Chassis-Based Switches

Designed for Enterprise LAN and MAN

+ Deployable as Core or Edge Switch
+ Enterprise-Class Software Functions
+ Support IPv6, NAT, MPLS, IPFIX services
+ User-Selectable AC and DC Power Supplies

Superior Performance

+ Dual Switch Fabrics Up to 384Gbps, 286Mpps Packet Forwarding
+ Bottleneck-Free Distributed Packet Switching/Routing
+ Intelligent Line Cards with On-Board L2/L3/L4 Switching Controllers

Flexible Modular Design

+ 6-Slot and 10-Slot Chasses
+ Scalable Expansion to 384 10/100/1000BASE-T, 384 PoE, 192 SFP or 32 10-Gigabit Ports
+ Single or Dual Control Modules/Power Supplies

High Resiliency

+ Dual Redundant Backup/Load-Sharing Control Modules
+ Dual Redundant Backup Power Supplies
+ Hot-Swappable Control and Line Cards
+ Replaceable Fan Modules
+ 802.1D/w/s Spanning Tree, 802.3ad Link Aggregation/Backup Redundancy
+ Rapid Ether Ring Protection (RERP)
+ VRRP Support

Robust Security

+ Advanced L2/L3/L4 ACL
+ IP-MAC-Port Binding
+ Virus/Malicious Traffic Flooding Prevention
+ CPU Protection Policy (CPP)

D-Link's DES-7200 series of chassis-based switches are intelligent and high-performance multi-layer LAN devices designed for enterprise campus and metropolitan area networks (MAN). They are ideal for deployment in environments where uninterrupted running of network applications and a high level of performance, security and control are required.

Featuring a flexible modular architecture and industry standard compliance, these switches provide scalable expansion and a high level of investment protection for businesses and telecom carriers to deploy Gigabit and 10-Gigabit packet switching and routing for office networking and Ethernet-based Internet services to homes.

The DES-7200 series switches feature minimum or zero network downtime, robust security and real-time running of bandwidth-intensive applications. Equipped with high-speed switch fabrics, redundant backup/load sharing capability and advanced software functions including complete IPv6 support, these switches provide the performance, high availability and future-proof architecture suitable for applications of not just today but well into the future.

Two DES-7200 series offers end-to-end connectivity and granular application control with two chasses supporting a wide range of port modules:

DES-7206 6-slot chassis with:
- 2 slots for dual control modules with dual load-sharing/redundant switch fabric of up to 192Gbps
- 4 slots for user-selectable port modules
- 2 slots for redundant backup power supplies
- 1 slot for fan module
- Up to 192Gbps switch fabric
- 142Mpps packet forwarding rate
- Up to 192 Gigabit ports
- Up to 16 10-Gigabit ports

DES-7210 10-slot chassis with:
- 2 slots for dual control modules with dual load-sharing/redundant switch fabric of up to 384Gbps
- 8 slots for user-selectable port modules
- 2 slots for redundant backup power supplies
- 1 slot for fan module
- Up to 384Gbps switch fabric
- 286Mpps packet forwarding rate
- Up to 384 Gigabit ports
- Up to 32 10-Gigabit ports

DES-7206
6-Slot Chassis

DES-7210
10-Slot Chassis

Chassis-Based Switches

QoS & Bandwidth Management

+ Rate Limiting for End-Users Subscribers' CPE
+ Granular Bandwidth Control Down to 64Kbits for Ingress and Egress traffic
+ Traffic Classification

Versatile Management

+ Telnet/CLI/SNMP v1, v2c, v3 Management
+ RMON Monitoring
+ System/Alert Information, Interface Management
+ Optional Dual Management Modules
+ 802.1v Protocol VLAN, Super VLAN, Private VLAN, Double VLAN
+ L3 Protocol-Based Policies
+ Port Mirroring/Traffic Redirection

Flexible Modular Design

The DES-7200 series is available in two models: the DES-7206 6-slot chassis with 4 open slots, and the DES-7210 10-slot chassis with 8 open slots. The open slots can be fitted with user-selectable port modules. In addition to the open slots, 2 slots are reserved for redundant backup control modules, 2 slots for redundant backup power supplies, and slots for replaceable fan modules. This modular architecture allows modules to be gradually added to meet network growth, and modules to be easily swapped anytime to fit network requirement change.

Deployable as Core or Distribution Switch

Using a common set of modules for 10/100/1000BASE-T ports, PoE support, SFP and 10-Gigabit uplinks, IT personnel can fit a DES-7200 switch with different port types and deploy it either as a core switch or an aggregation (i.e. distribution) switch. A DES-7200 core switch provides numerous high-speed fiber backbones for a campus and central office network, while a DES-7200 aggregation switch can provide high port density connections to workstations in an office environment, or to subscribers' CPE in a densely populated Ethernet metro area network.

High Availability

Both the DES-7206 and the DES-7210 provides 2 slots for installation of control modules. Each control module is equipped with its own switch fabric hardware and management agent, and can be used for redundant backup and sharing of network traffic load and management tasks. Adding to this feature are 2 redundant backup power supplies and hot swappable fan module to create very highly available chassis-based devices suitable for mission-critical network applications.

High Performance

The DES-7206 6-slot switch provides, a switch capacity of up to 192Gbps and a system performance of up to 142Mpps. The DES-7210 10-slot switch provides, a switch capacity of up to 384Gbps and system performance of up to 286Mpps. To make use of this high-performance hardware, these switches utilize a distribution switching method which has each line card (the port module that directly connects to the network nodes) intelligently determine the switch path for each data packet. The switches synchronize the switching and routing information between the control cards and the line cards to map out the fastest data transfer path. With each line card capable of performing L2/3/4 on-board packet switching without relying on the control cards, the DES-7200 switches can deliver very fast packet forwarding at almost zero-wait speed.

High Port Densities

Port densities can reach 192 Gigabit or 16 10-Gigabit ports per 6-slot chassis, or 384 Gigabit or 32 10-Gigabit ports per 10-slot chassis. All port modules are hot-swappable, and can be used for in either chassis type without the need to change any hardware or software settings.

Application Convergence

The DES-7200 combines high-speed hardware with software functions like prioritized traffic QoS and multicast routing to deliver the performance suitable for real-time applications such as Internet phone, streaming multimedia and TV. In addition, these switches offer Power over Ethernet (PoE) solutions to provide both electrical power and network connectivity to PoE-capable devices, such as IP phones and wireless AP, and are ideal for large-scale enterprise edge deployment. An example of this application convergence would be VoIP for mobile users via wireless access points connected through the DES-7200 switches.

Chassis-Based Switches

Complete IPv6 Support
The DES-7200 provides complete support for IPv6 to accommodate the potential huge increase in number of users and geographical needs of the Internet expansion. It addresses the requirements of emerging applications such as Internet-enabled wireless devices, home and industrial appliances, Internet-connected transportations, integrated telephony services, sensors networks, and distributed computing or gaming. The use of globally unique IPv6 addresses simplifies the mechanisms used for reach-ability and end-to-end security for network devices, functionality that is crucial to the applications and services that are driving the demand for IP addresses

Enterprise-Wide Security
The DES-7200 provides not only network access security but also protection against virus and worm attacks. Access security is provided through comprehensive policy-based ACL, port security, IP-MAC-Port binding features and Defeat IP Scan, while attacks hidden behind control protocols are thwarted to prevent the switch's CPU from being overwhelmed with unnecessary tasks which can cause degradation to a network's performance. The DES-7200 extends security to network management via such functions as SSH v2 and SNMP v3 with authentication and encryption of management traffic.

MPLS Functions
With the use of Advanced Service Engine (ASE), the DES-7200 supports many advanced Multi-protocol Label Switching (MPLS) functions, including MPLS label management, LDP, MPLS L2/L3 VPN and VPLS, enabling enterprises and service providers to build next-generation intelligent networks that deliver a wide variety of advanced, value-added services over a single infrastructure. This solution can be integrated seamlessly over any existing infrastructure, such as IP, Frame Relay, ATM, or Ethernet. Subscribers with differing access links can be aggregated on an MPLS edge without changing their current environments, as MPLS is independent of access technologies.

NAT Traversal and Accounting
The DES-7200 provides Layer 3 IP packet routing with Network Address Translation (NAT) useful for enterprise networks as well as Internet providers offering Ethernet metro area network services. With dynamic IP address generation for users in a campus LAN and subscriber CPEs in a carrier network, the DES-7200 can be deployed for end-to-end services without incurring the cost of attaching external routers to packet switching devices. In addition, the DES-7200 provides 802.1X access control with period accounting, multiple accounting and statistics, bandwidth restriction and RADIUS server support, enabling carriers to implement complete Ethernet-based Internet services to home customers.

QoS & Bandwidth Management
The DES-7200 supports numerous advanced traffic management options including flow-based bandwidth control and broadcast/multicast storm control. It provides egress traffic bandwidth control with minimum granularity of 64Kbits. Combining Rate Limiting applicable to categories of subscriber CPE and access control-based accounting, the DES-7200 provides the functions useful for carriers offering services to home users in a metropolitan Ethernet network.

Comprehensive Management
To maximize management uptime, the DES-7200 provides optional dual redundant backup management agents in the same chassis. It offers a comprehensive set of management features to provide enterprise-wide visibility and control to network administrators for configuration, access/traffic monitoring and troubleshooting. These features are accessible through a CLI, Telnet or SNMP console. RMON monitoring is supported, and complete debug, system information, alert information and interface management are provided.

Technical Specifications

Hardware (Chassis)	7206	7210
Chassis Slots	6	10
Fixed Slots (for Control Modules)	2	2
Open Slots (for Port Modules)	4	8 (vertical)
Max. Switch Capacity *	192 Gbps	384 Gbps
Max. Packet Forwarding Rate *	142 Mpps	286 Mpps

Module Support Matrix						
Modules	Port Type				Module Support	
Modules	10/100/1000Base-T	10/100/1000Base-T/SFP Combo	SFP	10G XFP	DES-7206	DES-7210
CPU Engines						
7200-CM1	-	-	-	-	√	
7200-CM2	-	-	-	-		√
7200-CM3^	-	-	-	-	√	
7200-CM4^	-	-	-	-		√
Advanced Service Engines						
7200-ASE1**	-	-	-	-	√	√
7200-ASE2**	-	-	-	-	√	√
7200-ASE3	-	-	-	-	√	√
7200-ASE4**	-	-	-	-	√	√
LAN Interface Modules						
7200-24	12	12	-	-	√	√
7200-24G	-	12	12	-	√	√
7200-24P	12(PoE)	12(PoE)	-	-	√	√
7200-48	44	4	-	-	√	√
7200-48P	44(PoE)	4(PoE)	-	-	√	√
7200-2XG	-	-	-	2	√	√
7200-4XG	-	-	-	4	√	√
Enhanced LAN Interface Modules						
7200-24GE	-	-	24^^	-	√	√
7200-24G2XGE**	-	-	24	2	√	√
7200-48E**	48	-	-	-	√	√
Power Supplies						
7206-1200AC	-	-	-	-	√	√
7206-1200DC	-	-	-	-	√	√
7206-2000AC	-	-	-	-	√	√
7206-2000DC	-	-	-	-	√	√
Fan Tray Modules						
7206-Fan	-	-	-	-	√	
7210-Fan	-	-	-	-		√

Notes:
* Note: Figures are based on the usage of 2 control modules.
** Note: Available in future
^ Note: Support Advanced Service Engine(ASE)
^^Note: Support dual speed 100/1000M SFP

Maximum Port Density	7206	7210
10/100/1000BASE-T Ports	192	384
10/100/1000BASE-T Ports with PoE	192	384
SFP Slots	96	192
10-Gigabit Ethernet XFP Slots	16	32

Fan Tray Modules	7206-Fan	7210-Fan
Number of DC Fans	6	

Power Supply Modules	7200-1200AC	7200-2000AC	7200-1200DC	7200-2000DC
AC Input Voltage	90 to 264 VAC @ 40 - 60Hz	90 to 264 VAC @ 40 - 60Hz	-	-
DC Input Voltage	-	-	-36 to -72 VDC	-36 to -72 VDC
Total Power Output (Watts)	1200	1200 output @ 90 - 176 VAC 2000 output @ 176 - 264 VAC	1200	2000

TECHNICAL SPECIFICATIONS

L2 Features
+ MAC Address Table
  16K per standard I/O module
  32K per enhanced I/O module
+ ARP
  Static ARP
  Configurable ARP aging time
+ Jumbo Frame up to 9,216 Bytes
+ IGMP snooping
  1K Groups
  IGMP Proxy
+ Spanning Tree
  802.1D STP
  802.1w RSTP
  802.1s MSTP
+ Rapid Ether Ring Protection (RERP)
  Support up to 16 domains
  Recovering L2 traffic in 500ms
+ Rapid Link Detection Protocol (RLDP)
+ 802.3ad Link Aggregation
  128 Trunk Groups, 8 Ports Per Group
+ Port Mirroring:
  One-to-One
  Multi-to-One
  Tx/Rx/Both port mirroring
+ Head of Line Blocking Prevention

VLAN
+ 802.1Q Tagged VLAN
+ 802.1v
+ VLAN Group: 4K
+ Port-Based VLAN
+ Super VLAN
+ Private VLAN
+ Double VLAN (Q-in-Q)
  Port-Based Q-in-Q
  Selective Q-in-Q

L3 Features
+ Max 2K IP interface
+ Secondary IP
+ VRRP
+ IPv6 Tunneling
  Manual Tunnel
  ISATAP
  6to4
+ IPv6 Ready Phase 2

L3 Routing
+ Routing Entries: 12K 192K (With ASZ3)
+ Static Routes: Max. 1K
+ Policy Based Route
+ Multi Path Route:
  ECMP /WCMP
+ RIP v1/v2
+ RIPng (IPv6)*
+ OSPF
  OSPF v2
  OSPF v3 (IPv6)
  Stub/NSSA Area
+ BGP v4
+ BGP+ v4 (IPv6)

L3 Multicasting
+ PIM-DM
+ PIM-DM v6 *
+ PIM-SM
+ PIM-SM v6*
+ PIM-SSM
+ PIM-SSM v6*
+ IGMP v1/v2/v3
+ PIM Snooping

QoS (Quality of Service)
+ 802.1p Class of Service (CoS)
+ 8 queues
+ Queue Handling:
  Strict
  Weighted Round Robin (WRR)
  ST+WRR
+ CoS Based on:
  VLAN ID
  802.1p Priority
  MAC Address

MPLS/VPLS
+ VRF (Enhanced I/O module or 7200-ASE3 is required)
+ MPLS Label Management (7200-ASE3 is required)
+ LDP (7200-ASE3 is required)
+ MPLS L3 VPN (7200-ASE3 is required)
+ VPWS* (7200-ASE3 is required)
+ VPLS* (7200-ASE4 is required)

NAT* (7200-ASE1 is required)

IPFIX (7200-ASE2 is required)
+ Support 128K IPFIX entries

ACL (Access Control List)
+ Ingress / Egress**ACL
+ ACL Based on
  802.1p Priority
  VLAN ID
  MAC Address
  IP Address or IP Prefix
  DSCP/IP Precedence
  IP Protocol Type
  TCP/UDP Port Number
  Combination of the above
+ Time-based ACL

Security
+ CPU Protection Policy (CPP)
+ SSH v1.5/v2
+ Port Security up to 16 MAC address per port
+ Global MAC-IP Binding
+ Defeat IP Scan
+ IP-MAC-Port Binding

AAA
+ 802.1X
  Port-Based Access Control
  MAC-Based Access Control
  Dynamic VLAN Assignment
+ Accounting
  Period Accounting
  Multiple Accounting
+ RADIUS

Management
+ Command Line Interface (CLI)
+ Telnet Server
+ TFTP
+ DHCP Server
+ DHCP Relay
+ DHCP Relay option 82
+ XModem
+ SNMP v1/v2c/v3
+ SNMP Trap
+ System Log
+ RMON v1
  Support 1,2,3,9 Groups
+ DNS Client
+ Debug
+ NTP/SNTP
+ File System
  Flash storage media
  Multiple Firmware
  Multiple Configuration
+ System Status LED
+ System Alert

MIB/IETF Standard
+ RFC1213 MIB-II
+ RFC1493 Bridge MIB
+ RFC1901, 1907 SNMPv2 MIB
+ RFC1157, 2571~2576 SNMP MIB
+ RFC1271, 2819 RMON MIB
+ RFC3569 PIM-SSM MIB
+ D-Link Private MIB
+ RFC2362 PIM-SM
+ RFC2338, 2787 VRRP
+ RFC1075 DVMRP
+ RFC2474~2475 DiffServ
+ RFC2674 802.1p
+ RFC2138~2139, 2865~2866 RADIUS
+ RFC1370, 1587, 1765, 1850,2328, 2370 OSPF
+ RFC1771, 1997, 2439, 2796, 2842, 2918 BGP
+ RFC1542, 2131, 3046 DHCP
+ RFC3069 Super VLAN
+ RFC3411~3417 SNMP
+ RFC768 UDP
+ RFC791 IP
+ RFC793 TCP
+ RFC854 Telnet
+ RFC1305 NTP
+ RFC1350 TFTP
+ RFC1769 SNTP
+ RFC2096 IP FDB MIB
+ RFC1724 RIP v2 MIB
+ RFC2933 IGMP v3 MIB

* Function available in future firmware upgrade
** Enhanced LAN Interface Module is required

Product Description

Chassis Kits

DES-7206-Base	6 slots chassis base with Fan module without Power supply
DES-7210-Base	10 slots chassis base with Fan module without Power supply

LAN Interface Modules

7200-24	12 ports 10/100/1000M and 12 ports combo 10/100/1000M / SFP module
7200-24G	12 ports SFP and 12 ports combo 10/100/1000M / SFP module
7200-48	48 ports 10/100/1000M module and 4 ports combo10/100/1000M / SFP module
7200-2XG	2 ports XFP module
7200-4XG	4 ports XFP module
7200-24P	12 ports 10/100/1000M and 12 ports combo 10/100/1000M / SFP module with PoE function
7200-48P	48 ports 10/100/1000M module and 4 ports combo10/100/1000M / SFP module with PoE function

Enhanced LAN Interface Module

7200-24GE	24 ports 100/1000M SFP module
7200-24G2XGE*	24 ports SFP and 2 ports XFP module
7200-48E*	48 ports 10/100/1000M module

Power Supplies

7200-1200AC	1200W redundant AC power supply
7200-1200DC	1200W redundant DC power supply
7200-2000AC	2000W redundant AC power supply
7200-2000DC	2000W redundant DC power supply

CPU Engines

7200-CM1	CPU module for DES-7206 chassis, 96G switching capacity
7200-CM2	CPU module for DES-7210 chassis, 192G switching capacity
7200-CM3	CPU module for DES-7206 chassis, 96G switching capacity, support Advanced Service Engine(ASE)
7200-CM4	CPU module for DES-7210 chassis, 192G switching capacity, support Advanced Service Engine(ASE)

Advanced Service Engine

7200-ASE1*	Advanced Service Engine for NAT support
7200-ASE2*	Advanced Service Engine for IPFIX support
7200-ASE3	Advanced Service Engine for MPLS support, 192K H/W routing table and 24K L3 FDB
7200-ASE4*	Advanced Service Engine for VPLS support

Accessories

7200-512RAM	512MB additional RAM for CPU models CM3/CM4.

Optional Products

Optional Management Software

DV-600P	D-View 6.0 Network Management Software Professional Edition
DV-600S	D-View 6.0 Network Management Software Standard Edition

Optional 10-Gigabit XFP Transceivers

DEM-421XT	XFP transceiver, 10GBASE-SR standard, multi-mode fiber, max. distance 300 m, 3.3/5V
DEM-422XT	XFP transceiver, 10GBASE-LR standard, single-mode fiber, max. distance 10 km, 3.3/5V
DEM-423XT	XFP transceiver, 10GBASE-ER standard, single-mode fiber, max. distance 40 km, 3.3/5V

Optional SFP Transceivers

DEM-310GT	SFP transceiver, 1000BASE-LX standard, single-mode fiber, max. distance 10 km, 3.3V
DEM-311GT	SFP transceiver, 1000BASE-SX standard, multi-mode fiber, max. distance 550m, 3.3V
DEM-312GT2	SFP transceiver 1000BASE-SX standard, multi-mode fiber, max. distance 2km, 3.3V
DEM-314GT	SFP transceiver, 1000BASE-LX standard, single-mode fiber, max. distance 50km, 3.3V
DEM-315GT	SFP transceiver, 1000BASE-LX standard, single-mode fiber, max. distance 80km, 3.3V
DEM-330T	WDM SFP transceiver, 1000BASE-LX standard, single-mode fiber, max. distance 10 km, 3.3V, Tx wavelength 1550 nm, Rx wavelength 1310 nm
DEM-330R	WDM SFP transceiver, 1000BASE-LX standard, single-mode fiber, max. distance 10 km, 3.3V, Tx wavelength 1310 nm, Rx wavelength 1550 nm
DEM-331T	WDM SFP transceiver, 1000BASE-LX standard, single-mode fiber, max. distance 40 km, 3.3V, Tx wavelength 1550 nm, Rx wavelength 1310 nm
DEM-331R	WDM SFP transceiver 1000BASE-LX standard, single-mode fiber, max. distance 40 km, 3.3V, Tx wavelength 1310 nm, Rx wavelength 1550 nm
DEM-211	SFP transceiver, 100BASE-FX Multi-mode fiber, max. distance 2Km, 3.3V
DEM-210	SFP transceiver, 100BASE-FX Single-mode fiber, max. distance 15Km, 3.3V

* Note: Available in future

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