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## RedHand *VisionIP*

### Further Information and Technical Specification

Modern CCTV is a complex market, and making the correct choice from all the available systems is not easy. Most systems operate in much the same way. However, there are a few systems which offer a much more intelligent approach and we believe **RedHand** products are amongst the best of these.

### So, what is *VisionIP*?

**VisionIP** is Event Driven Digital Surveillance software. It takes pictures whenever a camera is triggered by an event. This trigger can be caused either movement (Video Motion Detection), or by an external source such as a door/window contact etc. **The clear advantage here is that, unlike conventional CCTV, you will only record pictures when something is actually happening.**

### Low footprint – just another icon!

**VisionIP** is an IT solution and we perceive it as just another icon on your desktop. It uses digital network cameras/video servers, a conventional IT Network and both viewing and storage are on standard PCs. The system has been designed for **low maintenance and ease of use**, whilst being functionally rich. **You need not worry about hardware obsolescence, as the software runs on standard IT equipment.**

### Understanding your network...

**RedHand** is a division of **Network Connections (UK) Ltd**, and we are very experienced in designing, building and maintaining IT networks and systems. We understand the very real concerns that Network Managers have with regard to bandwidth requirements of the new digital video systems currently on the market. **Our system is designed to provide the best picture quality available, whilst using as little network bandwidth as possible.**

**Beware! Installers of digital video systems may tell you that the bandwidth requirements of their system are very small. Indeed it may be, but in order to achieve this, the video data will have been compressed and whenever compression takes place, the picture quality is degraded – often down to basic Web Cam standards.**

## So why is RedHand *VisionIP* different?

**RedHand** overcomes bandwidth, real-time and picture quality problems because it does **not use video**. Instead, when triggered, it takes two, digital still pictures every second irrespective of how busy the network is, so on playback the movement will seem much more natural. Because the picture files are small **your network will hardly notice that *VisionIP* is there**.

In other PC based video systems, motion detection is performed at the PC end by the software. This means there is network traffic from all the cameras all the time, only to be discarded if there is no movement. This often places a restriction on the maximum camera count. We do not feel that this is an acceptable approach and *VisionIP* carries out Video Motion Detection at source, in the camera itself. If there is no movement, then your network will be quiet. **There is no restriction on camera numbers which is clearly very attractive for larger sites.**

Two frames per second are perfectly adequate for capturing all human activity and overcome the disadvantages of video systems. Every picture is an excellent quality, colour JPEG image, which can be **printed or E-Mailed**. We do not compromise with picture size/resolution. When using 1.3 megapixel cameras we get 1280x1024 picture size. The **Viewer** module will present you with just the right information you need in a very simple and uncomplicated way. ***VisionIP* has low bandwidth impact with no picture degradation.**

## It offers other advantages too...

- Zero obsolescence** Many other systems use proprietary, digital video recorders and multiplexers, which can quickly become obsolete. You need not worry about hardware obsolescence, as *VisionIP* runs on standard IT equipment.
- Flexibility** Cameras plug into your existing network. If you want to move them, then you can do so without any expensive re-cabling. We can use wireless video and wireless LAN for those awkward places.
- Low Start-up Costs** In conventional systems the up-front costs can be high, as you have to buy the Video Recorder, Monitors and Multiplexers. Not so with *VisionIP*. You purchase a copy of the software and a single camera and you're on the road to peace of mind. You can buy more cameras as you need them and simply plug them into the network. You are not locked into 5, 9, 16 or any other number. **You can install any number of cameras on a system.**
- Burglar Alarm** Do you have a separate Burglar Alarm? Are you paying an outside monitoring company? *VisionIP* can do all this for you. Because you see the pictures as they happen, there should be **no more false alarm call outs** and the Police will be more likely to attend.
- Encryption** We offer picture encryption for sites that need it. This means that the file held on the disk cannot be read directly by any other Windows application and modified. As a further safeguard against the system operator being wrongly accused, encryption is a one time installation feature, thus it cannot be turned on or off at will.

## **VisionIP** in action

The basic operation is simple. The camera detects movement and sends a message through the network to the software. The software then sends a message back to the camera and asks it to send 2 pictures every second. It receives these pictures and stores them on the PC. It also builds up a database so that it knows what camera the picture came from and at what time. The system works totally asynchronously – when a camera wishes to send a picture it doesn't have to wait for its turn as in conventional multiplexed systems. The **Viewer** module can be on the same PC as the database or on any number of PCs distributed across the network. The PC holding the database serves the information to the **Viewers**.

**VisionIP** is totally scalable. There is no theoretical limit to the number of cameras that can be deployed. The limitation is the number of cameras that are likely to be sending pictures at the same time. A standard PC (see our specification recommendations) should be able to support up to 15 concurrent cameras – that means that 15 cameras are receiving motion at the same time. In our experience, operating a busy site with 20 cameras, only 4 or 5 are actually sending pictures at any one time. If more are required, then the design architecture allows any number of PC's to be connected, each supporting different cameras. The **Viewer** software will be aware of this and will be able to view all cameras irrespective of which PC the pictures are hosted on.

## There are two components to **VisionIP**

### **The Manager**

The **Manager** module resides on a fileserver or PC and when a camera is triggered, JPEG images are copied to the receiving system from the camera. The **Manager** is designed to work largely unattended and carries out self-checking routines on the status of connected cameras and on the delivery of new pictures. It will manage the files in a central database and will remove old ones automatically. The number of days for which you wish to keep pictures can be set up on a per-camera basis and can be altered at a later date (e.g. if school or company holidays are to be considered).

The **Manager** module is where we define the cameras: their location, IP addresses, the model of camera and the number of day's picture retention. If required we can enable SMS to alert the appropriate people that there has been an incident, via their mobile phones. We can also set up Remote Monitoring (see External Monitoring) and Audio devices. This feature will enable you to challenge intruders through the **Viewer** module, via locally installed, network driven speakers.

### **The Viewer**

The **Viewer** module can be installed on the same PC as the **Manager**, or on any number of PCs connected on the same LAN. Conventional, modern PC's are perfectly adequate but obviously the better the PC, the better the performance. A 100Mbps interface is acceptable, but a 1Gbps interface will provide a better performance. The task of the **Viewer** is to retrieve pictures from the host PC, and so the faster the interface, the better the performance.

## Features of the **Viewer** include the following:

- An extremely simple method of selecting pictures. Historical pictures, right up to current time, can be selected from each camera and a simple scroll bar enables you to find a date and time instantly. The pictures can also be played forwards or backwards in a cinematic style, which will not look very different from full motion video. Using the cursor keys you can move back and forth by one frame at a time. Because each image is a separate file (unlike video), the picture can easily be copied to the clipboard for pasting into other Windows applications. It can be printed on any networked printer, or can be emailed
- Any number of screen 'Layouts' can be supported. For example, you could define screens covering all external cameras, or all cameras in Building 1 etc. The possibilities are endless. 'Synchronised Play' enables any number of camera pictures to be locked together in time. This enables a "top down" view of a single incident where you can watch people walk from one camera to the next. This is an incredibly useful feature and can reduce the search time down to a few seconds.
- 'Go from Date/Time' enables you to see all pictures from any number of cameras spread across several days if necessary. Used in conjunction with 'Synchronised Play', this can enable an incident to be located within a few seconds.
- Any or all of the cameras can be viewed in real time. This does not affect the recording of pictures. You can Pan/Zoom the image in 'Live' mode. There is an adjustment to increase or decrease the frames per second. The standard is 2 fps to preserve network bandwidth.
- A Popup alert can be configured so that any movement will cause that camera to come up in 'Live video' mode. This can be useful for out of hours monitoring in a guarded warehouse situation, or where a school caretaker has on-site accommodation. Evidence of intruders can be seen without taking any risks.
- Using a microphone connected to the PC, audio warnings can be given to any intruders. This works through the Network (and the Internet). Audio receiver units are wired through an amplifier/speaker situated at convenient places near the cameras.
- Comprehensive CD writing facilities are provided and a standalone copy of the **Viewer** module is also written to the CD so that it may be played back on any PC. **VisionIP** also provides good evidence, as each picture is Time/Date stamped

## PC recommendations:

Depending on the total number of cameras on your system, the hardware can often be just a good quality PC, preferably with a fast (7200rpm) disk and plenty of RAM (1GMB preferred). We can advise you later when we know your exact requirements in terms of camera numbers, likely picture throughput etc. The actual number of cameras on a system is not an issue. The only limiting factor is how many cameras are likely to be sending files at the same time. As a guide, we have tested 14 cameras all running at once on an average PC (1GHz, 7400rpm SATA disk) with no problems.

## External Monitoring

### The Conventional approach

There are a number of approved companies across the country that provide a monitoring service for their customer's premises. Motion Detectors on site trigger a phone dialler, which is routed to a Monitoring Station. The station staff has the ability to "dial in" (usually through an ISDN line) to one of the cameras on site. The problem is one of knowing which camera. Also by the time the monitoring centre has responded and dialled in, the intruder will probably have moved out of range to another camera. A cat and mouse game then ensues, trying to find the intruder and verify that it is a genuine incident before the Police or key holder is called. Gathering evidence is hard and relies on accessing the on - site recording system after the event.

### The RedHand approach

The monitoring station will simply have a PC running a copy of **VisionIP**, connected to the Internet. When one of their customers gets a break-in, the actual pictures from cameras that have been triggered will be copied instantly via the Internet to the monitoring station. There is no need to 'dial in' as they will already have crystal clear photos to verify that there is a genuine break-in. They can immediately alert the Police or key holder and can email or print out the evidence.

## Cameras

Internal cameras need just a single network connection and power. Our cameras have in-built motion detection which can be set up to take a picture only when movement occurs in certain areas. The camera is set to ignore movement in other areas such as that caused by trees etc. They can be plugged into an existing network point.

Our standard external cameras are colour and automatically switch to infrared at night. Various lenses can be fitted to give wide angle or telephoto response. **VisionIP** will also accept input from any standard Video camera – including dome, covert, infrared, wireless etc. In both cases, the video signal is connected to a video server, which in turn is connected to the network. In this way, we can use your existing cameras and wiring and simply replace your old video recorder with video servers, which then connect directly to the network.

## Installation

**RedHand**, or one of their appointed installers, can carry out the entire installation of cameras, electrical works and network design and installation.

## Technical Specification – *VisionIP*

### Software description

#### The Manager

- Receives picture from cameras, manages the database and serves pictures to **Viewer** module.
- Optionally copies newly received pictures to a remote PC over any TCPIP link including the Internet.
- Automatically removes old pictures from the system allowing unattended operation. The number of days they should be retained can be individually set per camera.
- Tests each camera for network connectivity. If a camera fails a warning is issued on the message panel, and optionally to mobile phone(s).

#### The Viewer

- . Multiple Document Interface allowing a separate, moveable and scaleable window for each camera.
- . Very simple design allowing ease of use
- Picture Notification (“alarm”) facility to bring up windows for cameras that have been triggered, thus removing the need to have any windows open in a large attended installation. Optional sound alarm that can be fed to external speakers for notifying designated staff or management of a triggered camera.
- . Slide Bar to allow instant location of any historical incident. May be used with keyboard (cursor keys move one frame at a time, page up/down keys move 10 at a time)
- Ability to view pictures from/to certain Time/Date. Enables windows from any camera that has pictures between the selected times/dates. (Useful after arriving on site after a weekend and not knowing where the intruder entered)
- Synchronized Play function. Allows all camera pictures to be played back in sequence with each other.
- Real time viewing. Achieved by using multiple high-speed JPEG files rather than video, thus conserving bandwidth requirements but retaining picture quality.
- Copy picture to clipboard (for pasting into Windows applications or sending as an E-mail).
- Print Button for printing onto any networked or local printer in full colour.

#### CD Writer (with viewer)

- . Any number of pictures (up to the CD capacity) can be written to CD for use as evidence
- A standalone copy of the **Viewer** module is written to the CD allowing it to be read on any PC.

## PC requirements

- We recommend a good performance office PC running Windows XP/2003 and with at least 1Gb of RAM. 7200rpm disks are highly recommended for the PC that's running the **Manager** module.
- Sufficient disk space should be allowed for pictures. It is not possible for us to estimate the disk space required as each camera will have a different level of activity and each customer will want to keep pictures for a different length of time. We tend to use a value of 1Gb per camera per day for a busy site

## Cameras

- Any number of cameras can be configured on a single system, as they operate asynchronously
- Cameras are triggered by Video Motion Detection or by any contact source.
- Pictures are JPEG full resolution colour images, transmitted at the standard rate of 2 per second from the camera to the PC. Exact size/resolution is camera dependant.
- Pictures are time and date stamped as part of the actual image for court purposes.
- Any standard Video camera can be connected via a Video Server
- Large number of camera models are supported. These include megapixel cameras.