What is the Soundtrack of Your Network?

Brian Davis
Corning
Keep Track of the Soundtrack!

- Song AND artist
- Scan QR code
- You are entered to win BOSE Noise-cancelling Headphones
WHY

is it time to change the tune on network design
What is the Soundtrack of Your Network?
WHAT
A future-ready network now
Commercial Office Building
• 180,000 square feet
• 800 employees
• 6 floors

Applications
• Wi-Fi access points
• 4K TVs
• Café menu boards
• Scheduling panels
• Conferencing phones
• Video conferencing
• In-building cellular
• Printers, workstations
• Sound masking
• Security cameras
Comparison is based on network electronics and associated labor. Numbers do not include endpoints (APs, RN's, printers, etc. which are the same in both cases).

<table>
<thead>
<tr>
<th>180,000 SQFT</th>
<th>FIBER DEEP</th>
<th>TRADITIONAL COPPER</th>
<th>SAVINGS</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATERIAL</td>
<td>$730,170</td>
<td>$972,831</td>
<td>25%</td>
</tr>
<tr>
<td>LABOR</td>
<td>$137,669</td>
<td>$242,209</td>
<td>43%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>$867,839</td>
<td>$1,215,040</td>
<td>29%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ancillary Expenses</th>
<th>TRADITIONAL COPPER</th>
<th>FIBER DEEP</th>
<th>SAVINGS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Telecom Rooms</td>
<td>6 ($300k)</td>
<td>1 ($50K)</td>
<td>83%</td>
</tr>
<tr>
<td>Cable Tray</td>
<td>24W x 6 ($150/ft)</td>
<td>12W x 2D/J-Hook ($62)</td>
<td>60%</td>
</tr>
</tbody>
</table>

* Comparison is based on network electronics and associated labor. Numbers do not include endpoints (APs, RN’s, printers, etc. which are the same in both cases).
Time to think differently about building networks
Save space with fewer, longer runs of future-ready Composite Cable

Full pathways with little room for day-two applications

Rip-and-replace upgrades

Costly ancillary networking components (building IDF, cable trays, conduit, cooling, racks, etc.)

Reduce future upgrade costs

Extend the reach of the network

Reduce ancillary networking expenses
Wire it Once, Enable Everything

- **Deliver power and data** to enable hard-to-reach remote devices including IP devices connected via software-defined LAN (SD-LAN) and distributed antenna systems (DAS).
- **Fewer cable runs** take up less space in crowded or narrow pathways
- **Lighter** cable bundles are easier to handle
- Reduce IDF closets and associated maintenance costs by **reaching further distances**
- **Eliminate multiple runs** of single-purpose infrastructure
- Prepare for future demands with **scalable**, adaptable solution
Deliver Data and Power to the Edge

Applications

Access Control
Security Camera
Outdoor Wi-Fi
Small Cell

Access Node

Composite Cable
Reach distances of 2,000 feet or more

Power

Fiber / Copper Management

Optical Switch (Data)
Overcome Distance Limitations of Traditional Copper LAN

Corning’s ActiFi™ composite cable supports:
• Class 2 (low voltage) and Class 3 (medium voltage) power solutions including bulk power solutions
• Fiber devices directly or via a connection to PoE switches
• Unlimited bandwidth and bulk power from the MDF to the edge/zone to enable full network and power convergence

<table>
<thead>
<tr>
<th>ActiFi™ Composite Cable Distances</th>
<th>30 Watts</th>
<th>60 Watts</th>
<th>75 Watts</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 pair</td>
<td>Low voltage (57VDC)</td>
<td>20 AWG</td>
<td>590 ft</td>
</tr>
<tr>
<td></td>
<td>16 AWG</td>
<td>1,500 ft</td>
<td>750 ft</td>
</tr>
<tr>
<td></td>
<td>14 AWG</td>
<td>&gt;2,000 ft</td>
<td>1,190 ft</td>
</tr>
<tr>
<td></td>
<td>12 AWG</td>
<td>&gt;2,000 ft</td>
<td>1,895 ft</td>
</tr>
</tbody>
</table>

Example use cases: security cameras, outdoor Wi-Fi, blue emergency call boxes, devices that are typically “hard to reach”
WHEN
Deciding to Leverage Fiber - and Power Deep
WHEN to Think “Fiber-and Power-Deep”

Long-reach scenarios  Growth areas  Future technology needs  Flexibility
Where We See Fiber Deep

- Hospitality
- Healthcare
- Public Venues
- Business
- Education
When to Leverage a Fiber Deep Network

Environments
- Hospitality / entertainment
- Commercial office buildings
- K-12 schools
- Fortune 500 companies
- Universities
- Big box retail stores
- Parking garages/lots
- Perimeter fences
- Healthcare
- Senior living communities
- Campuses
- Apartment/condo complex
- Warehouses
- Etc.

Challenges
- Multiple applications
- Long-reach scenarios
- Unique network requirements
- Future technology upgrades
- Day 2 technology needs
- Limited space and pathways
- Expensive rip-and-replace upgrades
- Complex network management
- Few IDF closets available
- Limited local power options
- Limited conduit available
- Costly infrastructure and ancillary networking components

Applications
- Wi-Fi
- Audio/visual equipment
- Building management systems
- Point of sale
- Access controls
- Security cameras
- LAN
- Digital signage
- Conferencing panels
- VOIP
- Touchless controls
- Small Cell
- Thermal scanners
- IoT sensors
- Any IP device

2020 BICSI FALL Conference & Exhibition
WHO

The Adopters Are & How It’s Working For Them
Overview

General
- Brownfield renovation site (formerly Walmart®)
- 50,851 sq ft
- 65–70 employees

Supported Applications
- Qty. (24) Cisco 3802i Access Points
- Qty. (12) Cambridge Sound-Masking Controllers
- Qty. (9) Axis Security Cameras
- Qty. (8) Crestron NVX Networked Conference Room Displays
- Qty. (7) Crestron Mercury Conference Room Phones
- Qty. (7) Crestron Scheduling Panels
- Qty. (5) Corning® SpiderCloud® Radio Nodes (VZW service)
- Qty. (3) Crestron Conference Room Touch Panels
- Qty. (1) AV Camera
- Qty. (1) Printer Station

Network
# Results

<table>
<thead>
<tr>
<th></th>
<th>FIBER-DEEP SD-LAN</th>
<th>TRADITIONAL COPPER</th>
<th>SAVINGS</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATERIAL</td>
<td>$38,801</td>
<td>$50,430</td>
<td>23%</td>
</tr>
<tr>
<td>LABOR</td>
<td>$10,115</td>
<td>$24,034</td>
<td>58%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>$48,916</td>
<td>$74,464</td>
<td>34%</td>
</tr>
</tbody>
</table>

| NOTES | 22 cable runs on J-Hooks vs. 90 cable runs in cable tray
|       | 62 fiber terminations vs. 18 fiber terminations + 162 CAT 6 terminations

* Comparison is based on network electronics and associated labor. Numbers do not include endpoints (VAPs, RN’s, printers, etc. which are the same in both cases).
### Overview

**General**
- Greenfield
- 14 building campus with redundant MDFs
- > 2000 drops

**Supported Applications**
- Wi-Fi, Video, Voice, LAN, Security

### Network Topology

<table>
<thead>
<tr>
<th>MDF</th>
<th>IDF</th>
</tr>
</thead>
</table>

#### Floor Plan

![Floor Plan Image](image-url)
## Results

<table>
<thead>
<tr>
<th></th>
<th>FIBER-DEEP SD-LAN</th>
<th>TRADITIONAL COPPER</th>
<th>SAVINGS</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATERIAL</td>
<td>$428,436</td>
<td>$714,608</td>
<td>40%</td>
</tr>
<tr>
<td>LABOR</td>
<td>$104,010</td>
<td>$183,816</td>
<td>43%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>$532,446</td>
<td>$898,424</td>
<td>41%</td>
</tr>
</tbody>
</table>

### NOTES
- Campus environment
- Redundant core equipment and pathways

* Comparison is based on network electronics and associated labor. Numbers do not include endpoints (VAPs, RN's, printers, etc. which are the same in both cases).
# Outdoor Cameras

## Overview

**General**
- 48 outdoor cameras
- 1LAN-SDAN-8293 in 3M outdoor enclosure

## Network Topology
## Results

<table>
<thead>
<tr>
<th></th>
<th>FIBER-DEEP SD-LAN</th>
<th>FIBER DEEP (vs. Media Converter)</th>
<th>SAVINGS</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATERIAL</td>
<td>$43,850</td>
<td>$87,535</td>
<td>50%</td>
</tr>
<tr>
<td>LABOR</td>
<td>Wash</td>
<td>Wash</td>
<td>Wash</td>
</tr>
<tr>
<td>TOTAL</td>
<td>$43,850</td>
<td>$87,535</td>
<td>50%</td>
</tr>
</tbody>
</table>

### NOTES
- Media converters are expensive and an inferior product
- SD-LAN = fully managed; Media Converter = unmanaged (analogy would be like pulling a long extension cord from the press box to every light pole)
# Significant Savings by Moving to a Fiber Deep Architecture

<table>
<thead>
<tr>
<th></th>
<th>Small Office Building</th>
<th>Medium Office Building</th>
<th>Large Office Building</th>
<th>Campus</th>
<th>Outdoor Cameras</th>
</tr>
</thead>
<tbody>
<tr>
<td>Footprint (ft²/m²)</td>
<td>3000/279</td>
<td>51000/4724</td>
<td>180000/16723</td>
<td>14 buildings 2000 drops</td>
<td>48 drops</td>
</tr>
<tr>
<td>Employees</td>
<td>15</td>
<td>65-70</td>
<td>800</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Applications</td>
<td>• Wi-Fi, Security cameras • Voice • Data</td>
<td>• Wi-Fi • Sound Controllers • Security cameras • Voice • Cellular • Printer • Displays</td>
<td>• Wi-Fi • Sound masking • Security cameras • A/V • Cellular</td>
<td>• Wi-Fi • Voice • Data • A/V • Security cameras</td>
<td>• Outdoor Cameras</td>
</tr>
<tr>
<td>Overall Savings</td>
<td>17%</td>
<td>34%</td>
<td>29%</td>
<td>48%</td>
<td>50%</td>
</tr>
</tbody>
</table>
Fiber Deep In-building Solutions

Converge multiple technologies over a single, simplified infrastructure.

- Lower first-installed cost
- Save up to 50% on future upgrades
- Virtually unlimited bandwidth
- Optimized space utilization
- Low latency
- Scalable, flexible and intelligent
- Centralized Network Control
How’s Your Soundtrack?

Scan the Code
Fill out the form with 1) song title 2) artist
Win a set of BOSE noise-cancelling headphones