

Top Five Reasons for Investing in IBM Storage Networking c-type 32 Gbps Fabric Switches

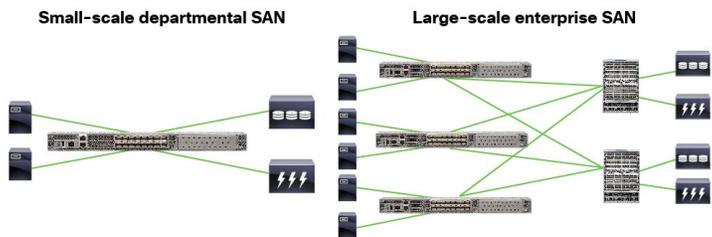


Designed specifically for flash, IBM Storage Networking c-type 32G FC switches complement IBM Storage all-flash and hybrid-flash systems through delivering industry-leading performance, scalability, security, and network connectivity in dense form factors. IBM c-type switches offer the industry’s first and only integrated, native, line-rate storage traffic analytics on 32 Gbps ports and provide highly reliable switching and performance, and highly available component design. In addition, IBM c-type switches provide lower total cost of ownership (TCO) and investment protection through enabling non-disruptive, cost-effective transition to Fibre Channel speed upgrades and NVMe-FC, while promoting operational simplicity by bringing programmability, analytics, manageability, and visibility to the SAN.

Switch-integrated SAN traffic analytics	Enterprise-class features as standard	Affordable and durable investment	High reliability and availability	Simple operation and interoperability
IBM c-type 32 Gbps switches offer built-in network processors that can capture key metrics from IO flows from every connected device at wire speed for storage traffic analytics without performance degradation and the need for any additional hardware.	The switches offer high-end features such as slow-drain isolation, link encryption, link diagnostics, Virtual Machine Identity server, and up to 8300 Buffer-to-Buffer (B2B) credits per port-group, all historically available only in high-end modular switches.	They provide lower total cost of ownership due to small form factor at entry level and investment protection through latest technology such as FC-NVMe at competitive prices.	The switches provide the same reliability in switching, performance, and highly available component design that c-type switches are renowned for.	You can configure a switch in a matter of minutes and manage it through a simple onboard GUI. The switches are interoperable with all existing installed bases of Fibre Channel switches and devices operating at 4-, 8-, 16-, and 32-Gbps.

SAN Analytics

Figure 1. SAN Analytics deployment options



IBM c-type 32 Gbps Fabric Switch offers built-in Storage Area Network (SAN) analytics that gives you visibility into the performance of every workload in the SAN from any point in the network. The fabric switches enable this capability at a very affordable price point, making them especially attractive for small departmental SANs (Figure 1) that want to gain visibility without having to invest in expensive hardware.

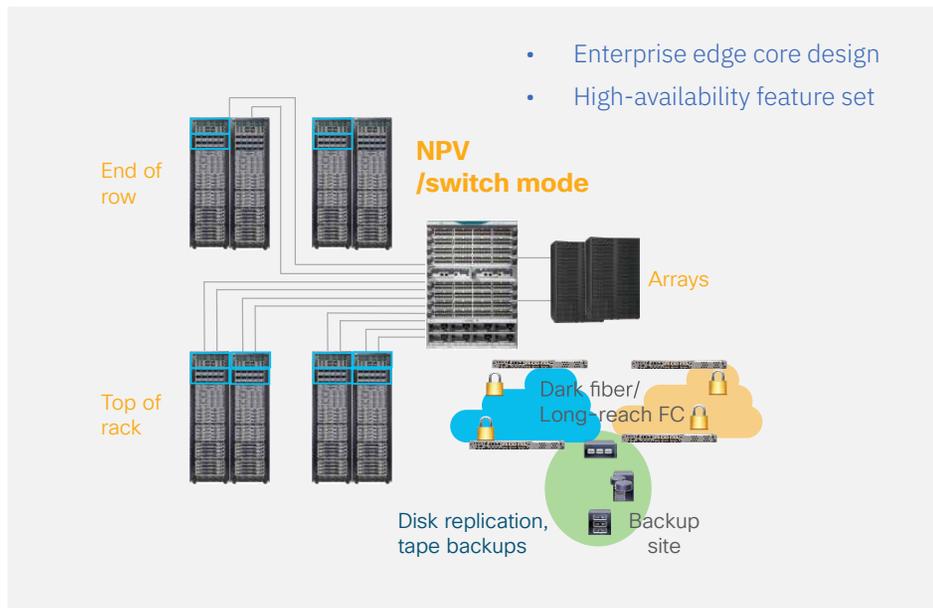
For enterprise SANs built on earlier-generation switches (Figure 1), you can seamlessly add this switch to the top of rack or host edge to enable visibility. The host-edge deployment also provides an analytics reference point close enough to the applications, one of the recommended best practices for SAN analytics.

These high-performance switches can also scale workloads without having to add switches when data grows. A dedicated telemetry port helps ensure that the high volume of analytics data can stream out of the switches without having to contend with the existing management interface. SAN Analytics can be run on board using a Command-Line Interface (CLI) or programmable Structured Query Language (SQL)-type queries as well.

Standard enterprise class

For enterprise-class deployments (Figure 2), features such as Fibre Channel link encryption, up to 8300 shared buffer-to-buffer credits per port-group of 16 ports, 500 dedicated buffer-to-buffer credits per port, slow-drain link isolation, link diagnostics, I/O acceleration, and Virtual Machine Identity server come standard on the IBM c-type Fabric Switch. Available in a range of port configurations and on demand licenses, they provide the flexibility to be deployed as end-of-row or top-of-rack with bi-directional airflow option, making them suitable for deployment with several data center cooling designs.

Figure 2. Edge-core deployment for large enterprises



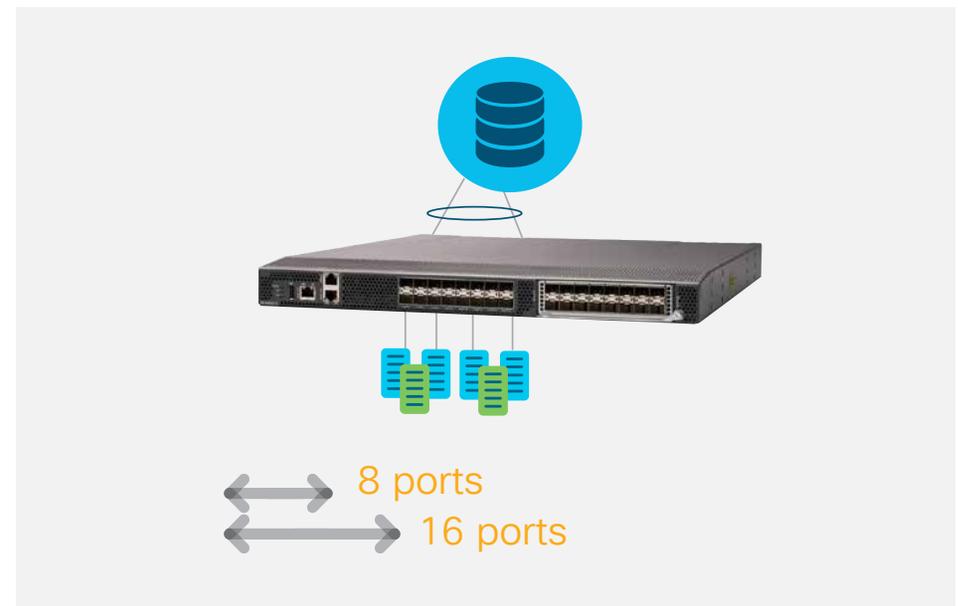
These high-end features are typically available only in more expensive switches. An example is using the ample buffer-to-buffer credits with link encryption to connect geographically separated data centers over long distances without performance hits and without incurring unacceptable latency. The c-type 32 Gbps switches can connect over 612 km (310 miles) using native encrypted Fibre Channel over dark fiber.

Affordable and lasting

The innovative design of the 32-port 32 Gbps fixed switch with only half the ports in base form factor powered by a single power supply unit and cooled by only two fans helps reduce the cost of power and cooling significantly, a feature that is especially appealing to entry-level SAN customers.

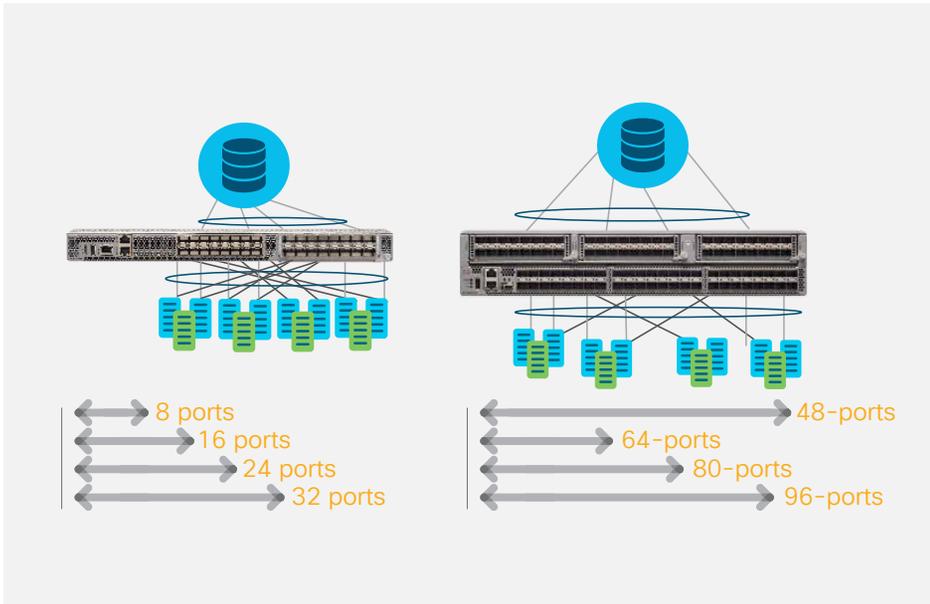
In addition, you have the flexibility of choosing an 8-port configuration as the base model and then expanding to 16 ports in the future by activating a license. This set-up gives you the freedom to invest in the additional physical 16 ports on a pay-as-you-go basis. The most affordable entry-level switch for the latest-generation Fibre Channel also helps ensure that investments are protected for a much longer period of time using simple technology upgrades.

Figure 3. Semi-modular design for lower costs



Highly reliable and available

Figure 4. Higher availability through expansion modules



The c-type fixed switches use the same nonblocking design as previous-generation models, helping guarantee full line rate of 32 Gbps on every port. In addition, they use the same centralized arbitration technology that helps assure predictable and consistent performance between any two ports on the switch. In terms of High Availability (HA), on the 32 port switch you still have the option of configuring up to one additional power supply to drive full power grid redundancy. The c-type 32G fabric switches offer N+1 Fan redundancy as standard. On the 32-port base configurations, up to 2 additional fans can be optionally configured.

You gain additional high-availability (figure 4) through field-replaceable 16-port expansion modules. Further, the highly available load-balanced Port Channels allow you to use member links that are striped across the base switch and expansion module.

Operational simplicity and interoperability

These switches can now be operational in matter of minutes instead of hours if you use the power-on autoprovision feature, which allows you to configure the switches from a thumb drive that you can attach to a USB drive. Representational State Transfer (REST)full Application Programming Interfaces (APIs) and a built-in Python interpreter provide the option of programming repetitive operations and configuration steps.

You can access the switch GUI through a simple browser that provides very intuitive configuration steps. In addition, the switch operates with Data Center Network Manager (DCNM) Fundamental Edition, which is free to download, and you can use it to configure and monitor these switches for any network events, including analytics .

For more detailed information, please explore c-type fabric switches at:
www.ibm.com/it-infrastructure/storage/san/c-type