“Implementing Digital Building Strategies and Applications within the Hospitality Space”

Panel Discussion
Panel Participants

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# PoE and Networks

<table>
<thead>
<tr>
<th>Standard</th>
<th>IEEE 802.3af</th>
<th>IEEE 802.3at</th>
<th>IEEE 802.3bt</th>
<th>HDBaseT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>PoE</td>
<td>PoE+</td>
<td>PoE++</td>
<td>4PPoE</td>
</tr>
<tr>
<td>Status</td>
<td>2003</td>
<td>2009</td>
<td>Publish Date: 12/26/2018</td>
<td>Exists today</td>
</tr>
<tr>
<td>Maximum number of energized pairs</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Maximum DC current per pair</td>
<td>350 mA</td>
<td>600 mA</td>
<td>600 mA</td>
<td>960 mA</td>
</tr>
<tr>
<td>Maximum power delivered by the Power Sourcing Equipment (PSE)</td>
<td>15.4 Watts</td>
<td>30.0 Watts</td>
<td>60.0 Watts</td>
<td>90.0 Watts</td>
</tr>
<tr>
<td>Minimum required power at the Powered Device (PD)</td>
<td>12.95 Watt</td>
<td>25.5 Watt</td>
<td>51.0 Watt</td>
<td>71.0 Watt</td>
</tr>
<tr>
<td>Maximum Data Rate</td>
<td>1000BASE-T</td>
<td>1000BASE-T</td>
<td>10GBASE-T</td>
<td>Varies</td>
</tr>
</tbody>
</table>
A Path to a Building DC Microgrid

- **Building Materials Science continues to improve:**
  - DC Powered
  - Connected
  - Sensor Rich

- **Commercial Inverter Based Appliances Continue to Emerge**

- **Many Variable Speed/Frequency Drives can be DC Powered today**
  (check with Manufacturers)

- **The DC Microgrid Emerges in the Building**
HVDC in the Data Center

- Data Centers are moving on the DC Path

- HV DC is *more energy efficient* (eliminates Double Conversion), compatible with UPS
- Buildings will *mimic these trends* to gain efficiencies
PoE Lighting
Design Possibilities of PoE
Touchscreen Wall Controllers

Plug into PoE system with Category Cable and communicate over the PoE network
Beyond Lighting

2019 BICSI Winter Conference & Exhibition
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IP Convergence for Digital Building Technologies

- Sensing
- Ventilation
- Lighting
- BACnet
- Coax
- PBX


Data Network

Cloud Management and Analytics

OpEx

Experiences

Sensing

IP Telephony

IP Cameras

Building Management Systems using low-voltage PoE

IP Building Systems on low-voltage PoE

OpEx
Connectivity Design Considerations

- Pick connectivity ready for emerging end points, designed to withstand stressors, and backed with a warranty for extended life cycles.
- Connectivity should be designed to support more than 1A
- Patchcord selection matters
Connectivity Design Considerations

Spark Gap Concerns When Un-mating Under PoE Load

- Connectivity designs that locate the last point of contact away from the fully mated connection protecting area of the mated connection from any arch damage
Structured Cabling and the RCDD

- Know Your Performance Margins Under Power Load
- Higher Temperatures = Higher Attenuation
IP Convergence for Digital Building Technologies

- Reduced Installation Costs
- Increased Installation Safety
- More Agile Deployments
- Enhanced Productivity
Digital Building Advancements
Intelligent Back-Up Systems, Advanced PoE Lighting
Replacement of Diesel Generator as Elevator Back-up

- Diesel Generator **increases life-safety hazard**, requires **constant maintenance**, requires **large servicing room**, emits **smoke and other fumes**

350 KW Diesel Generator
Requires 515 ft² for clearance
UPS Lithium Ion Battery Elevator Back-up

- Advancement in Lithium ion Batteries creates **compact**, **sustainable**, and **easily maintained** backup power supply

- Innovation that creates unique guest experience
Which do you prefer?
Centralized Energy Storage System (ESS)

- For the first time in the world, a diesel generator used for emergency power backup will be replaced with a Lithium Ion Battery Pack
- Diesel generators are loud, unsafe, and require frequent maintenance
- Energy Storage Systems are already being used in Korea to shave peak loads, integrate with renewable energy solutions, and back up power for different applications.
Which do you prefer?

Finding out your battery doesn’t work when there is a failure?

or

Finding out real time anything about your battery you need to know?
Intelligent Information Analysis

- Uninterruptible Power Supplies (UPS) can give you *real time information* as to the status of their power supply, and keeps track of maintenance requirements.

- Most backup failures occur from *human error*. Why not have a system that tells you when it needs maintenance instead of realizing it doesn’t work when there’s an outage?
LG OLED Lighting

- Structure & Principle
- Premium Light Quality
  - Minimal or No Ductwork
  - High Energy Efficiency
  - Lowest Life Cycle cost on the market
- Extremely Thin and Light
- Truly Flexible
THANK YOU!

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