Product Overview

The Inventec D6232Q is a 40GbE QSFP+ top of rack ideal for Datacenter server access 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, Cumulus® Linux®, 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.

Product Highlights

Performance

- 1440M Packets per Second
- 2.56 Terabits per Second Throughput
- Line Rate L2/L3 Forwarding
- 12MB Packet Buffer
- 32x40GbE QSFP+ Interfaces

Scalability

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

Flexible Storage

- 8-64GB SSD for Mass Storage
- 1 x USB Port for External Storage

Control Plane

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

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

Product Highlights (Continued)

Layer 2

- Dynamic ARP
- Jumbo Ethernet Frames (up to 12K 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), Multiprotocol 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

Product Specifications

Category	Description	Specifications
Physical	Form Factor	1RU Fixed
	Dimensions	448x482x43 mm (17.6x19x1.7 inch)
	Weight	9 kg (19.85 lbs)
	Interfaces	32x40GbE QSFP+
	Power Supplies	2 (1+1) Hot-Swappable and Redundant
	Power Connector	IEC320-C13
	Fans	4 (N+1) Hot-Swappable and Redundant
	System Flash	8MB System Flash
	SSD Storage	8-64GB
	External I/O	1 x USB
	MGMT Port	1 x GE RJ-45
	Console Port	1 x RJ45 (RS-232)
	Reset	1 x 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, 10G Active Twinax, 100 TX 1G SX/LX/TX
	QSFP+	40GBASE-LR4, -SR4, -XSR4, -CR4 (Active and Passive)
		40G-LRL4, 40G-PLR
		AOC-40G-Q-Q, QSFP-40G-CSR4
Performance and Scalability	Forwarding	Line-Rate 1440Mpps
	Throughput	2.56Tb per Second (Bi-Directional)
	Latency	590 nanoseconds
	Layer 2	288K MAC Addresses, 4K VLANs
	Layer 3	32K IPv4 Host Routes, 16K IPv4/8K IPv6 routes, 8K IPv4/4K IPv6 Mroutes
	Redundancy	256 x 802.3ad groups; 64-way ECMP
	Buffer	12MB
	Memory	8GB
Power	Type	AC
	Input Voltage	100~240VAC
	Input Current	3.5 A~ 6.5 A
	Input Frequency	50/60Hz
	Typical/Max Power Draw	192W/279W
Cooling	Front to Back Airflow	Yes
	Back to Front Airflow	Yes
Environmental	Operating Temperature	0~50C
	Storage Temperature	-40~70C
	Relative Humidity	20~90%
	Altitude	0~3000m(0~10,000ft)
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

Standards and RFC Compliance

- ANSI/TIA-1057 LLDP-MED
- IEEE 802.1AB Link level discovery protocol
- IEEE 802.1D Spanning tree
- IEEE 802.1p Ethernet priority with user provisioning and mapping
- IEEE 802.1Q Virtual LANs w/ port-based VLANs
- IEEE 802.1S Multiple spanning tree
- IEEE 802.1W Rapid spanning tree
- IEEE 802.1X Port-based authentication
- IEEE 802.3ac VLAN tagging
- IEEE 802.3ad Link aggregation
- IEEE 802.3x Flow control
- IETF DRAFT-idmr-dvmrp-v3-10 — DVMRP
- IETF DRAFT-magma-igmp-proxy-06.txt — IGMP/MLD-based multicast forwarding (IGMP/MLD proxying)
- IETF DRAFT-magma-igmpv3-and-routing-05.txt — IGMPv3 and multicast routing protocol interaction
- RFC 1112 Host extensions for IP multicasting
- RFC 1256 ICMP router discovery messages
- RFC 1321 Message digest algorithm
- RFC 1519 CIDR
- RFC 1765 OSPF database overflow
- RFC 1812 Requirements for IPv4 routers
- RFC 1981 Path MTU for IPv6
- RFC 1997 BGP Communities Attribute
- RFC 2131 DHCP relay
- RFC 2236 IGMP v2
- RFC 2328 OSPFv2
- RFC 2365 Administratively scoped boundaries
- RFC 2370 The OSPF Opaque LSA Option
- RFC 2385 Protection of BGP Sessions via the TCP MD5 Signature Option
- RFC 2460 IPv6 Protocol Specification
- RFC 2461 Neighbor Discovery
- RFC 2462 Stateless Autoconfiguration
- RFC 2464 IPv6 over Ethernet
- RFC 2474 Definition of the differentiated services field (DS Field) in the IPv4 and IPv6 headers
- RFC 2475 An architecture for differentiated services
- RFC 2545 BGP-4 Multiprotocol Extensions for IPv6 Inter-Domain Routing
- RFC 2597 Assured forwarding PHB group
- RFC 2710 MLDv1
- RFC 2711 IPv6 Router Alert
- RFC 2918 Route Refresh Capability for BGP-4
- RFC 3021 Using 31 -Bit Prefixes on IPv4 Point-to-Point Links
- RFC 3046 DHCP/BOOTP relay
- RFC 3056 Connection of IPv6 Domains via IPv4 Clouds
- RFC 3101 The OSPF “Not So Stubby Area” (NSSA) option
- RFC 3137 OSPF Stub Router Advertisement
- RFC 3246 An expedited forwarding PHB (Per-Hop Behavior)
- RFC 3260 New terminology and clarifications for DiffServ
- RFC 3315 Dynamic Host Configuration Protocol for IPv6 (DHCPv6)
- RFC 3376 IGMPv3
- RFC 3484 Default Address Selection for IPv6
- RFC 3493 Basic Socket Interface for IPv6
- RFC 3513 Addressing Architecture for IPv6
- RFC 3542 Advanced Sockets API for IPv6
- RFC 3587 IPv6 Global Unicast Address Format
- RFC 3623 Graceful OSPF Restart
- RFC 3633 IPv6 Prefix Options for Dynamic Host Configuration Protocol (DHCP) version 6
- RFC 3736 Stateless DHCPv6
- RFC 3768 Virtual Router Redundancy Protocol (VRRP)
- RFC 4213 Basic Transition Mechanisms for IPv6
- RFC 4271 A Border Gateway Protocol 4 (BGP-4)
- RFC 4291 Addressing Architecture for IPv6
- RFC 4443 ICMPv6
- RFC 4456 BGP Route Reflectors
- RFC 4486 Subcodes for BGP Cease Notification Message
- RFC 4541 IGMP snooping
- RFC 4760 Multiprotocol Extensions for BGP-4
- RFC 5171 Unidirectional Link Detection (UDLD) Protocol
- RFC 5340 OSPF for IPv6
- RFC 5492 Capabilities Advertisement with BGP-4
- RFC 6164 Using 127-Bit IPv6 Prefixes on Inter-Router Links
- RFC 6583 Operational Neighbor Discovery Problems
- RFC 6860 Hiding Transit-Only networks in OSPF
- RFC 826 Ethernet ARP
- RFC 894 Transmission of IP datagrams over Ethernet networks
- RFC 896 Congestion control in IP/TCP networks
- RFC3810 MLDv2
- RFC3973 PIM-DM
- RFC4601 PIM-SM