



CABLING THE FRIENDLY SKIES: Planning a Smart Infrastructure for Airports

David Coleman, Vice President of Business Development,
Paige DataCom Solutions

Carol Oliver, RCDD, DCDC, ESS, ICT Consultant,
CEO Communications; BICSI President Elect

CONNECTING YOU TO MORE



Who is Paige...

...Innovative solution provider

Each of our divisions are focused specifically on the fields they serve, with staff that dedicate their careers to their industries with care, friendliness and respect.

Paige is employee-owned, has over 200 employees and is globally headquartered in Union, NJ.





Global Reach

Big enough to handle anything,
yet small enough to care



CONNECTING YOU TO MORE

Today's Presenters

David Coleman



- Sr. VP, Business Development, Paige Datacom Solutions
- Experience:
 - 4th Generation Wire Geek
 - Technical Sales
 - Marketing
 - Product Development



Carol Everett Oliver,
RCDD, DCDC, ESS



- Principal of CEO Communications (ICT Consultant)
- Experience:
 - Technical Sales & Marketing
 - Installer Trainer
 - Industry Author
- BICSI Association:
 - Board of Directors –
 - President-Elect (2020-2022)
 - President (2022-2024)
 - Chair, Intelligent Building Standards



Agenda

- Airport IP Challenges
 - Space, Time, Money, Technology
- Low Voltage Infrastructure Solutions
 - Lengthonomics and GameChanger Cable™



**Making the most
of what you
have**

**Making it last as
long as possible**

CONNECTING YOU TO MORE



Airport IP Applications

- Data Communications
- Security & Surveillance
- Access Control
- Baggage Handling
- A/V (Displays, Public Address)
- Point-of-Sale Transactions



CONNECTING YOU TO MORE

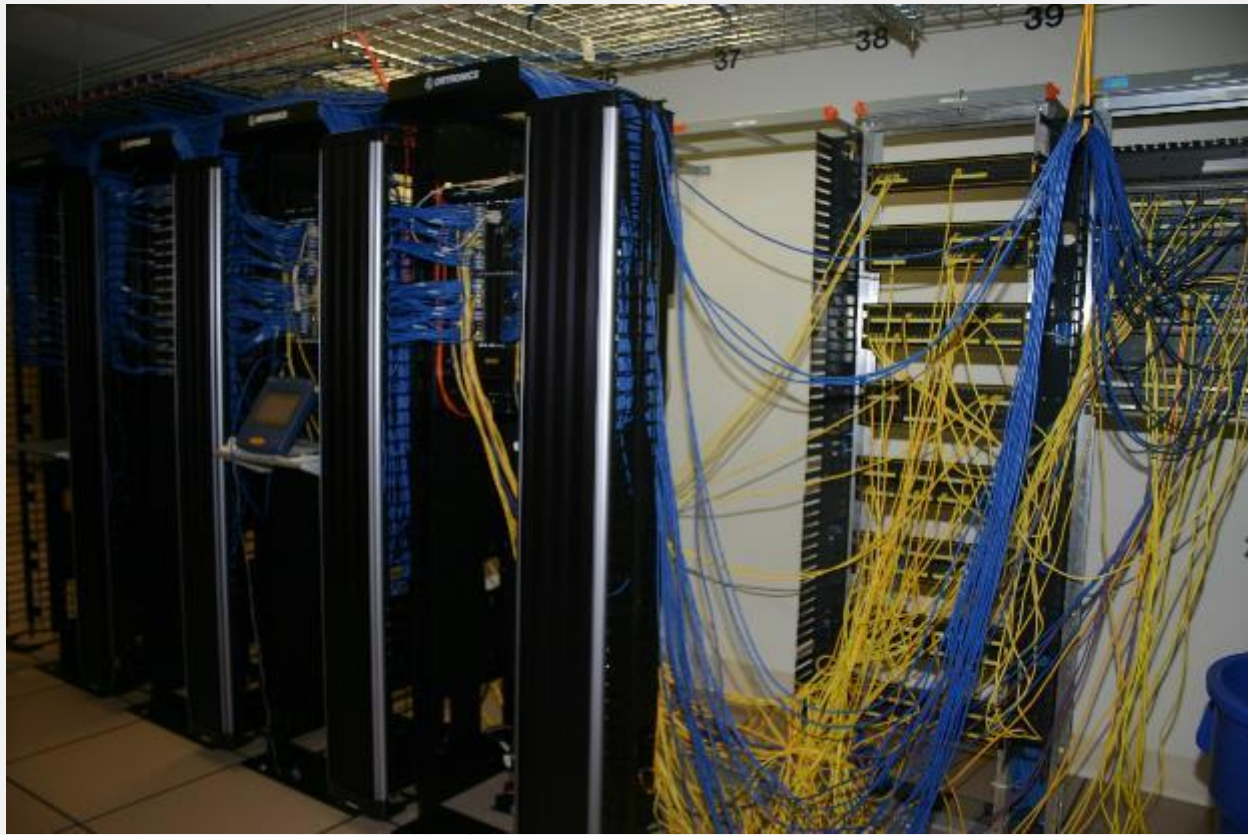


Network Cabling Challenges



- Bandwidth
- Power (PoE)
- Space (Distance/Location)
- Cost

IDFs/Telecom Rooms



Understanding Standards & Codes

- Codes are mandatory, enforceable by law
- Standards Are VOLUNTARY
 - Written by vendors
 - Least common denominator
 - Based on best practices by committee
 - Can always be exceeded
 - Can be compliant
 - Not always in sync

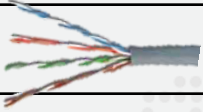



Additional Standards Applicable for Intelligent Buildings

- **ANSI/TIA-862-B-2016** “Structured Cabling Infrastructure Standard for Intelligent Building Systems” - TIA defines cable types, distances, testing, pathways and spaces and structured cabling layouts
- **ISO/IEC 11801** part 6 “Distributed Building Services” – International Standards that align with TIA.
- **ANSI/BICSI 007-2017**, “Information Communication Technology Design and Implementation Practices for Intelligent Buildings and Premises” – Addresses Network Integration of Systems and Different Systems (Lighting, Digital Signage, Vertical Transportation, Sound Systems, ESS, etc.) and Design Considerations (Power, Data, Zone Cabling)



Copper vs. Fiber Cables

	 Copper	Fiber 
Bandwidth	Category 6 – 250 MHz Category 6A – 500 MHz Category 7A ¹ – 1000 MHz	OM3 – up to 1500 MHz/km ² OM4 – up to 3500 MHz/km ² Singlemode - unlimited
Distance	Typical – 100m (<i>exception: hybrid cable or GameChanger</i>)	Multimode – Up to 2km ³ Singlemode - Up to 40km ³
Applications	Data and PoE (Power over Ethernet)	Data only <i>(Power can be achieved through a hybrid cable with media converters)</i>
Termination	RJ45 field termination	Factory terminated (trunks) or Requires trained/skilled labor for field termination
Cost	\$ - Most cost effective cable and connectivity	Multimode cable - \$\$\$ Singlemode cable - \$\$ Electronics/Transceivers - \$\$\$\$

¹ ISO 11801 Class F_A

² Minimum Overfilled Modal Bandwidth at 850nm wavelength

³ Application and fiber type dependent

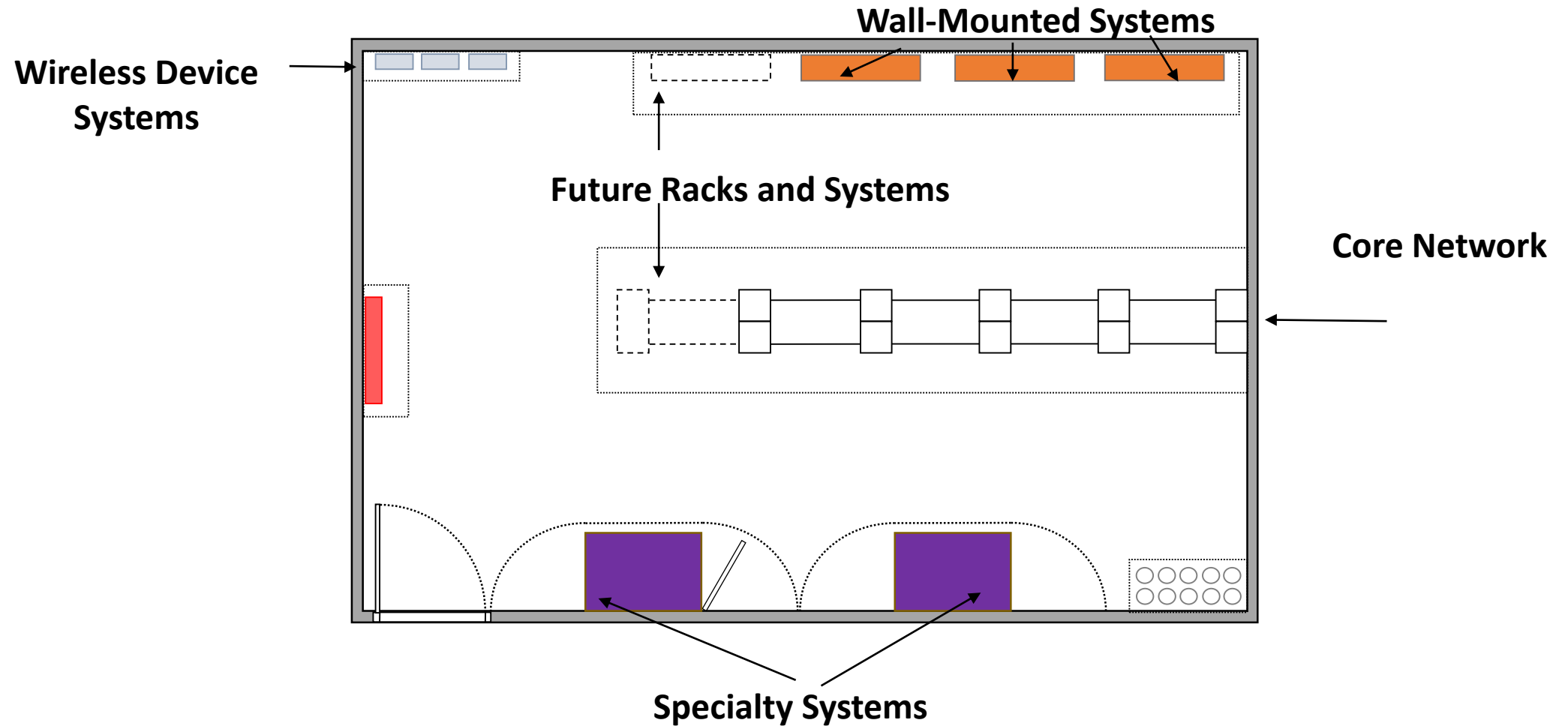
ANSI/BICSI-007-2017: ICT Design for Intelligent Buildings



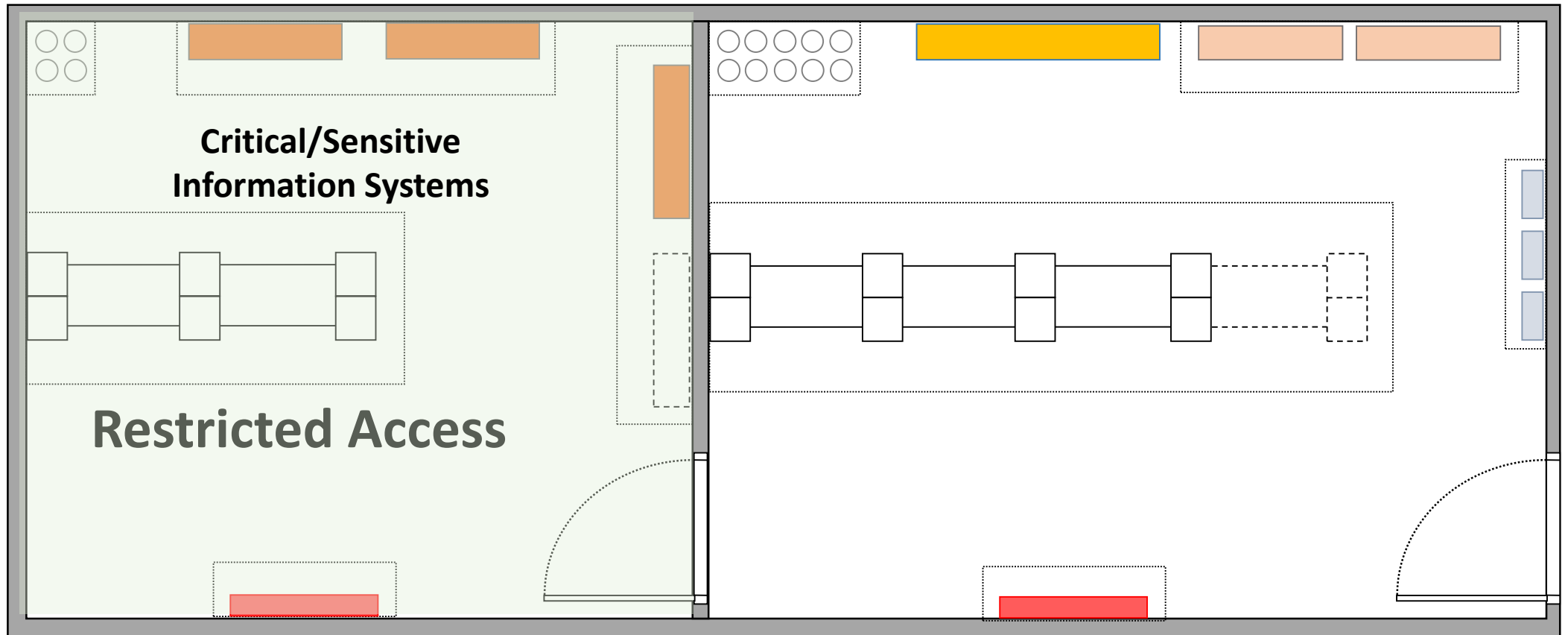
Integrating Applications on ICT Network

- Communications Infrastructure & Network Integration
- Design Considerations (Power, Data, Zone Cabling)
- Building Systems (Lighting, Digital Signage, Vertical Transportation, Sound Systems, ESS, etc.)
- Building Monitoring Systems
- Commissioning

Designing a Telecom Room that Supports Multiple Systems



Dual TRs Provide Restricted Access to the Core



Direct Termination Solution (TIA & BICSI): Modular Plug Terminated Link (MPTL)

- Custom length, quick connections in the field for direct connection to devices
- Improves performance and allows for more efficient power delivery by eliminating patch cords and outlets
- Improves security for devices like surveillance cameras by eliminating exposed patch cords

Photo taken at McCarran Airport in Las Vegas – Anyone could jump up and pull out the patch cord to the surveillance camera and wireless access point.



Unique Cabling: “Lengthonomics”

- Standards for copper cable is limited by IEEE and TIA to 100m
- Many applications are requiring Power and Data exceed the 100 meter limit:
 - Analog to IP Video upgrades
 - Video in parking lots/structures
 - Access Control
 - Video in Baggage Handling Systems
 - Outdoor Security Cameras
 - WiFi
 - Digital Signage



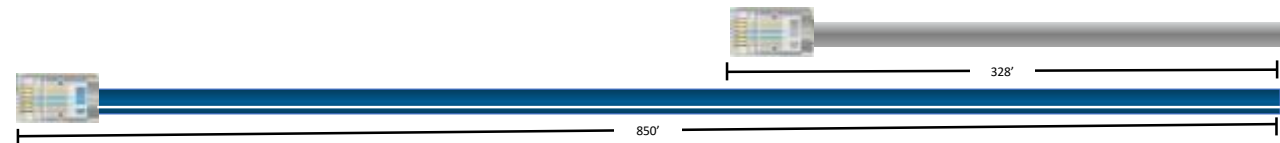
The Challenge

The Standard(s) Challenge

Installing IP devices more than 328 feet away from the network requires additional (and unnecessary)

- Time
 - Hardware
 - Terminations
 - Touch Points
- Money
 - Trades
 - Extenders
 - IDFs
- Hassle
 - Points of Failure
 - Risk
 - Labor

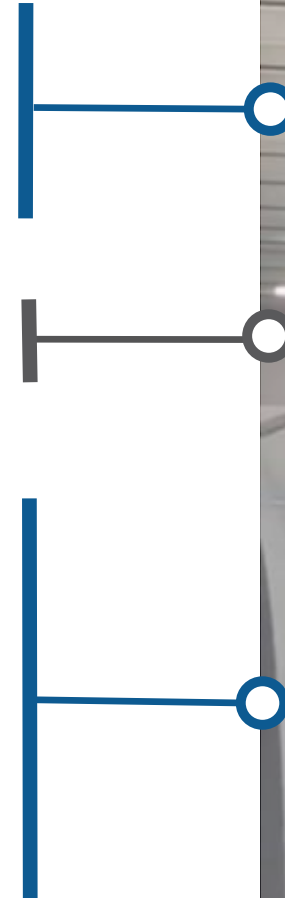
GameChanger can be run over 2.5x the distance of a standard category cable



1 Gb/s and PoE+ over 656 feet?

That's a GameChanger

- Supports Ethernet and PoE+
 - 1 Gb/s up to 656 feet (200m)
 - 10 Mb/s up to 850 feet (259m)
- Lab Verified by UL
- Field Testing Supported by:
 - AEM
 - Fluke
 - Ideal
 - Netscout
 - Softing
 - Viavi



The Solution
It's a GameChanger



The GameChanger [terminates like a standard Cat6](#). We recommend the ezEX44 or ezEX48 RJ 45 Connectors from Platinum Tools.





Riser

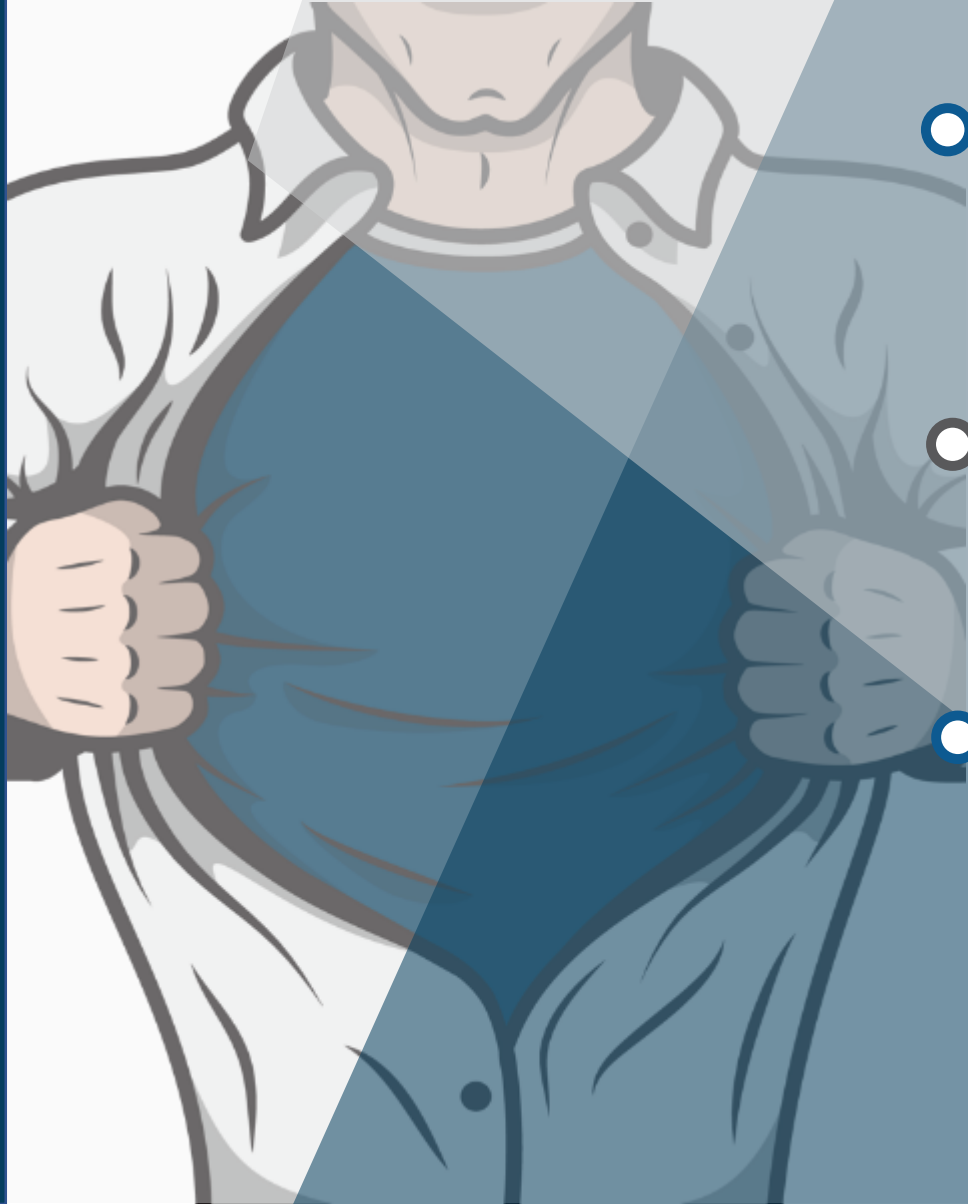
Plenum



Outside Plant

Outside Plant Shielded

Be A Hero



The Winning Solution for Your Team

Recover from a blown budget

Find Money for the bells and whistles you wanted

Create RFP's with faster, less expensive solutions

The GameChanger has won several awards including



THIRD PARTY ANALYSIS OF GAMECHANGER SAVINGS

- April 2018
- 860,000 ft.² parking garage
- 106 cameras
- Longest cable run 850 ft.
- Highest camera stream: 20Mb/s

Pricing Analysis provided by:
Mark S. Bennett, CPP, CSC



OPTION A: GAMECHANGER

Required Hardware	MSRP Unit Price	Quantity	Extended Cost (No Labor)
GameChanger CMR	\$0.40	38,000	\$15,010.00
24-Port Surge Suppressor	\$1,1216.00	5	\$6,080.00
24-Port Patch Panel	\$243.00	5	\$1,215.00
Total			\$22,305

OPTION B: CAT 6 + PoE EXTENDERS

Required Hardware	MSRP Unit Price	Quantity	Extended Cost (No Labor)
Cat 6 CMR	\$0.14	38,000	\$5,320.00
24-Port Surge Suppressor	\$1,1216.00	5	\$6,080.00
24-Port Patch Panel	\$243.00	5	\$1,215.00
PoE Extender at Camera	\$385.00	106	\$40,810.00
16-Port PoE Extender at IDF	\$7,3000	7	\$51,100.00
Total			\$104,525.00

OPTION C: HYBRID FIBER+POWER

Required Hardware	MSRP Unit Price	Quantity	Extended Cost (No Labor)
Powered Fiber & Accessories			\$31,311.60
PoE Extender Modules	\$1,195.31	53	63,351.56
Fiber Connectivity in IDF			\$7,319.25
Power Supply in IDF			\$5,015.00
Fiber/Copper SFPs	\$93.75	106	\$9,937.50
Chassis in IDF	\$656.00	6	\$3,936.00
Media Converter in IDF	\$50.00	106	\$5,300.00
Total			\$126,570.91

WHAT'S THE MAXIMUM DISTANCE THE GAMECHANGER CABLE CAN BE RUN?

...and other frequently asked questions

1 Gb/s up to 656 feet (200m)



10 Mb/s up to 850 feet (259m)



Delivers
1 Gbps performance
and PoE+
over 200 meters



WHAT'S THE DIFFERENCE BETWEEN GAMECHANGER AND A STANDARD CAT 6?

...and other frequently asked questions

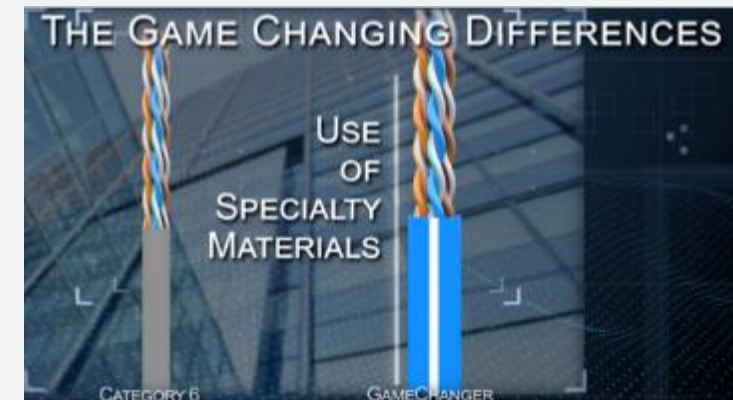
We've increased the
gauge size to **22 AWG**
(20% more than Cat 6)



We **twist it differently** than our
standard Cat 6 to optimize for long
distance transmission.



We've employed the use of **specialty materials** to allow for high
performance





WHO'S HAVING SUCCESS WITH THE GAMECHANGER TODAY?

...and other frequently asked questions

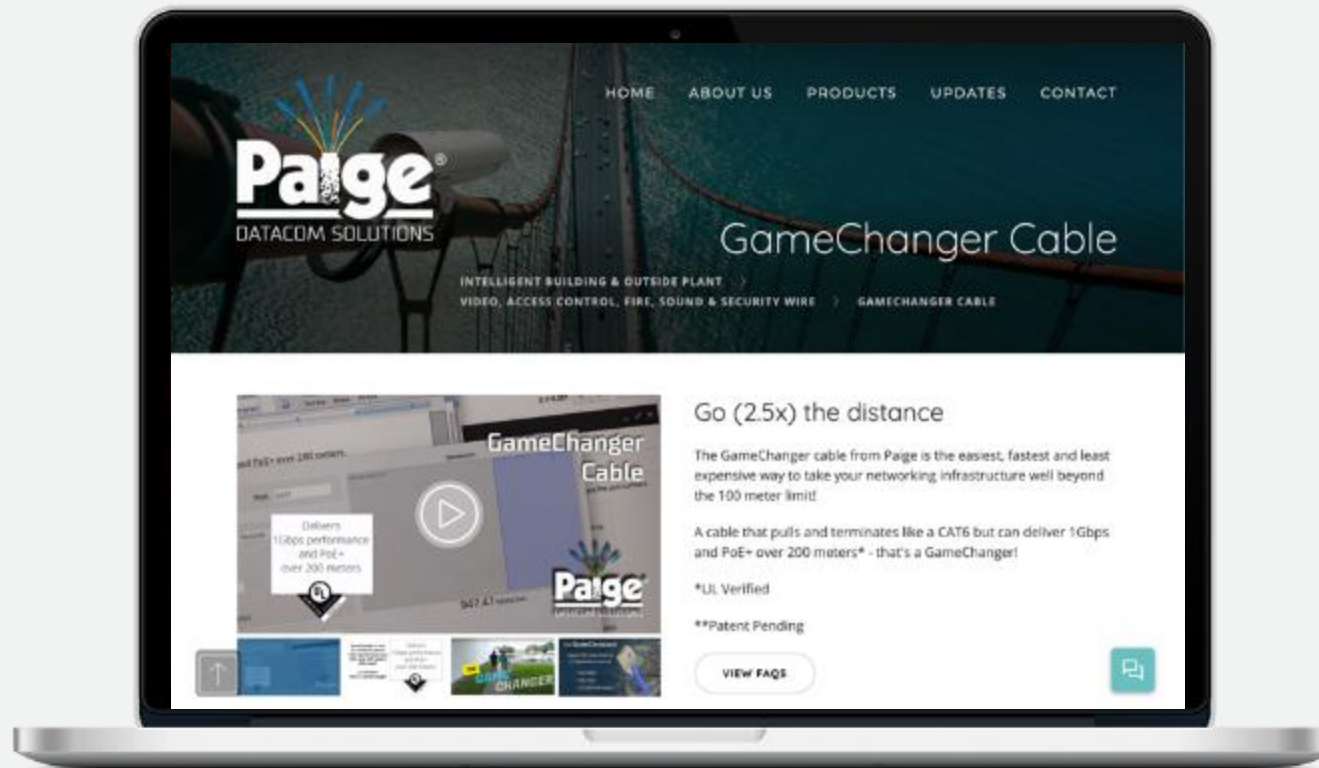


For More Information

www.paigedatacom.com/gamechanger



Live Chat with any questions at
www.paigedatacom.com



Spec Sheets



Flyers



Case Studies



White Papers



Blog Posts



Videos



Live Chat



More FAQ