

D6232Q DATACENTER SWITCH



Product Overview

The Inventec D6232Q is a 40GbE QSFP+ top of rack switch ideal for Datacenter server access as well as Enterprise and Service Provider network deployments. It is capable of line-rate L2/L3 switching performance in a compact 1RU form factor. The D6232Q switch is equipped with a 2.4GHz x86 Quad-Core CPU and supports a total of with 32x40GbE QSFP+ interfaces with a true PHY-less design. The D6232Q will also support 104x10G SFP+ interfaces with breakout cables. The D6232Q dramatically reduces energy consumption and power efficiency by placing lightly loaded ports into a low power state. It also supports server wake on LAN functionality.

Support for Open Network Ecosystems

The Inventec D6232Q supports multiple Network Operating Systems (NOS) including: Inventec IN-OS and Pica8® PicOS®. The Inventec D6232Q is also OpenFlow and SDN enabled. Full ONIE support assures network operators that the Inventec D6232Q seamlessly integrates into today's open network environments.

Feature-Richness, Performance, and Port Density

The Inventec D6232Q offers low cut-through mode latency, 12MB on-chip packet buffer memory, and dynamic buffer management. Dedicated unicast and multicast queues provide separate scheduling structures with support for applications such as IEEE 802.1Q, VxLAN, L2GRE, and NVGRE. Overall feature-richness, high-availability, performance, port-density, and line-rate switching capability make the D6232Q an excellent choice for next generation large and medium sized datacenters. This also makes the D6232Q well suited for use as a general purpose aggregation switch in Enterprise and Service Provider networks.

Performance

- 1440M Packets per Second
- 2.56 Terabits per Second Throughput
- Line Rate L2/L3 Forwarding
- 12MB Packet Buffer
- 32x40 GbE QSFP+ Interfaces

Control Plane

- CPU Options
 - 2.4 GHz x86 Quad-Core
- 8 GB DDR3 DIMM
- 8 MB SPI Boot Flash

Scalability

- 288 K MAC Entries
- 32 K IPv4 Host Routes
- 16 K IPv4 Routes
- 8 K IPv6 Routes
- 8 K MRoutes
- 4 K IPv6 MRoutes
- 4 K VLANs

High Availability

- 1+1 Hot-Swappable and Redundant Power Supply
- N+1 Hot-Swappable and Redundant Fans
- 802.3ad Link Aggregation/LACP
 - 16 Ports/Channel
 - 64 Groups per System

Programmability and Software Support

- Inventec IN-OS
- Pica8® PicOS®
- ONIE for Bare Metal Provisioning
- Open Source Software Provided as RPM
- Chef and Puppet Client Integration
- Bash Shell



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Flexible Storage

- 8-128 GB SSD for Mass Storage
- 1 x USB Port for External Storage

Layer 2

- Dynamic ARP
- Jumbo Ethernet Frames (up to 12 K bytes)
- Storm Control
 - Broadcast, Unknown
 - Unicast/Multicast
- STP
 - Rapid Spanning Tree (802.1w)
 - Multiple Spanning Tree (802.1s)
- VLAN
 - IEEE 802.1Q tagged based
 - Q in Q VLAN (802.1ad)
 - Private VLAN
- LLDP (802.1ab)
- Link Aggregation
 - 802.3ad with LACP
 - Virtual Port Channel
- Snooping
 - IGMP v1/v2/v3, DHCP, DHCPv6, MLDv1/v2

QoS

- 802.1p, IP Precedence and DSCP Based Classifications
- Differentiated Services
- Rate limiting
- Strict Priority Queueing
- Traffic Shaping
- Up to 10 Queues per Port
- WRED

Network Management and Monitoring

- CLI
- Telnet/SSH
- TFTP/Xmodem/FTP
- IPv6 Management
- Port Mirroring
- sFlow

Layer 3

- Address Resolution Protocol (ARP)
- IGMP v2/v3
- Internet Control Message Protocol (ICMP v4/v6)
- IPv6 (ICMP, OSPF v3, BGP, MLD)
- Open Shortest Path First (OSPF v2/v3)
- PIM-SM, PIM-SSM, PIM-BIDR, PIM-DM
- Policy Based Routing
- Static route
- Virtual Router Redundancy Protocol (VRRP)
- Border Gateway Protocol (BGP), Multi-protocol Extensions for BGP-4 (MP-BGP)
- Equal Cost Multipath (ECMP) (64-way)

Security

- AAA (Accounting and Authorization)
- ACL Logging and Mirroring
- DHCP Snooping
- DOS Protection
- Ingress/Egress L2/L3/L4 ACL
- IP Source Guard
- Management IP Filtering (SNMP/Telnet/SSH)
- Port MAC Locking
- Protected Ports
- Static MAC Filtering
- RADIUS
- TACACS+

Datacenter

- Priority-based Flow control (802.1Qbb)
- Enhanced Transmission Selection (802.1Qaz)
- Data Center Bridging Protocol (802.1Qaz)
- Quantized Congestion Notification (802.1Qau)
- L2 in L3 Tunneling (VxLAN/L2GRE/NVGRE)
- OpenFlow Switch Specification 1.0

SDN and White Box Solutions

- OpenFlow 1.3.1
- Indigo 2.0
- ONIE

Category	Description	Specification
Physical	Form Factor	1 RU Fixed
	Dimensions (D x H x W)	440 x 43 x 48 mm (17.32x1.70x19 inch)
	Weight	9.0 kg (19.85 lbs)
	Interfaces	32x 40 GbE QSFP+ port
	Power Supplies	2 (1+1) Hot-Swappable and Redundant
	Power Connector	IEC320-C13
	Fans	4 (N+1) Hot-Swappable and Redundant
	System Memory	8 GB
	Flash Storage	8-128 GB
	External I/O	1x USB
	MGMT Port	1x GE RJ-45
	Console Port	1x RJ-45 (RS-232)
	Reset	1x Reset Button (Front Panel Mounted)
	Status LEDs	System Health Status/Fan Status
	Activity LEDs	Link Activity/Status
Optics and Cables	SFP+	10GBASE-CR,-CU,-ER,- LR,-LRL,-SRL,-ZR 10G-DWDM, 10 G Active Twinax, 100 TX 1 G SX/LX/TX
	QSFP+	40 GBASE-LR4,-SR4,-XSR4,-CR4 (Active and Passive) 40 G-LRL4, 40 G-PLR AOC-40 G-Q-Q, QSFP-40 G-CSR4
Performance and Scalability	Forwarding	Line-Rate 1440 Mpps
	Throughput	2.56 Tb per Second (Bi-Directional)
	Latency	590 nanoseconds
	Layer 2	288 K MAC Addresses, 4 K VLANs
	Layer 3	32 K IPv4 Host Routes, 16 K IPv4/8 K IPv6 routes, 8 K IPv4/4 K IPv6 Mroutes
	Redundancy	256 x 802.3ad groups; 64-way ECMP
	Buffer	12 MB
	Memory	8 GB
Power	Type	AC
	Input Voltage	100 Vdc~240 Vdc
	Input Current	3.5 A~6.5 A
	Input Frequency	50/60 Hz
	Typical/Max Power Draw	192 W/279 W
Cooling	Front to Back Airflow	Yes
	Back to Front Airflow	Yes
Environmental	Operating Temperature	0~50 °C
	Storage Temperature	-40~70 °C
	Relative Humidity	20~90 %
	Altitude	0~3000 m(0~10,000 ft)
Compliance	EMI	CISPR-22/FCC Part 15 IEC61000-3-2/3 IEC61000-4-2/3/4/5/6/11
	Safety	CB: IEC60950-1 (2nd) CCC: GB 4943.1-2011
	RoHS	RoHS-6

ABOUT INVENTEC

Inventec Enterprise Business Group (EBG) was established in 1998 and has been focusing on the design and manufacturing of server systems. Inventec EBG is the key server system supplier of the global branding clients.

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* Standards and RFC Compliance

ANSI/TIA-1057	LLDP-MED	RFC 3021	Using 31 -Bit Prefixes on IPv4 Point-to-Point Links
IEEE 802.1AB	Link level discovery protocol	RFC 3046	DHCP/BOOTP relay
IEEE 802.1D	Spanning tree	RFC 3056	Connection of IPv6 Domains via IPv4 Clouds
IEEE 802.1p	Ethernet priority with user provisioning and mapping	RFC 3101	The OSPF "Not So Stubby Area" (NSSA) option
IEEE 802.1Q	Virtual LANs w/ port-based VLANs	RFC 3137	OSPF Stub Router Advertisement
IEEE 802.1S	Multiple spanning tree	RFC 3246	An expedited forwarding PHB (Per-Hop Behavior)
IEEE 802.1W	Rapid spanning tree	RFC 3260	New terminology and clarifications for DiffServ
IEEE 802.1X	Port-based authentication	RFC 3315	Dynamic Host Configuration Protocol for IPv6 (DHCPv6)
IEEE 802.3ac	VLAN tagging	RFC 3376	IGMPv3
IEEE 802.3ad	Link aggregation	RFC 3484	Default Address Selection for IPv6
IEEE 802.3x	Flow control	RFC 3493	Basic Socket Interface for IPv6
IETF	DRAFT-idmr-dvmpv3-10 — DVMRP	RFC 3513	Addressing Architecture for IPv6
IETF	DRAFT-magma-igmp-proxy-06.txt — IGMP/MLD-based multicast forwarding (IGMP/MLD proxying)	RFC 3542	Advanced Sockets API for IPv6
IETF	DRAFT-magma-igmpv3-and-routing-05.txt — IGMPv3 and multicast routing protocol interaction	RFC 3577	IPv6 Global Unicast Address Format
RFC 1112	Host extensions for IP multicasting	RFC 3623	Graceful OSPF Restart
RFC 1256	ICMP router discovery messages	RFC 3633	IPv6 Prefix Options for Dynamic Host Configuration Protocol (DHCP) version 6
RFC 1321	Message digest algorithm	RFC 3736	Stateless DHCPv6
RFC 1519	CIDR	RFC 3768	Virtual Router Redundancy Protocol (VRRP)
RFC 1765	OSPF database overflow	RFC 4213	Basic Transition Mechanisms for IPv6
RFC 1812	Requirements for IPv4 routers	RFC 4271	A Border Gateway Protocol 4 (BGP-4)
RFC 1981	Path MTU for IPv6	RFC 4291	Addressing Architecture for IPv6
RFC 1997	BGP Communities Attribute	RFC 4443	ICMPv6
RFC 2131	DHCP relay	RFC 4456	BGP Route Reflectors
RFC 2236	IGMP v2	RFC 4486	Subcodes for BGP Cease Notification Message
RFC 2328	OSPFv2	RFC 4541	IGMP snooping
RFC 2365	Administratively scoped boundaries	RFC 4760	Multiprotocol Extensions for BGP-4
RFC 2370	The OSPF Opaque LSA Option	RFC 5171	Unidirectional Link Detection (UDLD) Protocol
RFC 2385	Protection of BGP Sessions via the TCP MD5 Signature Option	RFC 5340	OSPF for IPv6
RFC 2460	IPv6 Protocol Specification	RFC 5492	Capabilities Advertisement with BGP-4
RFC 2461	Neighbor Discovery	RFC 6164	Using 127-Bit IPv6 Prefixes on Inter-Router Links
RFC 2462	Stateless Autoconfiguration	RFC 6583	Operational Neighbor Discovery Problems
RFC 2464	IPv6 over Ethernet	RFC 6860	Hiding Transit-Only networks in OSPF
RFC 2474	Definition of the differentiated services field (DS Field) in the IPv4 and IPv6 headers	RFC 826	Ethernet ARP
RFC 2475	An architecture for differentiated services	RFC 894	Transmission of IP datagrams over Ethernet networks
RFC 2545	BGP-4 Multiprotocol Extensions for IPv6 Inter-Domain Routing	RFC 896	Congestion control in IP/TCP networks
RFC 2597	Assured forwarding PHB group	RFC3810	MLDv2
RFC 2710	MLDv1	RFC3973	PIM-DM
RFC 2711	IPv6 Router Alert	RFC4601	PIM-SM
RFC 2918	Route Refresh Capability for BGP-4		

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