




IBM Storage Networking c-type Overview



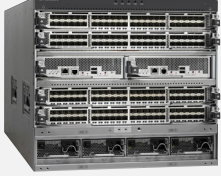


IBM Storage Networking c-type family provides storage connectivity into the future for mission-critical applications, massive amounts of data, solid state drives, and cloud-based environments with a single, proven operating system and a centralized management platform to enable evolutionary adoption and consistent SAN operations. Services-oriented SAN applications enable centralized solutions to meet customer needs, including data migration and acceleration of backup and replication performance between distant data centers.




IBM Storage Networking c-type 32 Gbps Directors

IBM Model	IBM SAN768C-6 multilayer director	IBM SAN384C-6 multilayer director	IBM SAN192C-6 multilayer director
Machine type model	8978-E16	8978-E08	8978-E04
			
Configuration	Chassis, dual Supervisor-1E Module, and up to 16 x 3000W AC power supplies	Chassis, dual Supervisor-1 Module, and up to 8 x 3000W AC power supplies	Chassis, dual Supervisor-1 Module, and 4 x 3000W AC power supplies
Maximum 4/8/10/16/32-Gbps Fibre Channel ports per chassis	768	384	192
Maximum Fibre Channel over IP (FCIP) ports per chassis	128 x 1/10 Gigabit Ethernet 32 x 40 Gigabit Ethernet ¹	64 x 1/10 Gigabit Ethernet 16 x 40 Gigabit Ethernet ¹	32 x 1/10 Gigabit Ethernet 8 x 40 Gigabit Ethernet ¹
Port speed	4/8/10/16/32-Gbps Fibre Channel 1/10/40-Gbps ¹ FCIP		
Line cards	48-port 4/8/16/32-Gbps Fibre Channel switching module 48-port 4/8/10/16/32-Gbps Fibre Channel switching module bundled with 48 16-Gbps SW SFP transceivers 24-port 2/4/8/10/16-Gbps Fibre Channel, 8-port 1/10 Gigabit Ethernet for FCIP, and 2-port 40 Gigabit Ethernet ¹ for FCIP		Feature #AJL4 Feature #AJL2 Feature #AJL5

¹40 Gigabit Ethernet ports on the 24/10-SAN extension module will be enabled in the future.

IBM Model	IBM SAN768C-6 multilayer director	IBM SAN384C-6 multilayer director	IBM SAN192C-6 multilayer director
			
Licenses	SAN Insights Package for c-type 32G Directors Enterprise package license DCNM SAN Advanced Edition Mainframe package license		Feature #AJKV Feature #AJJ9 Feature #AJJA Feature #AJJB
IBM Fibre Connection (FICON) certification	No	Yes	Yes
Expandability	16 module slots	8 module slots	4 module slots
Rack units	26	14	9
Chassis per rack	1	2	3
Crossbar switching fabric module	Feature #AJKF	Feature #AJKE	Feature #AJK9
Power supply	3000W AC PSU		
Features	<ul style="list-style-type: none"> ▪ Data center SAN consolidation ▪ Business continuance ▪ Centralized SAN management ▪ Advanced SAN security for compliance and regulation ▪ Centralized backup, recovery, and archiving through intelligent fabric applications ▪ Native switch-based programming and Representational State Transfer (REST) API support 		

IBM Storage Networking c-type 32 Gbps Fabric Switches

IBM Model	IBM SAN32C-6	IBM SAN48C-6	IBM SAN96C-6
Machine type model	8977-T32	8977-T48	8977-T96
			
Configuration	Semi-modular 1RU chassis; configurable to 8, 16, 24 or 32 ports enabled	Fixed 1RU chassis; configurable to 24, 32, 40 or 48 ports enabled	Semi-modular 2RU chassis; configurable to 48, 64, 80 or 96 ports enabled
Ports	16 X 4/8/16/32-Gbps Fibre channel (line rate) base switch 16X 4/8/16/32-Gbps Fibre channel (line rate) expansion module	48 X 4/8/16/32-Gbps Fibre channel (line rate) fixed switch	96 X 4/8/16/32-Gbps Fibre channel (line rate) semi-modular switch
Port speed	4/8/16/32-Gbps Fibre Channel	4/8/16/32-Gbps Fibre Channel	4/8/16/32-Gbps Fibre Channel
License keys	Enterprise package (Feature #AJJC) DCNM Advanced Edition (Feature #AJJD) 8-port On-Demand (Feature #AJJE) SAN Insights (Feature #AJHZ)	Enterprise package (Feature #AJJC) DCNM Advanced Edition (Feature #AJJD) 8-port On-Demand (Feature #AJKW) SAN Insights (Feature #AJHZ)	Enterprise package (Feature #AJKY) DCNM Advanced Edition (Feature #AJKZ) 16-port On-Demand (Feature #AJKX) SAN Insights (Feature #AJHY)
Features	<ul style="list-style-type: none"> ▪ Modular high availability ▪ Autozone capable ▪ Integrated SAN Telemetry ▪ FC-NVMe ready ▪ Slow drain detection and link isolation ▪ Sophisticated Diagnostics ▪ Virtual Machine awareness ▪ Up to 8270 Buffer-to-Buffer (B2B) credits per port (up to 612-km native 32-Gbps Fibre Channel SAN extension capability) ▪ Native on-switch REST API and PYTHON interpreter ▪ FC Link encryption ▪ 16-member port channel ▪ Power-On Auto Provisioning (POAP) and intelligent diagnostics ▪ Cisco In-Service Software Upgrade (ISSU) and dual redundant hot-swappable power supplies for high availability ▪ High-performance ISLs with multipath load balancing ▪ Smart zoning and VOQ ▪ Anti-counterfeit technology 		

IBM c-type Series Software License Packages

Licensed package	Description	Features
SAN Insights	This package includes features that enable On-board SAN Telemetry for SAN Insights DCNM visualization	<p>On-board SAN Telemetry:</p> <ul style="list-style-type: none"> Point in time views on a per switch basis with end-to-end metrics DCNM provides visualizations <p>SAN Insights:</p> <ul style="list-style-type: none"> DCNM visualization with historical data Topology Views, end-to-end metrics, port level metrics, etc... <p>SAN Telemetry Streaming:</p> <ul style="list-style-type: none"> Streams data out of the switches to any platform using industry standard formats
Enterprise license	This package includes advanced traffic engineering and advanced security features for enterprise SANs.	<p>Advanced traffic management</p> <ul style="list-style-type: none"> Inter-VSAN Routing (IVR) Quality of Service (QoS) Extended buffer-to-buffer credits <p>Security</p> <ul style="list-style-type: none"> Switch-to-switch and host-to-switch authentication Port security VSAN-based access control IP Security (IPsec) for Internet Small Computer Systems Interface and FCIP Internet Key Exchange (IKE) digital certificates Fabric binding for Fibre Channel
Data Center Network Manager (DCNM) license	Data Center Network Manager is designed to help customers efficiently implement and manage next-generation virtualized data centers. It provides timely management support for data center hardware platforms and NX-OS Software innovations.	<p>SAN management</p> <ul style="list-style-type: none"> Virtual machine-aware path management Monitoring and troubleshooting Single-pane management Scalability: Federation and VSAN Scoping <p>LAN management</p> <ul style="list-style-type: none"> Network virtualization through creation of Virtual Device Contexts (VDCs) Full automation of virtual-Port-Channel (vPC) operations FabricPath
Mainframe license	This package includes features required in mainframe environments. FICON is an architecture for high-speed connectivity between mainframe and I/O devices.	<ul style="list-style-type: none"> VSAN for FICON and Fibre Channel Protocol (FCP) intermode channel-to-channel operations FICON Control Unit Protocol (CUP) Fabric binding Switch cascading IBM TotalStorage virtual tape server IBM TotalStorage Extended Remote Copy (XRC) FICON native mode and native mixing operation Persistent FICON FCID assignment Port swapping for host channel cable connectors FICON tape acceleration