CBC America Presents

IP & MEGAPIXEL VIDEO SURVEILLANCE SOLUTIONS

Sept 2010

CA: 877-407-9555
NY: 800-422-6707
www.computarganz.com

Main Topics

- *Introduction to IP Network/Video 101*
- *Benefits of IP Video over Analog*
- *H.264 Compression vs. Motion JPEG*
- *Benefits of Megapixel Technology*
- *Improvements in Megapixel Lens Resolution*
- *NVR and Software Solutions*
- *Computar & GANZ IP Product Offerings*

CA: 877-407-9555
NY: 800-422-6707
www.computarganz.com

computar GANZ

Introduction to IP Network/Video 101

Purpose & objective

- Provide a foundation on IP and networking
- Identify and define network devices that are commonly used.
- Discuss basic network design concepts.

CA: 877-407-9555
NY: 800-422-6707
www.computarganz.com

computar GANZ

Introduction to IP Network/Video 101

Analog vs. Digital

- *Analog*
  - Well known Knowledgebase
  - Mature technology
  - Stable
  - Lowest price
  - Maxed out on resolution of 600 lines
- *Digital (IP)*
  - Leading edge technology
  - Remote Management
  - Highest quality video
  - Video Analytics
  - Secure data transmission
  - Flexible
  - Limited by available bandwidth
  - 100m or 328ft max length of cables per segment
  - Max number of segment is unlimited with zero video loss

computar GANZ

Introduction to IP Network/Video 101

Quick History of IP

- 1969 – Inception of ARPNET
- 1973 – TCP under development
- 1976 – DARPA adopts TCP
- 1978 – OSI Model is proposed
- 1978 – TCP and IP are separated
- 1983 – TCP/IP conversion date
- 1983 – ARPNET aka The Internet
- 1990 – Widespread Internet usage

computar GANZ

Introduction to IP Network/Video 101

Terms

Internet protocol (IP)

A key OSI layer network protocol used for addressing, delivering, and routing data over a network. IP communication is a layer 3 protocol.

- Flexible
- Dynamic
- The Standard in Networking

TCP/IP

Transmission Control Protocol/Internet Protocol – This is now the most common type of communication protocol for Internet and other similar networks. TCP is like a telephone call in that there is direct reliable communication.

UDP

User Datagram Protocol – This protocol is used for streaming audio and/or video, DNS servers, VSoIP and for printing. It is very efficient because it does not used error checking or the sorting of data packets. It is similar to sending an email in that you put the letter in the out box and you assume it gets to the destination, but very fast.

- A protocol is a standard, convention, or set of rules that governs the format, structure, or transmission of data.

Introduction to IP Network/Video 101

UTP

- Unshielded Twisted Pair – This common category of wiring is primarily used for data and communications. This network cabling that consists of four twisted pairs of copper wire terminated by RJ45 connectors and limited to 100 meters or 328 feet. (Note Cat5e & Cat6 RJ45 connectors are different for wire size)
  - Cat5 – Short for Category 5, supports up to 100MHz & was mainly used for 10Mbps, but was also used for 100Mbps networks.
  - Cat5e - Short for Category 5 Enhanced, which supports up to 350 MHz. and used for 100Mbps, but supports up to 1000Mbps.
  - Cat6 – Best for up to 1000Mbps due to much better electromagnetic insulation.
- Ethernet - 10Mbps. It uses two pairs of four pairs of wires.
- Fast Ethernet - 100Mbps. It also uses two pairs of wires.
- Gigabit Ethernet - 1000Mbps. It uses all four pairs of wires.

Introduction to IP Network/Video 101

POE

- Power Over Ethernet – This 802.3af-2003 standard uses the normally unused two pairs of wires to supply DC power. Supply ranges from 12 to 48VDC and up to 15.4 watts. As a rule, do not exceed 10% less of the Max supply rating!

Static/Dynamic IP

- Static IP is an address set up by you which does not change, and dynamic IP is assigned by a DHCP server or router which will or may change every day, week, month, or year.

DHCP

- Automatic IP assignment to an IP device from a DHCP server such as router. Setting include IP address, subnet mask, gateway address, primary and secondary DNS addresses.

computar GANZ

Introduction to IP Network/Video 101

DNS

- Domain Name Service – is system that returns the IP address when given a domain name, such as www.yahoo.com.

DDNS

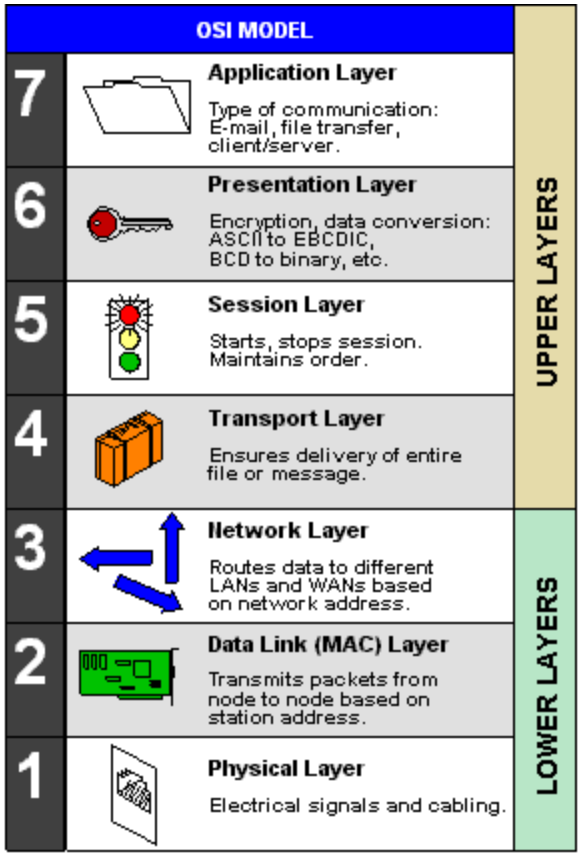
- Dynamic Domain Name Service – is system that returns the IP address when given a domain name, such as joes.dvrdns.org, from a service that manages dynamic public IP addresses.

Port Forwarding

- Port forwarding is also known as Port Mapping, Applications, Servers, Virtual Servers and Pin Holes. It is a method to open a hole, through a firewall, directed to a specific device, to allow specific TCP and/or UDP communication.

computar GANZ

Introduction to IP Network/Video 101



OSI Model

Open System Interconnection Model

- Layer 7 Application — User Interface
- Layer 6 Presentation — Presentation/Encryption
- Layer 5 Session — Connection Setup/Teardown
- Layer 4 Transport — Mechanics Reliable/Unreliable
- Layer 3 Network — Remote Path/Logical Address
- Layer 2 Data Link — Local Path/Physical Address
- Layer 1 Physical — Adapters/Cables/Connectors

CA: 877-407-9555
NY: 800-422-6707
www.computarganz.com

Introduction to IP Network/Video 101

Network Settings

IP Address – this is the address of the device, which is similar to a street address.

Subnet Mask - this defines a block of addresses.

Default Gateway – this is the address of the device that connects the network to the Internet.

Primary DNS & Secondary DNS – this is the address of the servers that contains the Internet address book of IP addresses.

```
C:\>ipconfig
Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.

C:\Documents and Settings\Test>ipconfig /all

Windows IP Configuration

        Host Name . . . . . . . . . . . . : XP-Pro-TestLab
        Primary Dns Suffix  . . . . . . . :
        Node Type . . . . . . . . . . . . : Unknown
        IP Routing Enabled. . . . . . . . : No
        WINS Proxy Enabled. . . . . . . . : No

Ethernet adapter Local Area Connection:

        Connection-specific DNS Suffix  . :
        Description . . . . . . . . . . . : Broadcom NetXtreme 57xx Gigabit Cont
roller
        Physical Address. . . . . . . . . : 00-1A-A0-D0-D0-51
        Dhcp Enabled. . . . . . . . . . . : No
        IP Address. . . . . . . . . . . . : 192.168.105.9
        Subnet Mask . . . . . . . . . . . : 255.255.255.0
        Default Gateway . . . . . . . . . : 192.168.105.2
        DNS Servers . . . . . . . . . . . : 65.255.193.61
                                            65.255.193.62
```

CA: 877-407-9555
NY: 800-422-6707
www.computarganz.com

Introduction to IP Network/Video 101

IP Address – IPv4

- Class A 0.0.0.0 – 127.255.255.255
- Class B 128.0.0.0 – 191.255.255.255
- Class C 192.0.0.0 - 223.255.255.255
- Class D 224.0.0.0 - 239.255.255.255

Special IP Addresses

Private or Local (like office cubical addresses)

- Class A 10.0.0.0 -10.255.255.255
- Class B 172.16.0.0 – 172.31.255.255
- Class C 192.168.0.0 – 192.168.255.255

APIPA

- Class B 169.254.0.0 – 169.254.255.255

Self (only for testing, simulation, or)

- 127.0.0.0.0 - 127.255.255.255

Other Unusable

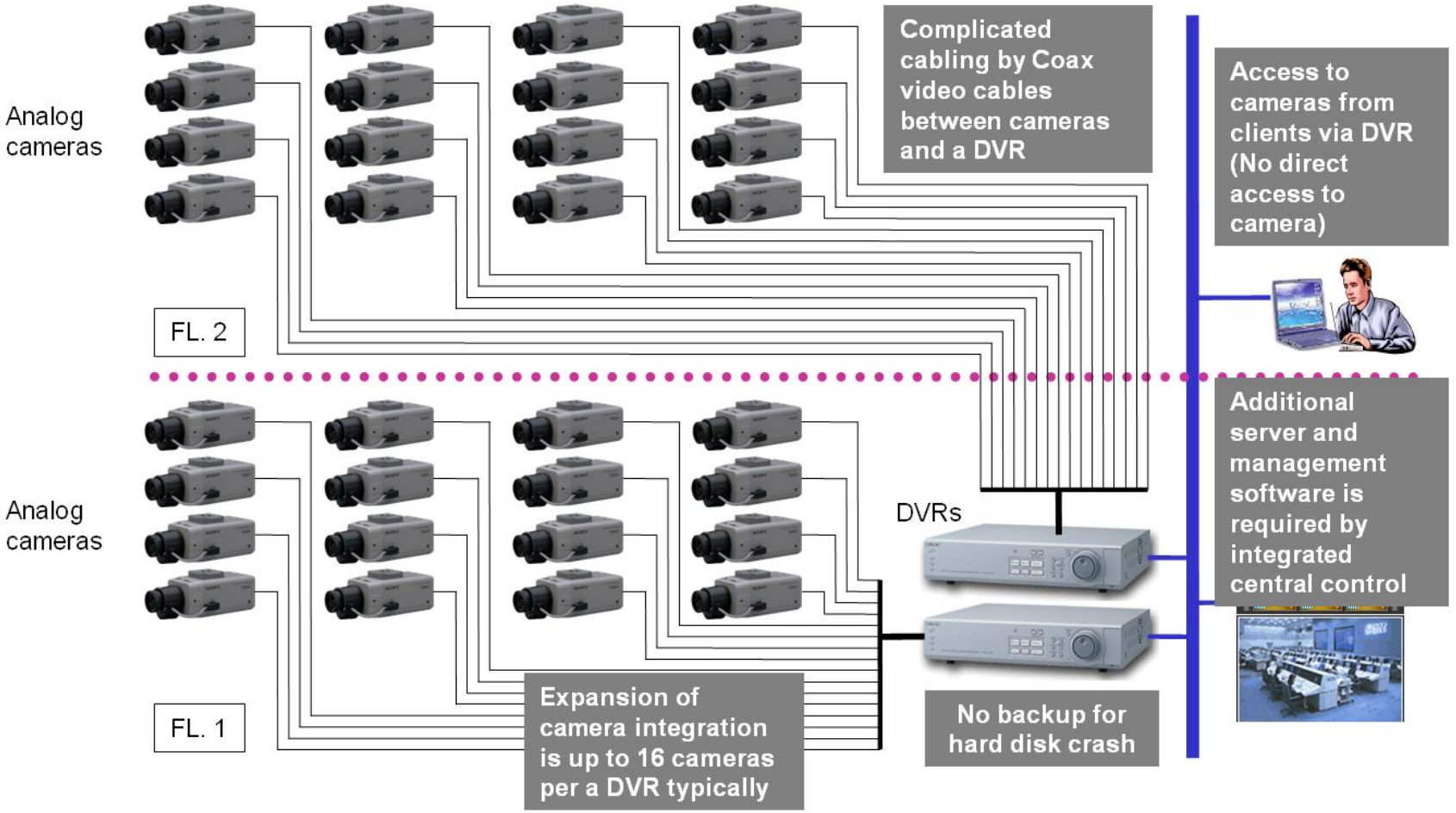
- 0.0.0.0 – DHCP request
- 255.255.255.255 – Broadcast

The rest of the IP addresses are Public, except for the first and the last of a block of addresses.

CA: 877-407-9555
NY: 800-422-6707
www.computarganz.com

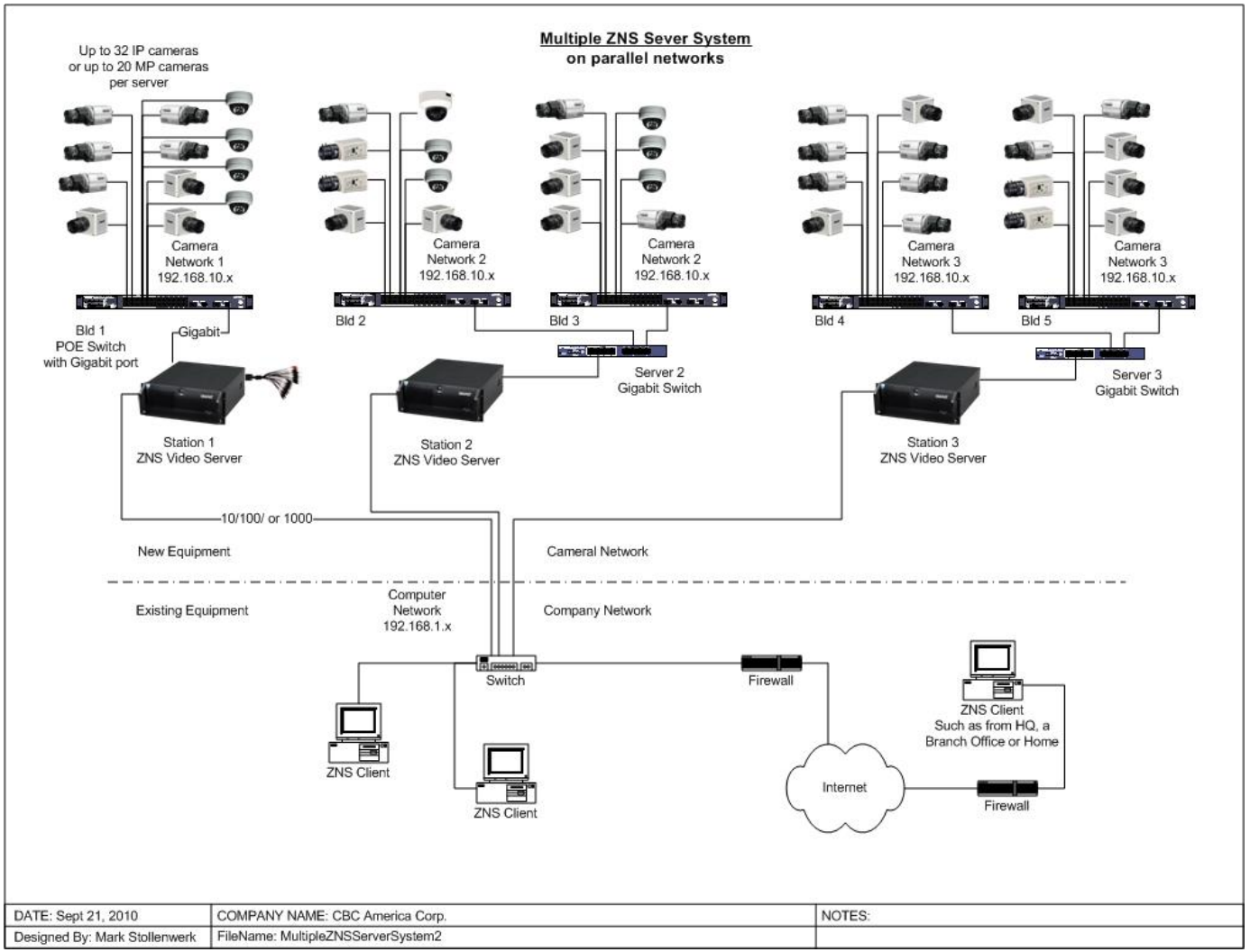
computar GANZ

CCTV System Layout



CA: 877-407-9555
NY: 800-422-6707
www.computarganz.com

IP System Layout



CA: 877-407-9555
NY: 800-422-6707
www.computarganz.com

IP Advantages over DVRs

Scalability. IP-Surveillance scales from one to thousands of cameras in increments of a single camera. There are no 16-channel jumps like in the DVR world. IP-Surveillance offers any frame rate for any camera at any time.

More cost efficient infrastructure. Most facilities are additional wiring (a major expense of CCTV installs) is required. Only one type of network (IP) connects and manages the enterprise for data, video, voice and others - making management more effective and cost effective.

Remote accessibility. Any video stream, live or recorded, can be securely accessed and controlled from any location in the world over wired or wireless networks.

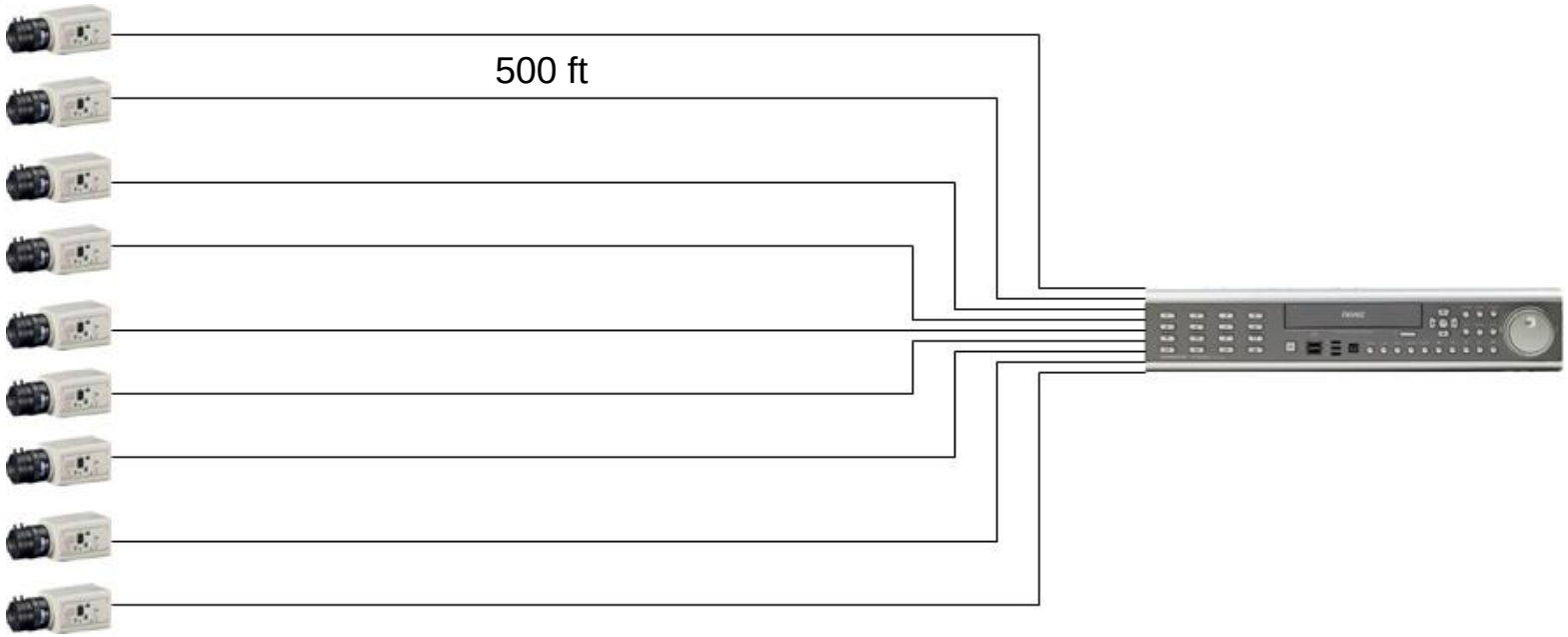
CA: 877-407-9555
NY: 800-422-6707
www.computarganz.com

computar GANZ

Copper impacts CCTV pricing

- Copper prices have doubled over the past four years, forcing many cable manufacturers to increase coax.

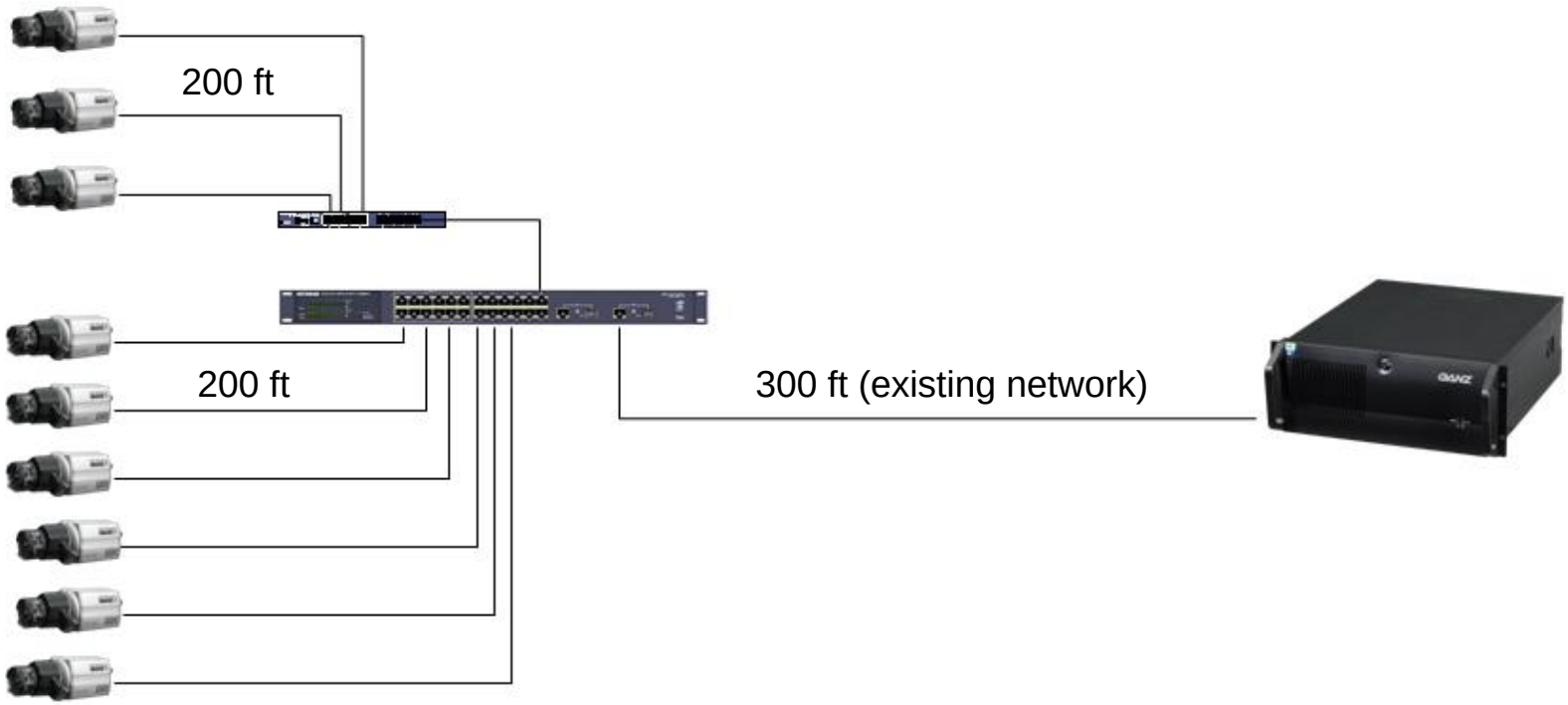
- In an analog CCTV layout, with eight cameras requiring 500 ft cable runs, the total wire cost could be $660.



CA: 877-407-9555
NY: 800-422-6707
www.computarganz.com

Copper impacts CCTV pricing

- The effect of copper's rising cost will be far less on an IP system than analog CCTV.
- In a similar layout as the previous example, an IP system with 8 cameras 200 ft away from the nearest switch could easily be wired for $160.



CA: 877-407-9555
NY: 800-422-6707
www.computarganz.com

Copper impacts CCTV pricing

Cost Comparison

Analog – 500 ft run from cameras to DVR or Network Video Recorder.

IP 200 ft new cable runs to existing network.

	Analog		IP	
# of Cables	Coax Length Req.	Total Coax Cost	Cat5e Length Req.	Total Cat5e Cost
8	4000 ft	$600	1600 ft	$160
16	8000 ft	$1320	3200 ft	$320
32	16000 ft	$2640	6400 ft	$560

CA: 877-407-9555
NY: 800-422-6707
www.computarganz.com

computar GANZ

IP Devices

- Modems – Convert POTS or cable to Ethernet
- Routers/Firewall – Manages the passing of IP traffic
- Switches – Connects IP devices to each other and resends IP traffic.
- Smart/Managed POE Switches – Preferred for video
- Hubs – Obsolete
- POE Midspans – Powers IP devices (does not resend IP traffic, but only passes IP traffic thru)
- Media converters – Converts Ethernet to another form like i.e. to COAX or Fiber Optic to extend beyond the 100 meter limit.

Combination devices

- Modem-Router-Switch – DSL Modem/Router

CA: 877-407-9555
NY: 800-422-6707
www.computarganz.com

computar GANZ

IP Documentation

Standardize your IP addressing schema

- Use a Class C network which is a subnet mask of 255.255.255.0 give you 254 devices, i.e. addresses from 192.169.10.1 to 192.168.10.254

Examples:

- 192.169.10.1 Gateway Router (or 192.169.10.254) usually not necessary
- 192.169.10.2 - 192.169.10.9 Smart Switches
- 192.169.10.10 - 192.169.10.19 NVR's
- 192.169.10.20 - 192.169.10.99 Cameras
- 192.169.10.100 - 192.169.10.140 DHCP assigned addresses devices

Device naming

- Name and label all Switches, NVR Servers, and Cables,
- For cameras, Numbers & Viewed location i.e. "01. Front Gate"
- Use a good label machine like a P-Touch

Write everything down on paper, date it, and keep it in a folder. The is even more important for changes, You can pretty it up later for the customer.

computar GANZ

Essential Network Installation Tools

- Laptop Computer (with camera installer softwares)
- UTP Cable Tester
- Cable Toner
- Cable Cutter and Cable Stripper
- RJ45 Crimp Tool
- 110 Punchdown Tool
- Patch Cable
- Cross-Over Patch Cable

CA: 877-407-9555
NY: 800-422-6707
www.computarganz.com

computar GANZ

Essential Network Testing Tools

- Ping – Uses an ICMP request on port 8 to find IP devices
- Ipconfig – gathers IP information on the PC
- Tracert – displays up to 15 routers from the source to the destination
- www.portforward.com – Used to get procedures for different devices.
- www.canyouseeme.org – Used to test completed port forward settings.
- www.yougetsignal.com/tools/open-ports/ - Used to test port forward settings on non-primary static IP addresses.
- Advanced IP Scanner 1.5 – helps find other device on the network.
- www.dyndns.com – a free DDNS service that allows you to choose your own sub-domain name and one of their domain names.

computar GANZ

IP Marketing Opportunities

Education – security and remote monitoring of school playground areas, corridors, halls, and classrooms, as well as security of the buildings themselves.

Sporting Events – Monitoring Stadiums to soccer or baseball fields.

Transportation – remote monitoring of railway stations and tracks, roads, highways, and airports.

Banking – traditional security applications in high street banks, branch offices, and anywhere ATMs are located.

Government – within security surveillance applications, often integrated into existing and new access control systems.

Retail – for security and remote monitoring purposes to making stor management easier and more efficient.

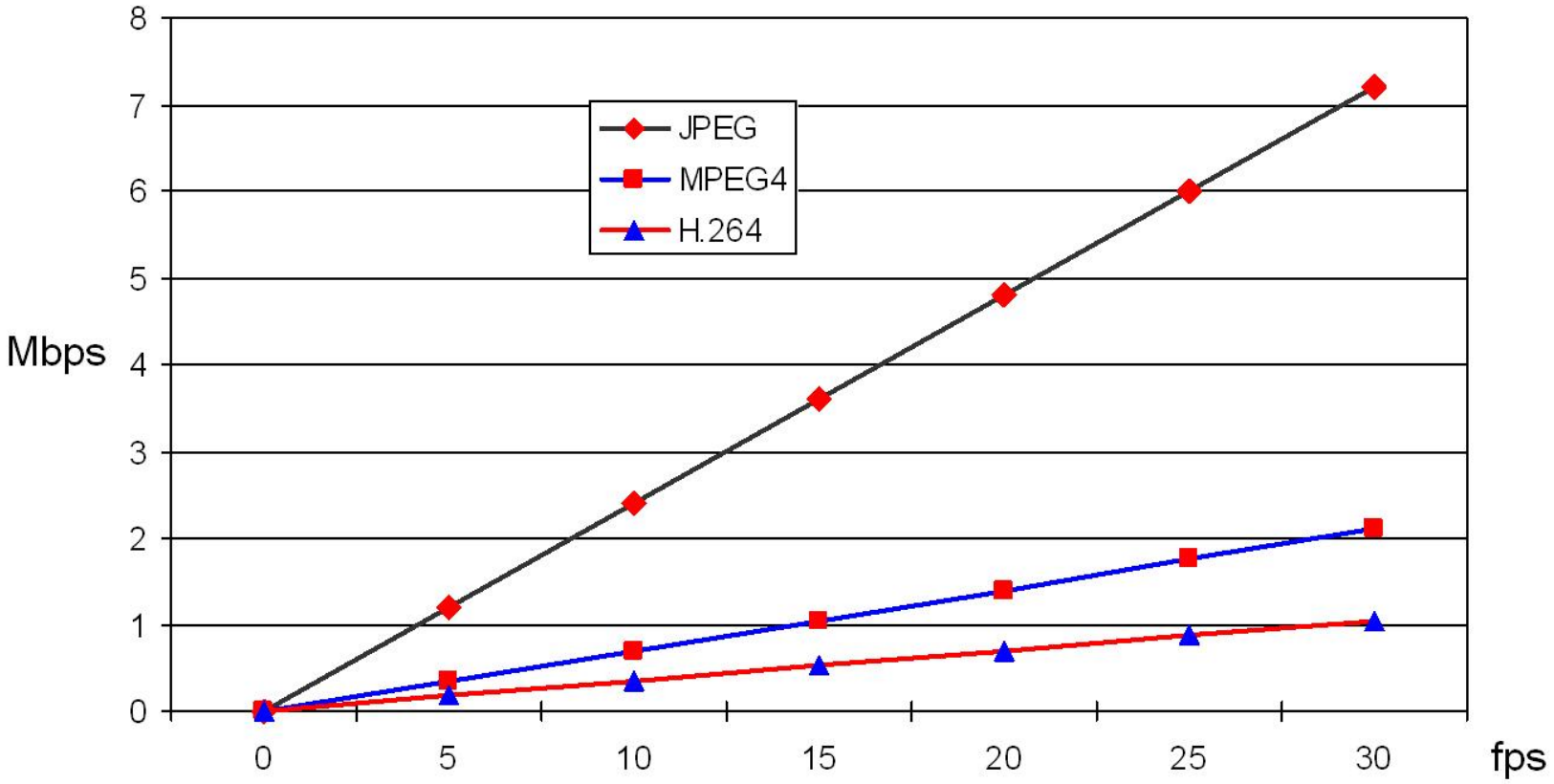
Industry – monitoring manufacturing processes, logistics system, warehouse and stock control systems.

CA: 877-407-9555
NY: 800-422-6707
www.computarganz.com

computar GANZ

Storage Capacity Planning

- The compression CODEC used (JPEG [MJPEG], MPEG4, or H.264) determines the storage capacity needed for each system.



CA: 877-407-9555
NY: 800-422-6707
www.computarganz.com

Storage Calculator

ZNS - ZNR
Estimated Storage Calculator

CBC (AMERICA) Corp.
Commack, NY: (800) 422-6707
Torrance, CA: (877) 407-9555
www.computarganz.com

Enter the number of cameras, the frames per second (fps), and the percentage of Motion viewed from the cameras in the light gray fields.
If 'N' for using MPEG4/H.264, storage will be calculated for MJPEG as are the other cameras. MPEG4/H.264 is calculated for medium motion.
If Continuous Recording is used, set % Motion to 100%, which means that recording is for 24 hour per day. Otherwise, % Motion can be estimated by dividing working hours by 24 hours times and estimated percent of the time there is motion. e.g. 15/24 x 80% = 50%

Number of Storage Days:	7

Camera Model (Max Camera Pixel Dimensions)	Max fps per camera	Max KB per Frame	# of Cameras	FPS per Camera	Using Mpeg4 /H.264 (Y/N)	% Motion	Ave. Bandwidth (Mbps)	Video Storage (GB/day)	Video Storage for 7 Days (TB)
MP8 (6400x1200) 4 images/camera	22	1172				50%	0.00	0.00	0.00
MP5A (2592x1944)	15	685				50%	0.00	0.00	0.00
MP5DN (2592x1944)	9	685			Y	50%	0.00	0.00	0.00
MP3A (2048x1536)	20	463				50%	0.00	0.00	0.00
MP3DN (2048x1536)	15	463			Y	50%	0.00	0.00	0.00
MP3DN-2 (Variable)	30	384				50%	0.00	0.00	0.00
MP2A (1600x1200)	24	293				50%	0.00	0.00	0.00
MP2DN (1600x1200)	24	293			y	50%	0.00	0.00	0.00
MP1A (1280x1024)	30	227				50%	0.00	0.00	0.00
MP1DN (1280x1024)	30	227			Y	50%	0.00	0.00	0.00
True D1 (720x480)	30	69				50%	0.00	0.00	0.00
D1 (704x480)	30	67.5				50%	0.00	0.00	0.00
VGA (640x480)	30	61.4	32	10	Y	50%	13.82	809.47	6.15
2 CIF (640X240)	30	30.7				50%	0.00	0.00	0.00
1 CIF (320x240)	30	15.3				50%	0.00	0.00	0.00

Total Mbps for storage:	**13.82**		
Total GB/Day:		**809.47**	
Total server storage for 7 Days (TB)			6.51

Act. HDD Size
=> 8 (TB)

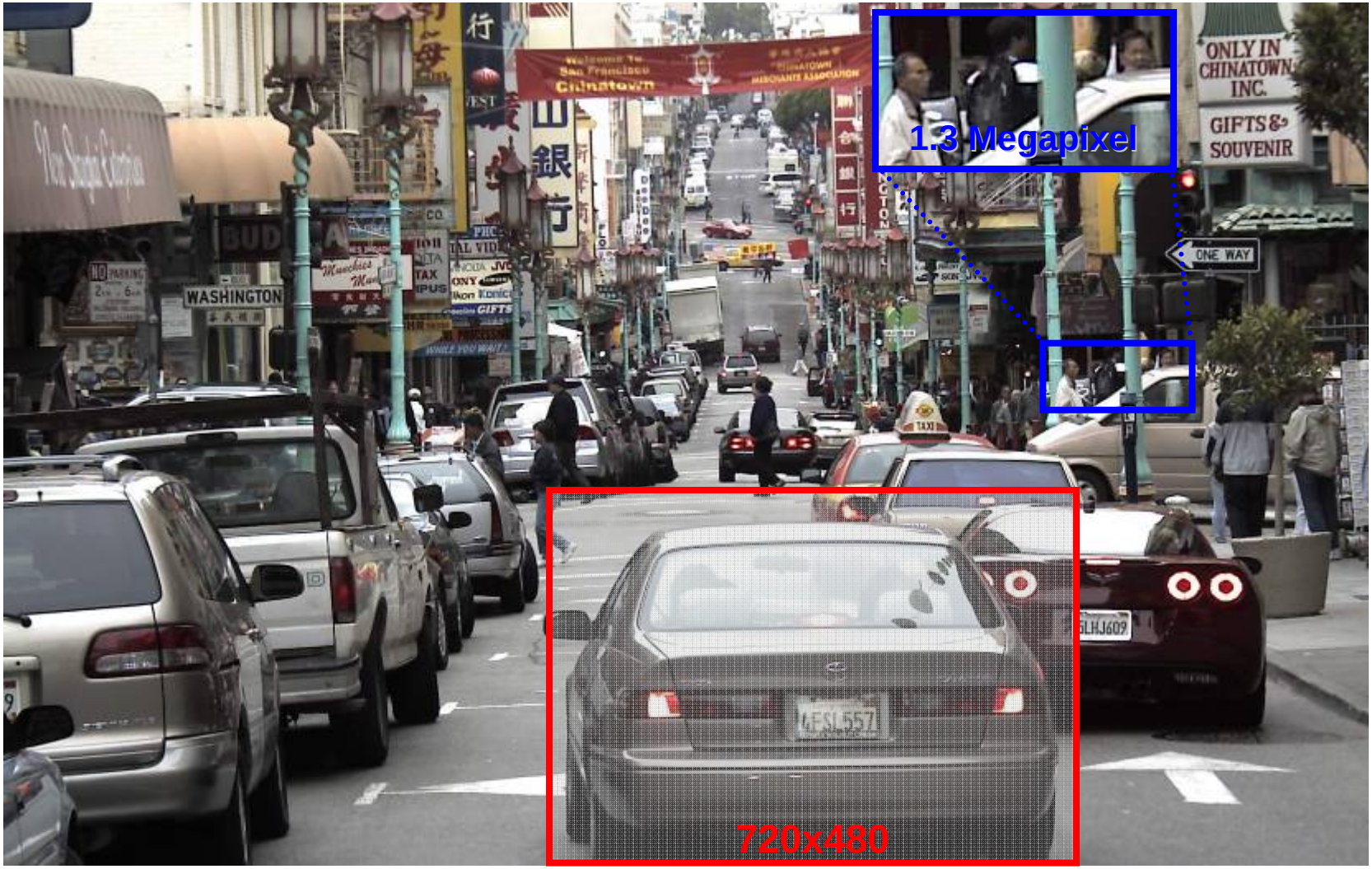
CA: 877-407-9555
NY: 800-422-6707
www.computarganz.com

Network Planning Considerations

- Customers Expectations (Security or entertainment)
  - Expected frames per second (24-30 fps for slight of hand, 10-15 fps for small item shoplifting, 3-7 fps for larger shoplifting, 1-3 fps for vandalism large item theft)
  - Video resolution/quality
- Number of cameras
  - Existing Cameras
  - D1/VGA Cameras
  - Megapixel Cameras
- How to limit network traffic
  - Record on motion
  - Reduced resolution
  - Areas to mask
- Existing Network
  - Cables or run new
  - Bandwidth
    - Internet Service existing/Available (DSL, T1, Cable, FIOS, ATT Uverse
    - Local network available bandwidth for client connections
  - Nodes / Switches / closets / NEMA Boxes Locations
  - Distances to nodes
  - Are media converters required to extend the network? Coax, Cat5e, Fiber

computar GANZ

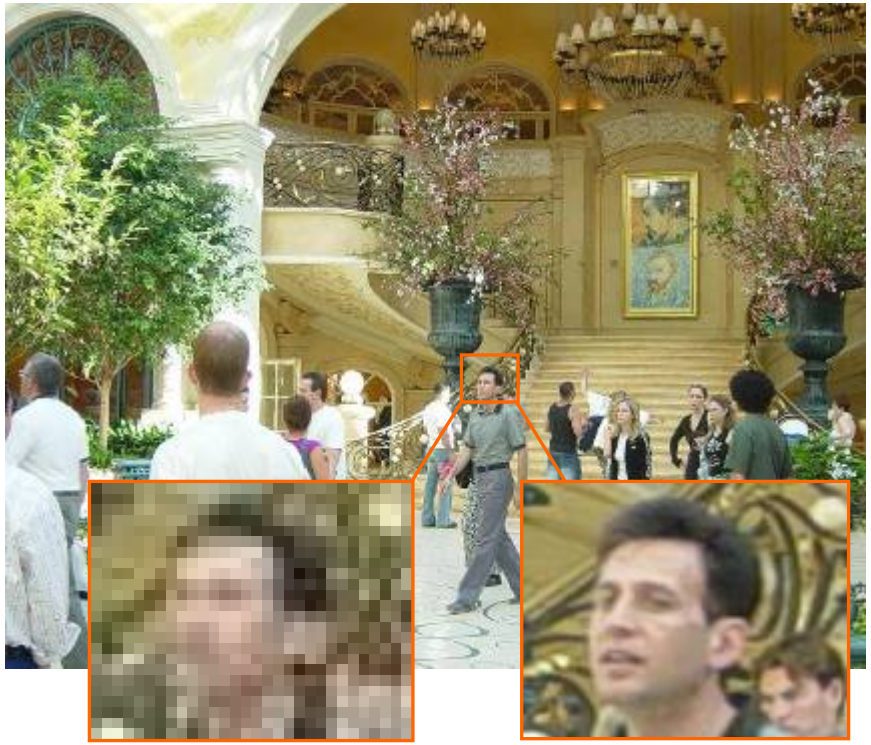
The Problem – Limited Field of View



CA: 877-407-9555
NY: 800-422-6707
www.computarganz.com

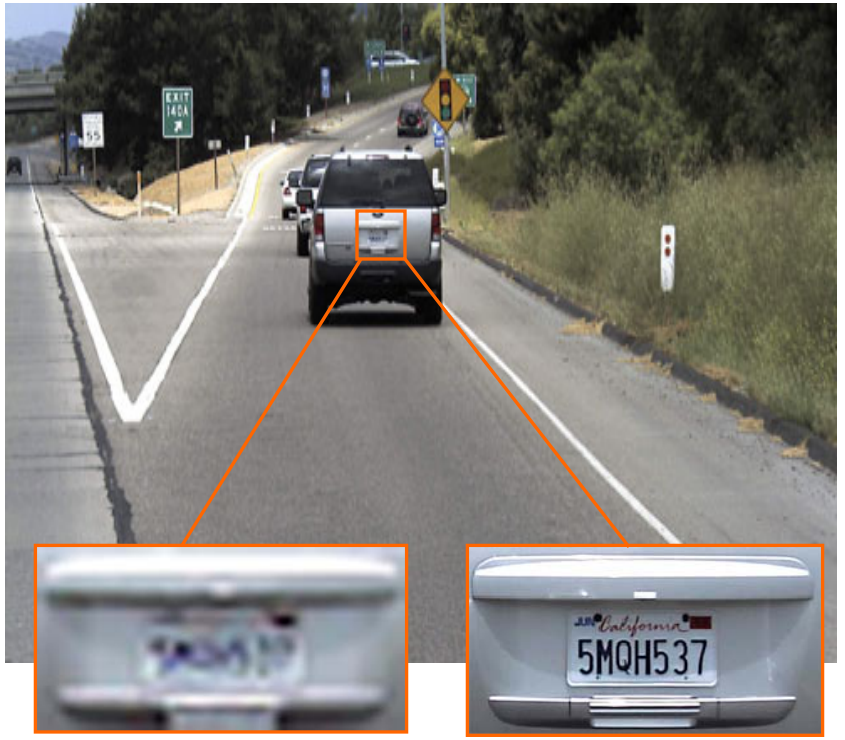
Analog vs. Megapixel

Despite significant advances in consumer imaging, a majority of video surveillance applications still utilize low-resolution cameras established on the analog standard.



720x480
NTSC CCTV System

1.3 Megapixel Video System



720x480
NTSC CCTV System

2 Megapixel Video System

CA: 877-407-9555
NY: 800-422-6707
www.computarganz.com

Resolution 101

Resolution	**Pixels**	**Camera / Server / Model**
352x240 (CIF)	0.1MP	Min. DVR Resolution
640x480 (VGA)	0.3MP	IPX, ZN, & ZV Series
704x480 (4CIF)	0.3MP	Max. DVR Resolution
704x576	**0.4MP**	**HDTV - 576p**
1280x720	**0.9MP**	**HDTV - 720p**
1280x1024 (SXGA)	1.3MP	MP1DN
1600x1200 (4SVGA)	2.0MP	MP2DN
1920x1080	**2.1MP**	**HDTV - 1080p**
2048x1536 (4XGA)	3.0MP	MP3DN
2560x1920 (16VGA)	5.0MP	MP5DN

CA: 877-407-9555
NY: 800-422-6707
www.computarganz.com

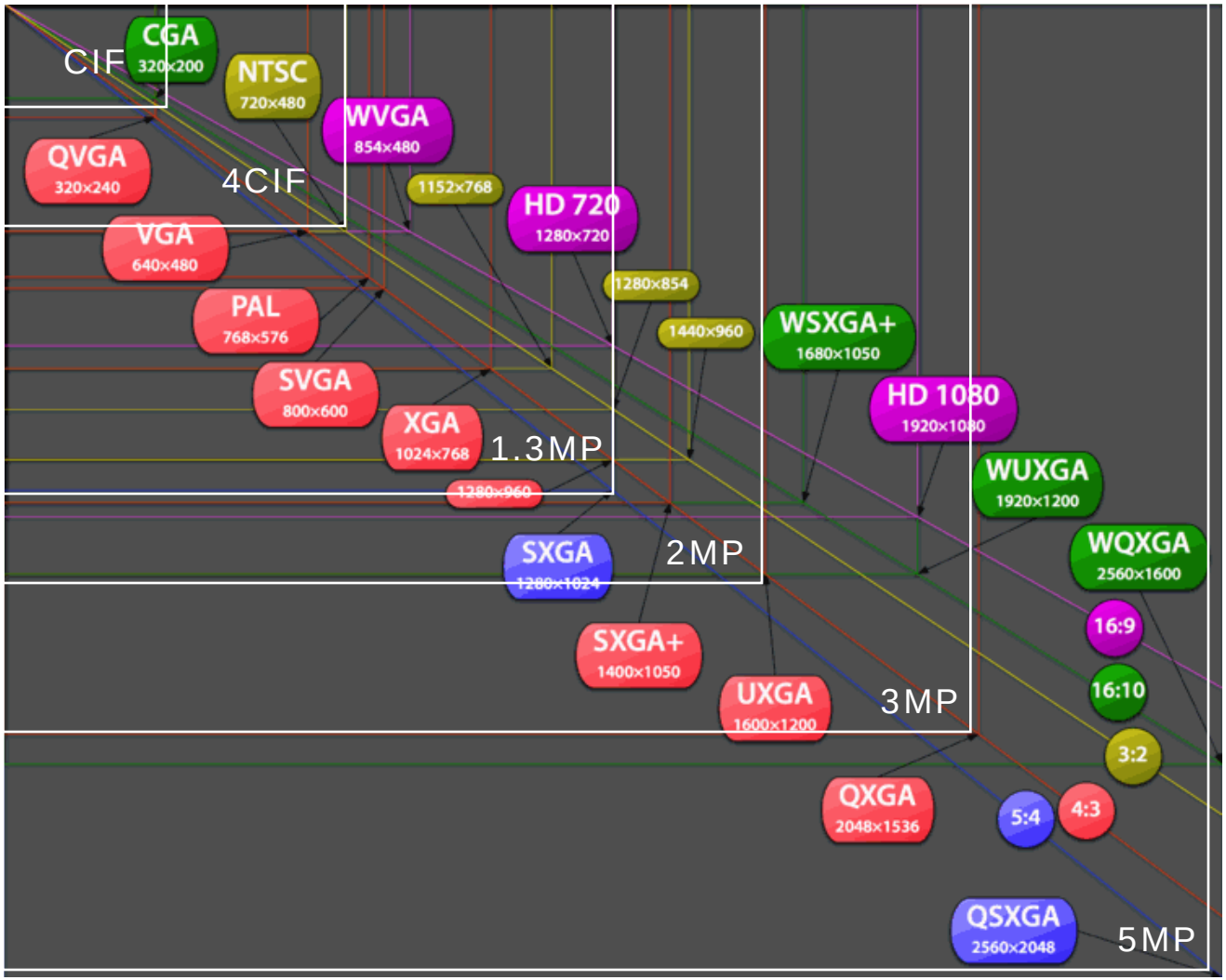
Putting Resolution In Perspective

Resolution	**Pixels**	**Camera / Series**
352x240 (CIF)	0.1MP	Min. DVR Resolution
640x480 (VGA)	0.3MP	VGA
704x480 (4CIF)	0.3MP	Max. DVR Resolution
720x480 (True D1)	0.3MP	DDK Series
704x576 (576p)	**0.4MP**	***PixelPro VGA***
1280x720 (720p)	**0.9MP**	***PixelPro 720p***
1280x1024 (SXGA)	1.3MP	MP1DN / MP1A
1600x1200 (UXGA)	2.0MP	MP2DN / MP2A
1920x1080 (1080p)	**2.1MP**	***PixelPro 1080p***
2048x1536 (QXGA)	3.0MP	MP3DN
2560x1920 (16VGA)	5.0MP	MP5DN / MP5A

CA: 877-407-9555
NY: 800-422-6707
www.computarganz.com

computar GANZ

Resolution 101

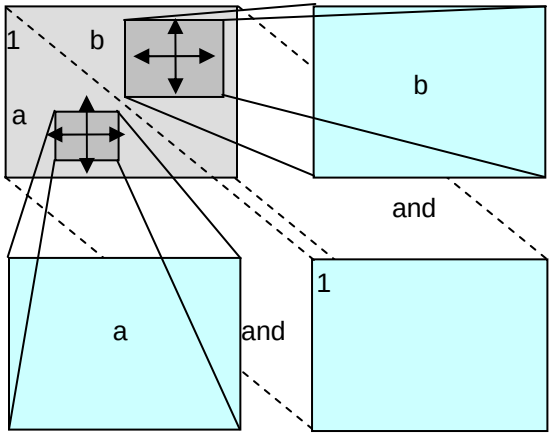


CA: 877-407-9555
NY: 800-422-6707
www.computarganz.com

Differences Between Mechanical & Digital PTZ

640x480
(NTSC/PAL)

Existing Mechanical PTZ allow either Full FOV Image OR Zoomed Image, but not both.



Megapixel cameras can simultaneously display Full FOV & Digitally Zoomed Image!

CA: 877-407-9555
NY: 800-422-6707
www.computarganz.com

Megapixel Lenses

Full Range of Computar® Monofocal & Varifocal Lenses

H0514-MP

M0814-MP

M1214-MP

M1614-MP

M2514-MP

M3514-MP

M5018-MP

M7528-MP

MLM3X-MP

M3Z1228C-MP

H2Z0414C-MP

HG2Z0414FC-MP

TG4Z2813FCS-MPIR

H3Z4518CS-MPIR

CA: 877-407-9555
NY: 800-422-6707
www.computarganz.com

Computar *Megapixel & HD Lens Offering*

H0514-MP
(5mm)
2MP

M0814-MP
(8mm)
2MP

M1214-MP
(12mm)
2MP

M1614-MP
(16mm)
2MP

M2514-MP
(25mm)
2MP

M3514-MP
(35mm)
2MP

M5018-MP
(50mm)
2MP

M7528-MP
(75mm)
2MP

TG4Z2813FCS-MPIR
(2.8-12mm A/I)
1 MP
720p HD

H2Z0414C-MP
(4-8mm)
2MP

HG2Z0414FC-MP
(4-8mm A/I)
2MP

H3Z4518CS-MPIR
(4.5-13.2mm)
3 MP

T3Z0312CS-MPIR
(3-8mm)
3 MP
1080p HD

TG3Z0312FCS-MPIR
(3-8mm A/I)
3 MP
1080p HD

CA: 877-407-9555
NY: 800-422-6707
www.computarganz.com

computar GANZ

Megapixel Lenses

Full Range of Computar® Monofocal & Varifocal Lenses

Model #	Type	Aperture	Focal Length	Mount	Iris	Specialty
TG4Z2813FSC-MPIR	1/3”	F1.3	2.8-12mm	CS	DC Auto	D/N, IR, 1.3MP
T3Z0312CS-MPIR	1/3”	F1.8	3-8mm	CS	Manual	D/N, IR, 3MP
TG3Z0312FCS-MPIR	1/3”	F1.8	3-8mm	CS	DC Auto	D/N, IR, 3MP
H3Z4518CS-MPIR	1/2"	f1.8	4.5mm ~ 13.2mm	CS	Manual	D/N, IR, 3MP
H2Z0414C-MP	1/2"	f1.4	4mm ~ 8mm	C	Manual	n/a
HG2Z0414FC-MP	1/2"	f1.4	4mm ~ 8mm	C	DC Auto	n/a
TG4Z2813FCS-MPIR	1/3"	f1.3	2.8mm ~ 12mm	CS	DC Auto	D/N, IR, 1.3MP
H0514-MP	1/2"	f1.4	5mm	C	Manual	n/a
M0814-MP	2/3"	f1.4	8mm	C	Manual	n/a
MP1214-MP	2/3"	f1.4	12mm	C	Manual	n/a
M1614-MP	2/3"	f1.4	16mm	C	Manual	n/a
M1620-MPV	2/3"	F2.0	16mm	C	Manual	3MP
M2514-MP	2/3"	f1.4	25mm	C	Manual	n/a
M2518-MPV	2/3"	F1.8	25mm	C	Manual	3MP
M2518-MPW	2/3"	F1.8	25mm	C	Manual	5MP
M3514-MP	2/3"	f1.4	35mm	C	Manual	n/a
M3520-MPV	2/3"	F2.0	35mm	C	Manual	3MP
M5018-MP	2/3"	f1.8	50mm	C	Manual	n/a
M5028-MPV	2/3"	F2.8	50mm	C	Manual	3MP
M7528-MP	2/3"	f2.8	75mm	C	Manual	n/a
M3Z1228C-MP	2/3"	f2.8	12mm ~ 36mm	C	Manual	n/a

CA: 877-407-9555
NY: 800-422-6707
www.computarganz.com

Megapixel Lenses

Computar® Introduces New 3MP Varifocal D/N IR Lens

H3Z4518CS-MPIR

- True 3-Megapixel Center and Corner Resolution
- 3X Varifocal 4.5 ~ 13.2mm / F1.8
- 1/2” Format, CS Mount
- IR-Corrected for True Day/Night Cameras

Standard IP Cameras

- Locking Set Screws on Zoom, Focus and Iris rings
- Precision All-Glass Optics Ensure Minimal Distortion
- Comprehensive 3-Year Warranty

CA: 877-407-9555
NY: 800-422-6707
www.computarganz.com

Computar *Megapixel & HD Lens Offering*

3MP 1/3” Format Varifocal D/N IR Lens

TG3Z0312FCS-MPIR

- Great Match for ***PixelPro*** 1/2.5” CMOS Sensor
- True 3-Megapixel Center and Corner Resolution
- 3X Varifocal 3 ~ 8mm / F1.2
- Manual & DC Auto Iris versions available
- 10% Larger Image - Designed for HD 16:9 Format
- IR-Corrected for True Day/Night Cameras
- No Focus Shift when using IR Illumination
- Locking Set Screws on Zoom, Focus and Iris rings
- Precision All-Glass Optics Ensure Minimal Distortion
- Comprehensive 3-Year Warranty

CA: 877-407-9555
NY: 800-422-6707
www.computarganz.com

PixelPro Series

(H.264 & MJPEG)

VGA

CS-Mount
ZN-C1

Vandal-Proof Dome
ZN-DT1A

720p

CS-Mount
ZN-C1M

Vandal-Proof Dome
ZN-DT1MA

1080p

CS-Mount
ZN-C2M

Vandal-Proof Dome
ZN-DT2MA

CA: 877-407-9555
NY: 800-422-6707
www.computarganz.com

PixelPro

Features & Specifications

- 1/2.5” Progressive Scan CMOS
- 30 ips @ 1080p Full HD Resolution
- 16:9 Aspect Ratio with ‘Wide Mode’
- True Mechanical Day/Night
- DC Auto Iris Output
- H.264 & M-JPEG Dual-Streaming

CA: 877-407-9555
NY: 800-422-6707
www.computarganz.com

computar GANZ

PixelPro

1/2.5” CMOS Sensor – FOV Calculations

Resolution / Mode	3mm	8mm
1080p Normal	*79.3°*	*31.0°*
720p Wide Mode	*105.0°*	*41.3°*
720p Normal	*79.3°*	*31.0°*
VGA	*87.6°*	*34.1°*

CA: 877-407-9555
NY: 800-422-6707
www.computarganz.com

computar GANZ

PixelPro

Features & Specifications

- Analog BNC Service Monitor Jack
- On-board Micro SDHC Card Slot
- External Alarm I/O Interface
- Pre- & Post-Alarm Buffers
- Bi-directional Audio Support
- Triple Power (12VDC / 24VAC / PoE)

CA: 877-407-9555
NY: 800-422-6707
www.computarganz.com

computar GANZ

PixelPro

Features & Specifications

- ONVIF Membership & Compliance
- NVR Software Integration Partners
- HTML-based SDK / API (CGI)
- P-Iris (Stepping Motorized Iris)
- MFZ (Motorized Focus & Zoom)
- Comprehensive 3-Year Warranty

CA: 877-407-9555
NY: 800-422-6707
www.computarganz.com

computar GANZ

PixelPro

ONVIF Membership & Compliance

ONVIF

- Global open interface standard designed to ensure compatibility & interoperability between all network video devices.

GANZ
POWERED BY CBC
CBC GROUP

- CBC Group is an official ONVIF member.
- PixelPro is certified as ONVIF Compliant.

CBC

CA: 877-407-9555
NY: 800-422-6707
www.computarganz.com

computar GANZ

PixelPro

NVR Software Integration Partners

GANZ ZNS SERIES

- **ZNS-NVR** is a basic monitoring & recording software which is licensed per 4, 9, 16, or an unlimited number of channels.

OnSSI IP To The Core

- **ONSSI Ocularis** provides sophisticated user interface tools for accessing and reviewing IP-based surveillance video.

exacq Technologies

- **ExacqVision VMS** (Video Management System) is an NVR software solution which offers several high-end features.

milestone

- **Milestone** provides an open-platform NVR solution, with optional software modules geared towards video analytics.

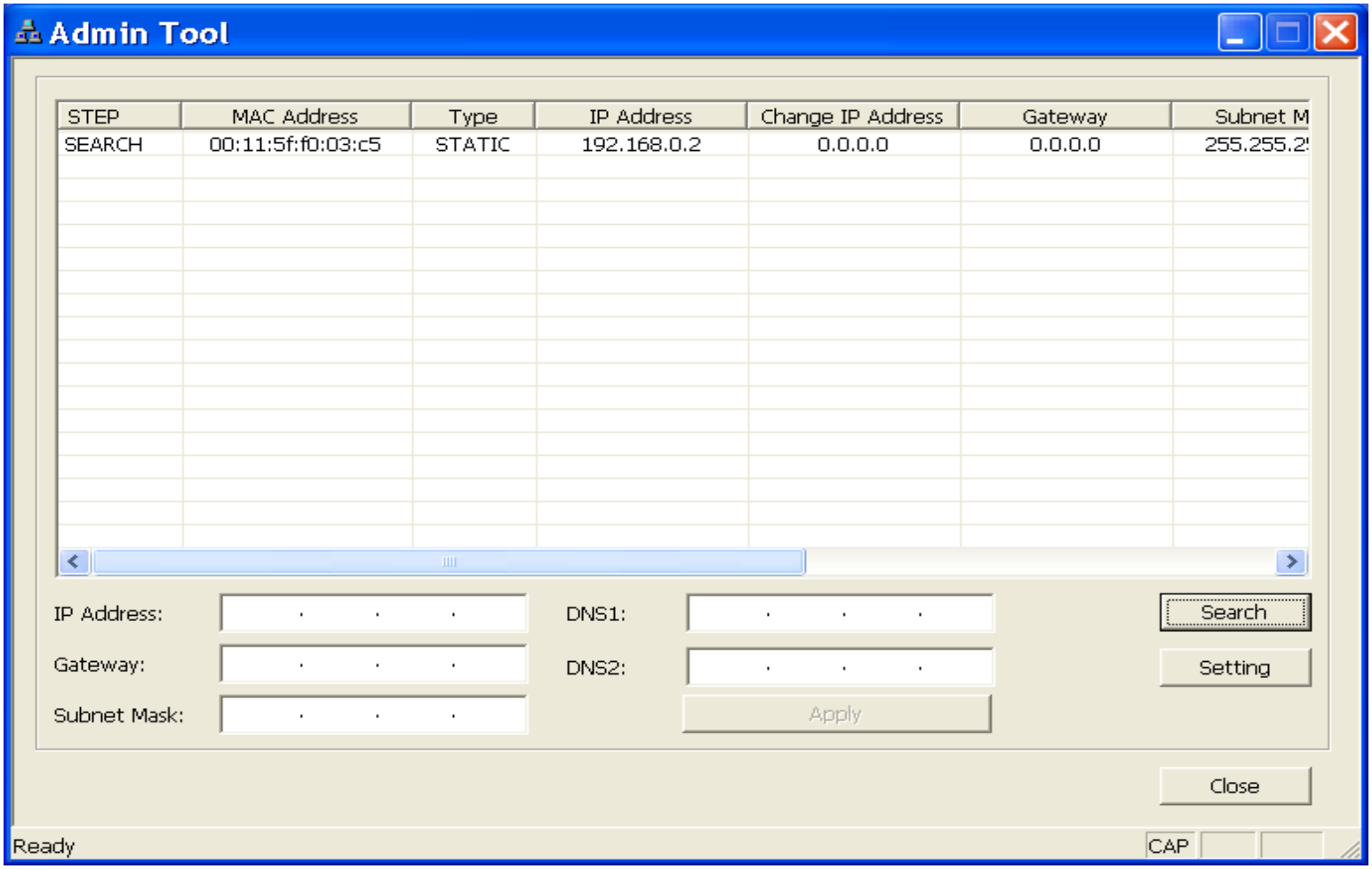
GANZ VSoIP
VIDEO SURVEILLANCE OVER INTERNET PROTOCOL

- **VSoIP** is a monitoring and recording software suite which will work with all GANZ IP & Megapixel devices, along with support for DIGIMASTER Networking DVRs.

CA: 877-407-9555
NY: 800-422-6707
www.computarganz.com

computar GANZ

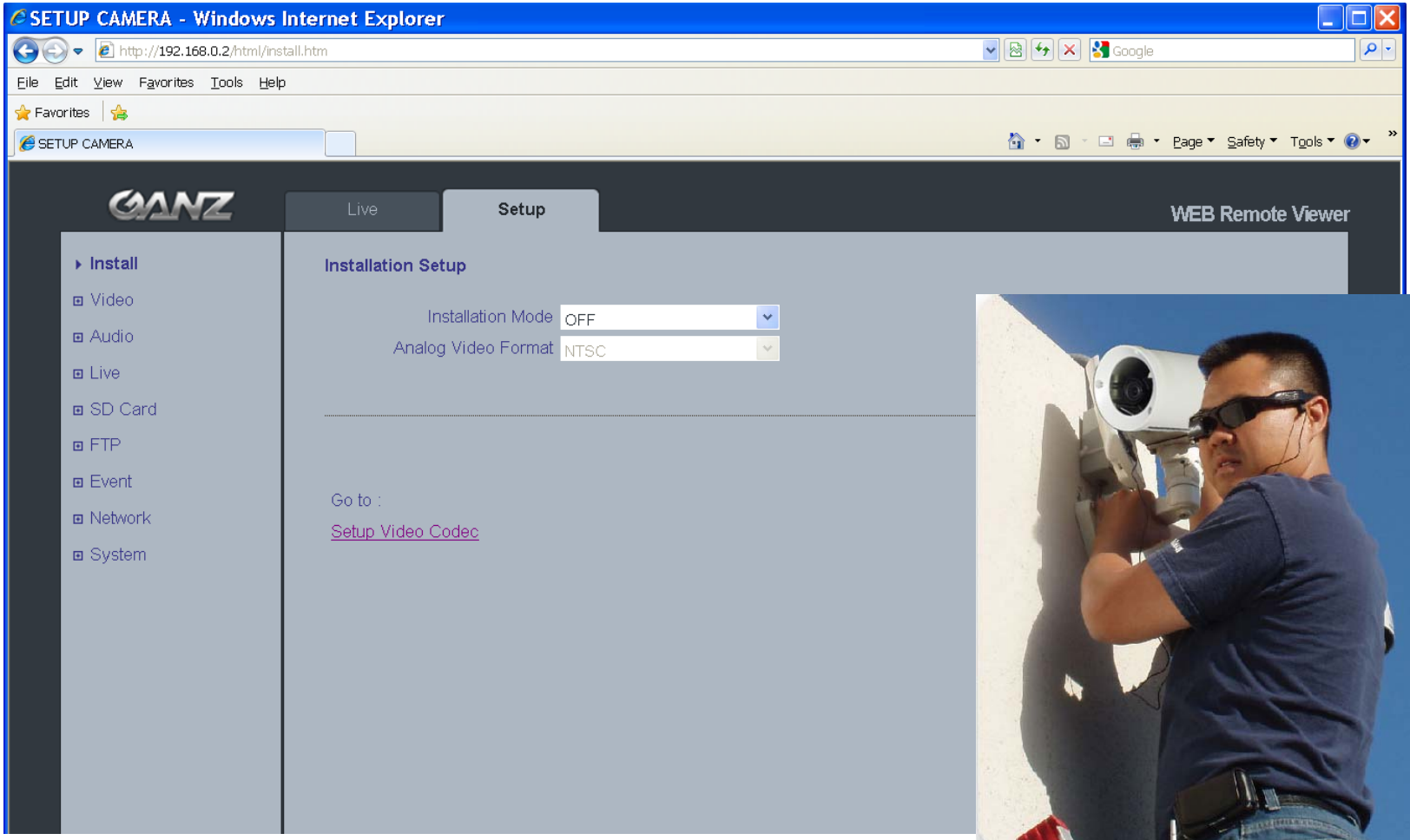
PixelPro IP Discovery Tool



Discover & Modify IP Address of any ***PixelPro*** device on the LAN.

CA: 877-407-9555
NY: 800-422-6707
www.computarganz.com

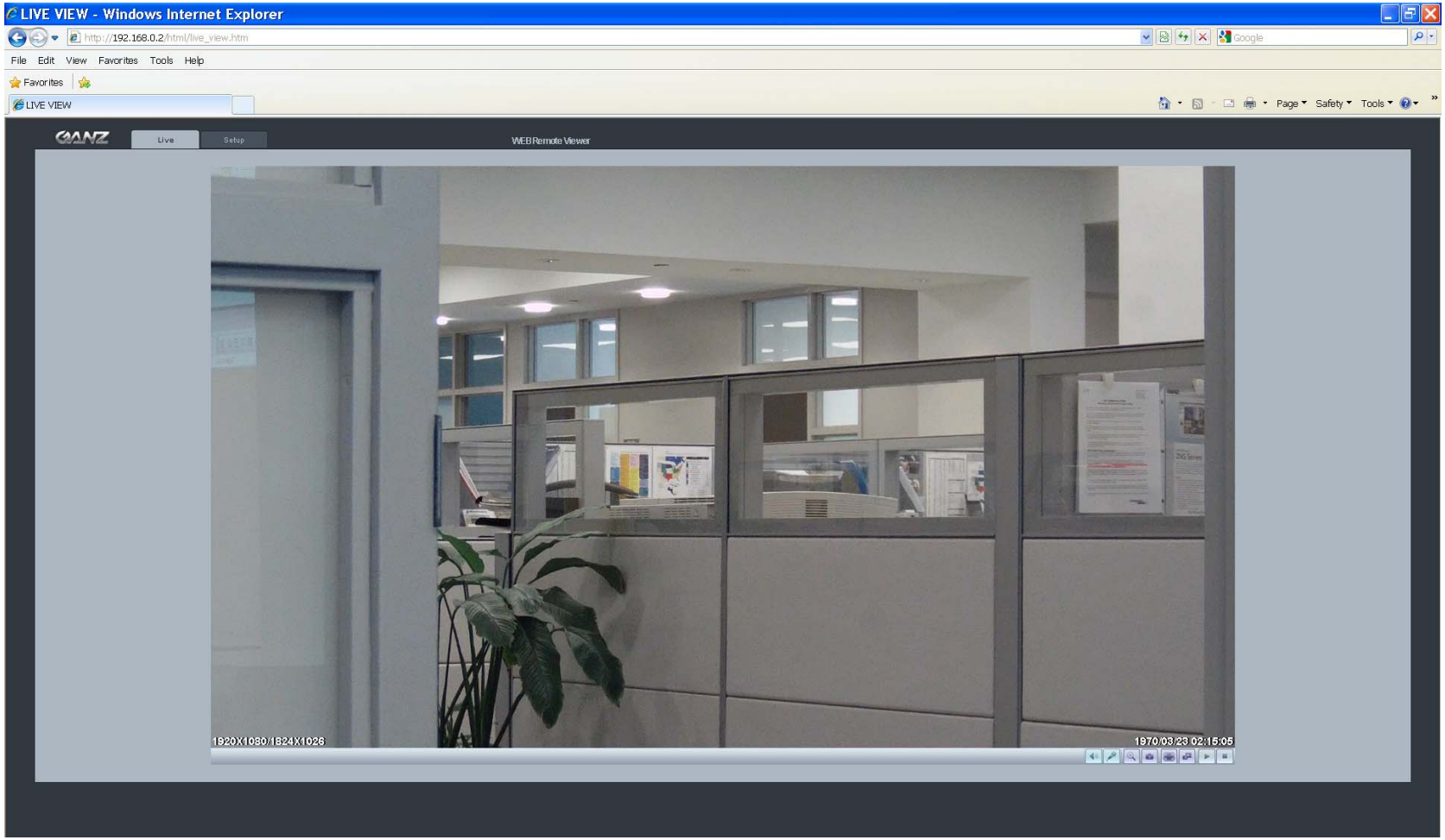
Web Browser Setup



‘Installation Mode’ enables the Analog BNC Service Monitor Jack.

CA: 877-407-9555
NY: 800-422-6707
www.computarganz.com

Web Browser View



1080p (16:9) Standard Live View Mode within Internet Explorer.

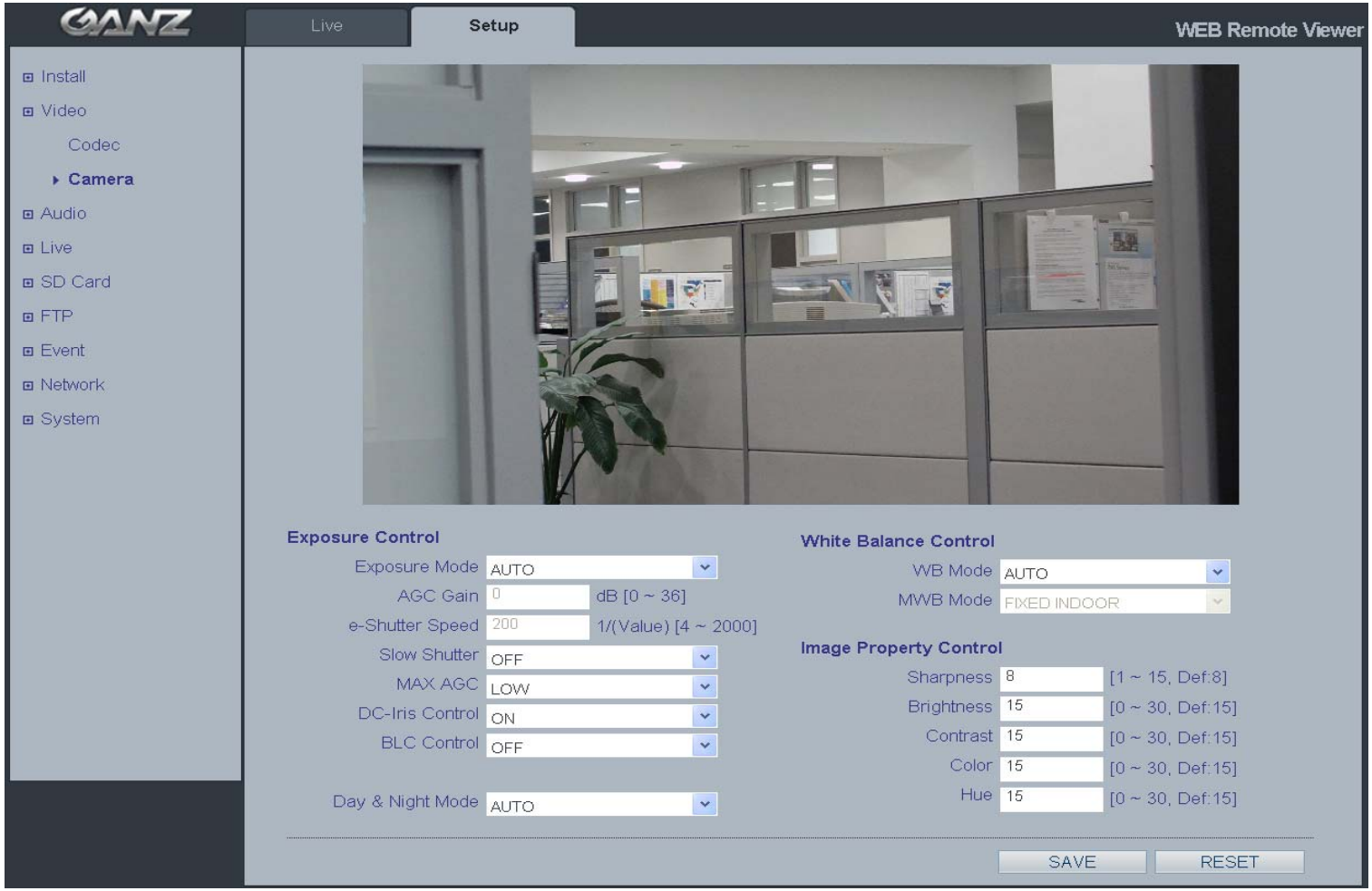
CA: 877-407-9555
NY: 800-422-6707
www.computarganz.com

Web Browser View

Picture-in-Picture (PIP) Display of Full Screen & Zoomed View.

CA: 877-407-9555
NY: 800-422-6707
www.computarganz.com

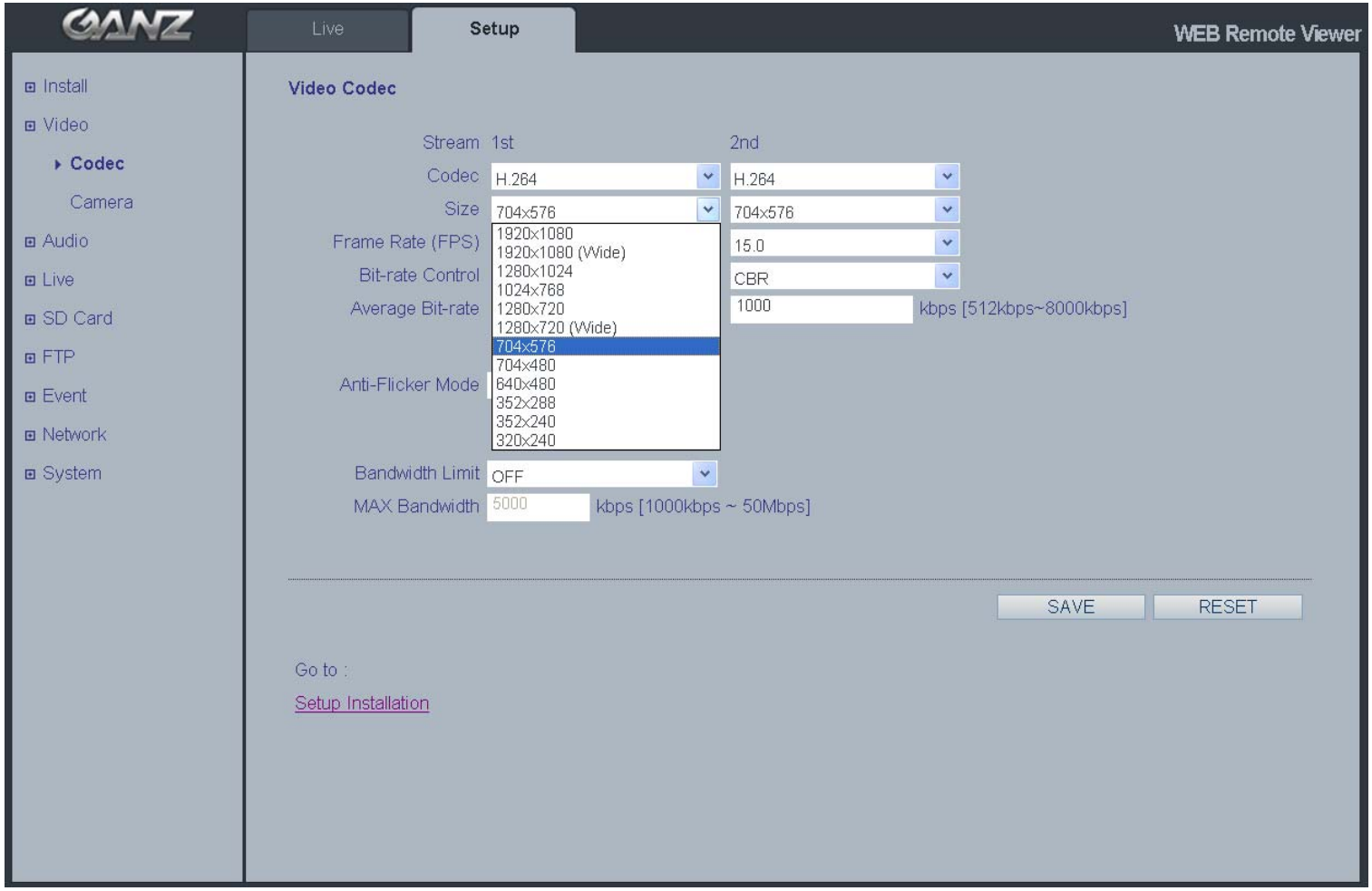
Web Browser Setup



View live video while making adjustments to all video settings.

CA: 877-407-9555
NY: 800-422-6707
www.computarganz.com

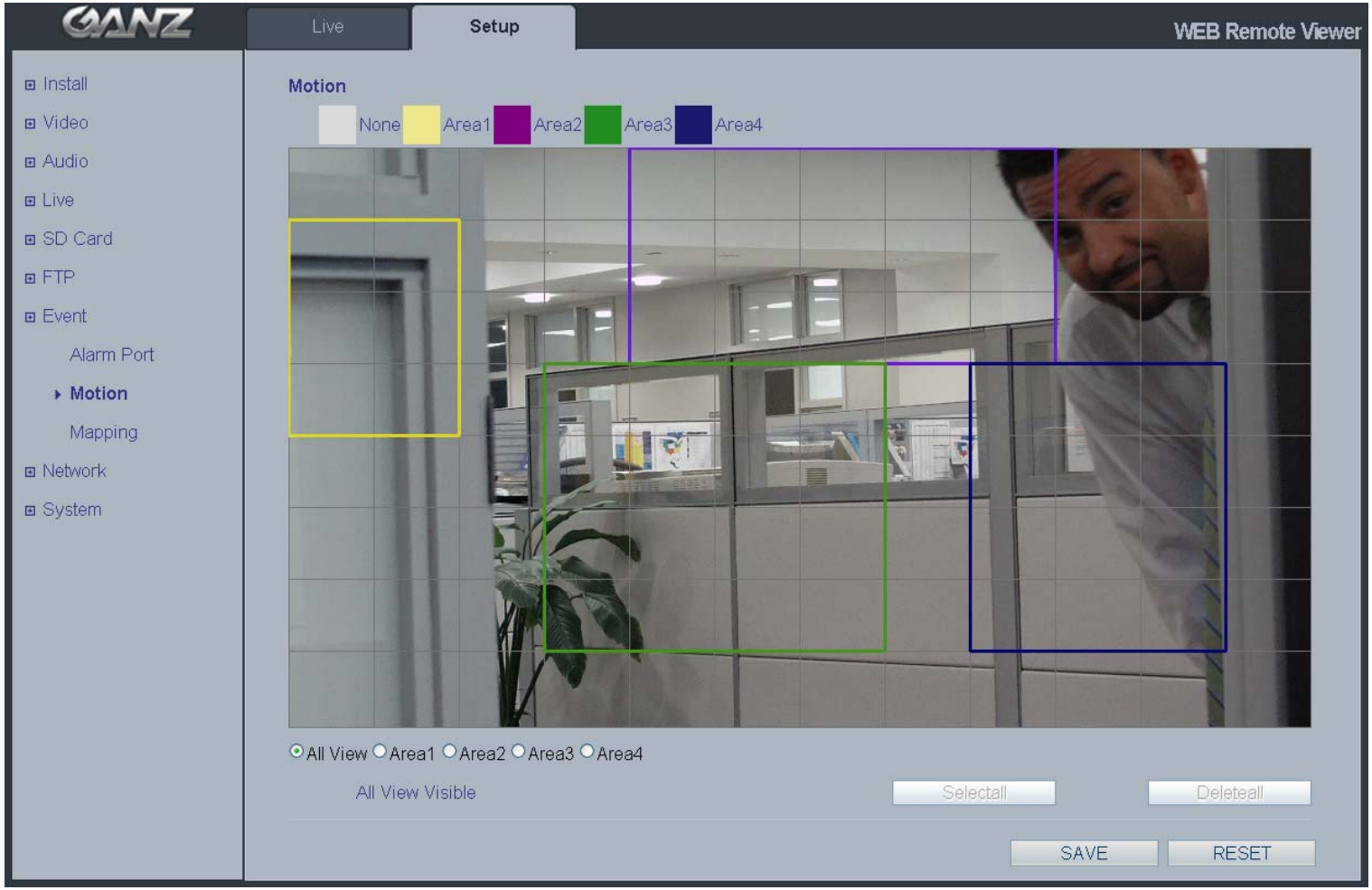
Web Browser View & Setup



Dual-Streaming H.264 & Motion JPEG, with adjustable aspect ratio.

CA: 877-407-9555
NY: 800-422-6707
www.computarganz.com

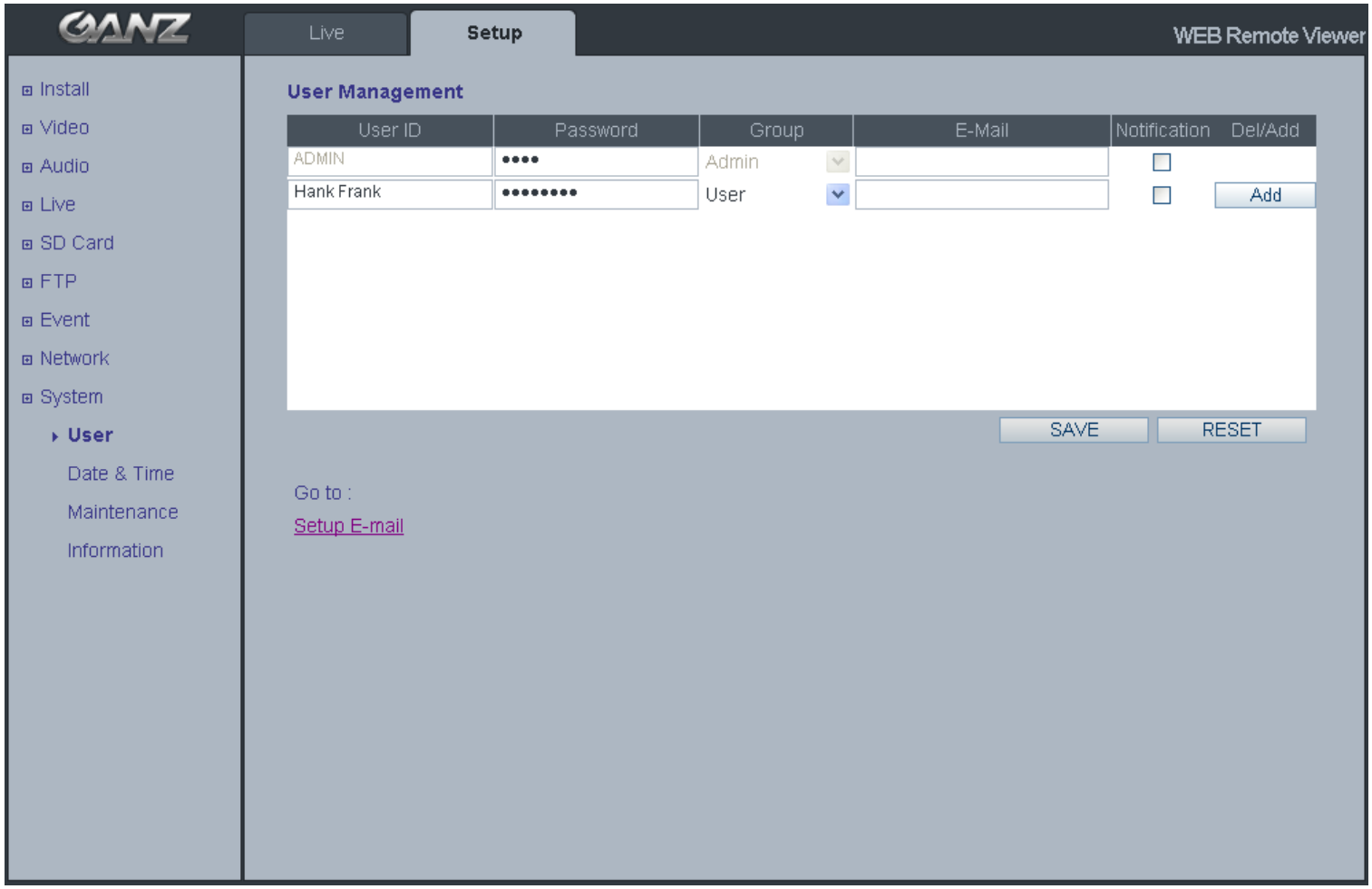
Web Browser View & Setup



Internal Motion Detection allows you to establish multiple detection zones.

CA: 877-407-9555
NY: 800-422-6707
www.computarganz.com

Web Browser View & Setup



User Management - establish an unlimited number of user accounts.

CA: 877-407-9555
NY: 800-422-6707
www.computarganz.com

Megapixel DN Cameras

(H.264 / MJPEG)

MP1DN

MP2DN

MP3DN

MP5DN

CA: 877-407-9555
NY: 800-422-6707
www.computarganz.com

Megapixel Cameras

(MJPEG)

MP1A

MP2A

MP3A

MP5A

MP3DN-2

MP8D-L4

MP8P

CA: 877-407-9555
NY: 800-422-6707
www.computarganz.com

Standard IP Cameras: IPX Series

DDK-1500D

True Day Night

DDK-1500

Model #	Resolution	Lux	Frame Rate	Power	Lens Type
DDK-1500	520 TV lines	Day 0.5 / Night 0.03	Up to 30 fps	PoE or 12VDC	1/3" C/CS, DC AI
DDK-1500D	530 TV lines	Day 0.5 / Night 0.00 (w/IR)	Up to 30 fps	PoE or 12VDC	3.7-12mm AI DC

CA: 877-407-9555
NY: 800-422-6707
www.computarganz.com

Economy IP Cameras: ZN Series

ZN-PT304L

ZN-YH305

ZN-D2024

ZN-BT3312

Model #	Resolution	Lux	Frame Rate	Power	Lens Type
ZN-PT304L	**640x480**	**1.5**	**30 fps**	**12 VDC**	**4mm**
ZN-YH305	**640x480**	**0.6**	**30 fps**	**PoE or 12 VDC**	**C/CS**
ZN-D2024	**640x480**	**1.5**	**30 fps**	**PoE or 12 VDC**	**2-4mm VF**
ZN-BT3312	**640x480 WDR**	**0.68 / 0 w/IR**	**30 fps**	**PoE or 12 VDC**	**3.3-12mm IR VF A/I**

CA: 877-407-9555
NY: 800-422-6707
www.computarganz.com

Single Channel Video Server: ZV Series

ZV-S306

Model #	Resolution	PTZ	Frame Rate	Power	Networking
ZV-S306	**640x480**	**RS485 / Pelco D**	**30 fps**	**12 VDC**	**10/100 Mbps Ethernet, RJ-45**

CA: 877-407-9555
NY: 800-422-6707
www.computarganz.com

ZNS Series NVR Software

Compatible with all GANZ IP Cameras (including Megapixel) and Video Servers.

Intuitive user interface requires minimal training in order to operate.

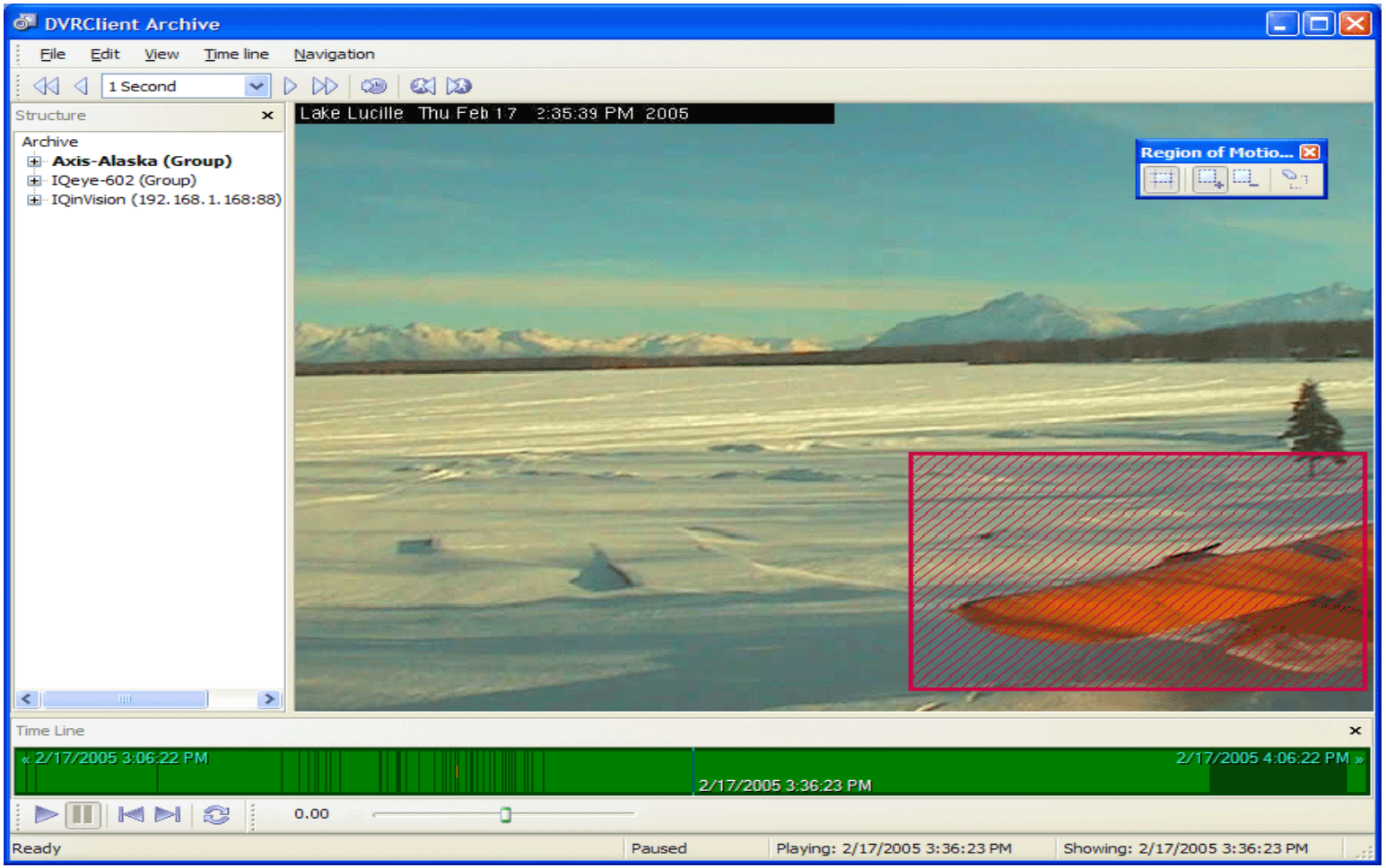
Network Camera Search Wizard finds all available IP Cameras on the network.

NVR Software License	***Shareware***	***Basic***	***Professional***	***Advanced***	***Enterprise***
Maximum No. of Cameras	**1**	**4**	**9**	**16**	**Unlimited***
Maximum Simultaneous Remote Client Connections	**1**	**1**	**3**	**5**	**Unlimited***

**** Per NVR Server; limitations are based on hardware specifications & network performance.***

CA: 877-407-9555
NY: 800-422-6707
www.computarganz.com

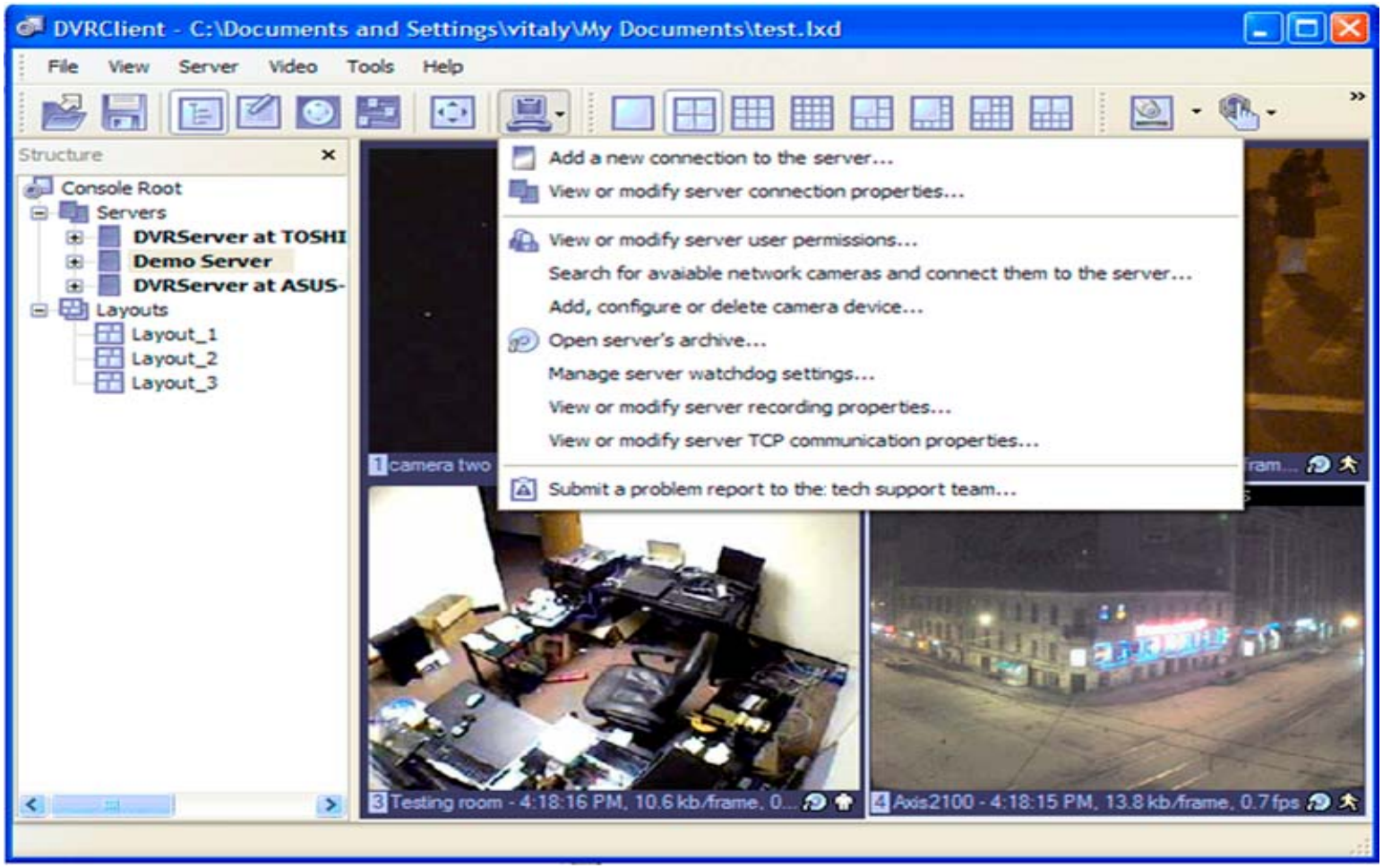
ZNS Software



Besides allowing standard navigation in searching through recorded video playback, the ZNS Software also has the ability to search for motion activity in any specified regions.

CA: 877-407-9555
NY: 800-422-6707
www.computarganz.com

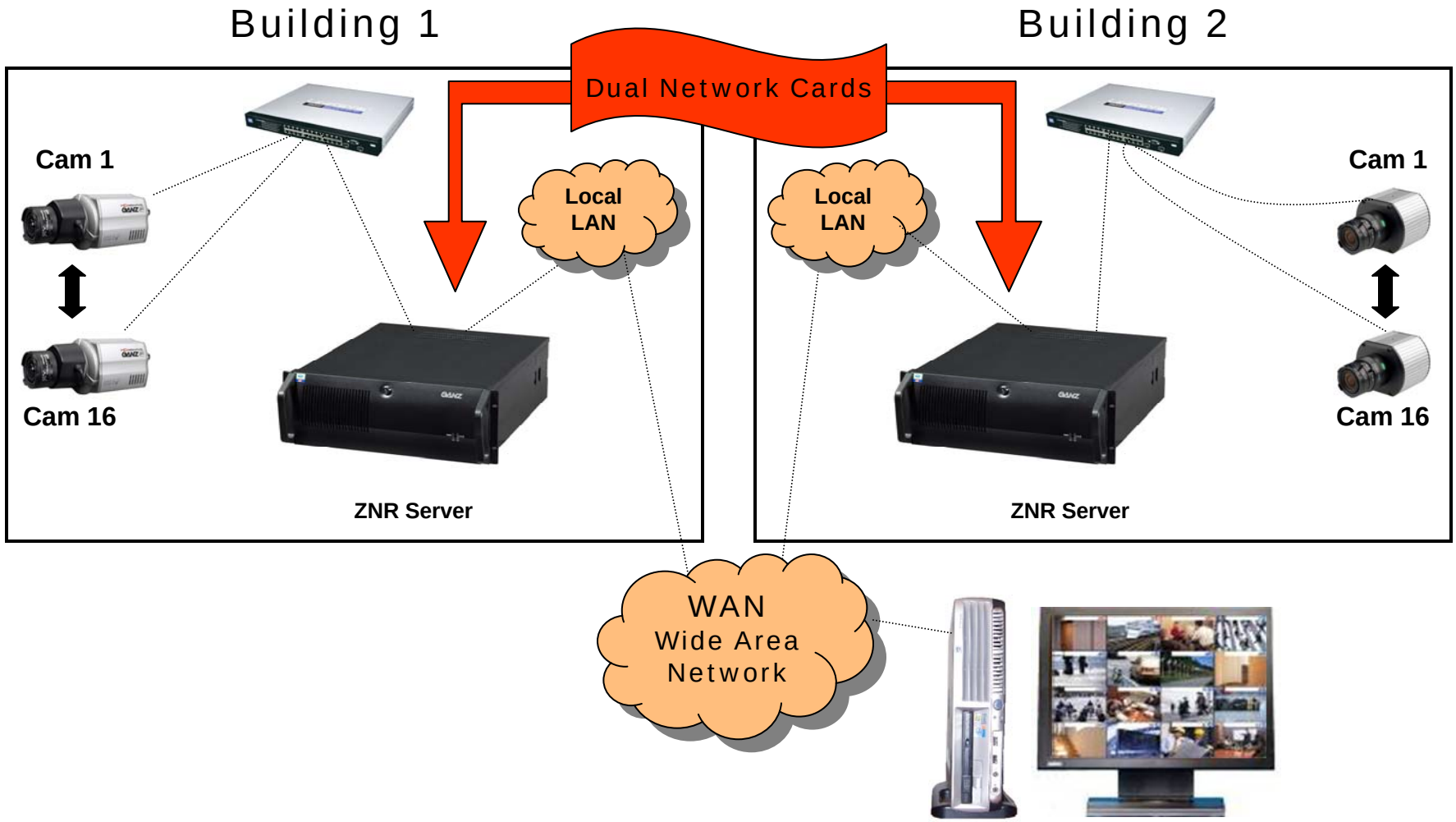
ZNS Software



Configuring the ZNS Software is a simple and intuitive process since it's done via user-friendly wizards.

CA: 877-407-9555
NY: 800-422-6707
www.computarganz.com

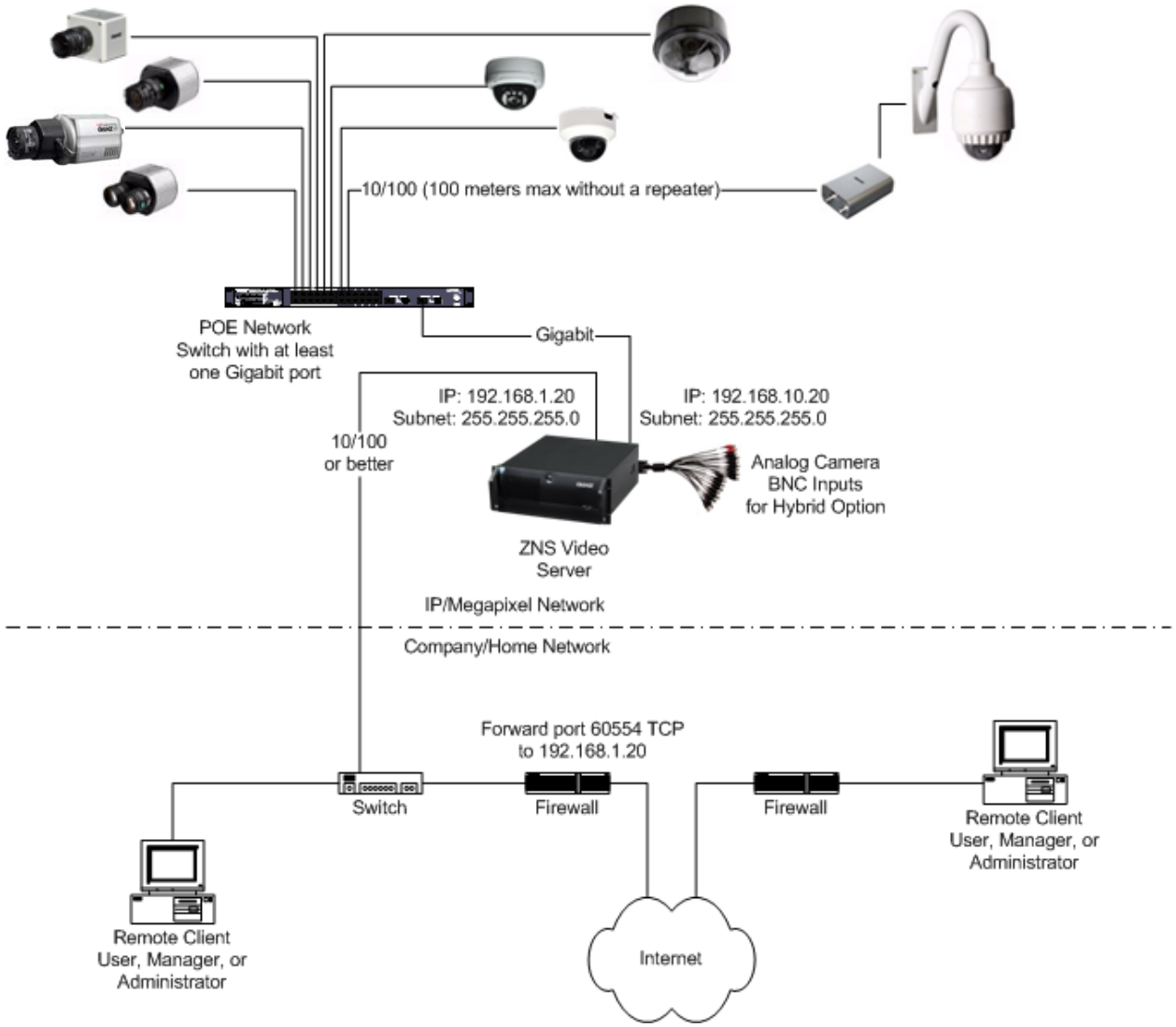
IP / Megapixel Network Topology



ZNS Client Station

CA: 877-407-9555
NY: 800-422-6707
www.computarganz.com

Network Topology: Network Design: Parallel Layout



CA: 877-407-9555
NY: 800-422-6707
www.computarganz.com

License Plate Recognition

MP5A - 50mm & MP2A - 50mm at 275 feet

CA: 877-407-9555
NY: 800-422-6707
www.computarganz.com

MPx Lens Selection for Recognition

Megapixel Lenses

Model #	Type	Aperture	Focal-Length	~Horiz.Angle	Mount	Iris Type	Specialty
TG4Z2813FCS-MPIR	1/3"	f1.3	2.8~12mm	81º-20º	CS	DC_Auto	D/N, IR,1.3MP
T3Z0312CS-MPIR	1/3"	f1.8	3~8mm	77º-30º	CS	Manual	D/N, IR,3MP
TG3Z0312FCS-MPIR	1/3"	f1.8	3~8mm	77º-30º	CS	DC_Auto	D/N, IR,3MP
HG2Z0414FC-MP	1/2"	f1.4	4~8mm	76º-42º	C	DC_Auto	n/a
H2Z0414C-MP	1/2"	f1.4	4~8mm	76º-42º	C	Manual	n/a
H3Z4518CS-MPIR	1/2"	f1.8	4.5~13.2mm	70º-29º	CS	Manual	D/N, IR, 3MP
H0514-MP	1/2"	f1.4	5mm	64º	C	Manual	n/a
M0814-MP	2/3"	f1.4	8mm	58º	C	Manual	n/a
M3Z1228C-MP	2/3"	f2.8	12~36mm	40º-14º	C	Manual	n/a
MP1214-MP	2/3"	f1.4	12mm	40º	C	Manual	n/a
M1614-MP	2/3"	f1.4	16mm	30º	C	Manual	n/a
M2514-MP	2/3"	f1.4	25mm	20º	C	Manual	n/a
M3514-MP	2/3"	f1.4	35mm	14º	C	Manual	n/a
M5018-MP	2/3"	f1.8	50mm	10º	C	Manual	n/a
M7528-MP	2/3"	f2.8	75mm	6.5º	C	Manual	n/a

Estimated Feet from camera for visual facial recognition (40 pixels/ft)

	1/3" Format lenses				1/2" format lenses					2/3" format lenses							
	2.8mm	3mm	8mm	12mm	4mm	4.5mm	5mm	8mm	13.2mm	8mm	12mm	16mm	25mm	35mm	36mm	50mm	75mm
MP1	19	20	53	80	20	23	25	40	66	29	44	58	91	127	131	182	273
MP2	23	25	67	100	25	28	31	50	83	36	55	73	114	159	164	227	341
MP3	30	32	85	128	32	36	40	64	106	46	70	93	146	204	210	291	436
MP5	38	41	108	162	41	46	51	81	134	59	88	118	184	258	265	368	552

Estimated Feet from camera for visual or software license plate recognition (60 pixels/ft)

	1/3" Format lenses				1/2" format lenses					2/3" format lenses							
	2.8mm	3mm	8mm	12mm	4mm	4.5mm	5mm	8mm	13.2mm	8mm	12mm	16mm	25mm	35mm	36mm	50mm	75mm
MP1	12	13	36	53	13	15	17	27	44	20	29	39	61	85	87	121	182
MP2	16	17	44	67	17	19	21	33	55	24	36	49	76	106	109	152	227
MP3	20	21	57	85	21	24	27	43	71	31	47	62	97	136	140	194	291
MP5	25	27	72	108	27	30	34	54	89	39	59	79	123	172	177	245	368

Estimated Feet from camera for software facial recognition (120 pixels/ft)

	1/3" Format lenses				1/2" format lenses					2/3" format lenses							
	2.8mm	3mm	8mm	12mm	4mm	4.5mm	5mm	8mm	13.2mm	8mm	12mm	16mm	25mm	35mm	36mm	50mm	75mm
MP1	6	7	18	27	7	8	8	13	22	10	15	19	30	42	44	61	91
MP2	8	8	22	33	8	9	10	17	28	12	18	24	38	53	55	76	114
MP3	10	11	28	43	11	12	13	21	35	16	23	31	48	68	70	97	145
MP5	13	13	36	54	13	15	17	27	45	20	29	39	61	86	88	123	184

CA: 877-407-9555
NY: 800-422-6707
www.computarganz.com

The Importance of Calculating Pixel Density

Desired Application	**Pixel Density**
Cash Register Transactions	150 pixels per ft.
Facial Recognition Software	120 pixels per ft.
License Plate Capture	60 pixels per ft.
Visual Identification	40 pixels per ft.

Camera Resolution

Focal Length of Lens

Distance to Object

CA: 877-407-9555
NY: 800-422-6707
www.computarganz.com

The Importance of Calculating Pixel Density

Desired Application	**Pixel Density**
Cash Register Transactions	150 pixels per ft.
Facial Recognition Software	120 pixels per ft.
License Plate Capture	60 pixels per ft.
Visual Identification	40 pixels per ft.

Camera / Lens	**Distance**	**Pixel Density**
PixelPro VGA + 8mm lens	25 ft.	50 pixels per ft.
PixelPro 720p + 8mm lens	25 ft.	100 pixels per ft.
PixelPro 1080p + 8mm lens	25 ft.	150 pixels per ft.
PixelPro 1080p + 8mm lens	50 ft.	75 pixels per ft.

CA: 877-407-9555
NY: 800-422-6707
www.computarganz.com

computar GANZ

Only As Good As Your Optics

5MP Camera + sub-2MP lens

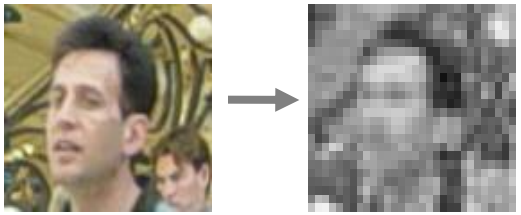
= Difficult to resolve smaller objects within frame

3MP Camera + 3MP center / 1.3MP corner

= Loss of focus towards the edges of the frame

Day/Night MP Camera + non-IR lens

= Focus shift in night mode with IR illumination



1.3MP Camera + wide-angle lens

= Insufficient pixel density for object recognition

CA: 877-407-9555
NY: 800-422-6707
www.computarganz.com

Reduced Total System Cost

- **Reduced Number of Cameras per Installation**
  Megapixel Cameras can replace up to 5 standard CCTV cameras including accessories such as mounts, wiring, lenses, and enclosures.
- **Reduced Wiring Cost**
  Ethernet CAT5e cable is less expensive than running Coax.
- **No External Power Supply Required**
  All of our IP Cameras are powered via Power-over-Ethernet (PoE) (IEEE 802.3af). Cameras would continue recording when the power is cut when a single uninterruptable power supply (UPS) is installed.
- **Easily Expandable & Scalable**
  Plug any additional cameras into the network switch. All cameras can be auto-detected and installed within the NVR software.
- **Simplicity**
  Simple Installation. Our technical support staff can also assist you.

CA: 877-407-9555
NY: 800-422-6707
www.computarganz.com

computar GANZ

Thank You For Your Participation!

IP & MEGAPIXEL
VIDEO SURVEILLANCE SOLUTIONS

Ryo Kimura – Regional Sales Manager - rkimura@cbcamerica.com
Mark Stollenwerk – Technical Support - mstollenwerk@cbcamerica.com
Tel: 877-407-9555 / Tel: 310-793-1500

Sept 2010

CA: 877-407-9555
NY: 800-422-6707
www.computarganz.com