HIGHWAYS
Getting to grips with transportation

BAXALL
L I M I T E D

IP Networks & Transportation Networks

Despite numerous attempts to increase public transport usage and reduce the congestion on our highways, road transport is expected to multiply. Along with this comes an increase in pollution and the number of accidents, plus a loss in economic productivity caused by tardiness. Goods transported by road therefore take longer and become more costly.

To help manage the existing and future traffic on our roads, Intelligent Transport Systems (ITS) have become increasingly common in road management. Using computer and communications technologies, many problems can be improved, thus increasing safety and efficiency on our roads.

Such systems rely on a high speed, high capacity communications network for the transfer of information from individual monitoring devices and sensors.

Until recently, CCTV was unable to take advantage of this network backbone because the equipment was based on analog technology. Cameras that were (and still are) used for traffic management had to use their own cabling back to one central monitoring point, making it a costly and inflexible exercise.

The move to digital has instigated a change in this, enabling CCTV images to be digitized. With the further development of such equipment, the new breed of Internet Protocol (IP) based CCTV equipment allows surveillance equipment to be directly linked to the ITS network.

VIDEO OVER IP - WHAT DOES IT MEAN?

IP is one of several protocols that enables 'data' to be transmitted and controlled over networks. This protocol can be used over most physical networks, such as Ethernet.

Baxall has developed the Destiny™-IP range to send real-time, quality digital video, together with audio and data. As IP is one of the de facto network protocols, it means that Destiny™-IP can be used to send CCTV images across an Ethernet network.

Products in the Destiny™-IP range include cameras, codecs, keyboards, networked video recorders and a variety of software applications for single and multi-user systems.

WHAT CAN VIDEO OVER IP BRING TO OUR ROADS?

Video over IP is a highly flexible solution to a wide range of road management problems. It makes video surveillance over wide areas and remote monitoring both cost-effective and practical. For example, sites that would have been monitored locally, can now use the existing ITS network to transmit images to any authorized location on that network. This means that more than one person/department can access images from any camera, at any location, at the same time.

This collection of real time data enables road managers to:

- Improve safety (i.e. parking lot monitoring and incident detection)
- Improve traffic efficiency and reduce congestion (i.e. monitoring traffic signals and re-setting them remotely)
- Improve environmental quality and energy efficiency
- Improve economic productivity
- Improve asset management

DRIVING ITS FORWARD WITH DESTINY-IP

The United States are well ahead in the use of ITS for road management and have been reaping the benefits. Caltrans (the State of California Department of Transportation) is a prime example.

Caltrans is responsible for the design, construction, maintenance and operation of the 15,000 miles of California State Highways. In order to monitor road conditions and control the traffic signal timing, Caltrans installed around 430 CCTV cameras. To allow its Automatic Traffic Management System (ATMS) to cost-effectively monitor and control those cameras from any number of control points, it turned to Baxall and the Destiny™-IP solution.

Baxall Destiny™-IP Codecs are advanced products that convert camera signals into compressed data and allow you to transmit full motion, high quality digital video across your IP network. Ethernet was specifically used in the case of Caltrans.

These Codecs can be configured as a server (encoder) or client (decoder). For Caltrans, a substantial number of both single and dual encoders and decoders were installed.

> *The flexibility comes from the Destiny-IP Codecs supporting multicast video.*

The main advantage for Caltrans of using Destiny™-IP is that it is a very flexible and cost-effective solution. The flexibility comes from the fact that Destiny™-IP Codecs support multicast video. This enables multiple Caltrans operators to view the same image stream simultaneously from numerous locations, without significantly impacting upon network bandwidth. These images can be viewed and controlled on a PC as a single, full or quad screen display. They can also be viewed as native full screen video on dedicated monitors or on a display wall. Pan, tilt and zoom functions and camera-to-monitor switching are also easily controllable. At present, the decoders at Caltrans are used to display images on monitors that are spread across diverse locations.

Cost effectiveness was achieved because no additional cabling was required. Caltrans' existing Ethernet network was utilized and the software runs on any PC using Windows 2000, NT4 and XP.

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Screen shot of Destiny IP PC Controller software

The existing Caltrans ATMS communicates via an RS232 port. Baxall provided a solution using a serial converter, which allowed the ATMS to connect to the Ethernet network and control the new IP surveillance sytem via the PC Controller application. This software enables control of the system, whilst at the same time giving a traditional CCTV feel to a leading edge technology solution.

At this moment in time, the CCTV images are restricted to Caltrans employees. With the introduction of the new Baxall WebServer however, plans are already afoot to stream key CCTV images to the Internet, thus allowing the public to check the highways for congestion themselves.

The Destiny-IP range forms part of the Destiny-IP suite of network video solutions. The highly acclaimed Destiny-IP range of products has won numerous awards from around the globe for design and innovation including millennium awards issued by the Design Council, a PSI premier award and the MIPS award for innovation and The Security Excellence award to name but a few.

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