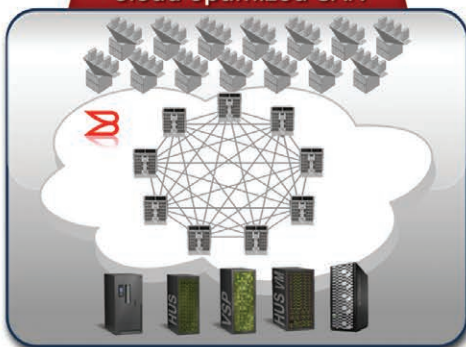


HITACHI DATA SYSTEMS PRODUCT REFERENCE GUIDE

Brocade Networking for Hitachi Data Systems Solutions

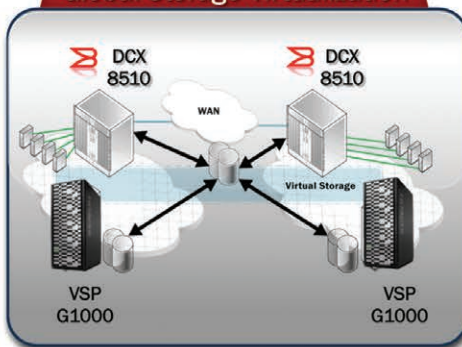
Fibre Channel and Ethernet Fabric Solutions Providing Effortless Scalability, Cloud-Optimized Performance, High Availability, and Unified Network Management

Cloud-optimized SAN



- Scale-out Fabrics
 - 9 Chassis Full-mesh
 - 10 Chassis Core-edge
- Integrated Metro/GEO Connectivity
- Unified SAN Management and Fabric Vision

Global Storage Virtualization



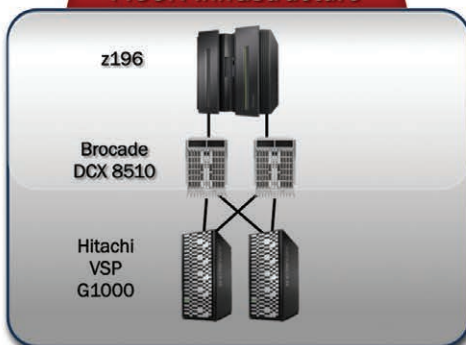
- High Performance SAN
- Six 9s of Hardware Availability
- Resilient Metro Links
- Advanced monitoring and diagnostics

UCP Solutions



- Embedded FC SAN Module
- Embedded Ethernet Module
- Converged Network Ready
- Integrated with Hitachi Management

FICON Infrastructure



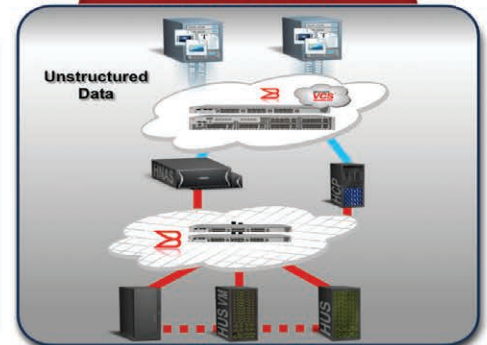
- Non-blocking FC Performance
- Six 9s Hardware Availability
- Protocol Intermix Mode (PIM)
- FICON Acceleration

Business Continuity/DR






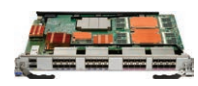



- FC over DWDM or Dark Fiber
- FCIP Extension
- Mainframe or Open Systems
- Optimized for Encrypted Environments

File & Content











- 10/40 GbE Ethernet Fabric
- Dynamic Scalability
- VCS AutoQoS
- HNAS Clustering




Storage Area Networks (SAN)

	GEN6 FIBRE CHANNEL			EXTENSION	GEN5 FIBRE CHANNEL		
Model	X6-8 Director	X6-4 Director	G620	SX6 Extension Blade	Brocade DCX 8510-8	Brocade DCX 8510-4	Brocade Analytics Monitoring Platform
							
HITACHI DATA SYSTEMS PART NUMBERS	<p>X6-8 Chassis,3PSU,0P2CP,2 32GB CORE,0SFRNPI,EB ·HD-X68-0001-M</p> <p>X6-8 Chassis,0PSU,0FAN,2CP,2CORE,0P,0SFP,EB ·HD-X68-0002-M</p> <p>32 Gbps FC Port Blades ·BR-X6-0148 (FC32-48,48P,0 SFP,BR) ·BR-X6-2148 (FC32-48,48 32G SWL SFP+,BR)</p> <p>X6-8 ICL Ports on Demand 16 4X32G QSFPs ·BR-X68ICLKIT-100M-01</p> <p>SW,PPINTEGRATED ROUTING,UPTO 128PORT,X6 ·BR-CHASIR128POD-01-M</p> <p>Gen5 Fibre Channel ICL Kits ·BR-X68GEN5ICLKIT-01-M (LIC+16 4X16G QSFPs 100M) ·BR-X68GEN5ICLKIT-2KM-01 (2KM,LIC & 8 2KM 4X16GQSFP)</p> <p>X6-8 Airflow Agnostic Chassis (must be purchased with unique power supply and fan skus) ·XHD-X68-0010 ·BR-X6-RACNPEPSU-0104 ·BR-X6-FANNPE-0122</p>	<p>X6-4 Chassis,2PS,0P2CP,2 32GB CORE,0SFRNPI,EB ·HD-X64-0001-M</p> <p>X6-4 Chassis,0PSU,0FAN,2CP,2CORE,0P,0SFP,EB ·HD-X64-0002-M</p> <p>32 Gbps FC Port Blades ·BR-X6-0148 (FC32-48,48P,0 SFP,BR) ·BR-X6-2148 (FC32-48,48 32G SWL SFP+,BR)</p> <p>X6-4 ICL Ports on Demand 8 4X32G QSFPs ·BR-X64ICLKIT-100M-01</p> <p>SW,PPINTEGRATED ROUTING,UPTO 128PORT,X6 ·BR-CHASIR128POD-01-M</p> <p>Gen5 Fibre Channel ICL Kits ·BR-X64GEN5ICLKIT-01-M (LIC+8 4X16G QSFPs 100M) ·BR-X64GEN5ICLKIT-2KM-01 (2KM,LIC & 8 2KM 4X16GQSFP)</p> <p>X6-4 Airflow Agnostic Chassis (must be purchased with unique power supply and fan skus) ·XHD-X64-0010 ·BR-X6-RACNPEPSU-0104 ·BR-X6-FANNPE-0122</p>	<p>1U Front-to-back airflow with SFP ·HD-G620-48-32G-F-M (SWL SFP,BR,AC,NON-PORT,ENT)</p> <p>1U Back-to-front airflow with SFP ·HD-G620-48-32G-R-M (SWL SFP,BR,AC,PORT SD,ENT)</p> <p>1U Back-to-front airflow with SFP ·HD-G620-24-32G-R-M (SWL SFP,BR,AC,PORT SIDE EX)</p> <p>1U Front-to-back airflow without SFP ·HD-G620-24-F-M (0 SFP,BR,AC,NON-PORT EXH)</p> <p>1U Back-to-front airflow without SFP ·HD-G620-24-R-M (0 SFP,BR,AC,PORT SIDE EXH)</p>	<p>Extension blade with 16x 32G SWL 1/10/40GbE SFPs ·HD-SX6-0001-M</p> <p>Extension blade with 16x 32G LWL 1/10/40GbE SFPs ·HD-SX6-0002-M</p>	<p>HD-DCX8518-0001-M 2PS, 0P, 2CP, 2 16GB CORE, 0 SFP, Enterprise Software Bundle (FV (incl. FW, APM), TRK, EF)</p> <p>16 Gbps Port Blades: ·BR-DCX8510-2102 (32-ports w/32 Gbps SFP)</p> <p>·BR-DCX8510-2148 (48-ports w/16 Gbps SFP)</p> <p>·BR-DCX8510-0102 (32-ports, 0 SFP)</p> <p>·BR-DCX8510-0148 (48-ports, 0 SFPs)</p> <p>·HD-DCX-2164 (64-ports, 8 Gbps SWL mSFP)</p> <p>8 Gbps Port Blades: ·BR-DCX8510-2032 (32-ports w/ 8 Gbps SFPs)</p> <p>·BR-DCX8510-2048 (48-ports w/ 8 Gbps SFPs)</p> <p>·BR-DCX8510-0032 (32-ports, 0 SFP)</p> <p>·BR-DCX8510-0048 (48-ports, 0 SFP)</p> <p>* Also configurable with Extension blades. ICLs enable connections of up to 10 chassis in a core-edge, and up to nine chassis in an active-active mesh topology. ICL Ports on Demand are licensed in increments of 16 ICL ports. Two ICL PoD licenses are required for full bandwidth. Connecting five or more chassis via ICLs also requires an Enterprise ICL license.</p>	<p>HD-DCX8514-0001-M 2PS,0P,2CP,2 16GB CORE, 0 SFP</p> <p>HD-DCX8514-1002-M Enterprise Software Bundle (FV (incl. FW, APM), TRK, EF)</p> <p>16 Gbps Port Blades: ·BR-DCX8510-2102 (32-ports w/32 Gbps SFP)</p> <p>·BR-DCX8510-2148 (48-ports w/16 Gbps SFP)</p> <p>·BR-DCX8510-0102 (32-ports, 0 SFP)</p> <p>·BR-DCX8510-0148 (48-ports, 0 SFPs)</p> <p>·HD-DCX-2164 (64-ports, 8 Gbps SWL mSFP)</p> <p>8 Gbps Port Blades: ·BR-DCX8510-2032 (32-ports w/ 8 Gbps SFPs)</p> <p>·BR-DCX8510-2048 (48-ports w/ 8 Gbps SFPs)</p> <p>·BR-DCX8510-0032 (32-ports, 0 SFP)</p> <p>·BR-DCX8510-0048 (48-ports, 0 SFP)</p> <p>* Also configurable with Extension blades. ICLs enable connections of up to 10 chassis in a core-edge, and up to nine chassis in an active-active mesh topology. ICL Ports on Demand are licensed in increments of 16 ICL ports. 1 ICL PoD license is required for full bandwidth. Connecting five or more chassis via ICLs also requires an Enterprise ICL license.</p>	<p>BR-AMP-UPG-01 Brocade Analytics Monitoring Platform, 24 FC Ports and includes 24 16G SW SFPs preinstalled with Analytic Capacity Upgrade License, Power Cords NOT included, BR</p> <p>IMPL-AMP-1 Initial AMP Implementation</p> <p>IMPL-AMP-ADD1 Implementation of additional AMP devices at same physical location</p>
PORTS	48 port FC blade (FC32-48) Extension blade – SX6	48 port FC blade (FC32-48) Extension blade – SX6	24, 36, 48, 64	16x 32 Gbps Fibre Channel ports 16x 1/10 Gigabit Ethernet (GbE) ports 2x 40 GbE ports	32, 48, 64 port FC blades, Extension blade - FX8-24	32, 48, 64 port FC blades, Extension blade - FX8-24	24
PORT SPEED	4, 8, 10, 16, 32 Gbps	4, 8, 10, 16, 32 Gbps	4, 8, 10, 16, 32 Gbps	1/10, 32, 40 Gbps	2, 4, 8, 10, 16 Gbps	2, 4, 8, 10, 16 Gbps	2/4/8/16
EXPANDABILITY	Up to 384 FC ports for device connectivity. ICL option provides additional bandwidth when connecting multiple chassis. Gen 6 ICL technology is fully backward compatible with Gen 5 ICL based fabrics at 16Gb speeds.	Up to 192 FC ports for device connectivity. ICL option provides additional bandwidth when connecting multiple chassis. Gen 6 ICL technology is fully backward compatible with Gen 5 ICL based fabrics at 16Gb speeds.	Ports on Demand, 12 ports QSFP Ports on Demand, 4 ports	Up to four Brocade SX6 blades per Brocade X6 Director family chassis	Up to 512 ports for device connectivity * ICL option provides additional bandwidth when connecting multiple chassis. Max port count reached with 8 Gbps FC8-64 blades.	Up to 256 ports * ICL option provides additional bandwidth when connecting multiple chassis. Max port count reached with 8 Gbps FC8-64 blades.	NA
FICON/CUP SUPPORT	Yes (CUP Optional)	Yes (CUP Optional)	NA	FICON metro distance support	Yes (CUP Optional)	Yes (CUP Optional)	NA
HARDWARE FEATURES	<ul style="list-style-type: none"> · Supports 10/25km LWL SFPs at 16Gb and 10km LWL at 32 Gb · Hot-swappable redundant power supplies · Hot-swappable redundant fans · Redundant and hot-swappable control processor blades · Redundant and hot-swappable 32Gb core switching blades · Redundant and hot-swappable WWN cards · Flexible airflow direction option (selected at time of order; not field changeable) · Brocade Standard rack-mount included 	<ul style="list-style-type: none"> · Supports 10/25km LWL SFPs at 16Gb and 10km LWL at 32 Gb · Hot-swappable redundant power supplies · Hot-swappable redundant fans · Redundant and hot-swappable control processor blades · Redundant and hot-swappable 32Gb core switching blades · Redundant and hot-swappable WWN cards · Flexible airflow direction option (selected at time of order; not field changeable) · Brocade Standard rack-mount included 	<ul style="list-style-type: none"> · 1U with reversible airflow option SKUs—front-to-back and back-to-front · Dual, hot-swappable redundant power supplies with integrated system cooling fans · Ethernet, console, and USB mgmt. ports · Clearlink Diagnostics (D_port) · Rack-Mount Kit included 	<ul style="list-style-type: none"> · Fibre Channel: Brocade hot-pluggable Small Form Factor (SFP) and SFP+, short wavelength (SWL), long wavelength (LWL), and extended long wavelength (ELWL) transceivers (available wavelength options vary for 16 Gbps and 32 Gbps SFPs) · Ethernet: Brocade hot-pluggable Small Form Factor (SFP) and SFP+, short reach wavelength (SRWL), long reach wavelength (LRWL), extended long wavelength (ELWL), and copper SFP/SFP+ transceivers (available reach options vary from 1 GbE, 10 GbE, and 40 GbE) 	<ul style="list-style-type: none"> · Supports 10/25km LWL SFPs at 8Gb or 16Gb · Hot-swappable redundant power supplies · Hot-swappable redundant blowers · Brocade Standard rack-mount included 	<ul style="list-style-type: none"> · Supports 10/25km LWL SFPs at 8Gb or 16Gb · Hot-swappable redundant power supplies · Hot-swappable redundant blowers · Brocade Standard rack-mount included 	Includes 4 post rack mount. 2u for analytics monitoring only. Support SWL and LWL SFPs.
STANDARD BUNDLED SOFTWARE	Enterprise Bundle (Extended Fabrics, Fabric Vision, ISL Trunking) Integrated Routing optional. IO Insight for application- and device-level IO latency and IOPS monitoring.	Enterprise Bundle (Extended Fabrics, Fabric Vision, ISL Trunking) Integrated Routing optional. IO Insight for application- and device-level IO latency and IOPS monitoring.	Enterprise Bundle (Extended Fabrics, Fabric Vision, ISL Trunking) Integrated Routing optional.	HTTP, SNMP v1/v3 (FE MIB, FC Management MIB), SSH; Auditing, Syslog; NTP v3; Brocade Advanced Web Tools; Brocade Network Advisor SAN Enterprise or Brocade Network Advisor SAN Professional/Professional Plus; Command Line Interface (CLI); SMI-S compliant; REST API.	Extended Fabrics, Fabric Vision (incl. FW, APM), ISL Trunking	Fabric Vision (incl. FW, APM), Extended Fabric, ISL Trunking	Analytics capacity upgrade license
OS SUPPORTED	Fabric OS v8.0.1	Fabric OS v8.0.1	Fabric OS v8.0.1	–	Fabric OS v7.x	Fabric OS v7.x	FOS 7.4.x_amp

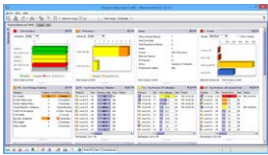

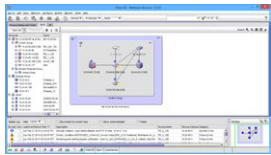
Storage Area Networks (SAN) DCX Backbone/Director/Switches

	ENTERPRISE	MIDRANGE	ENTRY		FCoE CONVERGENCE / ETHERNET FABRIC			
Model	Brocade 6520 Switch	Brocade 6510 Switch	Brocade 300 Switch	Brocade 6505 Switch	Brocade 6940-144S Switch	Brocade 6940-36Q Switch	Brocade VDX 6740 Switch	Brocade 6740T Switch
								
HITACHI DATA SYSTEMS PART NUMBERS	<ul style="list-style-type: none"> 8 Gbps SWL SFPs <ul style="list-style-type: none"> HD-6520-48-8G-R-M (48-ports) HD-6520-48-8G-F-M (48-ports) XBR-ENTPOD-8G (24-ports on demand) 16 Gbps SWL SFPs <ul style="list-style-type: none"> HD-6520-48-16G-R-M (48-ports) HD-6520-48-16G-F-M (48-ports) HD-6520-96-16G-1R-M (96-ports, Ent Bundle) XBR-ENTPOD-16G (24-ports on demand) * -F Portside intake airflow * -R Portside exhaust airflow 	<ul style="list-style-type: none"> 8 Gbps SWL SFPs <ul style="list-style-type: none"> HD-6510-24-8G-R-M (24-ports) HD-6510-48-8G-OR-M (48-ports) HD-6510-48-8G-1R-M (48-ports, Ent Bundle) HD-6510-24-8G-F-M (24-ports) XBR-MIDR12POD-8G (Port-On-Demand, 12 port Upgrade) 16 Gbps SWL SFPs <ul style="list-style-type: none"> HD-6510-24-16G-R-M (24-ports) HD-6510-48-16G-OR-M (48-ports) HD-6510-48-16G-1R-M (48-ports, Ent Bundle) HD-6510-24-16G-F-M (24-ports) XBR-MIDR12POD-16G (Port-On-Demand, 12 port Upgrade) * -F Portside intake airflow * -R Portside exhaust airflow 	<ul style="list-style-type: none"> HD-310-0008-M (8-ports, 0 e-port, 1 ps, 8 SWL 8Gb BR SFPs) HD-320-0008-M (8-ports, Full Fabric, 8 SWL 8Gb BR SFPs, Fixed Rack Mount) HD-360-0008-M (24-ports, Full Fabric, 24 SWL 8 Gbps BR SFPs, Fixed Rack Mount) HD-360-1008-M (24-ports, Ent Bundle, Full Fabric, 24 SWL 8 Gbps BR SFPs, Fixed Rack Mount) HD-360-1008-M (24-ports, Ent Bundle, Full Fabric, 24 SWL 8 Gbps BR SFPs, Fixed Rack Mount) XBR-SMEDPOD8-01 (8 Port upgrade w/ 8 SWL 8 Gbps BR SFPs) 	<ul style="list-style-type: none"> 8 Gbps SWL SFPs <ul style="list-style-type: none"> HD-6505-12-8G-OR-M (12-ports, rack mount kit) XHD-SMED12POD-8G (12 Ports on Demand) 16 Gbps SWL SFPs <ul style="list-style-type: none"> HD-6505-12-16G-OR-M (12-ports, rack mount kit) HD-6505-24-16G-2R-M (24-ports, rack mount kit, Ent Bundle) XBR-SMED12POD-16G (12 Ports on Demand) * -F Portside intake airflow * -R Portside exhaust airflow 	<ul style="list-style-type: none"> BR-VDX6940-64SACR VDX 6940-64S, AC, PORTSIDE EXHAUST BR-VDX6940-64SACF VDX 6940-64S, AC, NON PORTSIDE EXHAUST BR-VDX6940-96SACR VDX 6940-96S, AC, PORTSIDE EXHAUST BR-VDX6940-96SACF VDX 6940-96S, AC, NON PORTSIDE EXHAUST BR-VDX6940-144SACR VDX 6940-144S, AC, PORTSIDE EXHAUST BR-VDX6940-144SACF VDX 6940-144S, AC, NON PORTSIDE EXHAUST BR-VDX6940-64SDCF VDX 6940-64S, DC, NON PORTSIDE EXHAUST BR-VDX6940-64SDCR VDX 6940-64S, DC, PORTSIDE EXHAUST 	<ul style="list-style-type: none"> BR-VDX6940-36QACF VDX6940-36Q, AC, NON PORTSIDE EXHAUST BR-VDX6940-36QACR VDX6940-36Q, AC, PORTSIDE EXHAUST BR-VDX6940-36QDCF VDX6940-36Q,1U,DC,NON PORTSIDE EXH AIRFL BR-VDX6940-36QDCR VDX6940-36Q,1U,DC,PORTSIDE EXHAUST AIRFL BR-VDX6940-24QDCF VDX6940-24Q, DC, NON PORTSIDE EXHAUST BR-VDX6940-24QDCR VDX6940-24Q, DC, PORTSIDE EXHAUST BR-VDX6940-24QACF VDX6940-24Q, AC, NON PORTSIDE EXHAUST BR-VDX6940-24QACR VDX6940-24Q, AC, PORTSIDE EXHAUST 	<ul style="list-style-type: none"> BR-VDX6740-24-F (24P SFP+ PORTS 1/10GbE) BR-VDX6740-24-R (24P SFP+ PORTS 1/10GbE) BR-VDX6740-48-R (48P SFP+ PORTS 1/10GbE) BR-VDX6740-48-R (48P SFP+ PORTS 1/10GbE) BR-VDX674064ALLSWF (64P SFP+ PORTS 1/10GbE, VCS, FCOE) BR-VDX674064ALLSWR (64P SFP+ PORTS 1/10GbE, VCS, FCOE) BR-VDX6740-64-F (64P SFP+ PORTS 1/10GbE) BR-VDX6740-64-R (64P SFP+ PORTS 1/10GbE) * -F Portside intake airflow * -R Portside exhaust airflow 	<ul style="list-style-type: none"> BR-VDX6740T-24-F (24P 10GB-T PORTS ONLY - NO OPTICS, AC, NON-POR SIDE EXH AF) BR-VDX6740T-24-R (24P 10GB-T PORTS ONLY - NO OPTICS AC, PORT SIDE EXH AF) BR-VDX6740T-48-F (48P 10GB-T PORTS ONLY - NO OPTICS, AC, NON-POR SIDE EXH AF) BR-VDX6740T-48-R (48P 10GB-T PORTS ONLY - NO OPTICS AC, PORT SIDE EXH AF) BR-VDX6740T-56-1GF (48P 1GBASE-T PORTS,2 40GBE QSFP+) BR-VDX6740T-56-1GR (48P 1GBASE-T PORTS,2 40GBE QSFP+) BR-VDX6740T64ALLSWF (BNDL, 48P 10BaseT, 4P QSFP w/o SFPs, VCS, FCOE, PORT INTAKE) BR-VDX6740T64ALLSWR (BNDL, 48P 10BaseT, 4P QSFP w/o SFPs, VCS, FCOE, REAR INTAKE) BR-VDX6740T-64-F (48P 10BaseT, 4P QSFP w/o SFPs, PORT INTAKE) BR-VDX6740T-64-R (48P 10Base,T, 4P QSFP w/o SFPs, REAR INTAKE)
PORTS	48, 72, 96	24, 36, or 48 ports	8, 16, 24	12, 24	96 GbE SFP 12 40GbE QSFP+ 4 100GbE QSFP28	36 GbE QSFP+	Up to 48 1/10GE SFP+ ports, up to 4 40GE QSFP+ ports; QSFP+ ports can be deployed as 16 additional 10GE SFP+ ports	8 10GbE 10BaseT ports and 4 ports of 40 Gigabit (QSFP+ that can be broken out into four independent 10GbE ports, providing an additional 16 10GbE SFP+ ports
PORT SPEED	2, 4, 8, 10, 16 Gbps	2, 4, 8, 10, 16 Gbps	1, 2, 4, 8 Gbps	2,4,8,16 Gbps	1, 10, 40, 100 GbE	40 GbE (10 GbE using breakout cables)	1, 10, 40 GbE (DCB and TRILL)	10GE RJ45, 40GE
EXPANDABILITY	Ports on Demand, 24 Ports	Ports on Demand, 12-ports	Ports on Demand, 8 Ports	Ports on Demand, 12-ports	6, 12 40GE Ports on Demand 64, 80, 96 10GE Ports on Demand	24, 36 40GbE Ports on Demand	Ports on Demand, 8 port 10GE SFP+ Ports on Demand, 2 port 40GE SFP+	Ports on Demand, 24, 32, 40, 48, 56, 64
FICON/CUP SUPPORT	No	Yes	No	N/A	N/A	N/A	N/A	N/A
HARDWARE FEATURES	<ul style="list-style-type: none"> 2U with reversible airflow option SKUs—front-to-back and back-to-front Support for in-flight encryption and compression on any port, with a maximum of 8 ports for encryption/compression at 16 Gbps Redundant hot-swappable power supplies with integrated fans Ethernet, console, and USB mgmt. ports Clearlink Diagnostics (D_port) Forward Error Correction (FEC) Rack-Mount Kit included 	<ul style="list-style-type: none"> 1U with reversible airflow option SKUs—front-to-back and back-to-front Support for in-flight encryption and compression on any port, with a maximum of 2 ports for encryption/compression at 16 Gbps Redundant hot-swappable power supplies with integrated fans Ethernet, console, and USB management ports Clearlink Diagnostics (D_port) Forward Error Correction (FEC) Rack-mount kit included 	<ul style="list-style-type: none"> Supports 4km and 10km LWL SFPs Single fixed power supply 3 fixed N+1 fans Singular Switch FRU Fixed rack-mount included on 320 & 360 models 	<ul style="list-style-type: none"> Rack Mount Kit Optional second hot swappable power supply/fan assembly Forward Error Correction (FEC) 	<ul style="list-style-type: none"> 2U orderable as front-to-back or back-to-front airflow direction. Two redundant hot swappable AC or DC power supplies. 4 (n+1) hot swappable fans. 	<ul style="list-style-type: none"> 1u orderable as front-to-back or back-to-front airflow direction. Two redundant hot swappable AC or DC power supplies. 5 (n+1) hot swappable fans. 	<ul style="list-style-type: none"> Active optical, and optical transceiver cabling options Hot swappable, redundant power (250W/500W) and cooling Orderable front-to-back or back-to-front airflow 	<ul style="list-style-type: none"> Hot swappable, redundant power (250W/500W) and cooling Orderable front-to-back or back-to-front airflow
STANDARD BUNDLED SOFTWARE	<ul style="list-style-type: none"> Brocade Fabric OS - Bottleneck Detection, Brocade Advanced Zoning, Dynamic Fabric Provisioning, Dynamic Path Selection, Enhanced BB credit recovery, Frame Redirection, FSPF Enterprise Bundle for certain models - Fabric Vision (incl. FW, APM), Ext Fabrics, and Trunking 	<ul style="list-style-type: none"> Brocade Fabric OS - Bottleneck Detection, Brocade Advanced Zoning, Dynamic Fabric Provisioning, Dynamic Path Selection, Enhanced BB credit recovery, Frame Redirection, FSPF, NPV Enterprise Bundle for certain models - Fabric Vision (incl. FW, APM), Ext Fabrics, and Trunking 	<ul style="list-style-type: none"> Full Fabric (optional on 310), (Web Tools, & Adv. Zoning inc. in FOS 6.1), Ent. Bundle for HD-360-1004 and HD-360-1008, SAO included with FOS 6.0 or higher 	<ul style="list-style-type: none"> Brocade FOS 7.0 (includes Web Tools and Advanced Zoning) Enhanced Group Management Access Gateway (all ports must be activated) 	<ul style="list-style-type: none"> Advanced (IPv4, IPv6) Layer 2/3 features Full IP storage support with DCB capabilities VXLAN Gateway for VMware NSX built into hardware Virtual Fabric and VF extension capable OpenFlow 1.3 capable Full ISSU support for L2, L3, FC, FCoE protocols 	<ul style="list-style-type: none"> Advanced (IPv4, IPv6) Layer 2/3 features Full IP storage support with DCB capabilities VXLAN Gateway for VMware NSX built into hardware Virtual Fabric and VF extension capable OpenFlow 1.3 capable Full ISSU support for L2, L3, FC, FCoE protocols 	<ul style="list-style-type: none"> Automatic Migration of Port Profiles Full Layer 2 Feature Set VM Aware Network Automation ISL Trunking 	<ul style="list-style-type: none"> Automatic Migration of Port Profiles Full Layer 2 Feature Set VM Aware Network Automation ISL Trunking
OS SUPPORTED	Fabric OS 7.1.x	Fabric OS v7.x	Fabric OS v6.4.x	Fabric OS v7.x	Brocade Network OS 6.0.1	Brocade Network OS 6.x	Brocade Network OS 4.x	Brocade Network OS 4.x




Storage Area Networks (SAN) Extension/Routing

	EXTENSION		
	Brocade 7840 Extension Switch	Brocade 7800 4/2 & 16/6 Extension Switch	Brocade FX8-24 Extension Blade
			
HITACHI DATA SYSTEMS PART NUMBERS	<ul style="list-style-type: none"> ·HHD-7840-0001: 7840,42P,(24) 16G SW SFPs, (0) 1/10/40GbE SFP Includes (24) SWL FC SFPs; Enterprise Bundle (EXF, TRK and FV) and Advanced Extension (AEX) licenses are factory preinstalled. Includes rack mount kit 60-1003091-01. ·HD-7840-0002: 7840,42P,(24) 16G LW SFPs, (0) 1/10/40GbE SFP Includes (24) LWL FC SFPs; Enterprise Bundle (EXF, TRK and FV) and Advanced Extension (AEX) licenses are factory preinstalled. Includes rack mount kit 60-1003091-01. 	<ul style="list-style-type: none"> ·HD-7800-0001-M (6-ports, 4 8Gb SWL SFPs) ·HD-7800F-0001-M (22-ports, 16 8Gb SWL SFPs, 0 1GE SFP) ·HD-7800F-0002-M (22-ports, 16 8 Gbps LWL SFPs, 0 1GE SFP) ·XBR-7800UG-0001-M (7800 upgrade, 16P, 12 8 Gbps SWL SFPs, 0 1GE SFP) ·XBR-7800UG-0002-M (7800 upgrade, 16P, 12 8 Gbps LWL SFPs, 0 1GE SFP) 	<ul style="list-style-type: none"> ·HD-FX824-0001-M (22-ports, 12 8 Gbps SWL SFPs, 10 1GE SFP) ·HD-FX824-0002-M (22-ports, 12 8 Gbps LWL SFPs, 0 1GE SFP) <p>FX8-24 compatible only with other FX8-24 and 7800</p>
PORTS	Offers best-in-class Fibre Channel and FCIP port density, bandwidth, and throughput with up to twenty four 16 Gbps Fibre Channel ports, sixteen 1/10 GbE ports, and two 40 GbE ports using QSFP optics	4 8 Gbps FC and 2 1GbE; 16 8 Gbps FC and 6 1GbE	Base Multi Protocol: 12 8 Gbps FC and 10 1GbE Optional GbE configurations: 10 1GbE and 1 10GbE; 2 10GbE
PORT SPEED	2, 4, 8 or 16 Gbps FC; 1/10 and 40 Gbps Ethernet	1, 2, 4 or 8 Gbps FC; 1 Gbps Ethernet	1, 2, 4 or 8 Gbps FC; 1 /10 Gbps Ethernet
EXPANDABILITY	N/A	Optional software license for 4/2 base model to activate twelve 8 Gbps Fibre Channel and four 1GE ports and enable Open Systems Tape Pipelining	Optional software license to activate the two optional 10GE ports
POWER SUPPLIES	Dual hot-swappable redundant power supplies	Dual hot-swappable redundant power supplies	N/A
FICON/CUP SUPPORT	Optional: BR-LEXTSAFI-01 S/W,PP,ADVANCED ACCELERATOR FOR FICON BR-MIDRCUP-01 S/W,PP,FICON CUP FOR SINGLE SWITCH	FICON metro distance support (7800 16/6 only)	FICON metro distance support
HARDWARE FEATURES	Standard port exhaust airflow only	· Supports 4km and 10km LWL SFP's that are qualified · Slide rail rack-mount kit included	Supports 4km and 10km LWL SFP's that are qualified
STANDARD BUNDLED SOFTWARE	Enterprise Bundle (EXF, TRK and FV) and Advanced Extension (AEX). Also includes Adaptive Rate Limiting, FCIP Trunking, FCIP Quality of Service (QoS), Compression, FCIP Fast Write, Open Systems Tape Pipelining, Storage-Optimized TCP, IPSEC encryption Optional licenses: BR-LEXTSUG1-01: S/W, PP, 7840 WAN RATE UPGRADE 1 BR-LEXTSUG2-01: S/W, PP, 7840 WAN RATE UPGRADE 2 BR-MIDRIR-01: S/W, PP, INTEGRATED ROUTING FOR MID-TIER	FCIP Fast Write, Storage-Optimized TCP, Advanced Compression	FCIP Fast Write, Open Systems Tape Pipelining, Storage-Optimized TCP, Advanced Compression

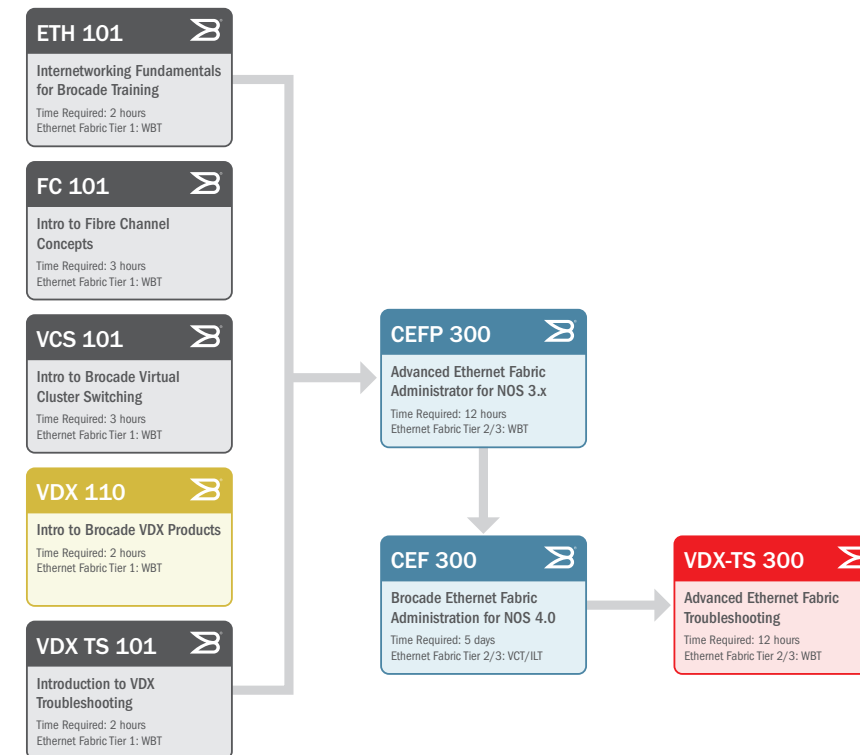
Brocade Network Advisor

	BROCADE NETWORK ADVISOR		
	IP	SAN	IP + SAN
			
PART NUMBERS	<ul style="list-style-type: none"> HD-NA-IP-BASE-M (IP Mgmt SW Kit for 50 devices) HD-NA-IP-DC-M (Adds DC (VCS Fabric Mgmt) license) HD-NA-IP-100-M (Adds IP mgmt SW license for 100 devices) HD-NA-IP-500-M (Adds IP mgmt SW license for 500 devices) HD-NA-IP-1000-M (Adds IP mgmt SW license for 1000 devices) HD-NA-IP-2500-M (Adds IP mgmt SW license for 2500 devices) 	<ul style="list-style-type: none"> HD-NA-SAN-ENT-M (SAN management SW license for up to 15000 switch ports (~400 switches) and 100 fabrics) HD-NA-SAN-PLU-M (SAN management SW license for up to 2560 switch ports (~40 switches) and 36 fabrics) 	<ul style="list-style-type: none"> HD-NA-BENT (IP and SAN management SW license for 550 IP devices, 15,000 SAN switch ports (~400 switches), and 100 SAN fabrics) HD-NA-BPLU (IP and SAN management SW license for 150 IP devices, 2560 SAN switch ports (~40 switches) and 36 SAN fabrics)
OPTIONAL SOFTWARE UPGRADE	<ul style="list-style-type: none"> · MPLS Management · SAN Management 	<ul style="list-style-type: none"> · IP Management · SAN PLU to ENT Upgrade 	<ul style="list-style-type: none"> · IP/SAN PLU to ENT Upgrade

Embedded Switch Modules for Hitachi Compute Blade Platforms

	COMPUTE BLADE MODULES		
	Brocade 6546 FC Module for CB500 only	Brocade VDX 6746 Ethernet Module for CB500 and CB2000 chassis	Brocade VDX 2746 Ethernet Module for CB2500 chassis
			
HITACHI DATA SYSTEMS PART NUMBERS	<ul style="list-style-type: none"> · HT-6546-0001-M: BR6546, 24_ports, 12 active, 4 SFP+(16Gb) & 13 months maintenance · HT-6546-0002-M: BR6546, 24_ports, 12 active, 4 SFP+(16Gb) ENT (TRK, FV&EXF) & 13 months maintenance 	<ul style="list-style-type: none"> · GV-BE2LSW3X1-Y.P (HT-VDX6746-0000) (24 PORT 10GE, 0 OPTIC) 	<ul style="list-style-type: none"> · HT-VDX2746-024-M: VDX 2746 base unit (42x10G internal, 14x10G Flex External, 2x40G external hardware), 24x10G ports licensed. No SFPs.
PORTS	24 ports total , 16 Internal and 8 External ports	24-ports (16 Internal/8 External)	42 x 10G Ethernet internal, 14 x Flex Ports external (10GbE or 16G FC) 2 x 40GbE external ports with breakout capability (also Flex)
PORT SPEED	16 Gbps FC (16, 8, 4 capable)	1/10 Gbps Ethernet	10GE, 40GE, 4, 8, 16 Gig FC
EXPANDABILITY	12-port POD Upgrade, POD license does NOT includes any SFP+s	N/A	<ul style="list-style-type: none"> HT-VDX2746-18x10G-POD 10G port upgrade. Adds 18x10G ports. HT-VDX2746-14x10G-POD 10G port upgrade. Adds 14x10G ports. HT-VDX2746-2x40G-POD 40G port upgrade. Adds 2x40G ports. HT-VDX2746-FCOE-M FCoE Activation License. Required for all FC/FCoE features. Includes 3yrs (-M) support.
FICON/CUP SUPPORT	No	No	No
STANDARD BUNDLED SOFTWARE	Enterprise bundle included only with Enterprise model HT-6546-0002-M	N/A	N/A
OS SUPPORTED	FOS 7.2.0_hit, 7.3.1	NOS 4.1.3	NOS 5.1.x

Brocade Ethernet Fabric and Converged Curriculum Path



For more course information or to register, go to www.brocade.com/education.
Contact HDS-OEMSE@Brocade.com for SAN or IP course recommendations.

Pure Play Networking for the Digital Transformation

Brocade networking solutions help the world's leading organizations turn their networks into platforms for business innovation. With solutions spanning public and private data centers to the network edge, Brocade is leading the industry in its transition to the New IP network infrastructures required for today's era of digital business.

Brocade combines a proven track record of expertise, innovation, and new technology development with standards leadership and strategic partnerships with the world's leading IT companies. The result is the industry's most comprehensive family of scalable, high-performance, and efficient networking solutions that provide a reliable foundation for cloud-optimized networks and highly virtualized data centers.

Storage Networking for HDS Solutions

New IP Enables Social Innovation

- Deploy a modern network infrastructure to address today's innovation requirements
- Implement an open, agile, software-defined strategy
- Take full advantage of mobility, cloud, social networking, and big data platforms

Dedicated Networks for Virtual Storage Platform

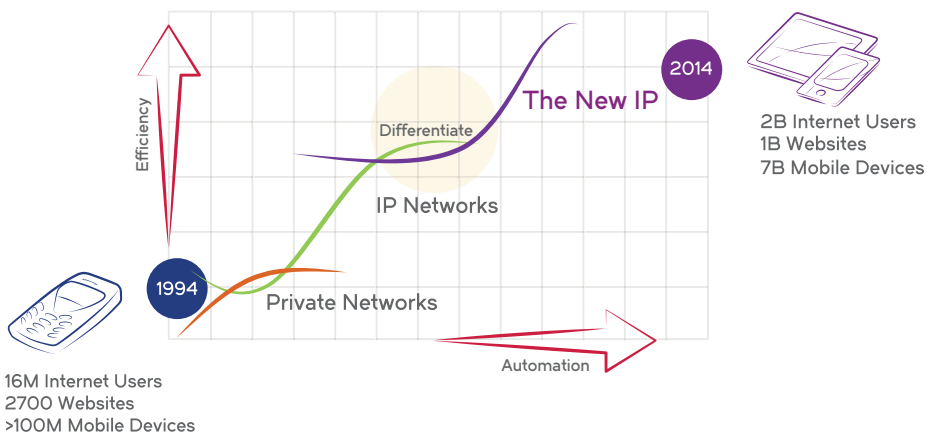
- Deliver predictable performance and unmatched resiliency for business-critical applications
- Provision network capacity with minimal intervention and virtually no learning curve
- Configure and manage multiple switches in the fabric as a single logical element
- Optimize Flash and All-Flash storage environments with Gen5 / Gen6 Fibre Channel

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- Trust in over 40 HDS solutions where Brocade Fibre Channel and Ethernet networks are designed in
- Address active data lakes with multiple storage types, including File, Block, and Object
- Scale beyond the reference architecture using the leader in storage networking

The New IP

Enabling the next generation of business



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HDS Account Team

hdsacct-tm@brocade.com

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