

# MA5800 System Overview

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# Objectives

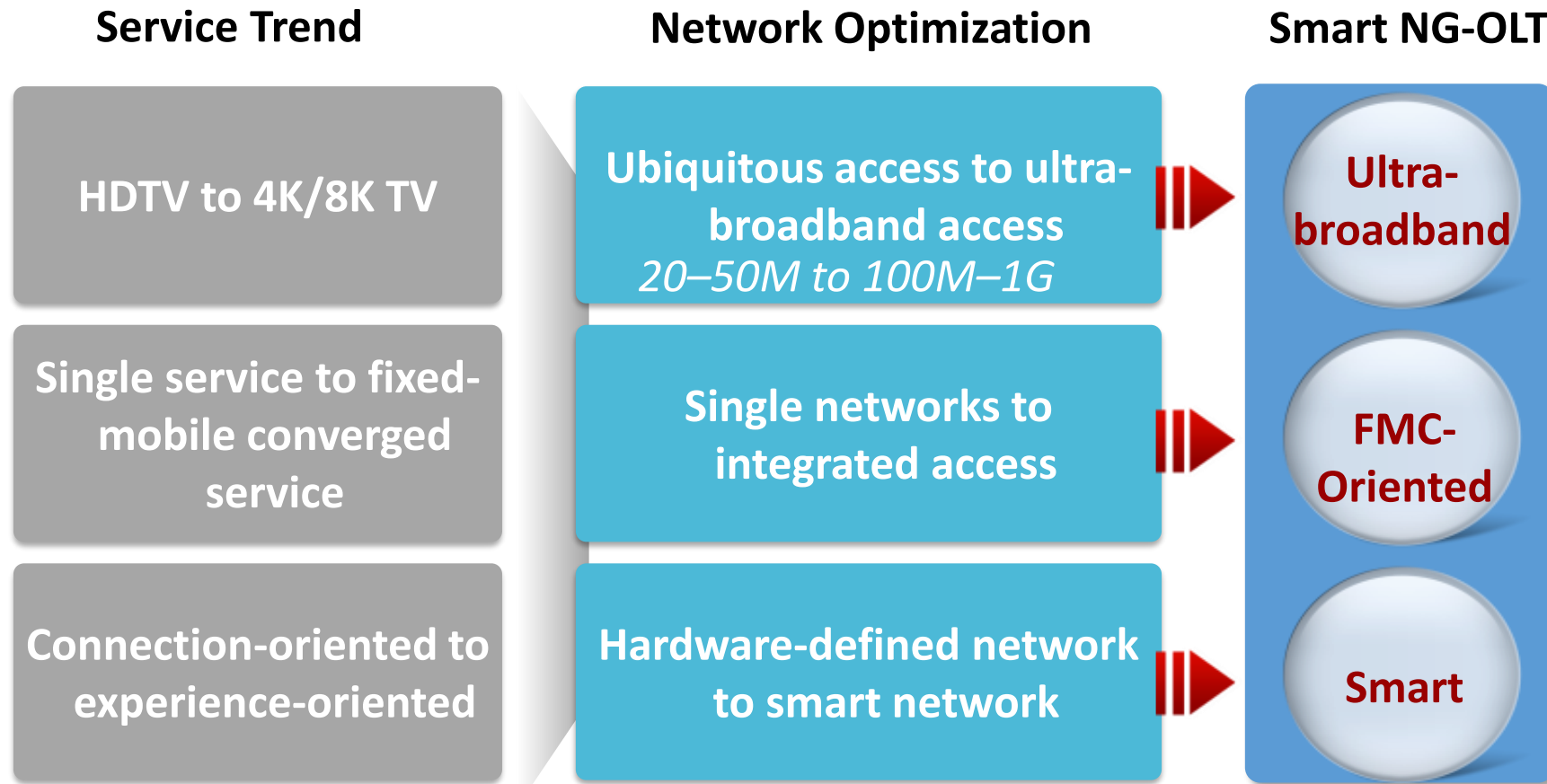
- Upon completion of this course, you will be able to:
  - Describe smart NG-OLT network application solutions
  - Describe MA5800 product highlights
  - Describe MA5800 hardware structure and board functions



# Contents

1. Smart NG-OLT
2. MA5800 Feature Overview
3. MA5800 Hardware Overview

# Smart NG-OLT Helps Building Broader, Faster, Smarter Access



# Building Broader, Faster and Smarter Access with Smart NG-OLT MA5800

## Smart NG-OLT MA5800



### Ultra-broadband



- 32K users with 100Mbps non-blocking to enjoy 4K TV
- Large capacity XG-PON, XGS-PON

### FMC-Oriented

fix mobile coverage oriented



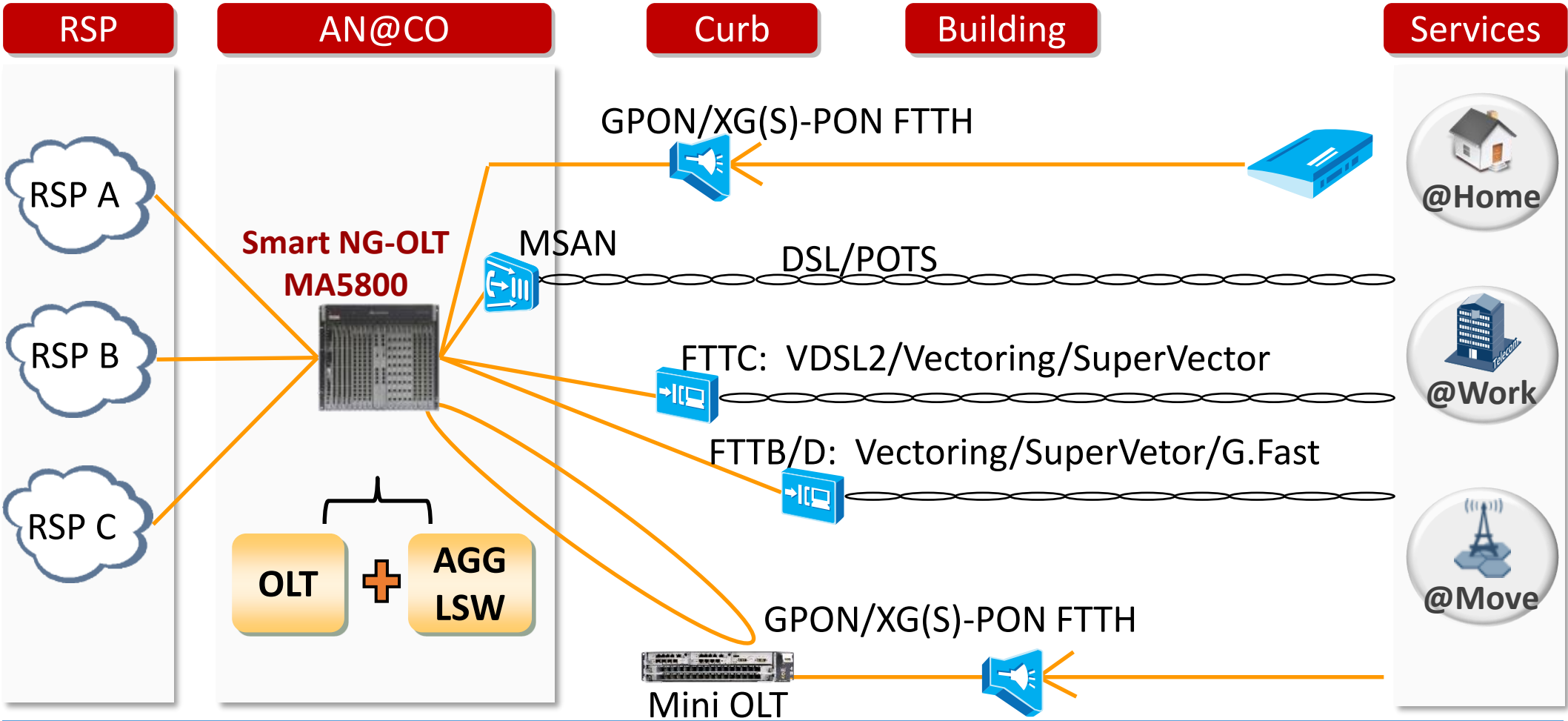
- Full-service PON/P2P access, home, office, mobile haul
- Integrate OLT and aggregation switch into one platform

### Smart Capability



- Programmable and virtualization, deliver new services quickly
- SDN-based smart services, simplify O&M, reduce OPEX

# Networking Scheme of the Smart NG-OLT



The smart NG-OLT integrates the functions of OLT and aggregation switch, Simplifies network



# 1. What is the future trend of business development?

multy service, smart service, smart convergence  
virtualisatie, more bandwidth



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## 1. Smart NG-OLT

## 2. MA5800 Feature Overview

### 2.1 Distributed architecture

### 2.2 Optimum video experience

### 2.3 Smooth evolution to 10G GPON

### 2.4 Slicing Technology

## 3. MA5800 Hardware Overview

ma56 managed centralized service  
means limitation to expand the service

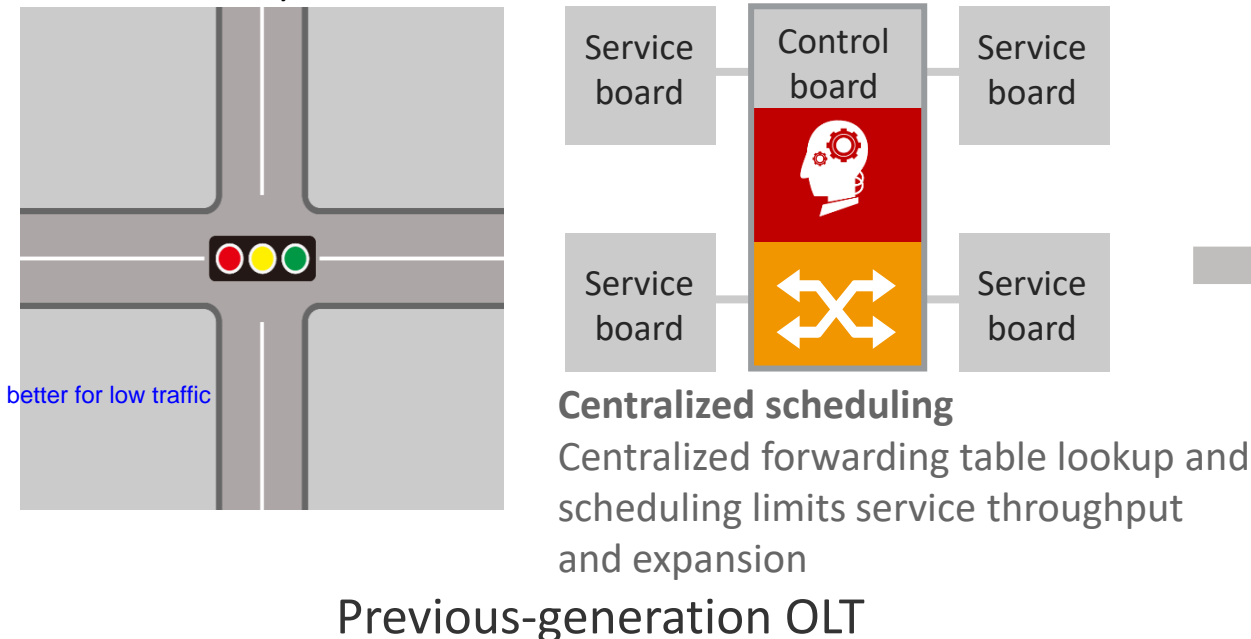
5800 is distributed



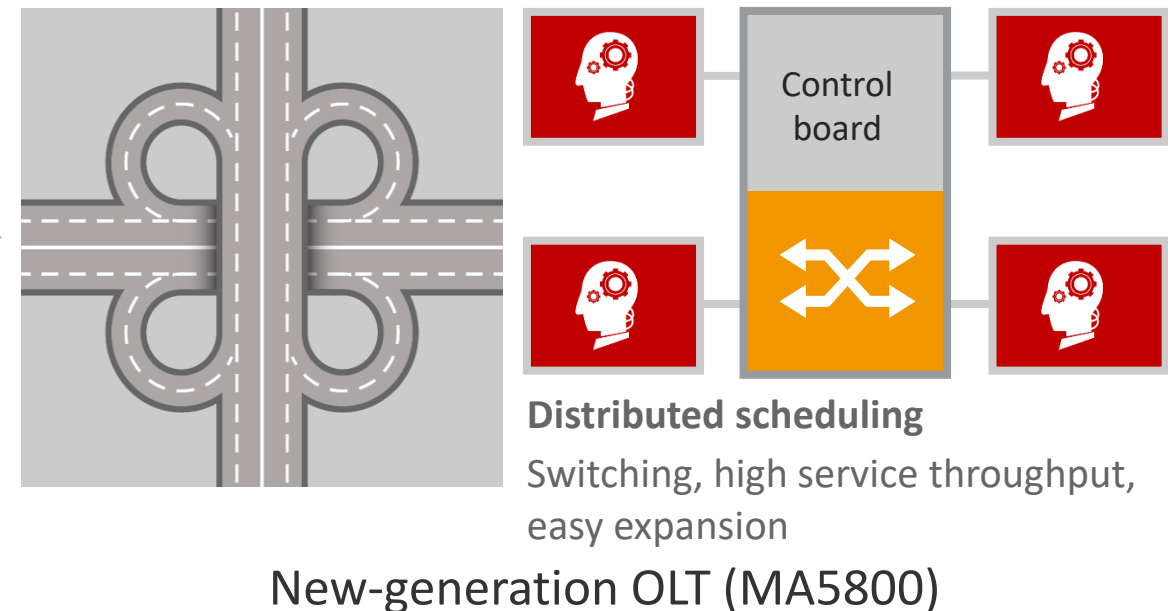
## 2.1 Distributed architecture

The MA5800 uses the distributed architecture (the same as the router). Under such an architecture, service processing on the control board is distributed to every service board, improving system switching capacity, performance, and reliability.

- ◆ **Centralized:** switching and service processing are implemented on the control board (for low traffic scenarios)



- ◆ **Distributed:** switching is implemented on the control board and service processing is implemented on service boards (for heavy traffic scenarios)





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## 1. Smart NG-OLT

## 2. MA5800 Feature Overview

### 2.1 Distributed architecture

### 2.2 Optimum video experience

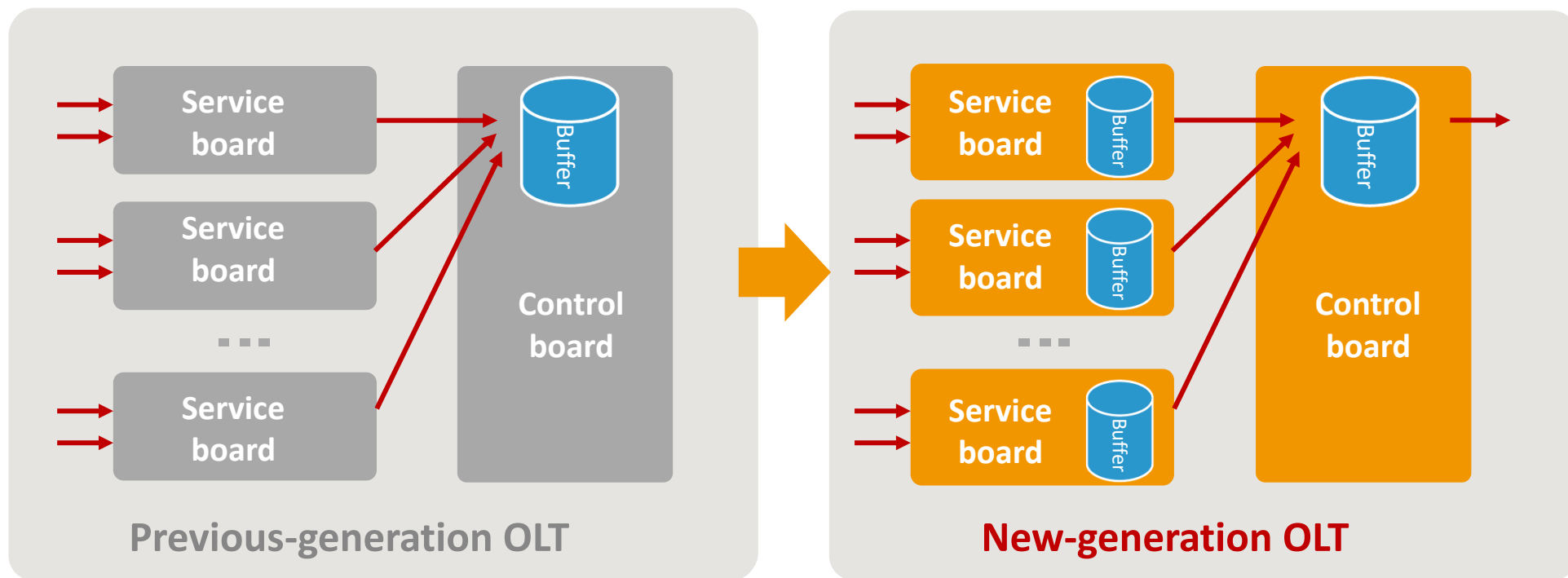
### 2.3 Smooth evolution to 10G GPON

### 2.4 Slicing Technology

## 3. MA5800 Hardware Overview

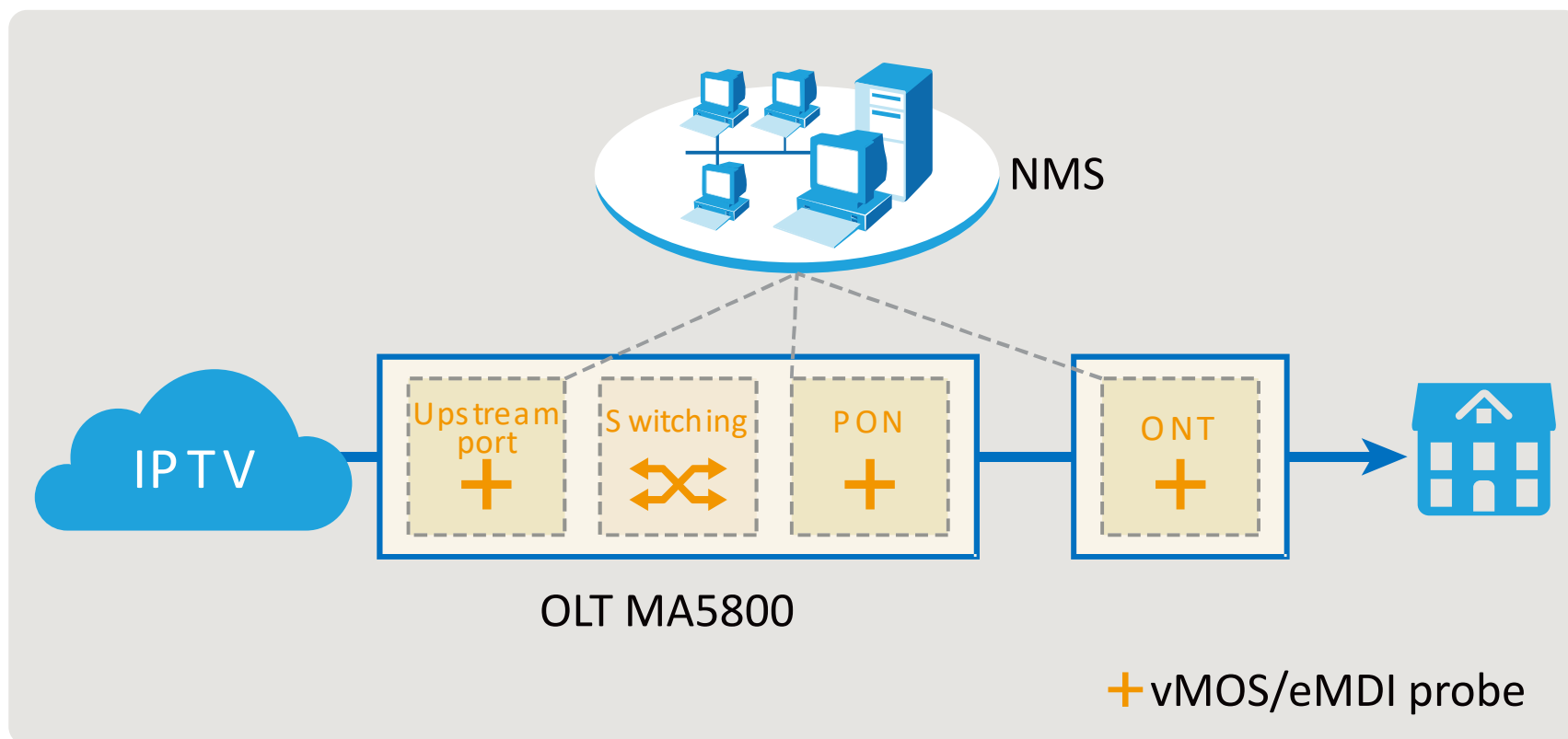
## 2.2 Optimum video experience (1)

The MA5800 supports cache in the distributed architecture for fast 4K/8K video start or channel zapping.



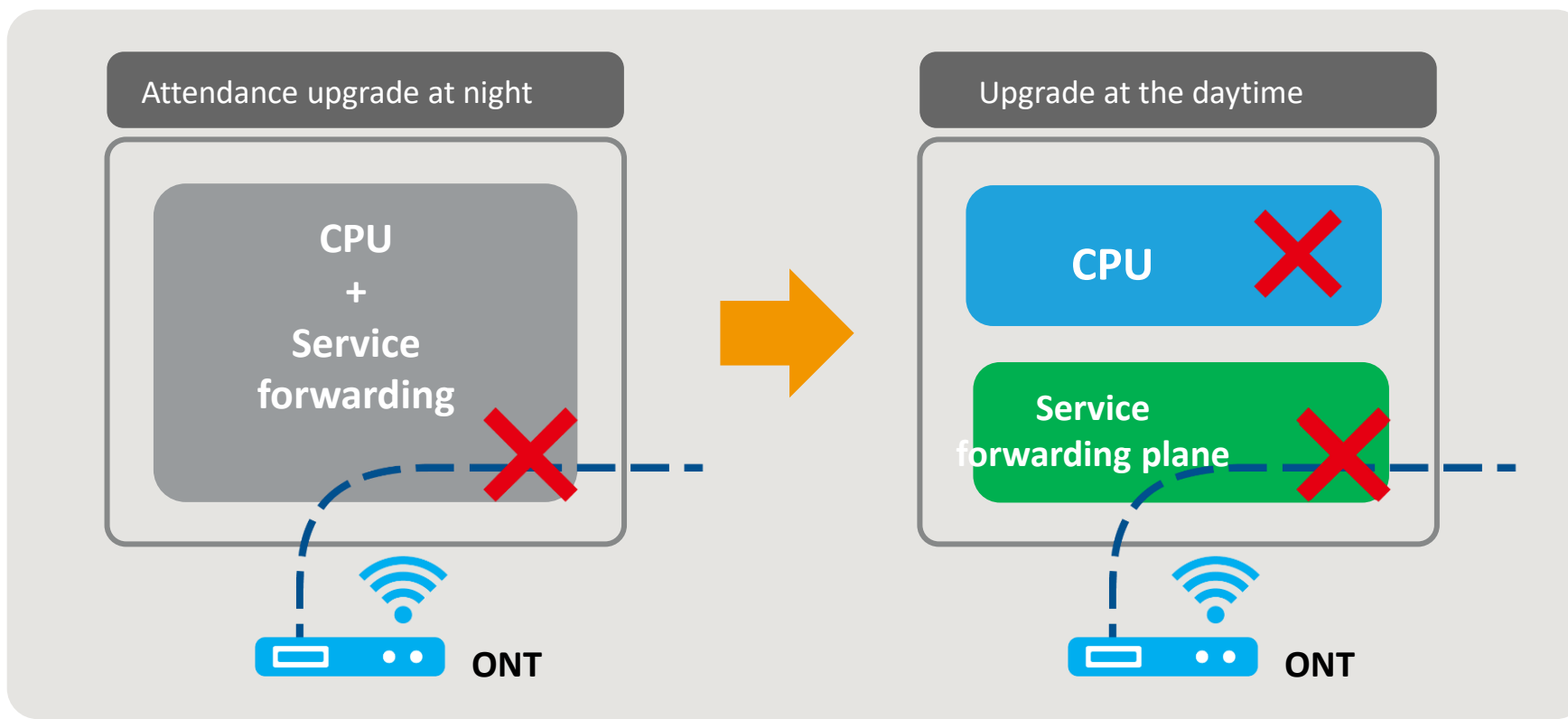
## 2.2 Optimum video experience (2)

The MA5800 Supports vMOS/eMDI video quality monitoring. Built-in probes on boards are used to collect video indicators and the NMS is used for remote monitoring and monitoring result query, improving video O&M experience.



## 2.2 Optimum video experience (3)

For the MA5800, video services are not interrupted during OLT upgrade, enhancing the user experience.





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## 1. Smart NG-OLT

## 2. MA5800 Feature Overview

2.1 Distributed architecture

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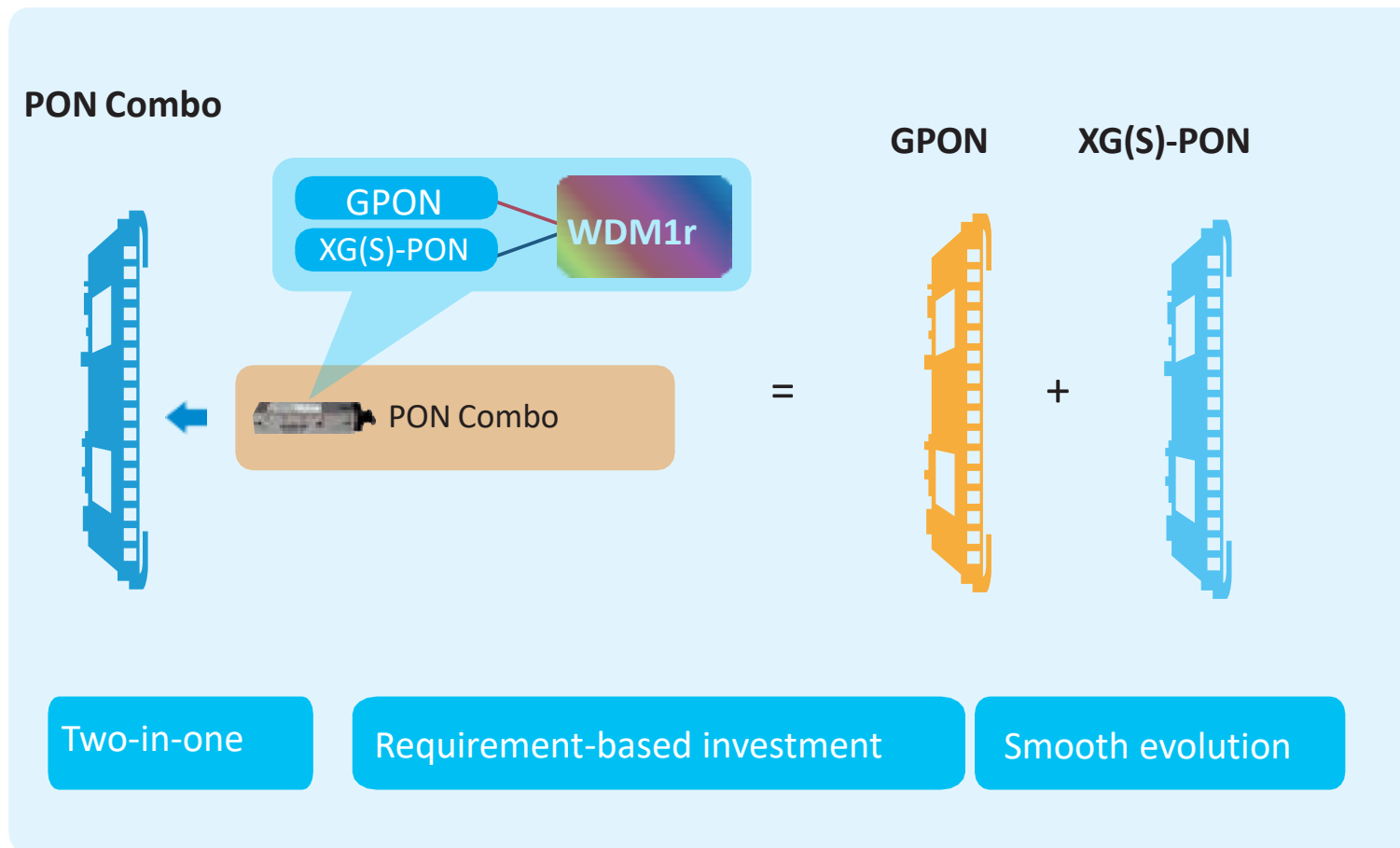
2.3 Smooth evolution to 10G GPON without any interruption

2.4 Slicing Technology

## 3. MA5800 Hardware Overview

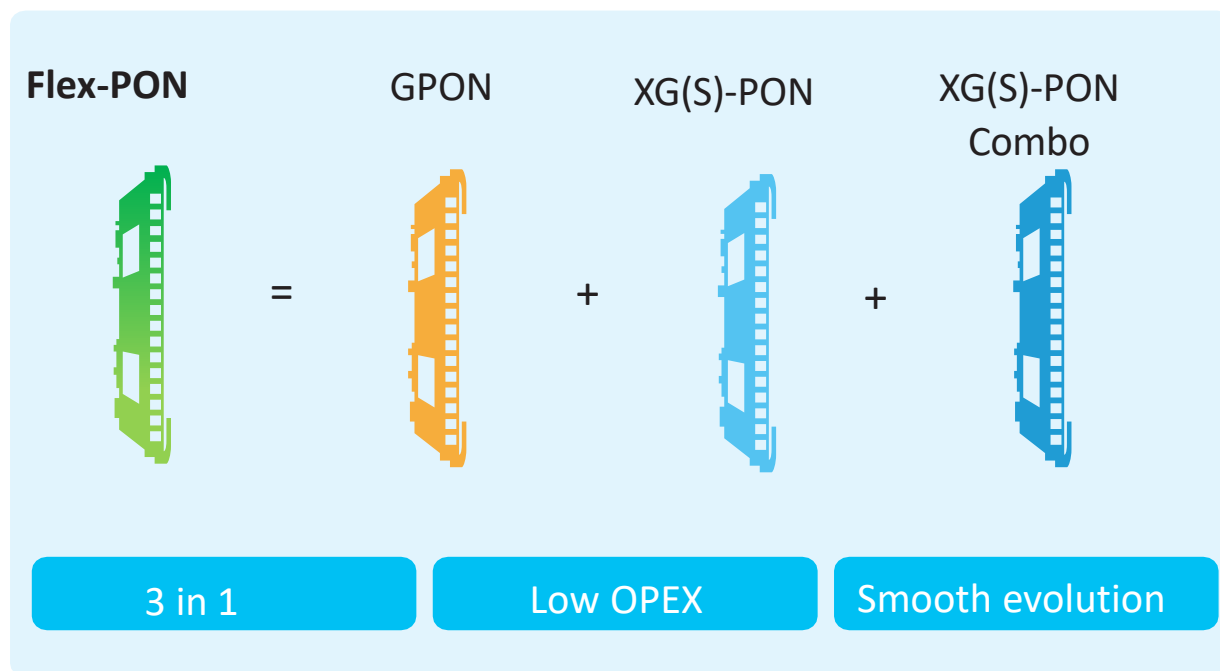
## 2.3 Smooth evolution to 10G GPON (1)

The MA5800 supports the **PON combo technology**, and can work with the built-in WDM1r optical module to support smooth evolution from GPON to XG(S)-PON.



## 2.3 Smooth evolution to 10G GPON (2)

A **Flex-PON** board supports GPON, XG-PON, XGS-PON, XG-PON&GPON combo, XGS-PON&GPON combo and TWDM PON with the corresponding optical module, and reduces OPEX by smooth evolution without board replacement.







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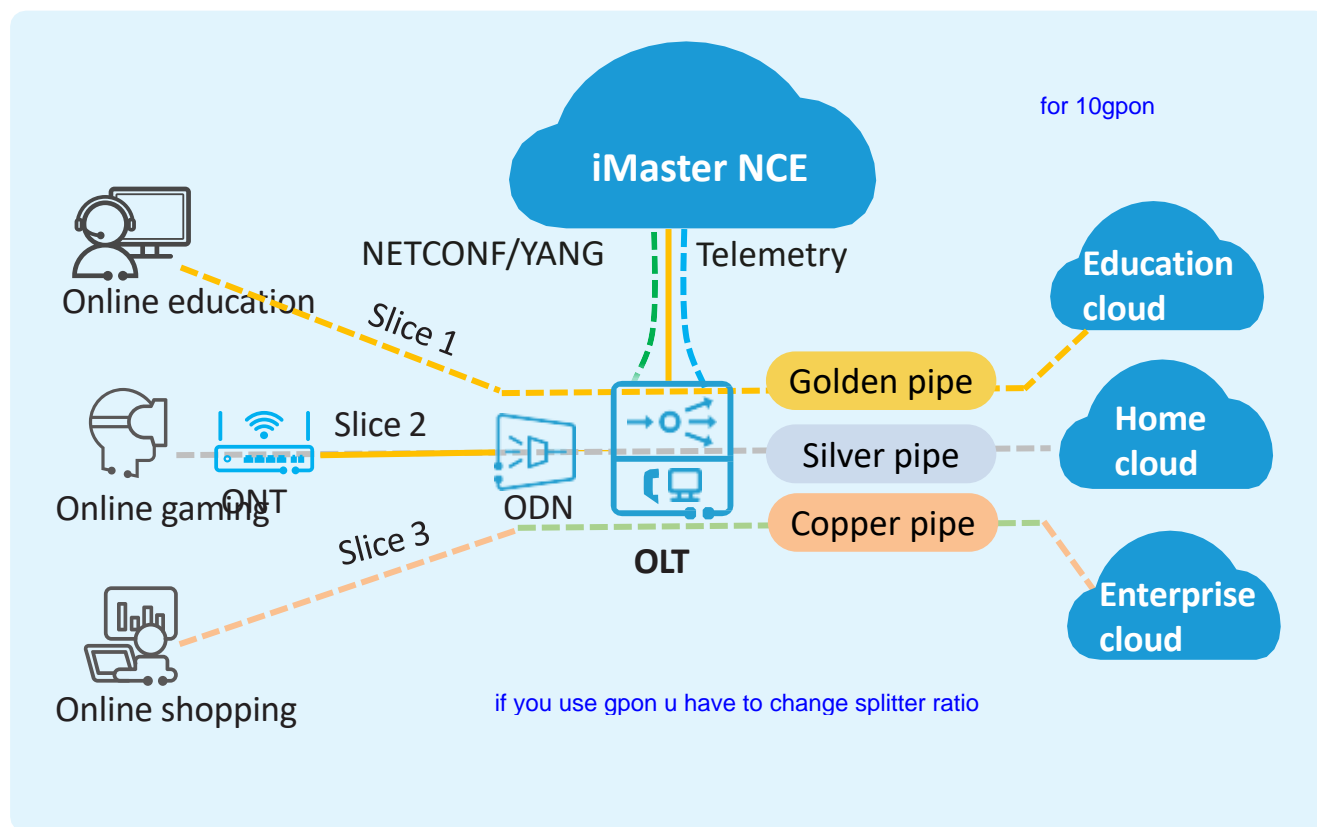
2.3 Smooth evolution to 10G GPON

2.4 Slicing Technology

## 3. MA5800 Hardware Overview

## 2.4 Slicing Technology

The E2E slicing technology provides differentiated bearing for services with different SLA requirements, achieving application-level bandwidth and latency commitment.



### Golden pipe

- High-priority scheduling
- Exclusive bandwidth
- Latency < 10 ms
- Upstream OTN+

### Silver pipe

- Medium-priority scheduling
- Bandwidth optimization
- Latency < 20 ms
- Upstream VxLAN

### Copper pipe

- Low-priority scheduling
- Bandwidth overselling allowed
- Latency not guaranteed
- Upstream SVLAN



# 1. How does MA5800 implement PON combo technology?





support gpon and 10gpon on one board



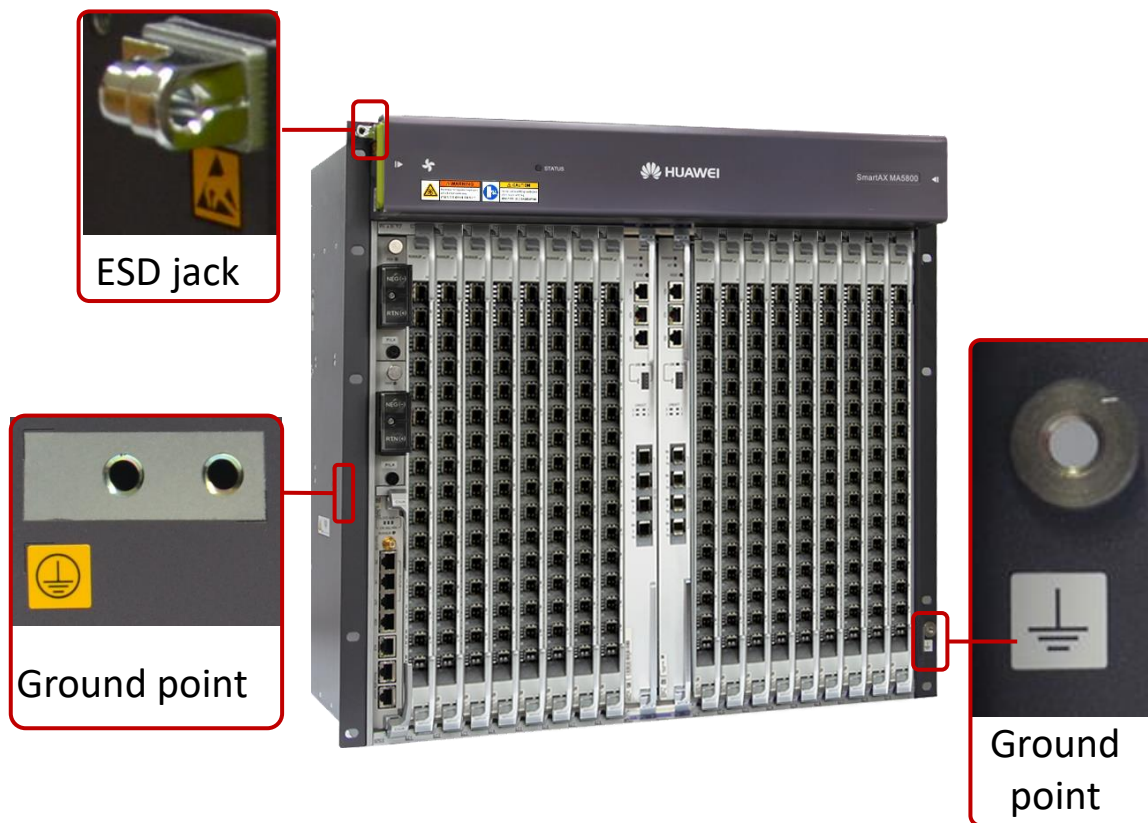
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3. MA5800 Hardware Overview

# MA5800 Serial Product

Specifications	MA5800-X17	MA5800-X15	MA5800-X7	MA5800-X2
Appearance	 11 U, 21 inches	 11 U, 19 inches	 6 U, 19 inches	 2 U, 19 inches
Number of service board slots	17	15	7	2
Switching capacity of the control board (load sharing mode)	<ul style="list-style-type: none"> <li>MPLA: 3.6 Tbit/s</li> <li>MPLB: 7 Tbit/s</li> <li>MPLG: 7.3 Tbit/s</li> </ul>			480 Gbit/s
Maximum bandwidth per service slot (load sharing mode)	<ul style="list-style-type: none"> <li>MPLA: 100 Gbit/s</li> <li>MPLB/MPLG: 200 Gbit/s</li> </ul>			80 Gbit/s
Maximum number of concurrent 4K video users	16000		8000	2000
Power supply mode	DC power support (dual for backup)			DC power support (dual for backup) AC power supply + battery for backup

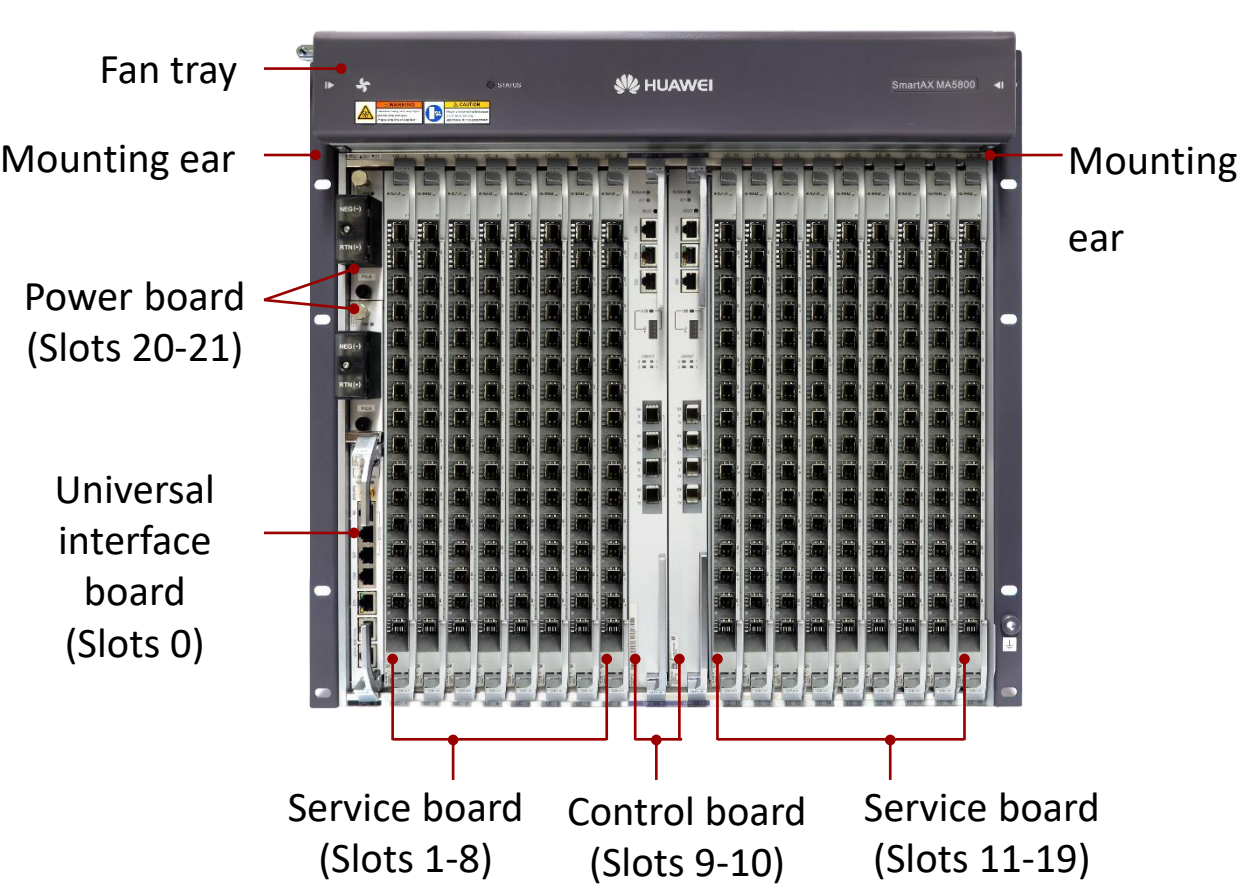
# MA5800-X17 Service Subrack



- large-capacity, ETSI
- A fan tray on top
- 22 slots in total
- Excluding mounting brackets:  
493 mm x 287 mm x 486 mm (W x D x H)
- Including mounting brackets:  
535 mm x 287 mm x 486 mm (W x D x H)

# MA5800-X17 Service Subrack

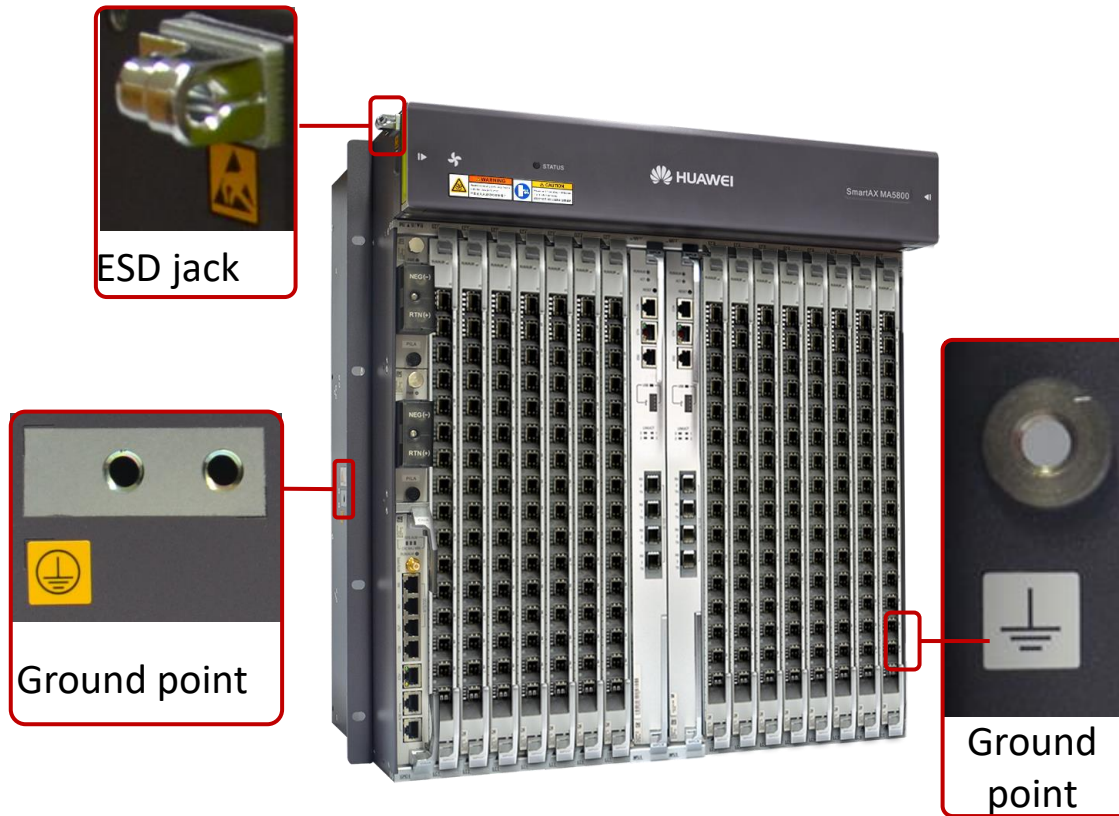
An MA5800-X17 service subrack provides 22 slots, including 2 slots for control boards, 2 slots for power boards, 1 slot for the universal interface board, and 17 slots for service boards.



Fan tray																			
20	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Power board									Control board	Control board	Service board	Service board	Service board	Service board	Service board	Service board	Service board	Service board	Service board
21																			
Power board	Service board	Service board	Service board	Service board	Service board	Service board	Service board	Service board											
Universal interface board																			



# MA5800-X17 Service Subrack<sup>x15</sup>

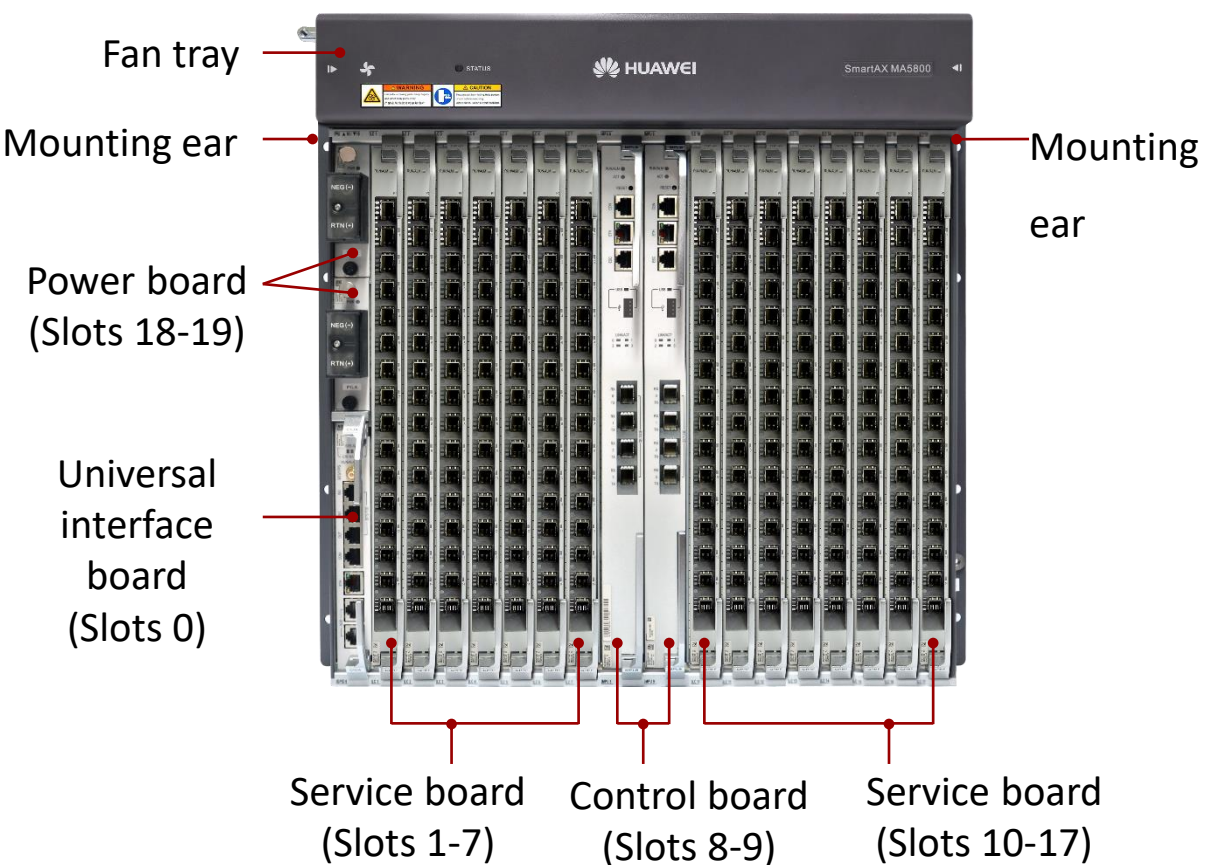


- large-capacity, IEC
- A fan tray on top
- **20 slots** in total
- Excluding mounting brackets:  
442 mm x 287 mm x 486 mm (W x D x H)
- Including mounting brackets:  
482.6 mm x 287 mm x 486 mm (W x D x H)



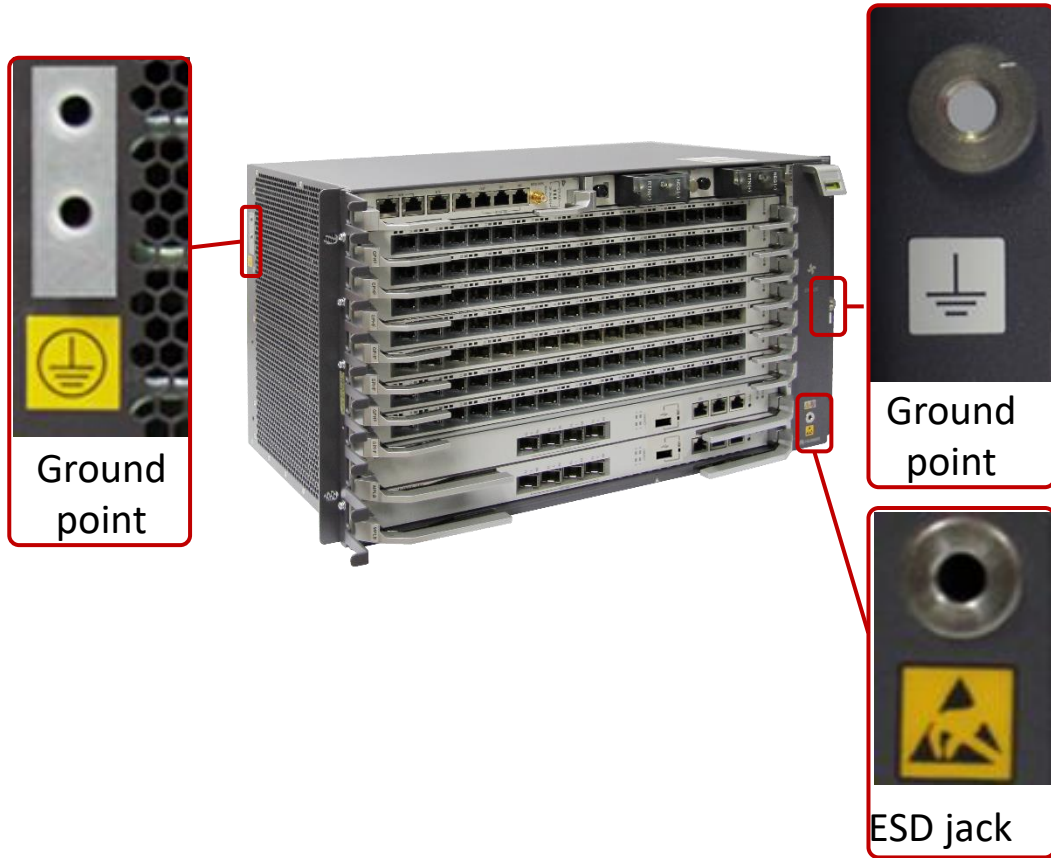
# MA5800-X15 Service Subrack

An MA5800-X15 service subrack provides 20 slots, including 2 slots for control boards, 2 slots for power boards, 1 slot for the universal interface board, and 15 slots for service boards.



Fan tray																	
18	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Power board																	
19																	
Power board	Service board	Service board	Service board	Service board	Service board	Service board	Service board	Control board	Control board	Service board	Service board	Service board	Service board	Service board	Service board	Service board	Service board
0																	
Universal interface board																	

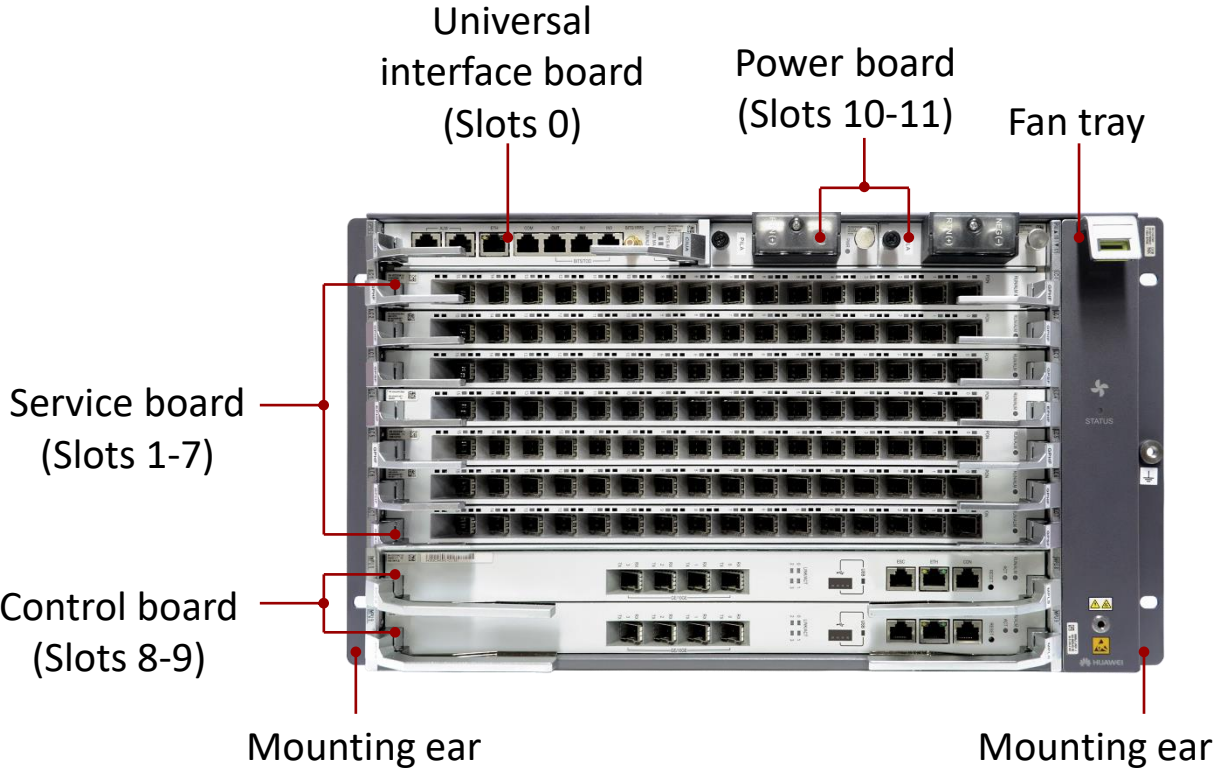
# MA5800-X7 Service Subrack



- Medium-capacity
- A fan tray on right
- **12 slots** in total
- Excluding mounting brackets:  
442 mm x 268.7 mm x 263.9 mm (W x D x H)
- Including IEC mounting brackets:  
482.6 mm x 268.7 mm x 263.9 mm (W x D x H)
- Including ETSI mounting brackets:  
535 mm x 268.7 mm x 263.9 mm (W x D x H)

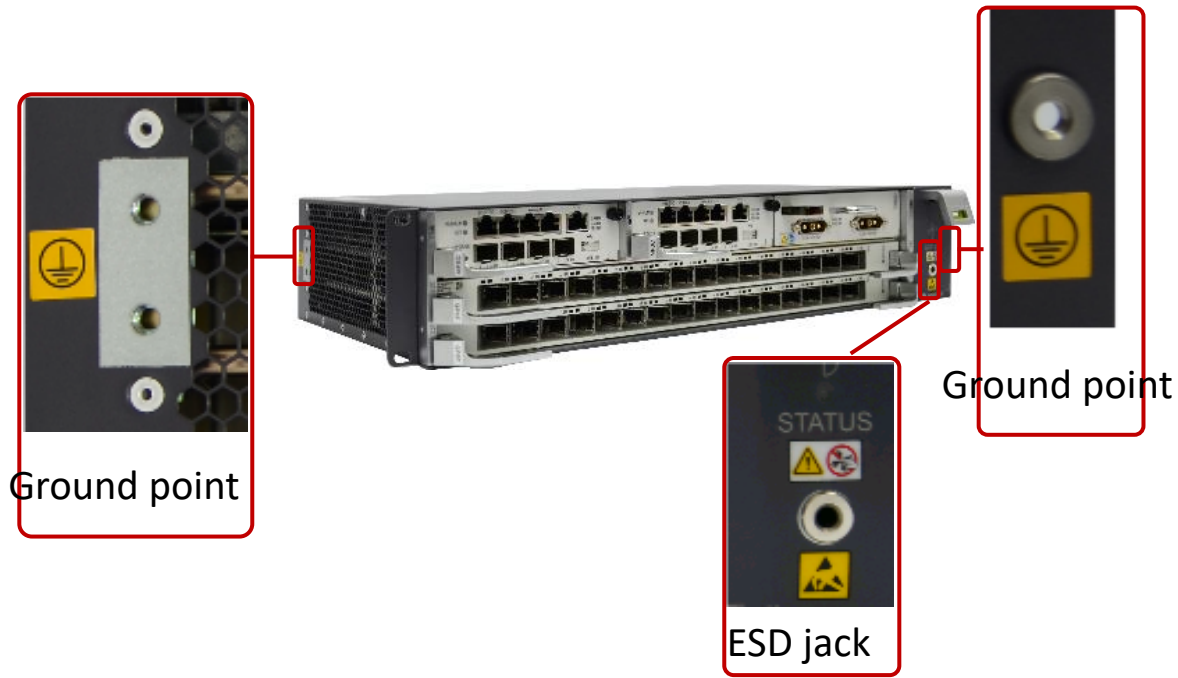
# MA5800-X7 Service Subrack

An MA5800-X7 service subrack provides 12 slots, including 2 slots for control boards, 2 slots for power boards, 1 slot for the universal interface board, and 7 slots for service boards.



0	Universal interface board	11	Power board	10	Power board	Fan tray
1	Service board					
2	Service board					
3	Service board					
4	Service board					
5	Service board					
6	Service board					
7	Service board					
8	Control board					
9	Control board					

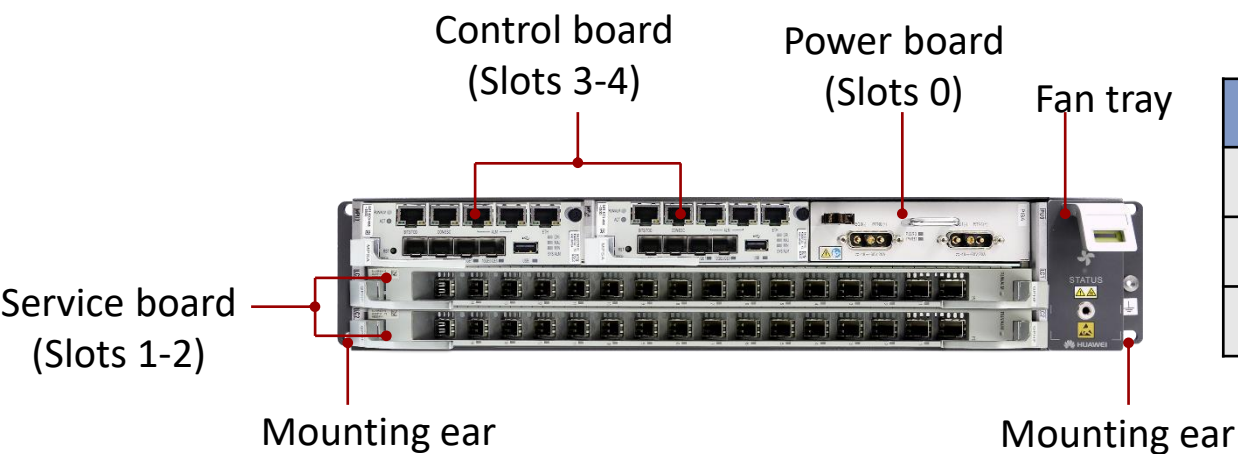
# MA5800-X2 Service Subrack



- Small-capacity
- A fan tray on right
- **5 slots** in total
- Excluding mounting brackets:  
442 mm x 268.7 mm x 88.1 mm (W x D x H)
- Including IEC mounting brackets:  
482.6 mm x 268.7 mm x 88.1 mm (W x D x H)
- Including ETSI mounting brackets:  
535 mm x 268.7 mm x 88.1 mm (W x D x H)

# MA5800-X2 Service Subrack

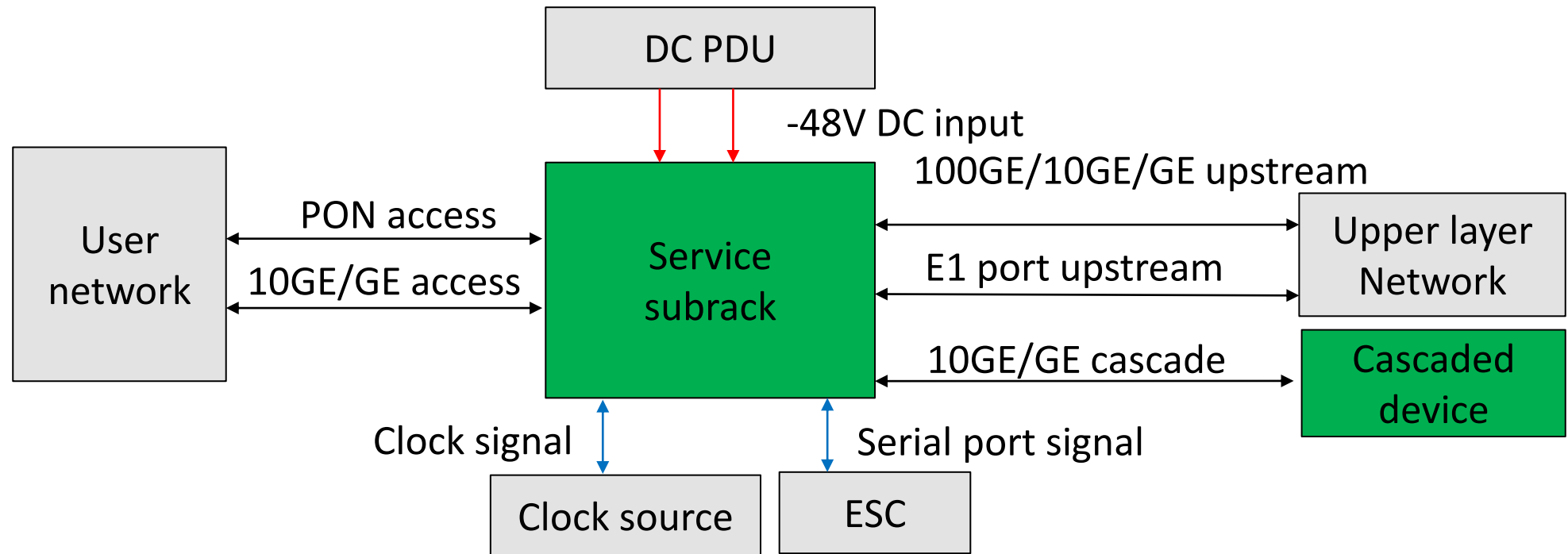
An MA5800-X2 service subrack provides 5 slots, including 2 slots for control boards, 1 slots for power boards, and 2 slots for service boards.



3	Control board	4	Control board	Power board	0	Fan tray
1	Service board					
2	Service board					
3	Service board					

# External connections of the Service Subrack

The MA5800 service subrack can be configured with different service boards to support different functions.



# MA5800 Board List

Board Type	Board Name	Description	Compatibility with the Service Subrack
Control board	MPLA, MPLB, MPLB-G01, MPLB-G02	Control board	MA5800-X17/X15/X7
	MPSA-G <small>special board</small>	Control board	MA5800-X2
Daughter board of Control board	CKUA, CKUB, CKUF	Daughter board of Control board	MA5800-X17/X15/X7
Upstream interface board	NXED	8-port upstream interface board	MA5800-X17/X15/X7/X2
	NCEB	2-port upstream interface board	MA5800-X17/X15/X7
Universal interface board	CIUA	Universal interface board	MA5800-X17/X15/X7
Power interface board	PILA	DC power interface board	MA5800-X17/X15/X7/X2
	PISA	DC power interface board	MA5800-X2
	PISB	AC power interface board	MA5800-X2



# MA5800 Board List

Board Type	Board Name	Description	Compatibility with the Service Subrack
GPON interface board	GPHF, GPSF	16-port GPON interface board	MA5800-X17/X15/X7/X2
XGS-PON interface board	XSHF	16-port XGS-PON interface board	MA5800-X17/X15/X7/X2
PON combo interface board	CGHF	16-port XG-PON and GPON combo interface board	MA5800-X17/X15/X7/X2
	CSHF	16-port XGS-PON and GPON combo interface board	MA5800-X17/X15/X7/X2
Flex-PON interface board	FLHF	16-port Flex-PON interface board	MA5800-X17/X15/X7/X2
ETH optical interface board	OGHK	48-port GE/FE optical interface board	MA5800-X17/X15/X7/X2
	OXHD	8-port 10GE/GE optical interface board	MA5800-X17/X15/X7/X2
	OXEG	24-port 10GE/GE optical interface board	MA5800-X17/X15/X7
OAI board	OTSF, OTHF	Optical artificial intelligence board	MA5800-X17/X15/X7/X2



# MPLA&MPLB Control Board\_Specifications



MPLA

MPLB/MPLB-G01/MPLB-G02

Feature	Specifications
Bandwidth per slot	MPLA: 100 Gbit/s (load sharing mode) MPLB/MPLB-G01/MPLB-G02: 200 Gbit/s (load sharing mode)
MAC address table	262143
Access ONT	17408
Multicast user	17408
IPv4 routing table	65536
IPv6 routing table	16384
Service port	139264
ARP table	131072
Maximum Frame Size	2052 bytes 9216 bytes (jumbo frame enabled)
Power consumption	MPLA: 89 W MPLB: 117 W MPLB-G01/MPLB-G02: 125 W

# MPLG Control Board\_Specifications



MPLG

Feature	Specifications
Bandwidth per slot	200 Gbit/s (load sharing mode)
MAC address table	262143
Access ONT	17408
Multicast user	17408
IPv4 routing table	65536
IPv6 routing table	16384
Service port	139264
ARP table	131072
Maximum Frame Size	2052 bytes 9216 bytes (jumbo frame enabled)
Power consumption	148 W

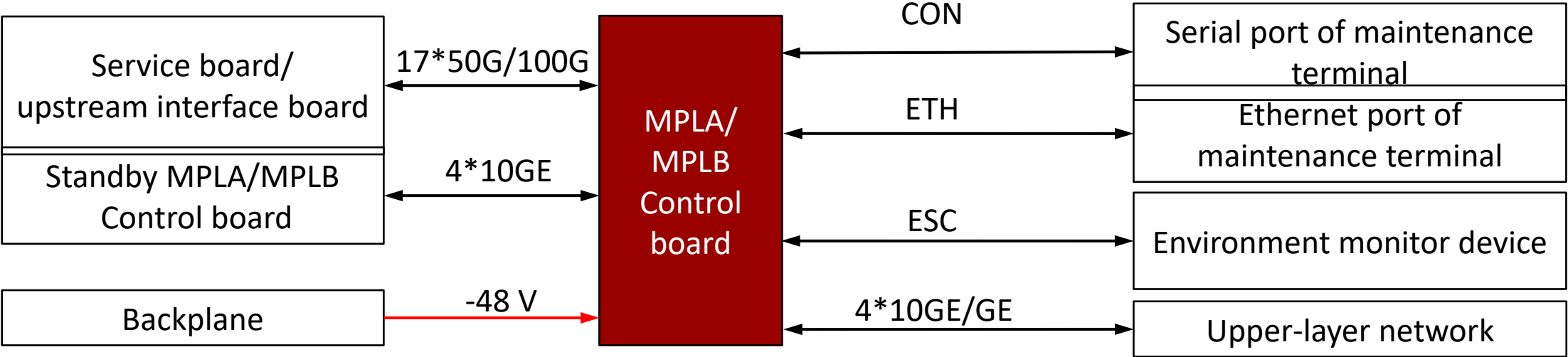
# MPLA&MPLB Control Board\_Port

Port	Function	Connection
CON (RS-232 serial port)	Supports local and remote maintenance	Use the <u>local maintenance serial port cable</u> to connect to the serial port of the maintenance terminal.
ETH (10/100/1000M Base-T maintenance Ethernet port)	Supports local and remote maintenance	Use the <u>network cable</u> to connect to the Ethernet port of the maintenance terminal.
ESC (RS-485 monitoring serial port)	Provides the environment monitoring channel	Use the <u>environment monitoring cable</u> to connect to the serial port of the monitored device.
GE/10GE optical ports	Upstream transmission or cascading port	Use the <u>optical fiber</u> to connect to the upper-layer device or the cascaded device.
USB	Reserved	-

# MPLG Control Board\_Port

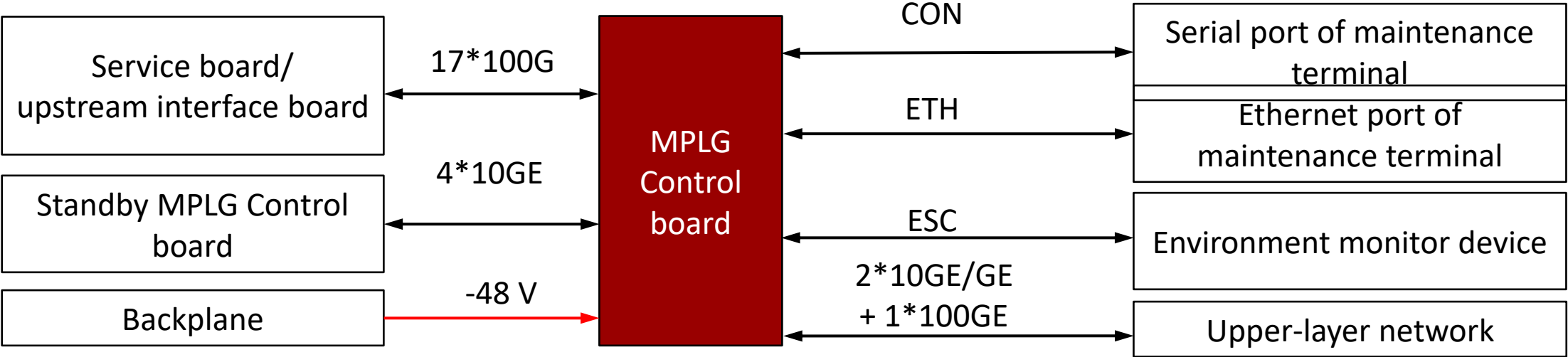
Port	Function	Connection
CON (RS-232 serial port)	Supports local and remote maintenance	Use the <u>local maintenance serial port cable</u> to connect to the serial port of the maintenance terminal.
ETH (10/100/1000M Base-T maintenance Ethernet port)	Supports local and remote maintenance	Use the <u>network cable</u> to connect to the Ethernet port of the maintenance terminal.
ESC (RS-485 monitoring serial port)	Provides the environment monitoring channel	Use the <u>environment monitoring cable</u> to connect to the serial port of the monitored device.
GE/10GE optical ports	Upstream transmission or cascading port	Use the <u>optical fiber</u> to connect to the upper-layer device or the cascaded device.
100GE optical ports	Upstream transmission or cascading port	Use the <u>optical fiber</u> to connect to the upper-layer device or the cascaded device.
USB	Reserved	-

# MPLA&MPLB Control Board\_External Connections














Daughter Board	Corresponding Control Board	Function
CKUA	MPLA/MPLB	<ul style="list-style-type: none"><li>Implements clock processing and provides the stratum-3 clock for the system.</li><li>Implements the 1588v2 clock processing function.</li><li>Implements the 1588ACR clock processing function.</li></ul>
CKUB	MPLA/MPLB	<ul style="list-style-type: none"><li>Implements clock processing and provides the stratum-3 clock for the system.</li><li>Implements the 1588v2 clock processing function.</li></ul>
CKUF	MPLB-G01/MPLB-G02	<ul style="list-style-type: none"><li>Implements clock processing and provides the stratum-3 clock for the system.</li><li>Implements the 1588v2 clock processing function.</li></ul>

# MPLG Control Board\_External Connections














Daughter Board	Corresponding Control Board	Function
CKUF	MPLG	<ul style="list-style-type: none"><li>Implements clock processing and provides the stratum-3 clock for the system.</li><li>Implements the 1588v2 clock processing function.</li></ul>

# MPLA&MPLB Control Board\_Indicator

Indicator	Name	Color	Status	Meaning
RUN/ALM	Running status indicator	Green 	Blinks slowly (on for 1 s and off for 1 s repeatedly)	The board functions properly
		Green 	Blinks quickly (on for 0.25 s and off for 0.25 s repeatedly)	Indicates that program loading is in progress
		Orange 	Blinks	A high-temperature alarm is generated
		Red 	On	The board is faulty
		Red 	Blinks (on for 0.25 s and off for 0.25 s repeatedly)	The board is starting up
ACT	Load sharing status indicator	Green 	On	The board is active
		Green 	Blinks (on for 1 s and off for 1 s repeatedly)	The board is standby
		Red 	On	If load sharing is abnormal, the board is in active state
		Red 	Blinks (on for 1 s and off for 1 s repeatedly)	If load sharing is abnormal, the board is in standby state
LINK/ACT 0-3	Link/data status indicator	Green 	On	A connection is set up on the port
		Green 	Blinks	Data is being transmitted
		-	off	No connection is set up on the port

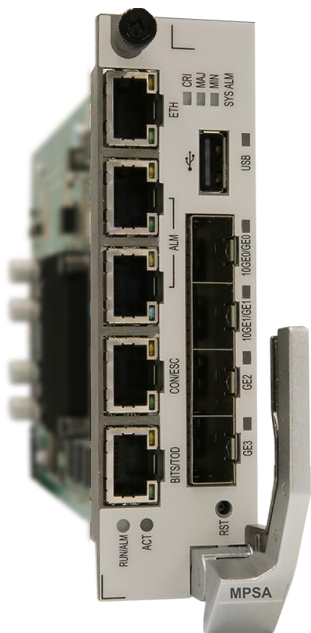
# MPLG Control Board\_Indicator

Indicator	Name	Color	Status	Meaning
RUN/ALM	Running status indicator	Green 	Blinks slowly (on for 1 s and off for 1 s repeatedly)	The board functions properly
		Green 	Blinks quickly (on for 0.25 s and off for 0.25 s repeatedly)	Indicates that program loading is in progress
		Orange 	Blinks	A high-temperature alarm is generated
		Red 	On	The board is faulty
		Red 	Blinks (on for 0.25 s and off for 0.25 s repeatedly)	The board is starting up
ACT	Load sharing status indicator	Green 	On	The board is active
		Green 	Blinks (on for 1 s and off for 1 s repeatedly)	The board is standby
		Red 	On	If load sharing is abnormal, the board is in active state
		Red 	Blinks (on for 1 s and off for 1 s repeatedly)	If load sharing is abnormal, the board is in standby state
LINK/ACT 0-2	Link/data status indicator	Green 	On	A connection is set up on the port
		Green 	Blinks	Data is being transmitted
		-	off	No connection is set up on the port



# MPSx Control Board\_Specifications

x2 model



MPSA-G



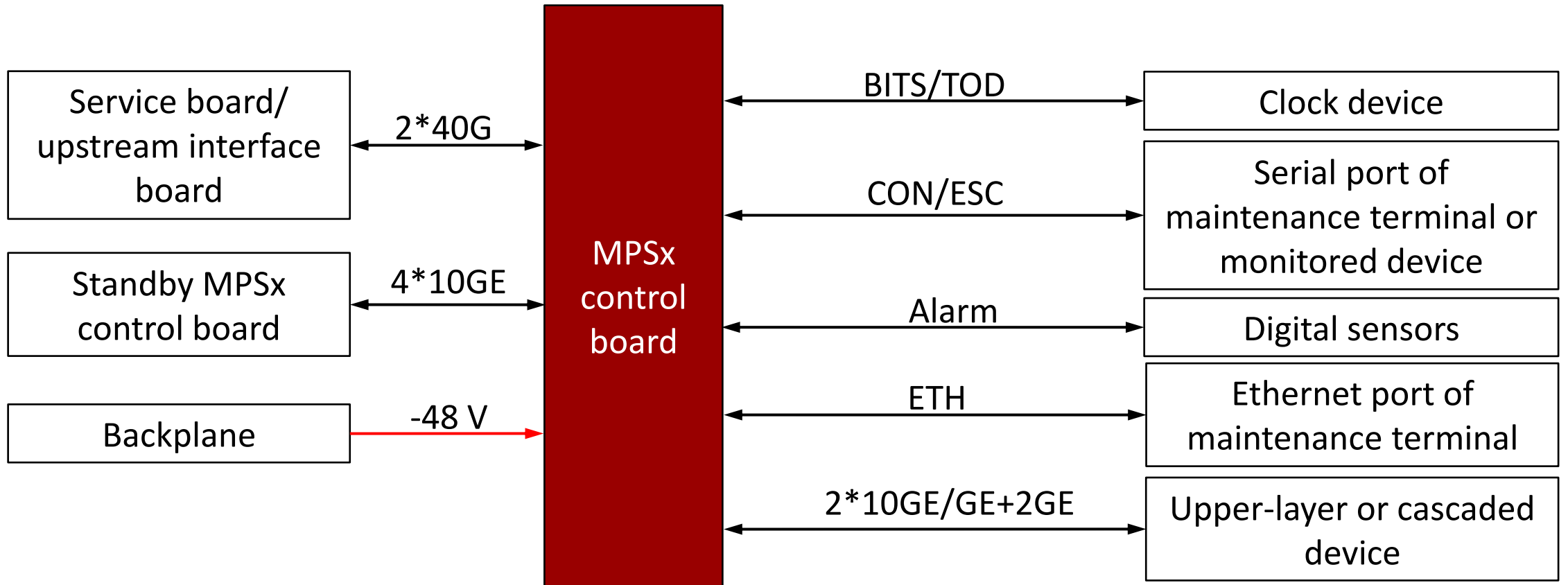
MPSG-G

Feature	Specifications
Bandwidth per slot	40 Gbit/s (load sharing mode)
MAC address table	262143
Access ONT	4096
Multicast user	4000
IPv4 routing table	65536
IPv6 routing table	16384
Service port	32768
ARP table	32768
Maximum Frame Size	2052 bytes 9216 bytes (jumbo frame enabled)
Power consumption	MPSA-G: 43W MPSG-G: 41W















# MPSx Control Board\_Port

Port	Function	Connection
BITS/TOD	BITS/TOD port	Use the <a href="#">clock cable</a> to connect to clock device.
ETH (10/100/1000M Base-T maintenance network port)	Supports local and remote maintenance	Use the <a href="#">network cable</a> to connect to the Ethernet port of the maintenance terminal.
CON/ESC (RS-232 maintenance serial port/RS-485 monitoring serial port)	Supports local and maintenance and environment monitoring channel	Use the <a href="#">local maintenance and environment monitoring combo cable</a> to connect to the serial port of the maintenance terminal/Connected to the serial port of the monitored device
Alarm (RJ45 port)	Provides the environment monitoring channel	Use the <a href="#">Environment monitoring cable</a> to connect to digital sensors.
10GE/GE optical port	Upstream transmission or cascading port	Use the <a href="#">optical fiber</a> to connect to the upper-layer device or the cascaded device.
GE optical port	Upstream transmission or cascading port	Use the <a href="#">optical fiber</a> to connect to the upper-layer device or the cascaded device.
USB	Reserved	-

# MPSx Control Board\_External Connections



# MPSx Control Board\_Indicator

Indicator	Name	Color	Status	Meaning
RUN/ALM	Running status indicator	Green 	Blinks slowly (on for 1 s and off for 1 s repeatedly)	The board functions properly
		Green 	Blinks quickly (on for 0.25 s and off for 0.25 s repeatedly)	Indicates that program loading is in progress
		Orange 	Blinks	A high-temperature alarm is generated
		Red 	On	The board is faulty
		Red 	Blinks (on for 0.25 s and off for 0.25 s repeatedly)	The board is starting up
ACT	Load sharing status indicator	Green 	On	The board is active
		Green 	Blinks (on for 1 s and off for 1 s repeatedly)	The board is standby
		Red 	On	If load sharing is abnormal, the board is in active state
		Red 	Blinks (on for 1 s and off for 1 s repeatedly)	If load sharing is abnormal, the board is in standby state
GE3, GE2, 10GE1/GE1, 10GE0/GE0	Link/data status indicator	Green 	On	A connection is set up on the port
		Green 	Blinks	Data is being transmitted
		-	off	No connection is set up on the port
CRI	Alarm indicators	Red 	On	The system has generated a critical alarm
MAJ		Orange 	On	The system has generated a major alarm
MIN		Yellow 	On	The system has generated a minor alarm

# Upstream Interface Board



in de 58

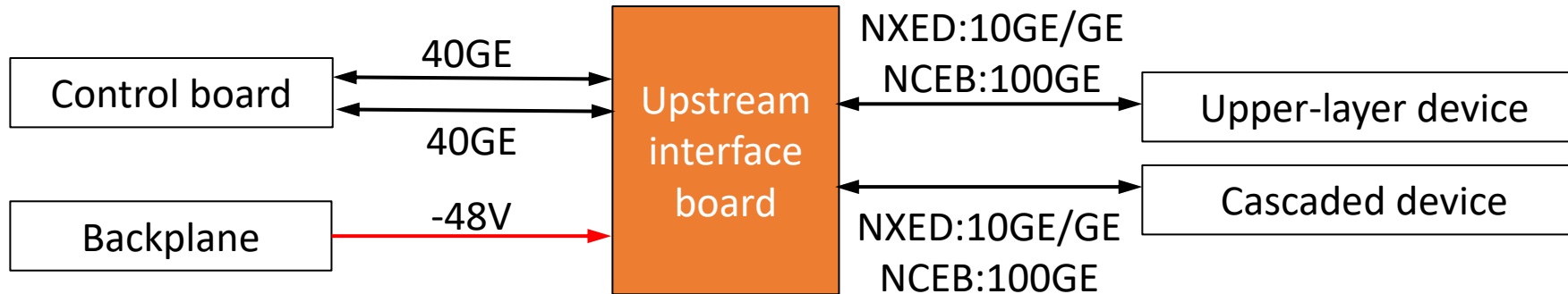
NXED

NCEB

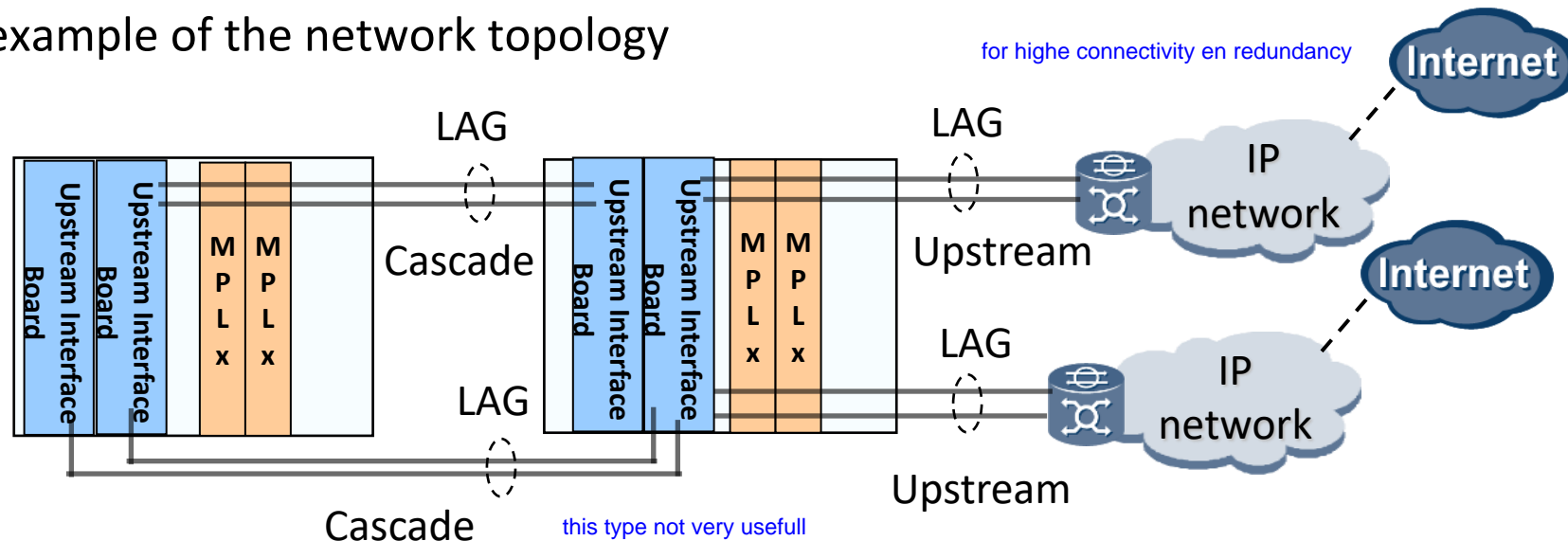
- **Functions:**
  - Ethernet clock synchronization
  - Temperature query and high temperature alarm
  - Automatic shutdown at high temperature
  - Link aggregation, increasing bandwidths and enhancing reliability
  - Pluggable optical module for different reaches
- **Ports:**
  - NXED: 8 10GE/GE optical port
  - NCEB: 2 100GE optical port

# Upstream Interface Board








- External connections of the upstream interface board




- An example of the network topology



# Upstream Interface Board\_Indicator









Indicator	Name	Color	Status	Meaning
RUN/ALM	Running status indicator	Green 	Blinks slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Green 	Blinks quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board enters the phase of communication with the control board during its startup
		Orange 	Blinks	A high-temperature alarm is generated
		Red	On	The board is faulty
		Red  	Blinks	The board is starting up
LINK/ACT 0-7(NXED) or 0~1(NCEB)	Link/data status indicator	Green	On	The link is normal
		Green 	Blinks	Data is being transmitted
		- 	off	The port is not connected

# Universal Interface Board




Universal Interface Board	Appearance	Function	Ports
CIUA		<ul style="list-style-type: none"><li>● Supports two types of frequency clock signals: 2 Mbit/s and 2 MHz</li><li>● Outputs SSM signals through 2 Mbit/s code streams</li><li>● Supports 1PPS+TOD inputs/outputs</li><li>● Supports alarm digital parameters, which are used in environment monitoring</li><li>● Supports synchronization Ethernet</li></ul>	<ul style="list-style-type: none"><li>● <b>BITS/TOD (RJ-45)</b><ul style="list-style-type: none"><li>▫ 2 inputs of 2 Mbit/s or 2 MHz BITS clock signals</li><li>▫ 2 inputs of 1 PPS+TOD time signals</li><li>▫ 1 output of 2 Mbit/s or 2 MHz, or 1PPS+ToD clock signals</li></ul></li><li>● <b>COM(RJ-45)</b><ul style="list-style-type: none"><li>▫ Reserved</li></ul></li><li>● <b>ETH (RJ-45)</b><ul style="list-style-type: none"><li>▫ Monitored packets that are transparently transmit from the ETH port to upstream port</li></ul></li><li>● <b>ALM (RJ-45)</b><ul style="list-style-type: none"><li>▫ 7 inputs of alarm digital parameters</li><li>▫ 1 output of digital controlling parameters</li></ul></li></ul>



# Universal Interface Board\_Indicator



Indicator	Name	Color	Status	Meaning
RUN/ALM	Running status indicator	Green 	Blinking slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Green 	Blinking quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board is being registered
		Red 	On	The board is faulty
CRI	Alarm indicators	Red 	On	The system has generated a critical alarm
MAJ		Orange 	On	The system has generated a major alarm
MIN		Yellow 	On	The system has generated a minor alarm
ETH	Link/data status indicator	Green 	On	The link is normal
		Orange 	Blinking	Data is being transmitted
		-	off	The port is not connected

# Power Boards





Power Board	Appearance	Function	Compatibility with the Service Subrack
PILA		<ul style="list-style-type: none"> <li>• One -48 V DC power input</li> <li>• Filtering and current-limiting for the power input port</li> <li>• Power input detection and protection fuse fault detection</li> <li>• Reporting of the protection alarm and board online signal</li> </ul>	MA5800-X17/X15/X7
PISA		<ul style="list-style-type: none"> <li>• Two -48 V DC power input</li> <li>• Filtering and current-limiting for the power input port</li> <li>• Power input detection and protection fuse fault detection</li> <li>• Reporting of the protection alarm and board online signal</li> </ul>	MA5800-X2
PISB		<ul style="list-style-type: none"> <li>• 1 channel of 220 V AC or 110 V AC input</li> <li>• Rated output power: 600 W</li> <li>• 1 battery for power backup</li> <li>• Input overcurrent protection</li> <li>• Input power monitoring</li> <li>• Temperature query and high-temperature alarm</li> </ul>	MA5800-X2

# Power Boards\_Indicator

- PILA









Indicator	Name	Color	Status	Meaning
PWR	Running status indicator	Green 	On	The input voltage and the protection fuse are normal.
		Orange 	On	The input voltage is normal but the protection fuse is faulty.
		-	Off	There is no power input or power system is faulty.

- PISA

Indicator	Name	Color	Status	Meaning
PWR0	Running status indicator	Green 	On	The input voltage and the protection fuse are normal.
		Orange 	On	The input voltage is normal but the protection fuse is faulty.
		-	Off	There is no power input or the input voltage is lower than 34 V.
PWR1	Running status indicator	Green 	On	The input voltage and the protection fuse are normal.
		Orange 	On	The input voltage is normal but the protection fuse is faulty.
		-	Off	There is no power input or the input voltage is lower than 34 V.

# Power Boards\_Indicator

- PISB

Indicator	Name	Color	Status	Meaning
AC IN	AC input indicator	Green 	On	Indicates that the AC input power is normal
		-	Off	Indicates that the AC input power is abnormal
DC OUT	DC output indicator	Green 	On	Indicates that the DC output power is normal
		-	Off	Indicates that the DC output power is abnormal
BAT	Power board battery connection indicator	Green	On	Indicates that battery connection is normal
		- 	Off	Indicates that battery connection is abnormal
PMU	Monitoring board running status indicator	Green 	Blinks quickly (on for 0.25 s and off for 0.25 s repeatedly)	Indicates that program loading is in progress (in this process, board insertion or removal is prohibited)
		Green 	Blinks slowly (on for 1 s and off for 1 s repeatedly)	Indicates that the board runs normally
		Red	Blinks	Indicating that the board is starting up
		Red 	On	Indicates that a critical alarm is reported
		Orange  	Blinks	Indicates that a minor alarm (such as the high temperature alarm) is reported

# GPON Interface Board

service board

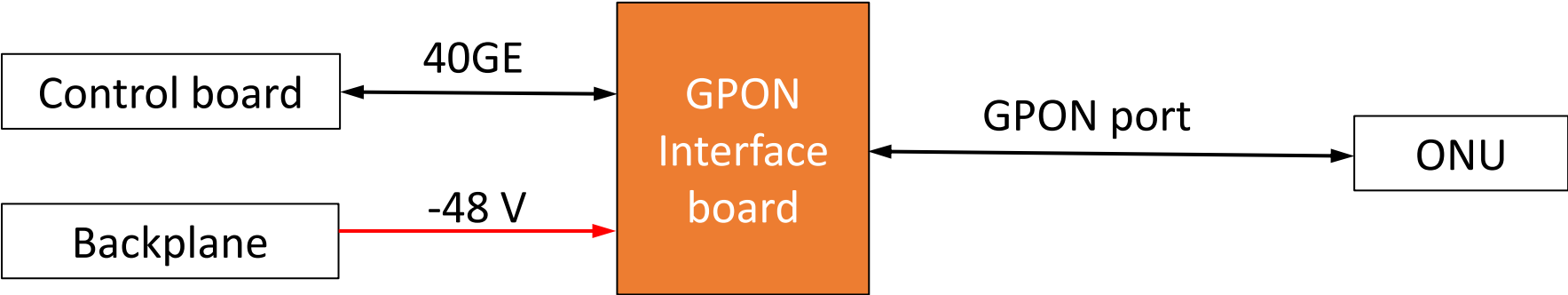


- **Functions:**
  - ❑ GPON interface board works together with the ONU to provide the GPON access service
  - ❑ High density and low power consumption, supporting 2048 access users
  - ❑ A maximum distance difference of 40 km between two ONUs under the same PON port, simplifying network planning
  - ❑ Real-time rogue ONT detection and isolation, ensuring stable service running
  - ❑ Variable-length of OMCI, improving upgrade efficiency and reducing break off time
- **Ports:** 16 GPON ports ( SFP )
- **Supported optical module types:** SFP, Class B+/Class C+/Class C++
- **Max. split ratio:**
  - Class B+: 1:64
  - Class C+/C++: 1:128

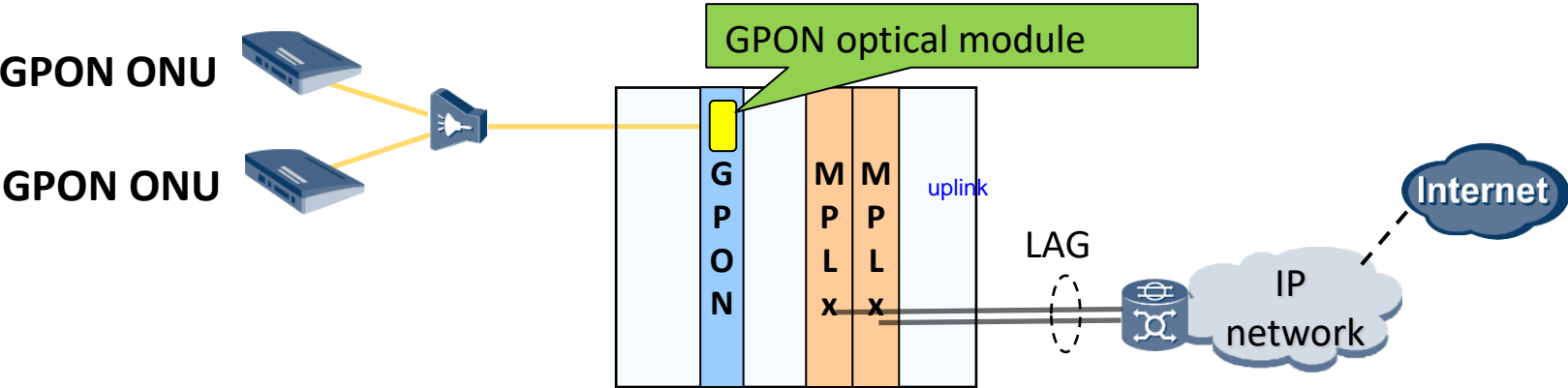
hoevel klanten erop kunnen

# GPON Interface Board

- External connections of the GPON service board



- An example of the network topology









# GPON Interface Board

- Differences

Specification	GPHF	GPSF
Application scenario	FTTC/B/D, FTTH, FTTO/FTTM	FTTH
Maximum number of MAC addresses	131072	16384
9216-byte Jumbo frames	Yes	No
Routes/ARP	196608	65536
1588v2	Yes	No
HQoS	Yes	No
Y.1731 PM	Yes	No
GPON Type B Protection Principles (Dual Homing)	Yes	No

# GPON Interface Board\_Indicator

Indicator	Name	Color	Status	Meaning
RUN/ALM	Running status indicator	Green 	Blinks slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Green 	Blinks quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board enters the phase of communication with the control board during its startup
		Orange 	Blinks	A high-temperature alarm is generated
		Red 	On	The board is faulty
		Red 	Blinks	The board is starting up
PON 0-15	PON port indicator	Green 	On	The ONT of the related PON port is online
		-	off	The ONT of the related PON port is offline



# XGS-PON Interface Board

10 gpon symmetrical

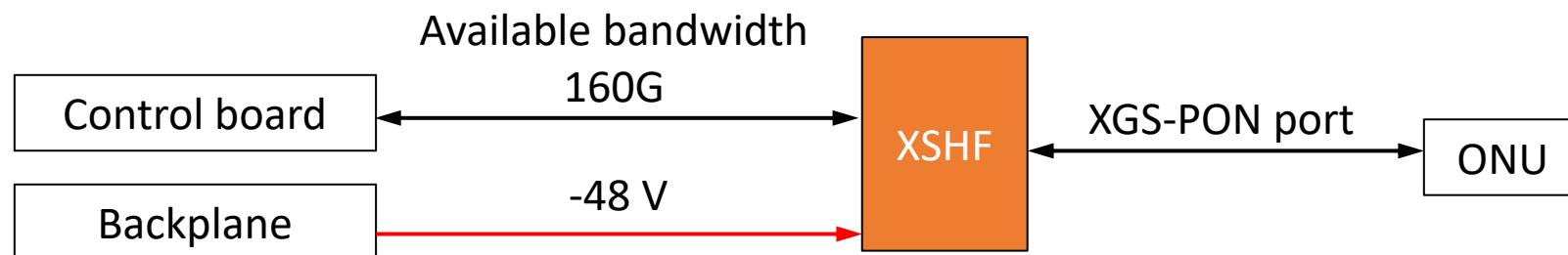


XSHF

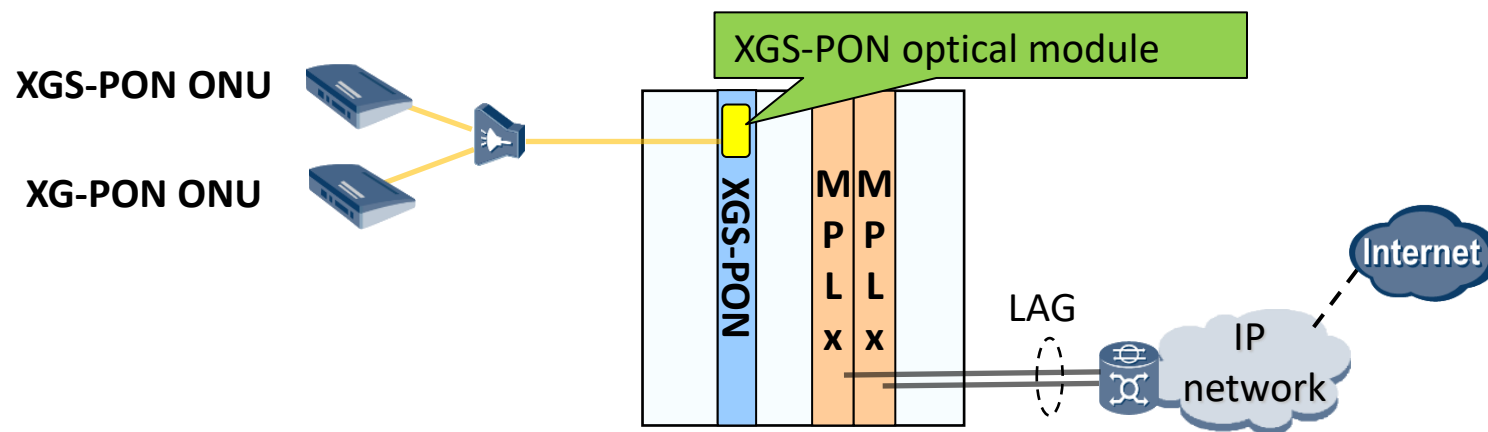
- **Functions:**
  - ❑ XGS-PON interface board works together with the ONU to provide the XGS-PON access service
  - ❑ A maximum distance difference of 40 km between two ONUs under the same PON port, simplifying network planning
  - ❑ Real-time rogue ONT detection and isolation, ensuring stable service running
- **Ports:** 16 XGS-PON ports ( SFP+ )
- **Rate mode:** Asymmetric, Symmetric
- **Port Rate**
  - ❑ Upstream: 9.953 Gbit/s & 2.488 Gbit/s
  - ❑ Downstream: 9.953 Gbit/s
- **Supported optical module types:** SFP+, N1/N2
- **Max. split ratio:** 1:256

# XGS-PON Interface Board






- External connections of the XGS-PON service board



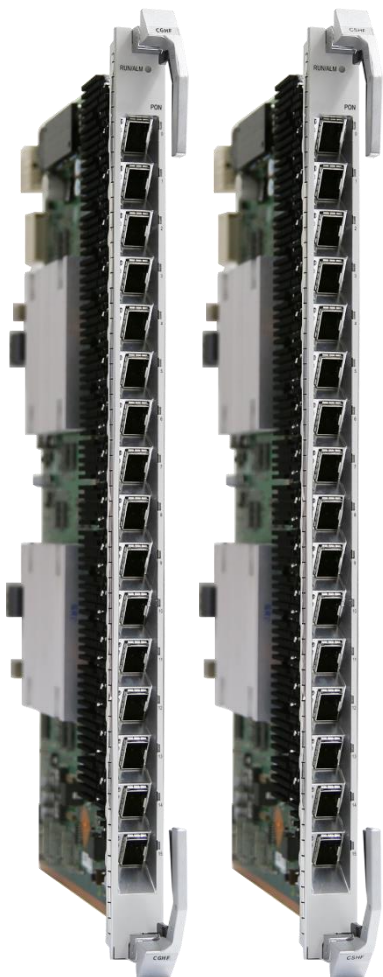
- An example of the network topology



# XGS-PON Interface Board\_Indicator

Indicator	Name	Color	Status	Meaning
RUN/ALM	Running status indicator	Green 	Blinks slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Green 	Blinks quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board enters the phase of communication with the control board during its startup
		Orange 	Blinks	A high-temperature alarm is generated
		Red	On	The board is faulty
		Red 	Blinks	The board is starting up
PON 0-15	PON port indicator	Green 	On	The ONT of the related PON port is online
		-	off	The ONT of the related PON port is offline

# PON Combo Interface Board



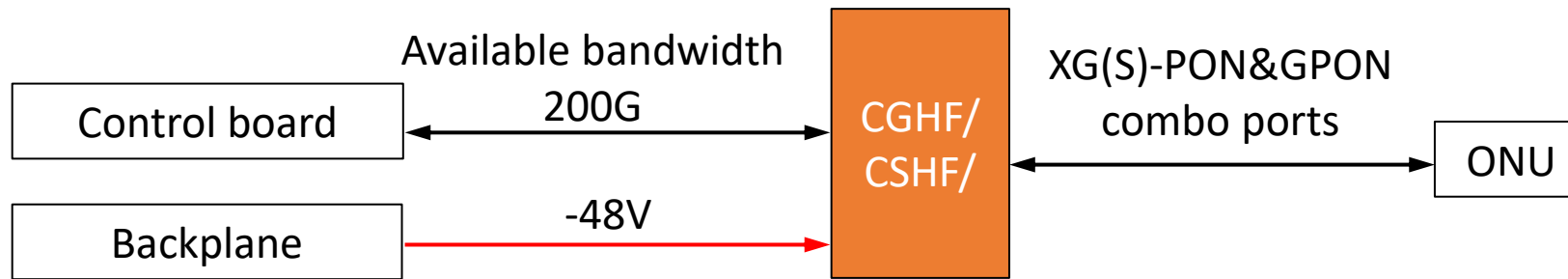
CGHF

CSHF

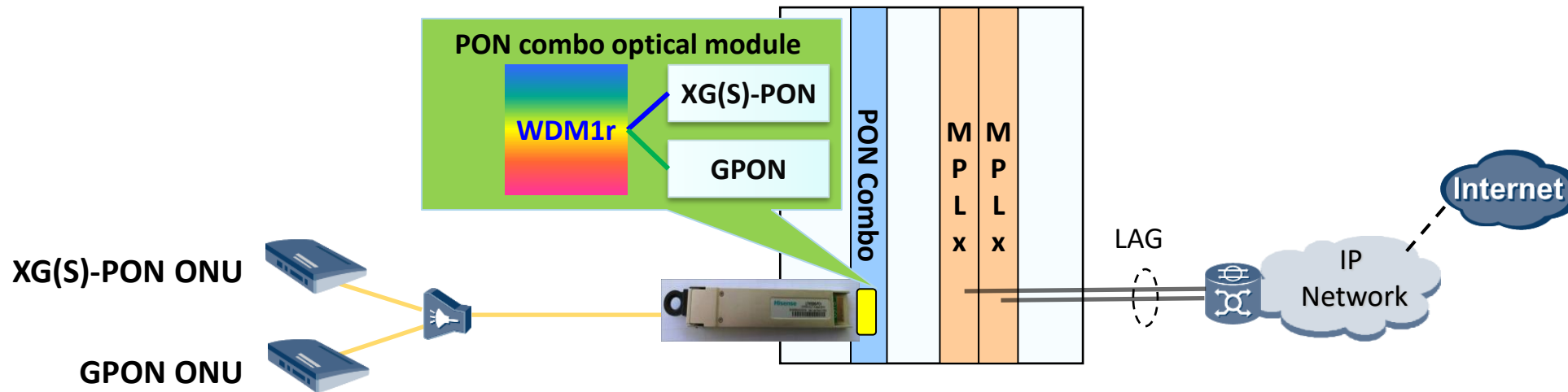
- **Functions:**
  - ❑ PON combo interface board works together with the ONU to provide the XG(S)-PON and GPON access service
  - ❑ A maximum distance difference of 40 km between two ONUs under the same PON port, simplifying network planning
  - ❑ Smart processing of XG(S)-PON and GPON services, meeting hybrid service requirements and reducing board and spare part types
  - ❑ Real-time rogue ONT detection and isolation, ensuring stable service running
  - ❑ Variable-length of OMCI, improving upgrade efficiency and reducing break off time
- **Ports:**
  - ❑ CGHF: 16 XG-PON&GPON ports ( SFP+ )
  - ❑ CSHF: 16 XGS-PON&GPON ports ( SFP+ )
- **Supported optical module types:**
  - ❑ CGHF: SFP+, N2a/Class B+/Class C+/Class D
  - ❑ CSHF: SFP+, Class B+/Class C+/Class D
- **Max. split ratio:**
  - ❑ GPON: 1:128
  - ❑ XG(S)-PON: 1:256

# PON Combo Interface Board

- External connections of the PON combo interface board



- An example of the network topology









# PON Combo Interface Board

- Differences

Specification	H901CGHF	H901CSHF
Service flows per PON board	16352	16352
Maximum number of MAC addresses	131072	131072
ONUs supported	•GPON: 2.5G/1.25G (downstream rate/upstream rate) •XG-PON: 10G/2.5G (downstream rate/upstream rate)	•GPON: 2.5G/1.25G (downstream rate/upstream rate) •XG-PON: 10G/2.5G (downstream rate/upstream rate) •XGS-PON: 10G/10G (downstream rate/upstream rate)
Type B protection	Yes	Yes
Type C protection	Yes	Yes
1588v2	Yes	No
9216-byte Jumbo frames	Yes	Yes

# PON Combo Interface Board\_Indicator

Indicator	Name	Color	Status	Meaning
RUN/ALM	Running status indicator	Green 	Blinks slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Green 	Blinks quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board enters the phase of communication with the control board during its startup
		Orange 	Blinks	A high-temperature alarm is generated
		Red 	On	The board is faulty
		Red 	Blinks	The board is starting up
PON 0-15	PON port indicator	Green 	On	The ONT of the related PON port is online
		-	off	The ONT of the related PON port is offline

# Flex-PON Interface Board



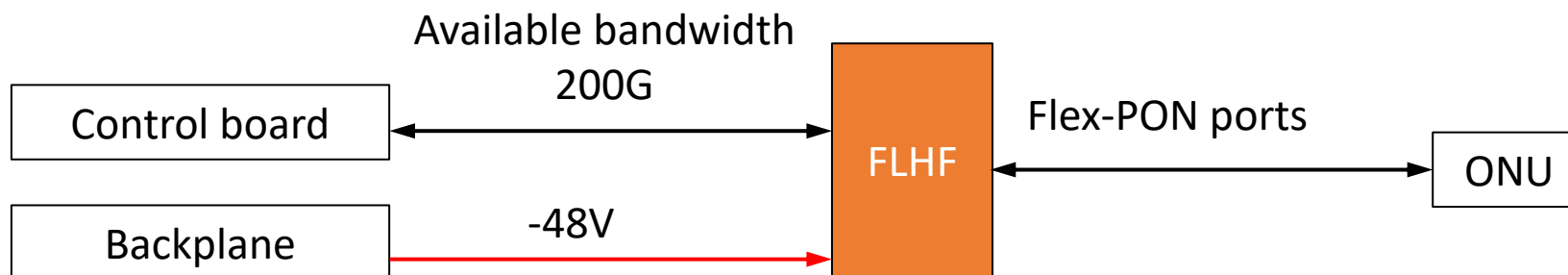
FLHF

- **Functions:**
  - ❑ PON combo interface board works together with the ONU to provide the XG(S)-PON and GPON access service.
  - ❑ A maximum distance difference of 40 km between two ONUs under the same PON port, simplifying network planning
  - ❑ Smart processing of XG(S)-PON and GPON services, meeting hybrid service requirements and reducing board and spare part types
  - ❑ Real-time rogue ONT detection and isolation, ensuring stable service running
  - ❑ Variable-length of OMCI, improving upgrade efficiency and reducing break off time
- **Ports:** 16 XG(S)-PON&GPON ports (SFP/SFP+)
- **Supported optical module types:**
  - ❑ GPON Optical Module (gpon mode), SFP, class B+/class C+/class C++
  - ❑ XG-PON Optical Module (xg-pon mode), SFP+, N1/N2a
  - ❑ XGS-PON Optical Module (xgs-pon mode) , SFP+, N2
  - ❑ XG-PON&GPON Combo PON Optical Module (combo-pon (xg-pon) mode) , SFP+, class B+/N2a
  - ❑ XGS-PON&GPON Combo PON Optical Module (combo-pon (xgs-pon) mode) , SFP+, class B+
- **Max. split ratio:**
  - ❑ GPON: 1:128
  - ❑ XG(S)-PON: 1:256

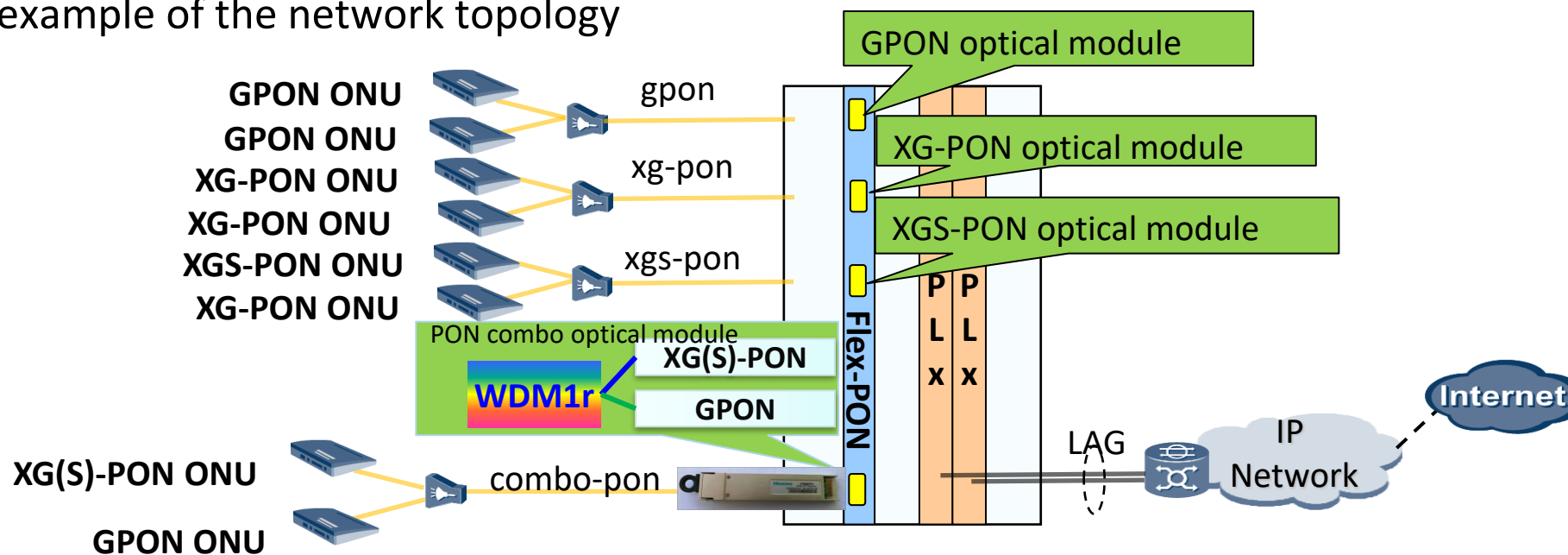


# Flex-PON Interface Board







- External connections of the Flex-PON combo interface board



- An example of the network topology



# Flex-PON Interface Board\_Indicator

Indicator	Name	Color	Status	Meaning
RUN/ALM	Running status indicator	Green 	Blinks slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Green 	Blinks quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board enters the phase of communication with the control board during its startup
		Orange 	Blinks	A high-temperature alarm is generated
		Red 	On	The board is faulty
		Red 	Blinks	The board is starting up
PON 0-15	PON port indicator	Green 	On	The ONT of the related PON port is online
		-	off	The ONT of the related PON port is offline

# ETH Interface Board



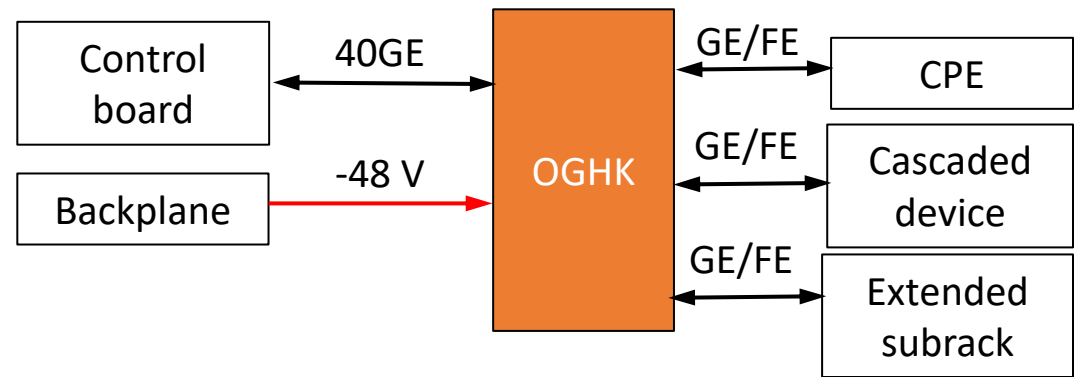
- **Application scenarios:**
  - ❑ OGHK is the 48-port GE/FE optical interface board, which supports two application scenarios of access and cascade.
  - ❑ OXHD is the 8-port 10GE/GE optical interface board, which supports two application scenarios of access and cascade.
  - ❑ OXEG is the 24-port 10GE/GE optical interface board, which supports three application scenarios of access, cascade and uplink.

- **Difference:**

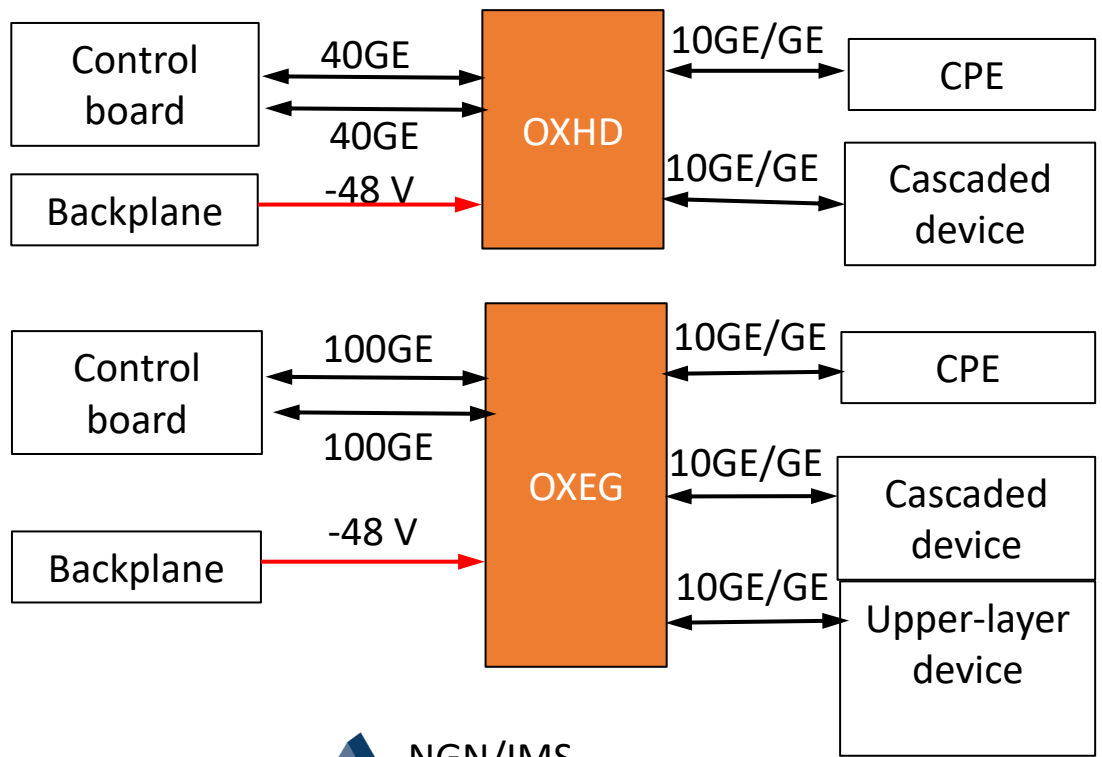
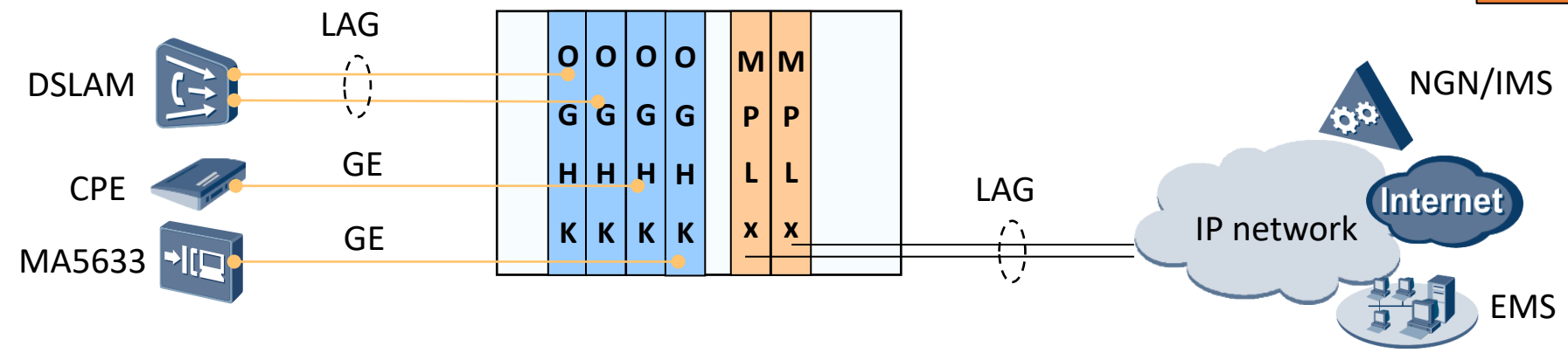
Board Name	Ports	Optical module	Network Role
OGHK	24/48*GE/FE	CSFP GE (48 ports) eSFP GE/FE (24 ports)	Cascade, extend, user (default)
OXHD	8*10GE/GE	SFP+ 10GE eSFP GE	cascade, user (default)
OXEG	24*10GE/GE	SFP+ 10GE eSFP GE	uplink, cascade, user (default)

# ETH Interface Board









- External connections of the ETH interface board



- An example of the network topology (OGHK)



# ETH Interface Board\_Indicator

Indicator	Name	Color	Status	Meaning
RUN/ALM	Running status indicator	Green 	Blinks slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Green 	Blinks quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board enters the phase of communication with the control board during its startup
		Orange 	Blinks	A high-temperature alarm is generated
		Red	On	The board is faulty
		Red 	Blinks	The board is starting up
LINK/ACT	Link/data status indicator			
		Green 	On	The link is normal
		Green 	Blinks	Data is being transmitted
		- 	off	No data is being transmitted

# OAI Board

optical artif intellegent board

test board






OTSF

OTHF

- **Functions:**
  - Use the Rayleigh scattering and Fresnel reflection energy distribution when light is transmitted in fibers to measure optical path attenuation and detect events and faults.
- **Ports:**
  - Management interface COM (RJ-45 )
  - Optical module interface (0-15)
- **Test range:**
  - OTSF: 4km,8km,12km,20km,40km,80km,120km,160km,240km,256km
  - OTHF: 4km,8km,12km,20km,40km,80km,100km
- **Maximum Sample Points:** OTSF: 1280000; OTHF: 131000
- **Sampling resolution:**
  - OTSF: 2m,1m,0.5m,0.1m,0.03m
  - OTHF: 1.25m,0.25m

# OAI Board\_Indicator

Indicator	Name	Color	Status	Meaning
RUN/ALM	Running status indicator	Green 	Blinks slowly (on for 1 s and off for 1 s repeatedly)	The board works in the normal state
		Green 	Blinks quickly (on for 0.25 s and off for 0.25 s repeatedly)	The board enters the phase of communication with the control board during its startup
		Red	On	The board is faulty
		Red 	Blinks	The board is starting up





## Q&A

x2,x5,x7,x15,x17

1. What kinds of service subrack are there for the MA5800 series product?
2. What application scenarios are supported by ETH interface boards of MA5800?

page 66

to establish remote devices





# Summary

In this course, we have learned:

- What is the Smart NG-OLT?
- MA5800 product highlights.
- The hardware of MA5800 series product.

# Thank You

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