Product Brief

H3C CN3360B Switch

Affordable, No-Compromise Storage Switch for the Modern Data Center

Highlights

- Provides an affordable storage switch that redefines simplicity and flexibility.
- Leverages industry-leading reliability, an unprecedented lifetime warranty, and unmatched product support for peace of mind.
- Meets the high-throughput, low-latency demands of critical applications with flash-ready performance.
- Enables the seamless transition to next-generation NVMe flash arrays, without a disruptive rip-and-replace.
- Starts small and grows on demand, from 8 to 24 ports, to support an evolving storage environment.
- Powers up from 16G to 32G to deliver increased performance on demand.
- Simplifies end-to-end management by automating repetitive daily management tasks.
- Installs in three easy steps with a point-and-click user interface—simplifying deployment and saving time.
- Proactively monitors and optimizes the health and performance of individual virtual machines (VMs), and identifies anomalies with VM Insight.
- Leverages Fabric Vision® technology to simplify administration, quickly resolve problems, increase uptime, and reduce costs.

Overview

Today's organizations are under pressure to digitize everything to be more competitive, maximize revenue growth, and increase productivity. Yet explosive data growth, coupled with user expectations of unlimited access from anywhere, at any time, on any device, is pushing storage environments to the limit. To meet these dynamic business demands, the network must evolve to improve speed, efficiency, and costs. This requires looking beyond legacy infrastructure, which was not designed to support the performance requirements of evolving workloads and flash-based storage technology—and will therefore impede the performance of an all-flash data center. Organizations need a new approach to storage networking to enable databases, virtual servers, desktops, and critical applications, and to unlock the full capabilities of flash. By treating the network as a strategic part of a storage environment, organizations can maximize their productivity and efficiency, even as they rapidly grow their environments.

The CN3360B provides an affordable storage switch without compromising on performance and reliability. Leveraging the power of Gen 6 Fibre Channel technology, it delivers a flash-ready solution for the always-on, digital business. With its combination of up to 32G performance, unmatched simplicity, and enterprise-class functionality, the H3C CN3360B provides exceptional price/performance value in an entry-level switch.

The H3C CN3360B offers small to midsized data centers affordable access to industry-leading Gen 6 Fibre Channel technology. Organizations gain the best of both worlds: high-performance access to industry-leading storage technology, and the ability to start small and grow on demand, from 8 to 24 ports, to support an evolving storage environment. The H3C CN3360B is also easy to use and install, with a point-and-click user interface that simplifies deployment and saves time.

Designed in an efficient 1U package, starting with 8 ports and low energy consumption at 0.10 watts per Gb/s and 3.2 watts per port, the switch delivers a low total cost of ownership (TCO) for Gen 6. To help further control costs, the H3C CN3360B provides real-time monitoring to enable users to actively monitor the switch's power usage.

Industry-Leading Technology That Is Flexible, Simple, and Easy to Use

The H3C CN3360B features up to 24 Fibre Channel ports, delivering industry-leading Gen 6 Fibre Channel technology in a flexible, simple, and easy-to-use solution. Designed for maximum flexibility, this entry-level switch offers pay-as-you-grow capability to easily and cost-effectively scale from 8 to 24 ports with Ports on Demand (PoD). Moreover, each of the 24 SFP+ ports supports 4, 8, 16, and 32G Fibre Channel speeds. High-speed 32G and 16G optics allow organizations to deploy bandwidth on demand to meet growing data center needs.

Gen 6 Fibre Channel

Gen 6 Fibre Channel is the purpose-built network infrastructure for mission-critical storage, delivering breakthrough performance, operational stability, and increased business agility to accelerate data access, adapt to evolving requirements, and drive always-on business operations. The H3C CN3360B with Gen 6 Fibre Channel technology is an affordable storage switch, delivering simplified operations, flash-ready performance, and always-on reliability to grow with the demands of your business.

With its PoD capability, the H3C CN3360B provides excellent overall value and the agility needed to enable rapid deployments to meet user demands and support higher growth.

Flash-Ready Performance for Evolving Storage Requirements

Faced with increased competition and the need to deliver differentiated services, organizations rely on leading technology to help them catapult their businesses and grow revenue. Gen 6 Fibre Channel delivers advanced 32G performance to redefine the limits of application performance and to unleash the full potential of new storage technologies.

The H3C CN3360B combines market-leading Gen 6 throughput and low latency with an affordable switch form factor, making it ideal for small to midsized businesses. Using this switch, organizations can build a flash-ready infrastructure that adapts to their expanding business requirements.

Administrators can achieve optimal bandwidth utilization, high availability, and load balancing by combining up to eight inter-switch links (ISLs) in a 256Gb/s trunk. This can be achieved through eight individual 32G SFP+ ports. Moreover, exchange-based Dynamic Path Selection (DPS) optimizes fabric-wide performance and load balancing by automatically routing data to the most efficient, available path in the fabric. This augments ISL Trunking to provide more effective load balancing in certain configurations.

To realize the full benefits of flash, organizations must transition their high-performance, latency-sensitive workloads to flash-based storage with NVMe. The H3C CN3360B is NVMe-ready, allowing organizations to seamlessly integrate Gen 6 Fibre Channel networks with the next generation of flash storage, without a disruptive rip-and-replace.
The simplicity and efficiency of NVMe over Fibre Channel enable significant performance gains for flash storage. Also, NVMe allows users to achieve faster application response times and harness the performance of solid state drives for better scalability across virtual data centers with flash. Leveraging the efficiency of NVMe over Fibre Channel, combined with the high performance and low latency of Gen 6 Fibre Channel, organizations can accelerate
IOPS to deliver the performance, application response time, and scalability needed for next-generation data centers.

Rely On the Network That Delivers Always-On Business Operations

Gen 6 technology leverages a rich heritage of Fibre Channel innovation to deliver industry-leading reliability for the world's most demanding data centers. Gen 6 and Fabric Vision technology provide a breakthrough hardware and software solution that helps organizations simplify monitoring, maximize network availability, and gain insight into issues to speed resolution and meet critical service-level agreements (SLAs). VM Insight is the newest feature in Fabric Vision technology, enabling proactive visibility into

Fabric Vision Technology

Fabric Vision technology with VM Insight, an extension of Gen 6 Fibre Channel, provides unprecedented insight and visibility across the storage network. Its powerful, integrated monitoring, management, and diagnostic tools enable organizations to:

- Simplify monitoring:
  - Deploy more than 20 years of storage networking best practices with a single click.
  - Leverage integrated network sensors to gain visibility into VM storage performance metrics to maintain SLA compliance.
  - Gain comprehensive visibility into the fabric using browser-accessible dashboards with drill-down capabilities.
- Increase operational stability:
  - Avoid 50% of common network problems with proactive monitoring.
  - Identify hot spots and automatically mitigate network problems—before they impact application performance.
  - Monitor performance for each VM and identify performance anomalies to facilitate fault isolation and troubleshooting.
- Dramatically reduce costs:
  - Eliminate nearly 50% of maintenance costs through automated testing and diagnostic tools.
  - Save up to millions of dollars on CapEx costs by eliminating the need for expensive third-party tools through integrated network sensors, monitoring, and diagnostics.
  - Simplify network planning and provisioning based on VM workload requirements to reduce costs.

the health and performance of individual virtual machines (VMs) through integrated sensors. By leveraging this capability, administrators can quickly identify abnormal VM behaviors to facilitate troubleshooting and fault isolation, helping to ensure maximum performance and operational stability.

Forward Error Correction (FEC) capabilities further increase resiliency by automatically detecting and recovering network transmission errors. To ensure predictable performance prior to deployment, organizations can validate infrastructure with ClearLink™ Diagnostics and Flow Generator features.

Simplified Management and Robust Network Analytics

Fabric Vision technology provides unprecedented insight and visibility across the storage network with powerful integrated monitoring, management, and diagnostic capabilities. These innovative features enable administrators to avoid problems before they impact operations, helping their organizations meet SLAs. Fabric Vision technology includes:

- VM Insight: Seamlessly monitors virtual machine performance throughout a storage fabric with standards-based, end-to-end VM tagging. Administrators can quickly determine the source of VM/application performance anomalies, as well as provision and fine-tune the infrastructure based on VM/application requirements to meet service-level objectives.
- Monitoring and Alerting Policy Suite (MAPS): Leverages prebuilt, rule-/policy-based templates within MAPS to simplify fabric-wide threshold configuration, monitoring, and alerting. Administrators can configure the entire fabric (or multiple fabrics) at one time using common rules and policies, or customize policies for specific ports or switch elements.
- Fabric Performance Impact (FPI) Monitoring: Leverages predefined MAPS policies to automatically detect and alert administrators to different latency severity levels, and to identify slow drain devices that could impact network performance. This feature identifies various latency severity levels, pinpointing exactly which devices are causing or are impacted by a bottlenecked port, and quarantines slow drain devices automatically to prevent buffer credit starvation.
- Dashboards: Provides integrated dashboards that display an overall SAN health view, along with details on out-of-range conditions, to help administrators easily identify trends and quickly pinpoint issues occurring on a switch or in a fabric.
- Configuration and Operational Monitoring Policy Automation Services Suite (COMPASS): Simplifies deployment, safeguards consistency, and increases operational efficiencies of larger environments with automated switch and fabric configuration services. Administrators can configure a template or adopt an existing configuration to seamlessly deploy a configuration across the fabric.
- ClearLink Diagnostics: Ensures optical and signal integrity for Fibre Channel optics and cables, simplifying deployment and support of high-performance fabrics. ClearLink Diagnostic Port (D_Port) is an advanced capability of Fibre Channel platforms.

- Flow Vision: Enables administrators to identify, monitor, and analyze specific application flows in order to simplify troubleshooting, maximize performance, avoid congestion, and optimize resources. Flow Vision includes:
  - Flow Monitor: Provides comprehensive visibility, automatic learning, and nondisruptive monitoring of a flow's performance. Administrators can monitor all flows from a specific host to multiple targets or volumes, from multiple hosts to a specific target/volume, or across a specific ISL. Additionally, they can perform volume-level monitoring of specific frame types to identify resource contention or congestion that is impacting application performance. With VM Insight, administrators can monitor network throughput statistics for each VM.
  - Flow Learning: Enables administrators to nondisruptively discover all flows that go to or come from a specific host port or a storage port, or traverse ISLs/IFLs (inter-fabric links) or Fibre Channel over Internet Protocol (FCIP) tunnels, to monitor fabric-wide application performance. In addition, administrators can discover top and bottom bandwidth-consuming devices and manage capacity planning.
  - Flow Generator: Provides a built-in traffic generator for pretesting and validating the data center infrastructure for robustness—including route verification and integrity of optics, cables, ports, back-end connections, and ISLs—before deploying applications.
  - Flow Mirroring: Provides the ability to nondisruptively create copies of specific application and data flows or frame types that can be captured for in-depth analysis.
- Forward Error Correction (FEC): Enables recovery from bit errors in device connections and ISLs, enhancing transmission reliability and performance.
- Credit Loss Recovery: Helps overcome performance degradation and congestion due to buffer credit loss.

Improve Efficiency with Fabric Automation

IT organizations spend nearly half of their time performing repetitive daily management tasks, such as zoning, inventory reporting, and operational validation checks. By automating these repetitive tasks, IT organizations can significantly improve their efficiency and dramatically decrease the risk of operational mistakes. Automation in large-scale IT environments integrates diverse infrastructure components with consistency and predictability to deliver greater operational efficiency and agility. With many years of storage networking experience, H3C understands the nuances that go into infrastructure management and the tasks that can benefit from automation. By introducing REST APIs directly into its switch and management products, offers a broad range of choices to enable any SAN management solution. IT organizations that couple H3C's robust data collecting capabilities with automation and orchestration tools (such as Ansible) gain the ability to automate configuration tasks and the visibility to monitor and detect any performance or health changes. automation solutions are based on these pillars:

- Make standard REST APIs available directly from the switch in order to automate repetitive daily tasks, such as fabric inventory, provisioning, and operational state monitoring.
- Leverage Ansible to easily scale automation and orchestration across the entire infrastructure.

SANnav™: Next-Generation SAN Management

SANnav™ Management Portal and SANnav Global View empower IT administrators by providing comprehensive visibility across the entire SAN, from a global view down to local environments. These tools streamline management workflows to accelerate the deployment of new applications, switches, hosts, and targets. They also increase operational efficiencies with a modernized graphical user interface (GUI) that enables enhanced monitoring, faster troubleshooting, and advanced analytics.

Gen 6 Fibre Channel hardware includes integrated network sensors that nondisruptively gather millions of real-time metrics that SANnav Management Portal uses to identify, monitor, and analyze the overall health and performance of the SAN. SANnav Management Portal contextualizes this data into visual dashboards, enabling administrators to quickly detect and isolate points of interest for both troubleshooting and performance optimization.

Access Gateway Mode

The H3C CN3360B can be deployed as a full-fabric switch or as a Access Gateway, which simplifies fabric topologies and heterogeneous fabric connectivity (the default mode setting is a switch). Access Gateway mode utilizes N_Port ID Virtualization (NPIV) switch standards to present physical and virtual servers directly to the core of SAN fabrics. This makes Access Gateway transparent to the SAN fabric, greatly reducing management of the network edge. The H3C CN3360B in Access Gateway mode can connect servers to NPIV-enabled SAN fabrics.

Organizations can easily enable Access Gateway mode via SANnav Management Portal. Key benefits of Access Gateway mode include:

- Improved scalability for large or rapidly growing server and virtual server environments
- Reduced management of the network edge, since Access Gateway does not have a domain identity and appears transparent to the core fabric
- Support for heterogeneous SAN configurations without reduced functionality for server connectivity

Lifetime Warranty

The H3C CN3360B helps to protect critical applications with the industry's only lifetime warranty. (Note: for H3C CN3360B Switches sold with a lifetime warranty, the lifetime warranty begins from the date the product is shipped from manufacturing facilities until the end-of-support (EOS) date, as announced by H3C, and it is subject to terms and conditions.) The CN3360B delivers peace of mind with industry-leading reliability, an unprecedented lifetime warranty, and unmatched product support. This lifetime warranty delivers access to technical experts 24x7 to troubleshoot and solve issues, eliminating the costs and complexities of post-warranty support.

Global Support

Global Support has the expertise to help organizations build resilient, efficient SAN infrastructures. Leveraging years of expertise in storage networking, Global Support delivers world-class technical support, implementation, and migration services to enable organizations to maximize their hardware and software investments, accelerate new technology deployments, and optimize the overall performance of their network.

Maximizing Investments

To help optimize technology investments, H3C and its partners offer complete solutions that include professional services, technical support, and education. For more information, contact a sales partner or visit: H3C.COM

H3C CN3360B Switch Specifications

System Architecture	
Fibre Channel Ports	Switch mode (default): 8-, 16-, and 24-port configurations (8-port increment through Ports on Demand [PoD] license); E_Ports, F_Ports, M_Ports, and D_Ports Access Gateway default port mapping: 16 F_Ports, 8 N_Ports
Scalability	Full-fabric architecture with a maximum of 239 switches
Certified Maximum	6000 active nodes; 56 switches, 19 hops in Fabric OS® fabrics; larger fabrics certified as required
Performance	Fibre Channel: 4.25Gb/s line speed, full duplex; 8.5Gb/s line speed, full duplex; 14.025Gb/s line speed, full duplex; 28.05Gb/s line speed, full duplex; auto-sensing of 4, 8, 16, and 32G port speeds.
ISL Trunking	Frame-based trunking with up to eight 32G SFP+ ports per ISL trunk; up to 256Gb/s per ISL trunk. Exchange-based load balancing across ISLs with DPS included in Fabric OS fabrics
Aggregate Bandwidth	768Gb/s
Maximum Fabric Latency	Latency for locally switched ports is <780 ns (including FEC)
Maximum Frame Size	2112-byte payload
Frame Buffers	2000 dynamically allocated
Classes of Service	Class 2, Class 3, Class F (inter-switch frames)
Port Types	F_Port, E_Port, M_Port, D_Port (ClearLink Diagnostic Port) on 24 SFP+ ports Access Gateway mode: F_Port and NPIV-enabled N_Port

System Architecture (cont.)	
Data Traffic Types	Fabric switches supporting unicast
Media Types	32G FC SFP+ LC connector: SWL, LWL, ELWL 16G FC SFP+ LC connector: SWL, LWL, ELWL
USB	One USB port for system log file downloads or firmware upgrades
Fabric Services *Note: Some fabric services do not apply or are unavailable in Access Gateway mode.*	BB Credit Recovery; Advanced Zoning (Default Zoning, Port/WWN Zoning, Peer Zoning); Congestion Signaling; Dynamic Path Selection (DPS); Extended Fabrics; Fabric Performance Impact Notification (FPIN); Fabric Vision; FDMI; Flow Vision; F_Port Trunking; FSPF; Integrated Routing; ISL Trunking; Management Server; Name Server; NPIV; NTP v3; Port Decommission/Fencing; QoS; Registered State Change Notification (RSCN); Target-Driven Zoning; VMID and AppServer
Management	
Management	HTTP/HTTPS; SNMP v1/v3 (FE MIB, FC Management MIB); SSH; Advanced Web Tools; SANnav Management Portal and SANnav Global View; Command Line Interface (CLI); RESTful API; trial licenses for add-on capabilities
Security	DH-CHAP (between switches and end devices), FCAP switch authentication; HTTPS, IP filtering, LDAP with IPv6, OpenLDAP, Port Binding, RADIUS, TACACS+, User-defined Role-Based Access Control (RBAC), Secure Copy (SCP), Secure Syslog, SFTP, SSH v2, SSL, Switch Binding, Trusted Switch
Management Access	10/100/1000 Mb/s Ethernet (RJ-45), in-band over Fibre Channel, serial port (RJ-45) and one USB port
Diagnostics	Active Support Connectivity (ASC) and Support Link (BSL); built-in flow generator; ClearLink optics and cable diagnostics, including electrical/optical loopback, link traffic/latency/distance; Fabric Performance Impact Monitoring (FPI); flow mirroring; Forward Error Correction (FEC); frame viewer; Monitoring and Alerting Policy Suite (MAPS); nondisruptive daemon restart; optics health monitoring; POST and embedded online/offline diagnostics, including environmental monitoring, FCping and Pathinfo (FC traceroute); power monitoring; RAStrace logging; Rolling Reboot Detection (RRD); Syslog/ Audit Log; VM Insight
Mechanical	
Enclosure	Back-to-front airflow (non-port-side intake); power from back, 1U
Size	Width: 428.80 mm (16.88 in.) Height: 42.90 mm (1.69 in.) Depth: 306.60 mm (12.07 in.)
System Weight	4.20 kg (9.26 lb) with one integrated power supply and fans, without transceivers 4.80 kg (10.58 lb) with one integrated power supply and fans, fully populated with transceivers
Environment	
Operating Environment	Temperature: 0°C to 40°C/32°F to 104°F Humidity: 10% to 85% (non-condensing)
Non-operating Environment	Temperature: –25°C to 70°C/–13°F to 158°F Humidity: 10% to 90% (non-condensing)
Operating Altitude	Up to 3000m (9842 ft)
Storage Altitude	Up to 12 km (39,370 ft)
Shock	Operating: Up to 20G, 6 ms half-sine Non-operating: Half sine, 33G 11 ms, 3G axis
Vibration	Operating: 0.5g sine, 0.4 grms random, 5 Hz to 500 Hz Non-operating: 2.0g sine, 1.1 grms random, 5 Hz to 500 Hz
Heat Dissipation	24 ports at 215 BTU/hr
Power	
Power Supply	Base switch includes a single, fixed power supply with four integrated system cooling fans
AC Input	90V to 264V, maximum input current: 2.2A
AC Input Line Frequency	47 Hz to 63 Hz
AC Power Consumption (System)	76.52W with all 24 ports populated with 32G SWL optics 55.83W for idle configuration (all optics loaded but not initialized)

For product information and a complete list of distributors, visit our website at: H3C.com

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