

2016 FTTH CONNECT



New Indoor Fiber Solutions

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OFS FTTH Solution Marketing

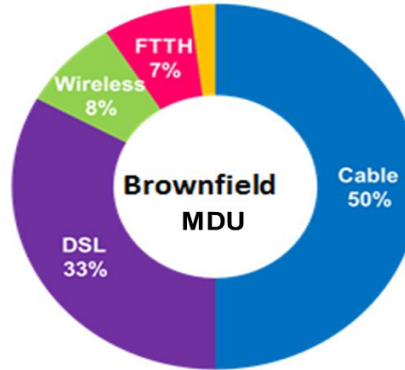
June 13, 2016

- MDU Segment Focus
- MDU Solutions Overview
- Solutions Discussion
- Real-world Installations
- What's Next





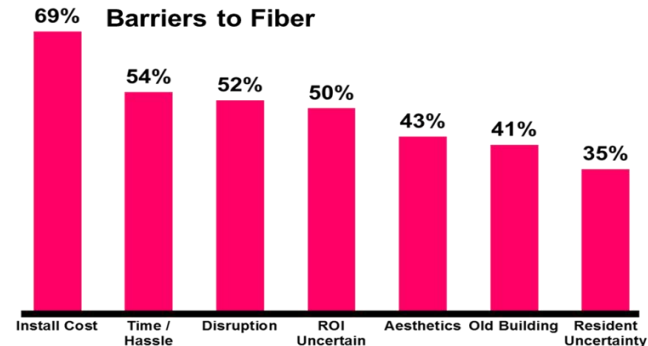
61% not aware of FTTH
2012 US Broadband Survey



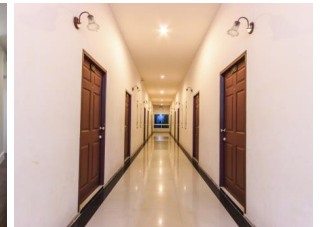
Broadband Magazine

Greenfield MDU Fiber Interest
Property competition
Easy install
Resident satisfaction
Fast upgrade
Futureproof
Influenced by economy

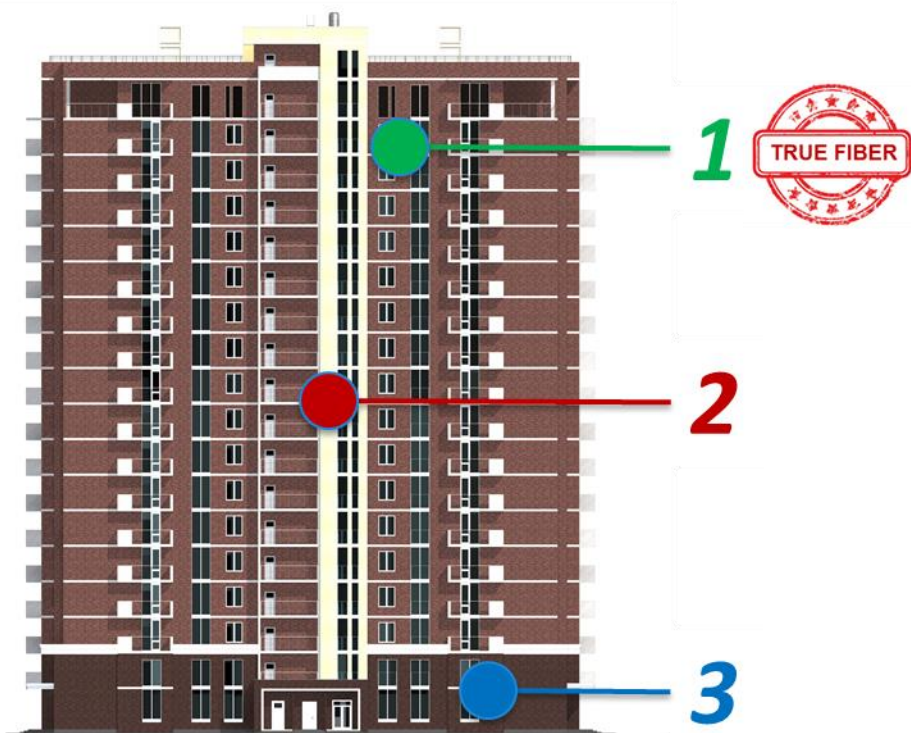
“
Need success strategy for MDU to succeed in residential FTTH. Luxury and high rise MDUs are the sweet spot.
 ”



- 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

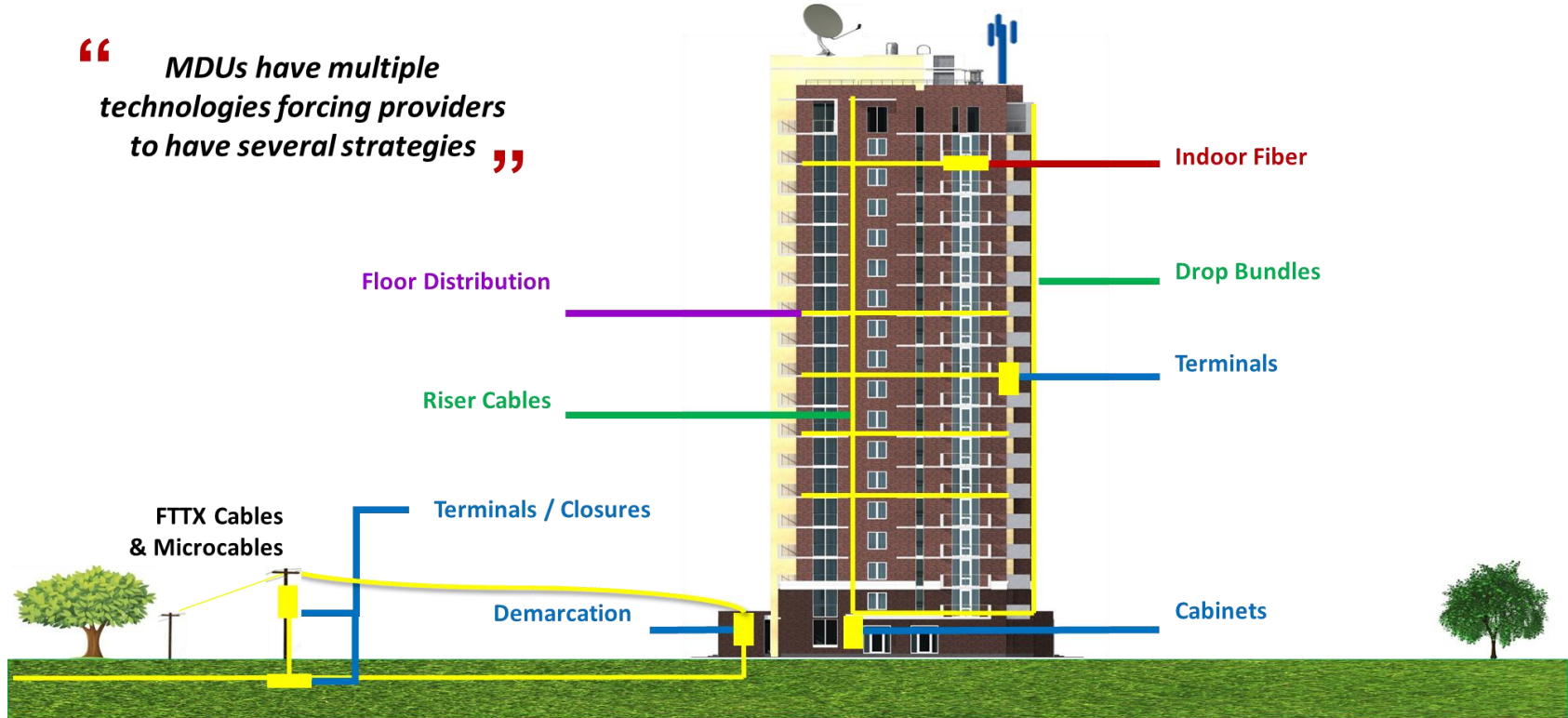
2. Hallway Sharing

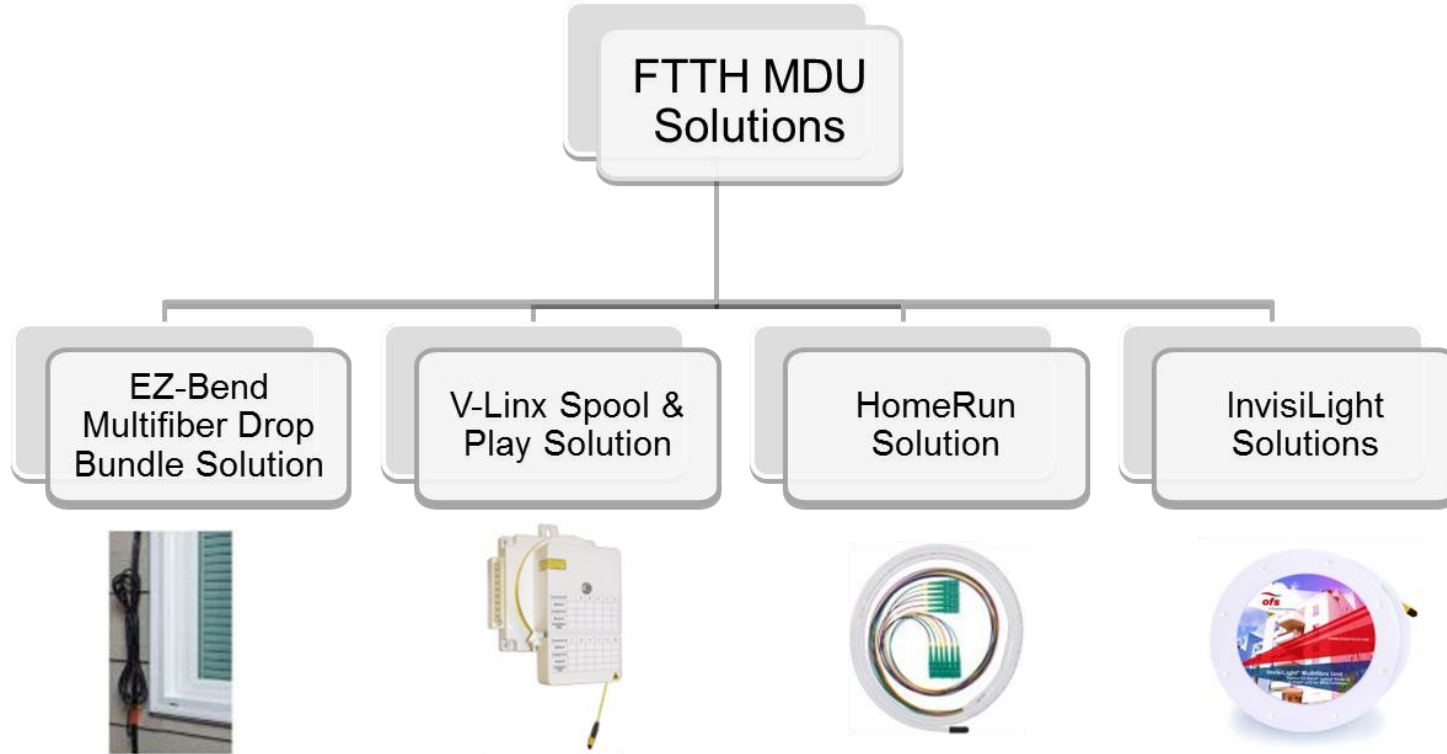
- powered by landlord / owner
- extends fiber into building
- shared ONT and/or bandwidth
- affects multiple tenants service / troubleshooting

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 ”







Staple It!



Coil It!

Tie It!



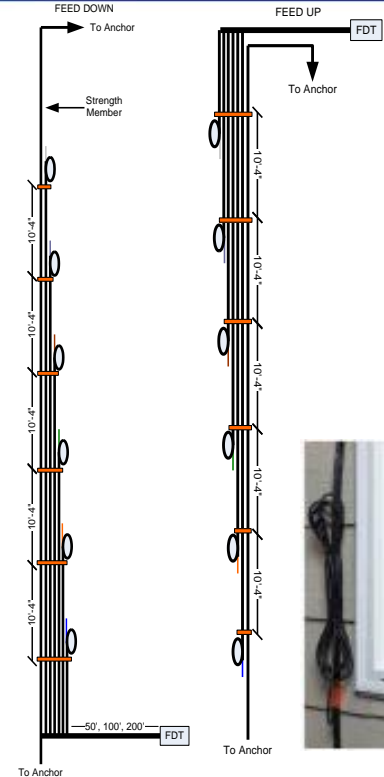
Corner It!

No problem – with G.657.B3 / 2.5 mm bend radius fiber

Drop Bundle Solution

- 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

- 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



FDH

Up to 144 units



Demarcation Point

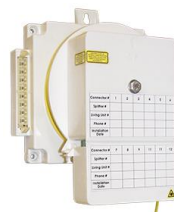


Drop Assemblies



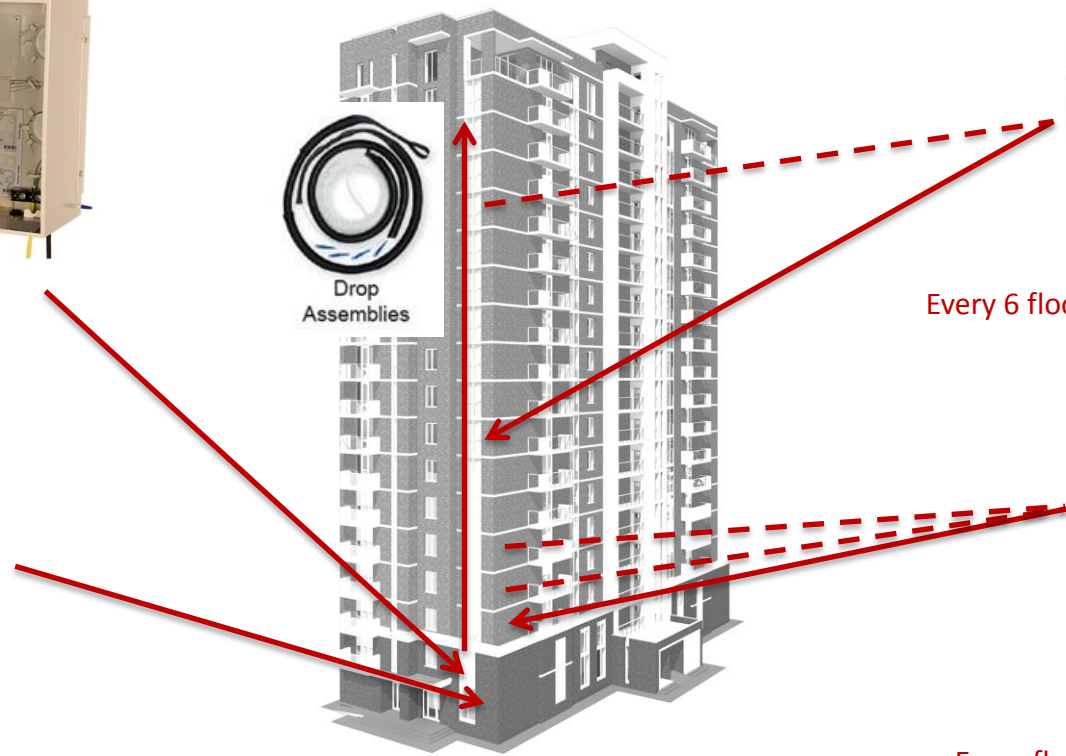
Combiner

Every 6 floors / terminals or 72 fibers



Terminal

Every floor up to 12 units/floor





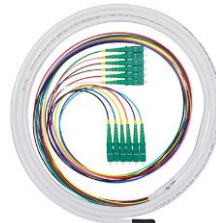
- Ideal in greenfield buildings or with dropped ceilings
- Inexpensive solution for risers
- Pre-connectorized on one end connecting to FDH
- Field installable connector or pigtail splice on other end



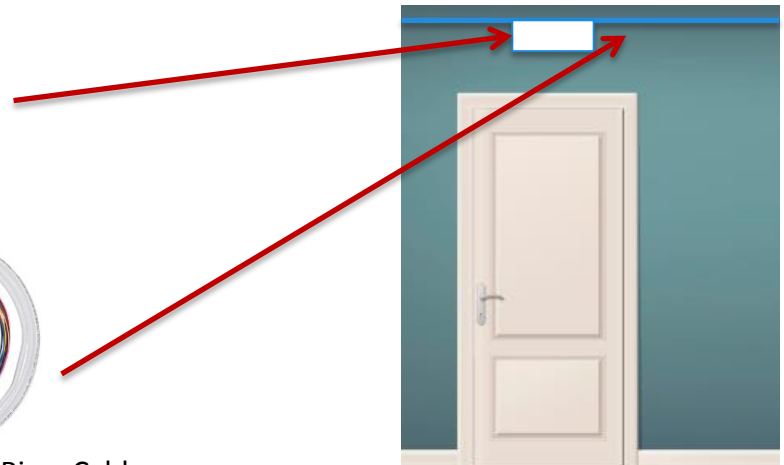
FDH



Rosette



Bend Insensitive Riser Cable





Open two "windows" in sheath



Cut and pull back fiber

Add connector (*SOC, Splice*)



Plug into in-unit network

Completed Install



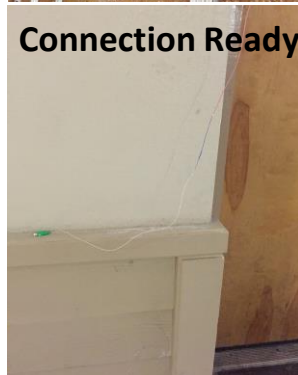
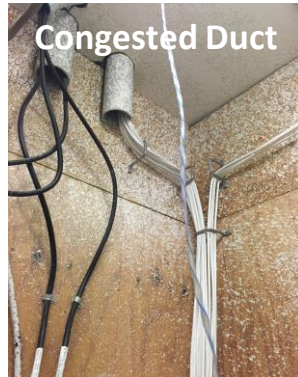
Hallway



Riser Cable (*Preconnectorized*)



FDH/Telecom Closet



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

②

③

④

Easy to install, Scalable, Less disruptive, Aesthetic
and Low cost

⑤

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)*

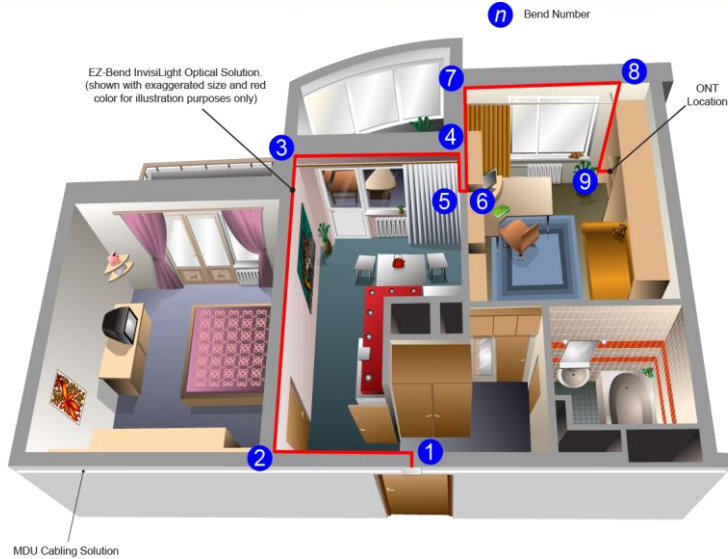


Launched 2015

12 fibers for hallways and risers



Invisible ILU Fiber Benefits



Easy, quick install

Blends into décor

Paintable

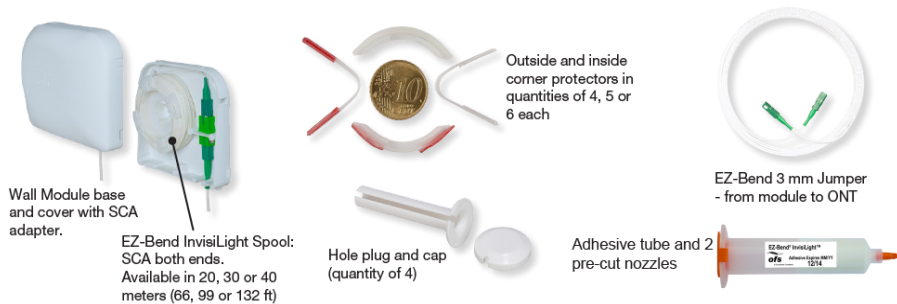
Supports typical indoor surfaces

Protected in crevices

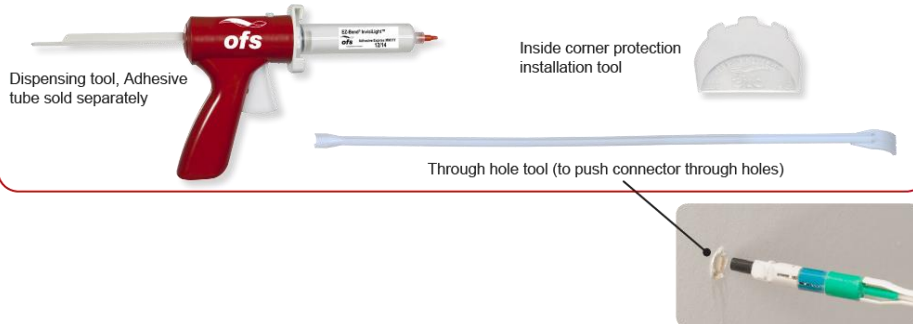


A Simple Kit Does It All

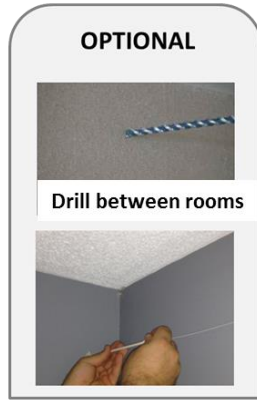
Kit Components



Tools (sold separately)



Invisible ILU Fiber Installation

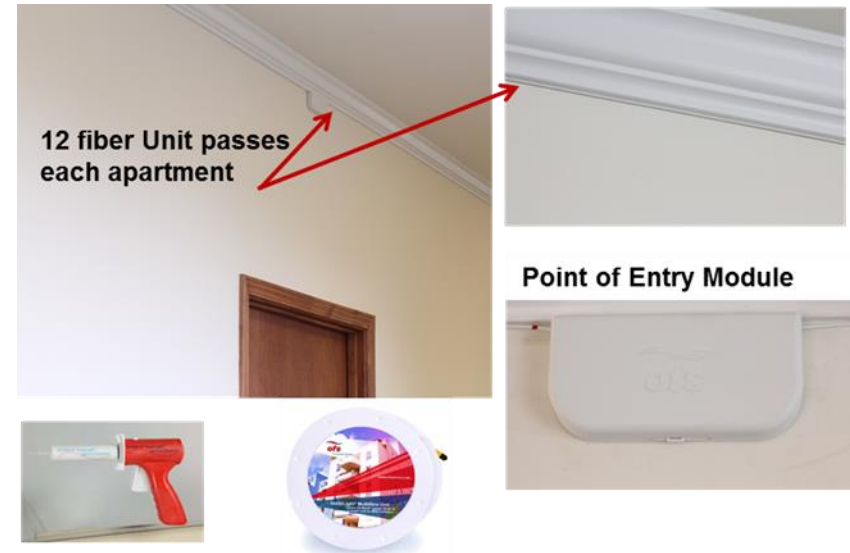


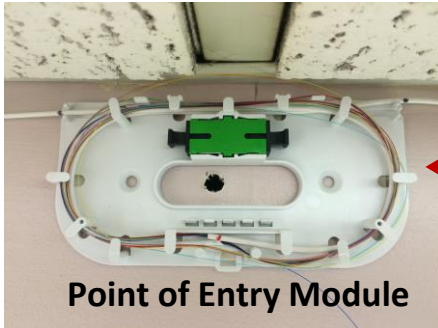
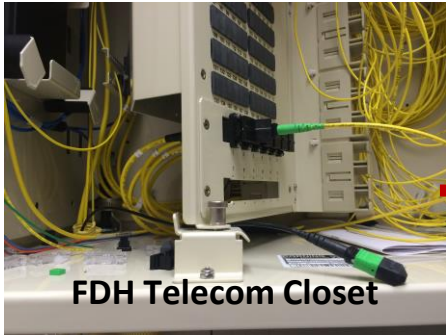
30 min/unit



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





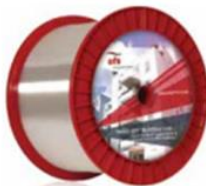
A Simple Kit Does It Again



*InvisiLight MDU
Point-of-Entry Module*



*Outside and inside corner protectors.
Quantities of 4, 5 or 6 each.*



*InvisiLight
Multifiber Unit for
ILU application*



*EZ-Bend 3 mm Jumper
for MDU applications*



*InvisiLight ILU
Wall Module base and cover
with SCA Adapter*



*An adhesive (in tube)
and 2 pre-cut nozzles*



*Hole plug
and cap (Qty. 4)*

*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)

MDU Hallway



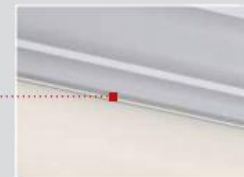
POE Module



Tenant Connection



InvisiLight
Multifiber Unit



What Does an Install Look Like?



... continuous **Innovation** is needed

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

or



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