Information Security Convergence
Defining a New Business Model?

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Your Presenter

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30+ years in physical security business development, sales and system design during a career with manufacturing, distribution, specialty and general contracting firms. Experienced estimator, project manager and consultant offering security design & spec writing support services.
Session Objectives

1. Understand current InfoSec trends and their impact on PhySec.
2. Define areas of logical and physical security convergence
3. How to calm CTO and I.T. Director’s fears by addressing InfoSec as a feature of IP Addressable Automated Systems
4. Consider a strategy to leverage InfoSec trends for system sales opportunities
5. How to build a physical security value proposition that resonates with I.T. professionals.
I.T. Influence Growing in Physical Security

• Larger I.T. Budgets with scheduled technology upgrades

• Information security becoming a priority
  – 76% of all organizations HACKED!
    • (Source: SIA - 2016 Cyberthreat Defense Report)
  – More IP Addressable systems residing on network
    • Increasing threat of identity and POS data theft

• Control of physical access to network equipment
  – “Network Equipment” – any device that is IP Addressable

• Convenience driving use of cloud & mobile devices with physical security apps
Industry Drivers Affecting Change

• IP Appliance Tech cost comparison - shared infrastructure
• Convenience of mobile app access & mobile credentials
• IP Video tech adoption adding comfort with IP Access Control
• Improved solutions (inter-operability) via systems integration
• End-Users “Hardening” Networks (IPSec) and improving Information Security (InfoSec)
• Logical & physical access merging – shared credential
• Moving processing/logic functions outside Server Core
Why are These Disciplines Converging?

• These three security disciplines were separate:
  – Physical Security (ASIS Certs – CPP, PSP)
  – Infrastructure Security: LAN / WAN (BICSI Certs – RCDD)
  – Information Security: (ISC2 Certs – CISSP)

• What is Drawing These Pros Together?
IP Value Message for Automated Systems?

- Passive Optical LAN (POL) offering 5 TB/s bandwidth!
  - Future-Proof Pipe: Optical Transport Network (OTN)
    - 100GB/s OTN: 1 - 5 TB/s up to 150m (IEEE 802.3ba)
    - 10 GB/S OTN: 0.8 - 1.2 TB/s up to 10km (IEEE 802.3ae)
      (Source - BICSI)
  - Enough backbone to support EVERY automated bldg system
- OTN simplifying network infrastructure
  - Lower deployment cost
- Open IEEE technology standards bringing integration & simpler inter-operability
- SQL data & Active Directory integration
Security Vulnerabilities

• More IP Data Connections = Greater Vulnerability
  – IoT and IP Edge Devices
  – Mobile Data (Smartphones)
  – Big Data (Cloud)

• 200 Billion IP Addressable devices by 2020
  (Source - Intel, “A Guide to the Internet of Things”)

• IPSec/InfoSec becoming greatest vulnerability and biggest threat
Understanding Pain Points

• User authentication
• Mitigating data vulnerability & hacker threat
• Coordination of electrical contractors
• Physical access to network equipment
• Open architecture vs. proprietary
• Need I.T. industry compliant equipment & protocols: IEEE 801.x/802.x, Active Directory, SQL, Sharing of SDK/API’s
Information Technology = Data Transport

• Data is KING with I.T./I.S.
  – Understand PhySec data security strategies

• Access Control Data Protocols
  – Wiegand (bit data)
  – Serial (i.e. RS-485) (not 801.x, 802.x compatible)
  – Centralized IP (conventional copper to Edge)
  – Distributed IP Edge (CAT cabling to the door)
Power:
PoE Now & Future

- IEEE 802.3bt - expected release by 12/2016
- 74W available = 3A @ 24VDC supplied by CAT 6 Cable!!!
- NO Conduit, NO A/C drop, & NO electrical coordination
- Sustainability – LEED projects

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PoE standards development

<table>
<thead>
<tr>
<th>Parameter</th>
<th>PoE (802.3af)</th>
<th>PoE Plus (802.3at)</th>
<th>4-pair PoE (802.3bt)</th>
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</thead>
<tbody>
<tr>
<td>PSE Power (W)</td>
<td>15.4</td>
<td>30</td>
<td>99.9W</td>
</tr>
<tr>
<td>PD Power (W) (assuming 100m channel)</td>
<td>12.95</td>
<td>25.5</td>
<td>74.55</td>
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<tr>
<td>Current (mAdc)</td>
<td>350</td>
<td>600</td>
<td>1920</td>
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<tr>
<td>Pairs Used</td>
<td>2-pr</td>
<td>2-pr</td>
<td>4-pr</td>
</tr>
<tr>
<td>DC loop resistance per conductor (Ω/100m)</td>
<td>40</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>Year Standardized</td>
<td>2003</td>
<td>2009</td>
<td>2016 (est)</td>
</tr>
</tbody>
</table>

Figure 4: Comparison of existing and proposed PoE standards
Source: CommScope White Paper 12/2015

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Edge controllers offer wet relays on onboard supporting **EXTRA** 2-4A 24VDC

Single Port Extractors offer PoE+ adding 1A of 24v switchable power to 0.5A of PoE already onboard

Custom Relay Logic available with IP-PoE in-line relays

UL294(b) Access Control PoE equipment standard
Low Power E-M Locking Devices  
“PoE Friendly”

- **Electric Strike** – draw under 100 mA
- **Mag Lock** – draw under 200 mA
- **Electrified Mortise Lock** – draw under 500 mA
- **Electrified Cylindrical Lock** – draw under 250 mA
- **IP-PoE Integrated Lock** (CR, EL, Controller) – draw under 150 mA
- **Electric Latch Retraction Exit Bar** – draw under 700 mA

*All products based on 24VDC power, MAX power draw*
Traditional Card Access Control

Network Backbone

- Wiegand Data & Power (5w)
- Electric Strike (2w)
- DPS (2w)
- REX (4w)

Reader Interface

A/C Drop

Serial RS485 (5w)

Controller

A/C Drop

Access Control Host

Access Control Client
Integrated Wiegand w/IP PoE
802.3 Edge System Design

- Users & Events Stored at the Edge
- Locking Hardware & Controller Powered by Network

PoE IP Edge Controller

PoE Switch (IEEE 802.3x)

(A/C Drop)

Network Backbone

(CAT 5e/6)

Data/Power Transfer Hinge

• Electrified Lock
• Card Reader Wiegand Data
• Card Reader Power
• Request-to-Exit Signal
• Dr. Position Signal

Access Control Host

(CAT 5e/6)

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IP PoE Integrated Lockset
802.3 Edge System Design

- **A/C Drop**
- **PoE Switch (IEEE 802.3x)**
- **Network Backbone**

- **2,400 Users**
- **10,000 Events At each door!**

**IP PoE Lock or Trim**

- **Data/Power Transfer Hinge**
- **Access Control Client**

**Electrified Lock**
- **Network Powered (all)**
- **IP Controller w/NIC**
- **Card Reader**
- **Request-to-Exit Switch**
- **Dr. Position Switch**

**Access Control Host & Middleware**

**Network Backbone** (CAT 5e/6)
IP WiFi Integrated Lockset
802.11 Edge System Design

- 2,400 Users
- 10,000 Events At each door!

+ Electrified Lock
+ Battery Pack (AA)
+ IP Controller w/WiFi Antenna
+ Card Reader
+ Request-to-Exit Switch
+ Dr. Position Switch

Wireless Access Point (WAP 802.11x)

Network Backbone

Access Control Host & Middleware

Access Control Client

A/C Drop

Addressing the needs of modern access control systems with IP WiFi integration.
InfoSec Safeguards

• Design with end-to-end encryption
  – OSDP (RS-485) & AES (IP)
• Safeguard against DDoS attacks via IP addressable devices
  – IP traffic monitoring
• Secure password strategies
  – CHANGE DEFAULT DEVICE PASSWORDS
• Active Directory integration for identity management
  – Credential/reader tech supporting encrypted certificate-based authentication
An I.T. Solutions Mindset for PhySec!

• Professional Services
  – Database Data Exchange (DDE)
  – Managed & Professional Services
  – Designing within open standards supports integrations/interfaces
    • Select IP integrated solutions partners to enhance inter-operability

• Technology, System Evaluation & Planning
  – Assist End-User with strategies for future-proofing tech
  – Provide annual End-User technology education & updates
  – Offer annual system evaluation and tech migration planning
  – Assist with multi-year budget planning
Thank You!
Questions?