

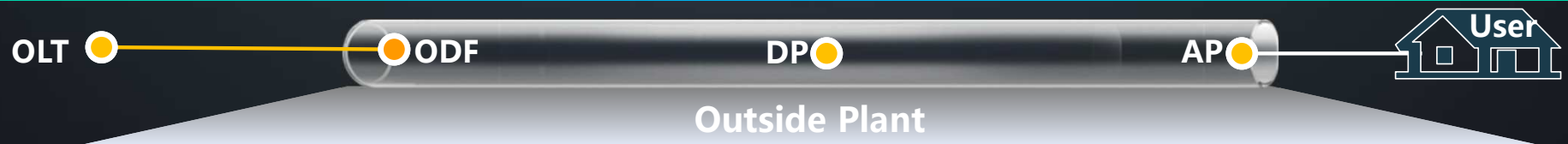
Huawei FastConnect ODN 2.0 Solution

Huawei Access Network
2018-11



Key Challenges in ODN Construction

Key Challenges



Slow Deployment



- Serial Construction
Cable Laying → Equipment Installation → Splicing → Cable Routing/Sealing.....
- Lack of Skilled Workers

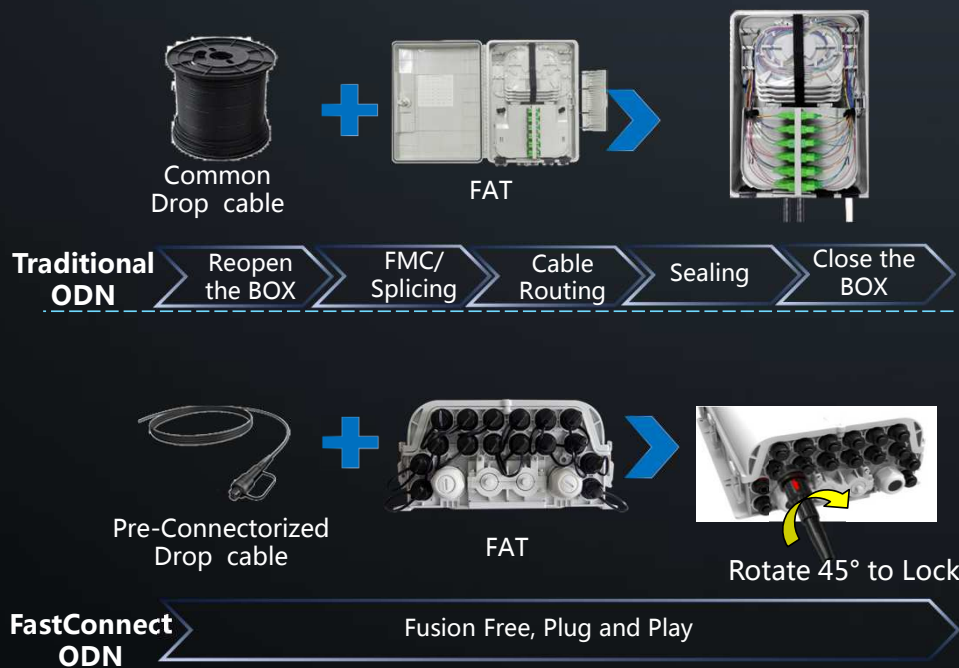
High Cost



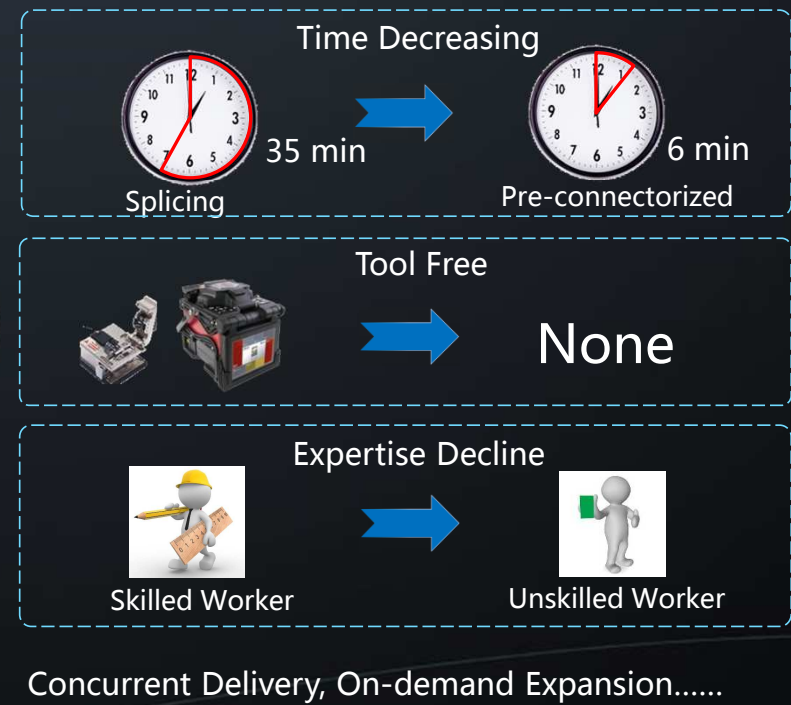
- High Splicing Cost ~15\$/F
- High Cost for Home Entry > 600\$/HC

Innovative FastConnect ODN Solution Accelerate FTTH Deployment

Key Advantage of FastConnect Products



Benefits by FastConnect ODN



Development of Huawei FastConnect ODN Solution

FastConnect ODN 1.0



- ✓ Drop Cable Splicing Free, Plug and Play
- ✓ Pole & Wall Mounting Installation



FastConnect ODN 2.0

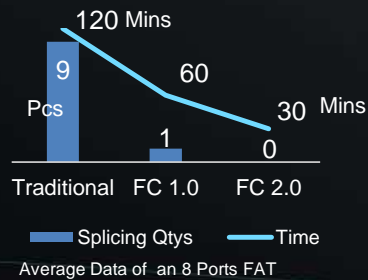


- ✓ Full-process Splicing Free
- ✓ Compact Design
- ✓ Variety Splicing Free Solutions

Full-process Splicing Free

Unskilled Workers, More Efficiency

Splicing Point & Installation Time



Compact Design

Smaller Size & High IP Protection



Meet All Scenarios

- Pole & Wall Mounting
- Aerial Mounting
- Manhole & Hand Hole
- Directly Buried

Variety Splicing Free Solutions

MPO Solution

Multi-service Access
Grid Planning



One-time CAPEX
↓
On-demand
Capacity Expansion

Uneven Splitting Solution

Single Fiber for Distribution
Concurrent Delivery



60% Distribution Cable Cost Saving
30% TTM Saving

Mini DP Solution

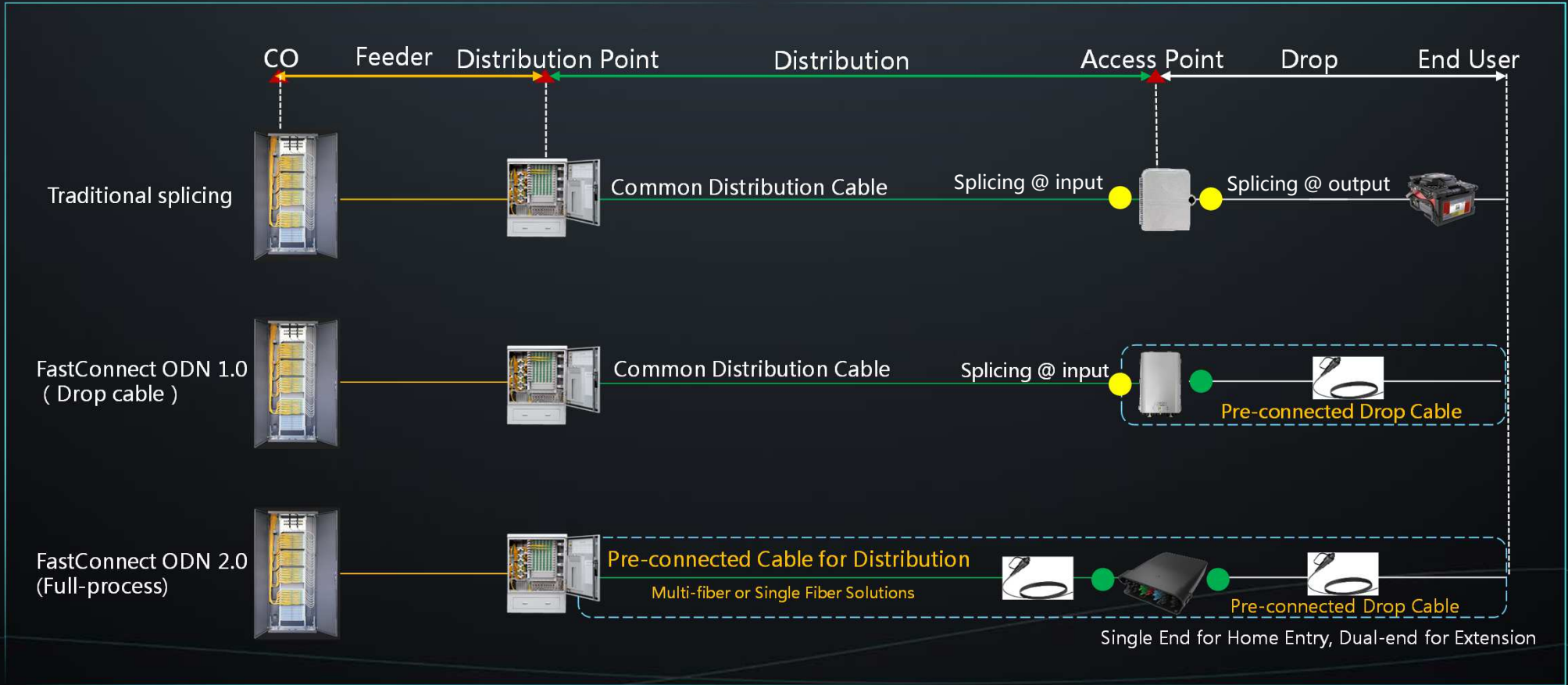
User DIY Trenching
Easy Cable Laying



Saving 60%
Home Connection
Cost

Full-process Splicing Free to Build Efficient ODN Network

● Splicing ● Pre-connected



Compact Design: Smaller and Lighter , Apply to More Scenarios

Traditional ODN

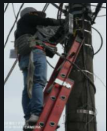
① Aerial Scenario

- Too heavy to install
- High requirements about optical cable strength due to heavy products



② Pole Scenario

- High dangers by working at heights for a long time



③ Underground Scenario

- Limited space
- Complex installation



Mini Pre-connection



Mini Pre-connection
FAT

(8/16 Cores)
IP65



Mini Pre-connection
FAT

(8Cores)
IP68

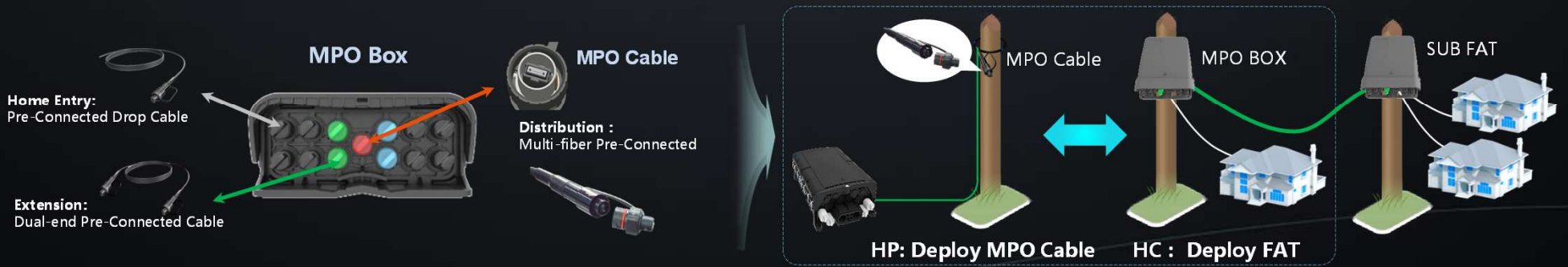
- Plug and play, without opening the box
- Smaller size by compact design and smaller connector, volume reduced by 30%
- Lighter weight by smaller volume and innovative materials, weight reduced by 50%

MPO Solution: Flexible Networking and Concurrent Delivery

Multi-service Access, Flexible Networking



All the Cables are Pre-connected, FAT & Cable Deploy Concurrently



MPO Solution: Easy HP Construction, Low Initial Investment

Star Network ,On-demand Expansion, Low Initial Investment

HLD

Grid Planning



Home Pass

Deploy MPO Distribution Cable



Home Connection

FAT Expansion On-demand



Take Up Rate 0~17%

Take Up Rate 17~34%

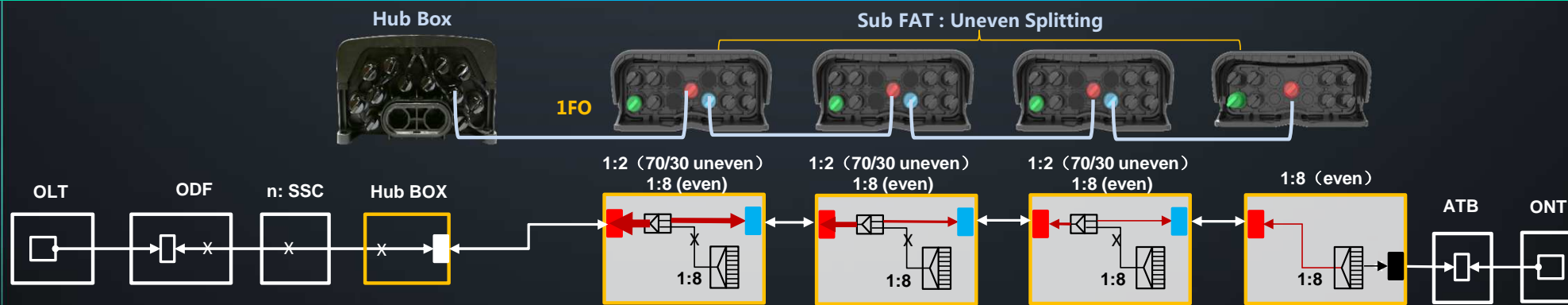
Distance recommend between the center to the far point is **100~150m , cover 20~60 Users**

Complete the **HP** deployment by **placing** the pre-connected **MPO distribution cables** to the target region

HC On-demand FAT expansion, plug and play , no splicing and skilled workers

Uneven Splitting Solution , Easy Planning, Fast Deployment

Chain Network, Optimized FastConnect Solution for Low Destiny Region



No Splicing, Plug and Play **»»** FAT Installation Efficiency 85% ↑
Unskilled Worker; Easy Maintenance

Distribution Cable Multi-fiber → 1FO **»»** Distribution Cable Cost Saving 70%

Decoupling FAT and Cable Concurrent Delivery **»»** TTM Improves 30%

Product Highlight

Hub FAT



- Support optical cable through
- Support connect 8-12 PCS uneven ratio splitting pre-connection link

Pre-Connected Cable



- Single fiber, Dual-ended pre-connect
- Typical IL ≤ 0.15dB (Grade B)
- Length: 50m/100m/150m/250m/350m

Unbalanced FAT



- Include 1:2(uneven ratio)+1:8 SPL
- Input / Output full pre-connected
- Single distribution cable

Inspire End-User: DIY Trenching Reduce Home Connection Cost by 60%

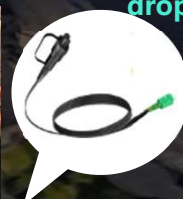
User DIY Process

- 1 • Apply for broadband service
• Receive ONT and cable with both ends pre-connectorized
- 2 • Dig a trench and lay the cable in the trench
- 3 • Connect one end of the cable to the MiniDP, and the other end to the ONT

Self Trenching



Dual-ended pre-connect drop cable



Mini DP



Operator:

- One-time deployed Mini DP quickly, 1 set/user



Mini DP

- Small size

Innovation Drop Cable

- Plug & Play
- Low-friction + bullet design , easier to laying , fast installation

Fiber laying
Wall drilling

Garden civil work

60%

Inspire End-user

Delivery+Material
Subsidy

No installation fee for the end-user by subsidy

FastConnect Products Highlights



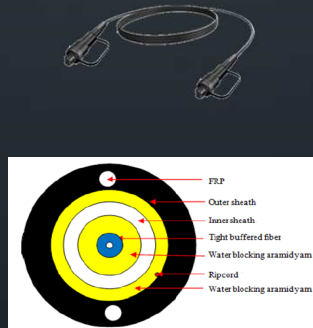
FAT2501 (8)

Size: 275 x 175 x 89mm
 Max Capacity: 8 SC
 Protection level: **IP65**
 Installation:
 Wall and Pole
Pass Through& Branch



FAT2502 (16)

Size: 300 x 200 x 118mm
 Max Capacity: 16 SC
 Protection level: **IP65**
 Installation:
 Wall and Pole
Pass Through& Branch



Example

Distribution Cable
(Round)

Fiber Count: 1
 Connector Type: SC/APC
 Protection level: **IP68/65**
 Insertion Loss:
 Max. ≤ 0.30 dB
 Cable Diameter:
5mm、3mm



Example

Drop Cable
(Round)

Fiber Count: 1
 Connector Type: SC/APC
 Protection level: **IP68/65**
 Insertion Loss:
 Max. ≤ 0.30 dB
 Cable Diameter:
5mm、3mm



Example

Drop Cable(bow type)

Fiber Count: 1
 Connector Type: SC/APC
 Protection level: **IP68/65**
 Insertion Loss:
 Max. ≤ 0.30 dB
 Cable Dimension:
2*5.3mm

Huawei Pre-Connectorised Products Selected by Operator Globally

The image is a composite graphic. On the left, a map of Europe highlights Spain in teal, with a red oval labeled 'Spain'. Above it are logos for Telefonica, Jazztel (Distribuidor Oficial), Vodafone, Movistar, and Orange. In the center is a photograph of a large conference hall with many people seated at round tables, identified as the 'Telefonica 2020 Strategy Summit'. On the right, a map of Latin America highlights Colombia, Peru, Argentina, Chile, and Brazil. Above this map are logos for Claro, TELECOM, vivo™, ATC, and Telefonica.

- ✓ Besides FastConnect Products, TDE is considering a deeper cooperation for other ODN products.
- ✓ Vodafone, Orange, Jazztel and other operators of Spain are all interested in Pre-connectorised solution

- ✓ Telefonica starts to deploy FTTH network in LATAM.
- ✓ Argentina, Peru, Colombia and Chile announced adopting Huawei FastConnect solution.
- ✓ Brazil is now cooperating with Huawei.

FastConnect Solution Succeed in Telefonica

Spain with Telefonica:

- The Best FTTH Country in Europe
- FTTH Cost = 450 USD / Per household
- TTM = 3Million Home Pass / per year

Policy & Regulations: Open Access

Facade Fiber

E2E FastConnect Solution

4 Years

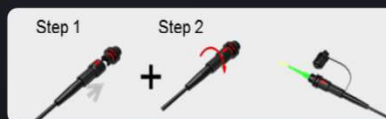
Continuous Delivery

1.5M+ Ports

Shipment / Year

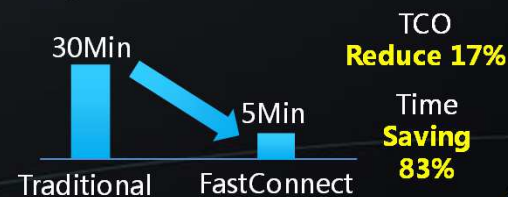


Total **6M+** Ports
Deployed



Connection in 2 seconds,
No Box Re-entry and
Splicing

Average of Each Port Installation



Wall mounting FAT + Pre-connected Drop Cable ,Plug and Play.

FastConnect Solution Success Cases In Argentina

AS-IS (2015)



Broadband take up rate: 52%

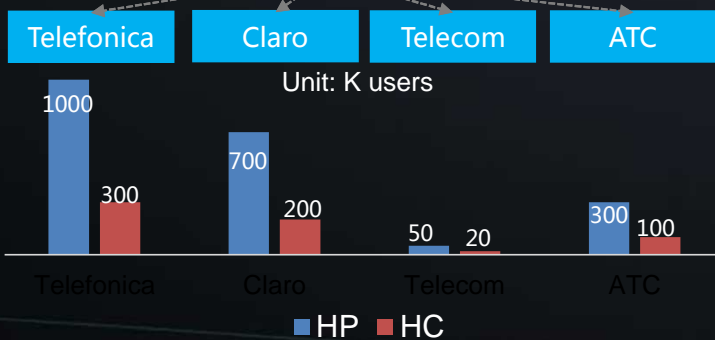
Bandwidth : 2M AD\VDSL



Release Video license
FTTH instead of copper

TO-BE (2019)

FTTH + Video



Challenges

High Initial Investment

Dispersed users
Low Penetration

Low Efficiency

Reopen Box @ Provisioning
Splicing & Sealing @ Aerial

Solutions & Benefits

Telefonica	Claro	Telecom	ATC
<p>FastConnect for HC, Plug and Play</p>	<p>MPO Solution , Full Process Splicing Free</p>	<p>Asymmetrical Splitting Solution by Unbalanced FastConnect FAT</p>	<p>Multi Carriers Sharing NFC Tags for Resource Management</p>
<p>17% TCO Saving</p>	<p>30% Initial Investment</p>	<p>60% Construction Efficiency</p>	<p>100% Resource Management</p>

Facing Giga Fiber Era , Let' s Write the Future Together

Continuous Innovation



Joint Innovation Cooperation with Carriers

Efficient Deployment




Variety of Solutions to Fit Different Scenarios

Global Application



Industry-Proven Quality, Selected by 80 Major Operators

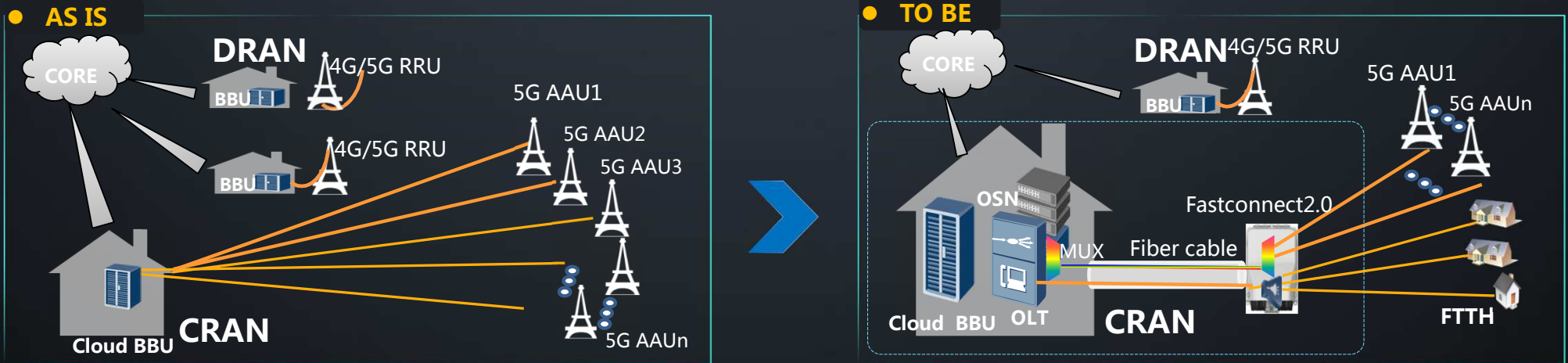


Thank You.

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Fastconnect2.0 supports multi-scene applications in 5G Era



Plug and Play

- Fastconnect 2.0 realize plug&play (fiber to AAU) , tools free
- IP65, suitable for a variety of extreme environments
- Can be upgraded to MPO as needed to support higher density deployments

Optical Components PAYG

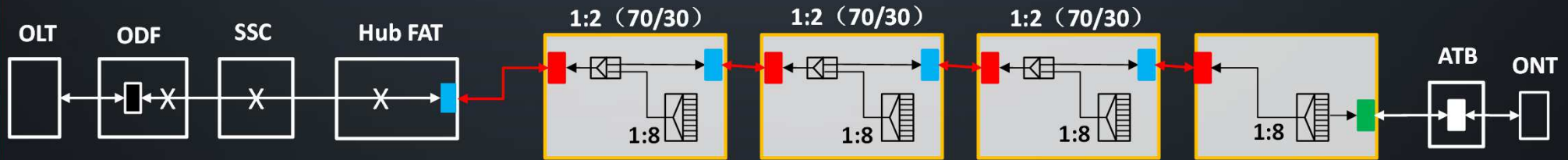
- Built-in MUX can easily support fiber multiplexing
- Support mini OADM , OTDR reflector , splitter on-demand deployment
- Modular configuration of optical components, fast connection via adapter

Multi-scene Applications

- Compatible with WDM-PON scene and passive DWDM scene
- Compatible with bidirectional SC and bidirectional dual LC connector
- Industry-leading periodic AWG design for MUX
- Support FMC convergence

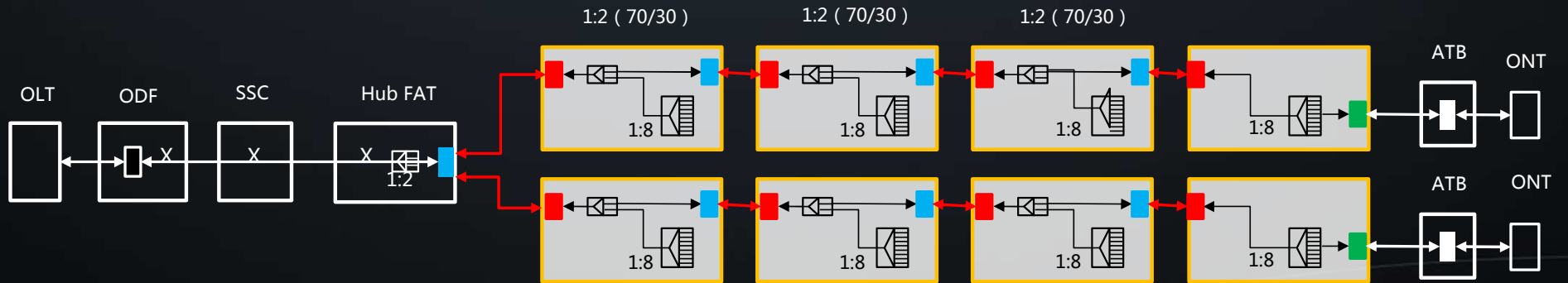
Uneven Splitting Solution Optical Power Budget and Coverage Distance

● 1:32 Uneven Splitting FastConnect Solution



Division level 1:32 , Class B+ Support 5km Coverage , Class C+ Support 10km Coverage

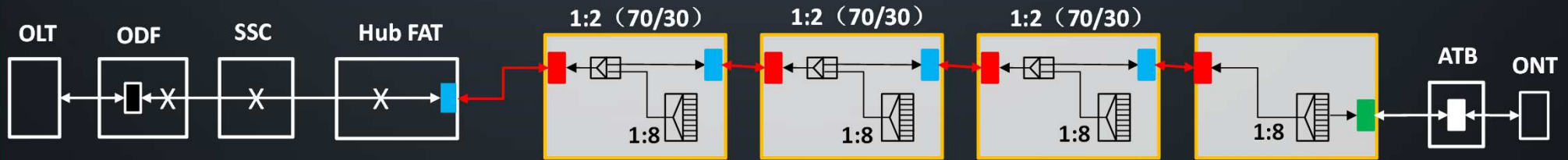
● 1:64 Uneven Splitting FastConnect Solution



Division Level 1:64 , Class C+ Support 7km , Class C++ Support 12km Coverage

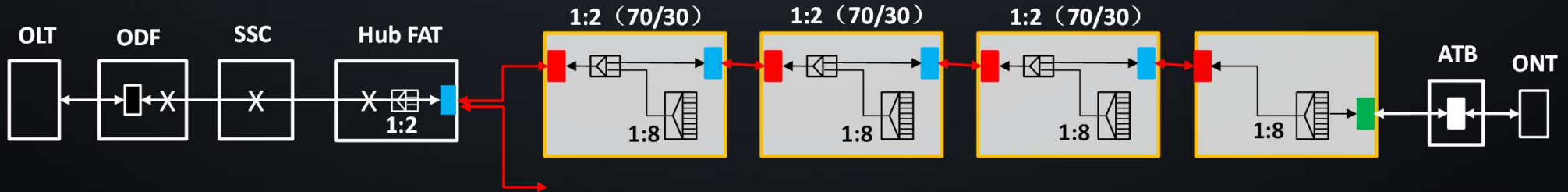
Uneven Splitting Solution Optical Power Budget and Coverage Distance

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