Managing Your PoE Infrastructure with AIM

Ronna Davis
Strategy and Technology
CommScope

2020 BICSI FALL Conference & Exhibition

BICSI

What is AIM?

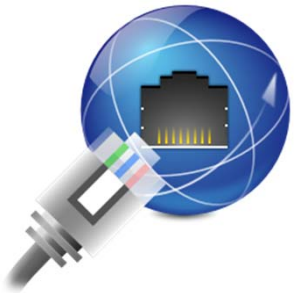
Automated Infrastructure Management

AIM Standards

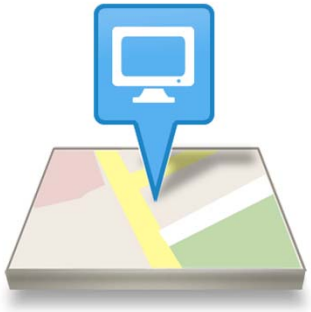
ISO/IEC 18598	AIM Standard
CENELEC EN 50667	AIM Standard
ANSI/TIA-5048	AIM Standard
ISO/IEC 14763-2	Amendment 1
ANSI/TIA-606B	Addendum 1
ANSI/TIA-5017	Physical Network Security
BICSI 009-2019	DC Operations & Maintenance Best Practices

The Typical AIM System

Document cabling infrastructure



Automatic Detection of the insertion and removal of cords

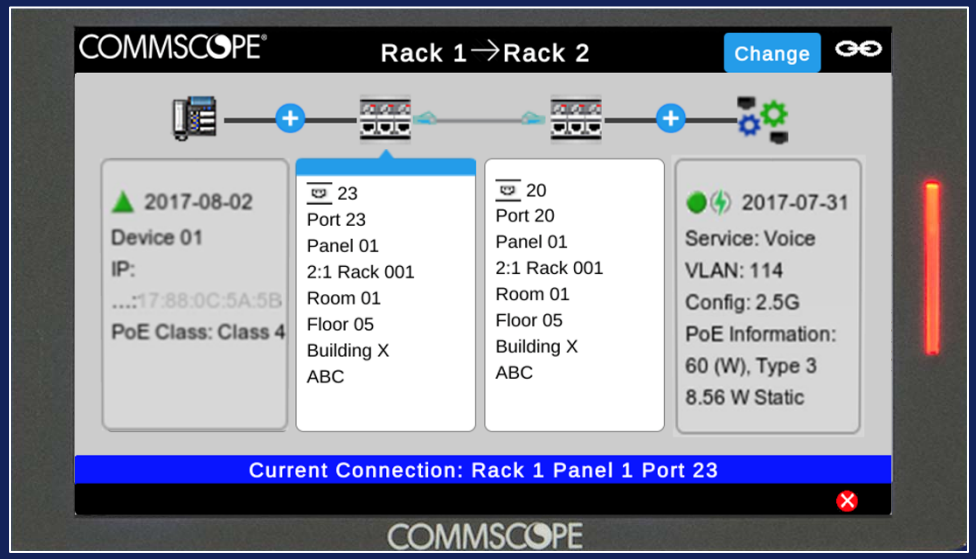


Network Device Discovery and their location information

Real-time monitoring of connectivity changes

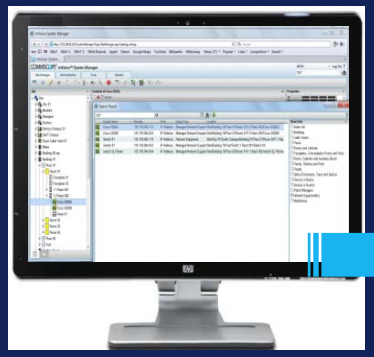
AIM Documentation

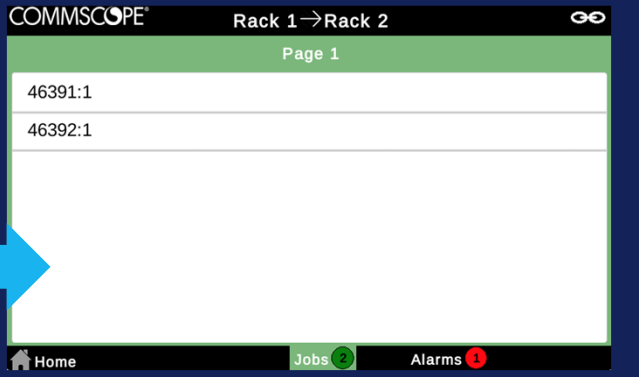
Circuit Trace Details

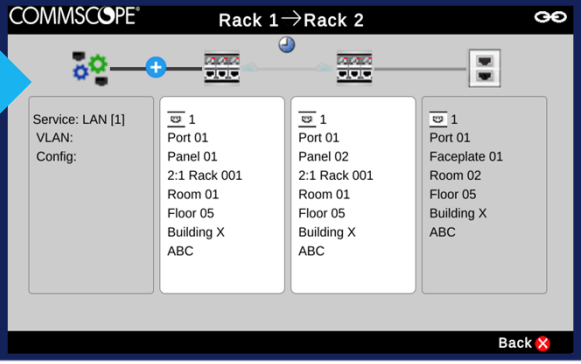


AIM Documentation

Work Order Tracking





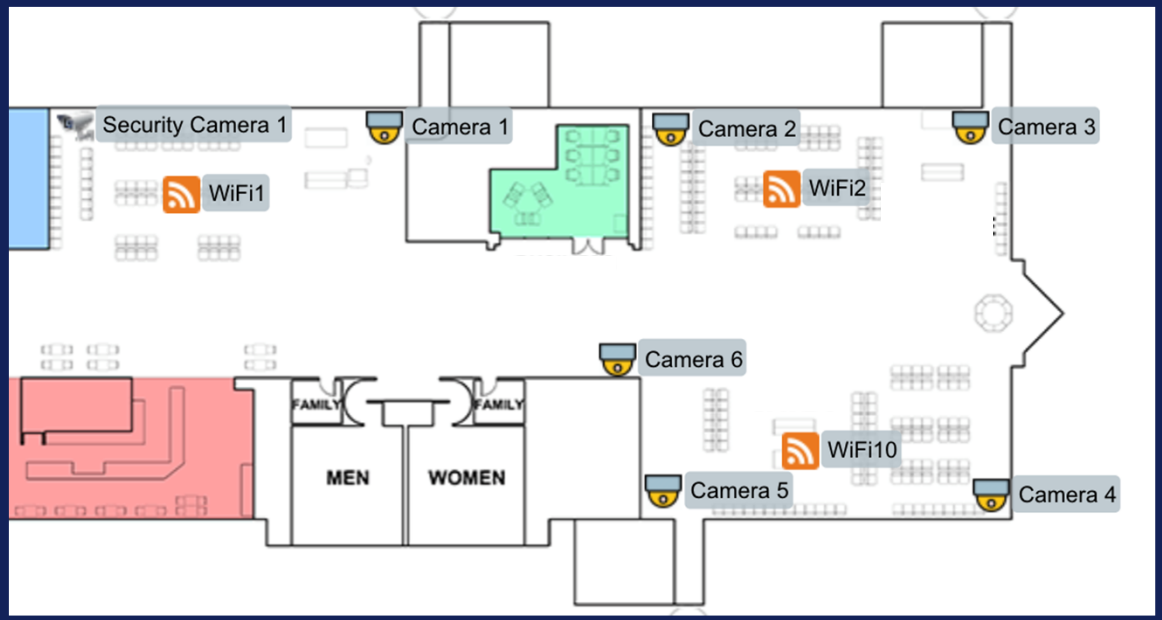


AIM Documentation

Device Location & Mapping

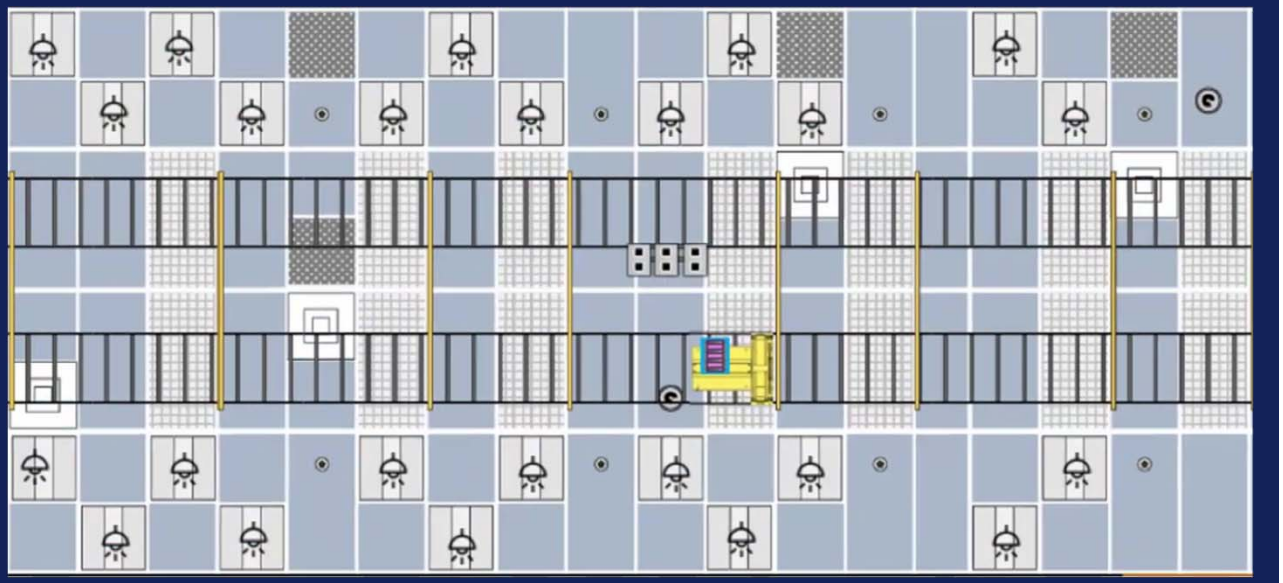
AIM Documentation (option B)

Device Location & Mapping



AIM Documentation (option C)

Device Location & Mapping



AIM Documentation

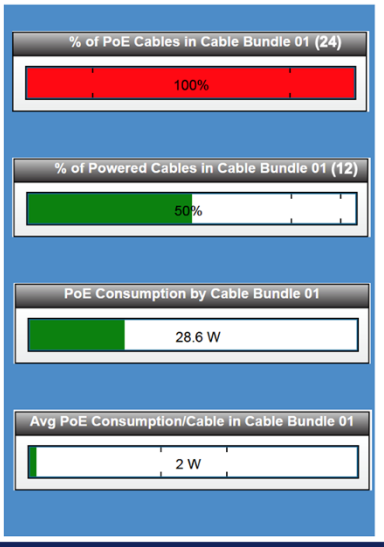
PoE Information for Cable Bundles

% of Cables Connected to PSE ports in a Bundle

% of Powered Cables in a Bundle

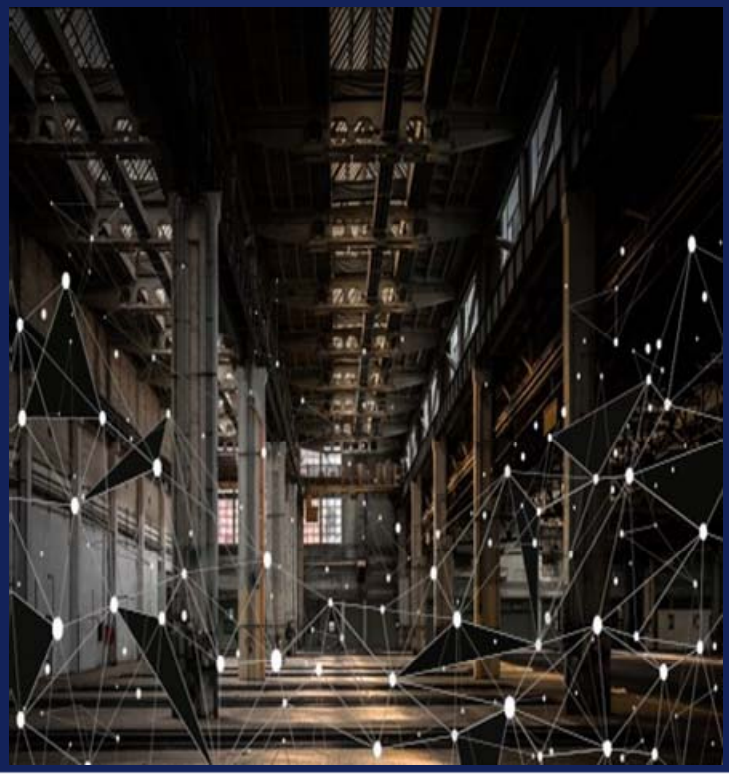
PoE Usage by Bundle (W)

Average PoE Usage per Cable in a Bundle (W)



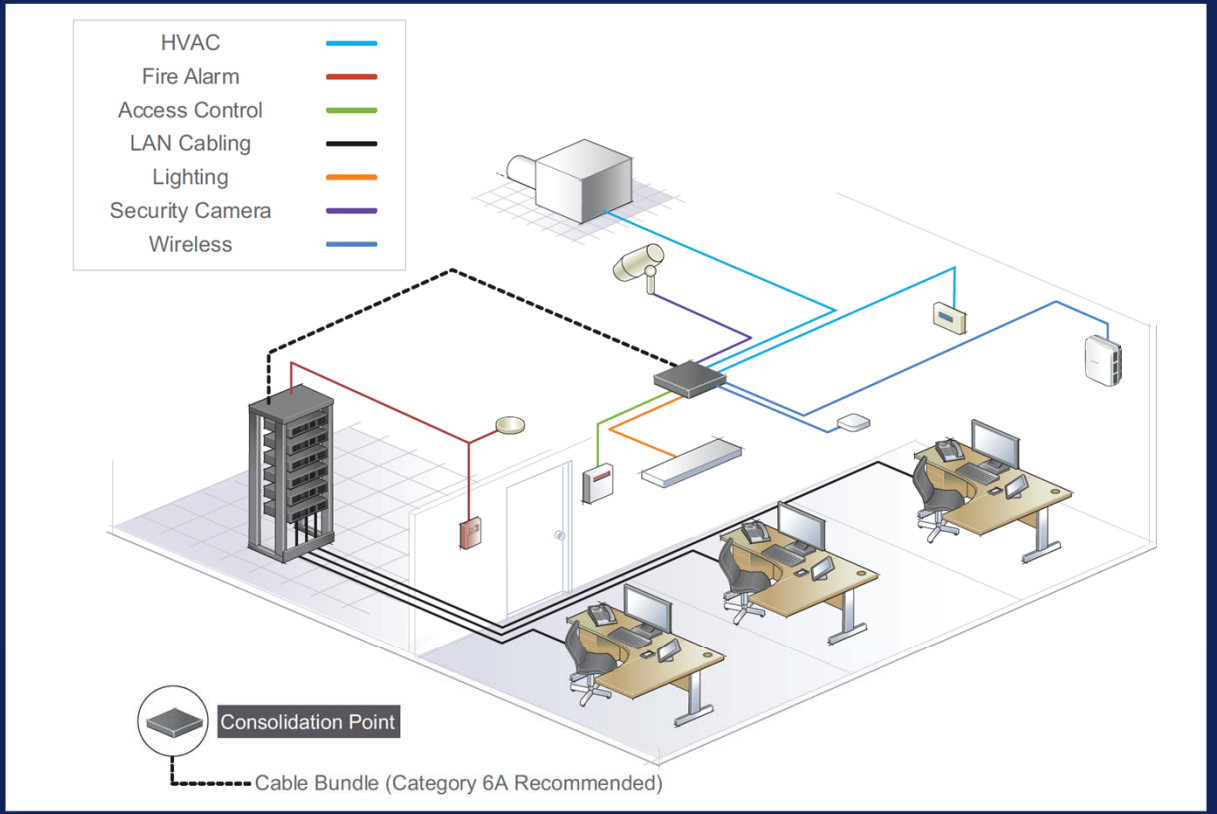
AIM Documentation

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

Up To 15.4 Watts	Standard: IEEE 802.3af, Type 1 (2002), 2-Pair PoE	Thin Clients; Biometric Access Control; 802.11n Wireless
Up To 30 Watts	Standard: IEEE 802.3at Type 2 (2009), 2-Pair PoE+	Card Readers; PTZ IP Cameras; Alarm Systems; VOIP Phones; Lighting
Up To 60 Watts	Standard: Cisco Proprietary (2011), 4-Pair UPoE, IEEE 802.3bt Type 3 (2017), 4-Pair PoE	Access Controls; Laptops; POS Readers; PTZ IP Cameras; Nurse Call; 802.11ac Wireless; Kiosk Displays
Up To 90 Watts	Standard: Power Over HDBASE-T (2011), 4-Pair POH IEEE 802.3bt Type 4 (2016-2017), 4-Pair PoE	Desktop Computers; Televisions; Video Conferencing; High Power Wireless

Ethernet Convergence

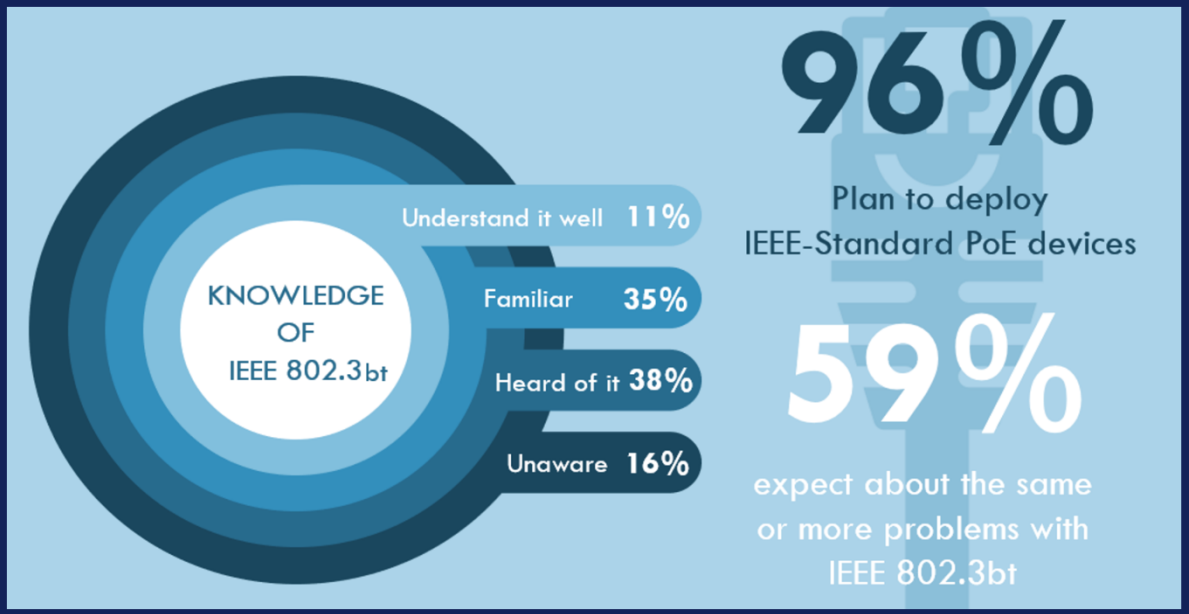
Market Share By 2025

PSE and Device Segment	IoT Connectivity Application	Industrial POE Solution Market
>40%	>30%	20%

Global Market Share (2018)	CAGR (2019-25)	Global Market Share By 2025
>$700M	>15%	>$2B

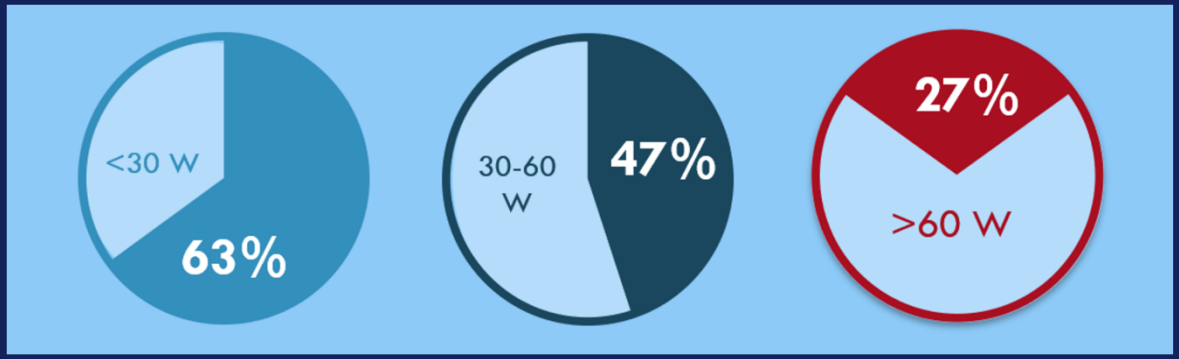
Ethernet Alliance - PoE Survey

Familiarity with IEEE 802.3bt



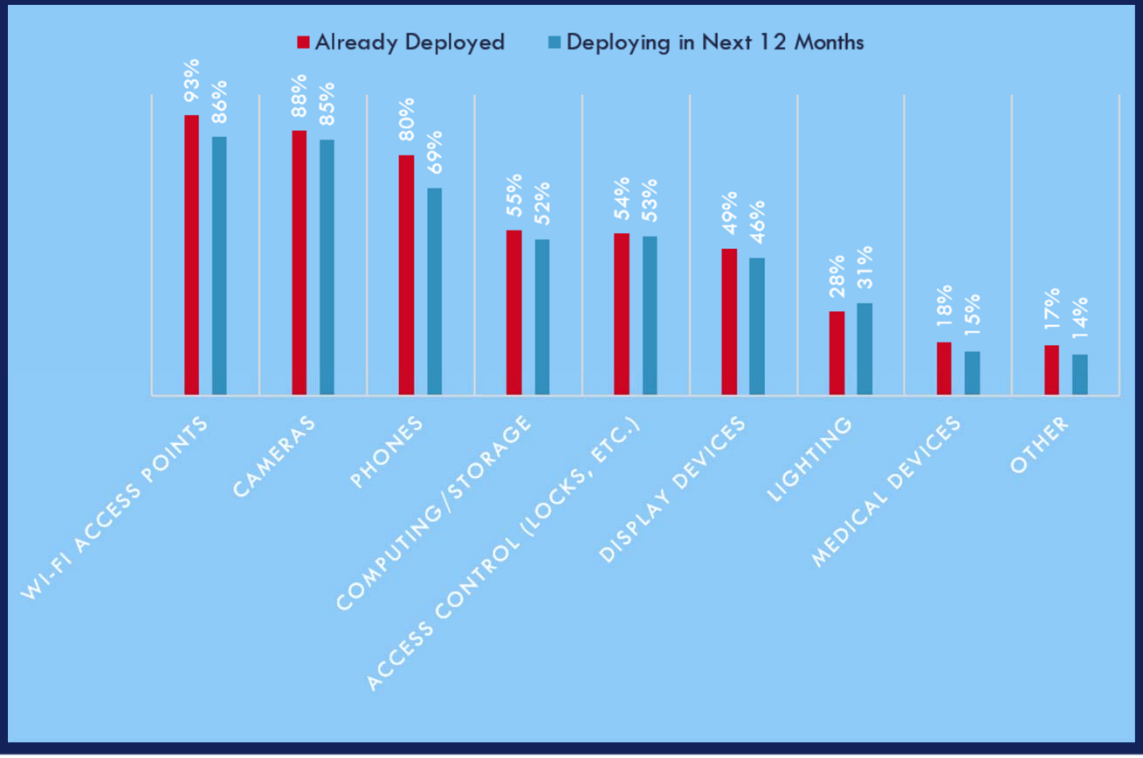
Ethernet Alliance - PoE Survey

Plans for deploying PoE by power level



Ethernet Alliance - PoE Survey

PoE Device Deployment



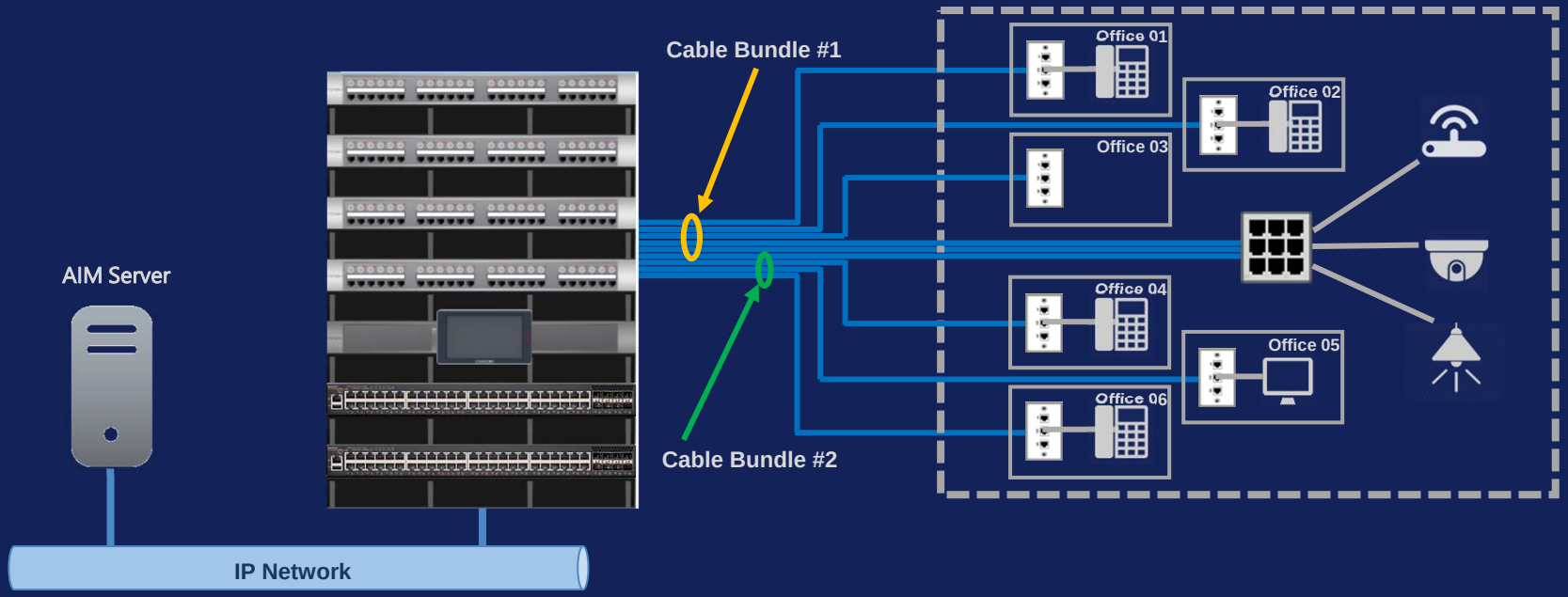
Ethernet Alliance - PoE Survey

4 out of 5 report having problems with PoE devices

AIM + PoE

AIM Systems & PoE

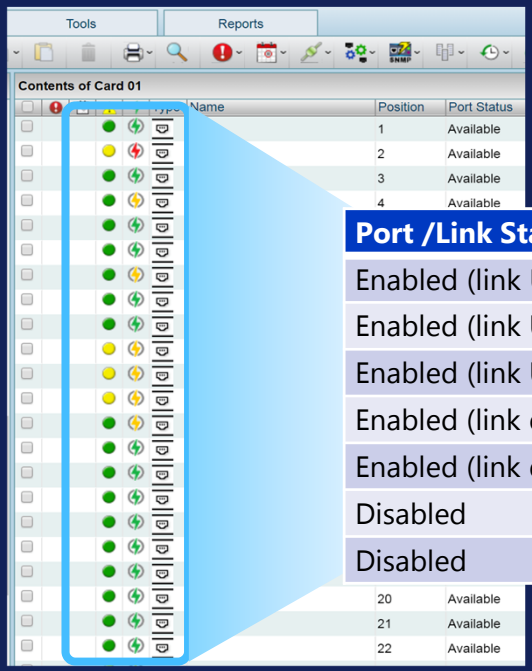
ISO/IEC 18598 – amendment 1 (adopted as ANSI/TIA-5048-1)



PoE Data From Switches

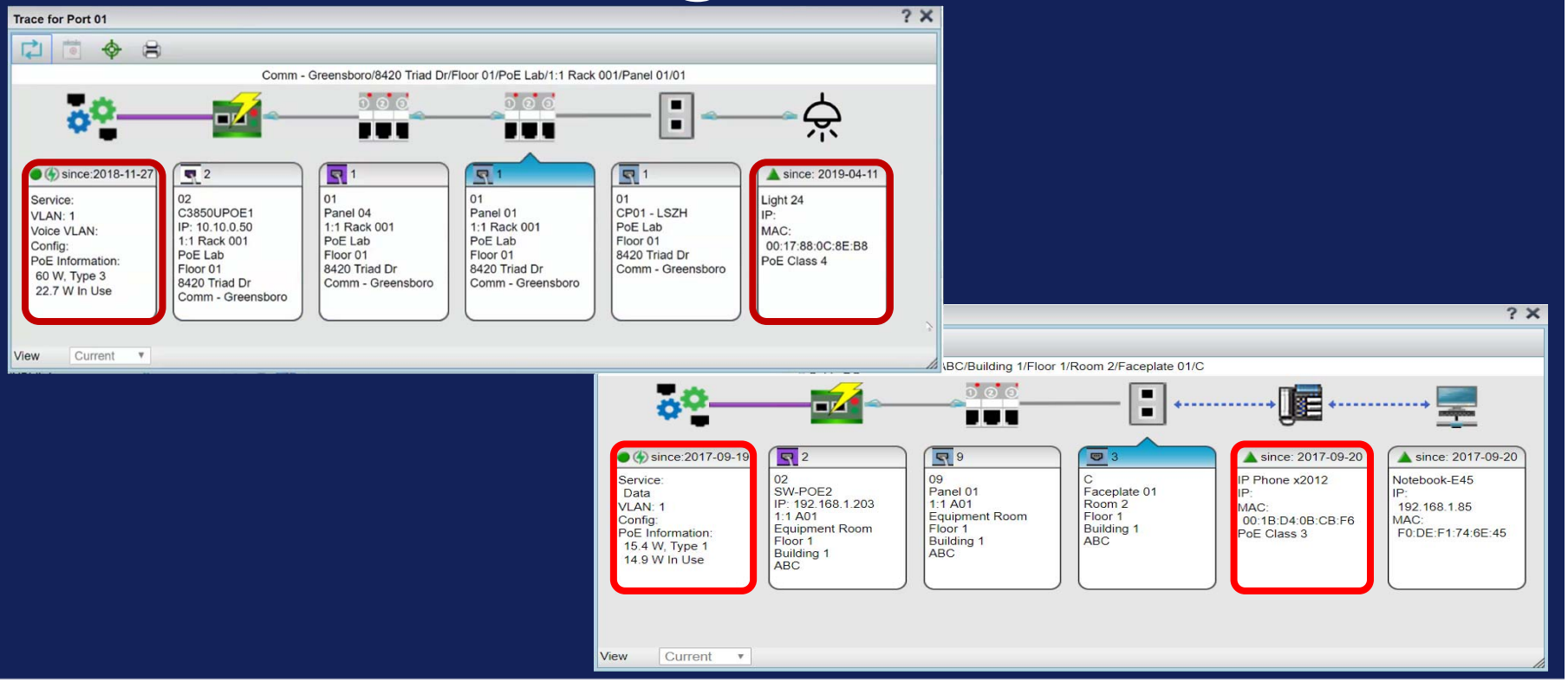
In line with TIA/EIA 606C

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



Port /Link Status	PoE Status
Enabled (link Up)	in use
Enabled (link Up)	not in use
Enabled (link Up)	disabled
Enabled (link down)	not in use
Enabled (link down)	disabled
Disabled	Not in Use
Disabled	disabled

Add Cabling Information

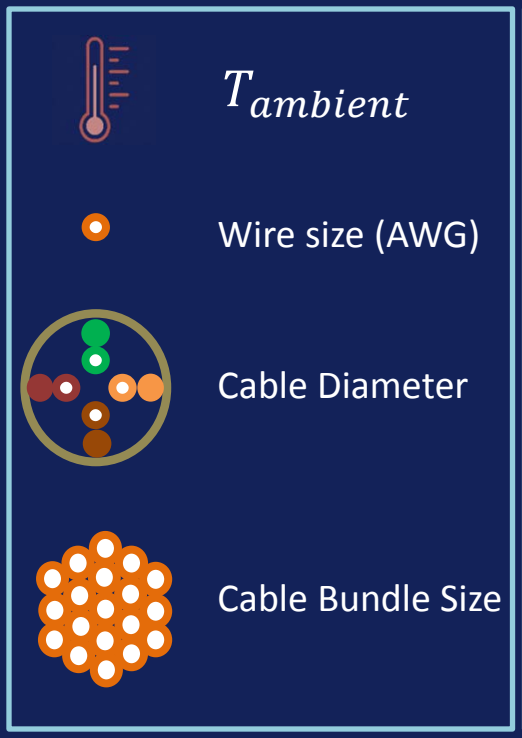


Impacts to Cable Operating Temp

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℃
$I_{conductor}$ = 0.48A

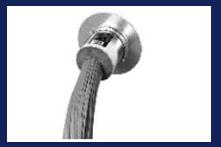


Installation Conditions


Open Air


Support Tray


Open Conduit

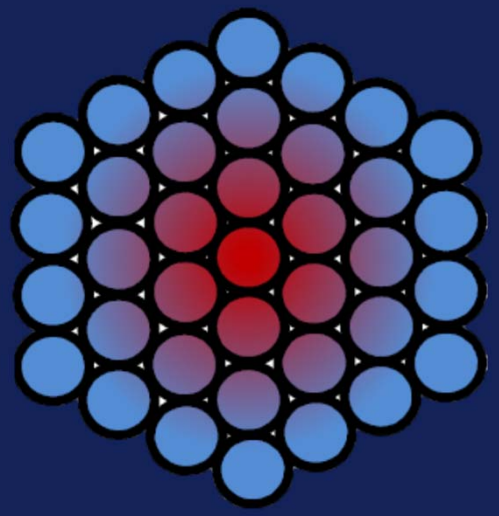

Conduit w/Sealed Ends

Heat Dissipation

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

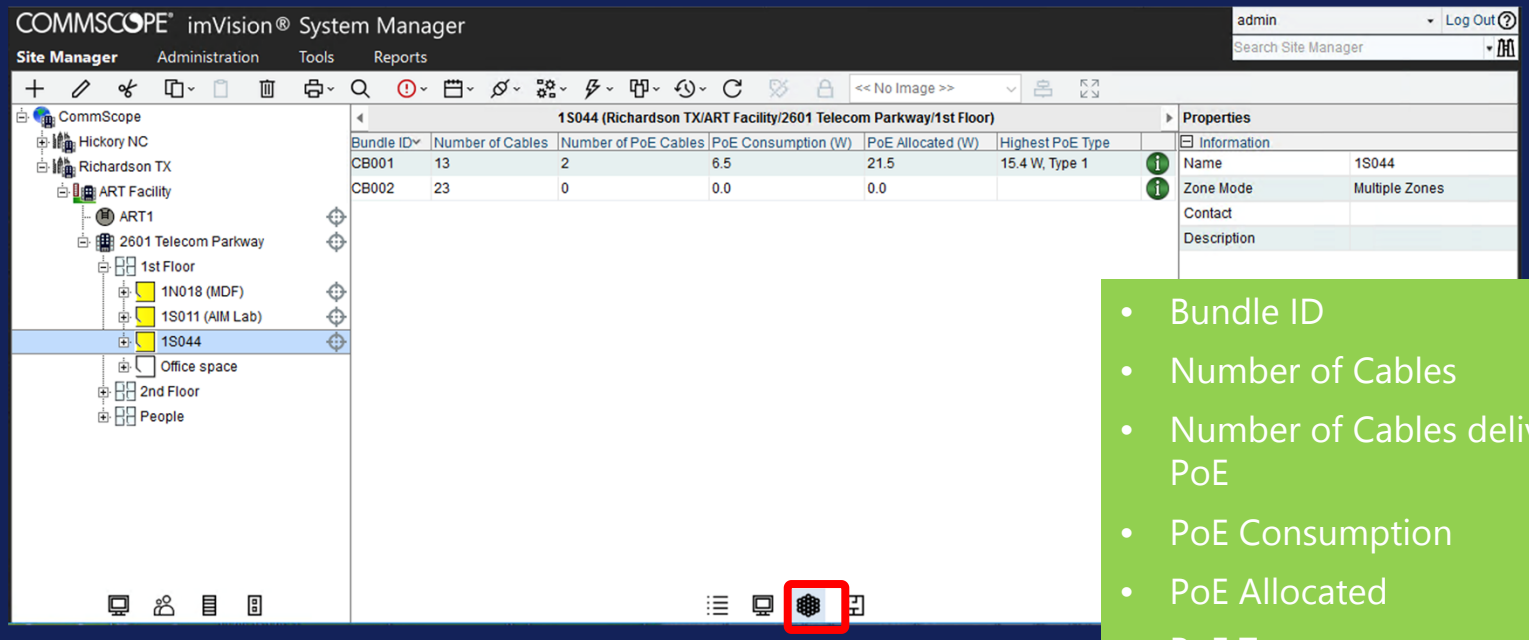
Increased temperature of installed cables will increase channel attenuation/insertion loss

Increased temperature may exceed the specified operating temperature



Tracking Cable Bundles

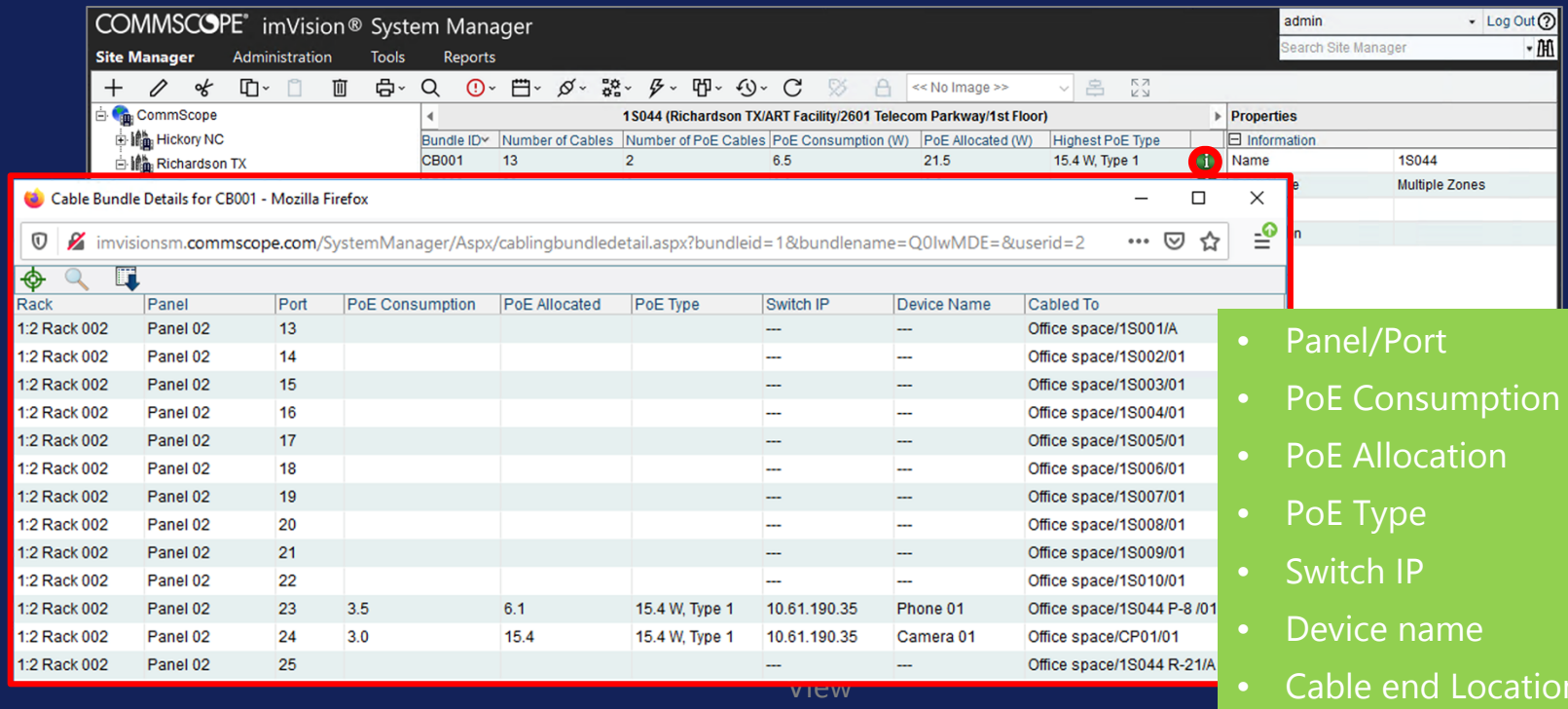
In line with TIA/EIA 606C



- Bundle ID
- Number of Cables
- Number of Cables delivering PoE
- PoE Consumption
- PoE Allocated
- PoE Type

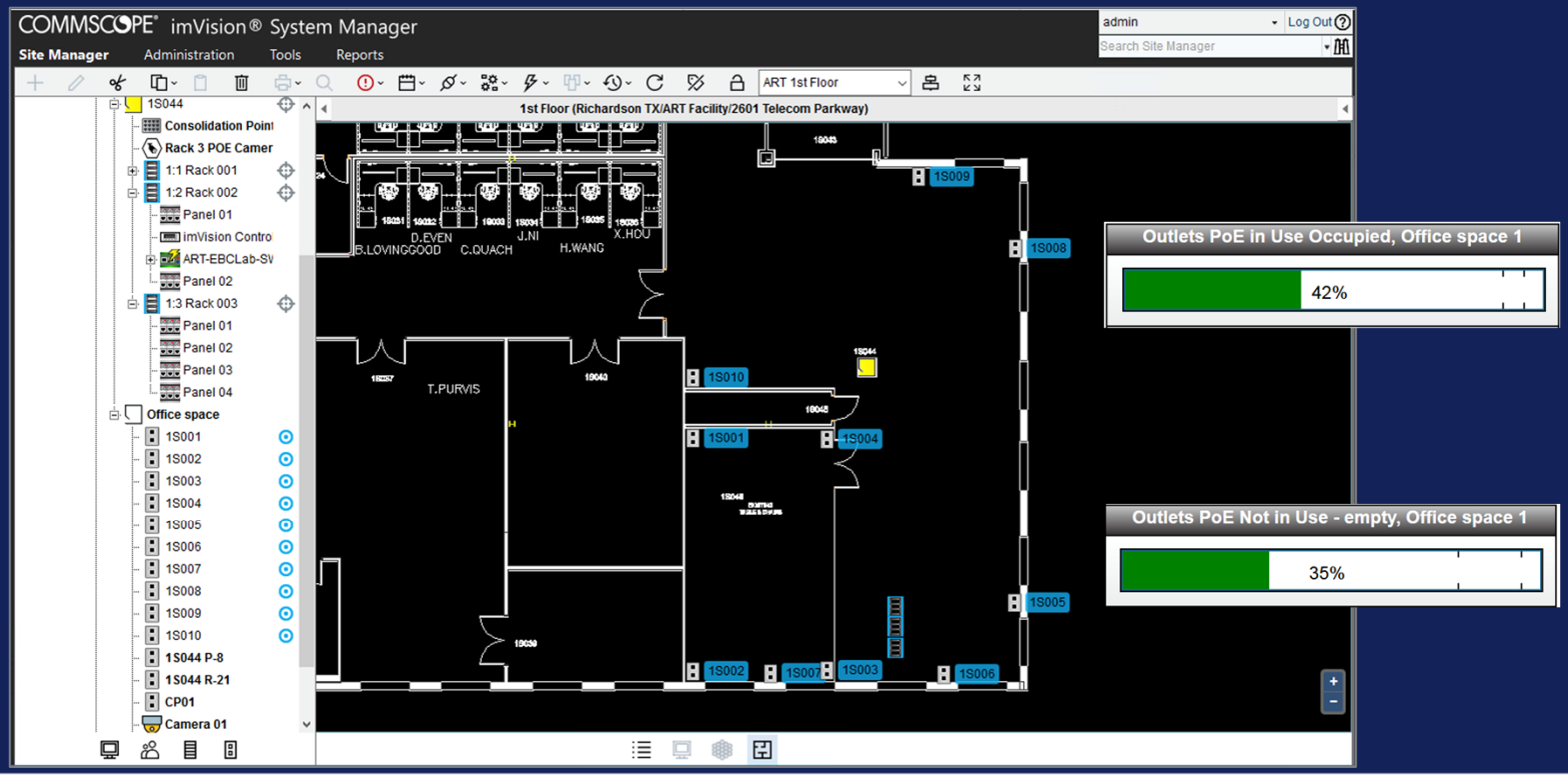
In line with TIA/EIA 606C

PoE in Cable Bundles



- 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:

Ronna Davis

ronnadavis@commscope.com