Managing Your PoE Infrastructure with AIM

Ronna Davis
Strategy and Technology
CommScope
What is AIM?
Automated Infrastructure Management
<table>
<thead>
<tr>
<th>Standard</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISO/IEC 18598</td>
<td>AIM Standard</td>
</tr>
<tr>
<td>CENELEC EN 50667</td>
<td>AIM Standard</td>
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<tr>
<td>ANSI/TIA-5048</td>
<td>AIM Standard</td>
</tr>
<tr>
<td>ISO/IEC 14763-2</td>
<td>Amendment 1</td>
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<tr>
<td>ANSI/TIA-606B</td>
<td>Addendum 1</td>
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<tr>
<td>ANSI/TIA-5017</td>
<td>Physical Network Security</td>
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<tr>
<td>BICSI 009-2019</td>
<td>DC Operations &amp;</td>
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<td></td>
<td>Maintenance Best Practices</td>
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</table>
The Typical AIM System

- Document cabling infrastructure
- Automatic Detection of the insertion and removal of cords
- Network Device Discovery and their location information
- Real-time monitoring of connectivity changes
AIM Documentation

Circuit Trace Details
AIM Documentation

Work Order Tracking
AIM Documentation

Device Location & Mapping
AIM Documentation (option B)

Device Location & Mapping
AIM Documentation (option C)

Device Location & Mapping
AIM Documentation

PoE Information for Cable Bundles

- % of Cables Connected to PSE ports in a Bundle
- % of Powered Cables in a Bundle
- PoE Usage by Bundle (W)
- Average PoE Usage per Cable in a Bundle (W)

2020 BICSI FALL Conference & Exhibition
AIM Documentation

Future Applications
PoE Today
PoE Design

*HVAC*
*Fire Alarm*
*Access Control*
*LAN Cabling*
*Lighting*
*Security Camera*
*Wireless*

Consolidation Point

Cable Bundle (Category 6A Recommended)
## Evolution of PoE

<table>
<thead>
<tr>
<th>Wattage</th>
<th>Standards</th>
<th>Devices</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up To 15.4 Watts</td>
<td>IEEE 802.3af, Type 1 (2002), 2-Pair PoE</td>
<td>Thin Clients, Biometric Access Control, 802.11n Wireless</td>
</tr>
<tr>
<td>Up To 30 Watts</td>
<td>IEEE 802.3at Type 2 (2009), 2-Pair PoE+</td>
<td>Card Readers, PTZ IP Cameras, Alarm Systems, VOIP Phones, Lighting</td>
</tr>
<tr>
<td>Up To 60 Watts</td>
<td>Cisco Proprietary (2011), 4-Pair UPoE, IEEE 802.3bt Type 3 (2017), 4-Pair PoE</td>
<td>Access Controls, Laptops, POS Readers, PTZ IP Cameras, Nurse Call, 802.11ac Wireless, Kiosk Displays</td>
</tr>
<tr>
<td>Up To 90 Watts</td>
<td>Power Over HDBASE-T (2011), 4-Pair POH, IEEE 802.3bt Type 4 (2016-2017), 4-Pair PoE</td>
<td>Desktop Computers, Televisions, Video Conferencing, High Power Wireless</td>
</tr>
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- **Thin Clients**
- **Biometric Access Control**
- **802.11n Wireless**
- **Card Readers**
- **PTZ IP Cameras**
- **Alarm Systems**
- **VOIP Phones**
- **Lighting**
- **Access Controls**
- **Laptops**
- **POS Readers**
- **PTZ IP Cameras**
- **Nurse Call**
- **802.11ac Wireless**
- **Kiosk Displays**
- **Desktop Computers**
- **Televisions**
- **Video Conferencing**
- **High Power Wireless**
Ethernet Convergence

- **Global Market CAGR (2019-25):** >15%
- **APAC Market CAGR (2019-25):** 20%

**Market Share By 2025**
- **PSE and Device Segment:** >40%
- **IoT Connectivity Application:** >30%
- **Industrial POE Solution Market:** 20%
- **Global Market Share (2018):** >$700M
- **CAGR (2019-25):** >15%
- **Global Market Share By 2025:** >$2B
Ethernet Alliance - PoE Survey

Familiarity with IEEE 802.3bt

- Understand it well: 11%
- Familiar: 35%
- Heard of it: 38%
- Unaware: 16%

96% Plan to deploy IEEE-Standard PoE devices

59% expect about the same or more problems with IEEE 802.3bt
Ethernet Alliance - PoE Survey

Plans for deploying PoE by power level

- <30 W: 63%
- 30-60 W: 47%
- >60 W: 27%
Ethernet Alliance - PoE Survey

PoE Device Deployment

- Wi-Fi Access Points: 93% Already Deployed, 86% Deploying in Next 12 Months
- Cameras: 88% Already Deployed, 85% Deploying in Next 12 Months
- Phones: 80% Already Deployed, 64% Deploying in Next 12 Months
- Computing/Storage: 55% Already Deployed, 52% Deploying in Next 12 Months
- Access Control (Locks, Etc.): 54% Already Deployed, 53% Deploying in Next 12 Months
- Display Devices: 49% Already Deployed, 46% Deploying in Next 12 Months
- Lighting: 28% Already Deployed, 31% Deploying in Next 12 Months
- Medical Devices: 18% Already Deployed, 19% Deploying in Next 12 Months
- Other: 17% Already Deployed, 14% Deploying in Next 12 Months
Ethernet Alliance - PoE Survey

4 out of 5 report having problems with PoE devices
AIM + PoE
AIM Systems & PoE

ISO/IEC 18598 – amendment 1 (adopted as ANSI/TIA-5048-1)
PoE Data From Switches

In line with TIA/EIA 606C

- PoE Capable (PS)
- PoE Type
- PoE Ports
- Ports with PoE In Use
- PoE Total Capacity (W)
- PoE Allocated Capacity (W)

<table>
<thead>
<tr>
<th>Port /Link Status</th>
<th>PoE Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enabled (link Up)</td>
<td>in use</td>
</tr>
<tr>
<td>Enabled (link Up)</td>
<td>not in use</td>
</tr>
<tr>
<td>Enabled (link Up)</td>
<td>disabled</td>
</tr>
<tr>
<td>Enabled (link down)</td>
<td>not in use</td>
</tr>
<tr>
<td>Enabled (link down)</td>
<td>disabled</td>
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<td>Disabled</td>
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Add Cabling Information
ISO/IEC TR 29125 and TIA-184A provide thermal models and cable bundling guidelines:

**Max Recommended Bundle Size = 24 cables (worst case)**

Worst case is based on:
- AWG 24 in a conduit
- \( T_{ambient} = 45^\circ C \)
- \( I_{conductor} = 0.48A \)
Heat Dissipation

Heat generated in cable = $I^2 \times R$

Increased temperature of installed cables will increase channel attenuation/insertion loss

Increased temperature may exceed the specified operating temperature
Tracking Cable Bundles

In line with TIA/EIA 606C

- Bundle ID
- Number of Cables
- Number of Cables delivering PoE
- PoE Consumption
- PoE Allocated
- PoE Type
PoE in Cable Bundles

In line with TIA/EIA 606C

- Panel/Port
- PoE Consumption
- PoE Allocation
- PoE Type
- Switch IP
- Device name
- Cable end Location
PoE Availability on Outlets
AIM + PoE =

- Enables PoE status tracking of cable bundles
- Generate summary reports to assist inspectors with assessment of installation safety
- Location based PoE capacity management
- Future proofed infrastructure
Questions?
Please contact:
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