DPX17000 Deep Service Core Switch

DP tech
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Overview

DPX17000 series is a new generation deep service core switch self-developed by Hangzhou DPtech, Co., Ltd. Based on DPtech APP-X hardware architecture, ConPlat operation system, and APP-ID application and threat signature database，DPX17000 provides large-capacity switching, routing, security and application delivery services, to help build an elastic and virtualized network core for the next generation Service-Oriented and security-focused enterprise IT infrastructure.

DPX17000 series adopts CLOS multistage switching architecture and separates the control plane and the forwarding plane by hardware, thus maximizing device reliability and allowing continuous bandwidth upgrade. The industry-leading hardware-based cluster features makes it easy to upgrade the system's switching capacity to maximum of 256Tbps. All critical components including main control unit, switching fabric, power supply, and fans are redundancy design, achieving carrier-class hardware availability.

DPX17000 provides comprehensive virtualization capabilities, VSM (virtual Switching Matrix) N: 1 virtualization and OVC (OS-Level Virtual Context) 1: M virtualization will enforce the L2-7 layer N: M virtualization, which can convert multiple physical network, security and application delivery modules into a "resource pool" for flexible scheduling. The vertical virtualization technology VEM (Virtual Extension Matrix) can virtualize core and access devices into one logical device to simplify the network to 1-tier architecture. Using the UMC (Unified Management Center) management platform, DPX17000 provides automated network management and maintenance programs, and can enable SDAN (Software Defined Application Network) through APP Flow or third-party interface.

DPX17000 is able to provide the most abundant services in the industry, supports more than 20 types of service modules including application firewall, IPS, load balancing, anti-DDoS, WAF and BRAS etc. The elastic service expansion technology allows dynamically adjusting service modules without restarting system, improving performance by increasing modules, and adding services and features by extending different modules. The ConPlat OS buildup a network and service deeply integrated platform, working together with the innovative "Flow Definition Template" service scheduling technology, DPX17000 will completely solve flow scheduling constraints between different service modules in chassis.

DPX17000 deep service core switch consists of three models: DPX17000-A5, DPX17000-A12 and DPX17000-A20 to meet demands of different-scale networks for performance, services and ports. It can be deployed in critical positions such as the core of high-end campus network, MAN convergence and large capacity gateway, providing an integrated solution implementing high-quality switching, routing, access control, load balancing, traffic control, CGN, and DPI.

Industry-leading Performance

- Provide a maximum of 128Tbps switching capacity for one chassis and can be smoothly upgraded to 256Tbps in future, protecting users' investment.
- Support 200ms caching capacity on each port, which can meet no packet loss demand for networks with high traffic bursts and ensure network service quality.
- Support high-density 40GE and 100GE interface modules such as 48*10GE, 16*40GE and 8*100GE. A single device supports up to 96 100GE, 192 40GE and 832 10GE ports, fully meeting application demands of next generation enterprise IT infrastructure.

Innovative VSM Hardware-based Cluster Technology

- The industry-leading VSM hardware-based clustering technology makes it able to implement a non-blocking switching system with multiple chassis by using dedicated cluster switching fabric. Compare with traditional stacking technology, VSM hardware-based cluster provides larger bandwidth, higher reliability and don't occupy any service interfaces.

Virtualization and Data Center Technology

- Innovative N: M virtualization can virtualize multiple physical network, security and application delivery modules into one logical device, and then virtualize this large logical device into several independent virtual devices, achieving "granulation" of resources on the service platform. This greatly improves utilization efficiency of resources, and thus allowing users to flexibly deploy resources required by applications.
- OVC can virtualize a physical device into Ns logical devices, satisfying multi-tenant demands for sharing core devices, and can realize complete isolation of L2-7 services between multiple service systems through OVC technology.
- VSM can virtualize multiple physical devices into one logical device, and provide control plane redundancy for virtual groups, distributed forwarding, cross-device link aggregation and unified IP management.
- VEM can virtualize multiple access and core devices into one logical device. In this way, the access devices becomes the port extension of the core device, simplifying management and cabling. Together with the service modules and "Flow Definition Template" technology, it can implement "secure to boundary" security protection for the entire network.
- TRILL(Transparent Interconnection of Lots of Links) and VXLAN(Virtual eXtensible Local Area Network) technologies help to build a simple and flexible large layer 2 network to fit large-scale

servers interconnection requirement in data center.

Deep Integration Network Services

- Integrate switching, routing, security and application delivery into a unified system, simplifying deployment and release supervisors from complex network management.
- Rich service expanding capabilities with support deep service features such as application firewall, IPS, flow control, application delivery, Anti-DDoS, WAF and etc.
- Innovative and flexible service scheduling based on "Flow Definition Template" enables precise data flow definition according to portfolio policies and flexible data flow customization between different service modules. This completely solved flow scheduling constraints between different service modules in the chassis.
- The elastic service expansion technology allows dynamic adjustment of service modules without restarting the system. It is plug-and-play, and achieves flexible deployment of services on demand.
- Powerful network adaptability and fully support abundant network features such as IPv4/IPv6 routing, L2/3 MPLS VPN, wireless, and BRAS.

Core-level High Availability

- Adopt industry-leading CLOS architecture with the main control unit and switching fabric independent from each other, significantly improving reliability and ensuring bandwidth upgrade of subsequent products.
- Adopt fully redundant hardware architecture, 1+1 main control unit redundancy, N+1 switching fabric redundancy, 1+1 fan module redundancy and N+M power supply redundancy.
- Support technologies such as graceful restart, hot patches, and data/control/monitor plane separation, ensuring 99.999% carrier-class reliability.
- Support fast fault detecting technologies such as BFD and OAM, and offer multiple device-level and network-level fault detecting ways.

DPX17000-A20   **DPX17000-A12**   **DPX17000-A5**

Specification

Item	DPX17000-A5	DPX17000-A12	DPX17000-A20
Switching Capacity	36Tbps/72Tbps	88Tbps/176Tbps	128Tbps/256Tbps
Packet Forwarding Rate	5400Mpps/21600Mpps	13200Mpps/52800Mpps	19200Mpps/76800Mpps
MCU(Main Control Unit) Slots	2	2	2
Switching Fabric Slots	1-4		
Service and Interface module Slots	4	10	12
Extension Service Slots	1	2	8

VSM Hardware-based Cluster	Support	Support	Support
Power Supply	N+M redundancy (Full load 2 block)	N+M redundancy (Full load 4 block)	N+M redundancy (Full load 6 block)
Interface Module	Support 24*GE, 48*GE, 48*GE with PoE, 4*10GE, 8*10GE, 32*10GE, 48*10GE, 8*40GE, 16*40GE, 2*100GE and 8*100GE		
Service Module	• Application Firewall Module • Intrusion Prevention System (IPS) Module • Traffic Management Module • Anti-DDoS Module • Application Delivery Module • Web Application Firewall Module • Wireless Controller Module • BRAS Module		
Layer 2 Feature	• VLAN, PVLAN, VLAN Mapping, QinQ, Flexible QinQ • VLAN assignment based on MAC address/port/subnet/protocol • Link aggregation, cross-board link aggregation • Port mirroring and traffic mirroring • Strom constrain, Broadcast/multicast/unknown unicast suppression • STP,RSTP,MSTP		
Layer 3 Feature	• IPv4: static routing, RIP v1/v2, OSPF, BGP, and policy routing • IPv6: IPv6 static routing, RIPng, OSPFv3, BGP4+, and IPv4 to IPv6 tunneling		
Virtualization	• VSM L2-7 N: 1 virtualization, which can virtualize multiple L2-7 physical devices into one L2-7 logical device. • OVC L2-7 1: M virtualization, which can virtualize one L2-7 physical/logical device into multiple L2-7 logical devices. • VEM L2-7 vertical virtualization, which can virtualize multiple physical access devices and core L2-7 devices into one L2-7 logical device. • Flow Definition Template technology allow defining the service flow based on L2-7 protocol characteristics and assigning physical/logical service modules the flow passes through on demand. • Support the unified IP management and configuration GUI for the host and service modules.		
MPLS/VPLS	• L3 MPLS VPN, VPLS, VLL, hierarchical VPLS, QinQ + VPLS access, P/PE, LDP and MPLS OAM.		
Data Center	• Support 802.1Qbg, TRILL and DCB. • Support VXLAN hardware gateway.		
Multicast	• IGMPv1/v2/v3 • IGMPv1/v2/v3 Snooping • PIM-SM/PIM-DM/PIM-SSM.		

Other Network Layer Features	• Traffic classification based on Layer 2, Layer 3, Layer 4, and priority information • Ingress/Egress CAR and 802.1P/DSCP priority Mark/Remark. • Support multiple actions including permit, deny, redirect, VLAN modification, and mirroring.
Application Firewall	• Provide maximum of 160Gbps throughput for a single module. • Support functions such as security zone isolation, access isolation, attack defense, NAT, and IPSec/SSL/PPTP/L2TP VPN.
IPS	• Provide maximum of 40Gbps throughput for a single module. • Provide layer 7 security protection and active protection against vulnerability attacks, web page tampering and SQL injection. • The built-in IPS anti-virus database provides real-time intercept against various worms and viruses.
UAG	• Provide maximum of 40Gbps throughput for a single module. • Identification, classification and L7 deep packet traffic management • Achieve visualization of network traffic and application, • Ensure critical services bandwidth by constrain non-critical services like P2P and games • Provide nearly 10 million URL database which is divided into dozens of categories, thus users can use URL control strategies simply and flexible
Application Delivery	● Provide maximum of 160Gbps link load balancing and 40Gbps server load balancing performance for a single module. ● Support functions such as link load balancing, server load balancing and application acceleration, ensuring fast and available applications.
Anti-DDoS Module	● Provide maximum of 160Gbps throughput for a single module. ● The combination of detection and cleaning effectively protects the MAN and IDC against massive DDoS attacks.
Wireless Controller	● Provide 801.11AC AP and 802.11n AP management, wireless user access control and security protection, 802.1x, MAC and Portal authentication. ● Support centralized/distributed forwarding.
BRAS	● Provide maximum of 100K users and 40Gbps throughput for a single module. ● Support authentication methods such as PPPoE, IPoE, Portal and 802.1X to implement centralized authentication, charging and management for large-scale users. ● Support N+M backup and N: 1 virtualization.
Management	● Support FTP, TFTP and Xmodem. ● Support web management interface and SNMP v1/v2/v3. ● Support RMON, NTP clock and intelligent power management. ● Support UMC.

Availability	• Adopt the CLOS architecture with the main control unit and switching fabric separated by hardware. • Support fast fault detecting technologies such as BFD and OAM. • Support 1+1 MCU redundancy, N+1 switching fabric redundancy, 1+1 fan module redundancy and N+M power supply redundancy. • Support online device health detection and allow detecting critical components such as MCU, switching fabric, chips and storage.		
Maximum Power Consumption	2400W	4800W	7200W
Weight	25.8kg	49.1kg	80kg
Dimensions (W x H x D)	442×309×480（mm）	442×703×480（mm）	442×1019×480（mm）