ZONE CABLING

Are we ready?

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CONNECTED BUILDINGS ARE HERE
AGENDA

★ NEW CHALLENGES
★ DESIGN DRIVERS
★ STANDARDS
★ ANSI BICSI STANDARDS FOR IB
★ CHANGE – DIGITAL TRANSFORMATION
★ THE DIGITAL CEILING
★ HOW TO DO ZONE CABLING
★ CONCLUSION
★ ADVICE
SMART vs. INTELLIGENT

- **Smart**: Performing actions based on direct input of information or data
- **Intelligent**: Performing actions based on common sense, experience, and the ability to adapt, taking context into account
DESIGN DRIVERS

"NEW" thinking

IoT
PoE
Sensors
WiFi
Multigigabit Ethernet
Energy saving
Comfort

"OLD" thinking

Local Area Network
Computers and phones
Network printers
100/1000 Ethernet

Structured Cabling

"NEW" thinking

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★ ISO/IEC 11801-6 2017 Part 6: „Distributed building services“

★ ANSI/TIA-862-B „Structured Cabling Infrastructure Standard for Intelligent Building Systems“


ANSI/BICSI STANDARDS FOR CONNECTED BUILDINGS
• **PoE**
  - DC in the last mile
  - PoE - 100W per port
  - LED lightning
  - TV sets (HDBaseT)
  - Mobile devices
  - Small home appliances
  - Even fridges
  - ...

• **IoT**
  - Sensors
  - Actuators
  - Cameras
  - Wearables
  - Vehicles
  - Drones
  - Tools
  - WiFi 6
  - ...

• **5G**
  - VR
  - AR
  - Surveillance
  - Games
  - Shopping
  - Netflix
  - Control
  - Management
  - Healing / Repairing
  - ...

• **BIG DATA**
  - Catch
  - Analyze
  - LEARN
  - Store
  - Search
  - Share
  - Exchange
  - Refresh
  - Use
  - ...

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CHANGE

75% COMPLETE

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HOW DOES IT TANGLE US

• **LIFE**
  - Smart City
  - Smart Street
  - Smart Shop
  - Smart Home
  - Smart Car
  - Smart Wearables
  - Smart Kids
  - Smart Pets
  - Smart Healthcare
  - Smart Life

• **INDUSTRY**
  - Smart Factory
  - Smart Floor
  - Smart Machine
  - Smart Tool
  - Smart Product
  - Smart Warehouse
  - Smart Delivery
  - Smart Production

• **WORK**
  - Smart Building
  - Smart Office
  - Smart Desk
  - Smart Chair
  - Smart Work
★ MORE REACH – 1km 10Mbs Single Pair Ethernet
★ MORE DEVICES – „Sensor“ Ethernet
★ MORE SPEED – Multi-Ethernet
★ MORE POWER – Different PDs
★ MORE PORTS – Number is multiplying
★ MORE SERVICES – IoT
★ MORE APPLICATIONS - IoT

★ MORE QUALITY CABLELING
FUNDAMENTALS OF ZONE CABLING

★ 3 CONNECTOR CHANNEL

Diagram showing the components of a zone cabling system, including BD or FD, Active Device (Switch), Patch Panel, Patch Cord, PERMANENT LINK 50-80 meters, Consolidation Point, Consolidation Area Cable, Outlet, Patch Cord, Work Place, Port, and IoT Device.
★ FLEXIBILITY
★ IDEAL FOR SHELL & CORE - BUSINESS & INDUSTRIAL
★ MAC FRIENDLY – FLOOR LAYOUT
★ LESS INSTALLATION TIME
★ USE OF PRECONNECTORIZED COPPER OR FIBER CABLING
★ ACTIVE OR PASSIVE CP
★ OPTIMIZING TOTAL COST – LESS CAPEX or TOTAL OPEX
★ REDUCING FIRE LOADS
**HEXAGON DEPLOYMENT PATTERN**
Large open spaces – office, industrial, warehouse, shopping malls
Up to 96 ports
4-5 “hexes” each of 425 m²
Total 2000 m²

**GRID DEPLOYMENT PATTERN**
Large spaces - Schools, Universities, Hospitals
4 “squares” each of 340 m²
Total 1400 m²

**LEG DEPLOYMENT PATTERN**
Small spaces – part of objects
24-96 ports
4 “squares” each of 340 m²
Total 1400 m²

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**TABLE 2: Typical building device density**

<table>
<thead>
<tr>
<th>Use of floor space</th>
<th>Coverage area per building device (m²)</th>
<th>Number of connections in the SCP required per 2000m² (hexagon pattern)</th>
<th>Number of connections in the SCP required per 1400m² (grid pattern)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classroom, data center, hospital, hotel, office, retail, or indoor parking</td>
<td>Minimum</td>
<td>Recommended</td>
<td>Minimum</td>
</tr>
<tr>
<td></td>
<td>25</td>
<td>80</td>
<td>96</td>
</tr>
</tbody>
</table>

a) Each SCP is assumed to support four to five 425m² hexagon-shaped coverage areas for a total maximum usable space of 2000m².
b) Each SCP is assumed to support four 340m² square-shaped coverage areas for a total of 1400m².
c) ANSI/TIA-606-8 provides an estimate coverage area per building device of 50m² for indoor parking application.
NETWORK TOPOLOGY

Centralized Cabling

Zone Cabling

Consolidation point work area

Telecommunications room cross-connect

To equipment

Consolidation point

Office furniture raceway

Solid cable

Cable assemblies

Patch cords

Source: Panduit

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SCP or HCP or CP

- ANSI/BICSI 007-2017 Intelligent Building Systems
- HCP
- PASSIVE
- SERVICE AREA / SERVICE OUTLET
- SOLID COPPER CABLE TO THE CP
- WALL CABLE FROM CP TO OUTLET
- 1, 2.5, 5, 10 GbE – at the moment
- 25/40 GbE - future
- INDIVIDUAL COPPER CABLE OR PRETERM COPPER CABLE BUNDLES

- ISO/IEC 11801-6 Distributed Building Services
- SCP
- PASSIVE
- SERVICE AREA / SERVICE OUTLET
- SOLID COPPER CABLE TO THE CP
- WALL CABLE FROM CP TO OUTLET
- 1, 2.5, 5, 10 GbE – at the moment
- Class EA, Class F, Class FA
- INDIVIDUAL COPPER CABLE OR PRETERM COPPER CABLE BUNDLES

- TIA/EIA-568-B.1 Open Office Cabling (ZONE)
- CP
- PASSIVE
- TELECOM OUTLET - WORK AREA OUTLET
- SOLID COPPER CABLE TO THE CP
- WALL CABLE FROM CP TO OUTLET
- 1, 2.5, 5, 10 GbE – at the moment
- 25/40 GbE - future
- INDIVIDUAL COPPER CABLE OR PRETERM COPPER CABLE BUNDLES

- ANSI/TIA/EIA-862-Bx : 2017 Building Automation Systems
- HCP
- PASSIVE
- COVERAGE AREA
- SOLID COPPER CABLE TO THE CP
- WALL CABLE FROM CP TO OUTLET
- 1, 2.5, 5, 10 GbE
- 25/40 GbE
- Cat.6, Cat.6A, Cat.8
- INDIVIDUAL COPPER CABLE OR PRETERM COPPER CABLE BUNDLES

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ANSI-TIA568.2-D standard - new link model named Modular Plug Terminated Link – MPTL

- **THIS IS NOT ZONE CABELING –**
- **THIS IS MUTOA (TIA) or MUTO (ISO)**
- **MAX LENGTH OF THE CABLE AFTER CP IS 20 meters**
- **ISO IS DRAFTING MPTL: ISO/IEC TR 11801-9910**
If you want to make it “active” by putting a switch inside – than it is not a CP, and it’s not a ZONE CABLEING.

It is FD.

Any way it could be a good approach to the DIGITAL CEILING when applying 25 or 40 Gig to the HCP.

You can use cat.8.2 or MM fiber.

Use of industrial fan-less switches.

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WHAT'S INSIDE THE BOX
CONSOLIDATION AREA CORD

- JACK to PLUG – F to M min 5, max 25 meters long
- PLUG to PLUG – M to M min 5 – max 25 meters long
- For Digital Ceiling and Floor – IT MUST BE CPR RATED

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FLOOR CP OPTIONS
CEILING CP
WALL CP
Follow

- KNOWLEDGE
- RESPONSIBILITY
- BEST PRACTICE
- EXPERTISE

Risks
- RISK
- UNRESPONSIBILITY
- CUTTING THE CORNERS

Sleep tight with Bicsi

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KEEP CALM AND GET IN THE ZONE
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