



GPON – FTTx Cabling Design & Solutions



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GPON – FTTx Cabling Designs and Solution

Lecture Outline :

1. Key Components of Structured Cabling Systems
2. Key Components of FTTx Cabling
3. Fiber splitters and other FOC components, LCP's (BEP's), NAP's and IOO's (OTO's)
4. Active Equipment in FTTx cabling : OLT and ONU/ONT
5. Introduction to GPON FTTx Cabling
6. Introduction to Network Topologies
7. FTTx Cabling Architecture
8. Traditional LAN Cabling Vs. GPON FTTx Cabling



GPON – FTTx Cabling Designs and Solution

Key Components of SCS

COPPER SOLUTION

COPPER CABLES
CAT5E, CAT6, CAT6A, CAT7



PATCH PANELS
24P, 48P



KEYSTONE JACKS
CAT5E, CAT6



FACEPLATE
1P, 2P, 3P, 4P, 6P



PATCH CORDS
CAT5E, CAT6



COPPER PRE-TERMS



MODULAR PLUG WITH
RUBBER BOOTS



FIBER SOLUTION

FOC CABLES
OS1/OS2, OM1, OM2, OM3, OM4



FIBER PATCH PANELS
24C, 48C, 72C, 96, 144C, 216C, 288C



FOC ADAPTERS
SC, LC, FC, ST, MU, E2K, MTRJ, MTP/MPO



OPTICAL INDOOR OUTLET
1P, 2P, 4P



FIBER PATCH CORDS / PIGTAILS
SC, LC, FC, ST, MU, E2K, MTRJ, MTP/MPO



FIBER PRE-TERMS



FIBER CONNECTORS WITH RUBBER
BOOTS
SC, LC, FC, ST, MU, E2K, MTRJ, MTP/MPO





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Key Components of FTTx Cabling

FTTx SOLUTION

FOC CABLES, SM G-652-D OS1/OS2



FIBER PATCH PANELS, SM 24C, 48C



FOC ADAPTERS, SM SC-UPC, SC-APC



OPTICAL INDOOR OUTLET, SM 1P, 2P, 4P



FIBER PATCH CORDS/ PIGTAILS, SM SC-UPC, SC-APC



FIBER PRE-TERMS SC-UPC, SC-APC

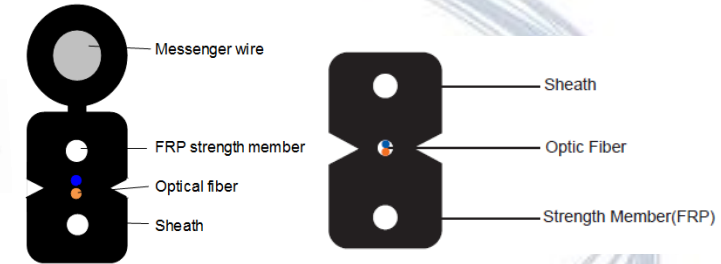


FIBER CONNECTORS WITH RUBBER BOOTS, SC-UPC, SC-APC



FTTx SOLUTION

FOC HORIZONTAL DROP CABLES G657-A1 & A2 (1 CORE, 2 CORE)

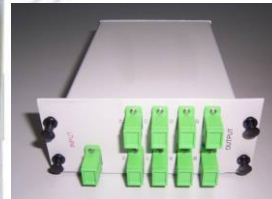


SPLITTER FIBER PATCH PANELS 1: 04 PLC, 1:08 PLC, 1:16 PLC, 1:32 PLC. 1:64 PLC



FTTx DISTRIBUTION BOX (WITH SPLITTER/S)

1: 04 PLC, 1:08 PLC, 1:16 PLC, 1:32 PLC. 1:64 PLC





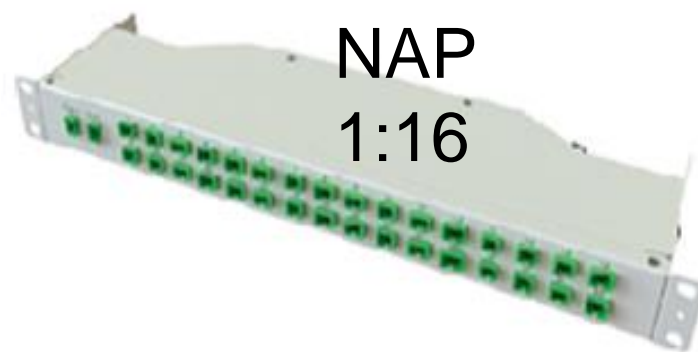
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Key Components of FTTx Cabling

What's splitter

Fiber optic splitter is used to split the fiber optic light into several parts at a certain ratio. It is a power distributor. And it also can combine the light into one fibre.

For example, a 1X2 50:50 fiber optic splitter will split a fiber optic light beam into two parts, each get 50 percent of the original beam.





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Key Components of FTTx Cabling

Classification

◆ By Technology & Process

FBT Splitter (Fused Bi-Conical Taper)
 PLC Splitter (Planar Lightwave Circuit)

◆ By fiber type:

Single-mode splitter
 (Both FBT and PLC splitter,
 we are focus on SM splitter for this
 presentation)

Multi-mode splitter (Only available for
 FBT type)

◆ By configuration:

Single-mode splitter

1x2,1x4,1x8,1x16,1x32,1x64,
 2x4,2x8,2x16,2x32,2x64

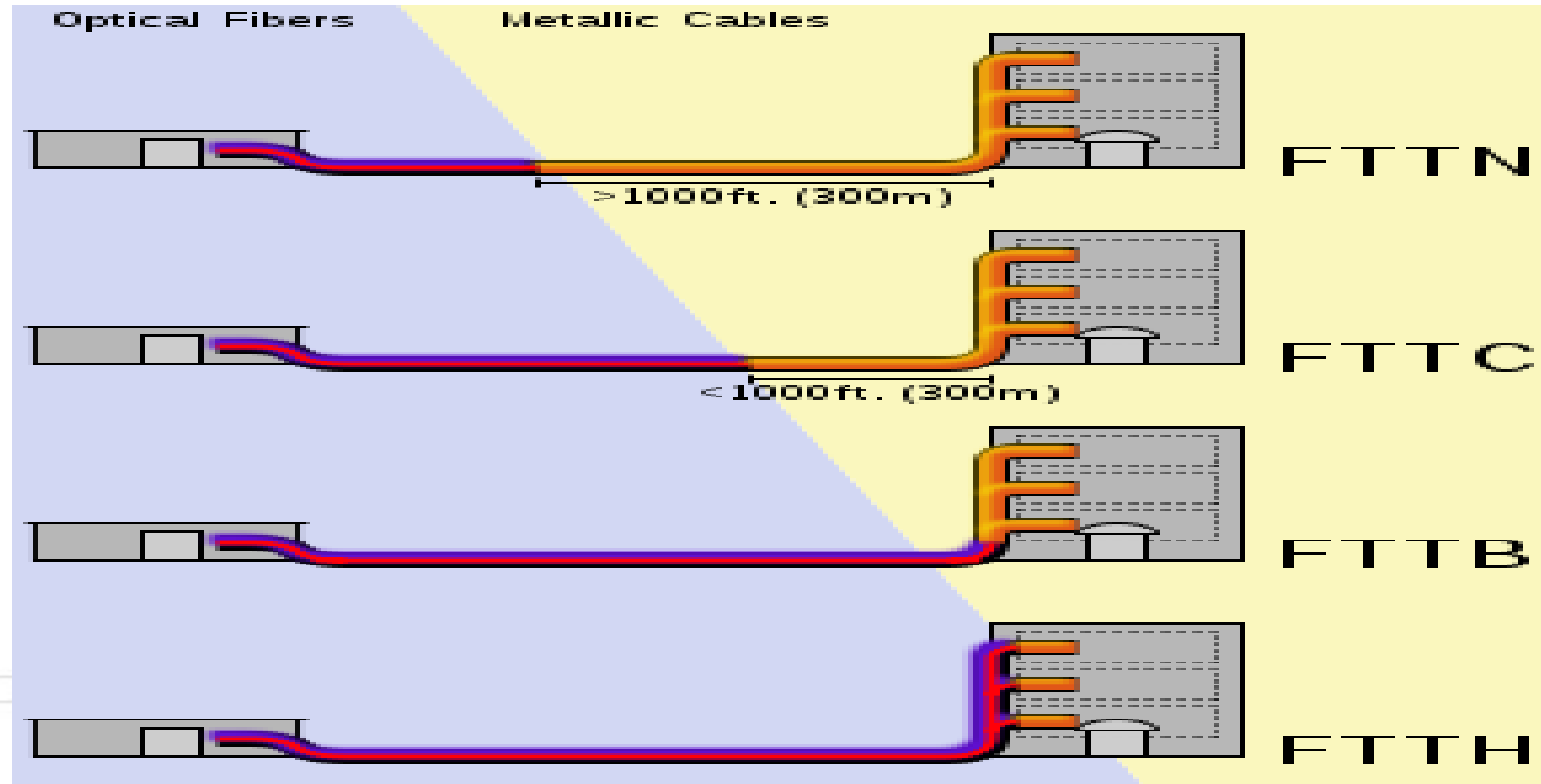
Parameters	PLC splitter	FBT splitter
Operating Wavelength (nm)	1260~1620	1310±40 1490±10 1550±40
Split Ratio	even split	95%:5% 90%:10% 80%:20% 70%:30% 60%:40% 50%:50% for 1X2 type, others are even split
Reliability	good	bad when two many 1x2 splitters spliced together
Volume	small	small for single steel pipe splitter, big for cascaded splitter
Price	Expensive for low Channel	good cost performance for 1X2,1x4



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Key Components of FTTx Cabling

Splitter Applications



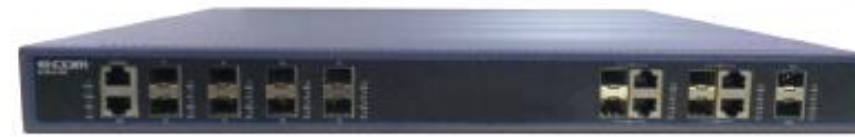


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Active Equipment Involved in FTTx Cabling



EPON OLT



GPON OLT



- **Dual Power Supply(Optional): Dual DC, Dual AC or DC+AC**
- **Splitting ratio: 1:64 (EPON) ; 1:128(GPON)**
- **Bandwidth allocation**
- **ONU Batch software upgrade**

4 PORT EPON	Cassette OLT (4 * EPON, 4*10G, 8 * Combo GE), Default AC single-power	EPON OLT
8 PORT EPON	Cassette OLT (8 * EPON, 4*10G, 8 * Combo GE), Default AC single-power	EPON OLT
8 PORT GPON	Cassette OLT (8 * GPON, 4 *GE combo port; 2* 10G SFP+ port, 1* console port), Default AC single-power	GPON OLT
16 PORT GPON	Cassette OLT (16 * GPON, 4 *GE combo port; 2* 10G SFP+ port, 1* console port), Default AC single-power	GPON OLT



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Active Equipment Involved in FTTx Cabling

EPON ONU Products

Products	Type	User interface
	SFU	1GE RJ45
	SFU	
	SFU	
	SFU	
	SFU	
	SFU	1GE RJ45 +CATV (W for single fiber)
	SFU	4FE RJ45
	SFU	
	SFU	4GE RJ45
	HGU	4FE RJ45+11n 300M WIFI
	HGU	4GE RJ45+11n 300M WIFI
	HGU	4GE RJ45+11n 300M WIFI+CATV (W for single fiber)
	HGU	4FE RJ45+11n 300M WIFI+CATV (W for single fiber)
	HGU	1GE+3FE RJ45+11n 300M WIFI+CATV (W for single fiber)
	SFU	4FE+1CATV
	SFU	1GE+3FE+1CATV (W for single fiber)
	SFU	
	POE (PD)	8FE RJ45
	MDU	8FE RJ45
	MDU	16FE RJ45
	MDU	24FE RJ45



1GE RJ45 SFU



1GE RJ45 SFU



1 GE RJ45 SFU



4 FE RJ45 SFU



W FE RJ45 +
WIFI



4 GE RJ45



1GE RJ45 SFU



8 FE RJ45 / POE



1 GE RJ45 + CATV





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Active Equipment Involved in FTTx Cabling

GPON ONU Products

Products	Type	User interface
	GPON SFU	1GE RJ45
	GPON SFU	
	GPON SFU	
	GPON SFU	
	GPON SFU	1GE RJ45 +CATV (W for single fiber)
	GPON SFU	
	GPON HGU	1GE RJ45 +1FE+1VOIP
	GPON HGU	4GE RJ45
	GPON HGU	4FE RJ45+11n 300M WIFI
	GPON HGU	4GE RJ45+11n 300M WIFI
	GPON HGU	4GE RJ45+11n 300M WIFI+CATV (W for single fiber)
	GPON HGU	4FE RJ45+11n 300M WIFI+CATV (W for single fiber)
	GPON HGU	1GE+3FE RJ45+11n 300M WIFI+CATV (W for single fiber)
	GPON HGU	4GE+2VOIP+11n 300M WIFI+1USB
	GPON HGU	4GE+2VOIP+11n 300M WIFI+1CATV+1USB
	GPON HGU	(W for single fiber)
	GPON HGU	4GE+2VOIP+2WIFI+2USB (2.4G 2*2 300M; 5.0G 3*3 1300M)
	GPON HGU	4GE+2VOIP+2WIFI+2USB (2.4G 3*3 450M; 5.0G 3*3 1300M)

1 GE RJ45 1 GE RJ45 1 GE RJ45 1 GE RJ45

1 GE RJ45 + CATV 1 GE RJ45 + 1FE + VOIP 4 GE RJ45 + WIFI 4GE RJ45

4GE + 2VOIP+ WIFI + 1 USB 4GE + 2VOIP+ WIFI + 1 USB + 1 CATV 4GE + 2VOIP + 2 WIFI + 2USB



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Active Equipment Involved in FTTx Cabling

GPON ONU Highlights

4LAN + 2 Voice + WiFi



4LAN + 2 Voice + WiFi + CATV





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Active Equipment Involved in FTTx Cabling

Smart PON - All in one (For home, Hotels)



Description

2GE+1RJ11+WIFI+HDMI+IPTV+2USB+Zigbee

2GE+1RJ11+WIFI+HDMI+IPTV+2USB

2GE+1RJ11+WIFI+HDMI+OTT+2USB+Zigbee

2GE+1RJ11+WIFI+HDMI+OTT+2USB





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Introduction to GPON FTTx Cabling

GPON OVERVIEW

PON/GPON grew from a requirement for more bandwidth in the Service Provider Market. (Higher access speeds than DSL could deliver) More Bandwidth (2.5G Downstream and 1.2G Upstream)

- Higher Subscriber density
 - Best replacement for aging copper / coax infrastructure
 - Environmentally friendly - green
 - Reduce power and TCO (Total Cost of Ownership)
-
- Long term life expectancy of the fiber infrastructure
 - Lower capital expenditures, since AN eqpt. and components are considerably reduced and/or completely excluded in the FTTx network
 - Lower operating costs through reduction of active components, support for greater distances between equipment nodes
 - Reduced re-occurring operating and maintenance costs



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Introduction to GPON FTTx Cabling

GPON OVERVIEW

- The adoption and worldwide acceptance grew as GPON FTTH proved that it has contributed much to the service providers in terms of time, money and human resources
- Contributes to the improved client service levels and over-all customer satisfaction; thus enhancing retention rates
- And most notably, GPON FTTH technology solutions; introduced new opportunities and services applications to service providers, introducing additional revenue streams which can be adopted and integrated into their present services offering; thereby increasing top line revenue without increasing cost



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Introduction to GPON FTTx Cabling

Basic Parameters of GPON

- GPON identifies 7 transmission speed combination as follows:

0.15552 Gbit/s up, 1.24416 Gbit/s down

0.62208 Gbit/s up, 1.24416 Gbit/s down

1.24416 Gbit/s up, 1.24416 Gbit/s down

0.15552 Gbit/s up, 2.48832 Gbit/s down

0.62208 Gbit/s up, 2.48832 Gbit/s down

1.24416 Gbit/s up, 2.48832 Gbit/s down

2.48832 Gbit/s up, 2.48832 Gbit/s down

Among them, 1.24416 Gbit/s up, 2.48832 Gbit/s down is the mainstream speed combination supported at current time.

- Maximum logical reach: 60 km
- Maximum physical reach: 20 km
- Maximum differential fibre distance: 20 km
- Split ratio: 1 : 64, it can be up to 1 : 128

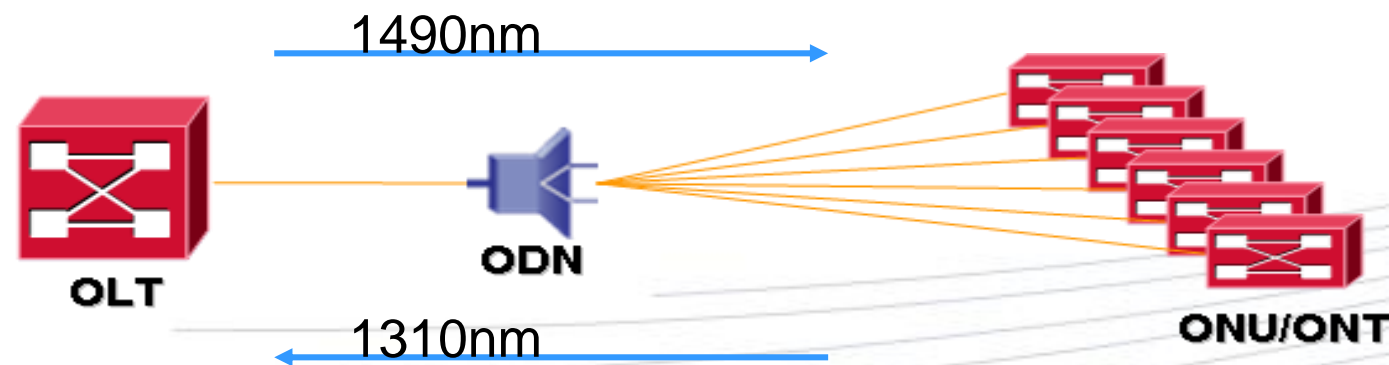


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Introduction to GPON FTTx Cabling

GPON Principle---Data Multiplexing

GPON adopts Wavelength Division Multiplexing (WDM) technology, facilitating bi-direction communication over a single fiber.



To separate upstream/downstream signals of multiple users over a single fibre, GPON adopts two multiplexing mechanism:

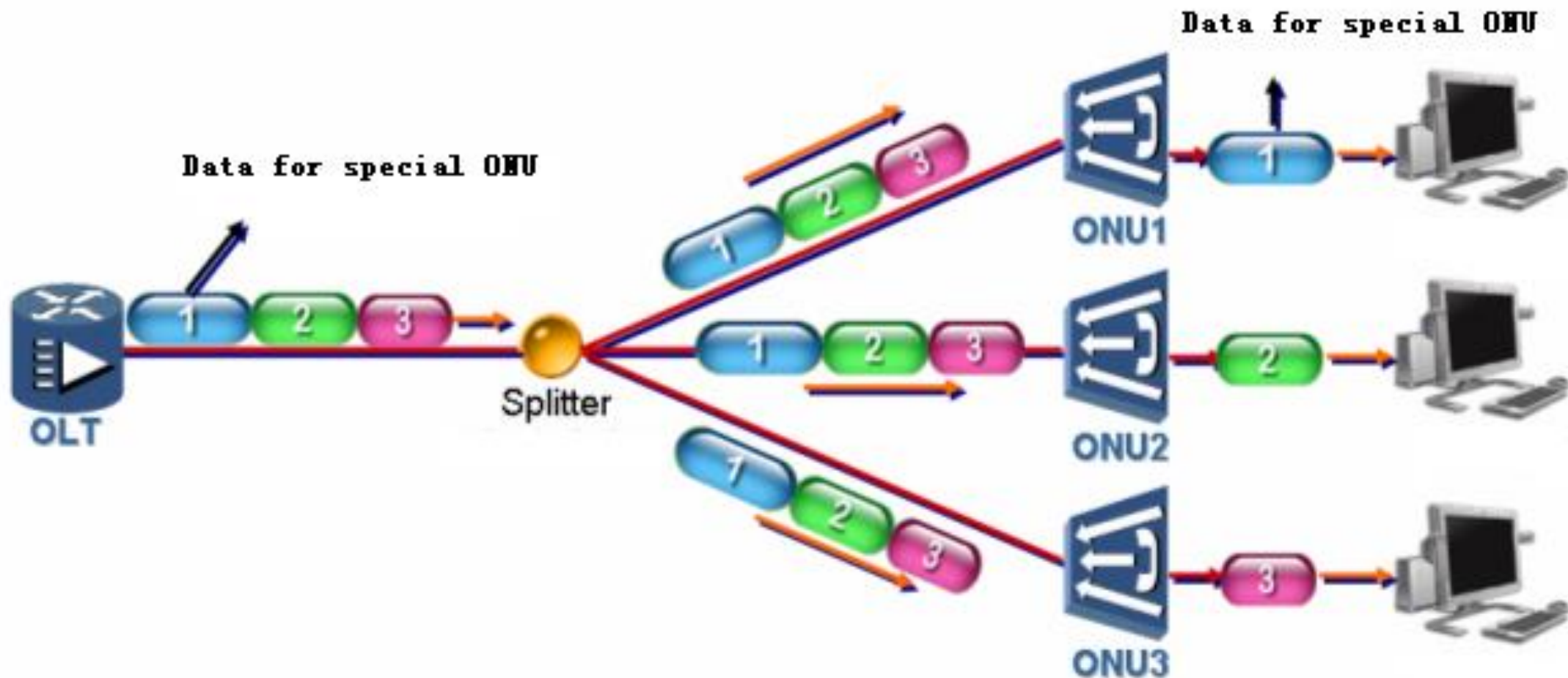
- In downstream direction, data packets are transmitted in a broadcast manner;
- In upstream direction, data packets are transmitted in a TDMA manner.



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Introduction to GPON FTTx Cabling

GPON Principle---Downstream Data

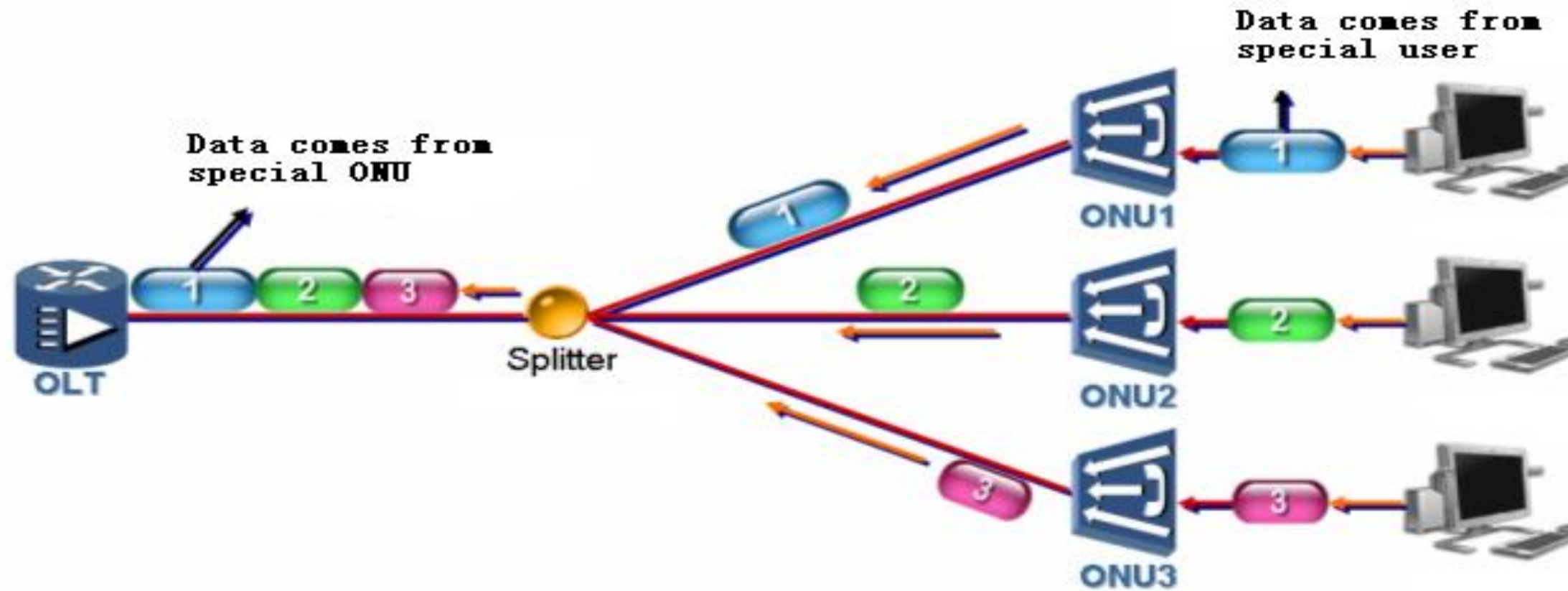




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Introduction to GPON FTTx Cabling

GPON Principle----Upstream Data



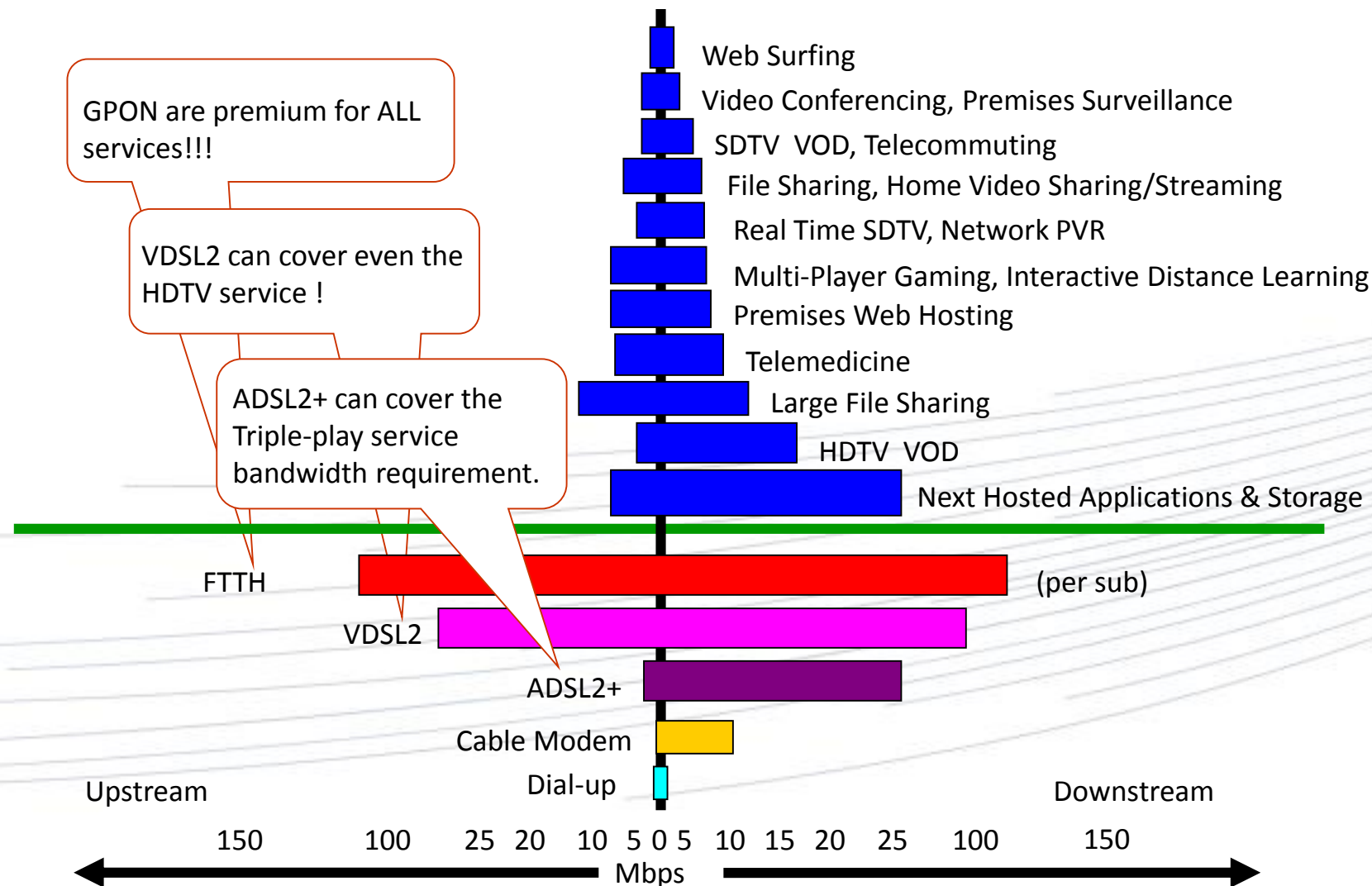
- TDMA mode



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Introduction to GPON FTTx Cabling

Consumer's Bandwidth Reqmts. Met By FTTH



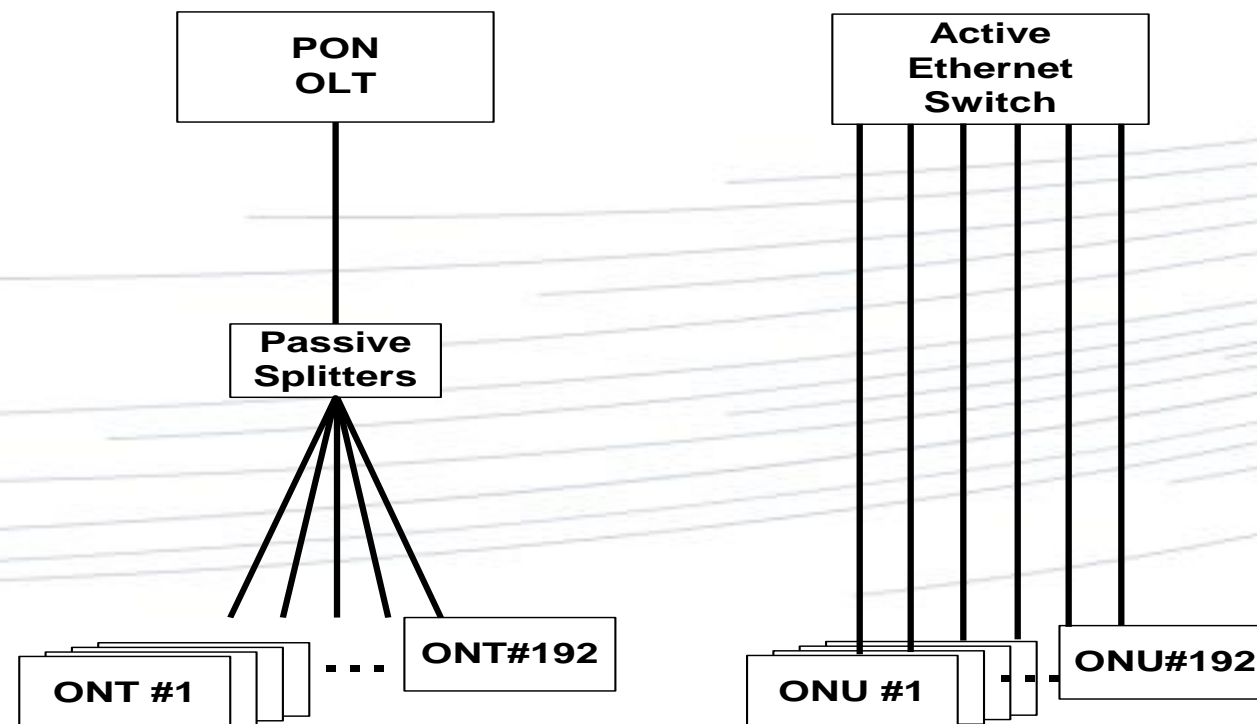


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Introduction to Network Topologies

Ethernet Vs. PON FTTx

- There are 2 choices for Fiber Access:
 - **Point to Point**
 - **Point to Multi-point**
- Point to Point is sometimes called Active Ethernet
- Point to Multi-point is called PON (passive optical network)



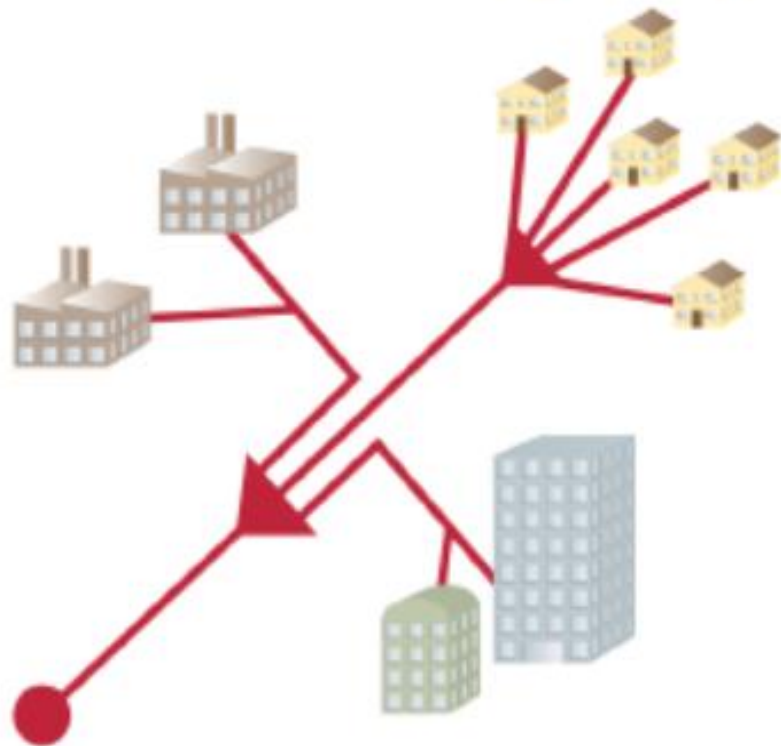


GPON – FTTx Cabling Designs and Solution

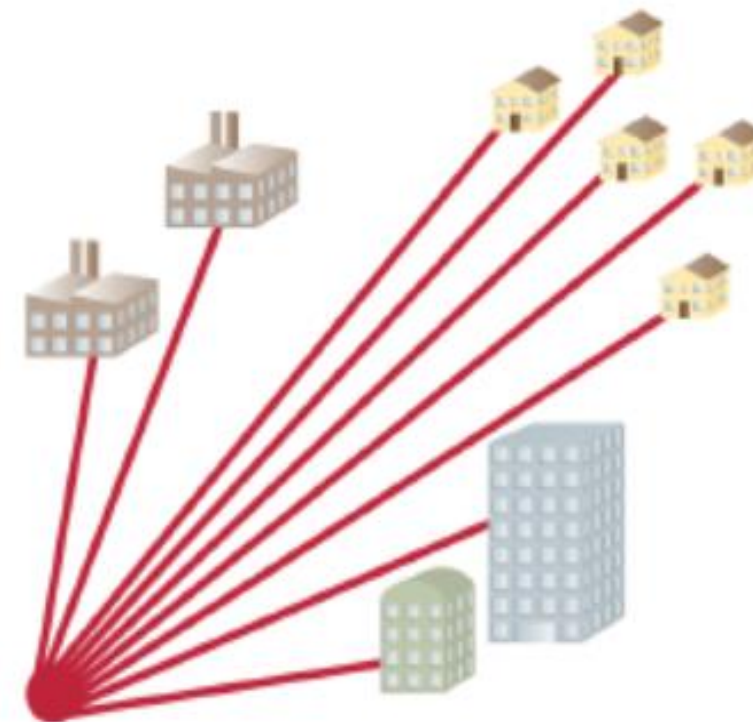
Introduction to Network Topologies

Topology

Point to Multi-Point [P2MP]



Point to Point [P2P]

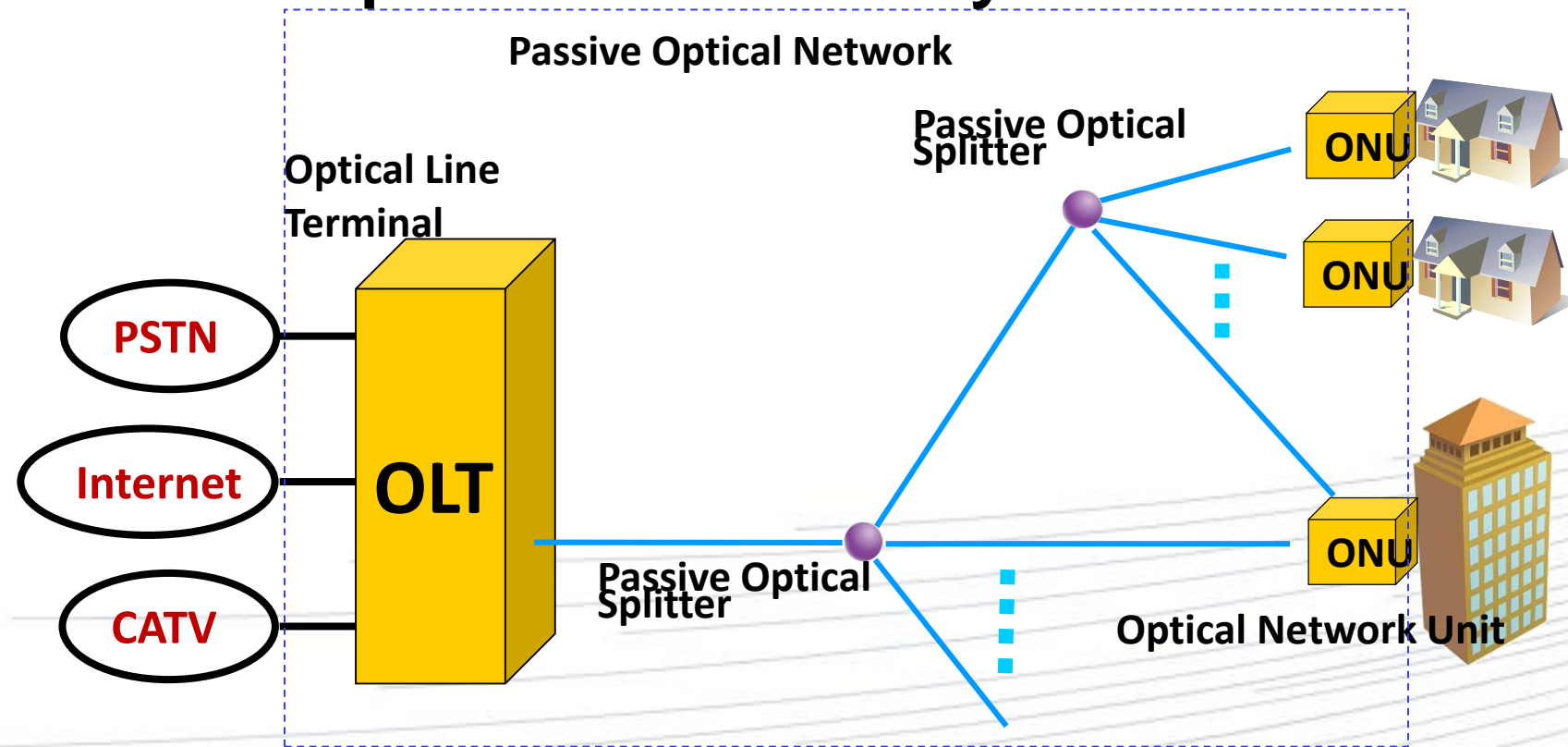




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Introduction to Network Topologies

Passive Optical Network Lay-Out

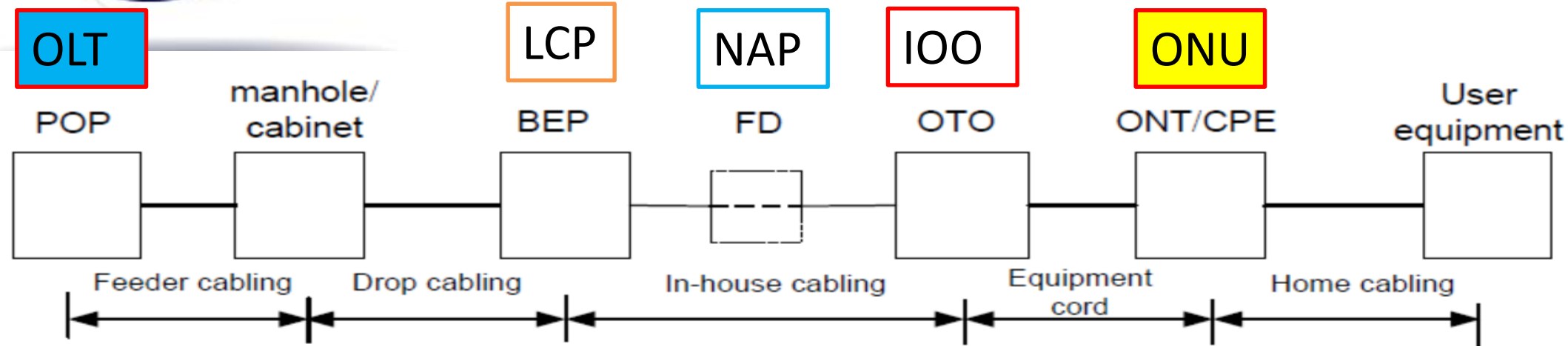


- PON is a kind of passive optical network featuring one-to-multiple-point architecture;
- PON is short for Passive Optical Network ;
- PON consists of Optical Line Terminal (OLT), Optical Network Unit (ONU) and Passive Optical Splitter.



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Introduction to Network Topologies



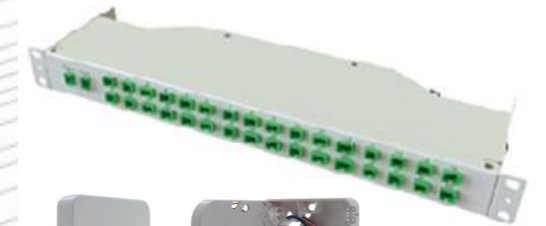
Key

BEP	Building Entry Point
CPE	Customer Premises Equipment
FD	Floor Distributor
ONT	Optical Network Termination
OTO	Optical Telecommunications Outlet
POP	Point of Presence

LCP Local Convergence Point

NAP Network Access Point

IOO Indoor Optical Outlet



NAP
1:4

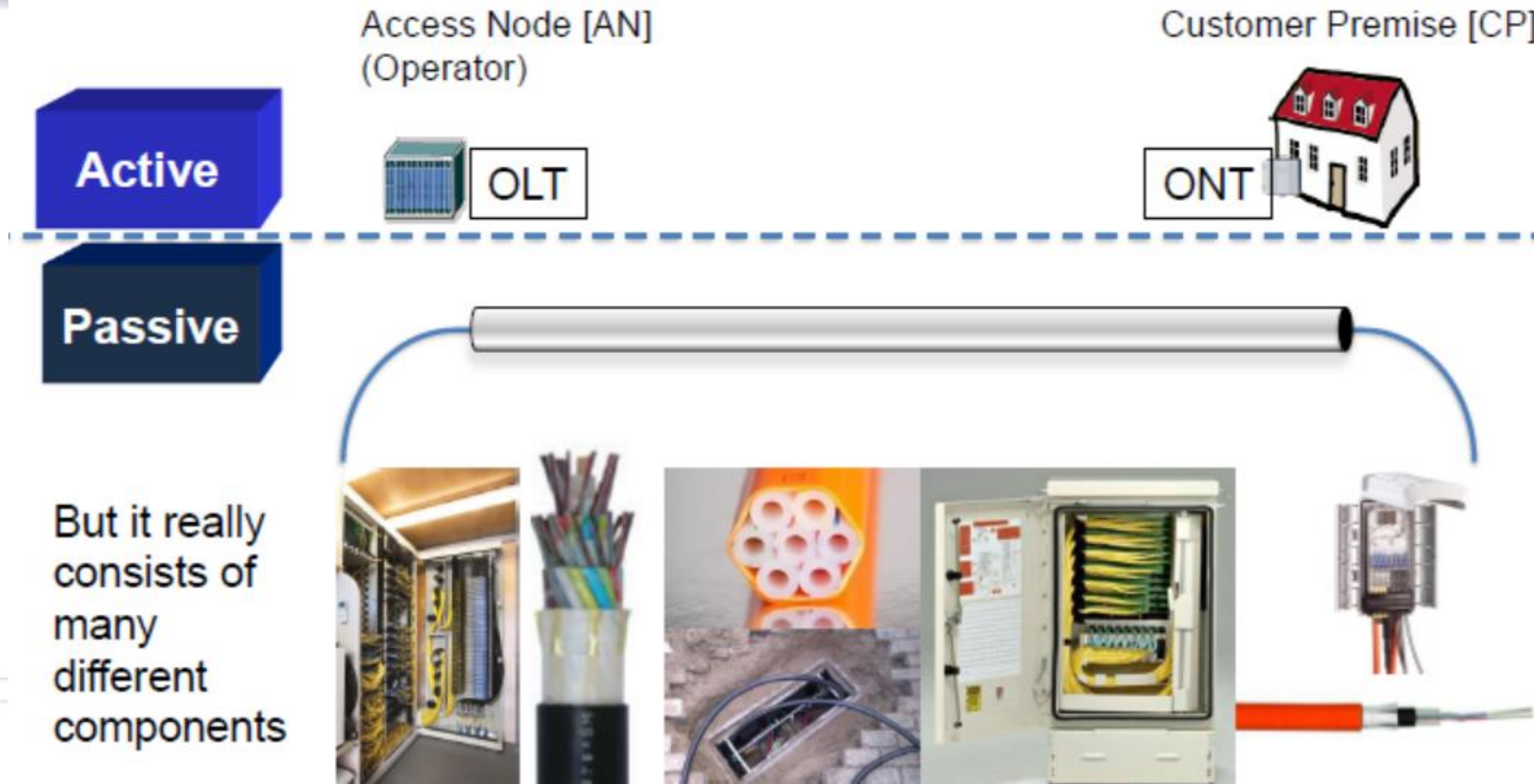
Figure 1 FTTH in-house installation reference model





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Introduction to Network Topologies

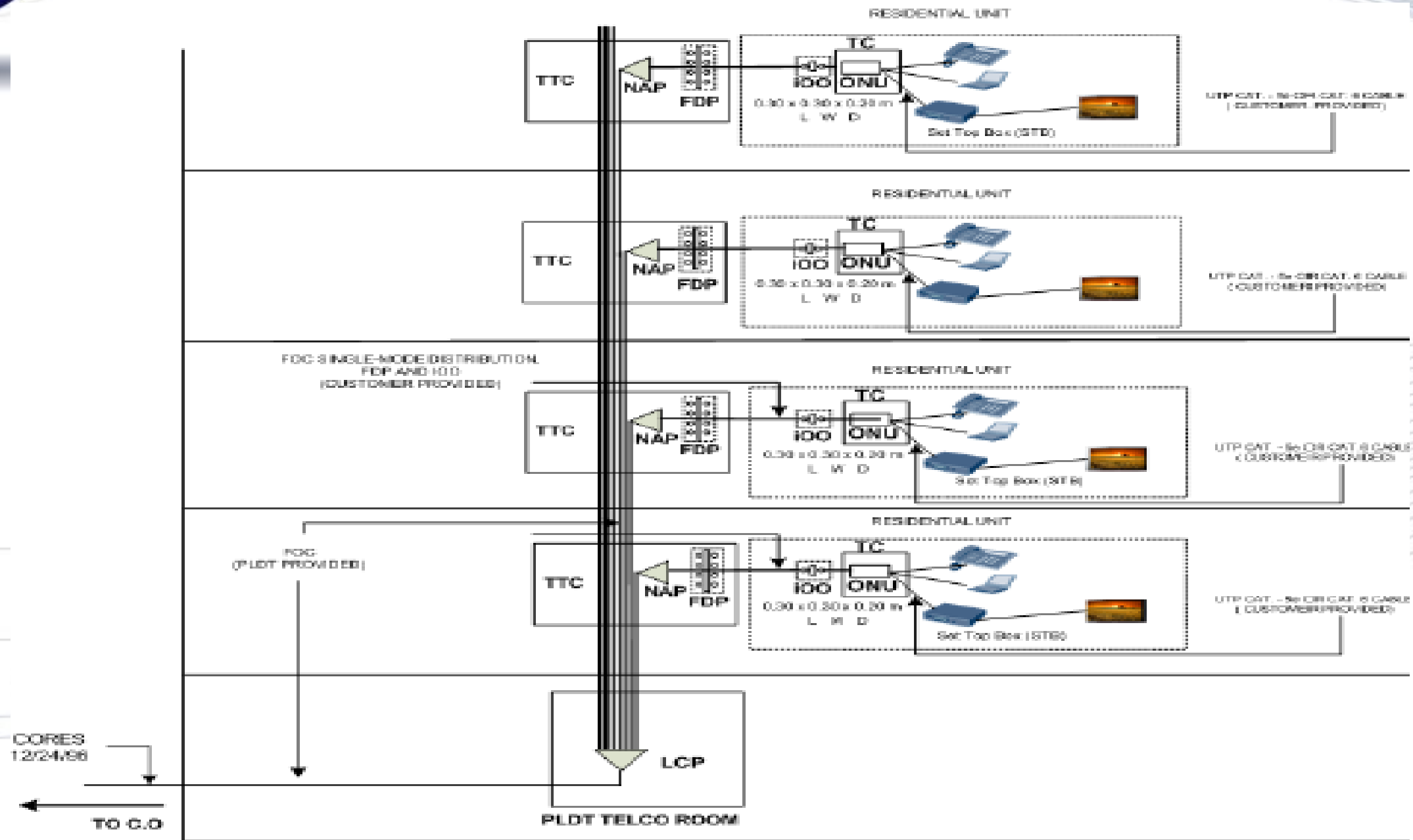


But it really consists of many different components



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FTTx Cabling Architecture

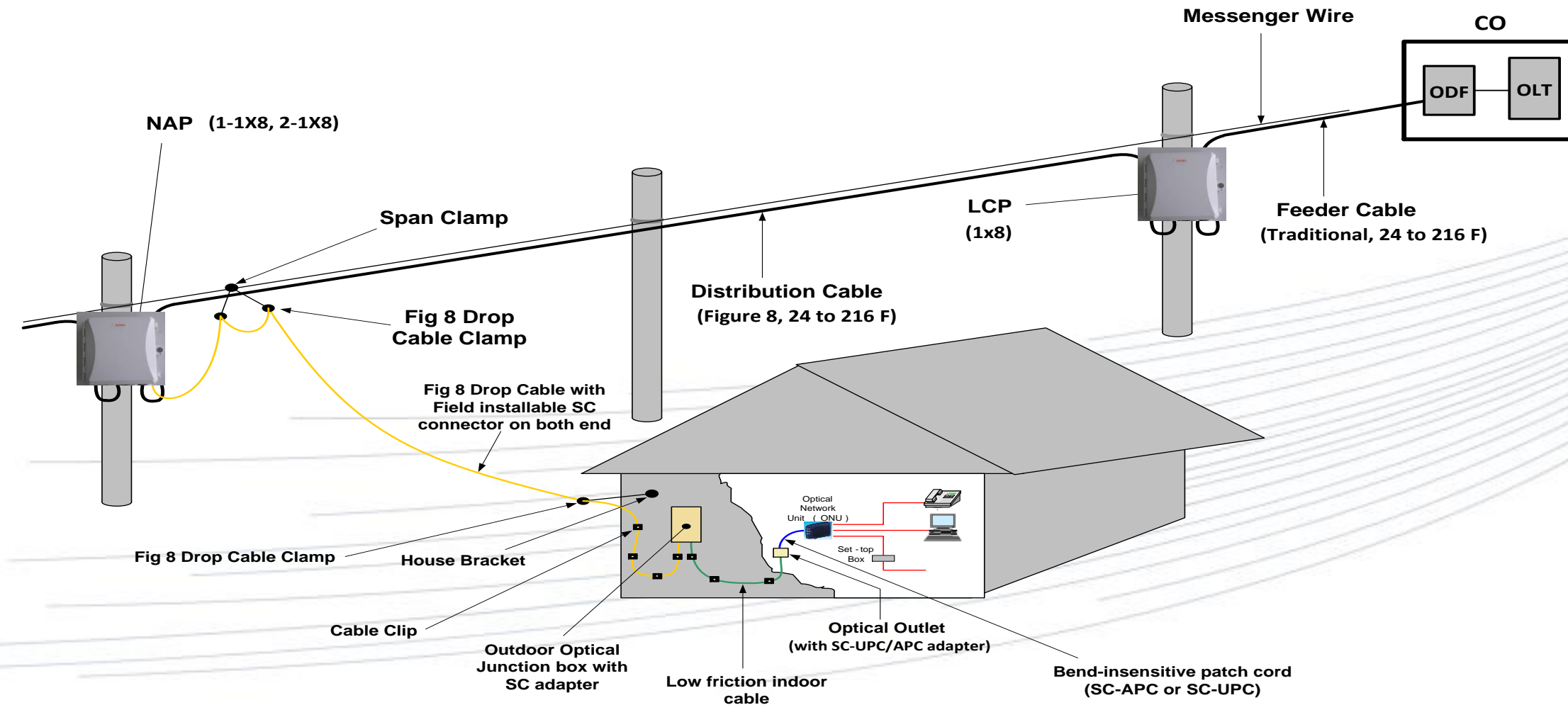




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FTTx Cabling Architecture

OPTICAL DISTRIBUTION NETWORK WITH POLE MOUNT NAP AND LCP





GPON – FTTx Cabling Designs and Solution

Traditional LAN Cabling Vs. GPON FTTx Cabling

TRADITIONAL LAN CABLING :

DETAILS :

- Number of Floors = 05 floors
- Ground Floor = MDF Location
- Grd Flr. To 5th Flr . = 15 rooms or tenant units

ASSUMPTIONS :

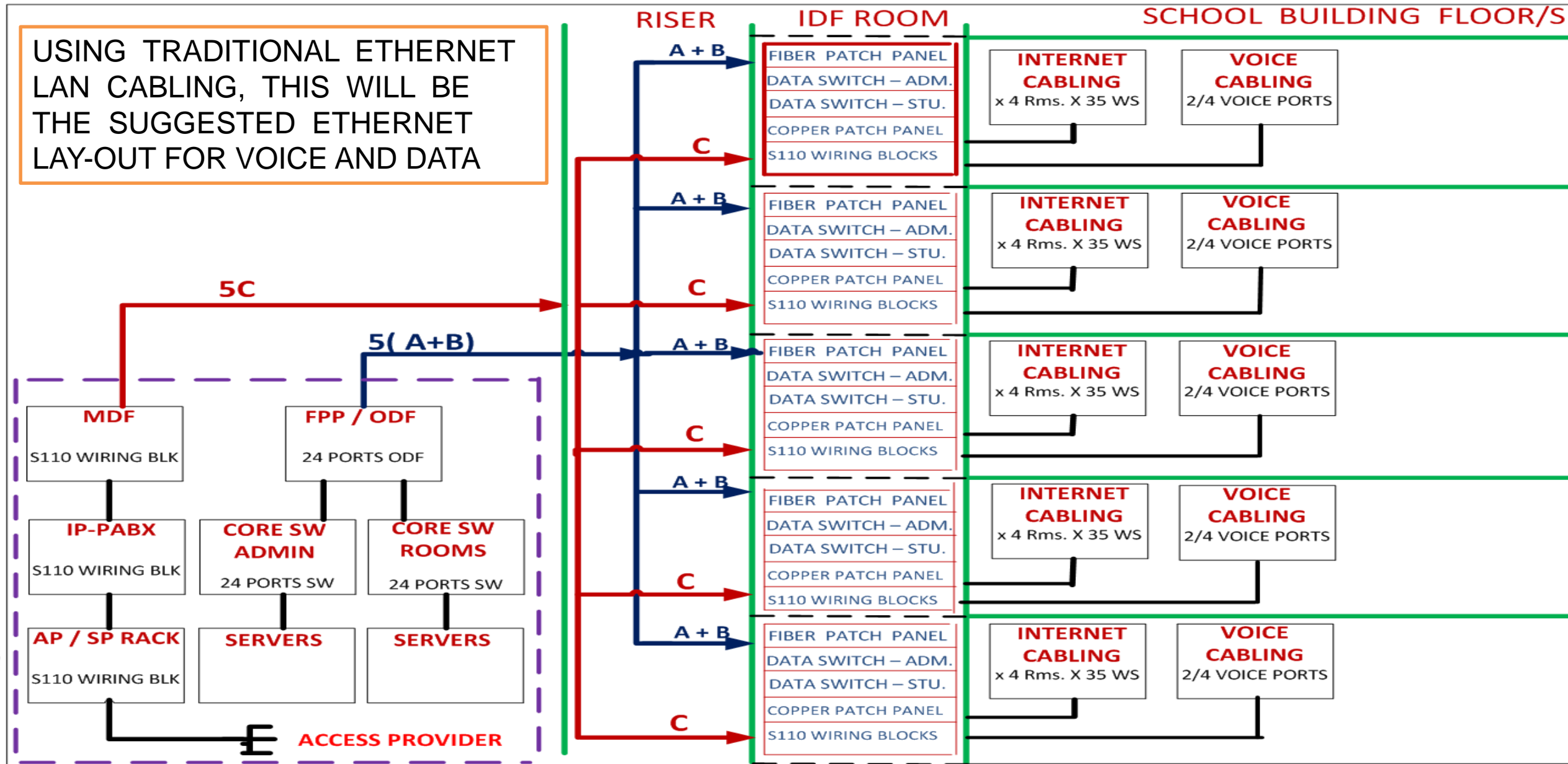
- Need to have at least 2 voice ports per room
- Need to have at least 2 data ports per room
- Need to have 6 CCTV ports per floor
- Need to have at least 2 access control or biometrics
- Need to have at least 1 port paging systems or intercom/s
- Need to have 4 data ports for digital signage/s on every floor



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Traditional LAN Cabling Vs. GPON FTTx Cabling

USING TRADITIONAL ETHERNET LAN CABLING, THIS WILL BE THE SUGGESTED ETHERNET LAY-OUT FOR VOICE AND DATA

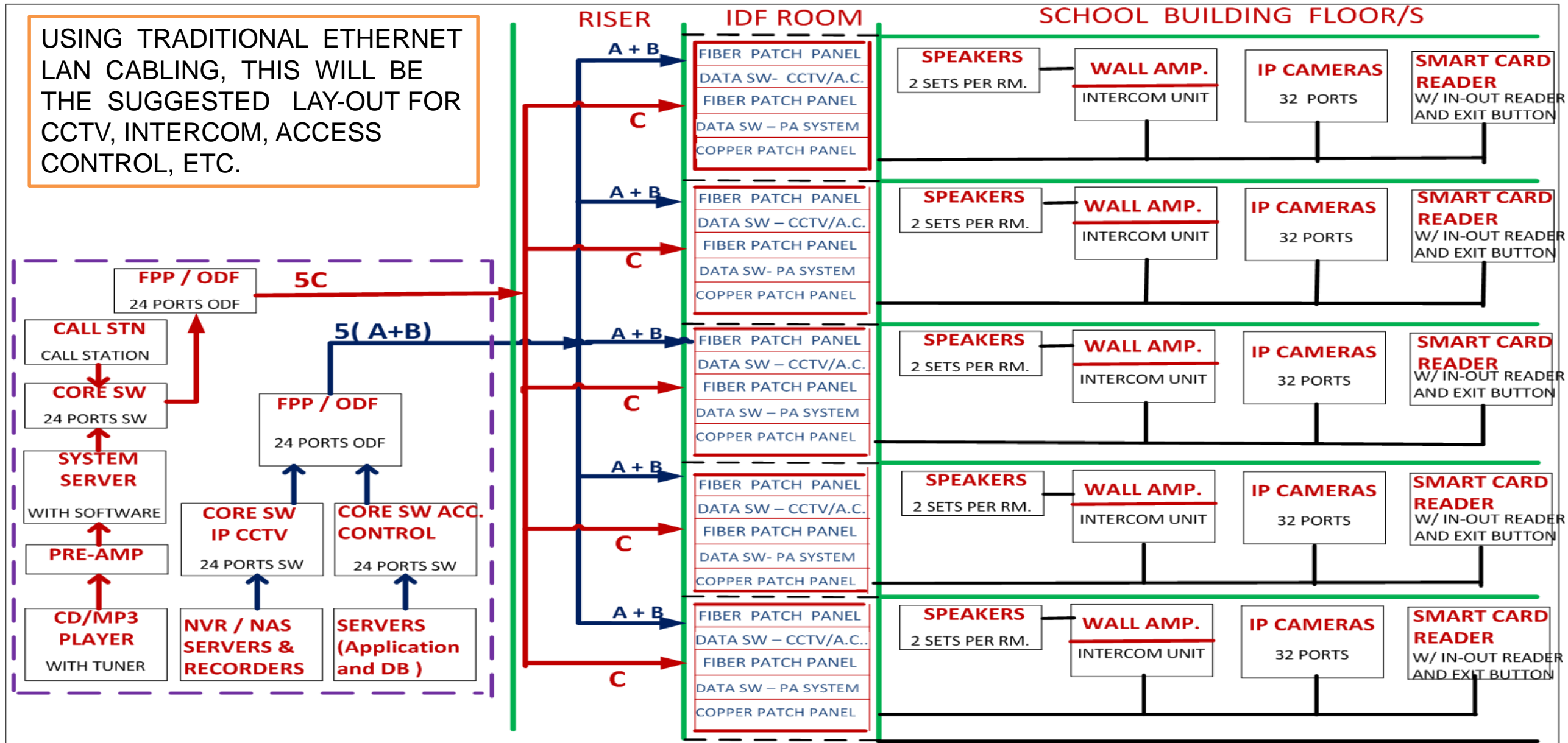




GPON – FTTx Cabling Designs and Solution

Traditional LAN Cabling Vs. GPON FTTx Cabling

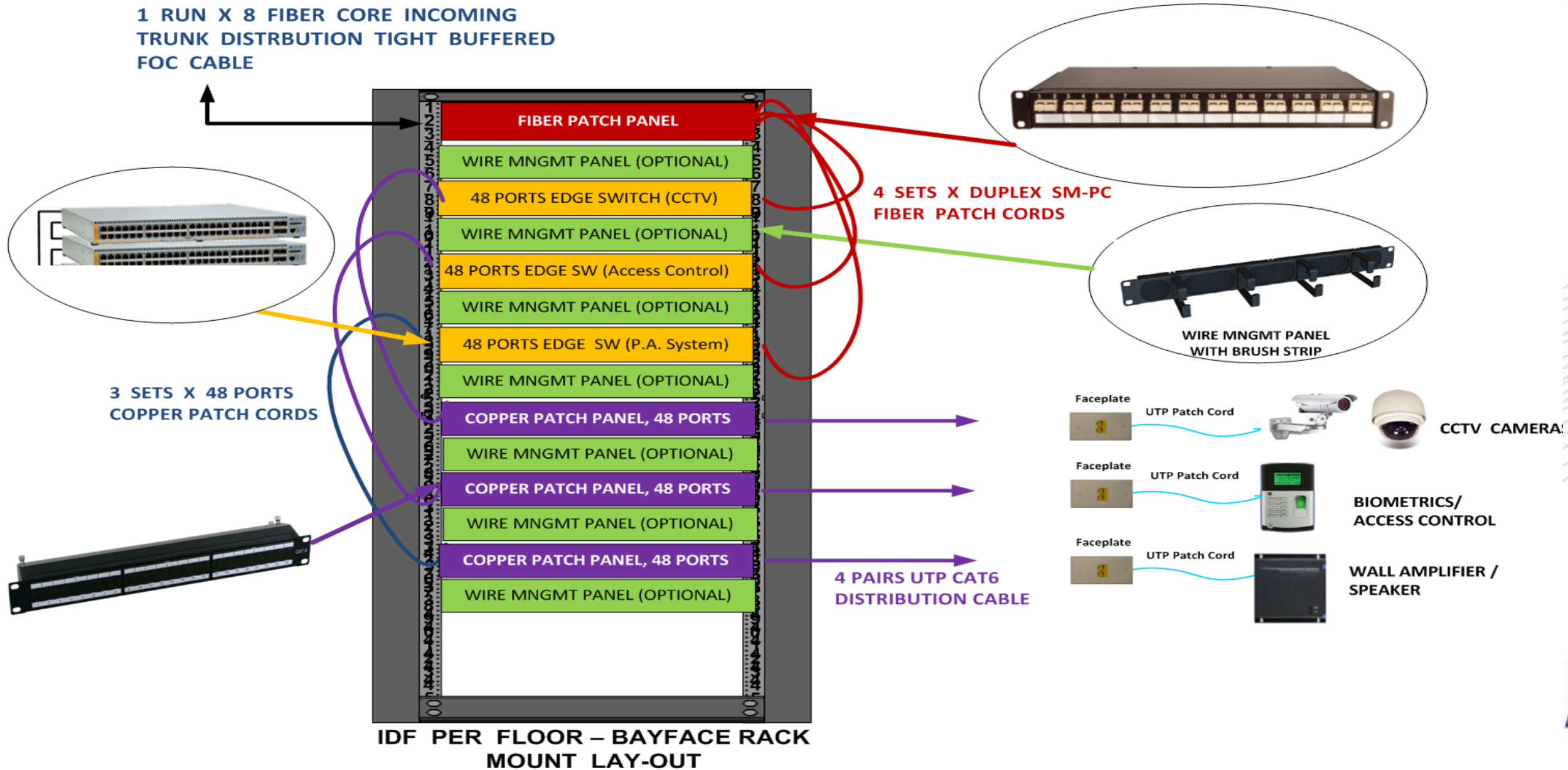
USING TRADITIONAL ETHERNET LAN CABLING, THIS WILL BE THE SUGGESTED LAY-OUT FOR CCTV, INTERCOM, ACCESS CONTROL, ETC.





GPON – FTTx Cabling Designs and Solution

Traditional LAN Cabling Vs. GPON FTTx Cabling





GPON – FTTx Cabling Designs and Solution

Traditional LAN Cabling Vs. GPON FTTx Cabling

GPON FTTx CABLING :

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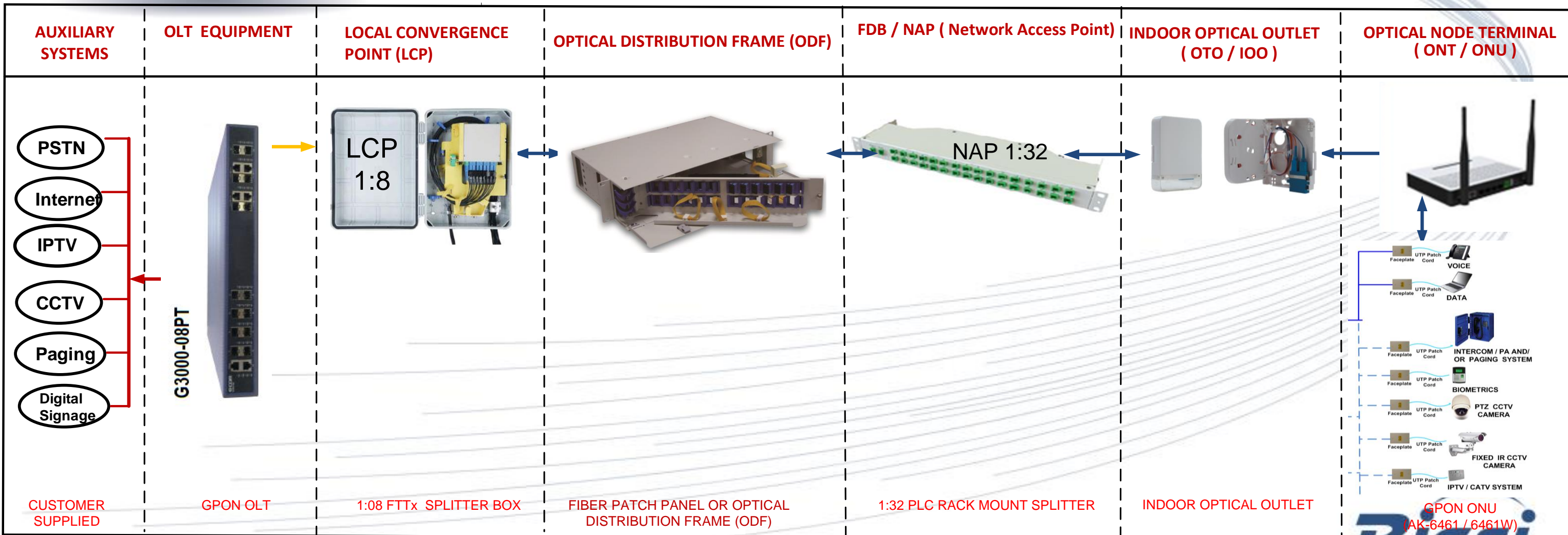
- Number of SC Ports Per Room = 2
- G657A1 indoor drop fiber core = 1 or 2
- No. of SC Adapter/s per I.O.O. = 2
- No. of LCP (Local Convergence Point) = 0
- No. Of Network Access Point (NAP) = 05
- No. of Fiber Distribution Panel per Flr. = 05 (optional)
- No. of ONT's (optical node terminal)/floor = 15



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Traditional LAN Cabling Vs. GPON FTTx Cabling

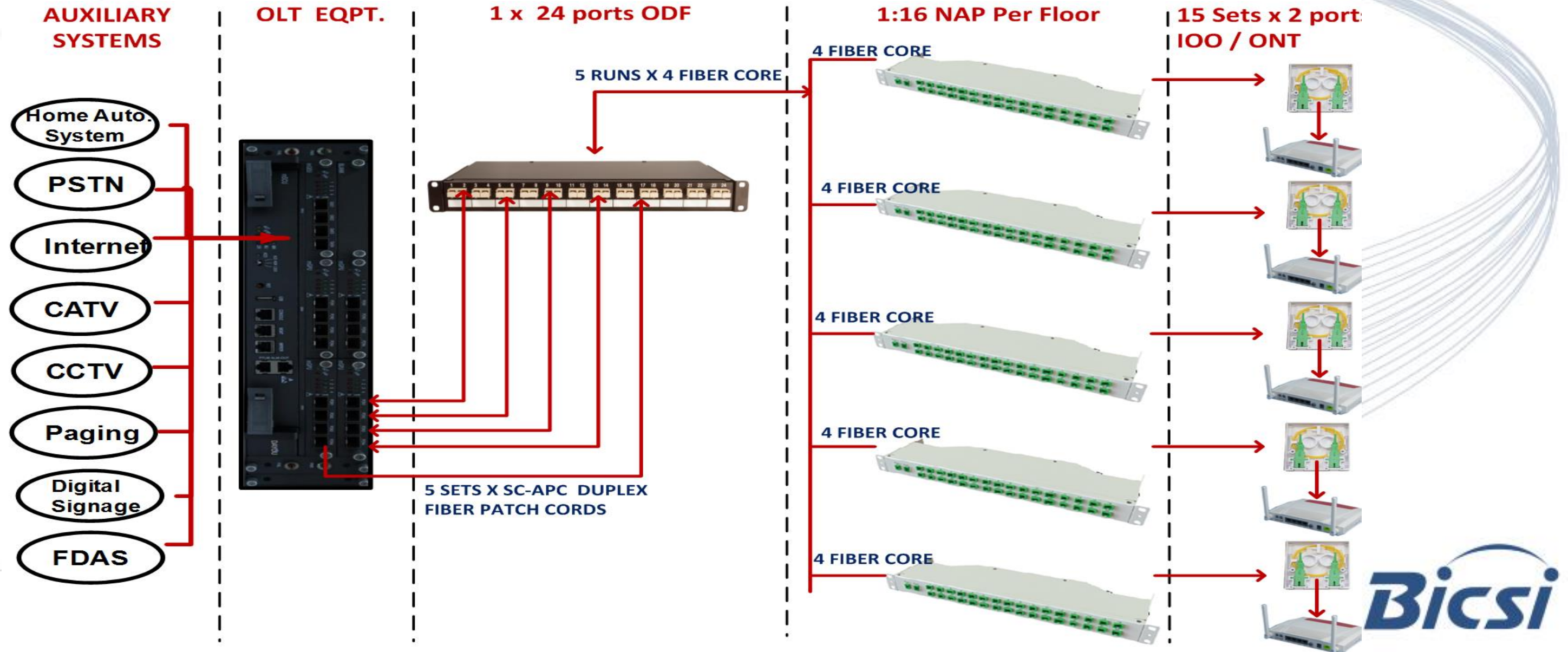
GPON FTTH EQPT. REQUIREMENTS (FOR TELECOMS AND ENTERPRISE NETWORK)





GPON – FTTx Cabling Designs and Solution

Traditional LAN Cabling Vs. GPON FTTx Cabling





GPON – FTTx Cabling Designs and Solution

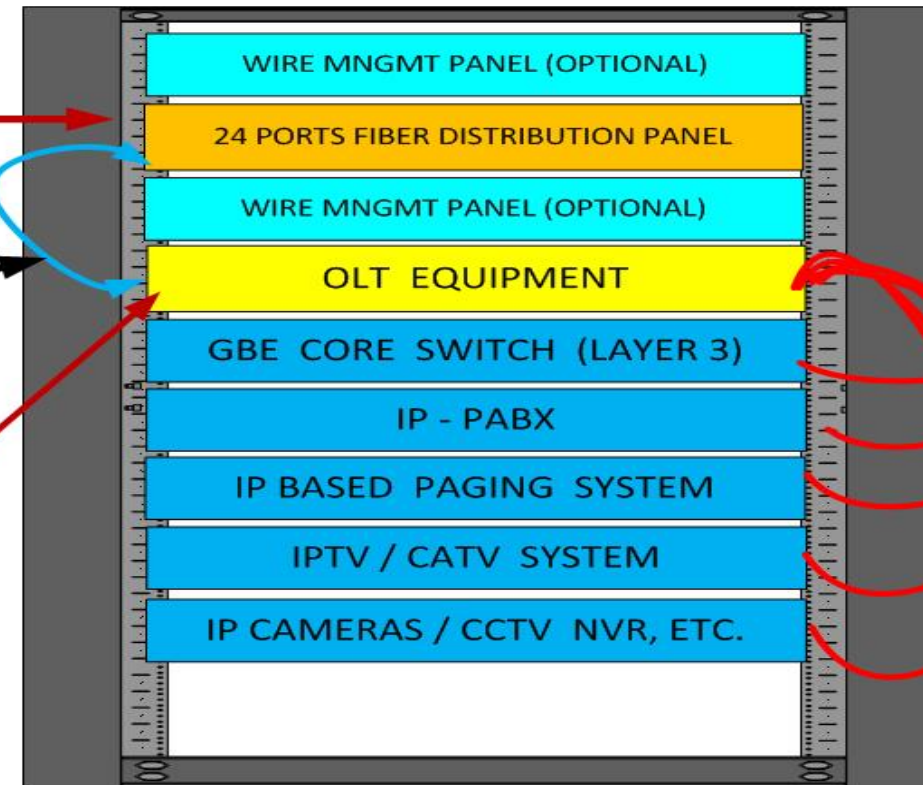
Traditional LAN Cabling Vs. GPON FTTx Cabling

PROPOSED MDF BAY RACK LAY-OUT



MAIN MDF GPON OLT EQPT. C3 CABINET (COMMAND AND CONTROL CABINET)

5 SETS X DUPLEX SM-APC SIMPLEX
FIBER PATCH CORDS
(FROM MDF OLT EQPT PORTS TO FIBER
DISTRIBUTION PANEL)



OLT EQUIPMENT G3000-08PT

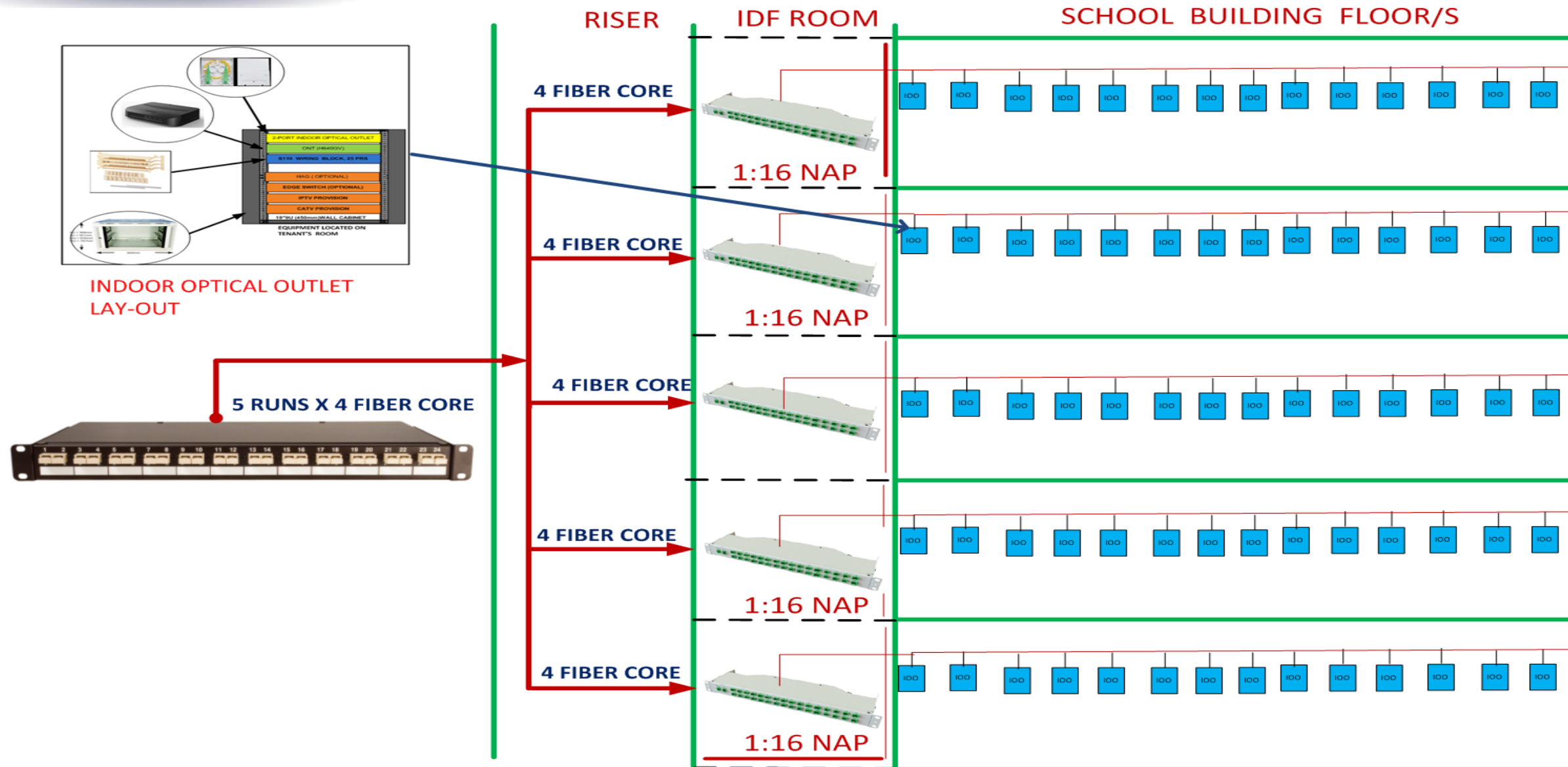




GPON – FTTx Cabling Designs and Solution

Traditional LAN Cabling Vs. GPON FTTx Cabling

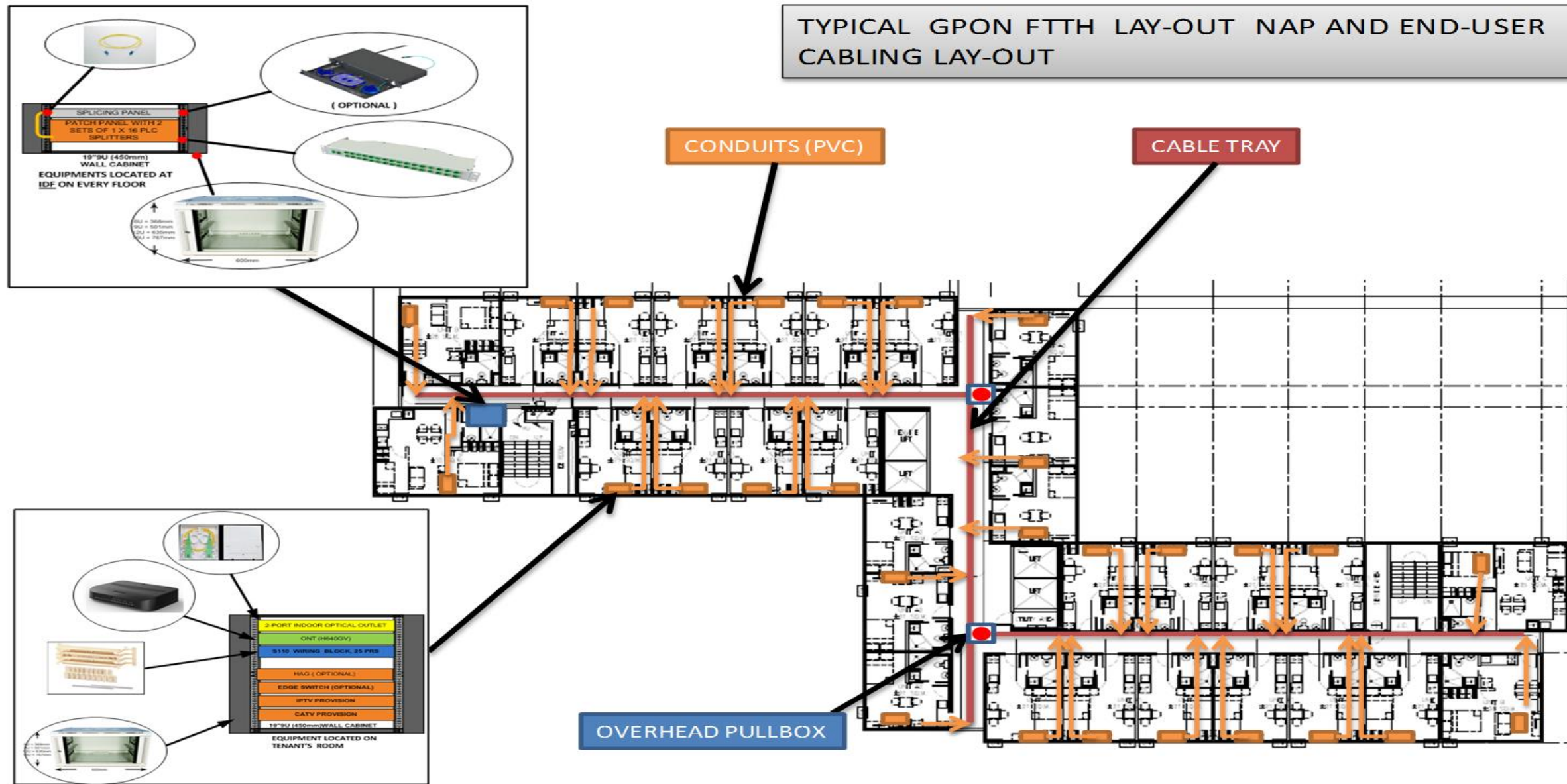
GPON FTTH VERTICAL RISER LAY-OUT





GPON – FTTx Cabling Designs and Solution

Traditional LAN Cabling Vs. GPON FTTx Cabling



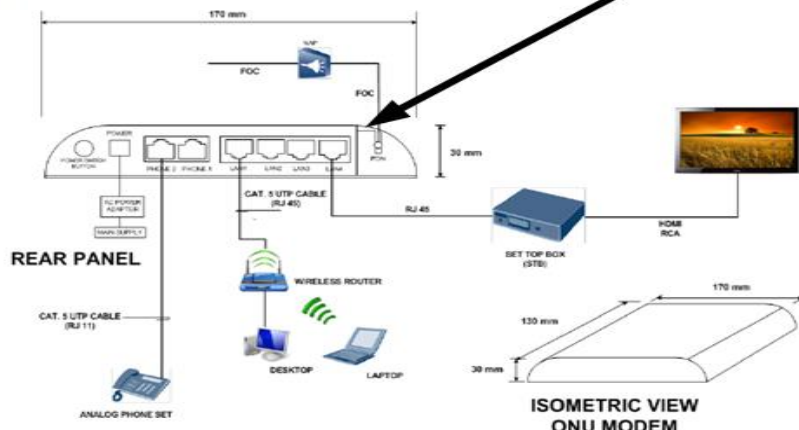


GPON – FTTx Cabling Designs and Solution

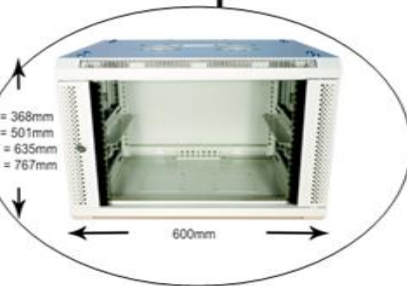
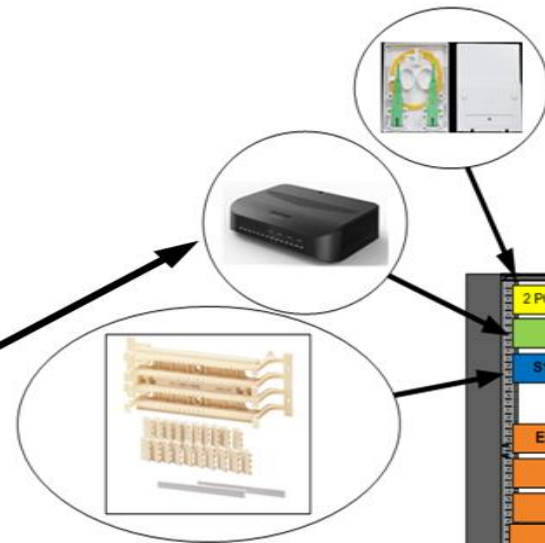
Traditional LAN Cabling Vs. GPON FTTx Cabling

Typical End-User Distribution Lay-Out

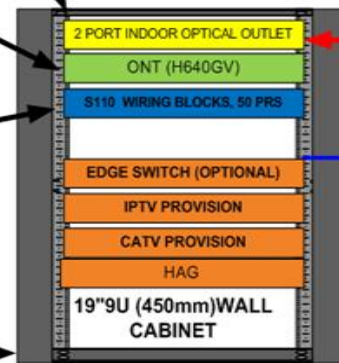
4LAN + 2 Voice + WiFi + CATV



OPTICAL NETWORK UNIT (ONU)



CAT6 UTP Cable to be distributed at designated areas
Homerun connected to HAG on every Unit



DIGITAL SIGNAGE WALL BOARD

SPARE FOR OTHER SERVICES

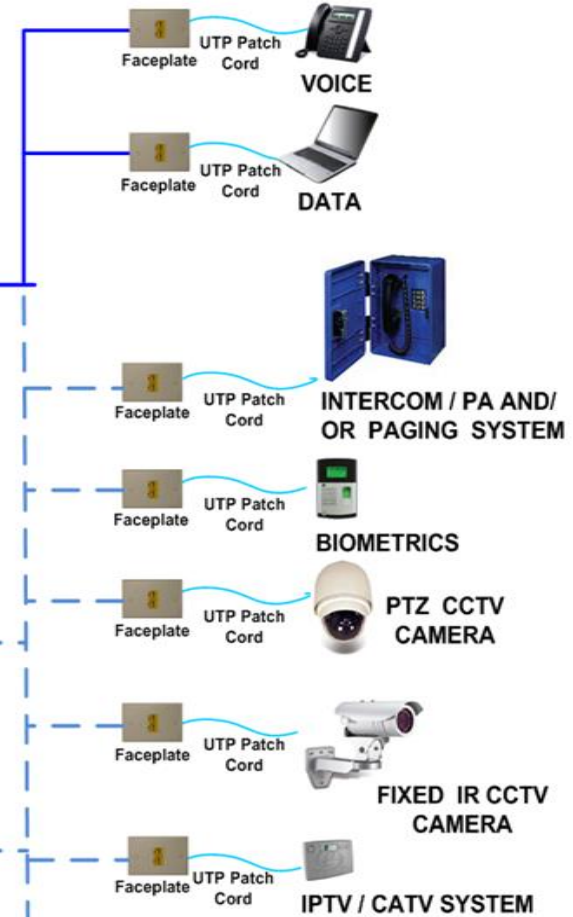


2 CORE DROP CABLE



Faceplate

Faceplate





GPON – FTTx Cabling Designs and Solution

Traditional LAN Cabling Vs. GPON FTTx Cabling

SOGO HOTEL DETAILS :

➤ Number of Floors	=	12
➤ Number of Basements	=	02
➤ With Mezzanine and Roof Deck		
➤ Number of Rooms per Floor		
❖ 3 rd to 12 th floor	=	14 rooms x 12 floors
❖ Ground Floor	=	05 rooms
❖ Mezzanine Floor	=	07 rooms
❖ 2 nd Floor	=	07 rooms
➤ Total No. of ONT Units	=	175 units

GPON FTTH ASSUMPTIONS :

➤ No. of hori. drop fiber runs (2 core LFIC)	=	175
➤ No. of SC Adapter/s per I.O.O.	=	02
➤ No. of Indoor Optical Outlets (OTO)/IOO	=	175
➤ No. of LCP's (1:8)	=	02
❖ 1 active LCP / 1 spare LCP		
➤ No. Of NAP's (1:16)	=	27
❖ 2 NAP's per Floor (1 ADMIN NAP AND 1 HOTEL GUEST NAP)		



GPON – FTTx Cabling Designs and Solution

Traditional LAN Cabling Vs. GPON FTTx Cabling

FTTH PROJECT – NUMBER OF ONT UNITS PER FLOOR

FLOORS	CORE A	CORE B	TOTAL
ROOF DECK	0	1	1
13 TH	0	1	1
12 TH	14	1	15
11 TH	14	1	15
10 TH	14	1	15
9 TH	14	1	15
8 TH	14	1	15
7 TH	14	1	15
6 TH	14	1	15
5 TH	14	1	15
4 TH	14	1	15
3 RD	14	1	15
2 ND	0	7	7
MEZZANINE	0	7	7
GRD	0	5	5
BASEMENT 1	0	3	3
BASEMENT 2	0	1	1
TOTAL :	140	35	175



GPON – FTTx Cabling Designs and Solution

Traditional LAN Cabling Vs. GPON FTTx Cabling

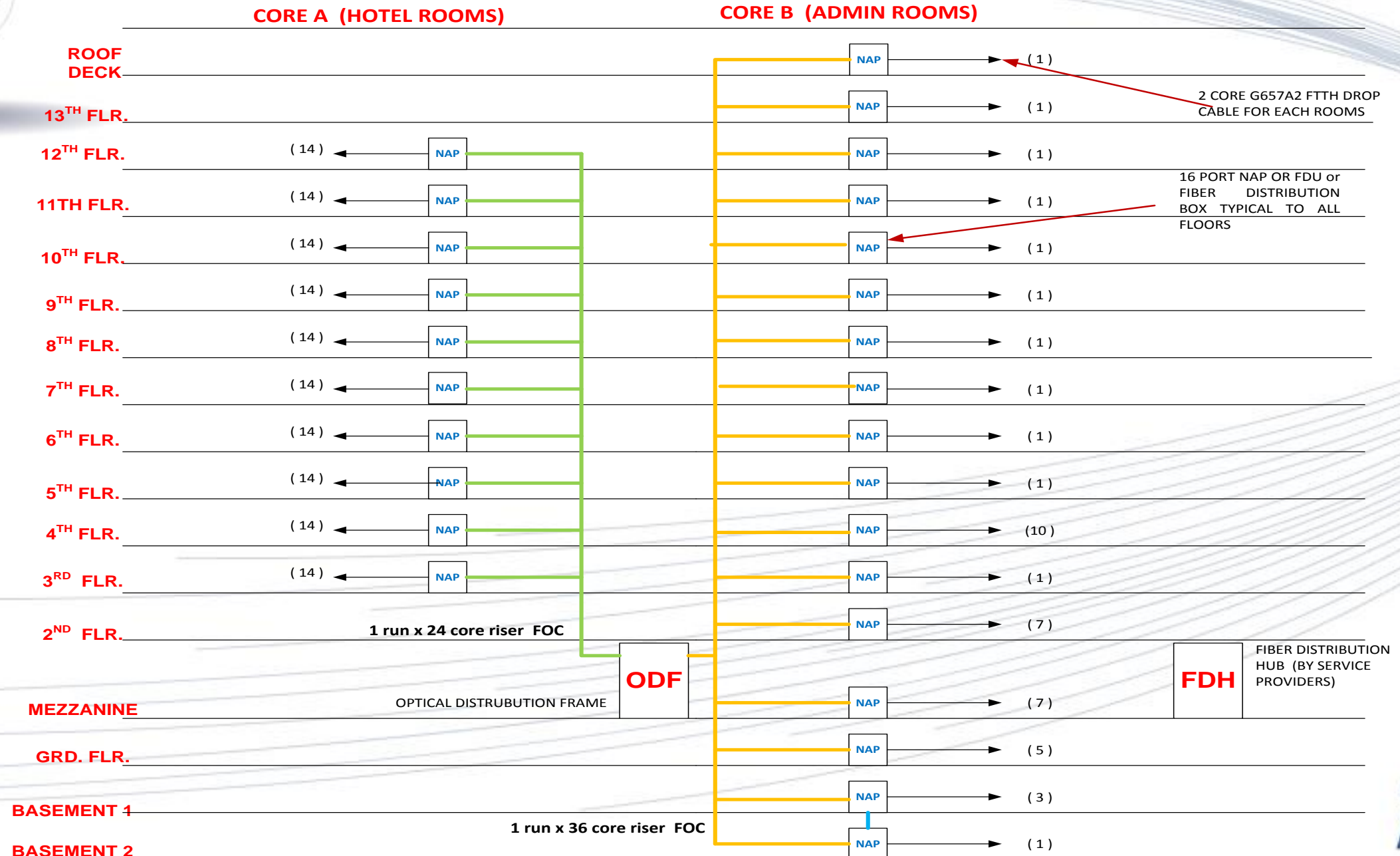
FTTH PROJECT – SERVICES OFFERED PER FLOOR

FLOORS	VOICE	DATA	WIFI	CCTV	AD TV	CATV
ROOF DECK	0	0	1	2	0	0
13 TH	1	1	1	2	0	0
12 TH	14	14	2	2	1	14
11 TH	14	14	2	2	1	14
10 TH	14	14	2	2	1	14
9 TH	14	14	2	2	1	14
8 TH	14	14	2	2	1	14
7 TH	14	14	2	2	1	14
6 TH	14	14	2	2	1	14
5 TH	14	14	2	2	1	14
4 TH	14	14	2	2	1	14
3 RD	14	14	2	2	1	14
2 ND	2	2	2	3	0	0
MEZZANINE	2	2	2	3	0	0
GRD	3	3	2	7	3	0
BASEMENT 1	1	1	1	2	0	0
BASEMENT 2	1	1	1	2	0	0
TOTAL	150	150	29	41	13	150



GPON – FTTx Cabling Designs and Solution

Traditional LAN Cabling Vs. GPON FTTx Cabling



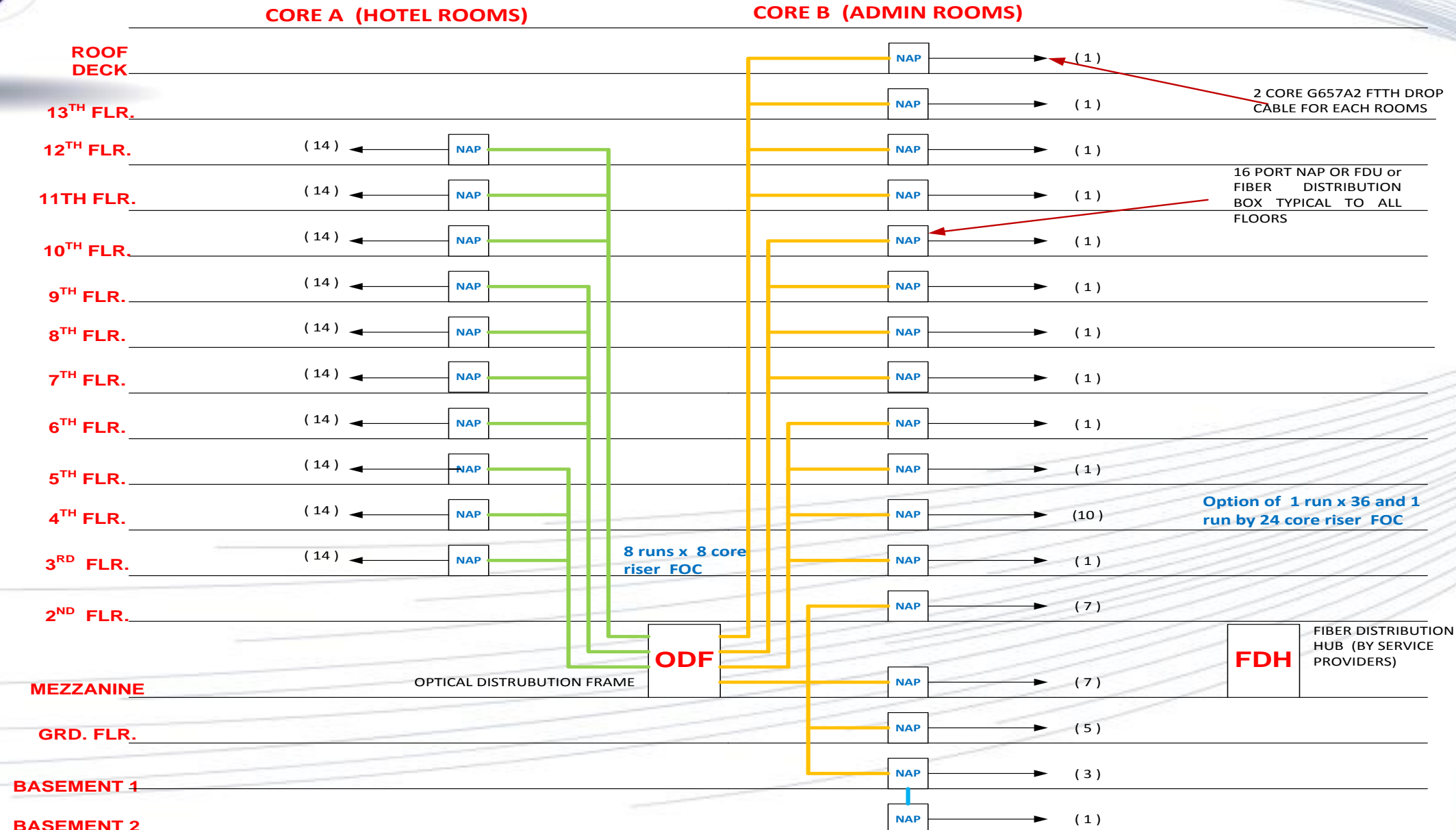
SCHEMATIC DIAGRAM - FIBER OPTIC VERTICAL RISER CABLE SYSTEM (OPTION 01)





GPON – FTTx Cabling Designs and Solution

Traditional LAN Cabling Vs. GPON FTTx Cabling



SCHEMATIC DIAGRAM - FIBER OPTIC VERTICAL RISER CABLE SYSTEM (OPTION 02)





GPON – FTTx Cabling Designs and Solution

Traditional LAN Cabling Vs. GPON FTTx Cabling

NAP/FDB SAMPLES W/ 1:16 FIBER SPLITTERS 01

Splitter in cassette box



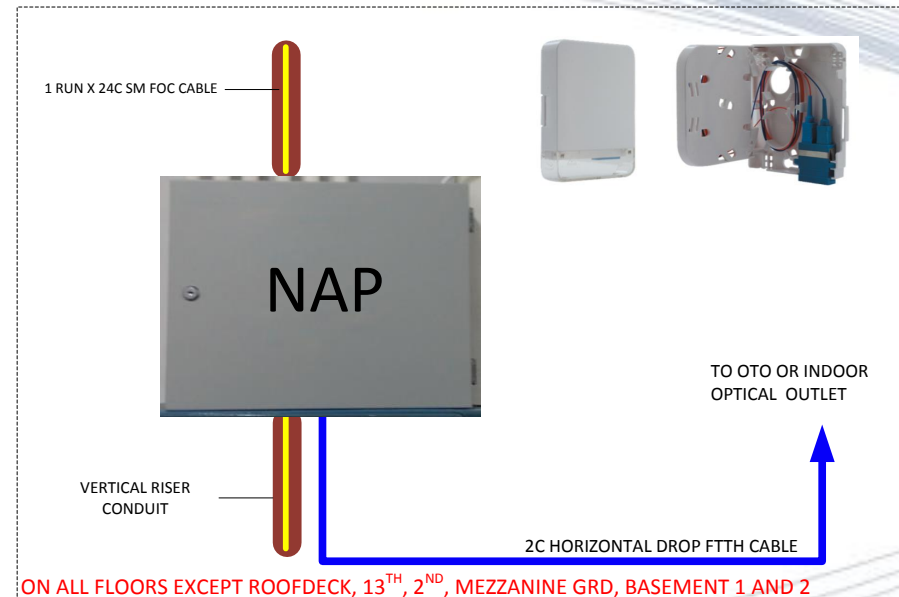
PLC splitter with 0.9mm tails =



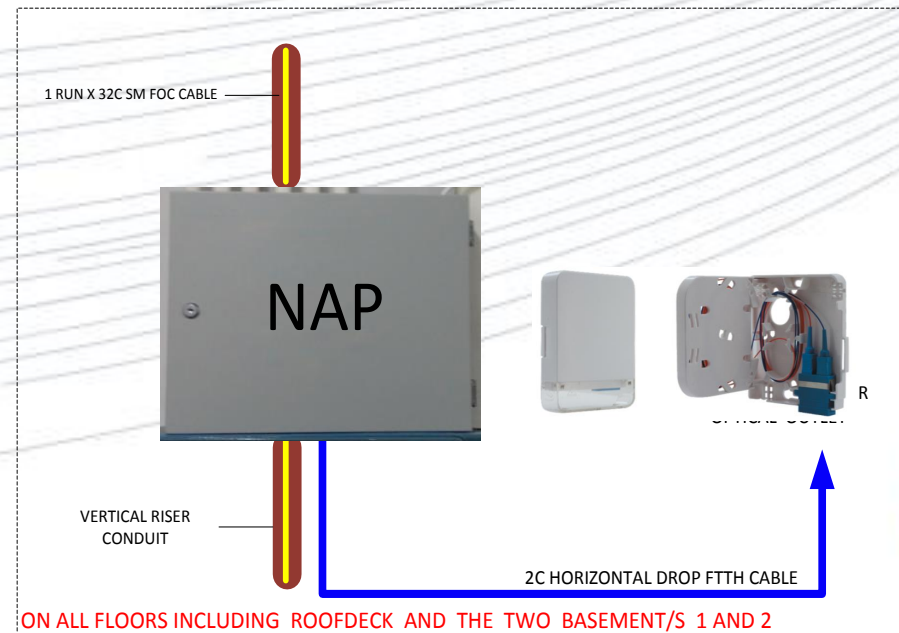
NAP/FDB SAMPLES W/ 1:16 FIBER SPLITTERS 02



NAP LAY-OUT ON CORE A (HOTEL ROOMS)



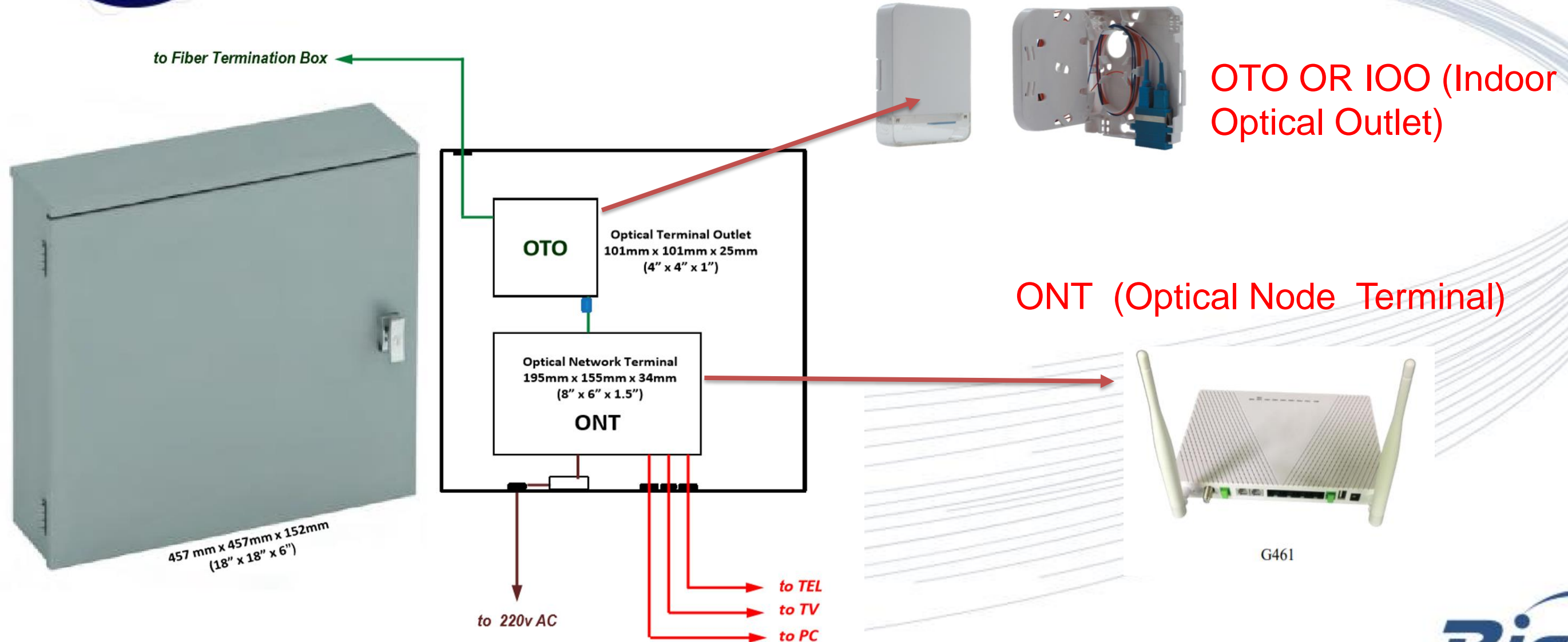
NAP LAY-OUT ON CORE A (ADMIN ROOMS)





GPON – FTTx Cabling Designs and Solution

Traditional LAN Cabling Vs. GPON FTTx Cabling



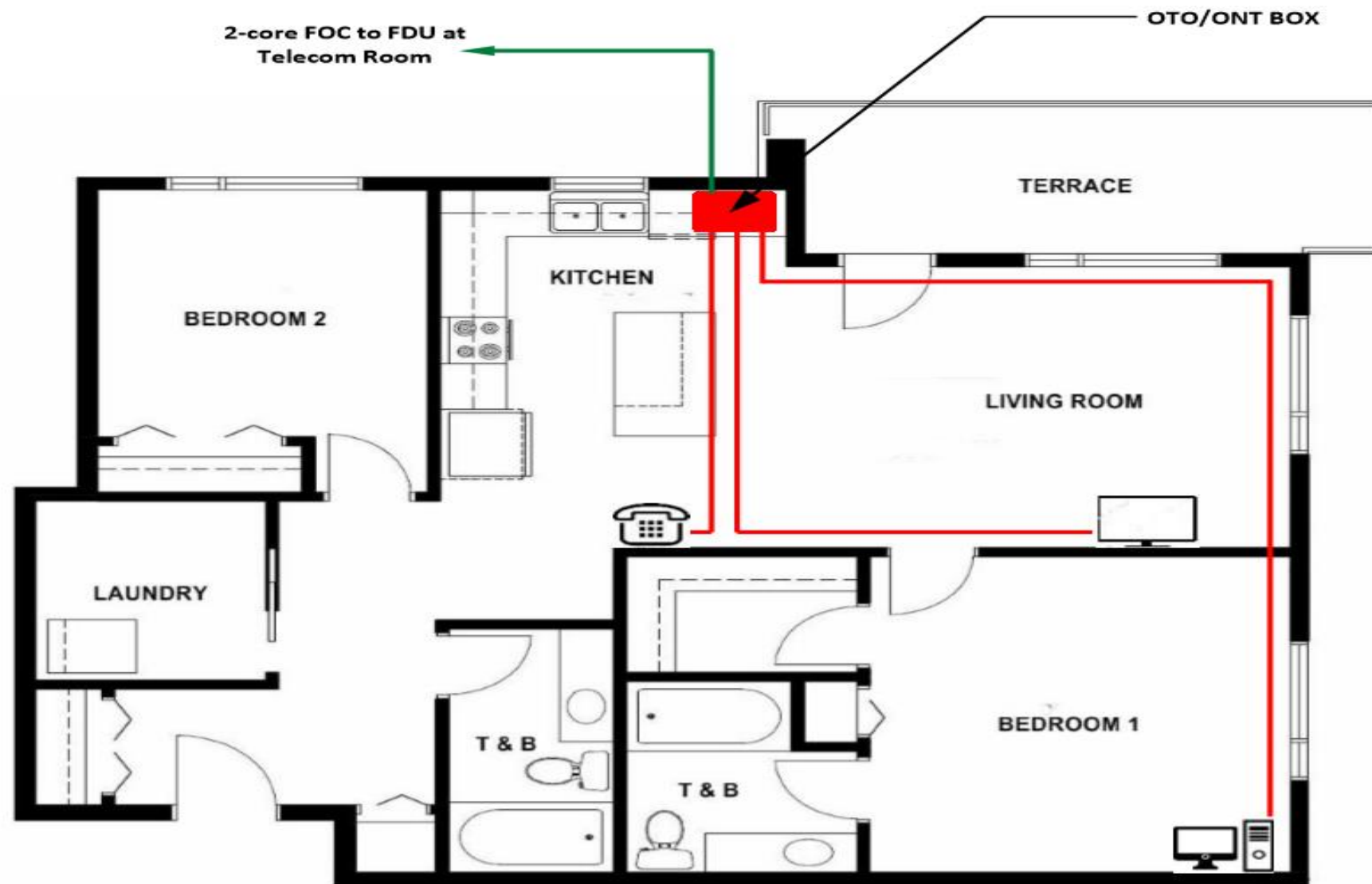
DETAILS OF OTO / ONT BOX ON TYPICAL GUEST ROOM





GPON – FTTx Cabling Designs and Solution

Traditional LAN Cabling Vs. GPON FTTx Cabling



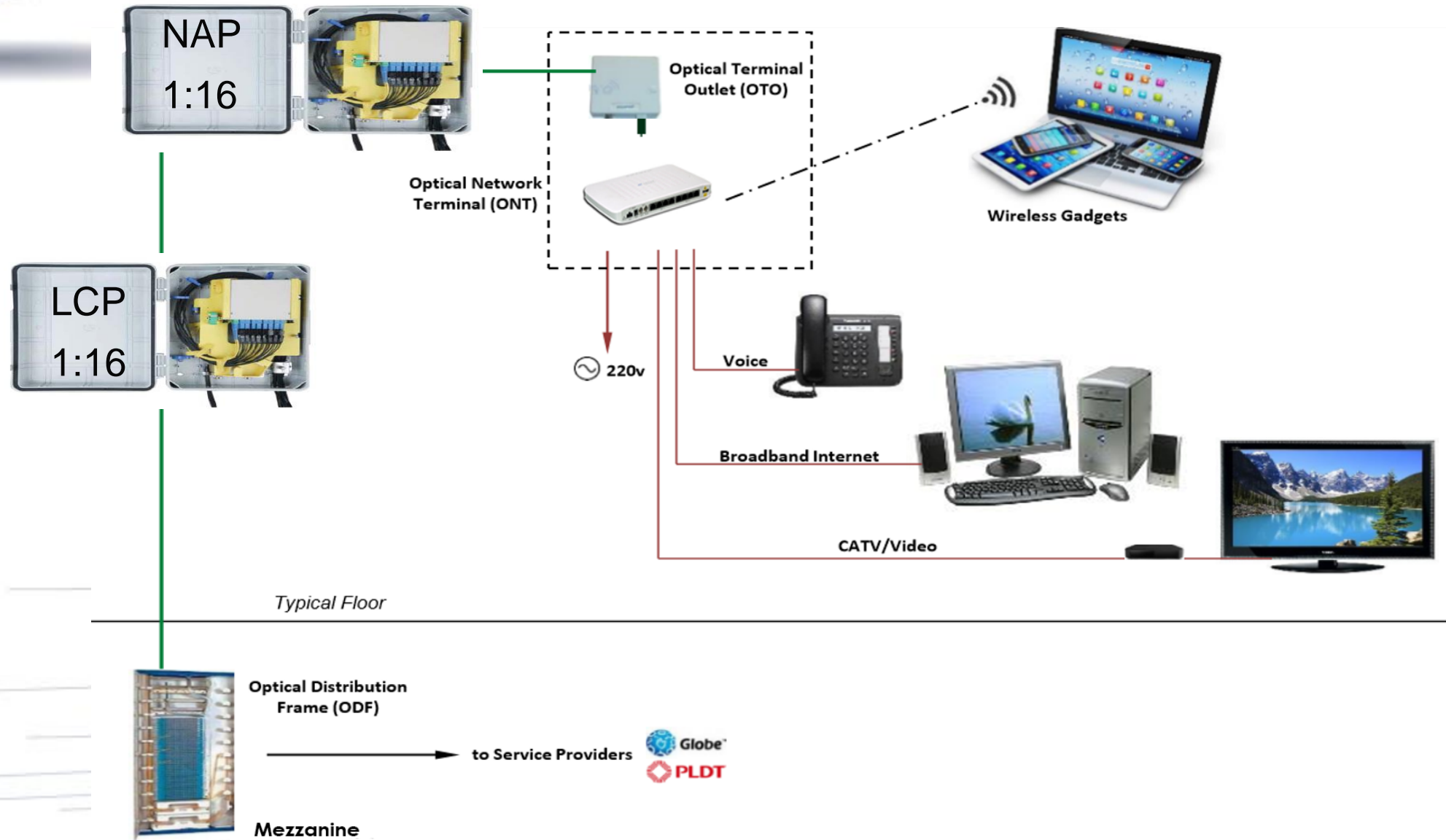
SAMPLE LAY-OUT PLAN OF OTO / ONT BOX ON TYPICAL GUEST ROOM





GPON – FTTx Cabling Designs and Solution

Traditional LAN Cabling Vs. GPON FTTx Cabling



SINGLE LINE PICTOGRAM – TYPICAL UNIT



GPON – FTTx Cabling Designs and Solution

Traditional LAN Cabling Vs. GPON FTTx Cabling

BORACAY HOTEL DETAILS :

➤ Number of Building/s	=	02 (Building A and Building B)
➤ Number of Floors	=	05 (Building A and Building B)
➤ Number of Rooms per Floor		
❖ Ground Flr. To 5 th Flr.	=	38 rooms x 5 floors 2 buildings
❖ Total No. Of IOO	=	380
❖ Total No. of ONT Units	=	380 units

GPON FTTH ASSUMPTIONS :

➤ No. of riser trunk FOC cable (4 core)	=	10 (5 runs per building x 2 buildings)
➤ No. of hori. drop fiber runs (2 core LFIC)	=	380
➤ No. of SC Adapter/s per I.O.O.	=	02
➤ No. of Indoor Optical Outlets OTO/IOO	=	380
➤ No. of LCP's (1:2)	=	02
➤ No. Of NAP's (1:32)	=	20 (10 NAP's per building)
❖ 2 NAP's per Floor		



GPON – FTTx Cabling Designs and Solution

Traditional LAN Cabling Vs. GPON FTTx Cabling

FTTH PROJECT – SERVICES OFFERED PER FLOOR

BUILDING A

FLOORS	VOICE	DATA	WIFI	IPTV	CATV	AD TV	CCTV
						HALLWAY	HALLWAY
5 TH FLOOR	38	38	38	38	38	01	02
4 TH FLOOR	38	38	38	38	38	01	02
3 RD FLOOR	38	38	38	38	38	01	02
2 ND FLOOR	38	38	38	38	38	01	02
1 ST FLOOR	38	38	38	38	38	01	02
TOTAL :	190	190	190	190	190	05	10





GPON – FTTx Cabling Designs and Solution

Traditional LAN Cabling Vs. GPON FTTx Cabling

FTTH PROJECT – NUMBER OF ONT UNITS PER FLOOR

FLOORS	BLDG. 4 CORE (CABLERUNS)	BLDG. 2 CORE HORI. (DROP CABLE RUNS)	NO. OF LCP	NO. OF NAP	NO. OF IOO	NO. OF ONT
5 TH FLOOR	02	38		02	38	38
4 TH FLOOR	02	38		02	38	38
3 RD FLOOR	02	38		02	38	38
2 ND FLOOR	02	38		02	38	38
1 ST FLOOR	02	38	01	02	38	38
TOTAL :	10	190	01	10	190	190



GPON – FTTx Cabling Designs and Solution

Traditional LAN Cabling Vs. GPON FTTx Cabling

FTTH PROJECT – SERVICES OFFERED PER FLOOR

BUILDING B

FLOORS	VOICE	DATA	WIFI	IPTV	CATV	AD TV	CCTV
						HALLWAY	HALLWAY
5 TH FLOOR	38	38	38	38	38	01	02
4 TH FLOOR	38	38	38	38	38	01	02
3 RD FLOOR	38	38	38	38	38	01	02
2 ND FLOOR	38	38	38	38	38	01	02
1 ST FLOOR	38	38	38	38	38	01	02
TOTAL :	190	190	190	190	190	05	10





GPON – FTTx Cabling Designs and Solution

Traditional LAN Cabling Vs. GPON FTTx Cabling

FTTH PROJECT – NUMBER OF ONT UNITS PER FLOOR

FLOORS	BLDG. 4 CORE (CABLERUNS)	BLDG. 2 CORE HORI. (DROP CABLE RUNS)	NO. OF LCP	NO. OF NAP	NO. OF IOO	NO. OF ONT
5 TH FLOOR	02	38		02	38	38
4 TH FLOOR	02	38		02	38	38
3 RD FLOOR	02	38		02	38	38
2 ND FLOOR	02	38		02	38	38
1 ST FLOOR	02	38	01	02	38	38
TOTAL :	10	190	01	10	190	190

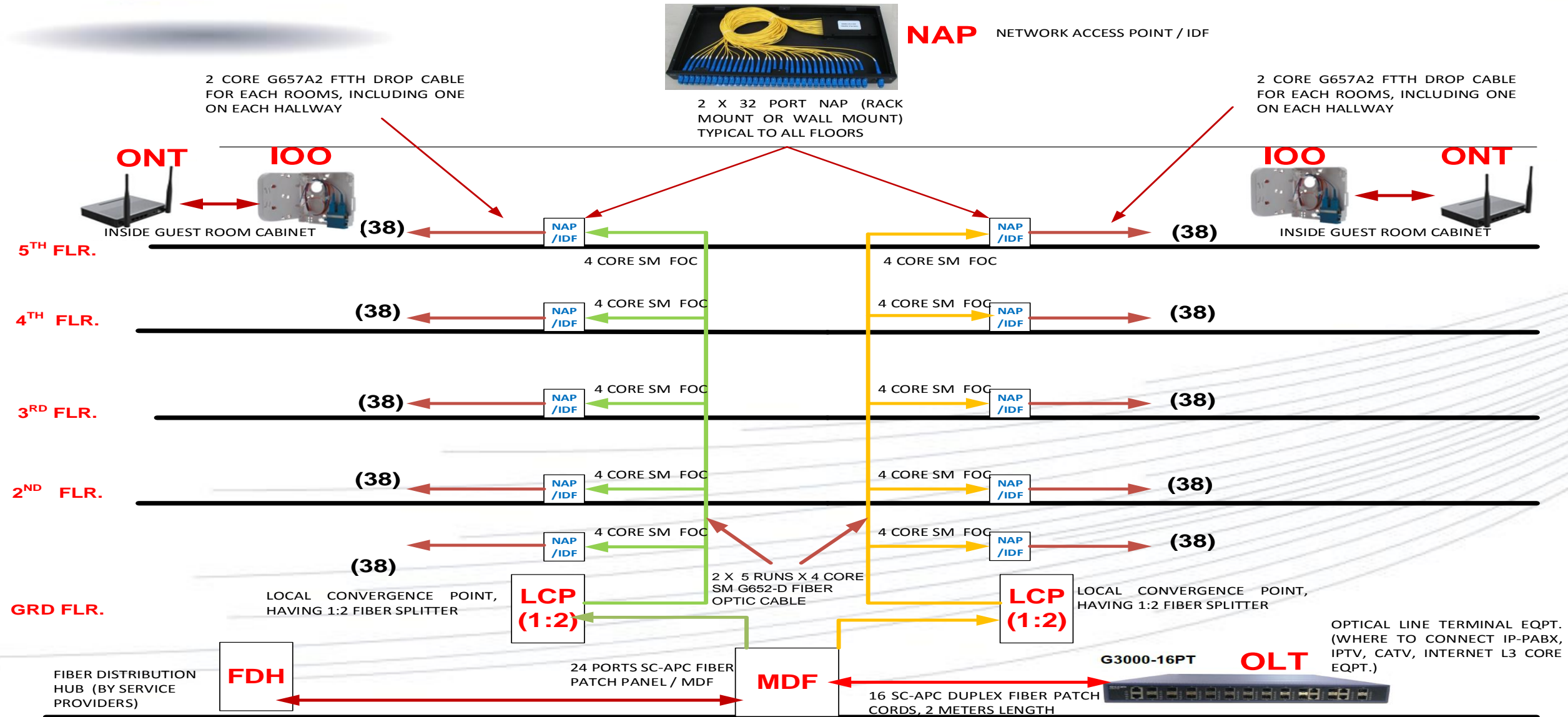


GPON – FTTx Cabling Designs and Solution

Traditional LAN Cabling Vs. GPON FTTx Cabling

HOTEL BUILDING A

HOTEL BUILDING B



SCHEMATIC DIAGRAM - GPON FTTx VERTICAL RISER CABLE SYSTEM

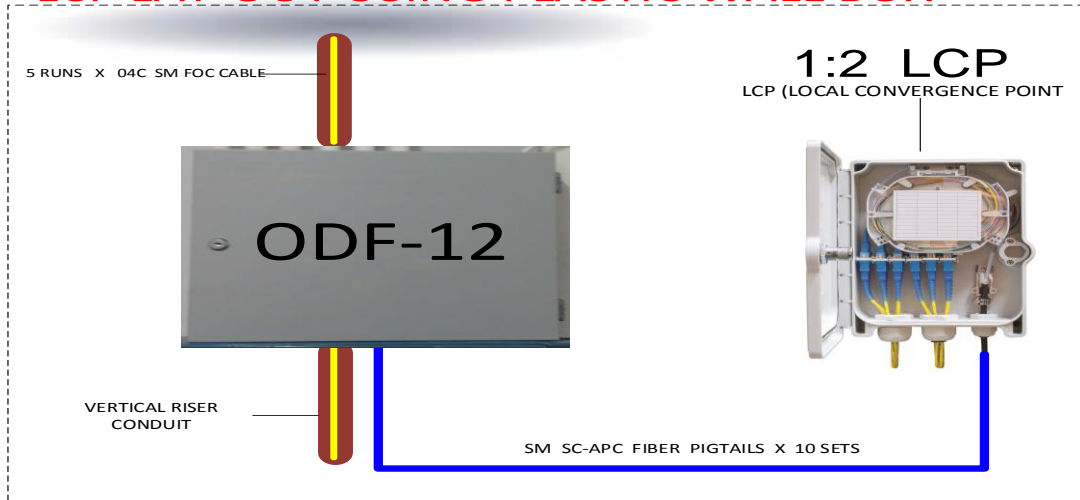




GPON – FTTx Cabling Designs and Solution

Traditional LAN Cabling Vs. GPON FTTx Cabling

LCP LAY-OUT USING PLASTIC WALL BOX

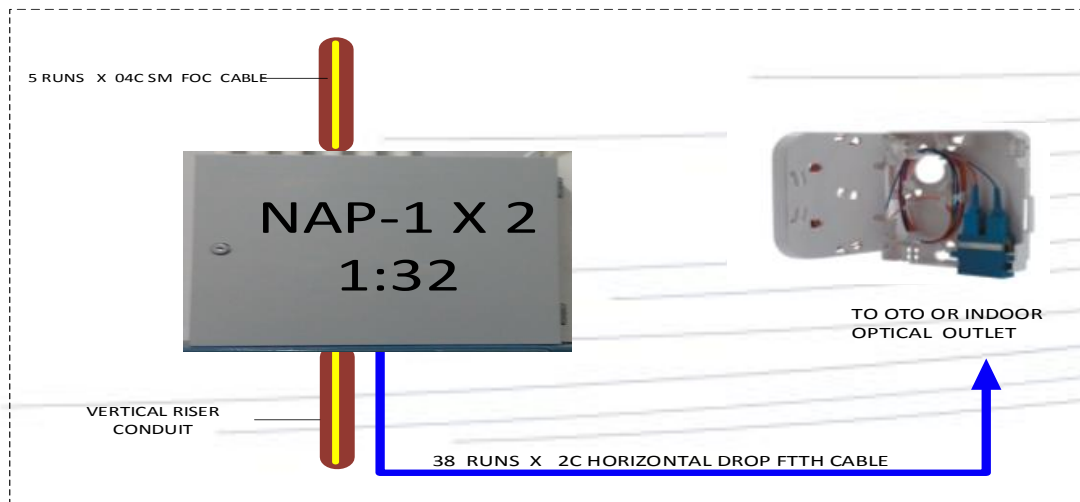


1. Cable entry port diameter is 11 – 15 mm
2. Drop cable output port is 16, having 2 mm width
3. No light should be passed on each output port of both LCP and NAP
4. The cable entry port has removable grommet.
5. The LCP and NAP maintains the use of plastic strain relief and duct plug to hold the drop cables.

NAP/IDF WITH 1:32 FIBER SPLITTERS



NAP LAY-OUT ON BLDG. A AND B



DETAILS OF LCP AND NAP ON EACH BLDG. AND PER FLOOR



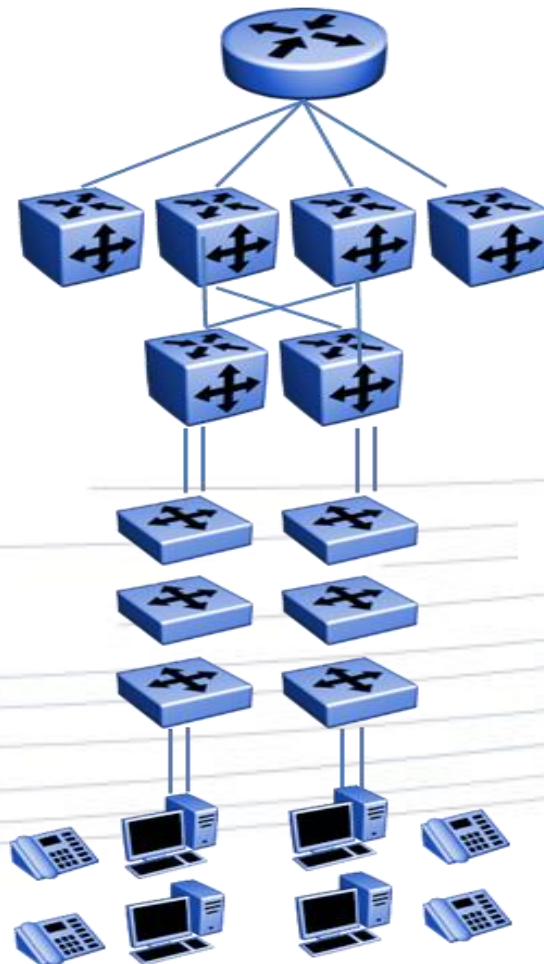


GPON – FTTx Cabling Designs and Solution

Traditional LAN Cabling Vs. GPON FTTx Cabling

Case Study: 20 Storey building, 394 nodes

Present Method of Deployment
Layers of Routers and Switches



Cost: \$1586K

Space: 212RU

Cable Weight: 12705 lbs

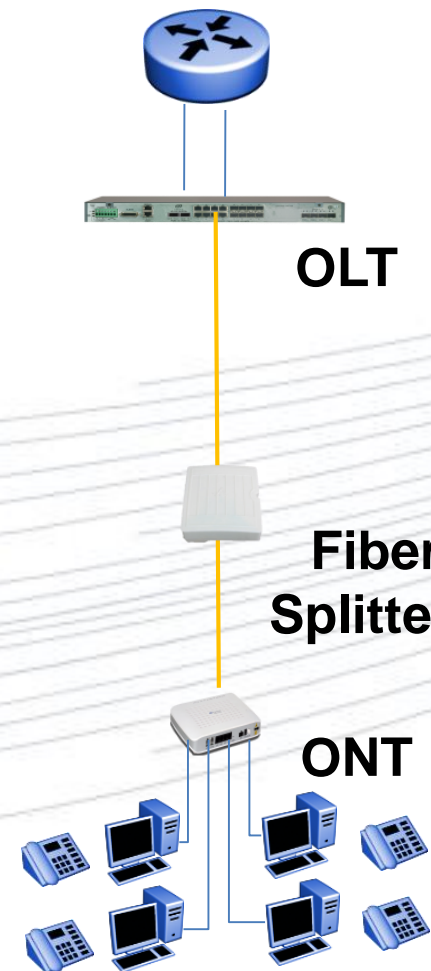
Power: 35485 watts

Campus
Aggregation
Building

Communication
Closet

End
User

GPON FTTx Solution



OLT

Fiber
Splitter

ONT

Cost: \$515K

Space: 32RU

Cable Weight: 931 lbs

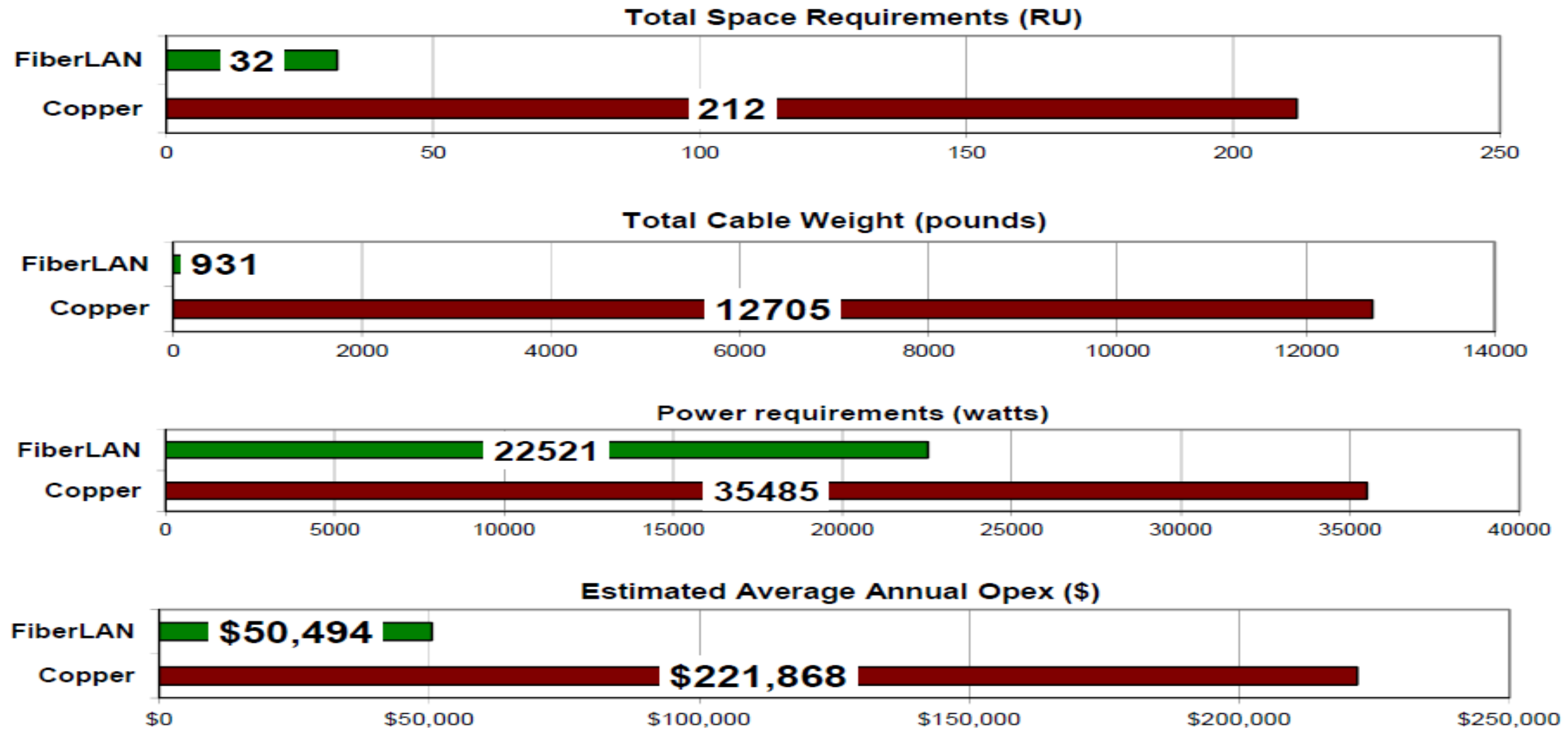
Power: 22521 watts





GPON – FTTx Cabling Designs and Solution

Traditional LAN Cabling Vs. GPON FTTx Cabling





GPON – FTTx Cabling Designs and Solution

Thank You

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