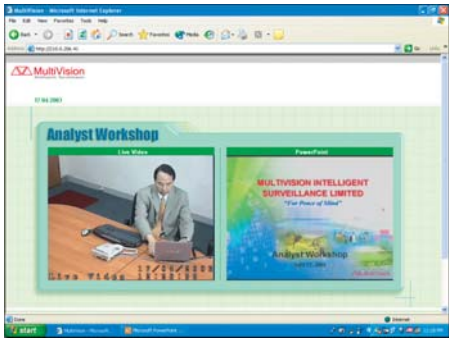
## Challenges

Infants are left in the Miami Children Hospital and day care centers in the USA either because they are sick or that their parents cannot take care of them during the day while at work. Many anxious parents and relatives would however like to be able to monitor their children constantly or do so remotely via the internet, if it is possible. With hundreds of people who may want access to the video images at the same time, ensuring that the right video image is provided and that the system resources are sufficient for remote monitoring is a real challenge. How can a healthcare organization meet these needs?

## Solution

A web site was set up with user ID/password control. Users were given their unique logins to access the video images that they were authorized to view via a web browser application. This protected data integrity and the privacy of the users. At the same time, a web casting application was customized where the NetServer can broadcast up to 50 simultaneous video streams to support the many viewers who may want to have access to the same video image.


The synchronization between the remote sites in sending and receiving the video images is not a trivial matter. Theoretically, each DVR, using MPEG 4 compression, requires a bandwidth of 8 Mbps to send 16 video channels of 25 fps and the client application requires a bandwidth of 18 Mbps to receive 36 video channels of 25 fps for remote monitoring. This is only possible in a local LAN environment. The NetServer and UCW have already been fully tested to support the hundreds of systems and tens of alarm-triggered monitoring and recording. It has also proven to work with the full spectrum of communication services, ranging from a GPRS modem of 28.8 Kbps to a 100BaseT LAN at 100 Mbps. This is another example illustrating that MultiVision's communications and handshaking protocol is now a well proven solution, fully functional and operational in many demanding situations.




This web-casting solution can be further extended as a video conferencing solution. MultiVision deployed this solution in an Analyst Workshop session in April 2003. The screen showed the presentation material and the speaker simultaneously. All that the viewers needed to do were to type in the IP address of the NetServer and they were able to view the live video footage. The audio portion of the conference can either be provided by using NetMeeting, or if better audio quality is required, an audio conference bridge would be set up.

# Home Automation Solution

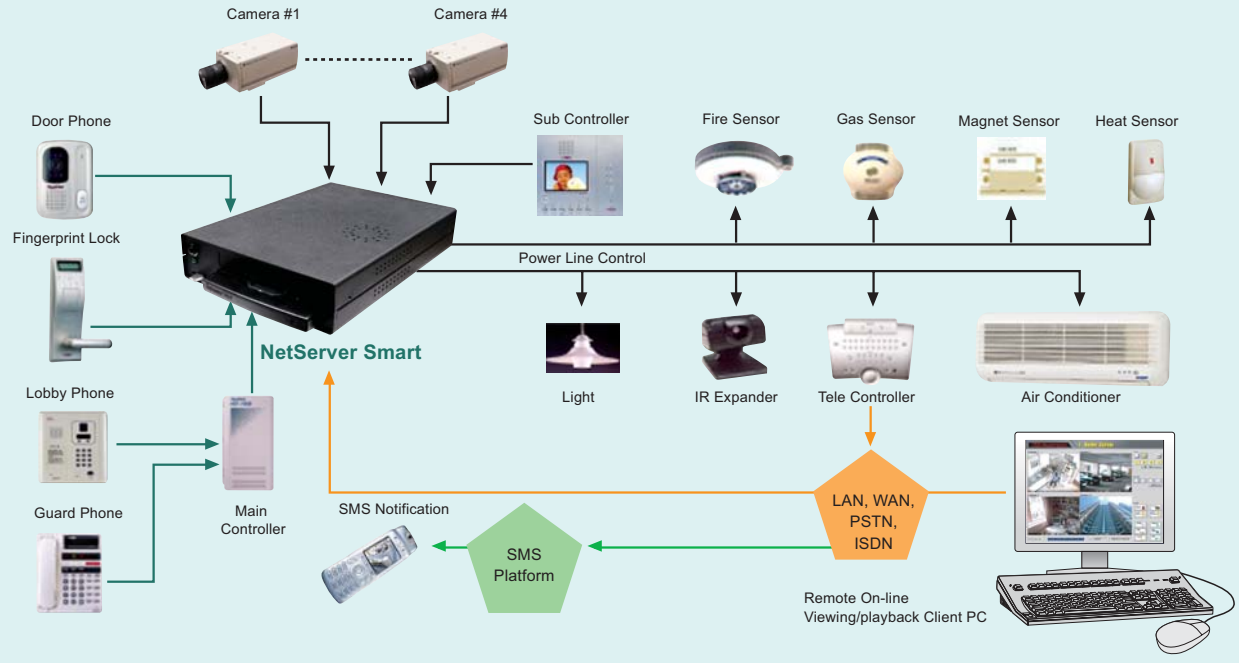
## Challenges

A surveillance solution for the home market has to provide the user with early notification of incidents occurring and remote control of the home appliances. How should the surveillance solution be customized to offer customers these features?

## Solution

The Intelligent Home (I-Home) digital video surveillance application is a customized solution specifically designed with the home user in mind. A graphical user interface gives the end users the ability to control household appliances connected to the interface of the system. At the same time, users are notified of incidents occurring at home through the e-mail alerts/alarms triggered either through motion detection or the activation of the various alarm devices e.g. infra-red sensors. By customizing the e-mail addressee format to that of a mobile phone number and the SMS platform server, a SMS notification can also be sent out to the end user, he/she can retrieve the image via any PC using a web browser.


**Figure 9 - Home Automation Solution**




The system can be set up based on the NetServer Smart system (Figure 9). This system is extremely small and comprises an external interface for connectivity between all I/O devices. Standard components such as the security intercom system can be plugged into the interface board for a total solution.

# Public Utility Solution

## Challenges

The leading power utility company in Hong Kong with over 200 substations wanted to deploy a digital video surveillance system with intrusion detection and remote monitoring capabilities where a better response can be coordinated in the case of emergency. Also, a public address system was to be installed to warn trespassers from straying into the remote facilities. The difficulties of the task were made even more challenging since many of the power plant substations to be monitored were located in remote areas. These locations typically did not even have a standard telephone connection. Broadband connectivity in these cases would be out of the question. How did MultiVision meet the remote monitoring requirement for this leading utility provider in such a challenging environment and given such severe constraints?

## Solution

The substations were categorized into those with LAN connection, broadband internet access and those with only PSTN connection. Phone lines were installed into those remote locations; and in the control room, an Asynchronous Terminal Multiplexing System (ATMS) was installed so that connection to each individual substation could be selected. A two-way audio application was also used over all the systems including the PSTN lines to sound warnings to trespassers. The capability to send both video and two-way audio over such a narrow bandwidth required MultiVision to provide specific customization.

**Figure 10 - Public Utility System Architecture**

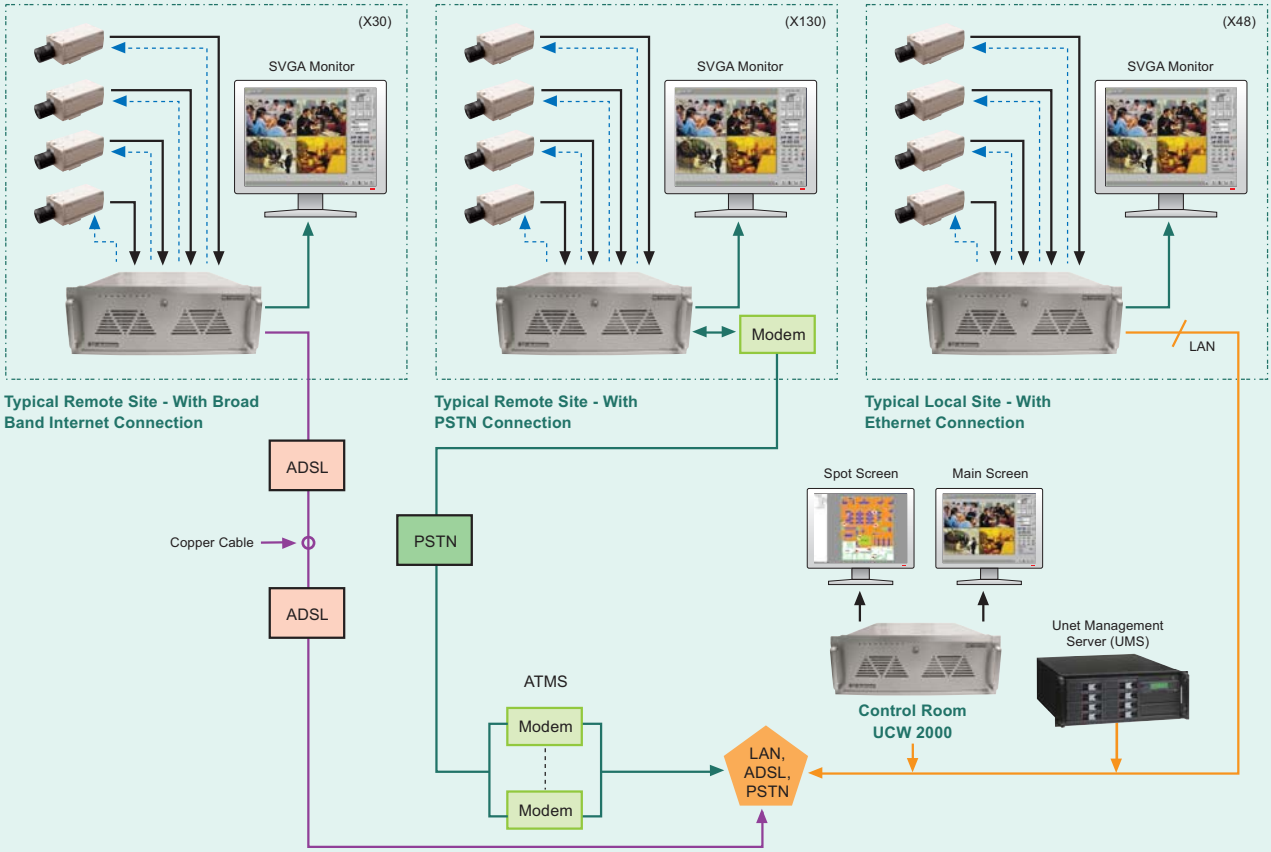



Figure 10 shows the network connection via the ADSL/PSTN/LAN lines. The middle section of the diagram shows the connections via the normal phone lines (PSTN) multiplexed using the ATMS. The right-hand side shows connections via corporate LAN services and the left-hand side shows connections via broadband ADSL lines. Each of these sites can be controlled by the UCW. The UMS was implemented to control and store passwords and manage the configurations of each of the systems.

**Figure 11 - Security Bureau Systems Architecture**

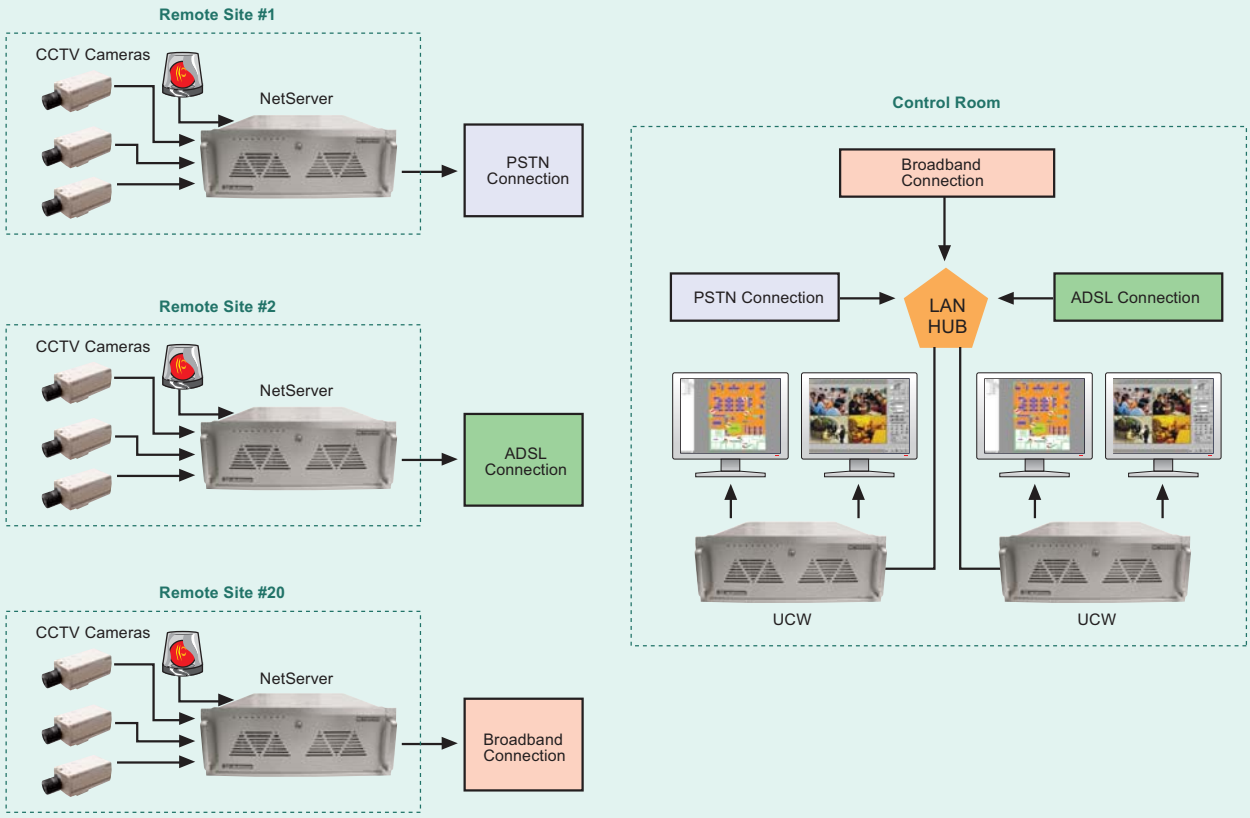



Figure 11 also illustrates a similar application MultiVision has received many requests for i.e. the monitoring of offices and factories in a typical commercial environment. An example is the monitoring of clients' premises services offered by a Security Services Company. Similar to the way traditional security alarm systems are monitored over standard telephone network, the ADSL or broadband options available today offer almost real-time image transmission, in addition to alarm monitoring from any location.

Each system has its own unique IP address. In the case of an ADSL connection, we suggest the use of a DNS provider to provide a dynamic IP address for the client. The building security system is then interconnected to the alarm inputs of the NetServer. This means taking an output from the building alarm system, typically from the auxiliary output and switching it via relay to a NetServer. When the security alarm is triggered, in addition to the sirens activating, the NetServer would then also automatically start recording using either a preset camera(s) or pre-position a camera to a certain location and start the recording. At the same time, the central monitoring station will also receive a signal from the security system. In this case, they can view the live video from the site as well. The remote control room has the facilities to select and control the various cameras onsite including the pan/tilt/zoom cameras.

Should the client have privacy concerns about "outsiders" viewing the system for reasons other than security, the application can be customized such that remote surveillance can only be activated when the alarm has been triggered. This safeguards the interests of the security-conscious clients.

# Commercial Solution

## Challenges

Analog CCTV systems have been around for many years and many commercial organizations have what are today considered as outdated CCTV systems. Some of these cameras may be controlled by matrix switches which are no longer manufactured. Most users want to migrate from analog CCTV to digital video surveillance while still keeping their investment in their cameras and matrix switches. How can they be assured that their new digital video recording system can integrate seamlessly with their old pan/tilt/zoom cameras?

## Solution

MultiVision has a long track record in both the analog and digital video surveillance markets. Our history goes back to our first analog matrix switches in 1986 and subsequently, our early entry into the research and development of digital video recording solutions in 1997. As such, many of the protocol drivers for most branded cameras and matrix switches can interface seamlessly and smoothly with the MultiVision range of digital video surveillance solutions. To support the discontinued matrix switches without protocol drivers, we have the ability to reverse engineer the control protocol by either reading from the e-PROM or using a data scope to capture the protocol. As such, users do not have to totally overhaul their equipment. Their early investment in the cameras and matrix switches can be protected and thus the life of the systems extended.

**Figure 12 - Commercial Solution Systems Architecture**

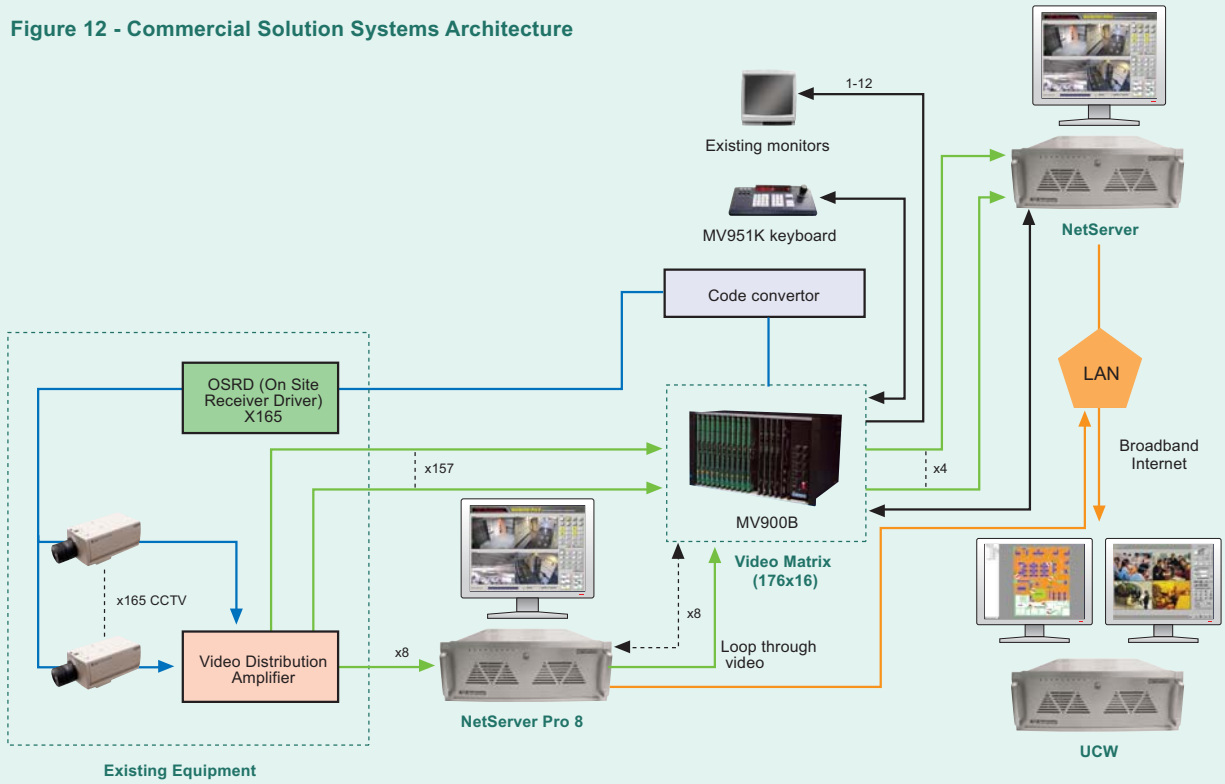



Figure 12 shows a factory site with 165 cameras being hooked up to a video distribution amplifier. 157 inputs are being fed into the video matrix, while 8 are being fed via a NetServer PRO 8, they then looped through to the video matrix. These 8 inputs are therefore recorded before passing to the video matrix system. From the video matrix, we have 12 existing analog monitors with keyboard. The 4 additional monitor outputs are being fed into the NetServer and then via a LAN connection, routed via the internet, and finally to a UCW. From this UCW, the operator can oversee and control all cameras from this remote site.

**Figure 13 - Enterprise Solution Systems Architecture**

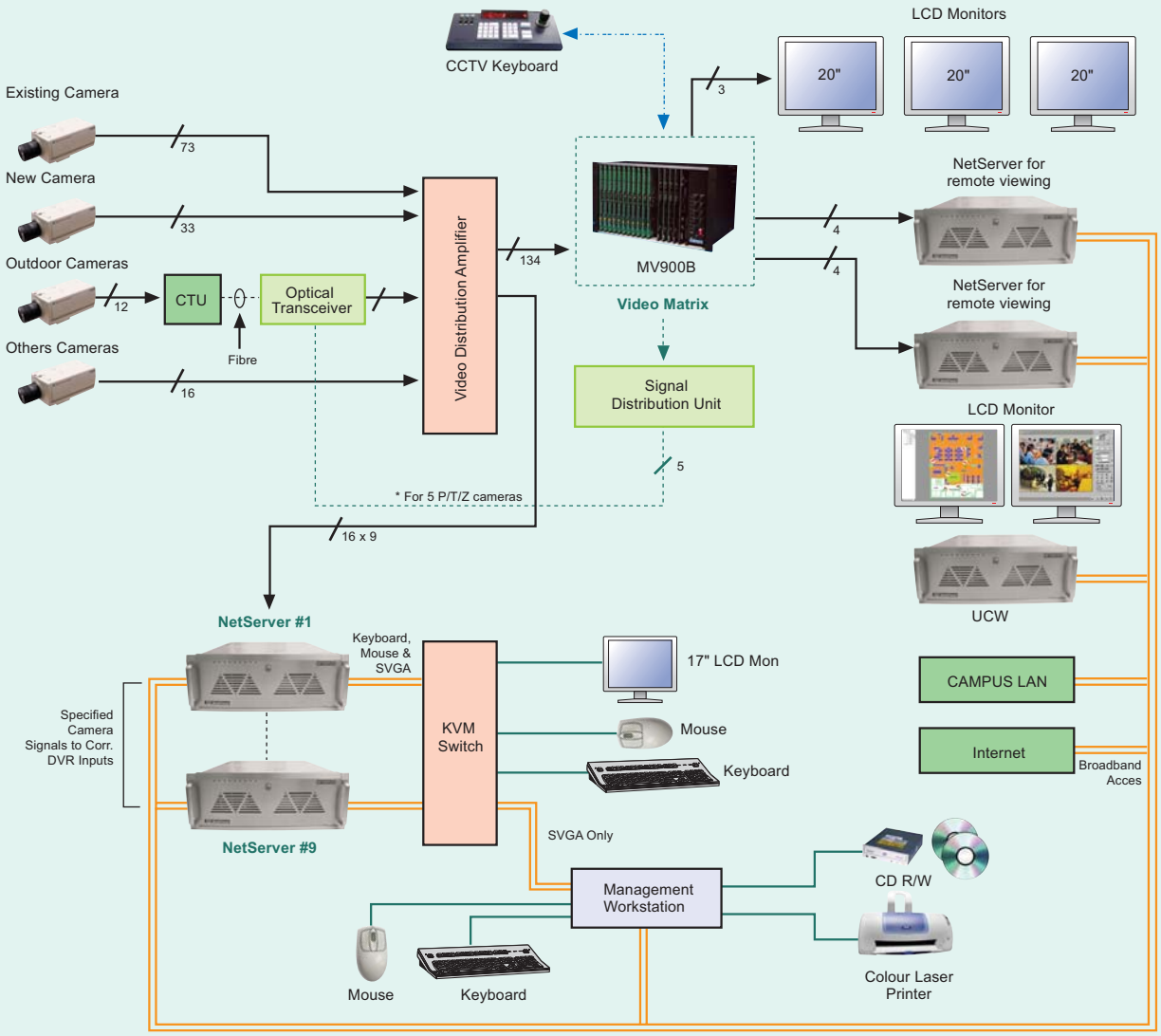



Figure 13 shows a solution which is similar to the commercial solution in Figure 12 but of a larger scale. Similar to the system customized for the commercial site, this configuration has various types of cameras throughout the complex all feeding into a Video Distribution Amplifier (VDA). All cameras are then taken from the VDA and fed into 9 NetServer systems for 100 percent recording. All the NetServers are then switched into a KVM switcher for local monitoring, if required. The other output from the VDA is fed into a MultiVision MV900B video matrix. This matrix comes with traditional analog outputs with keyboards in addition to the digital output. Multiple video signals are then selected from this matrix and fed into the NetServers for digital remote monitoring.

# Mobile Solution

## Challenges

To provide surveillance anytime, anywhere and on any device meant that people on the move can still view digital video images even when they are travelling in a vehicle. What type of system can be deployed inside a vehicle on the move and how can live images be captured and transmitted (in sufficient quality) for remote monitoring?

## Solution

Numerous factors have to be taken into consideration before deploying a mobile solution. The system itself must be compact and has to be able to sustain a level of vibration which is not common in a static product. MultiVision's NetServer Smart is based on a notebook architecture, is of a small form factor and it can withstand vibrations similar to that experienced when using a notebook on a plane. A special shock absorbing
mounting kit is provided to absorb/soften the extraordinary vibration experienced during transportation. The NetServer Smart can support TV composite output so that a small display unit can be installed in the vehicle. Furthermore, it is also a detachable system that does not require the keyboard and mouse to be connected. Any video files required can be mirrored back to another NetServer Smart. Transmission of the video images is made possible using the GPRS/HSCD circuits/3G networks available on mobile phones. This can provide an uplink speed of 28.8 Kbps and maintain a frame rate of around 1 fps.

**Figure 14 - Mobile Solution**

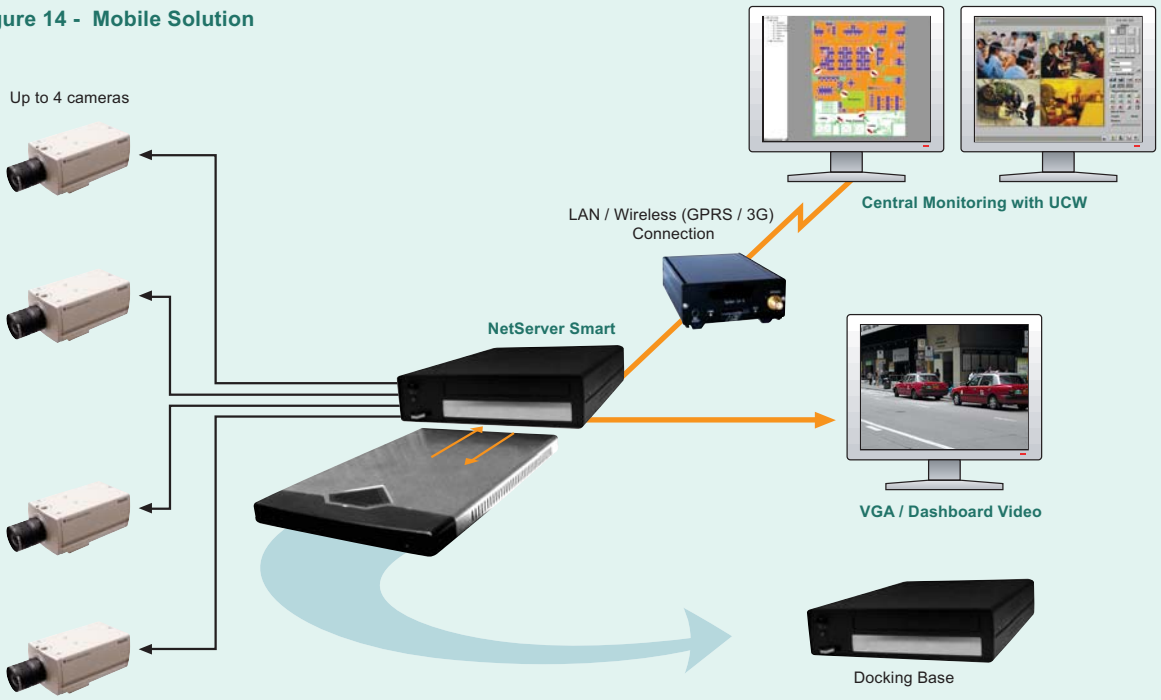



Figure 14 shows a mobile solution using the NetServer Smart with a removable module. The video images can either be transmitted real time using the GPRS/3G link or offline using another NetServer Smart as the docking base.

# Aviation Solution

## Challenges

Since the 9-11 incident, security at airports and in aircrafts has been significantly tightened to prevent any possible terrorist attack. Some airlines have pioneered the installation of on-board digital video surveillance equipment by fitting cameras in the cabin and monitoring devices in the cockpit. The ideal scenario is that both the pilot and air traffic management crew on the ground can have access to the same video images so that an informed course of action can be taken should there be emergencies. How can the video images be transmitted from the plane when it is cruising at hundreds of miles an hour and at high attitude of thousands of feet in the air?

## Solution

MultiVision has conducted a proof-of-concept trial by installing a rugged NetServer system inside an aircraft. By multiplexing the bandwidth of two satellite phones (providing 19.2 Kbps bandwidth), images were transmitted from the plane to the ground. With this proof of concept, the system may be extended to production use after a formal FAA certification has been completed.

**Figure 15 - Aviation Solution**

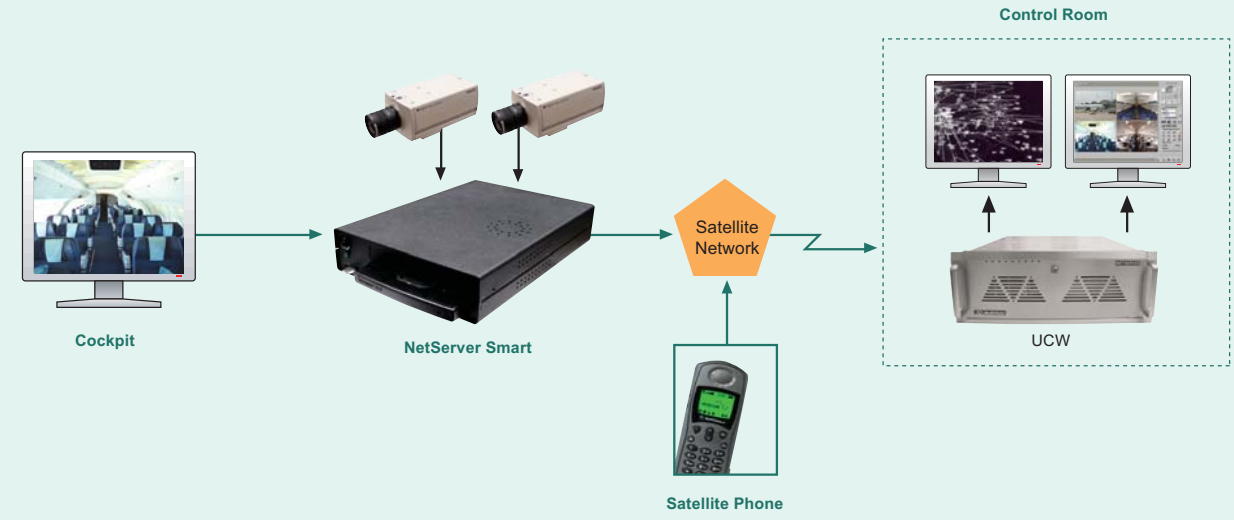



Figure 15 shows the installation of the digital video surveillance solution in an aircraft. The camera images are displayed at the cockpit as well as transmitted to the air traffic control center using satellite phones.

# Multivision Product Matrix

MultiVision offers our customers a comprehensive range of digital video surveillance products and solutions, namely the NetServer and NetCorder series of digital video recorders and UCW and NetViewer series for remote management. Features of the NetServer and NetCorder products are detailed in pages 20 and 21.

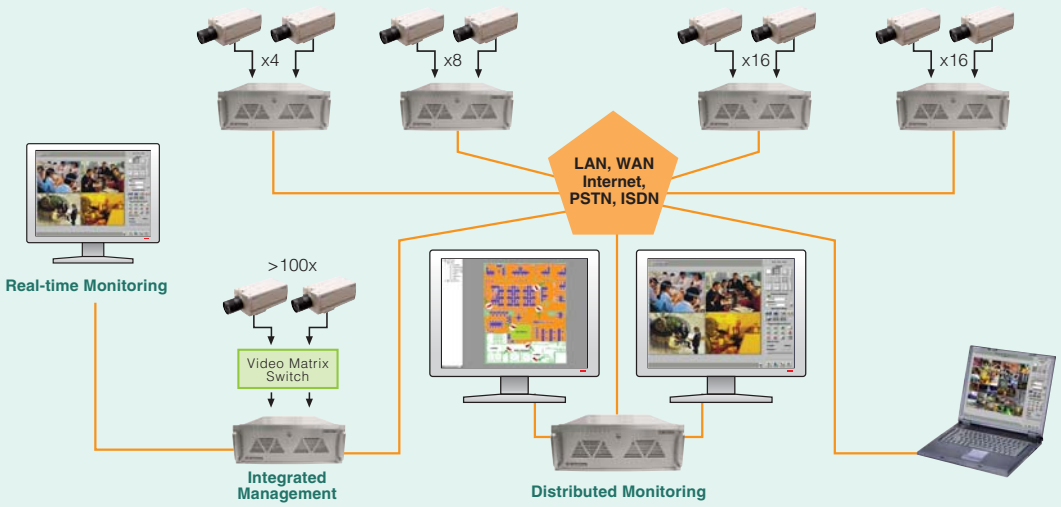
The UCW is a digital video management system developed by MultiVision which runs in parallel with our NetServers. The PC-based software program is user friendly and provides the end user with control, allowing central monitoring and management of multiple NetServers at different locations. The UCW is a fexible and cost-effective solution far beyond the conventional web-based remote monitoring software.

The remote client software, the NetViewer, is designed to work in tandem with MultiVision's NetCorder range of products. NetViewer is a PC-based software program which operates under the Microsoft Windows operating system. It can also support hardware compression cards and through the video monitor display video images real time.

## General System Features Of UCW And NetViewer:

- Complete, easy-to-install, user-friendly and powerful video surveillance management system
- Online viewing, recording and playback (or any operation combination of remote sites simultaneously via LAN, Internet, ISDN and PSTN)
- User friendly and easy-to-control on-video Pan/Tilt/Zoom
- Multi-view screen display: Access to live or play-back images at once
- Camera locations displayed as icons on GUI-based maps for easy selection and identification (Not available on NetViewer series)
- CIF resolution video display on UCW and NetViewer Super and D1 PAL / 4CIF NTSC resolution display for NetViewer Legend
- Minimal loss of quality with remote transmission
- Does not affect local recording and transmission
- Receives alarm-alert notifications from any remote site
- Re-sizeable digital zoom for live or playback video
- MPEG-4 compression technology
- Camera touring - Automatically sequences through multiple cameras from different remote sites (Not available on NetViewer series)
- Programmable overlay indicating time, date, site and camera locations and names
- Adjustable frame rate and video quality (Not available on NetViewer series)
- Multi-lingual capability
- Remote viewing password and user control management

**Figure 16 - Integrated Digital Video Surveillance Solution**



| List of Features | Remote Client For NetServer Series | | | Remote Client For NetCorder Series | |
|---|---|---|---|---|---|
| **Systems Specification** | **UCW - 500** | **UCW - 1000** | **UCW - 2000** | **NetViewer Super** | **NetViewer Legend** |
| **Video Features** | | | | | |
| Maximum remote live videos | 4 | 16 | 36 | 16 | 1 (Max 16 video channels with hardware decompression card) |
| Video display resolution | PAL: 384x288<br>NTSC: 320x240 | PAL: 384x288<br>NTSC: 320x240 | PAL: 384x288<br>NTSC: 320x240 | PAL: 352x288<br>NTSC: 352x240 | PAL: 704x576<br>NTSC: 704x480 |
| Multi-view screen display formats | 1 and 4 | 1,4,7,9,10,13 and16 | 1,4,7,9,10,13,16, 25 and 36 | 1,4,7,9 and 16 | 1 and 4 (Up to 16 analog outputs) |
| Overlays for time, date, site name and camera ID | ✓ | ✓ | ✓ | ✓ | ✓ |
| Refresh rate | Up to 4 real-time display channels | Up to 9 real-time display channels | Up to 9 real-time display channels | Up to 9 real-time display channels (Up to 16 real-time display channels and analog video outputs with hardware decompression card) | Up to 1 real-time display channels (Up to 16 real-time analog video outputs with hardware decompression card) |
| Dual-display operation | X | X | ✓ | X | X |
| Programmable camera touring | ✓ | ✓ | ✓ | X | X |
| Full-screen mode (with all control panels and buttons hidden) | ✓ | ✓ | ✓ | ✓ | ✓ |
| Re-sizable digital zoom | ✓ | ✓ | ✓ | ✓ | ✓ |
| For support hardware decompression card with analog video output | X | X | ✓ | ✓ (Max 16 video channels) | ✓ (Max 16 video channels) |
| **Recording Features** | | | | | |
| Maximum number of playback screens | 4 | 16 | 36 | 16 | 1 |
| Video recording resolution | PAL: 384x288<br>NTSC: 320x240 | PAL: 384x288<br>NTSC: 320x240 | PAL: 384x288<br>NTSC: 320x240 | PAL: 352x288<br>NTSC: 352x240 | PAL: 704x576<br>NTSC: 704x480 |
| Compression codec | MPEG-4 | MPEG-4 | MPEG-4 | MPEG-4 | MPEG-4 |
| Average frame size | 2.5K | 2.5K | 2.5K | 2.5K | 12.5K |
| Recording speed | Up to 100 / 120 fps (PAL / NTSC) | Up to 200 / 240 fps (PAL / NTSC) | Up to 225 / 270 fps (PAL / NTSC) | Up to 400 / 480 fps (PAL / NTSC) with hardware decompression card | Up to 25 / 30 fps (PAL / NTSC) |
| Circular-recording mode | ✓ | ✓ | ✓ | ✓ | ✓ |
| **Playback Features** | | | | | |
| Maximum playback screen | 4 | 16 | 36 | 4 | 17 (Hardware decompression card and analog output) |
| Playback at different speeds, shuttle forward and backward | ✓ | ✓ | ✓ | ✓ | ✓ |
| Image capture, zoom, save and print-out | ✓ | ✓ | ✓ | ✓ | ✓ |
| Fast search by site, camera ID, time and date | ✓ | ✓ | ✓ | ✓ | ✓ |
| Playback from remote or local site(s) | ✓ | ✓ | ✓ | ✓ | ✓ |
| **Other Features** | | | | | |
| Simultaneous recording, playback and online viewing | ✓ | ✓ | ✓ | X | X |
| Dual-display with map and camera-icon indications | X | X | | X | X |
| Alarm-alert notification with pop-up camera image from remote site(s) with sound | ✓ | ✓ | ✓ | ✓ (Message Only) | ✓ (Message Only) |
| History log of alarm events | ✓ | ✓ | ✓ | ✓ | ✓ |
| Adjustable frame rate and quality | ✓ | ✓ | ✓ | ✓ | ✓ |
| Remote view and password control | ✓ | ✓ | ✓ | X | X |
| Bi-directional audio communication with NetServer | ✓ | ✓ | ✓ | X | X |
| Configuration for P/T/Z | ✓ | ✓ | ✓ | ✓ | ✓ |
| Remote P/T/Z control | ✓ | ✓ | ✓ | ✓ | ✓ |
| Language GUI (Traditional / Simplified Chinese / English / Spanish) | ✓ | ✓ | ✓ | ✓ (Not available in Spanish) | ✓ (Not available in Spanish) |
| Data backup option | ✓ | ✓ | ✓ | X | X |

| List of Features | NetServer Series | NetServer Smart Series | NetServer Lite Series | NetServer Plus Series |
|---|---|---|---|---|
| **System Specification** | | | | |
| CPU | P4 1.8 GHz | P3 700 MHz | P3 800 MHz / 1 GHz (NetServer Lite-10) | P4 2.4 GHz |
| HDD | 80GB | 10GB | 20GB | 80GB |
| Max HDD | Up to1800GB | Up to 80GB | Up to 80GB | Up to1800GB |
| RAM | 256M DDR RAM | 256M SDRAM | 256M SDRAM | 256M DDR RAM |
| CD ROM / CD R/W | CD ROM | Option CD ROM | Option CD ROM | CD R/W |
| LAN | 10/100 Mbps | 10/100 Mbps | 10/100 Mbps | 10/100 Mbps |
| Operation system | Win 2000 Pro | Win XP Home | Win XP Home | Win 2000 Pro |
| Back panel | Standard | X | X | Pro |
| RAID card (optional) | ✓ | X | X | ✓ |
| **Key Features** | | | | |
| Maximum number of video / audio inputs | 16 / 5 | 4 / 2 | 4 / 2 | 16 / 4 |
| Total number of frames per second of each camera (for 16 channels) | (PAL) 2.2 fps<br>(NTSC) 2.5 fps | (PAL) 2.2 fps (Basic/Standard) 12.5 fps (Pro)<br>(NTSC) 2.5 fps (Basic/Standard) 15 fps (Pro) | (PAL) 2.2 fps (Basic/Standard) 12.5 fps (Pro)<br>(NTSC) 2.5 fps (Basic/Standard) 15 fps (Pro) | (PAL) 2.2 fps<br>(NTSC) 2.5 fps |
| Recording resolution | (PAL) 192x144 / 640x480<br>(NTSC) 160x120 / 640x480 | (PAL) 192x144 / 640x480<br>(NTSC) 160x120 / 640x480 | (PAL) 192x144 / 640x480<br>(NTSC) 160x120 / 640x480 | (PAL) 192x144 / 640x480<br>(NTSC) 160x120 / 640x480 |
| **Startup/Logoff** | | | | |
| Multiple level user access for each of the 50 users with selection choices of: Administrator rights, playback, recording, streaming time and priority PTZ | Only two levels - Super and Operator | Only two levels - Super and Operator | Only two levels - Super and Operator | ✓ |
| **Pan/Tilt/Zoom** | | | | |
| Camera PTZ control configuration | ✓ | ✓ | ✓ | ✓ |
| Multiple remote clients | ✓ | ✓ | ✓ | ✓ |
| **External Alarm** | | | | |
| Individual external alarm inputs (1-32) with rear panel | 1-16 with separate alarm cable | 4 with separate alarm cable | 4 with separate alarm cable | ✓ |
| Individual external alarm inputs (1-512) with interfacing to the external alarm server | X | X | X | ✓ |
| Individual external alarm output (1-16) with rear panel | 3 with separate cable | 3 with separate cable | 3 with separate cable | ✓ |
| **Playback** | | | | |
| Single and quad playback | Single only | Single only | Single only | ✓ |
| Search by event, time and date | ✓ | ✓ | ✓ | ✓ |
| Image capture, zoom, save and print-out | ✓ | ✓ | ✓ | ✓ |
| **Alarm** | | | | |
| Alarm alert for remote client | ✓ | ✓ | ✓ | ✓ |
| Pre-alarm recording | ✓ | ✓ | ✓ | ✓ |
| Post-alarm recording | ✓ | ✓ | ✓ | ✓ |
| Motion detection | ✓ | ✓ | ✓ | ✓ |
| Segregated motion and external alarms | ✓ | ✓ | ✓ | ✓ |
| Alarm log report | ✓ | ✓ | ✓ | ✓ |
| Alarm alert notification | ✓ | ✓ | ✓ | ✓ |
| Alarm alert e-mail with snap shot | ✓ | ✓ | ✓ | ✓ |
| Video loss indication | ✓ | ✓ | ✓ | ✓ |
| External monitor alarm popup | X | X | X | ✓ |
| **Remote Monitoring** | | | | |
| Remote access with streaming priority | X | X | X | ✓ |
| Maximum number of remote users and video streaming | 16 | 16 | 16 | 50 |
| Remote audio monitoring | X | ✓ (Pro) | ✓ (Pro) | ✓ |
| Remote configuration | X | X | X | ✓ |
| Viewing via web browser | ✓ | ✓ | ✓ | ✓ |

| NetServer Pro Series | NetServer Super Series | NetServer Super Plus Series | NetCorder Super Series | NetCorder Super Plus Series | NetCorder Legend Series |
|---|---|---|---|---|---|
| P4 2.4 GHz | P4 2.4 GHz | P4 2.4 GHz | P4 2.4 GHz | P4 2.4 GHz | P4 2.4 GHz |
| 80GB | 80GB | 80GB | 80GB | 80GB | 80GB |
| Up to 1800GB | Up to 4800GB | Up to 4800GB | Up to 4800GB | Up to 4800GB | Up to 4800GB |
| 256M DDR RAM | 256M DDR RAM | 256M DDR RAM | 256M DDR RAM | 256M DDR RAM | 256M DDR RAM |
| CD R/W | CD R/W | CD R/W | CD R/W | CD R/W | CD R/W |
| 10/100 Mbps | 10/100 Mbps | 10/100 Mbps | 10/100 Mbps | 10/100 Mbps | 10/100 Mbps |
| Win 2000 Pro | Win 2000 Pro | Win 2000 Pro | Win 2000 Pro | Win 2000 Pro | Win 2000 Pro |
| Pro | Pro | Pro | Pro | Pro | Pro |
| ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 8 / 8 | 16 / 16 | 16 / 16 | 16 / 16 | 16 / 16 | 16 / 16 |
| (PAL) 12.5 fps<br>(NTSC) 15 fps | (PAL) 25 fps<br>(NTSC) 30 fps | (PAL) 25 fps<br>(NTSC) 30 fps | (PAL) 25 fps<br>(NTSC) 30 fps | (PAL) 25 fps<br>(NTSC) 30 fps | (PAL) 25 fps<br>(NTSC) 30 fps |
| (PAL) 192x144 / 640x480<br>(NTSC) 160x120 / 640x480 | (PAL) 352x288<br>(NTSC) 352x240 | (PAL) 352x288 / 704x288<br>(NTSC) 352x240 / 704x240 | (PAL) 352x288<br>(NTSC) 352x240 | (PAL) 352x288 / 704x288<br>(NTSC) 352x240 / 704x240 | (PAL) 704x576<br>(NTSC) 704x480 |
| ✓ | ✓ | ✓ | Only two levels - Super and Operator | Only two levels - Super and Operator | Only two levels - Super and Operator |
| ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| ✓ | ✓ | ✓ | 1-16 | 1-16 | 1-16 |
| ✓ | ✓ | ✓ | X | X | X |
| ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| ✓ | ✓ | ✓ | ✓ | ✓ | Single only |
| ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| ✓ | ✓ | ✓ | X | X | X |
| ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| ✓ | ✓ | ✓ | X | X | X |
| ✓ | ✓ | ✓ | X | X | X |
| 50 | 50 | 50 | 24 | 24 | 24 |
| ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| ✓ | ✓ | ✓ | X | X | X |
| ✓ | ✓ | ✓ | ✓ | ✓ | X |

# HOW WOULD YOU MEASURE SAFETY?

**1,255 Hectares**
**700 Cameras**
**13 Control Centers**

**An Integrated View**

Hong Kong Chek Lap Kok International Airport is migrating their analog CCTV surveillance system to the MultiVision digital video surveillance solution.
Shouldn't you?

**49 Billion in Currency**
**188 Million Transactions**
**50,000 ATMs**

**An Incisive View**

In China, leading ATM manufacturer 'NCR' certifies the MultiVision digital video surveillance solution to provide additional safeguards to banks and their customers.
Shouldn't you?


**304 Million Journeys**
**5,700 Cameras**
**302 Train Stations**

**An Interactive View**

In Australia, the NSW State Rail Authority utilizes the MultiVision digital video surveillance solution for video reception and to enable two-way audio communication at train station help points.
Shouldn't you?

**2,500 Cameras**
**16 Casino Facilities**
**1-Second Failover**

**An Uninterrupted View**

In Macau, the Sociedade de Jogos de Macau is converting from its analog CCTV surveillance system to the MultiVision digital video surveillance solution using MPEG4 hardware compression and instant failover.
Shouldn't you?

## SOME RISKS ARE NOT WORTH TAKING

**MultiVision**
Intelligent Surveillance

**Fail-Safe Solution**
www.multivision.com.hk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