

BlackDiamond® X8* Modular Switch

Frequently Asked Questions (FAQ) for Channel Partners

Extreme Networks Open Fabric

1. What is the Extreme Networks Open Fabric?

The Extreme Networks Open Fabric is non-proprietary, open standards-based approach to provide fabric-based solutions for the Data Center and Cloud Computing environments. Many organizations, private or service provider-based, want to maintain flexibility and control of their network to control costs and enable flexibility in deployment and feature options over time. Given this, data center administrators typically want to avoid proprietary technologies that would lead to vendor lock-in and lack of pricing leverage. Some of the characteristics of a fabric (open or proprietary) are:

- High speed, low latency interconnectivity
- Non-blocking/non-oversubscribed infrastructure
- Layer 2 connectivity
- Multiple active paths with fast failover
- Mesh connectivity rather than a tree type topology
- Simple management, configuration and provisioning

The combination of these technologies, i.e. high density, non-blocking standards-based 40 GbE interconnectivity, multi-path support, and a standards based provisioning solution, such as OpenFlow, provide a viable, open standards solution to the demand for Layer 2 switching fabrics for cloud architectures. For additional information, read the Extreme Networks blog [Path to Interop: Open Fabric for the Cloud](#).

OpenStack Open Source Technologies

2. What is OpenStack?

[OpenStack](#) is a collection of open source technologies delivering a massively scalable cloud operating system. OpenStack is currently developing two interrelated projects: OpenStack Compute and OpenStack Object Storage. [OpenStack Compute](#) is software to provision and manage large groups of virtual private servers, and [OpenStack Object Storage](#) is software for creating redundant, scalable object storage using clusters of commodity servers to store terabytes or even petabytes of data.

3. Who is behind OpenStack?

Backed by Extreme Networks, Rackspace, NASA, Dell, Citrix, Cisco, Canonical and over 50 other [organizations](#), OpenStack has grown to be a [global software community](#) of developers, technologists, researchers and corporations collaborating on a standard and massively scalable open source cloud operating system. Our mission is to enable any organization to create and offer cloud computing services running on standard hardware.

4. Who uses OpenStack?

Corporations, service providers, VARS, SMBs, researchers, and global data centers looking to deploy large-scale cloud deployments for private or public clouds leveraging the support and resulting technology of a global open source community.

5. Why does OpenStack matter?

All of the code for OpenStack is freely available under the Apache 2.0 license. Anyone can run it, build on it, or submit changes back to the project. Extreme Networks and the OpenStack ecosystem strongly believe that an open development model is the best way to foster badly-needed cloud standards, reduce the fear of proprietary lock-in for cloud customers, and create a large ecosystem that spans cloud providers.

*Future Availability.

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6. What is Extreme Networks doing with OpenStack?

As part of our open standards, best-of-breed approach to the data center, we are working with OpenStack to define the networking layer of the Cloud. We are actively working with the OpenStack community to help define and implement networking functionality within the OpenStack service offerings.

OpenFlow Protocol

7. What is Extreme Networks doing with OpenFlow?

Extreme Networks is a member of the [Open Networking Foundation](#) (ONF), a nonprofit industry consortium dedicated to promoting a new approach to networking, called Software-Defined Networking (SDN). Participation in ONF helps Extreme Networks extend its mission to deliver scalability, openness, and investment protection for virtualized cloud and data center networks. ONF's support of the [OpenFlow](#) protocol and routing functions promotes network provisioning, mobility and security.

8. What are we doing with OpenFlow at Interop Vegas?

At Interop Las Vegas, May 8-12th, Extreme Networks (Exhibitor's Booth #2051) will take part in the first-of-its-kind multi-vendor floor demonstration of the OpenFlow protocol in conjunction with the InteropNet and the OpenFlow Lab. Demonstrated will be the extension of a single management domain across a physical and virtual switch infrastructure made up of devices from a variety of vendors, including Extreme Networks® ExtremeXOS®-based Ethernet switches.

OpenStack and OpenFlow Compared

9. What is the relationship between OpenStack and OpenFlow?

OpenFlow and OpenStack are two completely different initiatives. [OpenFlow](#) decouples the control and management plane from the data plane, allowing the intelligence behind forwarding decisions to be centralized in a separate controller. This offers the potential of simplifying network provisioning and traffic management in deployments where traditional distributed control and management planes run into challenges arising out of scale, multiple domains of control, distinct islands of connectivity, and disparate overlay networks. OpenFlow is in its very early stages, and is being pursued under the umbrella of the Open Networking Foundation (ONF). The Board of Directors of the ONF comprises companies that are primarily consumers of this technology, which provides further impetus to this initiative and helps ensure that the problems being addressed are relevant and solutions are pertinent. Extreme Networks is a member of the ONF and plans to work with the board and other members of the ONF to move the technology forward.

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Switch Platform

1. What is changing in the market to drive demand for this new switch platform?

With high density virtualization driving multiple Gbps of traffic from multi-core servers, servers are fast transitioning to 10 GbE as the cost of multiple 1 GbE connections starts approaching the cost of a 10 GbE port. And, with 10 GbE Ethernet providing a foundation for converging networking and storage on to a common Ethernet fabric, the ability to gain further cost savings by running storage and network over a common 10 GbE

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Ethernet infrastructure is fast becoming economical. All of this is leading to a rapid growth in 10 GbE at the data center network edge. The BlackDiamond X8 will offer not just high performance and density network in a single chassis, but will also offer the automation capabilities that are required for addressing rapid provisioning of applications and virtual machines, the intelligence to deal with mobility of applications and virtual machines, and the significantly lower carbon footprint required to be an environmentally-friendly citizen.

2. What will be new about the BlackDiamond X8 modular switch?

The BlackDiamond X8 modular switch will provide a game-changing approach to building scalable networks for highly virtualized and high performance computing environments. It will provide the ideal platform for building collapsed and converged network architectures for high performance and highly virtualized data centers at an industry leading price point. Key features will include:

- high density and capacity (up to 768 non-blocking 10 GbE ports or up to 192 non-blocking 40 GbE ports per switch) in a compact 14.5RU or 1/3 rack size form factor
- Extensive virtualization capabilities, including the ability to switch up to 128,000 virtual machines (VMs) at wire speed
- Support for storage and network convergence
- Extensive automation capabilities
- Industry leading green environmental metrics with power consumption of about 5W per 10 GbE port

3. What might a BlackDiamond X8 elevator pitch sound like?

The BlackDiamond X8 modular switch will double the 10 GbE port density and switching capacity as compared to its nearest competitor, will almost halve the power consumption and forwarding latency, will support up to 192 non-blocking 40 GbE ports or 768 10 GbE ports per chassis, will add support for virtualization and VM mobility, all in the smallest form factor in its class. You can think of the BlackDiamond X8 as a single-tier converged network in a box.

4. What is the anticipated BlackDiamond X8 switching capacity?

The BlackDiamond X8 will have more than 20 Tbps (20.48 Tbps) of switching capacity with 1.28 Tbps switching (2.56 Tbps bidirectional) bandwidth per each of its eight I/O slots at initial release. (The switching capacity will be 2.56 Tbps per slot times 8 slots equals 20.48 Tbps.)

5. What applications will the BlackDiamond X8 target?

Applications for the BlackDiamond X8 will include high-density switching providing low-latency connections and low power consumption for data centers and High Performance Cluster Computing (HPCC), as well as a high-performance core switch for large enterprise networks.

6. What is the anticipated BlackDiamond X8 General Availability (GA)?

The target GA is currently planned for early 2012.

7. Will the BlackDiamond X8 support non-blocking, wire speed ports?

Up to 768 x 10 GbE ports -or- up to 192 x 40 GbE ports will run at non-blocking, wire speed. The BlackDiamond X8 switch will be the only switch that will provide up to 768 x 10 GbE non-blocking, wire-speed ports in a single chassis.

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8. How many rack units will the BlackDiamond X8 require?

Each BlackDiamond X8 switch will fit into a 14.5RU space which will allow 3 switches to fit in a standard 7-foot rack. In a standard 3-switch rack, that converts to 2,304 x 10 GbE ports -or- up to 576 x 40 GbE ports all running at non-blocking, wire speed.

9. What will the BlackDiamond X8 virtual machine capacities be?

The BlackDiamond X8 will provide native hardware support for switching 128,000 virtual machines (VMs) at 10 GbE and 40 GbE line rates. Support for XNV™ (ExtremeXOS® Network Virtualization), automatic tracking of virtual machines and automated movement of virtual port profiles are currently planned to be included in the initial release.

10. What types of 10 GbE optics will the BlackDiamond X8 support?

10GBASE-CR (Direct Attach Copper), 10GBASE-SR (multi-mode fiber), 10GBASE-LRM (multi-mode fiber), 10GBASE-LR (single-mode fiber), 10GBASE-ER (single-mode fiber) transceivers will be supported.

System Architecture

11. What will some of the BlackDiamond X8 architectural advantages be?

The BlackDiamond X8 chassis will be designed to optimize the data center switching infrastructure with an “orthogonal mating” switching fabric and I/O modules for -high bandwidth, separated control plane and a switching fabric with full redundancy, high power-efficient power system, and environmentally efficient variable speed cooling fans with front-to-back (FB) cooling.

12. What does “orthogonal mating” mean in terms of benefits?

The BlackDiamond X8 modular switch will have a state-of-the art hardware design in which the switching fabric and I/O module mate directly in the chassis without having a backplane or mid-plane for the data path. By eliminating the mid-plane, orthogonal direct connectors offer unparalleled signal performance, airflow capacity and upgrade potential. By mating without a mid-plane-mounted pin-field, the BlackDiamond X8 will minimize crosstalk, attenuation and skew associated with more typical backplane and standard mid-plane interconnects, improving signal performance greatly. Without the need for a mid-plane printed circuit board (PCB) cooling through the mid-plane mating area will be vastly improved and the design will offer the ability to move to newer orthogonal connector technologies as they become available. This architecture will provide the ultimate future-proof design for higher bandwidth. This architecture will not apply to the Management Module (MM).

13. How many Switching Fabric Modules (FM) will be needed for wire-speed operation?

The BlackDiamond X8 will support two different types of switching fabric modules (FM) and will be able to support up to four switching fabric modules in a system. Fabric module options will include:

- **A 1.28 Tbps switching fabric module (FM)** used in conjunction with the 24-port 40 GbE modules. When 4 FMs are provisioned, the sustained performance will be up to 1.28 Tbps per slot (up to 2.56 Tbps per slot bidirectional). When 3 FMs are provisioned, the sustained performance will be up to 960 Gbps per slot (up to 1.92 Tbps per slot bidirectional). Wire-speed performance will be maintained even if one FM fails.
- **A 640 Gbps switching fabric module (FM)** that can be used in conjunction with the 12-port 40 GbE and 48-port 10 GbE modules. When 4 FMs are provisioned, the sustained performance will be up to

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640 Gbps per slot (up to 1.28 Tbps per slot bidirectional). When 3 FMs are provisioned, the sustained performance will be up to 480 Gbps per slot (up to 960 Gbps per slot bidirectional).

14. What types of I/O modules will be available for the BlackDiamond X8?

There are three initial BlackDiamond X8 I/O modules which will provide wire-speed switching depending on the number of Switching Fabric Modules (FM) provisioned (see above):

- 24-port 40 GbE module
- 12-port 40 GbE module
- 48-port 10 GbE module

15. Will management and switching fabric modules be separate?

Yes, the management module (MM) is separated from the switching fabric module (FM).

16. How many management modules (MM) will be supported?

The BlackDiamond X8 will support dual management modules, which will work in a redundant configuration.

17. What will be the Layer 2 system scalability?

The BlackDiamond X8 will be able to support up to 128K MAC FDB per I/O module, up to 1M MAC FDB per system.

18. What will be the Layer 3 system scalability?

The BlackDiamond X8 will be able to support up to 16K IPv4 LPM and 8K IPv6 LPM.

19. What will the multicast system scalability be?

The BlackDiamond X8 can support up to 6,000 multicast (s,g,v) entries in hardware.

20. What type of 40 GbE optics will the BlackDiamond X8 support?

40GBASE-SR4 (multi-mode fiber) will be supported. 40GBASE-LR4 (single-mode fiber) transceivers will be supported as the optics industry makes them available.

21. What version of ExtremeXOS will the BlackDiamond X8 require?

The BlackDiamond X8 will require ExtremeXOS 15.1.x minimum, the availability of which will be communicated at a later date.

22. What will the CPU, flash memory and DRAM capacities for the BlackDiamond X8 be?

The BlackDiamond X8 Management Module will have very high speed and scalable control plane support with an Intel i7 dual core CPU which will run at 2 GHz, 1 GB compact flash and 4 GB ECC DDR3 SDRAM.

23. What will the switch buffer sizes on BlackDiamond X8 switches be?

The I/O modules will support a 9 Mbyte (72 Mbit) packet buffer per 24 x 10 GbE ports or 6 x 40 GbE ports. This means that the 24-port 40 GbE module will have 36 Mbyte, the 12-port 40 GbE and the 48-port 10 GbE modules will have 18 MByte. Each of the switching fabric modules (FM) will support a 36 Mbyte (288 Mbit) packet buffer. This means that the FM packet buffer total will be 144 Mbytes when four FMs are installed.

24. What will be the expected BlackDiamond X8 switch latency?

The BlackDiamond X8 port-to-port latency will be less than 3 microseconds (64-byte packets).

25. Will BlackDiamond X8 switches support flow control?

Yes, 802.3x flow control will be supported. BlackDiamond X8 switches will be able to advertise their ability to

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support pause frame, that is, to receive pause frame and stop forwarding. When “TX” is enabled, BlackDiamond X8 switches will be able to generate pause frames as well.

26. Will BlackDiamond X8 switches be capable of zero-touch operation?

Yes. The operational features of automated configuration download, provisioning for lights out and zero-touch operation in the data center will be included in the initial release.

27. Will BlackDiamond X8 switches support IPv4 and IPv6?

Yes, IPv4 and IPv6 switching and routing in hardware will be supported in the initial release.

Planned System Specifications

Maximum Ports	Up to 192 40 GbE ports -or- up to 768 10 GbE ports
Layer 2/3/4 throughput	Up to 11.4 Billion Packets per second with 20.48 Terabit per second switching capacity, 1.28 Terabit per second per slot capacity
Latency	Less than 3 microsecond latency for Layer 2 and Layer 3 switching, port to port
Management port	One 10/100/1000BASE-T RJ-45 port for out-of-band management
Console port	(1) RS-232 RJ45 console port
Power Supply	N+1 redundancy and N+N grid redundancy for AC and DC, ~5 watts per 10 GbE port
Fan/Cooling	Five removable and hot-swappable fan trays
Chassis dimension	17.32” (W) x 25.4” (H) x 30.0” (D)
Layer 2 Switching	IEEE 802.D, IEEE 802.1W, IEEE 802.1S, EAPsv2, ESRP
IPv4/v6 Routing	Static, RIPv1, RIPv2, OSPFv2, OSPFv3, IS-IS, BGP4, BGP4+
VLANs	Up to 4,094 VLANs with Port, 802.1Q tag, Protocol, MAC-based VLAN
IP Multicast Routing	PIM-DM, PIM-SM, PIM-SSM, Multicast Source Discovery Protocol (MSDP)
ACL	Wire-speed ingress/egress ACL support
QoS	Ingress metering per ACL 8 egress queues per port, 802.1p, Diffserv, ACL based, Strict Priority and WFQ with min/max bandwidth control
DCB Support	Priority Flow Control (PFC), Enhanced Transmission Selection (ETS), Data Center Bridging eXchange (DCBX)

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Green Design

28. What will the BlackDiamond X8 green design attributes be?

BlackDiamond X8 power consumption will be approximately 5W per 10 GbE port. Efficient power supply and support for the Intelligent Platform Management Interface/Data Center Manageability Interface (IPMI/DCMI); real-time power measurement and reporting capability; front-to-back (FB) data center optimized cooling and high efficiency; and digital power supplies.

Power Supplies

29. Will BlackDiamond X8 switches ship with a power supply unit (PSU) installed?

No, power supplies will be orderable separately based on the customer's needs.

30. How many PSU slots will be available on the BlackDiamond X8 chassis?

Eight (8) PSU slots will be available.

31. What PSUs will be available for the BlackDiamond X8 chassis?

A 2500W AC PSU will be available at General Availability. A 1500W DC PSU will be available at a later date as will a BlackDiamond X8 DC-powered chassis.

32. Will I be able to mix AC and DC PSUs in a single BlackDiamond X8 chassis?

No. BlackDiamond X8 chassis will be available in all-AC version or all-DC versions. Mixing AC and DC PSUs will not be possible.

33. What kind of Power Redundancy will be supported?

The BlackDiamond X8 chassis will support N+1 power redundancy and N+N grid redundancy. N+1 power redundancy will provide system redundancy in case of power supply failure or one of the power lines.

34. What field-replaceable units (FRUs) will be hot-swappable?

BlackDiamond X8 PSUs and fan trays will be hot-swappable.

Cooling Fans

35. What will the switch cooling fan configuration be?

BlackDiamond X8 switches will ship with rear-mounted fan trays installed vertically on top of the switching fabric modules (FM). Each fan tray will work in a 5+1 redundant configuration so that one fan tray may fail without compromising the cooling performance. Switch cooling fans will operate with front-to-back (FB) cooling for efficient hot aisle/cold aisle data center deployment only. Fan modules will be hot swappable, and will have variable fan speed control plus a heat sensor which will be able to shut down the fabric modules if required.

36. Will bidirectional or reversible switch cooling fans available?

No, the switch cooling fans will not be bidirectional or reversible. Switch cooling fans will operate with front-to-back cooling (FB) for efficient hot aisle/cold aisle data center deployment.

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ExtremeXOS, Licenses and Feature Packages

32. Will BlackDiamond X8 switches use the same operating system as other the BlackDiamond switches?

Yes. BlackDiamond X8 switches will use the same modular ExtremeXOS operating system for extensive virtualization, automation, security and resiliency.

33. What will the BlackDiamond X8 default license level be?

The default software license for BlackDiamond X8 switches will be the Advanced Edge License. The Core License is optional.

34. What feature packages will be available?

The MPLS feature package and the Data Center feature package will be available in the initial release.

Ridgeline Network and Service Management Software

35. When will Ridgeline Network and Service Management Software support be available?

We do not have a release number or date for BlackDiamond X8 support on Ridgeline at this time.

ACLs, M-LAG, XNV, Direct Attach™, VEPA, MPLS, CLEAR-Flow, Sync-E, IPFIX, DCB

36. How many Access Control Lists (ACLs) will BlackDiamond X8 switches support?

For 24-port 40 GbE modules and 12-port 40 GbE modules, 2,048 ingress ACLs and 1,024 egress ACLs will be supported per 6-port 40 GbE. For 48-port 10 GbE modules, 2,048 ingress ACLs and 1,024 egress ACLs will be supported per 24-port 10 GbE.

37. Will the BlackDiamond X8 switches support Multiple Link Aggregation Groups (M-LAG)?

Yes, M-LAG will be supported on BlackDiamond X8 switches between two paired switches which have the same configuration. M-LAG allows creating a cluster by enabling two independent switches to work as a single system, providing link aggregation across the two switches. Links can be homed to different switches creating a cluster with a maximum of four BlackDiamond X8 switches.

38. Will the BlackDiamond X8 switches support Network Virtualization (XNV)?

Yes, BlackDiamond X8 switches will support XNV for centralized network-based Virtual Machine (VM) inventory, VM location history and VM provisioning.

39. Will the BlackDiamond X8 switches support Direct Attach? And what will be required?

Yes. BlackDiamond X8 switches will support Direct Attach to offload VM switching from servers, thereby improving performance. The optional Direct Attach Feature package will be required.

40. What is Virtual Ethernet Port Aggregator (VEPA)?

The IEEE 802.1Qbg and 802.1Qbh VEPA standards move the networking functions from today's hypervisor-based virtual switches to actual physical switches, such as the BlackDiamond X8. Extreme Networks refers to this feature as Direct Attach. See <http://www.networkworld.com/community/node/48739> for a third-party discussion of VEPA advantages.

41. Will BlackDiamond X8 switches support VEPA? And what will be required?

Yes. BlackDiamond X8 switches will support VEPA. The optional Data Center Feature Pack will be required to enable VEPA.

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42. Will BlackDiamond X8 switches support MPLS? And what will be required?

Yes, BlackDiamond X8 switches will support MPLS/H-VPLS. To enable MPLS/H-VPLS, the BlackDiamond X8 will require the MPLS feature pack.

43. Will CLEAR-Flow be supported while MPLS is in use?

Yes.

44. Will the BlackDiamond X8 switches support Sync-E?

No, Sync-E is a technology for Ethernet mobile backhaul, hence BlackDiamond X8 will not support it.

45. Will the BlackDiamond X8 switches support IPFIX (Internet Protocol Flow Information eXport)?

Yes, IPFIX will be supported. IPFIX (RFC 3917) is a follow-on protocol to the proprietary NetFlow. The technology is a complimentary protocol to sFlow®. IPFIX gathers information about network flows through the switch and sends the information to an external collector. BlackDiamond X8 switches include hardware support to keep track of the flow records.

46. Will BlackDiamond X8 switches support Data Center Bridging (DCB)?

Yes, BlackDiamond X8 switches will support Priority Flow Control (PFC), Enhanced Transmission Selection (ETS) and Data Center Bridging Capabilities eXchange protocol (DCBX). Congestion Notification (QCN) is not supported in the initial release. Descriptions of the DCB elements follow.

47. What is Data Center Bridging (DCB)?

Data center bridging refers to enhancements to Ethernet local area networks for use in data center environments. The Data Center Bridging (DCB) Task Group of the IEEE 802.1 Working Group conducts standard-setting efforts. Traditional Ethernet is the primary network protocol in data centers for computer-to-computer communications. However, Ethernet is designed to be a best-effort network that may drop packets when the network or devices are busy. In Internet Protocol networks, transport reliability has traditionally been the responsibility of the transport protocols, such as the Transmission Control Protocol (TCP), with the trade-off being higher complexity, greater processing overhead and the resulting impact on performance and throughput. For more information, see <http://www.ieee802.org/1/pages/dcbridges.html> and/or http://en.wikipedia.org/wiki/Data_Center_Bridging.

48. What is Priority Flow Control (PFC)?

Priority-based Flow Control (IEEE 802.1Qbb) provides a link-level flow control mechanism that can be controlled independently for each Class of Service (CoS), as defined by IEEE 802.1p. The goal of this mechanism is to ensure zero loss under congestion in Data Center Bridging (DCB) networks. PFC will be available in the first release of BlackDiamond X8.

49. What is Congestion Notification (QCN)?

Congestion Notification (IEEE 802.1Qau) provides end-to-end congestion management for protocols that are capable of transmission rate limiting to avoid frame loss. It is expected to benefit protocols such as TCP that do have native congestion management as it reacts to congestion in a more timely manner.

50. What is Enhanced Transmission Selection (ETS)?

Enhanced Transmission Selection (IEEE 802.1Qaz) provides a common management framework for assignment of bandwidth to 802.1p CoS-based traffic classes.

51. What is Data Center Bridging Capabilities Exchange Protocol (DCBX)?

Data Center Bridging Capabilities eXchange Protocol is a discovery and capability exchange protocol that is

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used for conveying capabilities and configuration of Data Center Bridging (DCB) features between neighboring devices to ensure consistent configuration across the network.

Certifications

52. Will the BlackDiamond X8 switches be Metro Ethernet Forum (MEF) compliant/tested?

BlackDiamond X8 switches are planned to be MEF9 and MEF14 compliant, however, the product will not be targeted for Metro Service Providers.

53. What are our plans for NEBS certification on BlackDiamond X8 switches?

We do not have a NEBS certification testing plan at this time.

Warranty and Support

54. What will the BlackDiamond X8 warranty be?

BlackDiamond X8 switches will carry a 1-year hardware warranty and a 90-day software warranty.

55. What Maintenance and Support offerings will be available for BlackDiamond X8 switches?

A full range of Maintenance and Support offerings will be available for BlackDiamond X8 switches. They will include; TAC & OS, Return & Repair, 48hr Advanced Hardware Replacement (AHR), Next Business Day (NBD) AHR, NBDOnsite, 4 Hour AHR, and 4 Hour Onsite services.

56. Will Professional Services be available for BlackDiamond X8 installations?

Yes. Both Extreme Networks and our Partners provide Professional Services will be able to help our customers get up and running across all of our hardware and software platforms. Utilizing these resources to augment the customer's resources is a good way to get customers started out on the right foot. They can also be used to help customers optimize or update existing networks. Send email to EPSRequest@extremenetworks.com for more information.

57. Will the BlackDiamond X8 qualify for the Premier Services Program?

Yes. BlackDiamond X8 switches will be eligible for the Premier Services Program. The optional Premier Services Program will provide customers with the next level of support beyond break/fix maintenance with a designated service delivery team, monitoring, weekly checkups, and optional onsite days. For more information visit: <http://www.extremenetworks.com/solutions/premier-services.aspx>

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For More Information

58. Where can customers find online information on BlackDiamond X8 switches?

The BlackDiamond X8 landing page may be easily accessed at: <http://extremenetworks.com/go/bdx8> or by following the standard site navigation.

59. Where can I direct my partners for information?

Extreme Networks [PartnerWeb](#) is our main site for reseller information.

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