



HTSG NSW Commercial

The Hills IP Cookbook



Rev 1.0



Contents



1. Welcome to the Hills IP Cookbook Rev 1!	4
1.1. IP system design	4
2. About Hills Industries	4
3. NX Security over IP	5
3.1. Overview	5
3.2. Typical System diagram, residential MRE application: -	5
3.3. Control Room Support for NX IP event reporting.	6
4. GE Integrated Access Control, Security and CCTV over IP	7
4.1. GE Challenger integrated access control and security system	7
4.2. GE Forcefield Server 5.1	7
4.3. GE Symdec Digital Video Recorder	7
4.4. GE DVR Video Integration	7
4.5. Typical System diagram, MRE application: -	8
4.6. Typical system diagram, FTTH IP application with PTZ control for CCTV	9
4.7. Typical system diagram, commercial application	10
5. IP CCTV	11
5.1. Stand alone IP CCTV Digital Video Recorder (DVR).	11
5.2. Network IP CCTV.	12
5.3. Pelco Endura	13
6. IP CCTV Cameras	14
6.1. Sony	14
6.2. Arecont Megapixel	14
6.3. DVTEL	14
6.4. Pelco	14

6.5. Axis	14
7. Crestron - Cisco IP Phone interface	15
7.1. Typical system diagram, commercial application.....	16
8. Hosted CCTV	17
8.1. OZVISION	17
8.2. Typical system diagram, residential application.....	19
9. IP Wireless (Wi Fi- Wi Max and Mesh)	20
9.1. Smartbridges.....	20
9.2. Fluidmesh	20
10. IP Infrastructure	21
10.1. Fibre-to-the-home (FTTH)	21
10.2. Typical system diagram, residential application: -.....	21
11. IP systems from Hills Industries.....	22
12. Glossary of Terms.....	23
13. Further Information	25



1. Welcome to the Hills IP Cookbook Rev 1!

The world is going IP, and so is Hills Industries! We may not yet have an IP Hills Hoist, although anything is possible in this brave new connected world.

In many cases Hills Electronic Security and Entertainment products are regarded as the industry standard and have a great track record with proven reliability and performance.

This document is intended to illustrate how Hills products can be deployed in an IP environment and takes a look at applications where IP networks are becoming a viable alternative to conventional wiring

1.1. IP system design

This document is intended as a guide to possible implementation of Hills products on IP Networks, however, IP solutions need to be fully engineered and there are many considerations including network speed, bandwidth, storage and redundancy to name a few. The business units of Hills Industries have staff skilled in network design and communications who are able to advise you about solutions that will meet your requirements.

2. About Hills Industries

Today, Hills is much more than a manufacturer of clever clotheslines. Hills is a diversified manufacturer of lots of clever Australian products and services which meet standards of quality and dependability people have come to expect and associate with the Hills brand.

Hills Industries is a \$A1Bn public listed company with operations in four industry segments: Home and Hardware Products, Electronic Security and Entertainment Products, Building and Industrial Products and Hills Eco products.

More information can be found at: www.hills.com.au

3. NX Security over IP.

3.1. Overview

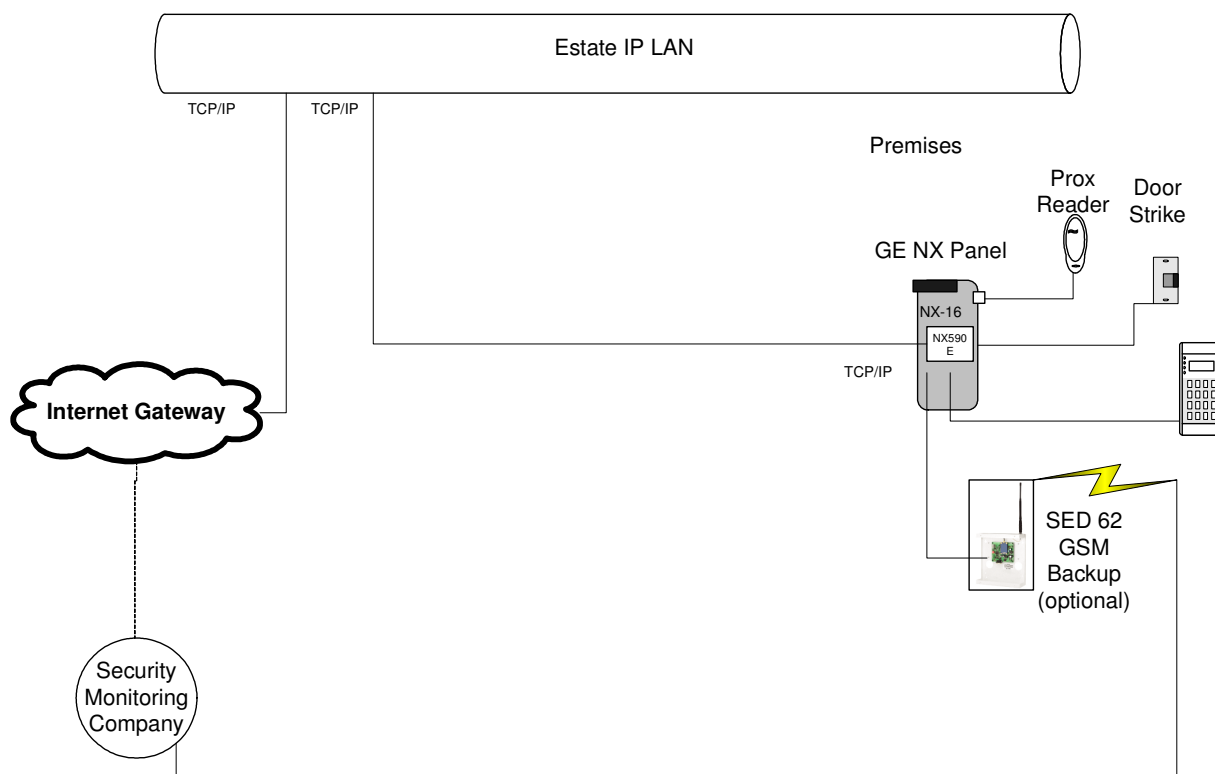
The NX has been an industry standard residential security Alarm Panel for many years and features back-to-base monitoring of security events using an integrated dialler.

Now, with the addition of the NX590e networking card, the NX can be enabled for IP reporting of security events back to a central control room over the internet, LAN or WAN.

If additional backup is required in case of network failure, and SED62 GSM wireless backup unit can be connected to the NX to facilitate event reporting via the GSM network.

3.2. Typical System diagram, residential MRE application: -

This example illustrates how the NX can be connected to a LAN or WAN via the NX590e networking card. Atypical example of where this is required is in an estate with a Fibre-to-the-home (FTTH) infrastructure. Security events are reported to the control room directly via the internet. The control room must have the capability to receive IP signals from the panel.



3.3. Control Room Support for NX IP event reporting.

As IP reporting of security alarm events has only recently been introduced, control room support is limited at the present time. New control rooms will soon be added to this list.

The control room supporting the products is: -

Security Control Room PTY LTD (Asial A1 Graded Monitoring Station)

Contact:- Shane 1300 727 643

4. GE Integrated Access Control, Security and CCTV over IP

The GE Challenger system is an industry standard integrated access control and security system. Now with the addition of the GE Forcefield server and the new Kalatel Symdec series digital video recorders the system is able to deliver fully integrated access control, security and CCTV functionality.

4.1. GE Challenger integrated access control and security system

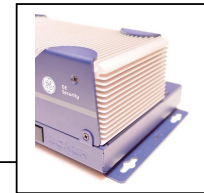
Industry standard “non-proprietary” integrated access control and security system

4.2. GE Forcefield Server 5.1

A total of 32 Challenger systems can be connected to a Forcefield server, which provides:

- 16,384 alarm points
- 1,024 separate alarm areas
- 4,096 doors or lift access points.

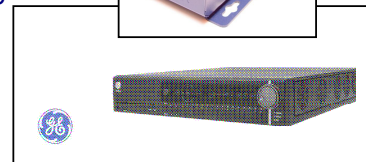
Forcefield can manage up to 1,000,000 users system wide



4.3. GE Symdec Digital Video Recorder

Features: -

- Real time recording on all channels at D1 resolution
- Hybrid DVR with up to 4 IP camera streams
- V stream technology manages video network transmission
- Up to 3TB internal storage
- SymSuite software including SymSecure, SymNav, Symbrowser



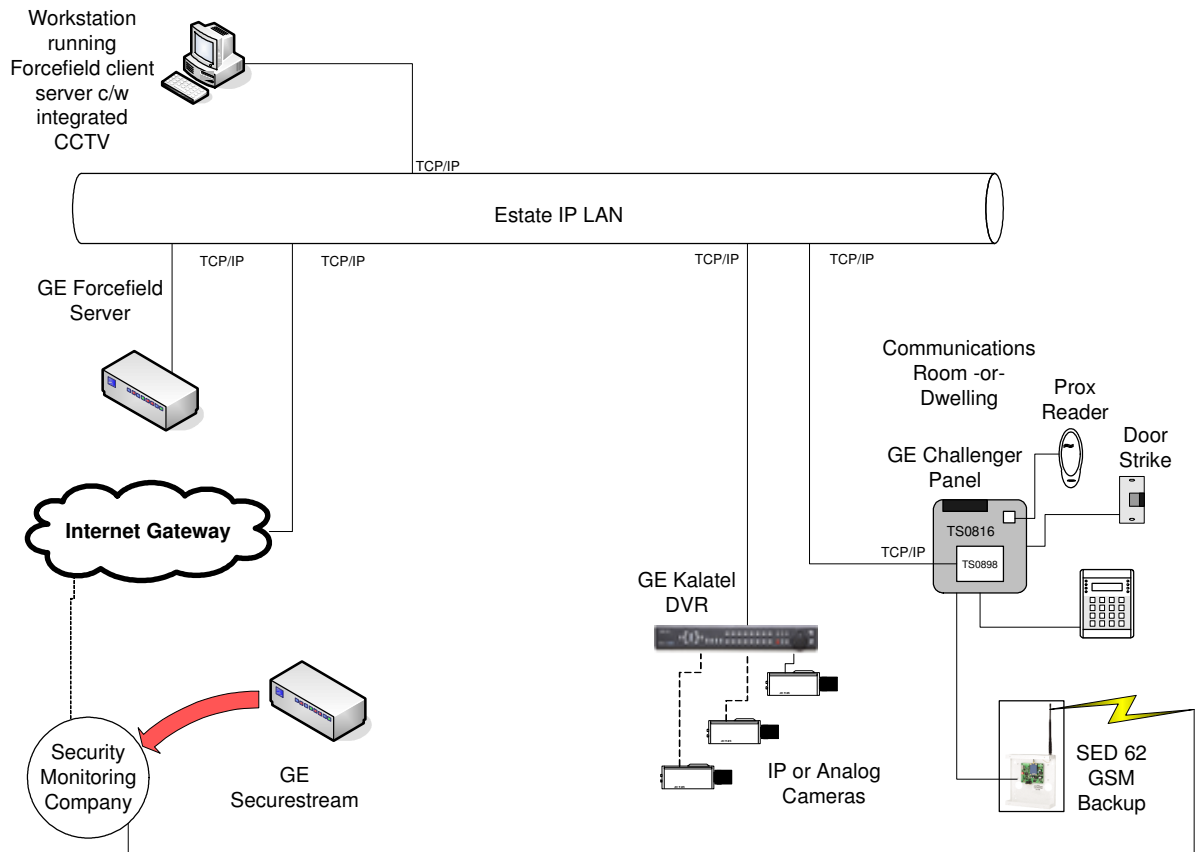
4.4. GE DVR Video Integration

Integrating CCTV to the Challenger system will allow the customer to: -

- Integrate a stand-alone DVR video system to the same Forcefield server as the Challenger security system
- Connect a DVR to provide live video and playback incidents on the Forcefiled workstation screen
- Play back recorded video tagged to an alarm event
- Allow operators to access selected/restricted cameras connected to a shared DVR
- Automate the selection of PTZ camera and presets using the received Challenger events from the same site
- Display multi-view cameras on a dual monitor Forcefield workstation.

4.5. Typical System diagram, MRE application: -

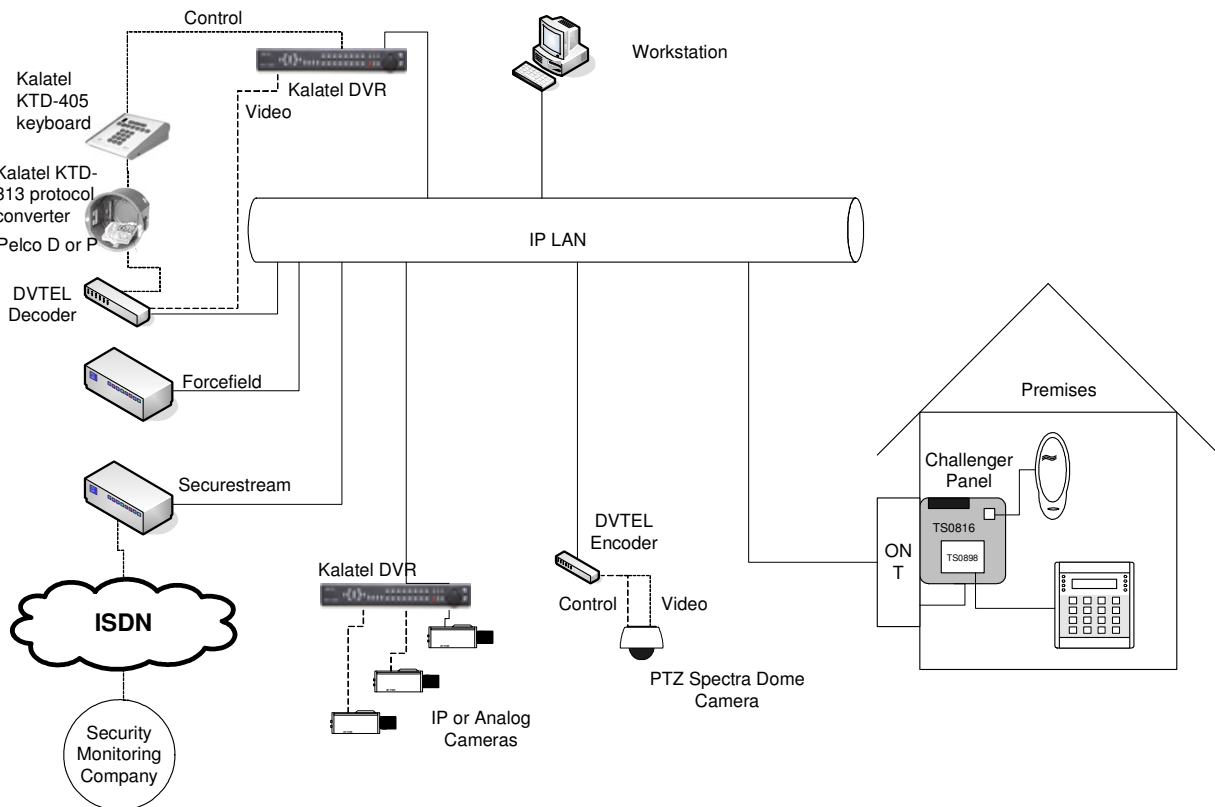
This example illustrates how the GE Challenger and CCTV systems can be integrated in a single-site application such as a commercial building or multi-unit residential estate (MRE). In this case the GE Securestream unit is located at the security monitoring company site and security event reporting is via a broadband connection.



4.6. Typical system diagram, FTTH IP application with PTZ control for CCTV

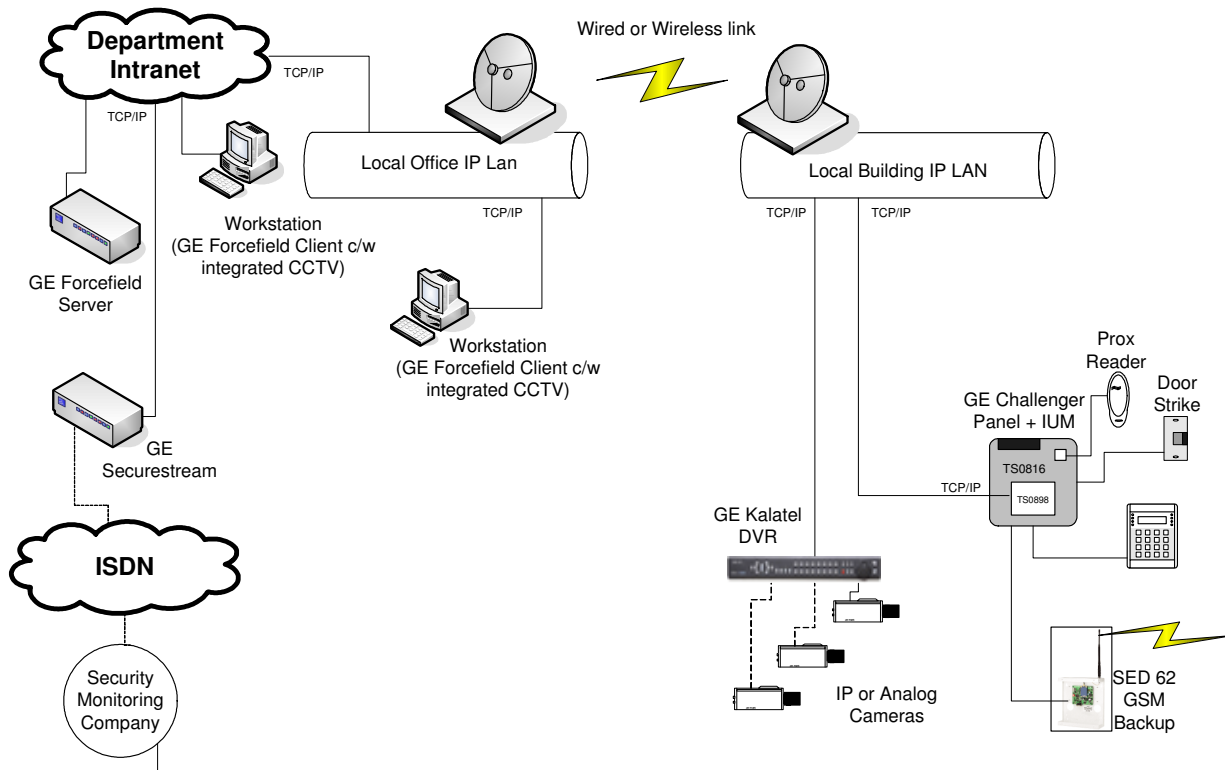
This example shows how an IP based integrated system can be implemented featuring security, access control and CCTV with Pan-tilt-zoom (PTZ) control of PTZ dome cameras.

DVTEL encoders and decoders are used where analog CCTV dome cameras are selected.



4.7. Typical system diagram, commercial application

This example illustrates how the GE Challenger and CCTV systems can be integrated in a multi-site application where the user database is centrally managed. In this case, the GE Securestream unit is located at the head-end facilitating monitoring over an ISDN connection. Backup can be via the SED series GSM unit.

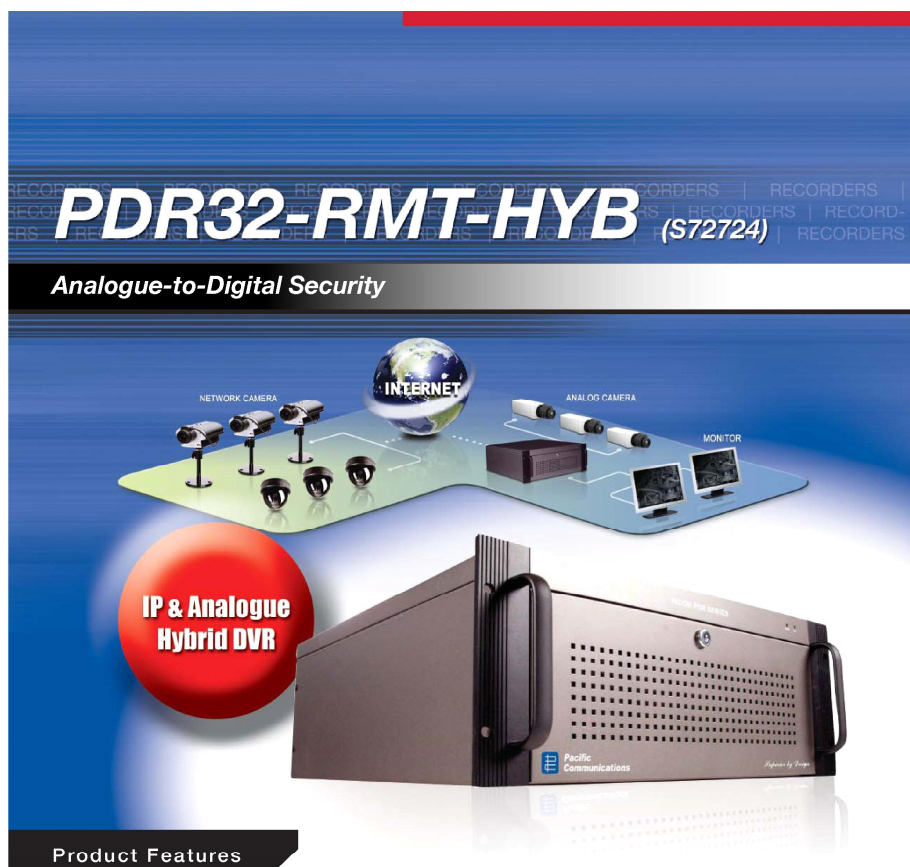


5. IP CCTV

CCTV systems were one of the first technologies to make the transition from conventional digital Digital Video Recording to IP network systems.

5.1. Stand alone IP CCTV Digital Video Recorder (DVR).

Pacific Communications (a Hills business unit) have announced the PDR32 hybrid DVR which features the connection of up to 16 IP cameras:-



In the transition period from analogue to digital surveillance solutions, the PDR32-RMT-HYB (S72724) brings you all the benefits of network and existing analogue based solutions. This 32 Channel Hybrid Digital Video Recorder eliminates the time and cost needed to adopt these new technologies by combining both analogue and digital solutions together.

Flexibility

- The PDR32-RMT-HYB (S72724) DVR adapts to existing analogue environments with the added feature of expansion using IP cameras and utilising existing network infrastructure

High Reliability

- Reliable video data transmission is guaranteed using TCP/IP protocol that provides flow control technology.
- Embedded Windows XP operating system.

Other Features:

- 32 Channel Digital Video Recorder with 16 analogue looping inputs.
- Monitoring features: Covert camera, object tracker, colour control, video blind detect, video flare detect, event alert.
- Motion Detection & Panoramic Playback.



A Hills Company

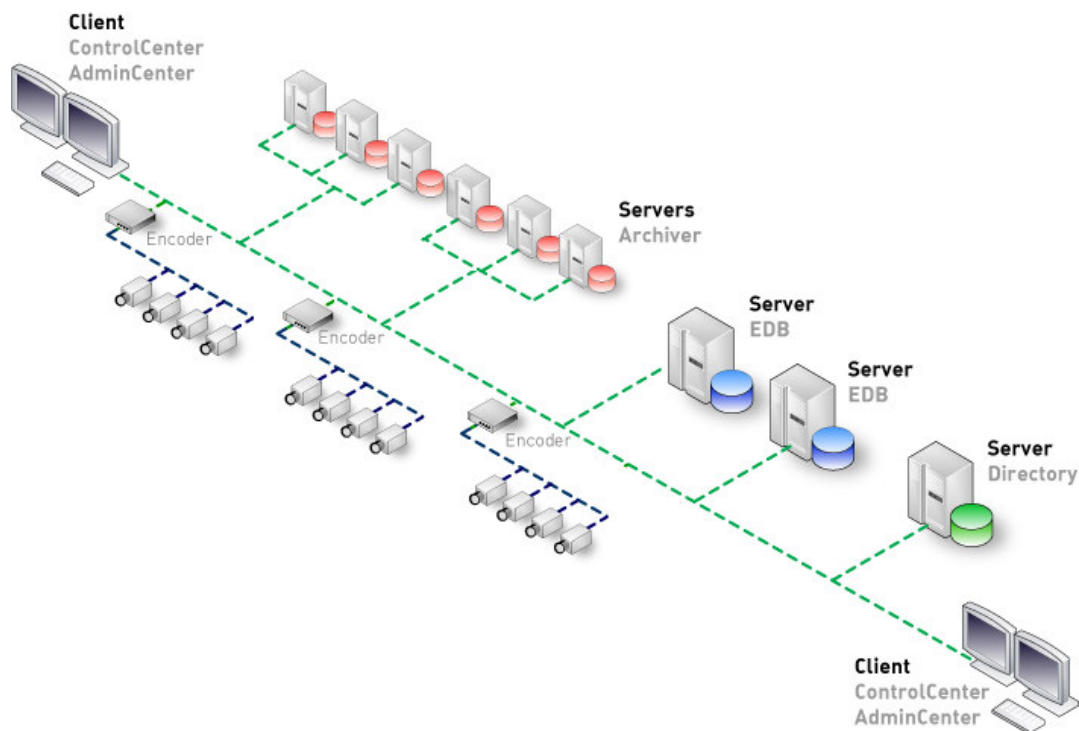
5.2. Network IP CCTV.

Pacific Communications offer a variety of Network Video Management Systems to suit a range of applications: -

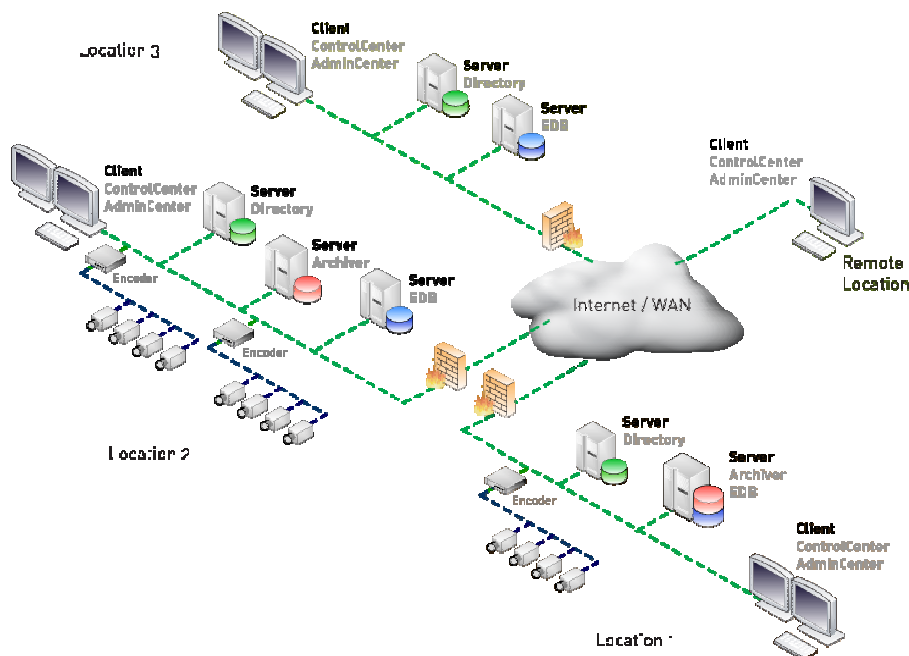
5.2.1. DVTEL.

DVTEL systems support a range of network architecture topologies for the implementation of network video management systems (NVMS). DVTEL encoders and decoders enable analog CCTV cameras and monitors to be used in conjunction with IP CCTV cameras and workstations. Conventional keyboard control is also supported.

5.2.1.1. Typical DVTEL NVMS network topology (Example 1)



5.2.1.2. Typical DVTEL NVMS network topology (Example 2)



5.3. Pelco Endura

The NVR5100 Series network video recorder sits at the center of a Pelco integrated video security system. It represents the state-of-the-art in scalability, features, and reliability. The NVR5100 Series represents a whole new generation of flexibility and integration for network-based video system recording. Designed for integration with all of Pelco's next generation networked security devices, the NVR5100 Series becomes the distributed system component that records all video, audio, and data.

The NVR5100 Series Network Video Recorder features

- 24/48 Input Streams,
- Up To 4.8 TB Storage,
- Hot-Swappable Drives



6. IP CCTV Cameras

Pacific Communications offer a range of IP CCTV cameras from a range of manufacturers: -

6.1. Sony



6.2. Arecont Megapixel

6.3. DVTTEL

6.4. Pelco

6.5. Axis

7. Crestron - Cisco IP Phone interface

The Cisco Unified IP Phone 7970G delivers the latest technology and advancements in IP telephony. It not only addresses the needs of executives and major decision makers but also brings network data and applications to users without PCs. This state-of-the-art IP phone also enables customers and developers to deliver more innovative and productivity-enhancing Extensible Markup Language (XML) applications to the display.

The Cisco Unified IP Phone 7970G features:

- A backlit, high-resolution colour touch-screen display
- Streamlined access to communications information, timesaving applications, and feature usage details
- Access to eight telephone lines (or combination of lines and direct access to telephony features)
- A high-quality hands-free speakerphone and built-in headset connection
- Support for inline power over Ethernet

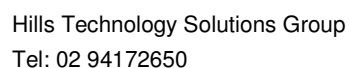
Crestron XPanel IE provides Web browser based control using ActiveX to attain true touchpanel behavior. XPanel IE Web pages are hosted on a 2-Series control system, allowing control on the fly from the Cisco phone via IP.

XPanel IE files are created just like touchpanel files using Crestron VisionTools Pro-e GUI design software. The look and function of touchpanel files created in VTPro-e are replicated precisely in XPanel IE. Subpages, multi-mode buttons, animations, object effects, transparencies and fonts appear and behave identically to those on an Isys® touchpanel. Cisco phone users experience Crestron touchpanel control directly from the phone's touchscreen. The touchscreen features a 234 x 234 resolution with adjustable backlight display and supports 12-bit color depth.

Cisco has standardized on Crestron as its worldwide exclusive Audio Visual technology provider.



This example illustrates how the Cisco IP phone can be implemented in a commercial application. The Cisco IP phone is able to control Crestron Lighting and therefore, HVAC and AV equipment as well as interfacing to the VOIP telephone infrastructure via the building LAN.



8. Hosted CCTV

Hosted CCTV services facilitate the recording and monitoring of CCTV images by hosting the images off-site on a remote server. The host is typically a service provider who operates the service for a monthly fee.

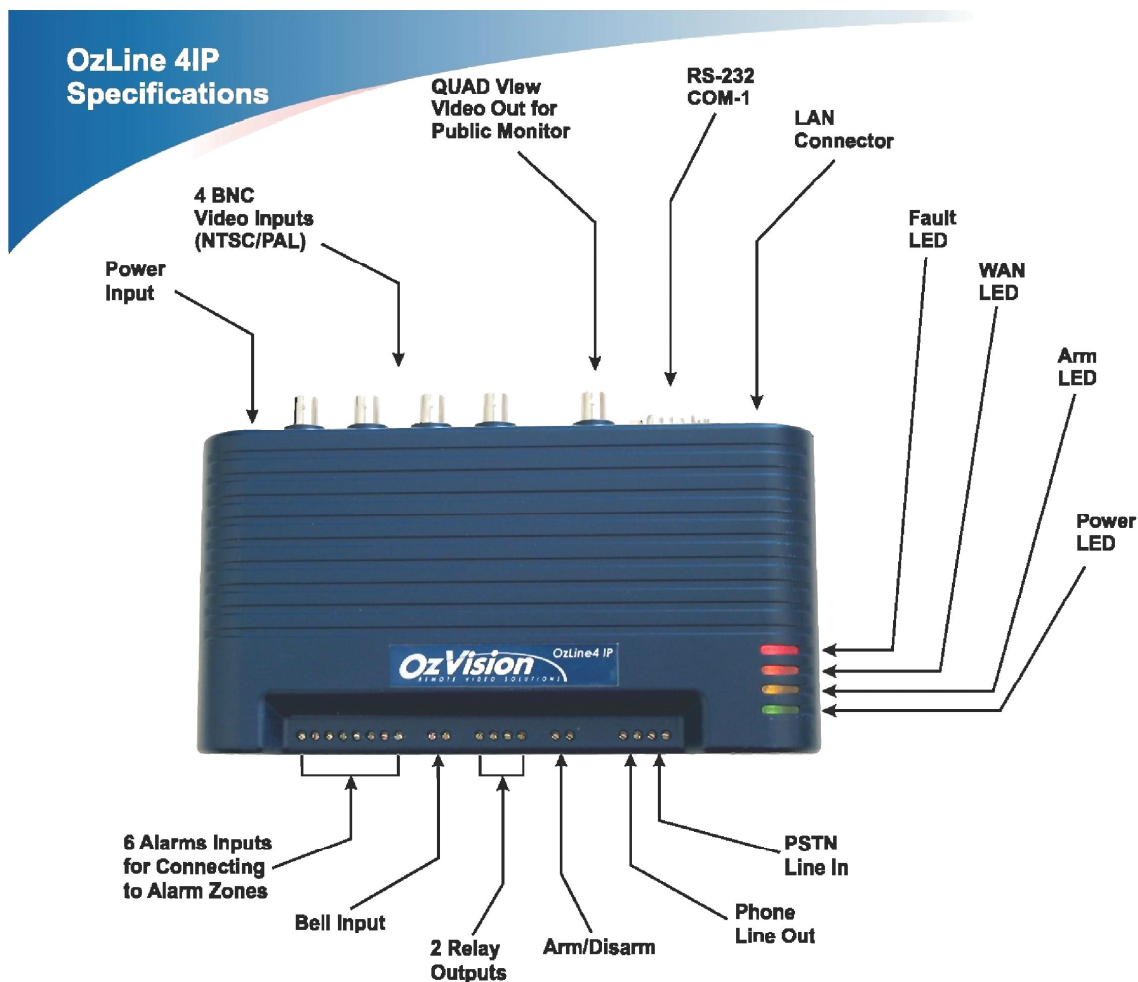
8.1. OZVISION

OZVISION is commonly used in conjunction with alarm panels for video verification of alarm events. The video verification is typically sent to a security company control room over the PSTN.

With the introduction of the IP version, it is now possible for the user to access images remotely from a secure website.

Features: -

- Plug and Play installation on IP Networks
- Captures and transmits high quality video over the internet
- Wall mount and table top enclosure
- Records and stores on the Ozvision Secure Network
- Transmits pre and post alarm recordings to central stations
- Supports login over the internet for remote viewing
- Provides storage on the network in configurations supported by your central station
- 4 video motion detection sensors linked to alarm zones
- Full interface to alarm panels
- Secure and encrypted information
- Constant "keep alive" test with server
- Optional PSTN modem and cellular backup for IP network



Alarm Inputs

- 6 Alarm Trigger (Dry Contact) Inputs for Connection to Alarm Panel Zones or triggering device
- 1 Bell (power) input to be connected to bell out of the alarm panel

Communications

- LAN and WAN 10/100 BaseT
- RS232 COM Port
- PSTN built in modem (optional) with line seizure

Local I/O

- VGA Monitor
- 2 Dry Contact Relay Outputs

Video Inputs

- 4 BNC Connectors for Video Inputs (NTSC or PAL)

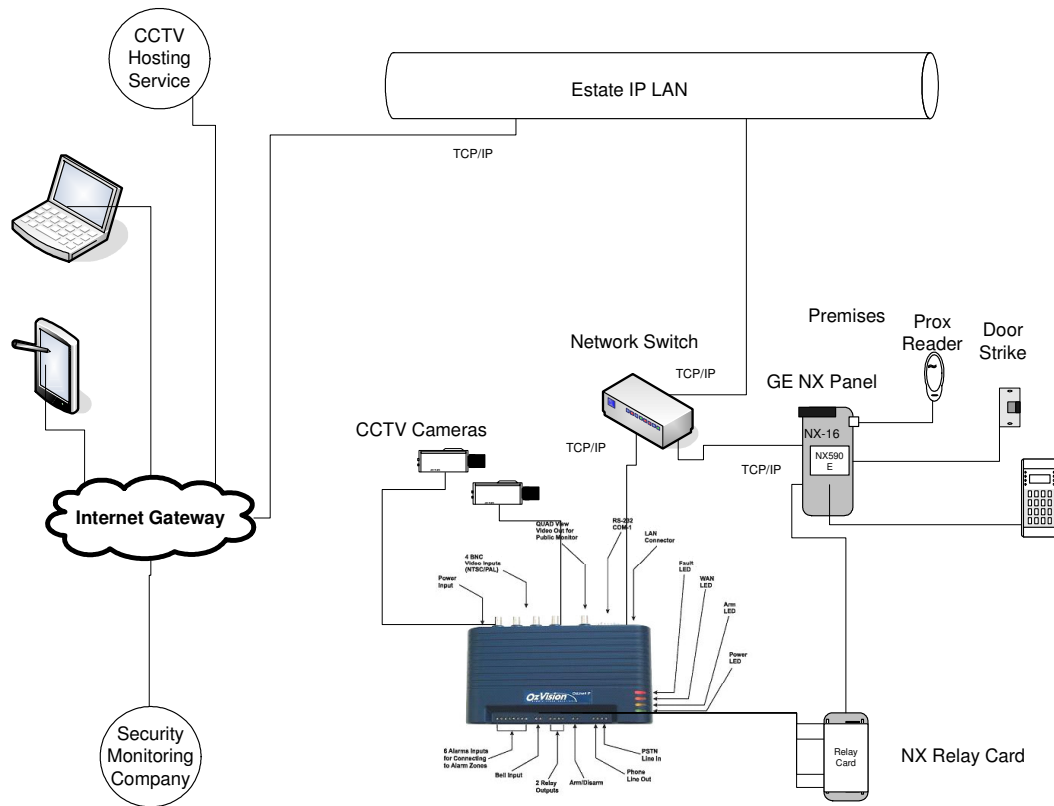
Video Outputs

- 1 BNC Connector for Local Video Output (NTSC or PAL) QUAD



12 Gill Street, Suite 1050, Woburn, MA 01801 | 800-385-2317 | 781-932-6900 | www.ozvision.com

8.2. Typical system diagram, residential application.

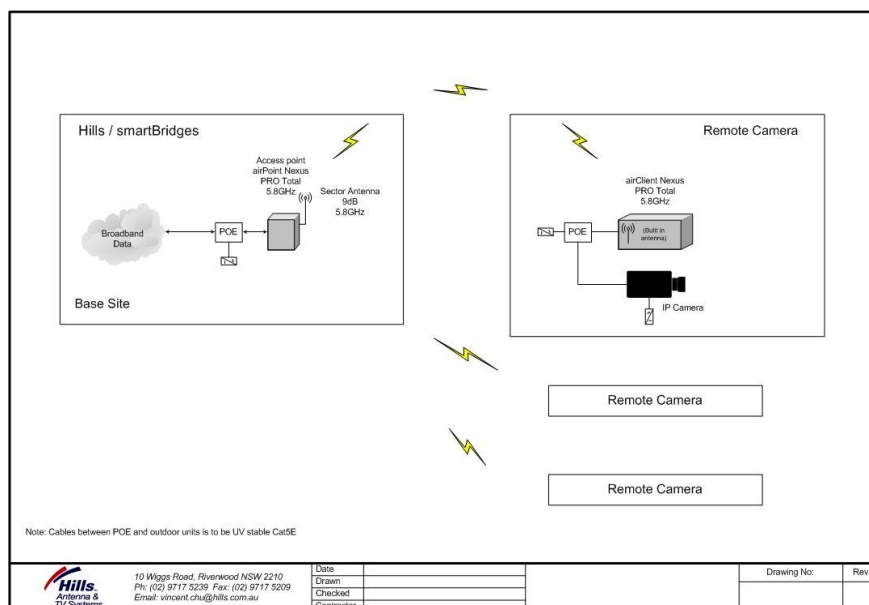


9. IP Wireless (Wi Fi- Wi Max and Mesh)

Hills Antenna and TV Systems offer a range of wireless IP network equipment including point-to-point and point-to-multipoint Wi-Fi and Wi-Max products as well as mesh technology.

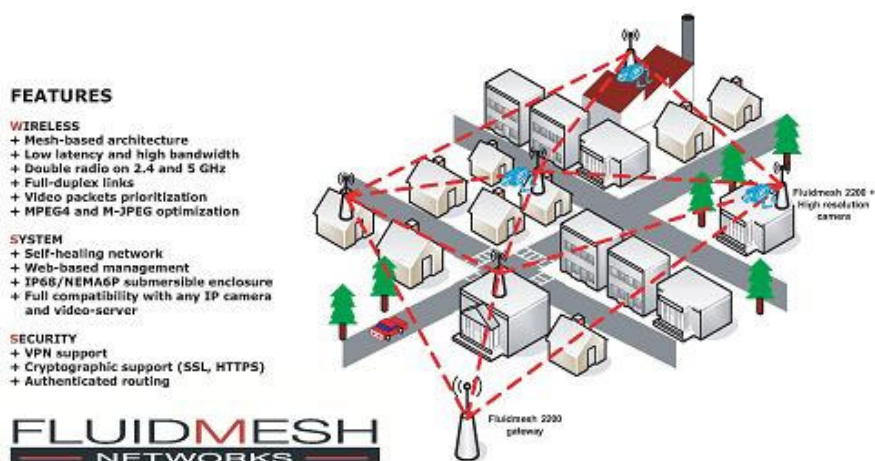
9.1. Smartbridges

Smartbridges support the transmission of IP CCTV as well as broadband via wireless point-to-point and point-to multipoint networks.



9.2. Fluidmesh

Fluidmesh enable IP CCTV images to be transmitted over a self healing "mesh" network which is ideal for city streets.



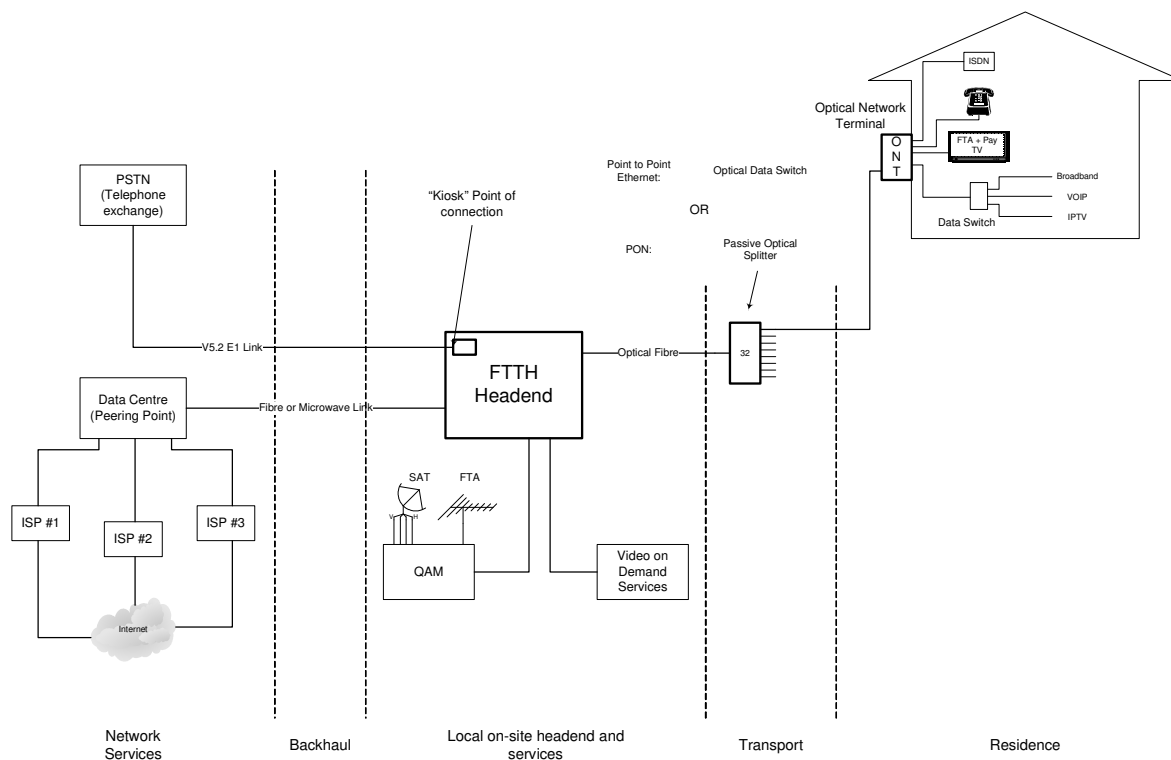
10. IP Infrastructure

Building infrastructure is moving away from proprietary cabling for building systems such as access control, security, CCTV, intercom and other systems to a single IP based network infrastructure. These networks may require extensive bandwidth if the network is to carry full motion video and IPTV. These systems may be based on optical fibre and Fibre-to-the-node (FTTN) and Fibre-to-the-home (FTTH) are possible network topologies.

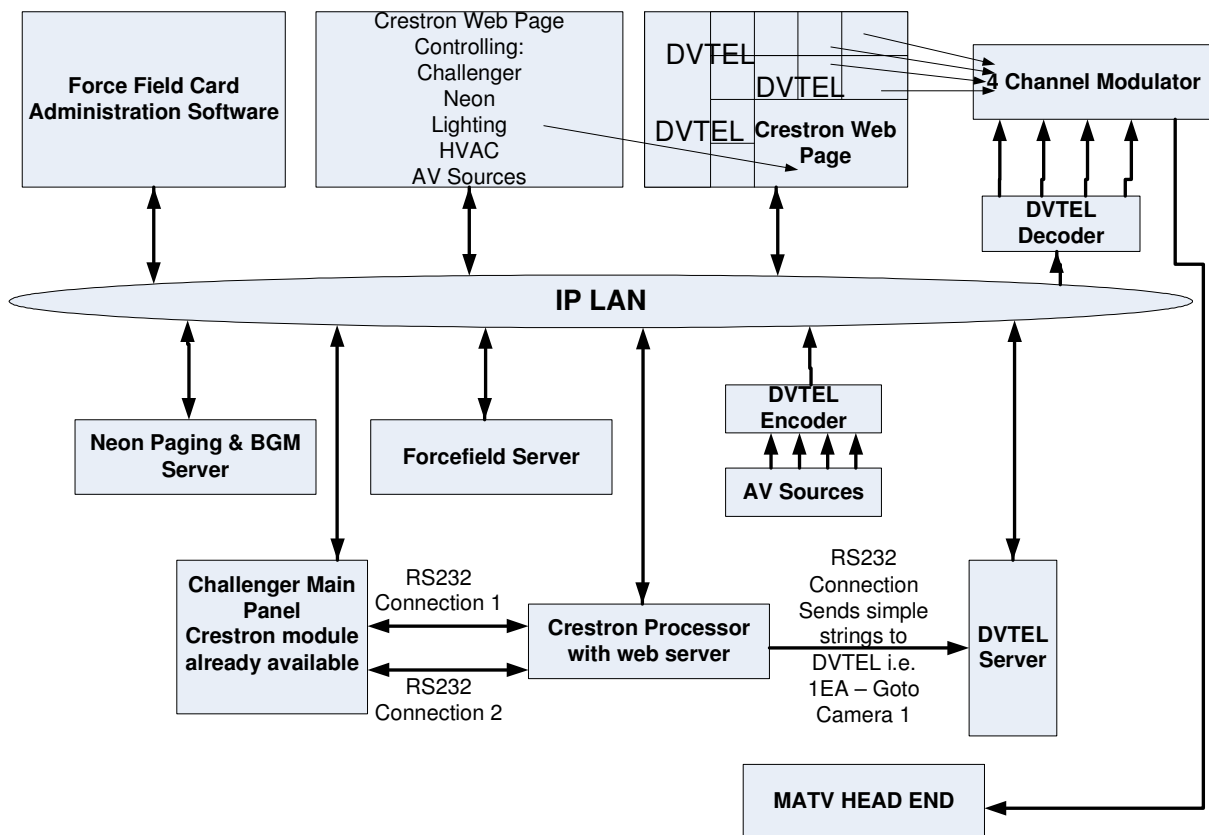
10.1. Fibre-to-the-home (FTTH)

Hills has partnered with OPTICOMM to deliver electronic services over a single IP infrastructure. The system supports a full ‘triple play’ of Broadband (including VOIP and IPTV), RF Television services and telephony as well as building services such as security, access control, CCTV, Video-on-demand and community intranet.

10.2. Typical system diagram, residential application: -



The business units of Hills industries offer a full suite of products with IP Connectivity. The following diagram illustrates how these systems can be integrated into a “whole of building” application: -



12. Glossary of Terms

Term	Definition
ADSL	Asymmetric Digital Subscriber Line - Digital phone line providing asymmetrical up/down path for data packages
ADSL2+	New gen ADSL with higher bandwidth - limited to close proximity to DSLAM
Asymmetric	Different speed/bandwidth up and down the line - greater speed for download than up
Back-haul	The data connection back to the (nearest) PSTN exchange
BPON	Broadband Passive Optical Network - early generation structure
DSLAM	Digital Subscriber Line Access Multiplexer - unit installed by carrier at exchange to provide access link for it's own subscribers
FTTB	Fibre to the Business - commercial version
FTTH	Fibre to the Home - overall term, and applicable to horizontal residential developments
FTTMDU	Fibre to the Multi-Dwelling Unit - applicable to vertical residential developments
FTTN	Fibre to the Node - a fibre network that provides connection to a node in the street, but cannot perform the "last mile" connection to the individual premises
FTTP	Fibre to the Premises - another, sometimes-used generic term for PON's
GEPON	Gigabyte Ethernet Passive Optical Network - with ethernet architecture
GPON	Gigabyte Passive Optical Network - with gigabyte switching capacity
HCF or HFC	Hybrid Copper Fibre - earlier restricted technology providing combined copper/fibre network
Head End	The control equipment and gateway point for back-haul and RF services
HHH	Hills Home Hub - the enclosure for the ONT and the home's structured cabling
ICMP	Internet Control Message Protocol
IEEE 802.3ah	International networking standard (for GEPON)
IGMP	Internet Group Multicast Protocol - Supported on GEPON, but switching required on Alcatel GPON to enable IPTV
IPTV	Television over internet - not anticipated to be functional in Aust for at least 5 years
Last Mile	The final connection leg of a network - in this case fibre from the head end right to the premises.
Layer 1	The physical link layer of standard TCP/IP network model - hardware and device drivers
Layer 2	Data network layer of standard TCP/IP network model - this layer is used for basic communication, addressing and routing, using IP and ICMP protocols. GEPON acts as a layer 2 ethernet switch.
Layer 3	The transport layer of standard TCP/IP network model - handles communication among programs on a network. TCP and UDP falls within this layer.
Layer 4	The application layer of standard TCP/IP network model - end-user applications reside at this layer. Commonly used applications include NFS, DNS, arp, rlogin, talk, ftp, ntp and traceroute.
NGEPON	Next Generation Ethernet Passive Optical Network - new technology currently being developed by Alloptic in the USA to deliver 10Gigabyte bandwidth over a PON
ONT or ONU	Optical Network Terminal or Unit - the gateway unit linking the home structured cabling system to the Fibre network - located in the HHH, in the home.
PON	Passive Optical Network - no power required over the links
POTS	Plain Old Telephone System - what we're used to

PSTN	Public Switched Telephone Network - conventional universal phone network
SIP	Session Initiation Protocol - standard signaling protocol for VOIP phones
STB	Set Top Box - interface connection to convert signal to content
Symmetric	Same speed/bandwidth up and down the line
TCP/IP	Transmission Control Protocol / Internet(work) Protocol
TDM	Time Division Multiplexing - common transmission method for digital packages
Triple Play	The provision of Voice, Data and Video services over the one single cable network
VLAN	Virtual Local Area Network - configured to operate as if networked on same connection
VoD	Video on Demand - movies, etc can be provided over GEAPON from local server
VOIP	Voice over Internet Protocol - cheaper-to-use phone system over internet link



**Contributions for the next issue
of the Hills IP Cookbook are welcome!**

13. Further Information

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<http://www.hills.com.au>

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