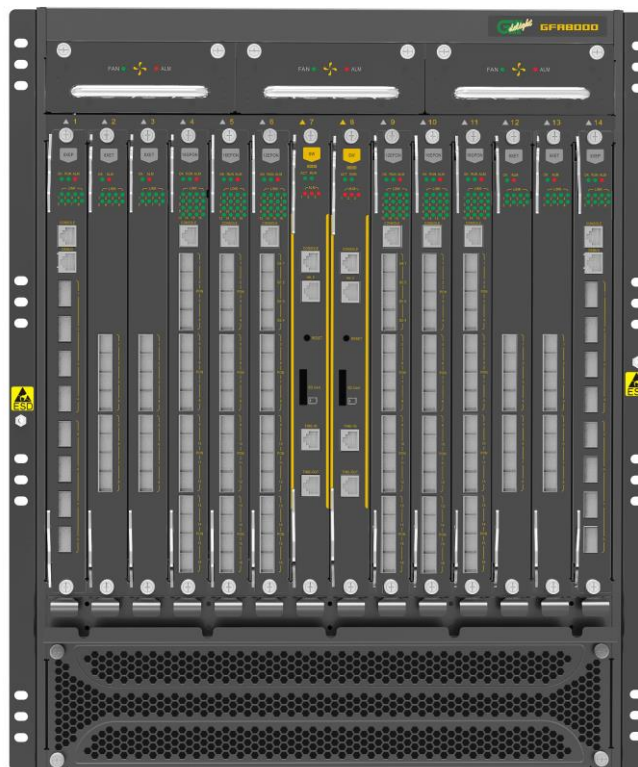


OLT Equipment of GFA8000

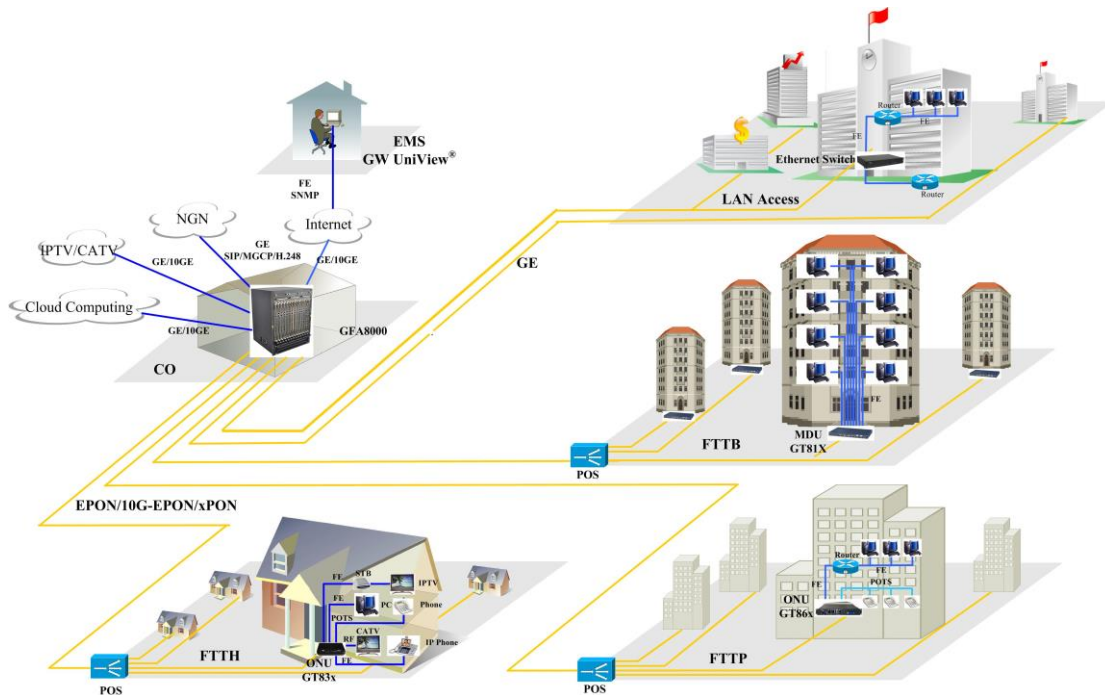
1.1.1 Product Overview

EasyPath GFA8000, the next generation of integrated service high-capacity local side convergence access platform produced by GW supports GE/EPON/GPON/ 10GEPON/ xPON/PTN/IP-RAN mixed networking. It is compatible with 12EPON service module and 10GE service module of current GFA6900 Series of OLT and can realize smooth evolution from EPON to 10G EPON and xPON. Meanwhile, the platform also supports dedicated access of P2P GE/10GE Ethernet or PTN/IP-RAN. It is a high-capacity unified platform to realize resident broadband access and governmental and corporate client dedicated access.



1.1.2 Application Schemes

EasyPath GFA8000 integrated service access platform can connect with EasyPath GT800 Series of ONU through optical fiber and passive optical splitter (POS) to realize EPON, 10GEPON and xPON access and provides broadband, voice CATV/IPTV and multi-service integrated access and Ethernet access board card to realize LAN access way. The up-link supports GE, 10GE PTN/IP-RAN multi-interface types and multi-platform service data transmission.



Functional Characteristics

13U plug-in high-density flexible extension structure, size of board card meet ATCA Standard, 12 service slots, 2 master control slots, 2 power supply modules and 3 groups of fans.

Capacity of back board is 2.8T, each slot can access 16 routes of EPON or 8 routes of 10GEPON, or 4/8 routes of 10GE Ethernet interface and realize up to 176 routes of EPON or 88 routes of 10GEPON non-blocking access.

High reliability design: Swapping control unit, power supply, fan and other critical components are redundant. Port protection crossing module and equipment is supported. Standard G.8032 Ring Protection Protocol is supported. Protection switching time is less than 50ms.

Rich QoS characters are supported: H-QoS is supported; Flow classification, flow mark, flow supervision, congestion management queue scheduling, traffic shaping and other functions are supported; 2-layer 802.1p and 3-layer ToS/DSCP oriented priority mark, scheduling and retransmission are supported; SP, WRR, DRR, SP+WRR and multi queue scheduling modes are supported.

Complete authentication functions are supported: RADIUS and TACCS+ authentications are supported; master and standby protection authentication functions of authentication server are supported.

3-layer routing function is supported: static routing, RIP V1/V2, OSPF/BGP/IS-IS and other dynamic routing protocols are supported.

Rich OAM functions are supported: Ethernet service OAM is supported. Y.7131/802.1ag Standard is followed; PTN/IP-RAN OAM, PTN/IP-RAN Equipment Criterion is followed; access chain layer OAM is supported, 802.3ah Standard is followed.

Complete PTN/IPRAN protection function is supported: Linear protection of LSP and PW is supported; 3-layer ring network protection is supported; dual-homing protection is supported to



realize port-to-port service protection with failure of access link or access node.

PTN/IPRAN service ability is supported: multi-service carrying capacity, L2/L3VPN and PWE3; IEEE 1588v2 function is supported to realize high-precision time synchronization, etc.

1.1.3 Technical Parameters

Product Specifications			
Quantity of Slot Position	19	Quantity of Service Module	12
Quantity of Master Control Module	2	Quantity of Fan Module	3
Quantity of Power Supply Module	2	Type of Power Supply	Hybrid Power Supply of AC 220V and DC -48V is supported
Power Consumption	< 1000W	Full Weight	< 56kg
MAC Address Table Capacity	256K	Capacity of Rear Panel	2.8T
Quantity of PON Interface	Maximum support: Up to 176 EPON interfaces; Maximum support: 88 10GEPON interfaces		
PON Module Wave Length	EPON: Transmitting 1490nm, receiving 1310nm 10GEPON: Transmitting 1577, receiving 1270nm		
Environment	Working Temperature: 0°C~ 45°C Storage Temperature:-10°C~ 70°C Relative Humidity: 10%~ 90% (non condensable)		
Characters of GE Electrical Interface	Supports IEEE 802.3 10/100/1000BASE-TX Transmission Rate: 10/100/1000M self-adaptation Interface Type: RJ45 Operation Mode: full duplex / semi duplex self-adaptation MDI/MDIX: Self-adaptation		
Characters of GE Optical Interface	Supports IEEE 802.3 1000BASE-LX/SX/CX Transmission Rate: 1000Mbit/s Interface Type: LC/ dual LC		
Characters of 10GE Optical Interface	Supports IEEE 802.3ae-2002 Transmission Rate: 10Gbps Interface Type: LC/ dual LC		
Ethernet Management Interface (in-band)	Supports in-band management, need no dedicated interface, can select a service interface as local Ethernet network management interface		
Ethernet Management Interface (out of band)	Transmission Rate: 10/100M Self-adaptation Interface Type: RJ45 Operation Mode: full duplex / semi duplex modem self-adaptation mode MDI/MDIX: self-adaptation		
Console □	Physical Interface: RJ45	Electrical Level: RS232	Baud Rate: 9600
System Performance			



Circuit Rate	EPON: Upper and lower lines are symmetrical 1.25Gbps; 10GE PON: Upper and lower lines are symmetrical 10Gbps
Maximum Branching Rate	1:128
VLAN	Supports 4k VLAN Supports VLAN based on port, MAC address, protocol and IP subnet Supports IEEE 802.1ad (Q in Q or VLAN stack), supports VLAN transformation Supports flexible Q in Q, supports VLAN label addition, replacement and deletion based on ACL Rule Supports VLAN label addition, replacement and deletion of entrance and exit Supports multicast VLAN Supports 8K strip entrance and 8K strip exit VLAN/dual layer VLAN label rule
Bridge	Line speed MAC address study based on hardware, multiple MAC address study and management manners Supports MAC limit based on port and link aggregation and VLAN Supports jumbo data package up to 12KB Supports IEEE 802.1d (STP)/802.1w (RSTP)/802.1s(MSTP) Supports broadcast storm restraint Supports port data mirror image, can mirror at entrance and exit at the same time
Flow Control	Supports IEEE 802.3x (full duplex flow control) and back pressure type flow control(semi duplex)
DBA	Bandwidth granularity is 64kbit/s Supports fixed bandwidth / maximum bandwidth, time delay grade, priority and other SLA parameter settings
Multicast	Supports multicast service by combining with SCB single copy broadcasting technical supports multicast service Supports IGMP V1/V2 Supports IGMP Snooping and IGMP Proxy Supports up to 1000 multicast groups Supports multicast source port limitation function Supports multicast right limit control function Supports IGMP pre-join and rapid leaving function Supports static multicast
Link Aggregation	Supports IEEE 802.3ad (link aggregation) Supports 128 port aggregation groups, each group supports 8 members Flow share based on 2-layer or 3-layer Flow share based on target MAC, VLAN, Ethernet type, target IP address and TCP/UDP port
QoS	Supports IEEE802.1p and DSCP, each port can provide 8 priority queue Supports priority label addition, modification and deletion based on ACL Rule Supports queue scheduling of SP,WRR and WDRR mechanism Supports service flow rate-limiting based on ACL Rule Supports traffic shaping



Introduction for Local Side OLT Equipment of GFA8000

<p>ACL</p>	<p>Supports ACL Rule based on port, MAC, IP, TCP/UDP port number, ToS/Diffserv Supports service perception, supports depth package testing, can analyze any 128 bytes before message Supports character matching width up to 840bit Supports 8K~ 256K ACL rules Supports addition, deletion and modification of VLAN and dual-layer VLAN label based on ACL Rule Supports addition, deletion and modification of priority label based on ACL Rule Supports service flow rate-limiting based on ACL Rule</p>
<p>Safety</p>	<p>Supports AES / trebled stirring encryption of PON line and dynamic key update Supports broadcast storm restraint, can limit broadcasting and unknown unicast or multicast message based on message or byte Supports message filtration and rate-limiting based on ACL Rule Anti attack of DOS based on hardware including Land attack, ping flood, SYN-ACK flooding, smurf attack, etc.</p>
<p>Reliability</p>	<p>Supports master control hot standby Supports uplink port cross-module protection Supports PON port and cross-module protection Supports 50ms level rapid ring network protection Supports 50ms level 1 + 1 trunk line optical fiber protection Supports 20ms level optical fiber full protection Power supply supports hot standby functions</p>
<p>Management</p>	<p>Supports UniView network management platform unified management based on SNMP V1/V2c UniView Supports Telnet remote management and local CONSOLE port management Support in-band/out of band network management, can set VLAN and priority of management data All ONU equipment under patent SNMP over OAM technical concentrative network management</p>
<p>Maintenance</p>	<p>Supports alarm and performance statistics, flow monitoring, loop testing, far-end equipment powering off monitoring Supports Ethernet port loop test Supports ONU automatic configuration, batch configuration Supports automation, batched long distance online update of ONU timing Supports long distance Ethernet cable test function, can test cable open circuit, short circuit fault and judge fault position Supports SNTP, is synchronous with upper layer network event network server Support short message alarm Support PON line optical power test, on line supervising OLT light-emitting and receiving power Support ONU strong light-emitting testing function</p>



1.1.4 GPON service card introduction

Optical ports technical specifications		support ITU-T G.984.1~ G.984.4 standard	
		Class B+	Class C+
Continuous mode optical transmitter	The average optical power	+1.5~+5dBm	+3~+7dBm
	Operating Wavelength	1490nm	
	Operating rate	Downlink: 2.5Gbit/s	
Burst-mode optical receiver	Receiver sensitivity	-28dBm	-32dBm
	Saturated received light power	-8dBm	-12dBm
	Operating Wavelength	1310nm	
	Operating rate	Uplink: 1.25Gbit/s	
Optical connector	Connection	SC/PC	
	Insertion Loss	0.4dB	

1.1.5 Product Quick Table

Product Model	Function Description
GFA8000	Local side 13U rack-mounted integrated service access device
GFA8000-PWU48-A0	GFA8000 equipment power supply module, DC48V, supports backup protection
GFA8000-FAN-A0	GFA8000 equipment fan module, supports backup protection
GFA8000-SW-A0	GFA8000 equipment exchange module, supports backup protection, supports 256K MAC
GFA8000-8XET-A0	Uplink board card, 8*10GE uplink board card, 8 SFP+ interfaces
GFA8000-4XET-A0	Uplink board card, 4*10GE uplink board card, 4 SFP+ interfaces
GFA8000-8XEP-B1	10GEPON service board, 8*10GEPON board card, 8 XFP interface;
GFA6900-16EPON-B1	PON service module, 16*EPON interfaces (SFP interface, must configure SFP EPON module solely). Applied equipment GFA8000/GFA6900/GFA6900M
GFA6900-12EPON-A0	GFA8000 equipment EPON service module, 12*EPON (select SFP EPON module) +4*GE (select SFP GE module); apply to GFA8000 /GFA6900 /GFA6900M /GFA6900S
GFA8000-16GPON	GPON service module, 16*GPON interfaces (SFP interface). Applied equipment GFA8000