Fonsweaver 780

1 Quick Overview of Product

FonsWeaver 780C/D/E is a series of multi-service integrated carrying optical transport device developed by FiberHome Telecommunication Technologies Co., Ltd. (hereinafter referred to as "FiberHome Telecommunication"), which can efficiently transmit voice and data services on the same platform. It can be used for the edge nodes of trunk network with large service volume, and can also be used as the core, aggregation and access nodes of MAN.

1.1 Product Architecture

The product architecture for FonsWeaver 780C/D/E device includes the following aspects.

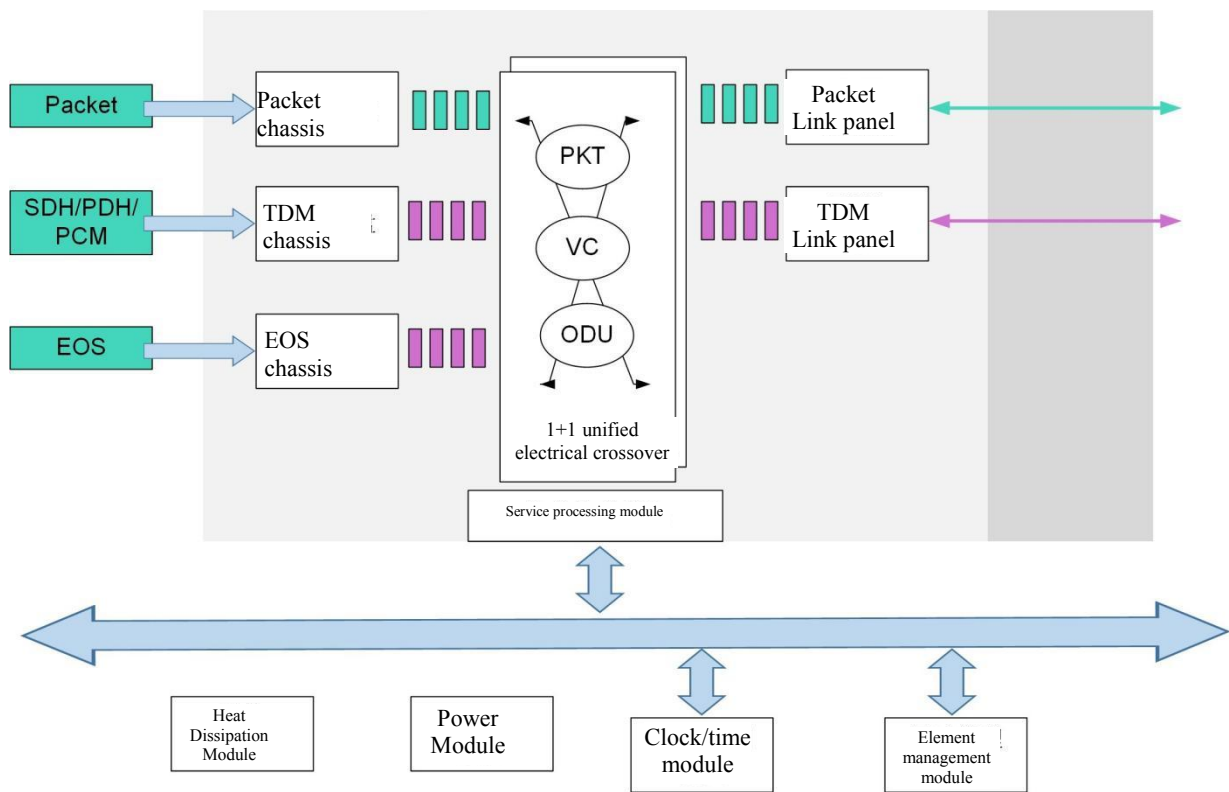| Logical structure	Function
Service processing module	Unified electrical cross unit based on packet/VC/ODUk switching. ◆ Packet service ↔ user end packet chassis ↔ packet switching ↔ packet link panel. ◆ TDM service ↔ user end TDM chassis ↔VC crossover↔ TDM link panel. ◆ EOS service ↔ user end EOS chassis ↔ VC crossover
Element management module	The inter-unit communication is realized through the internal bus of the system, which enables users to transfer overhead information, manage chassis information, achieve chassis bootstrap, etc.
Clock/time	Support physical layer clock synchronization and IEEE1588v2 time synchronization.
Heat Dissipation Module	Provide air cooling and heat dissipation function for the system and support intelligent fan control.
Power Module	It is used as the power supply for each module in the system.

Figure 1-1 FonsWeaver 780C/D/E product architecture

1.2 Product Positioning

This section introduces the positioning of FonsWeaver 780C/D/E products, including product introduction and network application.

Product Profile

FonsWeaver 780C/D/E adopts a unified VC/ODUK/Packet switching platform to provide customers with Ethernet, TDM, CES, PCM and other access services. The products support multi-device stacking and realize the expansion of access service. At the same time, the products have perfect QoS mechanism, reliable protection measures, strong service processing and operation and maintenance capabilities.

The FonsWeaver 780C subframe height is 9U and its external view is as shown in Figure 1-2. The FonsWeaver 780D subframe is 5U high and its external view is as shown in Figure 1-3. The FonsWeaver 780E subframe height is 3U and its external view is as shown in Figure 1-4.

Figure 1-2 External view of 780D subframe

Figure 1-3 External View of 780D Subframe

Figure 1-4 External view of 780D subframe

FonsWeaver 780C/D supports the extended access to E1 services through extended subframes. The external view of extended subframe is as shown in Figure 1-5.

Figure 1-5 External view of 780D subframe

Network Application

FonsWeaver 780C/D/E are mainly used in the access or edge aggregation node of MAN. As a multi-service convergence carrying platform, FonsWeaver 780C/D/E aggregate services into the core/backbone network. The application of FonsWeaver 780C/D/E in the network is shown in the following figure.
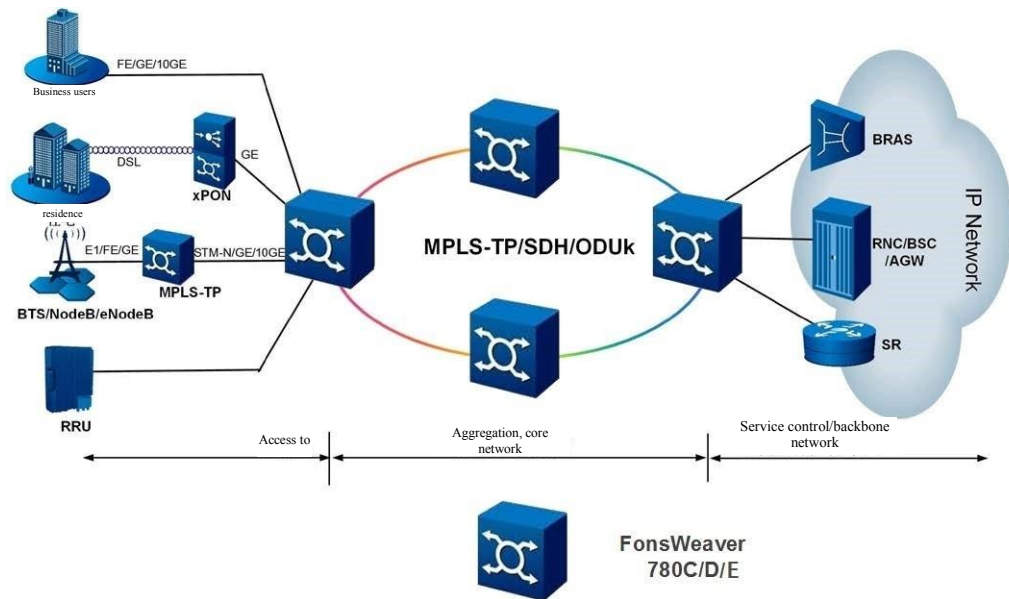
Figure 1-6 Network positioning diagram

1.3 Product Highlights

FonsWeaver780C/D/E feature powerful processing capability and rich functions.

Flexible and powerful service access and scheduling capabilities

u   Support PCM64k sub-rate (2/4 line, voice and audio, etc.)/FE/GE/10GE, E1, STM-1/4/16/64

and other types of service interfaces, to meet the full service transport at 64k ~ 100G

rate.

u   Support VC/ODUK/Packet unified scheduling, and SDH/MSTP, PTN single or hybrid networking.

u   Support E1 extension frame, support access of official telephone and dry contact.

u   Compatible with FonsWeaver 780C/D/E service unit.

Perfect protection

u   Provide rich network-level protection, and support SNCP protection, MSP1+1 protection, two-fiber multiplex section protection, 2M optical interface 1+1 protection, LSP path 1:1 protection, PW protection and other network-level protection to fully guarantee the availability of the network.

u   Provide perfect device-level protection, support 1+1 protection of power plate, 1+1 redundancy protection of main control and cross control unit, and E1

TPS1:N (N ≤ 4) protection for unit and TPS1:1 protection for FE unit.

Rich operation and maintenance functions

    u   Support automatic discovery of elements and automate device online management.

    u   The support system can automatically detect the newly added single unit information, to realize the single unit bootstrap function and simplify the configuration steps.

    u   Support remote upgrade to facilitate maintenance.

    u   Support single unit operation and automatic storage of fault information.

    u   Support automatic prompt of power failure, to deal with the fault quickly and accurately.

    u   Support intelligent adjustment of fan mode, automatic monitoring of device power supply and environmental information.

    u   Support rich OAM, to improve network operation and maintenance capability, quickly locate faults and reduce operation and maintenance costs.

    u   Support the ability of interconnection and hybrid networking with various optical transmission device of FiberHome Telecommunication.

    u   Support global time zone setting, alarm performance reporting and alarm inversion, and improve project maintainability.

Green, energy-saving and easy to install

    u   With excellent hardware and structural design, it can effectively reduce power consumption, and it is low in carbon emission and energy efficient.

    u   With small size and high integration, it supports pluggable photoelectric modules, and has strong applicability.

    u   Flexible installation mode, and supporting the installation of 19-inch and ETSI 21-inch cabinet.

Core chips and devices are self-developed and controllable

The core chips and devices of the products are domestically produced, with proprietary intellectual property rights, controllable, safe and reliable.

1.4   List of product features

The product features supported by FonsWeaver 780C/D/E are listed in the following table.

TABLE 1-1   List of product features

Features	FonsWeaver780C	FonsWeaver780D	FonsWeaver780E
Packet switching	2.4T	2.4T	440G
SDH low-order cross	40G	20G	5G
SDH high-order cross	320G	240G	200G
ODUk switching	2.4T	2.4T	—

TABLE 1-1   List of Product Features (Continued)

Features	FonsWeaver780C	FonsWeaver780D	FonsWeaver780E
Slot distribution	U service slots: 26 u Main control and cross u Power slots: 2 u Fan slot: 1	U service slots: 15 u Main control and cross u Power slots: 2 u Fan slot: 1	U service slots: 10 u Main control and cross u Power slots: 2 u Fan slot: 1
Service type	Ethernet service, SDH service, CES service, EOS service and PCM		SDH service, EOS service
Line rate	STM–1、STM–4、STM–16、STM–64、FE、GE、10GE		
Network Topology	Point to point, chain, star, ring, MESH, ring with chain, ring intersection, ring tangency		
Network Application	Pure SDH/MSTP, pure PTN, Hybrid SDH + PTN, etc		Pure SDH/MSTP
Device-level protection	Power plate 1 +1, main control and cross control unit 1 +1, E1 unit TPS protection, FE unit TPS		
Network-level	LSP1:1 protection, and PWAPS protection		—
Network-level protection	SNCP1+1 and 1:1 protection, two-fiber multiplex section protection, MSP protection, and 2M optical interface 1+1 protection		
OAM	u Ethernet service OAM (IEEE802.1ag) u MPLS-TPOAM u SDHOAM		SDHOAM
Packet QoS	u Flow classification: simple flow classification and complex u PHB priority: CS7, CS6, EF, AF4, AF3, AF2, AF1, BE u Traffic policing u Traffic shaping u Queue scheduling u Congestion management u Port QOS queue performance statistics		—
Clock synchronization	TDM clock synchronization, synchronous Ethernet, external clock input and output		
Time synchronization	1588v2, external time input and	External time input and output	
Tunnel	MPLS-TPTunnel		—
PW features	Single section PW		—

TABLE 1-1   List of Product Features (Continued)

Features	FonsWeaver780C	FonsWeaver780D	FonsWeaver780E
L2 Ethernet features	u Support the Ethernet subinterface u Support LAG interface u Support QinQ u Support automatic discovery of LLDP link u Support loop detection function and automatic close of ports u Support the inner and outer loopback mechanism of Ethernet u Support port-based VLAN partition u Support MAC entry restriction u Support unknown unicast/multicast/broadcast limit		—
L3 Ethernet features	u Support MPLS, u QoS, and u static/dynamic ARP u with Ethernet		—

The product features supported by the FonsWeaver 780C/D extended subframe are listed in the following table.

Features	PRO
SDH low-order cross capacity (Gbit/s)	1
SDH high-order cross capacity (Gbit/s)	5
Slot distribution	U service slots: 16 U line slots: 2 U main control clock slots: 2 U power slots: 2 U fan slot: 1
Service type	SDHE1 service
Line rate	2.5Gbit/s
Network Application	Large-scale E1 service application
Device-level protection Note 1	Power plate 1+1 protection, and E1 unit 1: NTPS protection
Clock/time synchronization	Clock synchronization: TDM clock synchronization, external
Note 1: The extended subframe main control clock unit does not support 1+1 protection for the time	