New Indoor Fiber Solutions

Anurag Jain
OFS FTTH Solution Marketing
Agenda

- MDU Segment Focus
- MDU Solutions Overview
- Solutions Discussion
- Real-world Installations
- What’s Next
"Need success strategy for MDU to succeed in residential FTTH. Luxury and high rise MDUs are the sweet spot."

Greenfield MDU Fiber Interest
- Property competition
- Easy install
- Resident satisfaction
- Fast upgrade
- Futureproof
- Influenced by economy
1. **Getting fiber to building**
   Expensive trenching, congested ducts, cost, tight space fiber bending affecting signal

2. **Installing fiber inside risers**
   Duct/pipe ownership, no pathways, expensive drilling, disruption, visibility of fiber/cables

3. **Space to install fiber to subscribers**
   Purchased or rented, no pathways, corners, install time, ONT placement, visibility of fiber/cables, décor preferences
MDU Indoor Placement Options

1. **Inside Living Unit**
   - powered by tenant
   - extends fiber deep into the unit
   - offers maximum bandwidth to tenant
   - first choice in greenfield buildings

2. **Hallway Sharing**
   - powered by landlord / owner
   - extends fiber into building
   - shared ONT and/or bandwidth
   - affects multiple tenants service / troubleshooting

3. **Centralized Closet**
   - powered by landlord / owner
   - fiber to building, reduced rewiring / copper reuse
   - limited bandwidth and **not** true fiber service
MDUs have multiple technologies forcing providers to have several strategies.
MDU Fiber Distribution Solutions

- EZ-Bend Multifiber Drop Bundle Solution
- V-Linx Spool & Play Solution
- HomeRun Solution
- InvisiLight Solutions
Importance of Bend Insensitive Fiber

- Staple It!
- Coil It!
- Tie It!
- Corner It!

No problem – with G.657.B3 / 2.5 mm bend radius fiber
• Buildings that cannot deploy fiber inside
• Drop bundles deployed outside takes fiber to units
• Maintains outside look of building
• Quick installation (~24 units in 2 days)
• Good alternative to indoor solutions
• Available in black or white to blend into surface

Heritage or very old buildings with limited duct space
Drop Bundle Solution Installation

Drop Bundles
New York City

Tenants refused indoor fiber solutions

40 units / 12 floors
Spool & Play Solution

- Ideal solution for mid-rise to high-rise buildings
- Complete flexibility in choice of FDH size and riser cables
- Plug and play makes installation quick and easy
- Innovative with terminals per floor reaching 12 tenants
- Combiner aggregates 6 terminals or 6 floors / 72 units
- Auto slack management simplifies building design on cable lengths
Spool & Play Solution

FDH
Up to 144 units

Demarcation Point

Drop Assemblies

Combiner
Every 6 floors / terminals or 72 fibers

Terminal
Every floor up to 12 units/floor
Spool & Play Installation

To CPE

Terminal

Interconnect 1U shelf
Indoor Cabling System Solution

• Ideal in greenfield buildings or with dropped ceilings
• Inexpensive solution for risers
• Pre-connectorized on one end connecting to FDH
• Field installable connector or pigtail splice on other end
Indoor Cabling System Installation

- Open two “windows” in sheath
- Cut and pull back fiber
- Add connector (SOC, Splice)
- Plug into in-unit network
- Completed Install

Dropped Ceiling
Hallway
Riser Cable (Preconnectorized)
FDH/Telecom Closet
Indoor Cabling System Installation

Twice normal install time from unknowns, double layered walls, fixed ceiling and congested ducts

159 units
We need a new solution …

It **MUST** be

1. Easy to install,
2. Scalable,
3. Less disruptive,
4. Aesthetic
5. and Low cost
Invisible Fiber Solutions

Indoor Living Unit Solution
(consists of products)

Launched 2012
1 fiber for inside the living unit

Building Hallway Solution
(consists of products)

Launched 2015
12 fibers for hallways and risers
Invisible ILU Fiber Benefits

- Easy, quick install
- Blends into décor
- Paintable
- Supports typical indoor surfaces
- Protected in crevices
A Simple Kit Does It All

Kit Components

- Wall Module base and cover with SCA adapter
- EZ-Bend InvisiLight Spool: SCA both ends. Available in 20, 30 or 40 meters (66, 99 or 132 ft)
- Outside and inside corner protectors in quantities of 4, 5 or 6 each
- Hole plug and cap (quantity of 4)
- Adhesive tube and 2 pre-cut nozzles
- EZ-Bend 3 mm Jumper - from module to ONT

Tools (sold separately)

- Dispensing tool, Adhesive tube sold separately
- Inside corner protection installation tool
- Through hole tool (to push connector through holes)

Corner and stucco ceiling

Crown molding

Crown molding

Ceiling edge above door

Baseboard
Invisible ILU Fiber Installation

30 min/unit

- Install wall module
- Plan installation path
- Apply corner protectors
- Spool out InvisiLight® fiber
- Apply adhesive
- Secure InvisiLight® fiber
- Close cover

OPTIONAL:
- Drill between rooms

OFS | New Indoor Fiber Solutions
Invisible MDU Hallway Fiber

- Uses same technology as ILU
- Virtually no disruption to tenants
- Blends into hallway décor
- 12 fibers in pre-connectorized spool
- Installed per floor or in risers with duct
- Fusion splice or mechanical connector
- Plug and play with ILU solution
Invisible MDU Hallway Fiber Installation

- FDH Telecom Closet
- Fire Rated Duct
- Hallway
- Point of Entry Module
- Between obstacles
- Around pillars
A Simple Kit Does It Again

- InvisiLight MDU Point-of-Entry Module
- Outside and inside corner protectors. Quantities of 4, 5 or 6 each.
- InvisiLight Multifiber Unit for ILU application
- Outside and inside corner protectors. Quantities of 4, 5 or 6 each.
- EZ-Bend 3 mm Jumper for MDU applications
- Tools Sold Separately (not shown)
  - Dispensing Tool (Adhesive in tubes sold separately)
  - Inside corner protection installation tool
  - Through-hole tool (to push connector through holes)

- InvisiLight ILU Wall Module base and cover with SCA Adapter
- Hole plug and cap (Qty. 4)
What Does an Install Look Like?

OFS' InvisiLight MDU Solution
Innovation Still Needed

... continuous **Innovation** is needed

Visit **OFS Booth# 306** to find out more

or

Anurag Jain
ajain@ofsoptics.com
(732) 748-7403