“...the physical security environment has been dominated by analog, stand alone control systems with limited interconnectivity, digital communications, or integrated management capability.”

Trends 2007: Physical and Logical Security Convergence
Forrester Research
Traditional Safety and Communication Systems

- Access—Buildings
- Monitoring
- Alarms
- Paging
- Video
- Voice
- Radio
Example: Safety Incident w/ Traditional Systems

Chemical spill at College Science Building Sends Fumes in the Air

1. Professor calls safety office to initiate response protocol.
2. Safety officer calls fire department.
3. Fire department closes building and calls for Hazmat.
4. Dean e-mails students to tell them class is canceled in science building.
5. Hazmat finds fumes are toxic & nearby areas are affected. Calls Dean.
6. Dean calls mayor to tell of community impact.
7. Mayor sends police to evacuate neighborhoods.
8. Nearby elementary school starts calling parents.
9. In-transit students show up to the building for class.
Traditional Systems Response

- Actions are linear
- Communication and decision support systems are independent
- Relies heavily on human intervention
Pain of Traditional CCTV...Limited Accessibility, Mobility

- Central station access only
  - No remote access
  - No on-scene collaborative access

- Investigation delays
  - Locate tape in archive
  - Ship from remote location
  - Review hours of video
Additional Convergence Drivers

IP-based physical security technology takes advantage of existing network infrastructure

Leverage network security features that authenticate users

Monitor rogue behavior

Implement policy-based responses

Industry groups are establishing technical interoperability standards between physical security systems and IT
Converged Systems
“Convergence is not about the unification of security into one environment, but about collaboration between environments.”

Trends 2007: Physical and Logical Security Convergence
Forrester Research
Safety Incident: Converged Systems

Chemical Sensors Note Incident in College Science Building and Trigger Notifications via Multiple Mediums

- College safety department
- Local fire department
- Local police department
- Parents of children in nearby school
- Nearby school
- Hazmat
- Dean
- Local police department
Converged Systems Response

- Actions occur in parallel
- Communication and decision support systems are connected and trigger policy-related responses
- Less dependent on human intervention
### Comparison of Legacy vs IP-based Video Surveillance Systems

<table>
<thead>
<tr>
<th>Description</th>
<th>Analog</th>
<th>IP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wired and wireless cameras for anytime, anywhere surveillance on campus</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Video recorded digitally for immediate access, enabling real-time incident response, investigation, and resolution on campus</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Control and monitoring can be transferred to any other point on the network</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Feeds can be digitally monitored to detect and flag incidents</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Supports existing analog cameras or newer, IP-based cameras</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Flexibility to add sensors and apply analytics</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Network keeps operating, even if one link or switch goes down</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Every device can be continuously monitored, and an alarm raised if anything fails</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Open, standards-based infrastructure enables deployment of new security applications and maximizes value of total system</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Lowest total cost of ownership</td>
<td>✔</td>
<td></td>
</tr>
</tbody>
</table>
Cisco is experienced with Convergence

Waves of Convergence

1980s

Network Consolidation

1990s

Network Consolidation

2000

Today

Network Consolidation

Cisco Confidential
Cisco’s Vision for Safety and Security
Delivering the Intelligent Converged Environment

Phase 1
Analog - Network Convergence
- Intelligent Information Network
- Standards-based Architecture

Phase 2
Web / Network – Centric Security
- Accessible, Scalable, Interoperable
- Partner Ecosystem

Phase 3
Network Transformation
- Solution Integration
- System / Device Expansion

Phase 4
Peer System Integration
- POS Integration
- EAS, Analytics

Phase 5
IT Network & Services
- Unified Communications
- IT Security
- Wireless

Maximize Value
Greater Utility
Flexible New Deployments & Capabilities
Faster Response, More Collaborative
Leverage Investments, Experience and Expertise
Analog – Network Convergence
Cisco Stream Manager

► Video Encoding / Decoding
  MPEG 4 DSP / ASIC-based
  1 and 4 port
  Protects Investments

► Video Aggregation & Switching
  GE and FE Network or USB
  Up to 64 ports / 3RU chassis
  Compact Manageability

► Hybrid Analog / Network Recording
  Matrix Switch Interoperable
  Smooth Migration

► Network Video Recording and Archival
  JBoD, RAID5
  Fiber Channel, SCSI
  IT-Caliber Storage

IP Gateways
Convergence Chassis
Integrated Services Platforms
Services Platforms
Web/Network – Centric Security
Cisco Video Surveillance Manager Solution

Cisco Video Surveillance Software Suite

Capture → Manage → Archive → View → Distribute

Video Management (MS & ES)
- Video Collection
- Video Routing
- Storage & Retrieval
- Event management
- Rules Engine
- C3/4 Integration

Video Storage (SS)
- DAS, SAN, NAS
- Local and Remote Loops and Events
- Redundant Archives
- Optional Clustering
- Hardware Agnostic

User Portal (OM)
- Video Viewing
- PTZ and Presets
- System Configuration
- User Management
- Reporting
- Event Display

Virtual Matrix Switch (VM)
- Single Control
- Multiple Displays
- Video Switching
- Video Wall

Operating Systems and Data Bases
- Linux, Windows XP
- MySQL, Oracle, dB/2

Communications
- Internet - Intranet - TCP/IP - HTTP(s) - RTP - RTSP

Common API
- Video Analytics
- Custom Interface
- Access Control
- Video Wall
- Back Office

MS - Media Server
ES - Encoding Server
SS - Storage System
OM - Operations Manager
VM - Virtual Matrix
Cisco IP Video Surveillance Camera 2500 Series

- Cisco Standard Definition IP Cameras
  - Wired Power over Ethernet (POE)
  - Wireless 802.11b, g, n
- Cisco Design for Physical Security Camera – Not just web cams
- High Quality, Excellent Video Images – On Par with Analog Cameras (NTSC, PAL)
- Fully Featured - Day/Night, Audio, Contacts, Alarms
- One camera suitable for many applications – Indoor/Outdoor Variable Lighting
- Networking Features

*Camera shown with optional DC auto iris lens, available separately*
Cisco Access Control

- **Hardware:**
  - Cisco Access Gateway controlling a door
  - Additional modules for readers, inputs and outputs can be connected to the Access Gateway via a CAN bus

- **Software:**
  - Cisco Physical Access Manager (Cisco PAM): Enterprise class Management application with rich interfaces to IT applications and Identity stores.
  - Web interface to Gateway for local management and monitoring
  - Enterprise Application Integration Studio for IT integration
Cisco IPICS Facilitates Coordinated, Interagency Response for Emergency and Everyday Use

**IPICS Server**
- Dynamic resource management
- RMS
- Centralized management
- Ops view
- Web interface
- Activity logging
- Database backup/restore
- User roles
- Licensing

**IP Phone Client**
- Enables push-to-talk
- Extends voice reach
- Channel communication
- Situational awareness
- Notification broadcast

**PMC Client**
- Multicast/unicast
- Offline/disaster mode
- DTMF
- PTT keyboard mapping
- Cached channel settings
- Multiselect for transmit
- Disable user feature

**Policy Engine**
- E-mail/SMS/pager alerts
- Force mute/unmute/logout
- Policy automation
- Telephony interface
- SIP interoperability (Cisco CallManager/Call Manager Express)
Network Transformation
Cisco Integrated Video Surveillance

The Cisco Integrated Video Surveillance Solution provides a cost effective way to deploy globally accessible surveillance to your remote sites

- **EVM-IPVS-16A: Analog Video Gateway**
  - Offers analog video interface for IP Video Surveillance Solutions
  - 16 Analog Video Ports: MJPEG, MPEG-4, H.264
  - 8 Contact Closure Ports
  - 2 RS-485 ports for device Pan/Tilt/Zoom control

- **Integrated Video Management and Storage System**
  - Targeted at <32 stream (camera) deployments
  - Utilizes pre-packaged VS Operation Manager and VS Media Server
  - Manage, view and archive surveillance data for up to 32 devices simultaneously
  - Unified interface into IP Cameras and Analog devices (through the AVG)

**Key Benefits**

- **Single Box Solution for UC and Surveillance**
  - Remote access to surveillance data for alarm/event validation
Wireless / Mobile Video Surveillance

Integrated, Rugged Video Surveillance + Data Communications
- More Effective Use of Data
- Efficient use of Network resources
- Shared Information in Real Time
- More Cost Effective Deployments
- Integration with other sensor applications

Best in Class Wireless Networking
- Wireless Mesh Architecture
- Support for Multiple Wired & Wireless Backhauls
- Multicast & QoS
- Multiple Layers of IP Security

Full-featured Video
- Interoperability with Analog & IP Cameras
- Flexible compression codecs
- Integrated Video Analytics options
Peer Systems Integration
Open Architecture “Enables” other App’s

- Video Surveillance Platform
  - Perimeter Monitoring
  - Electronic Access Control
  - Analytics
  - Intrusion Detection
  - Database
  - Radar

- Digital Video enables other applications
- Need to deliver different video for different applications
  - Viewing; analysis, storage
IT Network and Services Integration
Integration with other network end points
Converged Security & WLAN Management
Presence-based Services for Network and Wi-Fi Devices

- Mobility, Network and Physical Secure Access
- Event-tagged video
- Remote Management and Authentication
- Location-based Security
Why Cisco?

- Cisco is the most experienced in Convergence
- One IP system of systems offers an intelligent, converged environment
- Secure network as the platform delivers ubiquitous utility
- Foundation for third-party applications to provide breadth of capabilities across the enterprise