LISTEN.
THINK.
SOLVE.®

Industrial Security: Going Beyond Defense in Depth

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Allen-Bradley • Rockwell Software

Rockwell Automation

A Vendor's Perspective

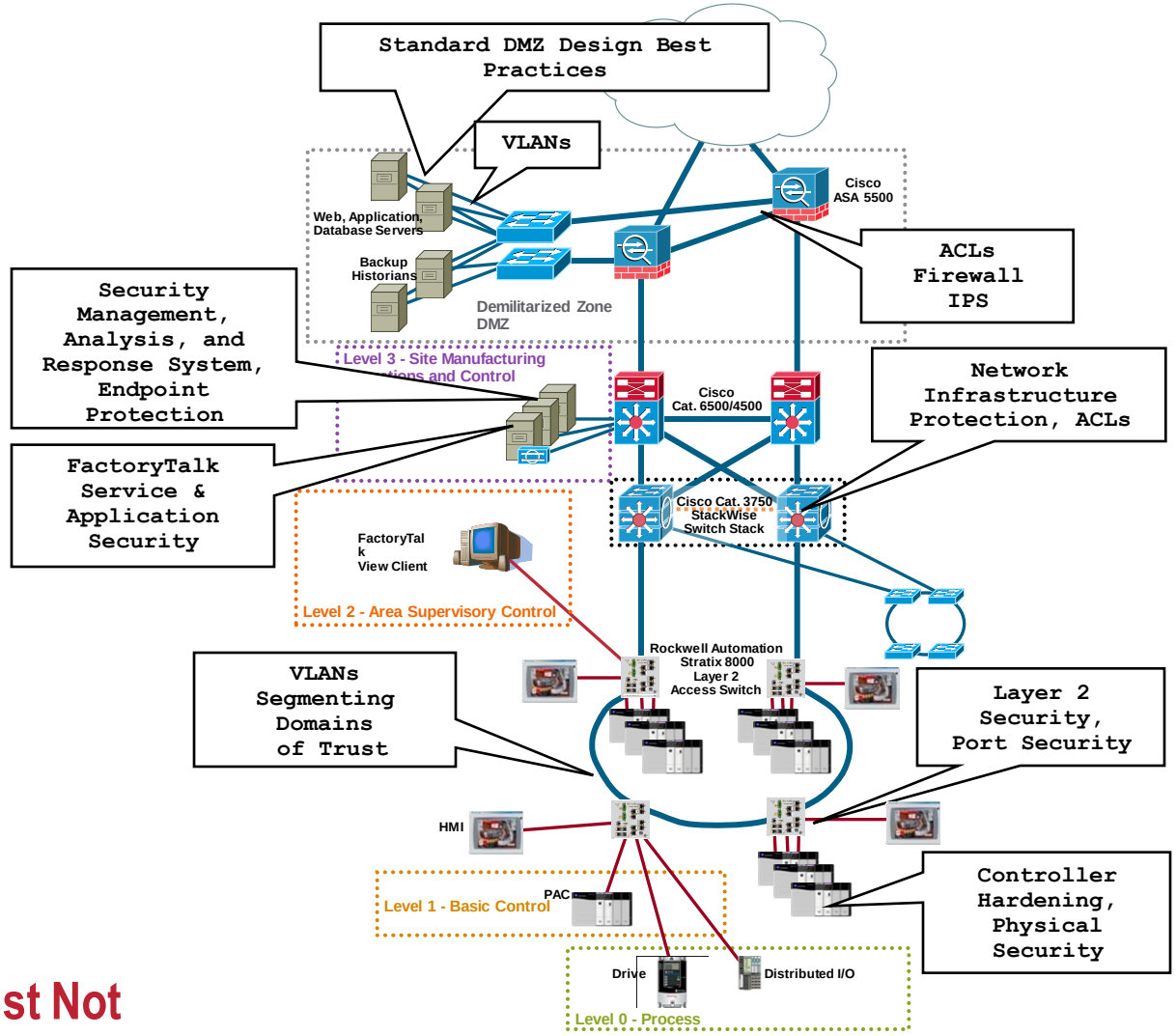
FACTS

- Control System lifecycles are long (20+ years)
- Security is a team sport
  - Vendors & Customers
  - IT & Engineering
  - Pick your teams
- Human beings are imperfect
- Control System safety and security are closely linked
- Control System security is about managing variables
- Managing the security variables enhances uptime

UPTIME = PROFITABILITY

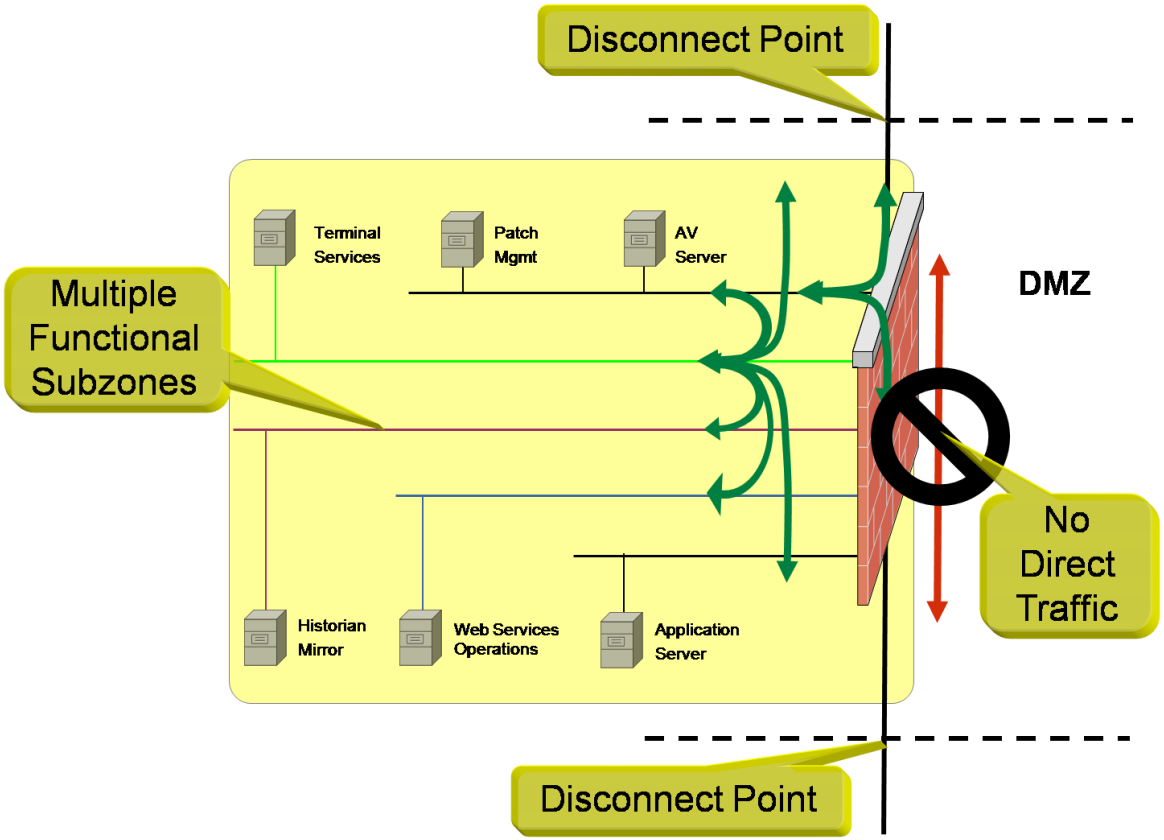
Security Design - the infrastructure

- Security is not a bolt-on
- Lead with a comprehensive ICS Security Program
- Implement an Automation DMZ for:
  - Remote Engineering Access
  - Remote 3rd Party Access
  - Secure MZ ←→ EZ programmatic data transfer
  - Secure EZ ←→ MZ management data transfer
  - A means to buffer inter-zone data in the event DMZ connectivity is disrupted
  - Wireless Integration



Network Security Services Must Not Compromise Operations of the Cell/Area Zone

Security Design - the DMZ



- Functional Security Sub-zones in the DMZs
- All traffic traverses the Firewall for DMZ communications
- Control-specific protocols should NEVER route to/through the DMZ

Security Design – the attributes

- Principle of Least Route (PoLR)
  - Principle of Least Privilege applies to Applications/User level system access
  - PoLR applies to network "reachability."
- Zone Segmentation is required (i.e. DMZs)
- The 'VLAN for Security' model is BROKEN, ANTIQUATED, and RISKY.
- Monitoring is REQUIRED
  - Revisits the IDS/IPS argument
  - Is IDS dead?
  - Is IPS appropriate for the ICS environment? Interior? Fringe?

Don't forget Microsoft:
IPsec Filters via GPO, netsh, WF/ICS, WMIC, PowerShell, etc...

Security Design – the Products

- **Anti-tamper capabilities**
  - Physical security (controller keyswitch)
  - CPU Lock (unauthorized access)
  - Read/Write Tags
  - Defined Constants (Persistent Tags)
  - Main Controller Function Blocks are not user accessible
- **Firmware signing**
  - Authenticity
- **Authorization & Authentication**
  - FactoryTalk Security (User Access Control)
  - Integration with Microsoft Active Directory (AD)
- **IP & Know-how Protection**
  - Source code
  - Custom routines

Industrial Security 2010 and Beyond

- It's about continuing Partnering & Collaboration efforts
  - Users, Vendors, Researchers and Agencies
  - Cooperation and coordination
- It's about enhancing Communication
  - Needs, desires and vigilance
  - Responsible disclosure
  - Consistency and Objectivity
- It's about furthering Standards
  - Process, Policy & Procedures (with compensating controls)
  - Internal and emerging global standards
  - Continuous Improvement (Suppliers & Users)
- It's about ongoing Acknowledgement and Addressing Risk
  - Everybody has something to lose
  - Everybody has something to protect

IGNORING RISK IS NOT AN OPTION

Questions? Comments?

THANK YOU!!

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