REPÚBLICA FEDERATIVA DO BRASIL
AGÊNCIA NACIONAL DE TELECOMUNICAÇÕES.

Certificado de Homologação

(Intransferível)

Nº **03588-11-05661**

Validade: **Indeterminada**

Emissão: **17/01/2012**

Solicitante:

BROCADE SISTEMAS DE COMUNICAÇÃO DO BRASIL LTDA
AVENIDA BERNARDINO DE CAMPOS 98 4º ANDAR PARAISO
4004040 SAO PAULO SP

Fabricante:

BROCADE COMMUNICATIONS SYSTEMS INC.
130, HOLGER WAY CALIFORNIA
SAN JOSE

Outras Unidades Fabris:

FOXCONN ASSEMBLY, LLC
COMPAQ CENTER WEST DRIV 11177
HOUSTON - ESTADOS UNIDOS

Este documento homologa, nos termos do Regulamento para Certificação e Homologação de Produtos para Telecomunicações, aprovado pela Resolução Anatel nº 242, de 30 de novembro de 2000, o Certificado de Conformidade nº 05938/11 , emitido pelo **OCD - IBRACE - Instituto Brasileiro de Certificação**. Esta homologação é expedida em nome do solicitante aqui identificado e é válida somente para o produto a seguir discriminado, cuja utilização deve observar as condições estabelecidas na regulamentação do(s) serviço(s) ou aplicação(ões) a que se destina.

Tipo:

Equipamento de Rede de Dados - Categoria III

Modelo(s):

ICX6610-24F
ICX6610-24
ICX6610-24P
ICX6610-48
ICX6610-48P

Serviço/Aplicação:

Redes de Dados

Características técnicas básicas:

Equipamento utilizado em redes Ethernet.

Observações:

Módulos de interface e protocolos de sinalização, especificados em documentos técnicos do produto, não estão cobertos por este certificado, sendo obrigatórios certificação e homologação, caso venham a ser fornecidos ou utilizados.

Constitui obrigação do fabricante do produto no Brasil providenciar a identificação do produto homologado, nos termos do art. 39 do Regulamento anexo à Resolução Anatel nº 242, em todas as unidades comercializadas, antes de sua efetiva distribuição ao mercado, assim como observar e manter as características técnicas que fundamentaram a certificação original.

As informações constantes deste certificado de homologação podem ser confirmadas no SGCH - Sistema de Gestão de Certificação e Homologação, disponível no portal da Anatel. (www.anatel.gov.br).

Marcos de Souza Oliveira
Gerente de Certificação e Numeração

REPÚBLICA FEDERATIVA DO BRASIL
AGÊNCIA NACIONAL DE TELECOMUNICAÇÕES.

Certificado de Homologação

(Intransferível)

Nº **04376-13-05599**

Validade: **Indeterminada**

Emissão: **29/01/2014**

Solicitante:

BROCADE SISTEMAS DE COMUNICAÇÃO DO BRASIL LTDA
AVENIDA BERNARDINO DE CAMPOS 98 PARAÍSO
4004040 SAO PAULO SP

Fabricante:

BROCADE COMMUNICATIONS SYSTEMS, INC.
130, HOLGER WAY 95134
SAN JOSE, CALIFÓRNIA

Este documento homologa, nos termos do Regulamento para Certificação e Homologação de Produtos para Telecomunicações, aprovado pela Resolução Anatel nº 242, de 30 de novembro de 2000, o Certificado de Conformidade nº 00080430 , emitido pelo **OCD - IBRACE - Instituto Brasileiro de Certificação**. Esta homologação é expedida em nome do solicitante aqui identificado e é válida somente para o produto a seguir discriminado, cuja utilização deve observar as condições estabelecidas na regulamentação do(s) serviço(s) ou aplicação(ões) a que se destina.

Tipo:

Equipamento de Rede de Dados - Categoria III

Modelo(s):

VDX 6740
VDX 6740T

Serviço/Aplicação:

Redes de Dados

Características técnicas básicas:

Equipamento utilizado em redes Ethernet.

Observações:

Módulos de interface e protocolos de sinalização, especificados nos documentos técnicos do produto, não estão cobertos por este certificado, sendo obrigatória sua certificação e homologação, caso venham a ser fornecidos ou utilizados.

Constitui obrigação do fabricante do produto no Brasil providenciar a identificação do produto homologado, nos termos do art. 39 do Regulamento anexo à Resolução Anatel nº 242, em todas as unidades comercializadas, antes de sua efetiva distribuição ao mercado, assim como observar e manter as características técnicas que fundamentaram a certificação original.

As informações constantes deste certificado de homologação podem ser confirmadas no SGCH - Sistema de Gestão de Certificação e Homologação, disponível no portal da Anatel. (www.anatel.gov.br).

Marcos de Souza Oliveira
Gerente de Certificação e Numeração

Certificados

Resultado da Consulta:
1 Certificado(s)
1 Produtos(s)
0 Serviços(s)

Página 1

Certificador: NCC **Nº Certificado:** NCC 15.04021 **Tipo:** Produto **Emissão:** 12/11/2015 **Validade:** 12/11/2018 **Status do Certificado:** Ativo Doc.Normativo Portaria Inmetro nº 170 de 10/04/2012

CNPJ/CPF	Razão Social / Nome (PF)	Nome fantasia	Endereço	Status	Papel da empresa
19551989000150	NUTANIX BRAZIL TECHNOLOGIES LTDA.	NUTANIX BRAZIL TECHNOLOGIES LTDA.	RUA FUNCHAL - EDIFÍCIO E-TOWER, 418 - 34/35ANDAR - VILA OLIMPIA - SAO PAULO, SP - BRASIL	ATIVO	SOLICITANTE

Marca	Modelo	Importado	Descrição
NUTANIX	NXS1U1NL04G410	SIM	SERVIDOR - 100-127 V / 50-60 HZ / 9.8-7 A OU 200-240 V / 50-60 HZ / 7-5 A

topo

Nova Pesquisa
Certificados | Produtos | Serviços | Empresas | Organismos Acreditados

NUTANIX™
Your Enterprise Cloud Platform

Nutanix Platform Specifications

NX-1000 SERIES

	Per Node (4 per Appliance)		Per Node (4 per Appliance)	
Model	NX-1065S-G5 (Configure to Order)		NX-1065-G5 (Configure to Order)	
Server Compute	Single Intel Broadwell: E5-2609v4 [8 cores / 1.7 GHz], E5-2620v4 [8 cores / 2.1 GHz], E5-2650v4 [12 cores / 2.2 GHz]		Dual Intel Broadwell: E5-2620v4 [16 cores / 2.1 GHz], E5-2640v4 [20 cores / 2.4 GHz]	
Storage Capacity	HYBRID: 1x SSD:* [480 GB, 800 GB, 960 GB, 1.2 TB, 1.6 TB or 1.92 TB] 2x HDD:* [2 TB, 4 TB or 6 TB]	ALL FLASH: 3x SSD:* [480 GB, 800 GB, 960 GB, 1.2 TB, 1.6 TB, 1.92 TB or 3.84 TB]	HYBRID: 1x SSD:* [480 GB, 800 GB, 960 GB, 1.2 TB, 1.6 TB or 1.92 TB] 2x HDD:* [2 TB, 4 TB or 6 TB]	ALL FLASH: 3x SSD:* [480 GB, 800 GB, 960 GB, 1.2 TB, 1.6 TB, 1.92 TB or 3.84 TB]
Memory	64 GB, 96 GB, 128 GB or 256 GB		64 GB, 96 GB, 128 GB, 192 GB, 256 GB, 384 GB, 512 GB or 1 TB	
Network Connections	2x 1GbE RJ45 and 1x 100 Mbps RJ45 (IPMI)		2x 1 GbE, 1x 1GbE RJ45 (IPMI) Add-on: Dual-Port 1 GbE or Dual-Port 10 GbE or Quad-Port 10 GbE or Dual-Port 10 GBASE-T	
Certifications	CSAus, FCC, CSA, ICES, CE, KCC, RCM, VCCI-A, BSMI, EAC, SABS, INMETRO, S-MARK, UKRSEPRO, BIS**			

* FIPS 140-2 Level 2 self encrypting drives may be available; ** For more information, email regulatory_compliance@nutanix.com

Appliance Specifications

Dimensions	Height: 3.5" (88mm), Width: 17.25" (438mm), Depth: 30.5" (775mm)	Height: 3.5" (88mm), Width: 17.25" (438mm), Depth: 32.75" (832mm)
Weight	66.45 lbs. (30.1kg) stand-alone, 90.15 lbs. (40.9kg) package, 5.25 lbs (2.4kg) node*	90 lbs. (40.8kg) stand-alone, 105 lbs. (47.6kg) package, 7 lbs (3.2kg) node*
System Cooling	4x80mm heavy duty fans with PWM fan speed controls	
Operating Environment	Op Temp Rng: 50°-95°F (10°-35°C) Non-Op Temp Rng: -40°-158°F (-40°- 70°C) Op Humidity Rng (non-condensing): 20-95% Non-Op Humidity Rng: 5-95%	
Power Consumption	1160W maximum, 812W typical	1393W maximum, 907W typical
Power Supply (Dual Supply / Block)	1.1kW Out @100-120V, 12.7-10.5A, 50-60Hz; 80PLUS TITANIUM 2.0kW Out @200-240V, 10.0-9.8A, 50-60Hz; 80PLUS TITANIUM	
Thermal Dissipation	3958 BTU/hr maximum, 2770 BTU/hr typical	4755 BTU/hr maximum, 3094 BTU/hr typical
Operating Requirements	Input Voltage: 100-240V AC auto-range, Input Frequency: 50-60Hz	

* Package weight includes rails and all accessories, standalone weight includes all drives

NUTANIX™
Your Enterprise Cloud Platform

Nutanix Platform Specifications

NX-3000 SERIES

	Per Node (4 per Appliance)		Per Node (1 per Appliance)		Per Node (1 per Appliance)	
Model	NX-3060-G5 (Configure to Order)		NX-3155G-G4 (Configure to Order)		NX-3175-G5 (Configure to Order)	
Server Compute	Dual Intel Broadwell: E5-2620v4 [16 cores / 2.1 GHz], E5-2640v4 [20 cores / 2.4 GHz], E5-2650v4 [24 cores / 2.2 GHz], E5-2680v4 [28 cores / 2.4 GHz], E5-2695v4 [36 cores / 2.1 GHz]		Dual Intel Haswell: E5-2660v3 [20 cores / 2.6 GHz], E5-2680v3 [24 cores / 2.5 GHz], E5-2698v3 [32 cores / 2.3 GHz]		Dual Intel Broadwell: E5-2650v4 [24 cores / 2.2 GHz], E5-2667v4 [16 cores / 3.2 GHz], E5-2680v4 [28 cores / 2.4 GHz], E5-2695v4 [36 cores / 2.1 GHz], E5-2699v4 [44 cores / 2.2 GHz]	
Storage Capacity	HYBRID	ALL FLASH	HYBRID	ALL FLASH	HYBRID	ALL FLASH
	2x SSD:* [480 GB, 800 GB, 960 GB, 1.2 TB, 1.6 TB or 1.92 TB] 4x HDD:* [1 TB or 2 TB]	6x SSD:* [480 GB, 800 GB, 960 GB, 1.2 TB, 1.6 TB, 1.92 TB or 3.84 TB]	2x SSD:* [480 GB, 800 GB, 1.2 TB or 1.6 TB] 4x HDD:* [2 TB, 4 TB or 6 TB]	6x SSD:* [480 GB, 800 GB, 1.2 TB or 1.6 TB]	2x SSD:* [480 GB, 800 GB, 960 GB, 1.2 TB, 1.6 TB or 1.92 TB] 2x HDD:* [2 TB, 4 TB or 6 TB]	4x SSD:* [480 GB, 800 GB, 960 GB, 1.2 TB, 1.6 TB, 1.92 TB or 3.84 TB]
Memory	128 GB, 192 GB, 256 GB, 384 GB, 512 GB or 1 TB		192 GB, 256 GB, 384 GB, 512 GB, 640 GB or 768 GB		128 GB, 192 GB, 256 GB, 384 GB, 512 GB, 640 GB, 768 GB, 1 TB or 1.5 TB	
Network Connections	2x 1 GbE and 1x 1 GbE RJ45 (IPMI) Add-on: Dual-Port 10 GbE or Quad-Port 10 GbE or Dual-Port 10 GBASE-T		Dual-port 10Gb and 1x 1GBE RJ45 (IPMI) Add-on: Dual-port 10G SFP+ or Quad-Port 10 GbE or Dual-port 10GBASE-T		Dual-Port 10 GbE and 1 x 1 GbE RJ45 (IPMI) Optional Add-on: Dual-Port 10 GbE, Quad-Port 10 GbE or Dual-port 10GBASE-T	
Certifications	CSAus, FCC, CSA, ICES, CE, KCC, RCM, VCCI-A, BSMI, EAC, SABS, INMETRO, S-MARK, UKRSEPRO, BIS**					
GPU	Not Applicable		3x PCIe expansion slot; 2x M10***		1x PCIe expansion slot; 1x GRID K1 or 1x GRID K2; 1x M60	

* FIPS 140-2 Level 2 self encrypting drives may be available; ** For more information, email regulatory_compliance@nutanix.com; *** Expected GA Nov. 2016, subject to change

Appliance Specifications

Dimensions	Height: 3.5" (88mm), Width: 17.25" (438mm), Depth:28.5" (724mm)	Height: 3.5" (88mm), Width: 17.38" (441mm), Depth:29.125" (740mm)	Height: 1.7" (43mm), Width: 17.25" (438mm), Depth:29.5" (750mm)
Weight	90 lbs. (40.8kg) stand-alone, 105 lbs. (47.6kg) package, 7 lbs (3.2kg) node*	60.6 lbs. (27.5kg) stand-alone, 70.4 lbs. (32kg) package*	33 lbs. (14.9kg) stand-alone, 46.7 lbs. (21.2kg) package*
System Cooling	4x80mm heavy duty fans with PWM fan speed controls	4x80mm heavy duty fans with PWM fan speed controls	8x 40x56mm heavy duty fans with PWM fan speed controls
Operating Environment	Op Temp Rng: 50°-95°F (10°-35°C) Non-Op Temp Rng: -40°-158°F (-40°- 70°C) Op Humidity Rng (non-condensing): 20-95% Non-Op Humidity Rng: 5-95%	Op Temp Rng: 50°-95°F (10°-35°C) Non-Op Temp Rng: -40°-158°F (-40°- 70°C) Op Humidity Rng (non-condensing): 8-95% Non-Op Humidity Rng: 5-95%	Op Temp Rng: 50°-95°F (10°-35°C) Non-Op Temp Rng: -40°-140°F (-40°- 60°C) Op Humidity Rng (non-condensing): 8-90% Non-Op Humidity Rng: 5-95%
Power Consumption	1764W maximum, 1150W typical**	1492W maximum, 1350W typical**	873W maximum, 567W typical**
Power Supply (Dual Supply / Block)	1.1kW Out @100-120V, 12.7-10.5A, 50-60Hz; 80PLUS TITANIUM 2.0kW Out @200-240V, 10.0-9.8A, 50-60Hz; 80PLUS TITANIUM	1.0kW Out @100-127V, 13.0-9.0A, 50-60Hz; 1.6kW Out @200-240V, 10.0- 8.0A, 50-60Hz	0.8kW Out @100-127V, 9.8-7.0A, 50-60Hz; 80PLUS TITANIUM 1.0kW Out @200-240V, 7.0- 5.0A, 50-60Hz; 80PLUS TITANIUM
Thermal Dissipation	6019 BTU/hr maximum, 2924 BTU/hr typical**	5092 BTU/hr maximum, 4607 BTU/hr typical	2979 BTU/hr maximum, 1936 BTU/hr typical
Operating Requirements	Input Voltage: 100-240V AC auto-range, Input Frequency: 50-60Hz		

* Package weight includes rails and all accessories, standalone weight includes all drives; ** Results dependent on configuration

NUTANIX™
Your Enterprise Cloud Platform

Nutanix Platform Specifications

NX-6000 SERIES

	Per Node (2 per Appliance)		Per Node (2 per Appliance)	Per Node (1 per Appliance)	
Model	NX-6035C-G5 (Configure to Order)		NX-6035-G5 (Configure to Order)	NX-6155-G5 (Configure to Order)	
Server Compute	Dual Intel Broadwell: E5-2609v4 [16 cores / 1.7 GHz], E5-2620v4 [16 cores / 2.1 GHz]		Dual Intel Broadwell: E5-2620v4 [16 cores / 2.1 GHz], E5-2640v4 [20 cores / 2.4 GHz]	Dual Intel Broadwell: E5-2620v4 [16 cores / 2.1 GHz], E5-2640v4 [20 cores / 2.4 GHz], E5-2650v4 [24 cores / 2.2 GHz], E5-2680v4 [28 cores / 2.4 GHz], E5-2695v4 [36 cores / 2.1 GHz]	
	HYBRID	ALL FLASH	HYBRID	HYBRID	ALL FLASH
Storage Capacity	1x SSD:* [800 GB, 960 GB, 1.2 TB, 1.6 TB or 1.92 TB] 5x HDD:* [4 TB or 6 TB]	6x SSD:* [800 GB, 960 GB, 1.2 TB, 1.6 TB, 1.92 TB or 3.84 TB]	1x SSD:* [800 GB, 960 GB, 1.2 TB, 1.6 TB or 1.92 TB] 5x HDD:* [4 TB or 6 TB]	2x SSD:* [800 GB, 960 GB, 1.2 TB, 1.6 TB or 1.92 TB] 10x HDD:* [4 TB]	12x SSD:* [800 GB, 960 GB, 1.2 TB, 1.6 TB or 1.92 TB]
Memory	64 GB, 128 GB, 192 GB, 256 GB, 384 GB, 512 GB or 1 TB		64 GB, 128 GB, 192 GB, 256 GB, 384 GB, 512 GB or 1 TB	64 GB, 128 GB, 192 GB, 256 GB, 384 GB, 512 GB, 640 GB, 768 GB, 1 TB or 1.5 TB	
Network Connections	2x 1 GbE and 1x 1 GbE RJ45 (IPMI) Add-on: Up to 2x Dual-Port 10 GbE or 2x Quad-Port 10 GbE or 2x Dual-Port 10 GBASE-T		2x 1 GbE and 1x 1 GbE RJ45 (IPMI) Add-on: Up to 2x Dual-Port 10 GbE or 2x Quad-Port 10 GbE or 2x Dual-Port 10 GBASE-T	4x 1 GBASE-T and 1x 1 GbE RJ45 (IPMI) Add-on: Up to 1x Dual-Port 10 GbE or 1x Quad-Port 10 GbE or 1x Dual-Port 10 GBASE-T	
Certifications	CSAus, FCC, CSA, ICES, CE, KCC, RCM, VCCI-A, BSMI, EAC, SABS, INMETRO, S-MARK, UKRSEPRO, BIS**				

* FIPS 140-2 Level 2 self encrypting drives may be available; ** For more information, email regulatory_compliance@nutanix.com

Appliance Specifications

Dimensions	Height: 3.47" (88mm), Width: 17.25" (438mm), Depth:30.25" (768mm)		Height: 3.47" (88mm), Width: 17.38" (441mm), Depth: 29.13" (740mm)
Weight	79 lbs. (35.83kg) stand-alone, 94 lbs. (42.63kg) package, 7.7 lbs (3.5kg) node*		56 lbs. (25.4kg) stand-alone, 65.1 lbs. (29.53kg) package
System Cooling	4x80mm heavy duty fans with PWM fan speed controls		4x80mm heavy duty fans with PWM fan speed controls
Operating Environment	Op Temp Rng: 50°-95°F (10°-35°C) Non-Op Temp Rng: -40°-158°F (-40°- 70°C) Op Humidity Rng (non-condensing): 20-90% Non-Op Humidity Rng: 5-95%		Op Temp Rng: 50°-95°F (10°-35°C) Non-Op Temp Rng: -40°-158°F (-40°- 70°C) Op Humidity Rng (non-condensing): 8-95% Non-Op Humidity Rng: 5-95%
Power Consumption	812W maximum, 528W typical**	832W maximum, 546W typical**	659W maximum, 625W typical**
Power Supply (Dual Supply / Block)	800W Out @100-140V, 10-7A, 50-60Hz; 80PLUS TITANIUM 1.6kW Out @180-240V, 11-8A, 50-60Hz		1.0kW Out @100-104V, 9.8-7.0A, 50-60Hz; 80PLUS TITANIUM 1.0kW Out @180-240V, 7.0-5.0A, 50-60Hz; 80PLUS TITANIUM
Thermal Dissipation	2771 BTU/hr maximum, 1802 BTU/hr typical**	2839 BTU/hr maximum, 1863 BTU/hr typical**	2249 BTU/hr maximum, 2133 BTU/hr typical**
Operating Requirements	Input Voltage: 100-240V AC auto-range, Input Frequency: 50-60Hz		

* Package weight includes rails and all accessories, standalone weight includes all drives; ** Results dependent on configuration

NUTANIX™
Your Enterprise Cloud Platform

Nutanix Platform Specifications

NX-8000 SERIES

	Single Node (1 per Appliance)		Per Node (2 per Appliance)	
Model	NX-8150-G5 (Configure to Order)		NX-8035-G5 (Configure to Order)	
Server Compute	Dual Intel Broadwell: E5-2667v4 [16 cores / 3.2 GHz], E5-2680v4 [28 cores / 2.4 GHz], E5-2695v4 [36 cores / 2.1 GHz], E5-2699v4 [44 cores / 2.2 GHz]		Dual Intel Broadwell: E5-2640v4 [20 cores / 2.4 GHz], E5-2643v4 [12 cores / 3.4 GHz], E5-2650v4 [24 cores / 2.2 GHz], E5-2680v4 [28 cores / 2.4 GHz], E5-2695v4 [36 cores / 2.1 GHz]	
Storage Capacity	HYBRID	ALL FLASH	HYBRID	ALL FLASH
	4x SSD:* [480 GB, 800 GB, 960 GB, 1.2 TB, 1.6 TB or 1.92 TB] 20x HDD:* [1 TB or 2 TB]	24x SSD:* [480 GB, 800 GB, 960 GB, 1.2 TB, 1.6 TB or 1.92 TB]	2x SSD:* [480 GB, 800 GB, 960 GB, 1.2 TB, 1.6 TB or 1.92 TB] 4x HDD:* [4 TB or 6 TB]	6x SSD:* [480 GB, 800 GB, 960 GB, 1.2 TB, 1.6 TB, 1.92 TB or 3.84 TB]
Memory	128 GB, 192 GB, 256 GB, 384 GB, 512 GB, 640 GB, 768 GB, 1 TB or 1.5 TB		128 GB, 192 GB, 256 GB, 384 GB, 512 GB or 1 TB	
Network Connections	1x 1GbE RJ45 (IPMI), 2x 10GBASE-T, Add-on: Up to 2x Dual-port 10GbE or 2x Quad-port 10GbE or 2x Dual-port 10GBASE-T		2x 1 GbE, 1x 1GbE RJ45 (IPMI) Add-on: Up to 2x Dual-port 10GbE or 2x Quad-port 10GbE or 2x Dual-port 10GBASE-T	
Certifications	CSAus, FCC, CSA, ICES, CE, KCC, RCM, VCCI-A, BSMI, EAC, SABS, INMETRO, S-MARK, UKRSEPRO, BIS**			

* FIPS 140-2 Level 2 self encrypting drives may be available; ** For more information, email regulatory_compliance@nutanix.com

Appliance Specifications

Dimensions	Height: 3.5'' (88mm), Width: 17.4'' (441mm), Depth: 28.5'' (724mm)	Height: 3.47'' (88mm), Width: 17.25'' (438mm), Depth: 30.25'' (768mm)
Weight	47.5 lbs. (21.5kg) stand-alone, 57.2 lbs. (25.9kg) package*	79 lbs. (35.83kg) stand-alone, 94 lbs. (42.63kg) package, 7.7 lbs (3.5kg) node*
System Cooling	4x80mm heavy duty fans with PWM fan speed controls	4x80mm heavy duty fans with PWM fan speed controls
Operating Environment	Op Temp Rng: 50°-95°F (10°-35°C) Non-Op Temp Rng: -40°-150°F (-40°- 70°C) Op Humidity Rng (non-condensing): 8-95% Non-Op Humidity Rng: 5-95%	Op Temp Rng: 50°-95°F (10°-35°C) Non-Op Temp Rng: -40°-158°F (-40°- 70°C) Op Humidity Rng (non-condensing): 20-90% Non-Op Humidity Rng: 5-95%
Power Consumption	650W maximum, 400W typical	949W maximum, 622W typical
Power Supply (Dual Supply / Block)	800W Out @100-120V, 9.8-7A, 50-60Hz; 80PLUS TITANIUM 1.0kW Out @200-240V, 7-5A, 50-60Hz; 80PLUS TITANIUM	800W Out @100-140V, 10-7A, 50-60Hz; 80PLUS TITANIUM 1.6kW Out @180-240V, 11-8A, 50-60Hz
Thermal Dissipation	2217 BTU/hr maximum, 1364 BTU/hr typical	3238 BTU/hr maximum, 2123 BTU/hr typical
Operating Requirements	Input Voltage: 100-240V AC auto-range, Input Frequency: 50-60Hz	Input Voltage: 100-240V AC auto-range, Input Frequency: 50-60Hz

* Package weight includes rails and all accessories, standalone weight includes all drives; ** Results dependent on configuration

NUTANIX™
Your Enterprise Cloud Platform

Nutanix Platform Specifications

Previous Options
Updated Platforms Available

Configure to Order

NX-1000 Series

NX-9000 Series

	Per Node (4 per Appliance)		Per Node (4 per Appliance)
Model	NX-1065S (Configure to Order)	NX-1065-G4 (Configure to Order)	NX-9060-G4 (Configure to Order)
Server Compute	Single Intel Ivy Bridge: E5-2630v2 [6 cores / 2.6 GHz] E5-2680v2 [10 cores / 2.8 GHz]	Dual Intel Haswell: E5-2620v3 [12 cores / 2.4 GHz] E5-2640v3 [16 cores / 2.6 GHz]	Dual Intel Haswell: E5-2620v3 [12 cores / 2.4 GHz] E5-2680v3 [24 cores / 2.5 GHz]
Storage Capacity	1x SSD* [480 GB, 800 GB, 1.2 TB or 1.6 TB], 2x HDD* [2 TB, 4 TB or 6 TB]		6x SSD** [800 GB, 1.2 TB, 1.6 TB]
Memory	64 GB, 128 GB, 192 GB, or 256 GB	64 GB, 128 GB, 192 GB, 256 GB, 384 GB or 512 GB	128 GB, 192 GB, 256 GB, 384 GB or 512 GB
Network Connections	2x 1GbE RJ45 and 1x 100 Mbps RJ45 (IPMI) Optional Add-on: Dual-Port 10 GbE or 2x 1GbE RJ45	2x 1 GbE, 1x 1GbE RJ45 (IPMI) Add-on: 2x 1 GbE or Dual-Port 10 GbE or Quad-Port 10 GbE or Dual-Port 10 GBASE-T	2x 1 GbE and 1x 1 GbE RJ45 (IPMI) Add-on: Dual-Port 10 GbE or Quad-Port 10 GbE or Dual-Port 10 GBASE-T
Certifications	CSAus, FCC, CSA, ICES, CE, KCC, RCM, VCCI-A, BSMI, EAC, SABS, INMETRO, S-MARK, UKRSEPRO, BIS**		CSAus, FCC, CSA, ICES, CE, KCC, RCM, VCCI-A, BSMI, EAC, SABS, INMETRO, S-MARK, UKRSEPRO**

* FIPS 140-2 Level 2 self encrypting drives may be available
** For more information, email regulatory_compliance@nutanix.com

Appliance Specifications

Dimensions	Height: 3.5" (88mm), Width: 17.25" (438mm), Depth: 30.5" (775mm)	Height: 3.5" (88mm), Width: 17.25" (438mm), Depth: 32.75" (832mm)	Height: 3.5" (88mm), Width: 17.25" (438mm), Depth: 30.75" (781mm)
Weight	66.45 lbs. (30.1kg) stand-alone, 90.15 lbs. (40.9kg) package, 5.25 lbs (2.4kg) node*	90 lbs. (40.8kg) stand-alone, 105 lbs. (47.6kg) package, 7 lbs (3.2kg) node*	72 lbs (32.7kg) stand-alone, 87 lbs (39.5kg) package, 7 lbs (3.2kg) node*
System Cooling	4x80mm heavy duty fans with PWM fan speed controls		4x80mm heavy duty fans with PWM fan speed controls
Operating Environment	Op Temp Rng: 50°-95°F (10°-35°C) Non-Op Temp Rng: -40°-158°F (-40°- 70°C) Op Humidity Rng (non-condensing): 20-95% Non-Op Humidity Rng: 5-95%		Op Temp Rng: 50°-95°F (10°-35°C) Non-Op Temp Rng: -40°-158°F (-40°- 70°C) Op Humidity Rng (non-condensing): 20-95% Non-Op Humidity Rng: 5-95%
Power Consumption	470W maximum, 350W typical	1540W maximum, 1080W typical	1900W maximum, 1000W typical**
Power Supply (Dual Supply / Block)	1.1kW Out @100-120V, 12.7-10.5A, 50-60Hz; 2.0kW Out @200-240V, 10.0-9.8A, 50-60Hz		1.1kW Out @100-120V, 12.7-10.5A, 50-60Hz; 2.0kW Out @200-240V, 10.0-9.8A, 50-60Hz
Thermal Dissipation	1604 BTU/hr maximum, 1194 BTU/hr typical	5255 BTU/hr maximum, 3685 BTU/hr typical	6483 BTU/hr maximum, 3412 BTU/hr typical**
Operating Requirements	Input Voltage: 100-240V AC auto-range, Input Frequency: 50-60Hz		Input Voltage: 100-240V AC auto-range, Input Frequency: 50-60Hz

* Package weight includes rails and all accessories, standalone weight includes all drives

Previous Options
Updated Platforms Available

NX-3000 Series

Configure to Order

	Per Node (4 per Appliance)	Per Node (1 per Appliance)
Model	NX-3060-G4 (Configure to Order)	NX-3175-G4 (Configure to Order)
Server Compute	Dual Intel Haswell: E5-2630v3 [16 cores / 2.4 GHz] E5-2660v3 [20 cores / 2.6 GHz] E5-2680v3 [24 cores / 2.5 GHz]	Dual Intel Haswell: E5-2660v3 [20 cores / 2.6 GHz] E5-2680v3 [24 cores / 2.5 GHz] E5-2697v3 [28 cores / 2.6 GHz] E5-2699v3 [36 cores / 2.3 GHz]
Storage Capacity	2x SSD* [480 GB, 800 GB, 1.2 TB or 1.6 TB] 4x HDD* [1 TB or 2 TB]	2x SSD* [480 GB, 800 GB, 1.2 TB or 1.6 TB] 2x HDD* [2 TB, 4 TB or 6 TB]
Memory	128 GB, 192 GB, 256 GB, 384 GB or 512 GB	192 GB, 256 GB, 384 GB, 512 GB, 640 GB or 768 GB
Network Connections	2x 1 GbE and 1x 1 GbE RJ45 (IPMI) Add-on: Dual-Port 10 GbE or Quad-Port 10 GbE or Dual-Port 10 GBASE-T	Dual-Port 10 GbE and 1x 1 GbE RJ45 (IPMI) Optional Add-on: Dual-Port 10 GbE or Quad-Port 10 GbE
Certifications	CSAus, FCC, CSA, ICES, CE, KCC, RCM, VCCI-A, BSMI, EAC, SABS, INMETRO, S-MARK, UKRSEPRO**	
GPU		1x PCIe expansion slot; 1x GRID K1 or 1x GRID K2 or 1x M60***

* FIPS 140-2 Level 2 self encrypting drives may be available ** For more information, email regulatory_compliance@nutanix.com
*** GRID card adds up to 220 addtional Watts of power **** Available in all-flash (6x SSD, no HDD)

Appliance Specifications

Dimensions	Height: 3.5" (88mm), Width: 17.25" (438mm), Depth:28.5" (724mm)	Height: 1.7" (43mm), Width: 17.25" (438mm), Depth:29.5" (750mm)
Weight	90 lbs. (40.8kg) stand-alone, 105 lbs. (47.6kg) package, 7 lbs (3.2kg) node*	33 lbs. (14.9kg) stand-alone, 46 lbs. (20.9kg) package*
System Cooling	4x80mm heavy duty fans with PWM fan speed controls	8x 40x56mm heavy duty fans with PWM fan speed controls
Operating Environment	Op Temp Rng: 50°-95°F (10°-35°C) Non-Op Temp Rng: -40°-158°F (-40°- 70°C) Op Humidity Rng (non-condensing): 20-95% Non-Op Humidity Rng: 5-95%	Op Temp Rng: 50°-95°F (10°-35°C) Non-Op Temp Rng: -40°-140°F (-40°- 60°C) Op Humidity Rng (non-condensing): 8-90% Non-Op Humidity Rng: 5-95%
Power Consumption	1900W maximum, 1000W typical**	770W maximum, 690W typical**
Power Supply (Dual Supply / Block)	1.1kW Out @100-120V, 12.7-10.5A, 50-60Hz; 2.0kW Out @200-240V, 10.0-9.8A, 50-60Hz	0.8kW Out @100-127V, 9.8-7.0A, 50-60Hz; 1.0kW Out @200-240V, 7.0- 5.0A, 50-60Hz
Thermal Dissipation	6483 BTU/hr maximum, 3412 BTU/hr typical**	2627 BTU/hr maximum, 2354 BTU/hr typical
Operating Requirements	Input Voltage: 100-240V AC auto-range, Input Frequency: 50-60Hz	

* Package weight includes rails and all accessories, standalone weight includes all drives
** Results dependent on configuration

Previous Options
Updated Platforms Available

NX-6000 Series

Configure to Order

	Per Node (2 per Appliance)	
Model	NX-6035C (Configure to Order)	NX-6035-G4 (Configure to Order)
Server Compute	Single Intel Ivy Bridge: E5-2630v2 [6 cores / 2.6 GHz]	Dual Intel Haswell: E5-2620v3 [12 cores / 2.4 GHz] E5-2630v3 [16 cores / 2.4 GHz]
Storage Capacity	1x SSD:* [800 GB] 5x HDD:* [4 TB or 6 TB]	1x SSD* [800 GB, 1.2 TB or 1.6 TB], 5x HDD* [4 TB or 6 TB]
Memory	32 GB	64 GB, 128 GB, 192 GB, 256 GB, 384 GB or 512 GB
Network Connections	2x 1 GbE and 1x 100 Mbps RJ45 (IPMI) Add-on: Dual-Port 10 GbE	2x 1 GbE and 1x 1 GbE RJ45 (IPMI) Add-on: Dual-Port 10 GbE or Quad-Port 10 GbE or Dual-Port 10 GBASE-T
Certifications	CSAus, FCC, CSA, ICES, CE, KCC, RCM, VCCI-A, BSMI, EAC, SABS, INMETRO, S-MARK, UKRSEPRO, BIS**	

* FIPS 140-2 Level 2 self encrypting drives may be available
** For more information, email regulatory_compliance@nutanix.com

Appliance Specifications

Dimensions	Height: 3.47" (88mm), Width: 17.25" (438mm), Depth:30.25" (768mm)	
Weight	79 lbs. (35.83kg) stand-alone, 94 lbs. (42.63kg) package, 7.7 lbs (3.5kg) node*	
System Cooling	4x80mm heavy duty fans with PWM fan speed controls	
Operating Environment	Op Temp Rng: 50°-95°F (10°-35°C) Non-Op Temp Rng: -40°-158°F (-40°- 70°C) Op Humidity Rng (non-condensing): 20-90% Non-Op Humidity Rng: 5-95%	
Power Consumption	570W maximum, 350W typical**	750W maximum, 400W typical**
Power Supply (Dual Supply / Block)	1.1kW Out @100-120V, 12.7-10.5A, 50-60Hz; 2.0kW Out @200-240V, 10.0-9.8A, 50-60Hz	
Thermal Dissipation	1945 BTU/hr maximum, 1194 BTU/hr typical	2560 BTU/hr maximum, 1364 BTU/hr typical**
Operating Requirements	Input Voltage: 100-240V AC auto-range, Input Frequency: 50-60Hz	

* Package weight includes rails and all accessories, standalone weight includes all drives
** Results dependent on configuration

Previous Options
Updated Platforms Available

NX-7000 Series

	Single Node (1 per Appliance)
Model	**NX-7110**
Server Compute	Dual Intel Ivy Bridge E5-2680v2 [20 cores / 2.8 GHz]
Storage Capacity	2x SSD [400 GB], 6x HDD [1 TB]
Memory	Configurable; 128 GB or 256 GB
Network Connections	Dual-Port 10 GbE, 2x 1 GbE, 1x 10/100 BASE-T RJ45
Certifications	CSAus, FCC, CSA, ICES, CE, KCC, RCM, VCCI-A, BSMI, EAC, SABS, INMETRO, S-MARK, UKRSEPRO, BIS**

* FIPS 140-2 Level 2 self encrypting drives for NX-6060-E
** For more information, email regulatory_compliance@nutanix.com

Appliance Specifications

Dimensions	Height: 3.5" (88mm), Width: 17.2" (437mm), Depth: 31" (787mm)
Weight	54 lbs. (24.5kg) stand-alone, 73 lbs. (33.1kg) package*
System Cooling	5x80mm heavy duty fans with PWM fan speed controls
Operating Environment	Op Temp Rng: 50°-95°F (10°-35°C) Non-Op Temp Rng: -40°-158°F (-40°- 70°C) Op Humidity Rng (non-condensing): 8-90% Non-Op Humidity Rng: 5-95%
Power Consumption	1200W maximum, 900W typical
Power Supply (Dual Supply / Block)	1.0kW Out @100-120V, 12.0-10.0A, 50-60Hz; 1.8kW Out @200-240V, 10.0-8.5A, 50-60Hz
Thermal Dissipation	4090 BTU/hr maximum, 3070 BTU/hr typical
Operating Requirements	Input Voltage: 100-240V AC auto-range Input Frequency: 50-60Hz

* Package weight includes rails and all accessories, standalone weight includes all drives

Previous Options
Updated Platforms Available

NX-8000 Series

Configure to Order

	Single Node (1 per Appliance)	Per Node (2 per Appliance)
Model	NX-8150-G4 (Configure to Order)	NX-8035-G4 (Configure to Order)
Server Compute	Dual Intel Haswell: E5-2667v3 [16 cores / 3.2 GHz], E5-2680v3 [24 cores / 2.5 GHz] E5-2697v3 [28 cores / 2.6 GHz], E5-2699v3 [36 cores / 2.3 GHz]	Dual Intel Haswell: E5-2637v3 [8 cores / 3.5 GHz], E5-2643v3 [12 cores / 3.4 GHz] E5-2660v3 [20 cores / 2.6 GHz], E5-2680v3 [24 cores / 2.5 GHz] E5-2697v3 [28 cores / 2.6 GHz]
Storage Capacity	4x SSD* [480 GB, 800 GB, 1.2 TB or 1.6 TB], 20x HDD* [1 TB or 2 TB]	2x SSD* [480 GB, 800 GB, 1.2 TB or 1.6 TB], 4x HDD* [4 TB or 6 TB]
Memory	128 GB, 192 GB, 256 GB, 384 GB, 512 GB, 640 GB or 768 GB	128 GB, 192 GB, 256 GB, 384 GB or 512 GB
Network Connections	1x 1GbE RJ45 (IPMI), 2x 10GBASE-T, Add-on: Up to 3x Dual-port 10GbE or up to 3x Quad-port 10GbE or up to 2x Dual-port 10GBASE-T	2x 1 GbE, 1x 1GbE RJ45 (IPMI) Add-on: Dual-Port 10 GbE or Quad-Port 10 GbE or Dual-Port 10 GBASE-T
Certifications	CSAus, FCC, CSA, ICES, CE, KCC, RCM, VCCI-A, BSMI, EAC, SABS, INMETRO, S-MARK, UKRSEPRO**	CSAus, FCC, CSA, ICES, CE, KCC, RCM, VCCI-A, BSMI, EAC, SABS, INMETRO, S-MARK, UKRSEPRO**

* FIPS 140-2 Level 2 self encrypting drives may be available
** For more information, email regulatory_compliance@nutanix.com

Appliance Specifications

Dimensions	Height: 3.5" (88mm), Width: 17.4" (441mm), Depth: 28.5" (724mm)	Height: 3.47" (88mm), Width: 17.25" (438mm), Depth: 30.25" (768mm)
Weight	47.5 lbs. (21.5kg) stand-alone, 57.2 lbs. (25.9kg) package*	79 lbs. (35.83kg) stand-alone, 94 lbs. (42.63kg) package, 7.7 lbs (3.5kg) node*
System Cooling	4x80mm heavy duty fans with PWM fan speed controls	4x80mm heavy duty fans with PWM fan speed controls
Operating Environment	Op Temp Rng: 50°-95°F (10°-35°C) Non-Op Temp Rng: -40°-150°F (-40°- 70°C) Op Humidity Rng (non-condensing): 8-95% Non-Op Humidity Rng: 5-95%	Op Temp Rng: 50°-95°F (10°-35°C) Non-Op Temp Rng: -40°-158°F (-40°- 70°C) Op Humidity Rng (non-condensing): 20-90% Non-Op Humidity Rng: 5-95%
Power Consumption	650W maximum, 400W typical	950W maximum, 500W typical
Power Supply (Dual Supply / Block)	800W Out @100-120V, 9.8-7A, 50-60Hz; 1.0kW Out @200-240V, 7-5A, 50-60Hz	1.1kW Out @100-120V, 12.7-10.5A, 50-60Hz; 2.0kW Out @200-240V, 10.0-9.8A, 50-60Hz
Thermal Dissipation	2217 BTU/hr maximum, 1364 BTU/hr typical	3241 BTU/hr maximum, 1706 BTU/hr typical
Operating Requirements	Input Voltage: 100-240V AC auto-range, Input Frequency: 50-60Hz	Input Voltage: 100-240V AC auto-range, Input Frequency: 50-60Hz

* Package weight includes rails and all accessories, standalone weight includes all drives
** Results dependent on configuration

DATA SHEET

Brocade ICX 6610 Switches

HIGHLIGHTS

- Delivers chassis-level performance and availability, providing an optimal user experience for streaming video, VDI, UC, and other critical applications
- Offers unprecedented stacking performance with 320 Gbps of stacking bandwidth, eliminating inter-switch bottlenecks
- Provides up to 1 Tbps of total switching capacity with up to 384 1 GbE and 64 10 GbE per stack for campus network edge and aggregation layers
- Provides unmatched availability with four redundant 40 Gbps stacking ports per switch, hitless stacking failover, hot switch replacement, and dual hot-swappable power supplies and fans
- Simplifies network operations and protects investments with the Brocade HyperEdge® Architecture, enabling consolidated network management and advanced services sharing across heterogeneous switches

Chassis-Like Capabilities in a Stackable Form Factor

Today's enterprise networks are expected to deliver services thought impossible just a few years ago. High-Definition (HD) video conferencing, real-time collaboration, Unified Communications (UC), and Virtual Desktop Infrastructure (VDI) are only a few of the applications that organizations are deploying to enhance employee productivity, improve customer service, and create a competitive advantage. These same networks must also provide anytime, anywhere mobile access and scale to meet rising user expectations. At the same time, organizations face continued pressure to reduce costs and do more with less. More than ever, campus networks need to quickly and efficiently evolve with the ever-changing business environment.

Combining the Best of a Chassis and a Stackable Switch

The Brocade® ICX® 6610 Switch redefines the economics of enterprise networking by providing unprecedented levels of performance, availability, and flexibility in a stackable form factor—delivering the capabilities of a chassis with the flexibility and cost-effectiveness of a stackable switch.

Class-Leading Performance for Today and Tomorrow

The Brocade ICX 6610 delivers wire-speed, non-blocking performance across all ports to support latency-sensitive applications such as real-time voice/video streaming and VDI. Brocade ICX 6610 Switches can be stacked using four full-duplex 40 Gbps stacking ports that provide an unprecedented 320 Gbps of backplane stacking bandwidth with full redundancy, eliminating inter-switch bottlenecks. Additionally, each switch can provide up to eight 10 Gigabit Ethernet (GbE) ports for high-speed connectivity to the aggregation or core layers.

High Availability

When every second matters, Brocade ICX 6610 Switches help deliver continuous availability to optimize the user experience. Brocade stacking technology delivers high availability, performing real-time state synchronization across the stack and enabling instantaneous hitless failover to a standby controller in the unlikely event of a failure of the master stack controller. Organizations also can use hot-insertion/removal of stack members to avoid interrupting service when adding a switch to increase the capacity of a stack or replacing a switch that needs servicing.

In addition to stack-level high availability, Brocade ICX 6610 Switches include system-level high-availability features, such as dual hot-swappable, load-sharing, and redundant power supplies. The modular design also has dual hot-swappable fan trays. These features provide another level of availability for the campus wiring closet in a compact form factor. Additional design features include intake and exhaust temperature sensors and fan spin detection to quickly identify abnormal or failed operating conditions—helping to minimize mean time to repair.

Unmatched Simplicity and Investment Protection

The Brocade ICX 6610 is easy to deploy, manage, and integrate into both new and existing networks. Organizations can buy only what they need today and easily scale up as demand grows and new technologies emerge.

The flexibility of a stackable switch allows organizations to forgo investing in a chassis upfront and put precious capital to better use elsewhere. Organizations can purchase an initial switch to get started and add a new Brocade ICX 6610 Switch to the stack as their business grows.

With capabilities such as bandwidth on demand, the Brocade ICX 6610 enables organizations to grow their networks when necessary. Organizations can initially deploy 1 GbE uplink ports and upgrade to 10 GbE ports when desired with an easy-to-activate software license.

Figure 1: Brocade ICX 6610 Switches can be stacked using four standard 40 Gbps QSFP ports that provide a fully redundant virtual chassis backplane with 320 Gbps of stacking bandwidth.

Organizations also have peace of mind with the Brocade Assurance® Limited Lifetime Warranty. This warranty can help improve Total Cost of Ownership (TCO) while freeing up both capital and resources to re-invest into the business. For warranty details, visit www.brocade.com/warranty.

The Brocade ICX 6610 uses standard 40 GbE ports and QSFP cables for stacking. This not only delivers class-leading stacking performance and availability, but also increases cabling options and reduces cable costs—unlike competitive offerings, which rely on proprietary stacking ports and cables.

Support for MACsec, SDN, and 40 GbE standards provides maximum future-proofing and investment protection. This enables organizations to deploy these capabilities as needed when more network devices supporting them become available.

Built for the Most Demanding Enterprise Network Environments

Brocade stacking technology makes it possible to stack up to eight Brocade ICX 6610 Switches into a single logical chassis switch, providing simple and robust expandability for future growth at the network edge or aggregation layer. Also, this stacked virtual switch has only a single IP address to simplify management, and offers transparent forwarding across a pool of up to 384 1 GbE and 64 10 GbE ports. When new switches are added to the stack, they automatically inherit the stack's existing configuration file, enabling true plug-and-play network expansion.

Brocade stacking technology also delivers high availability, performing real-time state synchronization across the stack and enabling instantaneous hitless failover to a standby controller, if the master stack controller fails. In addition, organizations can use hot-insertion/removal of stack members to avoid interrupting service.

Brocade ICX 6610 Switches offer four dedicated full-duplex 40 Gbps stacking ports that provide full redundancy and an unprecedented 320 Gbps of stacking bandwidth, essentially eliminating the need to work around inter-switch bottlenecks (see Figure 1).

Unlike competitive offerings that use proprietary stacking ports, the use of standard 40 Gbps QSFP ports offers optimum flexibility and future-proofing. These dedicated stacking ports free up the 10 GbE ports for high-speed connectivity to the aggregation or core layers.

Up to Eight 10 GbE Ports on Demand per Switch

Brocade ICX 6610 Switches offer eight dual-mode Small Form-Factor Pluggable (SFP)/SFP+ ports, enabling high-bandwidth connectivity to the aggregation or core layers. These ports can be upgraded from 1 GbE to 10 GbE by simply applying a software license, eliminating the need to install a hardware module. In addition, organizations can aggregate these ports across the stack to provide high-speed, redundant links between the wiring closet and the aggregation layer, or between the aggregation and the core layer. With the ability to use short-range and long-range optics, along with copper Twinax cables, the Brocade ICX 6610 supports flexible and cost-effective network architectures (see Figure 2).

The Brocade ICX 6610 delivers industry-leading 8-port 10 GbE density in a 1U switch, providing up to 80 Gbps of uplink bandwidth to the aggregation or core layers of the network. This bandwidth enables a 1:1 subscription ratio throughout the network. As a result, organizations can deploy highly utilized networks to avoid congestion during peak hours.

Figure 2: Brocade ICX 6610 Switches support eight dual-mode 1 GbE/10 GbE SFP/SFP+ ports (left) and up to 48 1 GbE RJ-45 or 24 1 GbE SFP ports (right).

Built to Power Next-Generation Edge Devices

The Brocade ICX 6610 can deliver both power and data across network connections, providing a single-cable solution for the latest edge devices. Brocade ICX 6610 Switches are compatible with industry-standard VoIP equipment as well as legacy IP phones. In addition, they support the Power over Ethernet (PoE+) standard (802.3at) to provide up to 30 watts of power to each device. This high-powered solution simplifies wiring for next-generation edge devices, such as video conferencing and Voice over IP (VoIP) phones, pan/tilt surveillance cameras, and 802.11n wireless Access Points (APs). The PoE capability reduces the number of power receptacles and power adapters while increasing reliability and wiring flexibility. With a 1500-watt power budget per switch (with two power supplies), the Brocade ICX 6610 24- and 48-port PoE models can supply up to Class 4 PoE+ (30 watts) power to every port.

Plug-and-Play Operations for Powered Devices

The Brocade ICX 6610 supports the IEEE 802.1AB Link Layer Discovery Protocol (LLDP) and ANSI TIA 1057 Link Layer Discovery Protocol-Media Endpoint Discovery (LLDP-MED) standards that enable organizations to deploy interoperable multivendor solutions for UC. Configuring IP endpoints such as VoIP phones can be a complex task, requiring manual and time-consuming configuration. LLDP and LLDP-MED address this challenge by providing a standard, open method for configuring, discovering, and managing network infrastructure. The LLDP protocols also help reduce operational costs by simplifying and automating network operations. For example, LLDP-MED provides an open protocol for configuring Quality of Service (QoS), security policies, Virtual LAN (VLAN) assignments, PoE power levels, and service priorities.

Flexible Cooling Options

All Brocade ICX 6610 Switches support reversible front-to-back airflow options. This data center-friendly design improves mounting flexibility in racks, while adhering to the cooling guidelines of the hosting environment. Organizations can specify airflow direction at the time of order and can reverse the direction after deployment by swapping the power supplies and fan assembly (see Figure 3).

Full Layer 3 Capabilities

Brocade ICX 6610 Switches also offer powerful IPv4 and IPv6 Layer 3 switching capabilities. Organizations can use premium Layer 3 features—such as IPv4/IPv6 OSPF and RIP routing, Policy-Based Routing (PBR), VRRP, and Protocol-Independent Multicast (PIM)—to reduce complexity and enhance the reliability of large enterprise networks by bringing Layer 3 capabilities to the network edge and/or aggregation layer (see Figure 4). Advanced Layer 3 capabilities include BGP routing, enabling remote offices to connect Brocade ICX 6610 Switches to service provider networks. Premium and advanced routing capabilities can be added to any Brocade ICX 6610 Switch model through software key-based activation.

SDN-Enabled Programmatic Control of the Network

Software-Defined Networking (SDN) is a powerful new network paradigm designed for the world's most demanding networking environments and promises breakthrough levels of customization, scale, and efficiency. The Brocade ICX 6610 enables SDN by supporting the OpenFlow 1.3 protocol, which allows communication between an OpenFlow controller and an OpenFlow-enabled switch. Using this approach, organizations can control their networks programmatically, transforming the network into a platform for innovation through new network applications and services. The Brocade ICX 6610 delivers OpenFlow in true hybrid port mode. With Brocade hybrid port mode, organizations can simultaneously deploy traditional Layer 2/3 forwarding with OpenFlow on the same port. This unique capability provides a pragmatic path to SDN by enabling network administrators to progressively integrate OpenFlow into existing networks, giving them the programmatic control offered by SDN for specific flows while the remaining traffic is forwarded as before. Brocade ICX 6610 hardware support for OpenFlow enables organizations to apply these capabilities at line rate.

Figure 3: The Brocade ICX 6610 provides four 40 Gbps high-performance QSFP stacking ports (center) and dual, hot-swappable load-sharing power supplies and fan trays (left and right).

BROCADE HYPEREDGE ARCHITECTURE

The Brocade HyperEdge Architecture brings campus networks into the modern era to better support mobility, security, and application agility. This evolutionary architecture integrates innovative wired and wireless technologies to streamline application deployment, simplify network management, and reduce operating costs.

The HyperEdge Architecture enables organizations to build networks that are:

- **Agile:** By eliminating Spanning Tree Protocol (STP) between HyperEdge Domain switches through a flatter Layer 2 design, the HyperEdge Architecture increases link utilization and reduces application deployment complexity. The Distributed AP Forwarding functionality of Brocade wireless Access Points (APs) efficiently secures and directs mobile traffic at the network edge without tunneling data back to a central controller at the network core.
- **Automated:** By grouping premium and entry-level switches with intelligent wireless APs into a consolidated management domain, HyperEdge Domains eliminate the need to provision and manage devices individually—simplifying network deployment and management.
- **Cost-effective:** The HyperEdge Architecture enables the propagation of advanced features and services from premium switches to entry-level switches, allowing IT organizations to purchase only what they need today and add intelligent services as the business evolves. Further cost savings is achieved with Brocade wireless solutions using controller-less or controller-shared license deployment options.

BROCADE ICX 6610 SWITCH AND CONTROLLER INTEROPERABILITY

The Brocade ICX 6610 Switch operates seamlessly under the Brocade SDN Controller. This controller is a quality-assured edition of the OpenDaylight controller code supported by an established networking provider and its leaders within the OpenDaylight community.

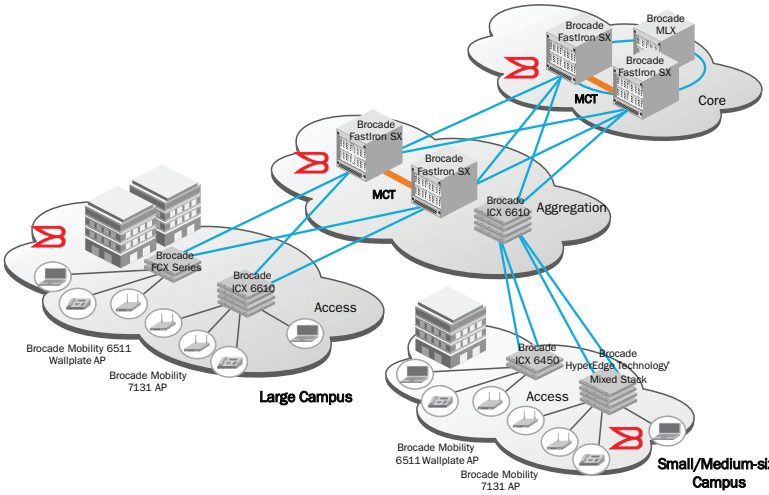


Figure 4: The Brocade ICX 6610 is suitable for deployment at the network access and aggregation layers, thanks to its high performance, availability, and flexibility.

Simplified, Secure Standards-Based Management and Monitoring

The Brocade ICX 6610 provides simplified, standards-based management capabilities that help organizations reduce administrative time and effort while securing their networks.

sFlow-based "Always-On" Network Monitoring

sFlow is a modern, standards-based network export protocol (RFC 3176) that addresses many of the challenges that network managers face today. By embedding sFlow into the Brocade ICX 6610, Brocade delivers an "always-on" technology that operates with wire-speed performance. sFlow dramatically reduces implementation costs compared to traditional network monitoring solutions that rely on mirrored ports, probes, and line-tap technologies. Moreover, sFlow gives organizations full, enterprise-wide monitoring capability for every port in the network.

Simplified Deployment with Auto-Configuration

The Brocade ICX 6610 supports auto-configuration, simplifying deployment with a truly plug-and-play experience. Organizations can use this feature to automate IP address and feature configuration of the switches without requiring a highly trained network engineer onsite. When the switches power up, they automatically receive an IP address and configuration from DHCP and Trivial File Transport Protocol (TFTP) servers. At this time, the switches can also automatically receive a software update to be at the same code revision as currently installed switches.

Open-Standards Management

The Brocade ICX 6610 includes an industry-standard Command Line Interface (CLI) and supports Secure Shell (SSHv2), Secure Copy (SCP), and SNMPv3 to restrict and encrypt management communications to the system. In addition, support for Terminal Access Controller Access Control System (TACACS/TACACS+) and RADIUS authentication helps ensure secure operator access.

Out-of-Band Management

The Brocade ICX 6610 includes a 10/100/1000 Mbps RJ-45 Ethernet port dedicated to out-of-band management, providing a remote path to manage the switches, regardless of the status or configuration of the data ports.

Data Center ToR Switch for 1 GbE and 10 GbE Server Connectivity

Thanks to its class-leading 10 GbE port count, the Brocade ICX 6610 is an ideal solution as a Top-of-Rack (ToR) switch in a mixed 1 GbE/10 GbE server connectivity environment. It is designed to fit in server racks, consuming only one rack unit and offering dual integrated power supplies and fan assemblies with reversible front-to-back/back-to-front airflow for flexible cooling options. In data center environments where most servers have 1 GbE and some 10 GbE network interfaces, the Brocade ICX 6610 provides a compact and cost-effective 1 GbE/10 GbE ToR switch (see Figure 5). This configuration uses 10 GbE links to connect to Brocade ICX data center aggregation switches.

Unified Wired/Wireless Network Management With Brocade Network Advisor

Managing enterprise campus networks continues to become more complex due to the growth in services that rely on wired and wireless networks. Services such as Internet, e-mail, video conferencing, real-time collaboration, and distance learning all have specific configuration and management requirements. At the same time, organizations face increasing demand to provide uninterrupted services for high-quality voice and Unified Communications (UC), wireless mobility, and multimedia applications.

To reduce complexity and the time spent managing these environments, the easy-to-use Brocade Network Advisor discovers, manages, and deploys configurations to groups of IP devices. By using Brocade Network Advisor, organizations can configure Virtual LANs (VLANs) within the network, manage wireless access points, and execute commands on specific IP devices or groups of IP devices. sFlow-based proactive monitoring is ideal for performing network-wide troubleshooting, generating traffic reports, and gaining visibility into network activity from the edge to the core. Brocade Network Advisor centralizes management of the entire family of Brocade wired products and Aruba wireless products.

Warranty

The Brocade ICX 6610 Switch is covered by the Brocade Assurance Limited Lifetime Warranty. For details, visit www.brocade.com/warranty.

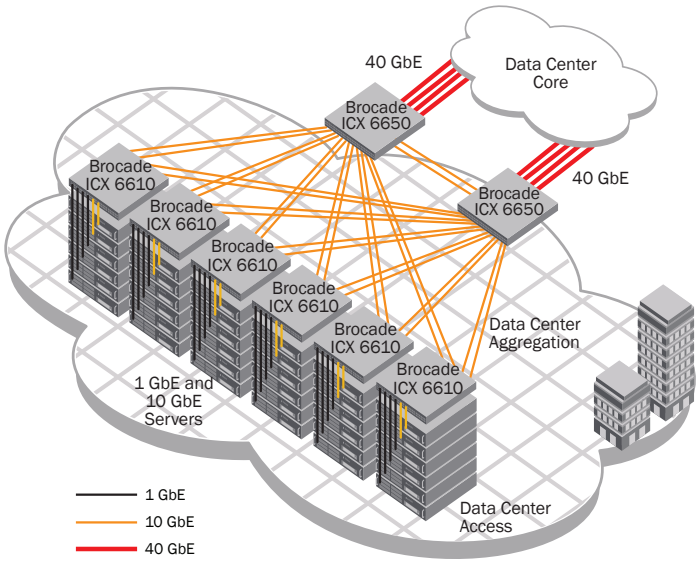


Figure 5: The Brocade ICX 6610 provides ToR 1 GbE and 10 GbE server connectivity with the Brocade ICX 6650 providing data center aggregation.

Maximum Operational Efficiency and Investment Protection

To further improve operational efficiency, Brocade ICX 6610 Switches come with 90 days of free technical support from the Brocade Technical Assistance Center and free software updates. With these capabilities, organizations gain peace of mind while freeing up IT budget and resources to grow their businesses.

Brocade Global Services

Brocade Global Services has the expertise to help organizations build scalable, efficient cloud infrastructures. Leveraging 15 years of expertise in storage, networking, and virtualization, Brocade Global Services delivers world-class professional services, technical support, network monitoring services, and education, enabling organizations to maximize their Brocade investments, accelerate new technology deployments, and optimize the performance of networking infrastructures.

Affordable Acquisition Options

Brocade Capital Solutions helps organizations easily address their IT requirements by offering flexible network acquisition and support alternatives. Organizations can select from purchase, lease, Brocade Network Subscription, and Brocade Subscription Plus options to align network acquisition with their unique capital requirements and risk profiles. To learn more, visit www.Brocade.com/CapitalSolutions.

Maximizing Investments

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

Brocade ICX 6610 Feature/Model Comparison

	24 or 48 RJ-45 Ports		24 SFP Ports	24 or 48 PoE+ Ports	
	Brocade ICX 6610-24	Brocade ICX 6610-48	Brocade ICX 6610-24F	Brocade ICX 6610-24P	Brocade ICX 6610-48P
Switching capacity (data rate, full duplex)	528 Gbps	576 Gbps	528 Gbps	528 Gbps	576 Gbps
Forwarding capacity (data rate, full duplex)	396 Mpps (wire speed)	432 Mpps (wire speed)	396 Mpps (wire speed)	396 Mpps (wire speed)	432 Mpps (wire speed)
Aggregated stacking bandwidth	1,230 Gbps	1,230 Gbps	1,230 Gbps	1,230 Gbps	1,230 Gbps
Units per stack	8	8	8	8	8
Long-distance stacking (maximum distance between two stacked switches)	150 m	150 m	150 m	150 m	150 m
10/100/1000 Mbps RJ-45 ports	24	48	N/A	24	48
100/1000 Mbps SFP ports	N/A	N/A	24	N/A	N/A
Dual-mode 1/10 GbE SFP/SFP+ ports (10 GbE SFP+ optional upgrade license)	8	8	8	8	8
40 Gbps QSFP stacking ports	4	4	4	4	4
PoE power budget (two AC power supplies)	N/A	N/A	N/A	1,500 W	1,500 W
PoE power budget (two DC power supplies)	N/A	N/A	N/A	516 W	516 W
Maximum PoE Class 3 ports	N/A	N/A	N/A	24 (one power supply)	48 (one power supply)
Maximum PoE+ ports	N/A	N/A	N/A	24 (one power supply)	48 (two power supplies)
Redundant/load sharing; hot-swappable power supplies Max output (second optional)	2×250 W	2×250 W	2×250 W	2×1,000 W	2×1,000 W
Weight (one power supply/one fan tray)	6.42 kg (14.15 lb)	6.78 kg (14.95 lb)	6.69 kg (14.75 lb)	7.10 kg (15.65 lb)	7.46 kg (16.45 lb)
Dimensions	429 mm (16.880 in.) W × 406.4 mm (16.00 in.) D × 44 mm (1.732 in.) H – 1U				
Airflow	Front to back (reversible)				
MTBF (25°C, CL: 60%)	474,527 hours	408,144 hours	400,449 hours	416,567 hours	336,984 hours

Brocade ICX 6610 Specifications

System Architecture

Connector options	10/100/1000 ports: RJ-45 1 Gbps SFP ports: SX, LX, LHA, LHB, 1000Base-BX, CWDM 10 Gbps SFP+ ports: Direct-attached copper (Twinax), SR, LR Stacking ports: 40 GbE QSFP for use with direct-attached 1 meter or 5 meter stacking cable Out-of-band Ethernet management: 10/100/1000 Mbps RJ-45 Console management: RJ-45 serial	
Maximum MAC addresses	32,000	
Maximum VLANs	4,096	
Maximum STP (spanning trees)	254	
Maximum routes (in hardware)	16,000	
Trunking	Maximum ports per trunk: 8 Maximum trunk groups: 124	
Maximum jumbo frame size	9,216 bytes	
Layer 2 switching	• 802.1s Multiple Spanning Tree • 802.1x Authentication • Auto MDI/MDIX • BPDU Guard, Root Guard • Dual-Mode VLANs • Dynamic VLAN Assignment • Dynamic Voice VLAN Assignment • Fast Port Span • GARP VLAN Registration Protocol • IGMP Snooping (v1/v2/v3) • Link Fault Signaling (LFS) • MAC Address Locking; Port Security • MAC-Layer Filtering • MAC Learning Disable	• MLD Snooping (v1/v2) • Multi-device Authentication • Per-VLAN Spanning Tree (PVST/PVST+/PVRST) • Mirroring - Port-based, ACL-based, MAC Filter-based, and VLAN-based • Port Loop Detection • Private VLAN • Protected Link Groups • Protocol VLAN (802.1v), Subnet VLAN • Remote Fault Notification (RFN) • Single-instance Spanning Tree • Single-link LACP • Trunk Groups • Uni-Directional Link Detection (UDLD)
Base Layer 3 routing	• IPv4 static routes • ECMP • Port-based Access Control Lists • L3/L4 ACLs • Host routes • Virtual Interfaces	• Routed Interfaces • Route-only Support • Routing Between Directly Connected Subnets • HyperEdge service propagation
Premium Layer 3 routing	• IPv4 and IPv6 static and dynamic routes • OSPF v2, OSPF v3 (IPv6) • PIM-SM, PIM-SSM, PIM-DM, PIM passive (IPv4/IPv6 multicast routing functionality) • PBR	• RIP v1/v2, RIPng (IPv6) • Virtual Route Redundancy Protocol (VRRP) • VRRP-E, VRRP-E (IPv6) • VRRPv3 (IPv6)
Advanced Layer 3 routing	• BGP4, BGP4+(IPv6) • GRE • IPv6 over IPv4 tunnels • VRF (IPv4 and IPv6)	

Brocade ICX 6610 Specifications (continued)

SDN features	• Support for OpenFlow v1.0 and v1.3 • OpenFlow support with true hybrid port mode • OpenFlow support with stacking, including mixed stacks • Operates seamlessly under the Brocade SDN Controller	
Metro features	• Metro-Ring Protocol (v1, v2) • Virtual Switch Redundancy Protocol (VSRP) • VLAN Stacking (Q-in-Q)	• VRRP • Topology Groups
Quality of Service (QoS)	• ACL Mapping and Marking of ToS/DSCP • ACL Mapping and Marking of 802.1p • ACL Mapping to Priority Queue • ACL Mapping to ToS/DSCP • Classifying and Limiting Flows Based on TCP Flags • DHCP Relay	• DiffServ Support • Honoring DSCP and 802.1p • MAC Address Mapping to Priority Queue • Priority Queue Management using Weighted Round Robin (WRR), Strict Priority (SP), and a combination of WRR and SP
IEEE standards compliance	• 802.1AB LLDP/LLDP-MED • 802.1D-2004 MAC Bridging • 802.1p Mapping to Priority Queue • 802.1s Multiple Spanning Tree • 802.1w Rapid Spanning Tree • 802.1x Port-based Network Access Control • 802.3 10 Base-T • 802.3ab 1000 Base-T • 802.3ad Link Aggregation (Dynamic and Static) • 802.3ae 10 Gigabit Ethernet	• 802.3af Power over Ethernet • 802.3at Power over Ethernet Plus • 802.3u 100 Base-TX • 802.3x Flow Control • 802.3z 1000Base-SX/LX • 802.3 MAU MIB (RFC 2239) • 802.3ba 40 Gbps Ethernet • 802.1AE MACsec • 802.1Q VLAN Tagging
Traffic management	• ACL-based inbound rate limiting and traffic policies • Broadcast, multicast, and unknown unicast rate limiting	• Inbound rate limiting per port • Outbound rate limiting per port and per queue
High availability	• Redundant hot-swappable internal power supplies • Hot-swappable fan trays • L3 VRRP protocol redundancy • Real-time state synchronization across the stack	• Hitless failover from master to standby stack controller • Protected link groups • Hot insertion and removal of stacked units
Management		
Management and control	• Auto Configuration • Brocade HyperEdge technology • Configuration Logging • Digital Optical Monitoring • Display Log Messages on Multiple Terminals • Embedded Web Management • Embedded DHCP Server • Industry-standard Command Line Interface (CLI) • Key-based activation of optional software features • Integration with HP OpenView for Sun Solaris, HP-UX, IBM AIX, and Windows • Brocade Network Advisor support	• MIB Support for MRP, Port Security, MAC Authentication, and MAC-based VLANs • Out-of-band Ethernet Management • RFC 783 TFTP • RFC 854 TELNET Client and Server • RFC 951 Bootp • RFC 1157 SNMPv1/v2c • RFC 1213 MIB-II • RFC 1493 Bridge MIB • RFC 1516 Repeater MIB • RFC 1573 SNMP MIB II • RFC 1643 Ethernet Interface MIB

Brocade ICX 6610 Specifications (continued)

Management and control (continued)	• RFC 1643 Ethernet MIB • RFC 1724 RIP v1/v2 MIB • RFC 1757 RMON MIB • RFC 2068 Embedded HTTP • RFC 2131 DHCP Server and DHCP Relay • RFC 2570 SNMPv3 Intro to Framework • RFC 2571 Architecture for Describing SNMP Framework • RFC 2572 SNMP Message Processing and Dispatching	• RFC 2573 SNMPv3 Applications • RFC 2574 SNMPv3 User-based Security Model • RFC 2575 SNMP View-based Access Control Model SNMP • RFC 2818 Embedded HTTPS • RFC 3176 sFlow • SNTP Simple Network Time Protocol • Support for Multiple Syslog Servers
Embedded security	• 802.1X Accounting • MAC Authentication • Bi-level Access Mode (Standard and EXEC Level)	• EAP pass-through support • IEEE 802.1X username export in sFlow • Protection against Denial of Service (DoS) attacks
Secure management	• Authentication, Authorization, and Accounting (AAA) • Advanced Encryption Standard (AES) with SSHv2 • RADIUS/TACACS/TACACS+ • Secure Copy (SCP)	• Secure Shell (SSHv2) • Username/Password • Web authentication

Environment

Temperature	Operating temperature:	0°C to 55°C 32°F to 131°F
	Storage temperature:	–25°C to 70°C –13°F to 158°F
Humidity	Relative humidity: 5% to 95%, non-condensing	
Altitude	Storage altitude: 10,000 ft (3,000 m) maximum	
Acoustic	From 39.6 dB (24 ports, 1 fan, 1 PSU) to 48.7 dB (48 ports, 2 fans, 2 PSUs)	

Power

Power supplies	Up to two internal, redundant, field-replaceable, load-sharing AC or DC power supplies with dedicated system and PoE power
Power inlet	C13
Input voltage	Typical 100 to 240 VAC
Input line frequency	50 to 60 Hz

Power Draw (no PoE loads)

Models	With 1 Power Supply	With 2 Power Supplies
Brocade ICX 6610-24	120 W	140 W
Brocade ICX 6610-48	165 W	185 W
Brocade ICX 6610-24F	125 W	145 W
Brocade ICX 6610-24P	120 W	140 W
Brocade ICX 6610-48P	165 W	185 W

Brocade ICX 6610 Specifications (continued)

Compliance/Certification	
Electromagnetic emissions	FCC Class A (Part 15); EN 55022/CISPR-22 Class A; VCCI Class A; ICES-003 Electromagnetic Emission; AS/NZS 55022; EN 61000-3-2 Power Line Harmonics; EN 61000-3-3 Voltage Fluctuation and Flicker; EN 61000-6-3 Emission Standard (supersedes: EN 50081-1)
Safety	CAN/CSA-C22.2 NO. 60950-1-07; UL 60950-1 Second Edition; IEC 60950-1 Second Edition; EN 60950-1:2006 Safety of Information Technology Equipment; EN 60825-1 Safety of Laser Products—Part 1: Equipment Classification, Requirements and User's Guide; EN 60825-2 Safety of Laser Products—Part 2: Safety of Optical Fibre Communication Systems
Immunity	EN 61000-6-1 Generic Immunity and Susceptibility (supersedes EN 50082-1); EN 55024 Immunity Characteristics (supersedes EN 61000-4-2 ESD); EN 61000-4-3 Radiated, Radio Frequency, Electromagnetic Field; EN 61000-4-4 Electrical Fast Transient; EN 61000-4-5 Surge; EN 61000-4-6 Conducted Disturbances Induced by Radio-Frequency Fields; EN 61000-4-8 Power Frequency Magnetic Field; EN 61000-4-11 Voltage Dips and Sags
Environmental regulatory compliance	RoHS-compliant (6 of 6); WEEE-compliant

Brocade ICX 6610 Ordering Information

Part Number	Description
ICX6610-24-E	24-port 1 GbE RJ45, plus 8×1 GbE SFPP uplink ports (upgradable to 10 GbE). 4×40 GbE QSFP stacking ports. 1 power-supply-side exhaust, hot-swappable fan assembly and 250 W power supply. Base software.
ICX6610-24-PE	24-port 1 GbE RJ45, plus 8×1 GbE SFPP uplink ports (upgradable to 10 GbE). 4×40 GbE QSFP stacking ports. 1 power-supply-side exhaust, hot-swappable fan assembly and 250 W power supply. Premium software.
ICX6610-24-I	24-port 1 GbE RJ45, plus 8×1 GbE SFPP uplink ports (upgradable to 10 GbE). 4×40 GbE QSFP stacking ports. 1 power-supply-side intake, hot-swappable fan assembly and 250 W power supply. Base software.
ICX6610-24-PI	24-port 1 GbE RJ45, plus 8×1 GbE SFPP uplink ports (upgradable to 10 GbE). 4×40 GbE QSFP stacking ports. 1 power-supply-side intake, hot-swappable fan assembly and 250 W power supply. Premium software.
ICX6610-24P-E	24-port 1 GbE RJ45 PoE+, plus 8×1 GbE SFPP uplink ports (upgradable to 10 GbE). 4×40 GbE QSFP stacking ports. 1 power-supply-side exhaust, hot-swappable fan assembly and 1,000 W power supply. Base software.
ICX6610-24P-PE	24-port 1 GbE RJ45 PoE+, plus 8×1 GbE SFPP uplink ports (upgradable to 10 GbE). 4×40 GbE QSFP stacking ports. 1 power-supply-side exhaust, hot-swappable fan assembly and 1,000 W power supply. Premium software.
ICX6610-24P-I	24-port 1 GbE RJ45 PoE+, plus 8×1 GbE SFPP uplink ports (upgradable to 10 GbE). 4×40 GbE QSFP stacking ports. 1 power-supply-side intake, hot-swappable fan assembly and 1,000 W power supply. Base software.
ICX6610-24P-PI	24-port 1 GbE RJ45 PoE+, plus 8×1 GbE SFPP uplink ports (upgradable to 10 GbE). 4×40 GbE QSFP stacking ports. 1 power-supply-side intake, hot-swappable fan assembly and 1,000 W power supply. Premium software.
ICX6610-24F-E	24-port 1 GbE SFP, plus 8×1 GbE SFPP uplink ports (upgradable to 10 GbE). 4×40 GbE QSFP stacking ports. 1 power-supply-side exhaust, hot-swappable fan assembly and 250 W power supply. Base software.
ICX6610-24F-PE	24-port 1 GbE SFP, plus 8×1 GbE SFPP uplink ports (upgradable to 10 GbE). 4×40 GbE QSFP stacking ports. 1 power-supply-side exhaust, hot-swappable fan assembly and 250 W power supply. Premium software.
ICX6610-24F-I	24-port 1 GbE SFP, plus 8×1 GbE SFPP uplink ports (upgradable to 10 GbE). 4×40 GbE QSFP stacking ports. 1 power-supply-side intake, hot-swappable fan assembly and 250 W power supply. Base software.

Brocade ICX 6610 Ordering Information (continued)

ICX6610-24F-PI	24-port 1 GbE SFP, plus 8×1 GbE SFPP uplink ports (upgradable to 10 GbE). 4×40 GbE QSFP stacking ports. 1 power-supply-side intake, hot-swappable fan assembly and 250 W power supply. Premium software.
ICX6610-48-E	48-port 1 GbE RJ45, plus 8×1 GbE SFPP uplink ports (upgradable to 10 GbE). 4×40 GbE stacking ports. 1 power-supply-side exhaust, hot-swappable fan assembly and 250 W power supply. Base software.
ICX6610-48-PE	48-port 1 GbE RJ45, plus 8×1 GbE SFPP uplink ports (upgradable to 10 GbE). 4×40 GbE QSFP stacking ports. 1 power-supply-side exhaust, hot-swappable fan assembly and 250 W power supply. Premium software.
ICX6610-48-I	48-port 1 GbE RJ45, plus 8×1 GbE SFPP uplink ports (upgradable to 10 GbE). 4×40 GbE QSFP stacking ports. 1 power-supply-side intake, hot-swappable fan assembly and 250 W power supply. Base software.
ICX6610-48-PI	48-port 1 GbE RJ45, plus 8×1 GbE SFPP uplink ports (upgradable to 10 GbE). 4×40 GbE QSFP stacking ports. 1 power-supply-side intake, hot-swappable fan assembly and 250 W power supply. Premium software.
ICX6610-48P-E	48-port 1 GbE RJ45 PoE+, plus 8×1 GbE SFPP uplink ports (upgradable to 10 GbE). 4×40 GbE QSFP stacking ports. 1 power-supply-side exhaust, hot-swappable fan assembly and 1,000 W power supply. Base software.
ICX6610-48P-PE	48-port 1 GbE RJ45 PoE+, plus 8×1 GbE SFPP uplink ports (upgradable to 10 GbE). 4×40 GbE QSFP stacking ports. 1 power-supply-side exhaust, hot-swappable fan assembly and 1,000 W power supply. Premium software.
ICX6610-48P-I	48-port 1 GbE RJ45 PoE+, plus 8×1 GbE SFPP uplink ports (upgradable to 10 GbE). 4×40 GbE QSFP stacking ports. 1 power-supply-side intake, hot-swappable fan assembly and 1,000 W power supply. Base software.
ICX6610-48P-PI	48-port 1 GbE RJ45 PoE+, plus 8×1 GbE SFPP uplink ports (upgradable to 10 GbE). 4×40 GbE QSFP stacking ports. 1 power-supply-side intake, hot-swappable fan assembly and 1,000 W power supply. Premium software.

Accessories and Options

ICX6610-PREM-LIC	Brocade ICX 6610 premium software license
ICX6610-ADV-LIC	Brocade ICX 6610 advanced software license
ICX6610-ADV-UPG-LIC	Brocade ICX 6610 premium to advanced software upgrade
ICX6610-10G-LIC-POD	License to upgrade 4 ports of 1 GbE SFPP uplink to 10 GbE
RPS15-E	Brocade ICX 6610/6650 non-PoE 250 W PSU, power-supply-side exhaust airflow
RPS15-I	Brocade ICX 6610/6650 non-PoE 250 W PSU, power-supply-side intake airflow
RPS16-E	1,000 W power supply for Brocade ICX 6610 PoE models, power-supply-side exhaust airflow
RPS16-I	1,000 W power supply for Brocade ICX 6610 PoE models, power-supply-side intake airflow
RPS16DC-E	510 W DC power supply for Brocade ICX 6610, power-supply-side exhaust airflow
RPS16DC-I	510 W DC power supply for Brocade ICX 6610, power-supply-side intake airflow
ICX6610-FAN-E	Power-supply-side exhaust airflow fan for the Brocade ICX 6610 (two fans required with two power supplies)
ICX6610-FAN-I	Power-supply-side intake airflow fan for the Brocade ICX 6610 (two fans required with two power supplies)
40G-QSFP-C-0101	40 GbE QSFP direct-attached copper cable, 1 m, one-pack
40G-QSFP-C-0501	40 GbE QSFP direct-attached copper cable, 5 m, one-pack
BR-NTWADV-IP-BASE	Brocade Network Advisor IP management software license for up to 50 devices; required for initial purchase of IP-only management; minimum of one year of support is required.

Corporate Headquarters
San Jose, CA USA
T: +1-408-333-8000
info@brocade.com

European Headquarters
Geneva, Switzerland
T: +41-22-799-56-40
emea-info@brocade.com

Asia Pacific Headquarters
Singapore
T: +65-6538-4700
apac-info@brocade.com

BROCADE

DATA SHEET

Brocade VDX 6740, 6740T, and 6740T-1G Switches

HIGHLIGHTS

- Transforms networks to deliver cloud scale, agility, and operational efficiency with Brocade data center fabrics
- Supports 1, 10, and 40 GbE options for optimal flexibility and scale
- Meets today's application demands with high performance and low latency
- Delivers line-rate throughput for all ports and packet sizes
- Fits into any data center design by leveraging 10 GbE/40 GbE uplinks, Ports on Demand (PoD), and Capacity on Demand (CoD)
- Maximizes network availability with efficiency and resiliency
- Supports storage environments with advanced flexibility

Advanced Features to Transform Data Centers

Data centers continue to evolve, creating a need for an infrastructure that can support growth in Virtual Machines (VMs), distributed applications, and data, as well as the transition to cloud-based computing—without compromising performance. The Brocade® VDX® 6740 and the Brocade VDX family of switches deliver the performance, flexibility, and efficiency essential to modern data centers, including cloud and highly virtualized environments.

Brocade VDX 6740 Switch

The Brocade VDX 6740 (Figure 1) offers 48 10 Gigabit Ethernet (GbE) SFP+ ports and four 40 GbE QSFP+ ports. Each 40 GbE port can be broken out into four independent 10 GbE SFP+ ports, providing an additional 16 10 GbE SFP+ ports. In addition, the switch features low power consumption, consuming 1 watt per 10 GbE port.

Brocade VDX 6740T Switch

The Brocade VDX 6740T (Figure 2) offers 48 10GBASE-T ports and four 40 GbE QSFP+ ports. Each 40 GbE port can be broken out into four independent 10 GbE SFP+ ports, providing an additional 16 10 GbE SFP+ ports. The switch also features low power consumption, consuming less than 5 watts per 10 GbE port.

Brocade VDX 6740T-1G Switch

The Brocade VDX 6740T-1G (Figure 3) offers 48 1000BASE-T ports and two 40 GbE QSFP+ ports. Each 40 GbE port can be broken out into four independent 10 GbE SFP+ ports, providing an additional eight 10 GbE SFP+ ports for uplink. All 48 1000BASE-T ports can be upgraded to 48 10GBASE-T ports via the Capacity on Demand (CoD) software license. Two 40 GbE ports are enabled as part of the base license. The additional two 40 GbE ports can be upgraded via the Ports on Demand (PoD) software license.

The Brocade VDX 6740, 6740T, and 6740T-1G are all Ethernet fabric Top-of-Rack (ToR) switches that support a demanding data center environment. The Brocade VDX 6740 series of switches provides the advanced feature set that data centers require while delivering the high performance and low latency virtualized environments demand. Together with Brocade data center fabrics, these switches transform data center networks to support the New IP by enabling cloud-based architectures

that deliver new levels of scale, agility, and operational efficiency. These highly automated, software-driven, and programmable data center fabric design solutions support a breadth of network virtualization options and scale for data center environments ranging from tens to thousands of servers. Moreover, they make it easy for organizations to architect, automate, and integrate current and future data center technologies while they transition to a cloud model that addresses their needs, on their own timetable and on their terms.

Transforms Networks to Deliver New Levels of Scale, Agility, and Operational Efficiency

Brocade VDX switches allow organizations to evolve their data center networks at their own pace, with full investment protection. As the foundation for several data center architectures, Brocade VDX switches support Brocade IP fabrics, Brocade VCS® fabrics, as well as network virtualization, including controller-based network virtualization architectures, such as VMware NSX-V-certified, and standards-based controller-less architectures with Brocade BGP-EVPN Network Virtualization for architectural flexibility (see Figure 4).

For organizations seeking automated provisioning capabilities to improve IT agility, Brocade VDX switches, together with Brocade VCS Fabric technology, accelerate time to value through automated provisioning of network devices and network virtualization. Automated service and resource upgrades further reduce ongoing maintenance time and costs. High availability is achieved through non-disruptive In-Service Software Upgrade (ISSU) and self-healing fabrics.

Read more about Brocade data center fabrics.

Organizations that aim to automate the entire network lifecycle and integrate with cross-domain technologies to improve business agility—but lack sufficient engineering resources or training—can transform their networks with Brocade Workflow Composer™. Brocade Workflow Composer supports the Brocade VDX platform, enabling enterprise and cloud service provider IT organizations to bring network automation to IT operations (see Figure 5). Unlike other network automation solutions that require proprietary hardware platforms and focus solely on configuration management, Brocade Workflow Composer provides turnkey, customizable, or do-it-yourself network workflow automation for provisioning, validation, troubleshooting, and remediation of the entire Brocade VDX platform—while integrating with tool chains and processes from other IT domains. Brocade Workflow Composer is powered by StackStorm, an open, extensible, and microservices-based framework that leverages the power of proven DevOps methodologies; popular open source technologies such as Puppet, Python, and Mistral; and a thriving technical community for peer collaboration and innovation to provide event-driven, cross-domain workflow automation.

Additionally, Brocade VDX switches offer programmability and interoperability options through a PyNOS Library and YANG model-based REST and Netconf APIs. Cloud orchestration and control through OpenStack and OpenDaylight-based SDN controller support enable full network integration with compute and storage resource provisioning and management.

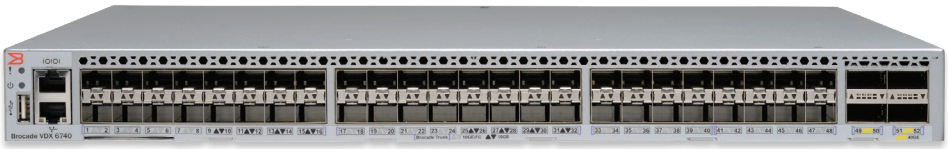


Figure 1: The Brocade VDX 6740 Switch provides 48 10 GbE SFP+ ports and four 40 GbE QSFP+ ports.

Figure 2: The Brocade VDX 6740T Switch provides 48 1000BASE-T/10GBASE-T ports and four 40 GbE QSFP+ ports.

Figure 3: The Brocade VDX 6740T-1G Switch provides 48 1000BASE-T/10GBASE-T ports and four 40 GbE QSFP+ ports.

Meets Today's Application Demands with High Performance and Low Latency

As data centers virtualize more of their servers and VM density per server increases, organizations will require higher bandwidth connectivity to support the explosion of data and application processing. With 1/10 GbE connections, Brocade VDX 6740, 6740T, and 6740T-1G Switches deliver the high-performance computing needed to keep up with the demands of a virtualized data center, allowing organizations to reduce network congestion, improve application performance, and meet the capacity required by 1 GbE and 10 GbE servers. The 40 GbE uplinks can easily

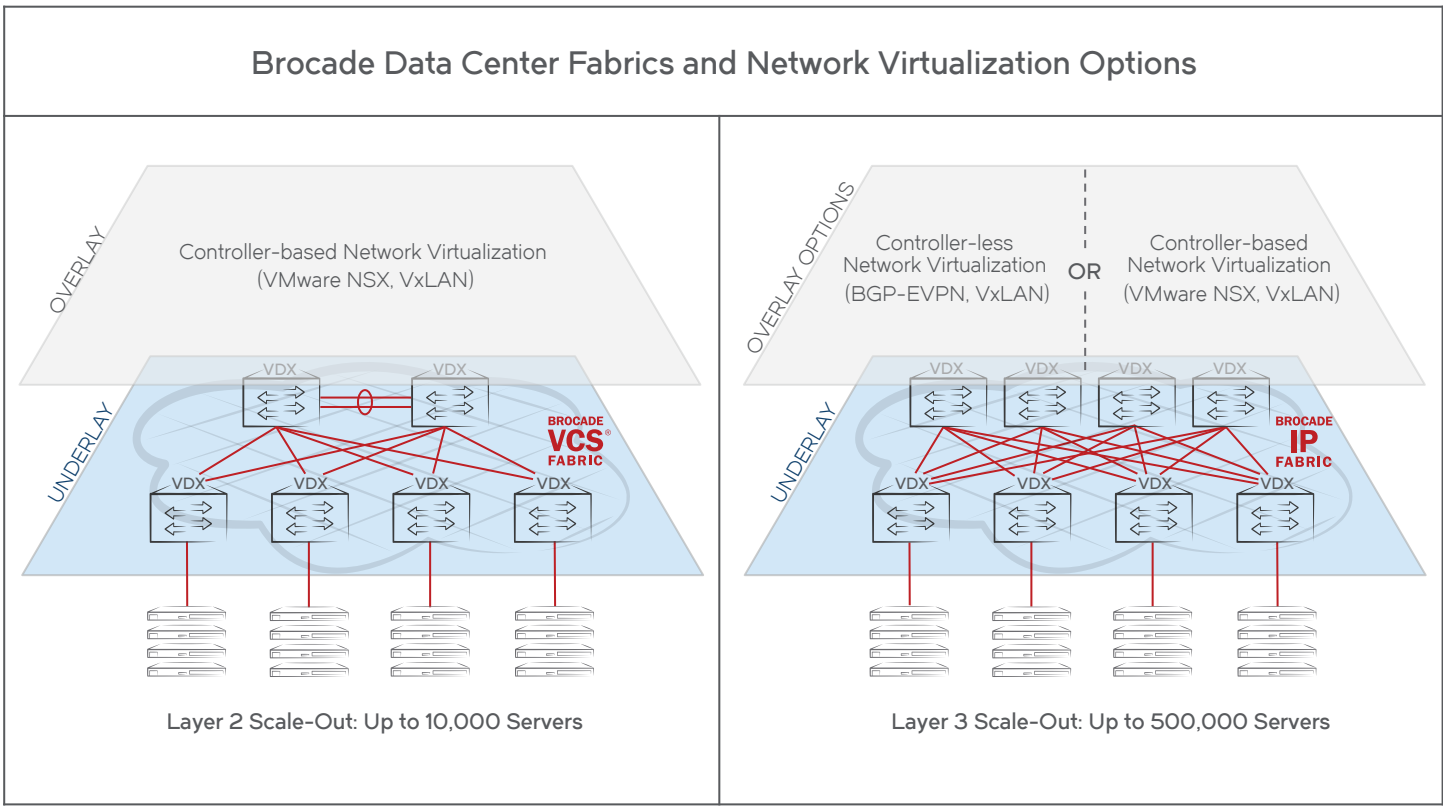


Figure 4: Multiple network architectures offer the flexibility that can help organizations rapidly adapt to changing business conditions and traffic patterns.

aggregate high-bandwidth traffic and reduce bottlenecks that occur when aggregating multiple 10 GbE connections, keeping data center networks working at peak performance.

In a Brocade VCS fabric, Brocade VDX 6740 Switches also help maximize network utilization with hardware-based Brocade ISL trunking. Organizations can create an 80 GbE trunk by utilizing two 40 GbE ports, or a 160 GbE trunk with 16 10 GbE ports. The Brocade ISL trunk is automatically formed between two Brocade VDX 6740, 6740T, and 6740T-1G Switches when they are linked together, allowing traffic to be equally distributed among all ports. This increases link efficiency and limits traffic disruptions, especially during high traffic times. Also, 40 GbE and 10 GbE trunking is supported between Brocade VDX 6740, 6940, and 8770 Switches. Refer to the *Brocade VDX 6740 Hardware Reference Manual* for details.

While an increase in traffic can also create latency issues, Brocade VDX 6740 Switches deliver very low latency through wire-speed ports with 850 ns (Brocade VDX 6740) and 3 µs (Brocade VDX 6740T/6740T-1G) any-port-to-any-port latency. In addition, the switches deliver an industry-leading 24 MB deep buffer per switch. This provides the buffering capacity to handle increases in traffic, especially during peak times when ports are congested, allowing traffic to be distributed across the ports. The Brocade VDX 6740, 6740T, and 6740T-1G feature a single ASIC design, instead of multiple ASIC designs commonly found on other switches, further improving performance and reducing latency since all ports can communicate via one ASIC.

Fits into Any Data Center Design

Access ports are positioned to allow for easy server connectivity and to simplify cabling. With a choice of front-to-back or back-to-front airflow, these switches are ideal for ToR deployments connecting servers, storage, and other switches, as well as for providing compatibility for either hot aisle or cold aisle data center designs. With dual-speed functionality, each 1 GbE port also supports 10 GbE connections, providing the flexibility needed to support a mixed environment as data centers transition to higher bandwidth.

The switches are designed to connect data centers with multiple options to meet individual design requirements. This flexible design provides investment protection, giving organizations a single switch that can support varying data center requirements. The following features help organizations meet their evolving needs:

- **10 GbE or 40 GbE uplinks:** The 40 GbE SFP+ ports offer the flexibility to expand and interconnect the network infrastructure intelligently and

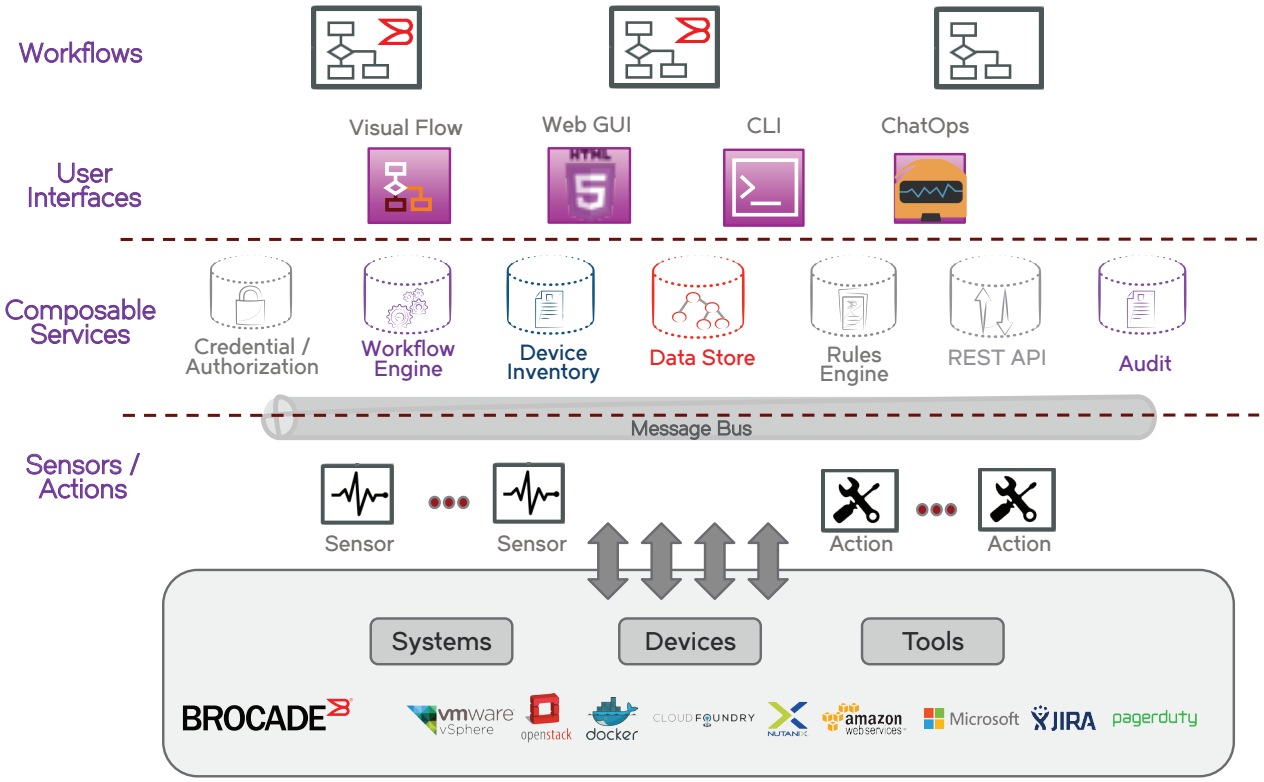


Figure 5: Brocade Workflow Composer brings workflow-centric, cross-domain network automation to IT operations.

efficiently while reducing bottlenecks. The switches offer the option to separate the 40 GbE uplinks into four 10 GbE uplinks via breakout cables. As capacity and need increase, organizations can revert to 40 GbE when ready.

- **Ports on Demand:** Ports on Demand (PoD) enables organizations to activate 24 to 64 ports. They can purchase the number of ports that they currently need and seamlessly scale up later by simply applying a software license. This flexible and cost-efficient "pay as you grow" licensing model solves scalability challenges by allocating IT resources as needed.
- **Capacity on Demand:** The Capacity on Demand (CoD) license for the Brocade VDX 6740T-1G enables organizations to upgrade all 48 1000BASE-T ports to 48 10GBASE-T. This helps organizations migrate seamlessly from 1 GbE to 10 GbE via a software license without ripping and replacing the physical switch.

Maximizes Network Availability with Efficiency and Resiliency

Brocade data center fabrics create a more efficient and resilient network, and deliver the high performance and high reliability required by today's data centers.

Optimizing East-West Traffic

Traditional data centers are architected with a rigid, three-tier tree topology optimized for the north-south traffic flow of client-server computing environments, compromising performance, increasing latency, and creating bottlenecks. With the increased prevalence of virtualization and distributed applications, data center network traffic is now predominantly east-west, or server-server. Brocade data center fabrics were designed and optimized to address these traffic patterns by moving traffic through any of the active paths and avoiding the multiple hops required in other tiered topologies

In-Service Software Upgrade

The Brocade VDX 6740 family of switches delivers a highly efficient ToR In-Service Software Upgrade (ISSU) by leveraging a software model that uses a dual-OS infrastructure on a multi-core CPU. This enables data center administrators to deliver enterprise-class business continuity on ToR switches during a software upgrade/downgrade process. This software change process is non-disruptive to Layer 2, Layer 3, Fibre Channel, and FCoE traffic.

Moreover, the ISSU implementation is hardware-optimized, thus reducing the time it takes to complete the upgrade/downgrade process.

Supports Storage Environments with Advanced Flexibility

The Brocade VDX 6740, 6740T, and 6740T-1G offer advanced storage support with multiple storage connectivity options, including FCoE, Fibre Channel (Brocade VDX 6740 only), iSCSI, and NAS storage. They also feature Data Center Bridging (DCB), which enables the reliable exchange of storage traffic over the LAN network, eliminating packet loss when network congestion occurs and allocating bandwidth as needed to keep the network running efficiently. Moreover, the switches offer Network-Attached Storage (NAS) Auto QoS intelligence to prioritize delay-sensitive IP storage traffic within the fabric and to help ensure consistent performance while decreasing latency.

The Brocade VDX 6740 features 32 Flex Ports, which can take either a 10 GbE or 16 Gbps Fibre Channel personality. In Fibre Channel mode, these Flex Ports can be used to either directly connect Fibre Channel storage to VCS fabrics or bridge FCoE traffic to Fibre Channel SANs, thus protecting existing SAN investments. The Flex Ports and FCoE features on the Brocade VDX 6740 can be turned on with an add-on software license.

Brocade Global Services

Brocade Global Services has the expertise to help organizations build scalable, efficient cloud infrastructures. Leveraging 20 years of expertise in storage, networking, and virtualization, Brocade Global Services delivers world-class professional services, technical support, and education services, enabling organizations to maximize their Brocade investments, accelerate new technology deployments, and optimize the performance of networking infrastructures.

Acquisition Options That Match Balance Sheet Objectives

Successful network deployments drive business forward, providing technical and financial agility. Brocade offers the broadest financing models, from traditional leasing to Brocade Network Subscription. Network-as-a-Service allows organizations to subscribe to network assets today then upgrade on demand, scale up or down, or return them with 60-day notification. Brocade Network Subscription plans can be structured to meet IASC guidelines for OpEx or CapEx treatment to align with financial goals. Learn more at www.nonetworkcapex.com.

Maximizing Investments

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

Brocade VDX 6740, 6740T, and 6740T-1G Feature Overview

Overview	Brocade VDX 6740	Brocade VDX 6740T	Brocade VDX 6740T-1G
Form factor	1U	1U	1U
Switching bandwidth (data rate, full duplex)	1.28 Tbps	1.28 Tbps	1.28 Tbps
Switch performance	960 Mpps	960 Mpps	960 Mpps
Port-to-port latency	850 ns	3 µs	3 µs
Dimensions and weight	Width: 43.99 cm (17.32 in.) Height: 4.32 cm (1.75 in.) Depth: 40.99 cm (16.14 in.) Weight: 8.66 kg (19.1 lb)	Width: 43.74 cm (17.22 in.) Height: 4.27 cm (1.68 in.) Depth: 53.65 cm (21.12 in.) Weight: 10.82 kg (23.85 lb)	Width: 43.74 cm (17.22 in.) Height: 4.27 cm (1.68 in.) Depth: 53.65 cm (21.12 in.) Weight: 10.82 kg (23.85 lb)
1/10 GbpsE SFP+ ports	Up to 64	Up to 16	Up to 16
2/4/8/16 Gbps Fibre Channel Flex Ports	Up to 32 (out of 64 10 GbE ports) Port types supported: E_Port (connecting to EX_Port only), F_Port, N_Port (Access Gateway mode)	0	0
1/10 GBASE-T	0	48	48
40 GbE QSFP+ (10 GbE breakout cable)	4	4	4
10 GbE Ports on Demand (PoD)	24, 32, 40, 48, 56, 64	24, 32, 40, 48, 56, 64	N/A
10 GbE Capacity on Demand (CoD)	N/A	N/A	16, 32, 48
Power supplies	Two hot-swappable, load-sharing	Two hot-swappable, load-sharing	Two hot-swappable, load-sharing
Cooling fans	N+1 redundant, integrated into power supplies	N+1 redundant, five hot-swappable fan units	N+1 redundant, five hot-swappable fan units
Airflow	Front to back Back to front	Front to back Back to front	Front to back Back to front

Brocade VDX 6740, 6740T, and 6740T-1G Specifications

Scalability Information*	
Connector options	Out-of-band Ethernet management: RJ45 (fixed) Console management: RJ45 to RS-232 (fixed) Firmware and diagnostic: USB
Maximum VLANs	4,096
Maximum MAC addresses	160,000
Maximum port profiles (AMPP)	1,024
Maximum members in a standard LAG	64
Maximum per-port priority pause level	8
Maximum switches that a vLAG can span	8
Maximum members in a vLAG	64
Maximum jumbo frame size	9,216 bytes

* Please refer to the latest version of the release notes for the most up-to-date scalability numbers.

Brocade VDX 6740, 6740T, and 6740T-1G Specifications *(continued)*

Scalability Information*	
Queues per port	8
DCB Priority Flow Control (PFC) classes	8
Maximum ACLs	13,000
Maximum ARP entries	32,000
Maximum IPv4 unicast routes	12,000
Maximum IPv6 unicast routes	3,000†
HA/ISSU	ISSU fully supported
Mechanical	
Enclosure	Front-to-rear, rear-to-front airflow; 1U, 19-inch EIA-compliant; power from non-port side
Environmental	
Temperature	Operating: 0°C to 40°C (32°F to 104°F) Non-operating and storage: -25°C to 70°C (-13°F to 158°F)
Humidity	Operating: 10% to 85% non-condensing Non-operating and storage: 10% to 90% non-condensing
Altitude	Operating: Up to 3,048 meters (10,000 feet) Non-operating and storage: Up to 12 kilometers (39,370 feet)
Shock	Operating: 20 G, 11 ms half-sine Non-operating and storage: Square wave, 44 G, 15 ms
Vibration	Operating: 0.5 G peak, 0.7 G ms random, 5 to 500 Hz Non-operating and storage: 2.0 g sine, 1.4 G rms random, 5 to 500 Hz
Airflow	Brocade VDX 6740T port-side-intake: Maximum: 49.3 CFM; Nominal: 26.3 CFM Brocade VDX 6740T port-side-exhaust: Maximum: 51.9 CFM; Nominal: 27.3 CFM Brocade VDX 6740 port-side-intake and port-side-exhaust: Maximum: 25.7 CFM; Nominal: 11.5 CFM
Heat dissipation	1,672.41 BTU/hr
Power	
Power supplies	Two internal, redundant, field-replaceable, load-sharing AC power supplies
Power inlet	C13
Input voltage	85 to 264 VAC nominal
Input line frequency	50 to 60 Hz
Inrush current	Limited to 30 A peak at 240 VAC during cold startup at 25°C ambient
Maximum current	6 A max at 100 VAC/60 Hz
Maximum power consumption	Brocade VDX 6740: 110 W Brocade VDX 6740T: 460 W Brocade VDX 6740T-1G: 276 W (Base SKU)

Safety Compliance

- CAN/CSA C22.2 No. 60950-1-07 including A1 / UL 60950-1-07, Ed. 2 including A1
- CAN/CSA-C22.2 No. 60950-1 Second Edition
- EN 60950-1 Second Edition +A1/A12
- IEC 60950-1 Second Edition +A1
- GB 4943.1-2011 and GB9254-2008
- CNS14336-1(99)

* Please refer to the latest version of the release notes for the most up-to-date scalability numbers.
† Hardware supported.

Brocade VDX 6740, 6740T, and 6740T-1G Specifications *(continued)*

EMC

- FCC Class A
- ICES-003 Class A
- VCCI-Class A
- CE
- C-Tick
- BSMI
- GOST
- KCC Class A
- CCC

Immunity

- ANSI C63.4
- ICES-003 Class A
- CISPR22 and JEIDA (Harmonics)
- EN55022 Class A and EN55024
- CISPR22
- AS/NZS CISPR22
- CNS 13438(95)
- 51318.22-99 and 51318.24-99
- KN22 and KN24
- GB17625.1-2003

Environmental Regulatory Compliance

RoHS-6 (with lead exemption) Directive 2002/95/EC

Standards Compliance

Brocade VDX 6740 products conform to the following Ethernet standards:

- IEEE 802.1D Spanning Tree Protocol
- IEEE 802.1s Multiple Spanning Tree
- IEEE 802.1w Rapid Reconfiguration of Spanning Tree Protocol
- IEEE 802.3 Ethernet
- IEEE 802.3ad Link Aggregation with LACP
- IEEE 802.3ae 10G Ethernet
- IEEE 802.1Q VLAN Tagging
- IEEE 802.1p Class of Service Prioritization and Tagging
- IEEE 802.1v VLAN Classification by Protocol and Port
- IEEE 802.1AB Link Layer Discovery Protocol (LLDP)
- IEEE 802.3x Flow Control (Pause Frames)
- IEEE 802.3ab 1000BASE-T
- IEEE 802.3z 1000BASE-X

The following draft versions of the Data Center Bridging (DCB) and Fibre Channel over Ethernet (FCoE) standards are also supported on the Brocade VDX 6740:

- IEEE 802.1Qbb Priority-based Flow Control
- IEEE 802.1Qaz Enhanced Transmission Selection
- IEEE 802.1 DCB Capability Exchange Protocol (Proposed under the DCB Task Group of IEEE 802.1 Working Group)
- FC-BB-5 FCoE (Rev 2.0)

The Brocade VDX 6740 products conform to the following Fibre Channel standards:

- FC-GS-5 ANSI INCITS 427:2007 (includes the following)
  - FC-GS-4 ANSI INCITS 387: 2004
- FC-SP-2 INCITS 496-2012 (AUTH-A, AUTH-B1 only)
- FC-DA INCITS TR-36: 2004 (includes the following)
  - FC-FLA INCITS TR-20: 1998
  - FC-PLDA INCIT S TR-19: 1998
- FC-MI-2 ANSI/INCITS TR-39-2005
- FC-PI INCITS 352: 2002
- FC-PI-2 INCITS 404: 2005
- FC-PI-4 INCITS 1647-D, revision 7.1 (under development)
- FC-FS-2 ANSI/INCITS 424:2006 (includes the following)
  - FC-FS INCITS 373: 2003
- FC-LS INCITS 433: 2007
- MIB-FA INCITS TR-32: 2003

RFC Support

RFC 768	User Datagram Protocol (UDP)
RFC 783	TFTP Protocol (revision 2)
RFC 791	Internet Protocol (IP)
RFC 792	Internet Control Message Protocol (ICMP)
RFC 793	Transmission Control Protocol (TCP)
RFC 826	ARP
RFC 854	Telnet Protocol Specification
RFC 894	A Standard for the Transmission of IP Datagram over Ethernet Networks
RFC 959	FTP
RFC 1027	Using ARP to Implement Transparent Subnet Gateways (Proxy ARP)

Brocade VDX 6740, 6740T, and 6740T-1G Specifications *(continued)*

RFC 1112	IGMP v1
RFC 1157	Simple Network Management Protocol (SNMP) v1 and v2
RFC 1305	Network Time Protocol (NTP) Version 3
RFC 1492	TACACS+
RFC 1519	Classless Inter-Domain Routing (CIDR)
RFC 1584	Multicast Extensions to OSPF
RFC 1765	OSPF Database Overflow
RFC 1812	Requirements for IP Version 4 Routers
RFC 1997	BGP Communities Attribute
RFC 2068	HTTP Server
RFC 2131	Dynamic Host Configuration Protocol (DHCP)
RFC 2154	OSPF with Digital Signatures (Password, MD-5)
RFC 2236	IGMP v2
RFC 2267	Network Ingress Filtering
RFC 2328	OSPF v2
RFC 2370	OSPF Opaque Link-State Advertisement (LSA) Option—Partial Support
RFC 2375	IPv6 Multicast Address Assignments
RFC 2385	Protection of BGP Sessions with the TCP MD5 Signature Option
RFC 2439	BGP Route Flap Damping
RFC 2460	Internet Protocol, Version 6 (v6) Specification (on management interface)
RFC 2462	IPv6 Stateless Address Auto-Configuration
RFC 2464	Transmission of IPv6 Packets over Ethernet Networks (on management interface)
RFC 2474	Definition of the Differentiated Services Field in the IPv4 and IPv6 Headers
RFC 2571	An Architecture for Describing SNMP Management Frameworks
RFC 2711	IPv6 Router Alert Option
RFC 2865	Remote Authentication Dial-In User Service (RADIUS)
RFC 3101	The OSPF Not-So-Stubby Area (NSSA) Option
RFC 3176	sFlow
RFC 3137	OSPF Stub Router Advertisement
RFC 3392	Capabilities Advertisement with BGPv4
RFC 3411	An Architecture for Describing SNMP Frameworks
RFC 3412	Message Processing and Dispatching for the SNMP
RFC 3413	Simple Network Management Protocol (SNMP) Applications
RFC 3587	IPv6 Global Unicast Address Format
RFC 3623	Graceful OSPF Restart - IETF Tools
RFC 3768	VRRP
RFC 4271	BGPv4
RFC 4291	IPv6 Addressing Architecture

Brocade VDX 6740, 6740T, and 6740T-1G Specifications *(continued)*

RFC 4292	IP Forwarding MIB
RFC 4293	Management Information Base for the Internet Protocol (IP)
RFC 4443	ICMPv6 (replaces 2463)
RFC 4456	BGP Route Reflection
RFC 4510	Lightweight Directory Access Protocol (LDAP): Technical Specification Road Map
RFC 4601	Protocol Independent Multicast—Sparse Mode (PIM-SM): Protocol Specification (Revised)
RFC 4724	Graceful Restart Mechanism for BGP
RFC 4861/5942	IPv6 Neighbor Discovery
RFC 4893	BGP Support for Four-Octet AS Number Space
RFC 5880	Bidirectional Forwarding Detection (BFD)
RFC 5881	Bidirectional Forwarding Detection (BFD) for IPv4 and IPv6 (Single Hop)
RFC 5882	Generic Application of Bidirectional Forwarding Detection (BFD)
RFC 5883	Bidirectional Forwarding Detection (BFD) for Multihop Paths
IPv6 Routing	
RFC 2740	OSPFv3 for IPv6
RFC 2545	Use of BGP-MP extensions for IPv6
IPv6 Multicast	
RFC 2710	Multicast Listener Discovery (MLD) for IPv6
VRRP/VRRPe	
RFC 5798	VRRP Version 3 for IPv4 and IPv6

Brocade Network OS Software Capabilities

		VCS Fabrics	IP Fabrics
Software scalability	Maximum switches in a fabric	48	Unlimited
	Maximum ECMP paths in a fabric	32	32
	Maximum LAGs in a fabric	2,000	48
Layer 2 switching	Service Node Load Balancing BFD/ARP Optimizations	X	X
	Conversational MAC Learning	X	X
	Virtual Link Aggregation Group (vLAG) spanning	X	X
	Layer 2 Access Control Lists (ACLs)	X	X
	Edge Loop Detection (ELD)	X	X
	Address Resolution Protocol (ARP) RFC 826	X	X
	Private VLANs	X	
	Maintenance Mode/Graceful Traffic Diversion	X	
	Distributed VXLAN Gateway	X	
	Diagnostic Ports	X	
	IP Maps Support	X	

Brocade Network OS Software Capabilities *(continued)*

		VCS Fabrics	IP Fabrics
Layer 2 switching *(continued)*	L2 Loop prevention in an overlay environment		X
	High availability/In-Service Software Upgrade—hardware-enabled	X	X
	IGMP v1/v2 Snooping	X	X
	MAC Learning and Aging	X	X
	Link Aggregation Control Protocol (LACP) IEEE 802.3ad/802.1AX	X	X
	Virtual Local Area Networks (VLANs)	X	X
	VLAN Encapsulation 802.1Q	X	X
	Per-VLAN Spanning Tree (PVST+/PVRST+)	X	X
	Rapid Spanning Tree Protocol (RSTP) 802.1w	X	X
	Multiple Spanning Tree Protocol (MSTP) 802.1s	X	X
	STP PortFast, BPDU Guard, BPDU Filter	X	X
	STP Root Guard	X	X
	Pause Frames 802.3x	X	X
	Static MAC Configuration	X	X
	Uni-Directional Link Detection (UDLD)	X	X
	Transparent LAN Services	X	
Layer 3 switching	Border Gateway Protocol (BGP4+)	X	X
	DHCP Helper	X	X
	Layer 3 ACLs	X	X
	Multicast: PIM-SM, IGMPv2	X	X
	OSPF v2/v3	X	X
	Static routes	X	X
	IPv4/v6 ACL	X	X
	Policy-Based Routing (PBR)	X	X
	Bidirectional Fault Detection (BFD)	X	X
	32-WAY ECMP	X	X
	VRF Lite	X	X
	VRF-aware OSPF, BGP, VRRP, static routes	X	X
	VRRP v2 and v3	X	X
	Fabric Virtual Gateway	X	
	IPv4/IPv6 dual stack	X	X
	IPv6 ACL packet filtering	X	X
	BGP Additional-Path	X	X
	BGP-Allow AS	X	X
	BGP Generalized TTL Security Mechanism (GTSM)	X	X

Brocade Network OS Software Capabilities *(continued)*

		VCS Fabrics	IP Fabrics
Layer 3 switching *(continued)*	BGP Peer Auto Shutdown	X	X
	Multicast Refactoring	X	X
	IPv6 routing	X	X
	OSPF Type-3 LSA Filter	X	X
	Wire-speed routing for IPv4 and IPv6 using any routing protocol	X	X
	BGP-EVPN Control Plane Signaling RFC 7432		X
	BGP-EVPN VXLAN Standard-based Overlay		X
	Multi-VRF	X	X
	IP Unnumbered Interface		X
	Intersubnet Routing (Symmetric and Assymetric)		X
	IP over Port Channel		X
	VRRP-E	X	X
	Static Anycast Gateway		X
	ARP Suppression		X
Automation and programmability	OpenFlow 1.3	X	X
	REST API with YANG data model	X	X
	Puppet	X	X
	Python	X	X
	PyNOS libraries	X	X
	Ansible	X	X
	VMware vRealize plugins	X	X
	DHCP automatic fabric provisioning	X	X
	Netconf API	X	X
Multitenancy and virtualization	TRILL FGL-based VCS Virtual Fabric feature	X	
	Virtual fabric extension	X	
	VM-Aware Network Automation	X	
	BFD for virtual fabric extension	X	
	Brocade VCS Gateway for NSX	X	
	Brocade IP Fabric Gateway for NSX		X
	VMware NSX-v Certification	X	X
	Automatic Migration of Port Profiles (AMPP)	X	X

Brocade Network OS Software Capabilities *(continued)*

		VCS Fabrics	IP Fabrics
DCB	Priority-based Flow Control (PFC) 802.1Qbb	X	
	Enhanced Transmission Selection (ETS) 802.1Qaz	X	
	Manual configuration of lossless queues for protocols other than FCoE and iSCSI	X	
	Data Center Bridging eXchange (DCBX)	X	
	DCBX Application Type-Length-Value (TLV) for FCoE and iSCSI	X	
Fibre Channel/FCoE	Multi-hop Fibre Channel over Ethernet (FCoE); requires Brocade VCS Fabric technology	X	
	FC-BB5 compliant Fibre Channel Forwarder (FCF)	X	
	Native FCoE forwarding	X	
	FCoE to Fibre Channel Bridging	X	
	FCoE on Brocade VDX 6740 and Brocade VDX 6740T	X	
	FCoE on QSFP+ port	X	
	Flex Ports, allowing direct and SAN connectivity of Fibre Channel targets	X	
	Multi-hop Access Gateway Support	X	
	End-to-end FCoE (initiator to target)	X	
	FCoE Initialization Protocol (FIP) v1 support for FCoE device login and initialization	X	
	Name Server-based zoning	X	
	Supports connectivity to FIP Snooping Bridge (FSB) device	X	
Fibre Channel/FCoE (continued)	FCoE traffic over standard LAG	X	
	Interface Binding	X	
	10 GbE CoD license needs to be activated in order to support FCoE on the Brocade VDX 6740T-1G	X	
	Dual Personality Ports	X	
	Logical SANs	X	
High availability	ISSU L2 and L3	X	X
	BFD	X	X
	OSPF3-NSR	X	X
	BGP4-GR	X	X
Quality of Service (QoS)	ACL-based QoS	X	X
	Eight priority levels for QoS	X	X
	Class of Service (CoS) IEEE 802.1p	X	X
	DSCP Trust	X	X
	DSCP to Traffic Class Mutation	X	X
	DSCP to CoS Mutation	X	X

Brocade Network OS Software Capabilities *(continued)*

		VCS Fabrics	IP Fabrics
Quality of Service (QoS) *(continued)*	DSCP to DSCP Mutation	X	X
	Random Early Discard	X	X
	Per-port QoS configuration	X	X
	ACL-based Rate Limit	X	X
	Dual-rate, three-color token bucket	X	X
	ACL-based remarking of CoS/DSCP/Precedence	X	X
	ACL-based sFlow	X	X
	Scheduling: Strict Priority (SP), Deficit Weighted Round-Robin (DWRR), Hybrid Scheduling (Hybrid)	X	X
	Queue-based Shaping	X	X
	Flow-based QoS	X	X
Management and monitoring	Logical chassis management	X	
	Switch Beaconing	X	X
	IPv4/IPv6 management	X	X
	Industry-standard Command Line Interface (CLI)	X	X
	Netconf API	X	X
	REST API with YANG data model	X	X
	Brocade VDX Plugin for OpenStack	X	X
	Link Layer Discovery Protocol (LLDP) IEEE 802.1AB	X	X
	MIB II RFC 1213 MIB	X	X
	Management VRF	X	X
	Switched Port Analyzer (SPAN)	X	X
	Telnet	X	X
	SNMP v1, v2C, v3	X	X
	sFlow RFC 3176	X	X
	Out-of-band management	X	X
	Remote SPAN (RSPAN)	X	X
	RMON-1, RMON-2	X	X
	NTP	X	X
	Management Access Control Lists (ACLs)	X	X
	Role-Based Access Control (RBAC)	X	X
	Range CLI support	X	X
	UDLD	X	X

Brocade Network OS Software Capabilities *(continued)*

		VCS Fabrics	IP Fabrics
Management and monitoring *(continued)*	OpenStack Neutron ML2 plugin	X	X
	Python	X	X
	Puppet	X	X
	Distributed Configuration Management	X	
	Maps switch health monitoring	X	
Security	Port-based Network Access Control 802.1X	X	X
	RADIUS (AAA)	X	X
	TACACS+	X	X
	Secure Shell (SSHv2)	X	X
	BPDU Drop	X	X
	Lightweight Directory Access Protocol (LDAP)	X	X
	Secure Copy Protocol	X	X
	Port Security	X	X

Brocade VDX 6740, 6740T, and 6740T-1G Hardware Ordering Information

See the Brocade VDX Transceiver Support Matrix for optics and cable ordering details.

Hardware SKU	Description
BR-VDX6740-24-F	Brocade VDX 6740, 24P SFP+ ports only—no optics, AC, non-port-side exhaust airflow
BR-VDX6740-24-R	Brocade VDX 6740, 24P SFP+ ports only—no optics, AC, port-side exhaust airflow
BR-VDX6740-48-F	Brocade VDX 6740, 48P SFP+ ports only—no optics, AC, non-port-side exhaust airflow
BR-VDX6740-48-R	Brocade VDX 6740, 48P SFP+ ports only—no optics, AC, port-side exhaust airflow
BR-VDX6740-64-F	Brocade VDX 6740, 64P SFP+ ports only—no optics, AC, non-port-side exhaust airflow
BR-VDX6740-64-R	Brocade VDX 6740, 64P SFP+ ports only—no optics, AC, port-side exhaust airflow
BR-VDX6740-64-ALLSW-F	Brocade VDX 6740, 64P SFP+ ports only—no optics, AC, FCoE, VCS fabric, non-port-side exhaust airflow
BR-VDX6740-64-ALLSW-R	Brocade VDX 6740, 64P SFP+ ports only—no optics, AC, FCoE, VCS fabric, port-side exhaust airflow
BR-VDX6740T-24-F	Brocade VDX 6740T, 24P 10GBASE-T ports only—no optics, AC, non-port-side exhaust airflow
BR-VDX6740T-24-R	Brocade VDX 6740T, 24P 10GBASE-T ports only—no optics, AC, port-side exhaust airflow
BR-VDX6740T-48-F	Brocade VDX 6740T, 48P 10GBASE-T ports only—no optics, AC, non-port-side exhaust airflow
BR-VDX6740T-48-R	Brocade VDX 6740T, 48P 10GBASE-T ports only—no optics, AC, port-side exhaust airflow
BR-VDX6740T-64-F	Brocade VDX 6740T, 48P 10GBASE-T and 4 SFP+ ports only—no optics, AC, non-port-side exhaust airflow
BR-VDX6740T-64-R	Brocade VDX 6740T, 48P 10GBASE-T and 4 SFP+ ports only—no optics, AC, port-side exhaust airflow
BR-VDX6740T-64-ALLSW-F	Brocade VDX 6740T, 48P 10GBASE-T and 4 SFP+ ports only—no optics, AC, FCoE, VCS fabric, non-port-side exhaust airflow
BR-VDX6740T-64-ALLSW-R	Brocade VDX 6740T, 48P 10GBASE-T and 4 SFP+ ports only—no optics, AC, FCoE, VCS fabric, port-side exhaust airflow
BR-VDX6740T-56-1G-F	Brocade VDX 6740T-1G, 48P 1000BASE-T and 2 40 GbE QSFP+ ports, upgradable to 10GBASE-T via license only—no optics, AC, non-port-side exhaust airflow

Brocade VDX 6740, 6740T, and 6740T-1G Hardware Ordering Information *(continued)*

Hardware SKU	Description
BR-VDX6740T-56-1G-R	Brocade VDX 6740T-1G, 48P 1000BASE-T and 2 40 GbE QSFP+ ports, upgradable to 10GBASE-T via license only—no optics, AC, port-side exhaust airflow
BR-VDX6740-8x10G-POD	8-port PoD license for Brocade VDX 6740 and 6740T
BR-VDX6740-2x40G-POD	2-port 40 GbE PoD license for Brocade VDX 6740 and 6740T
BR-VDX6740T-1G-16X10G-COD	16-port 1 GbE to 10 GbE Capacity on Demand (CoD) upgrade license for Brocade VDX 6740T-1G

Brocade VDX 6740, 6740T, and 6740T-1G Software License Ordering Information

Software SKU	Description
BR-VDX6740-FCoE	Software, FCoE license for Brocade VDX 6740 and 6740T
BR-VDX6740-VCS	Software, VCS license for Brocade VDX 6740 and 6740T‡
BR-VDX6740-ALLSW	Software, VCS and FCoE license for Brocade VDX 6740 and 6740T‡

‡ VCS license is not required when running Brocade NOS 4.1 or later releases.

Brocade VDX 6740, 6740T, and 6740T-1G FRU and Optics Ordering Information

FRU and Optics SKU	Description
XBR-250WPSAC-F	FRU 250 W AC power supply/fan, non-port-side exhaust airflow, Brocade VDX 6740
XBR-250WPSAC-R	FRU 250 W AC power supply/fan, port-side exhaust airflow, Brocade VDX 6740
XBR-500WPSAC-01-F	FRU 500 W AC power supply/fan, non-port-side exhaust airflow, Brocade VDX 6740T, 6740T-1G
XBR-500WPSAC-01-R	FRU 500 W AC power supply/fan, port-side exhaust airflow, Brocade VDX 6740T, 6740T-1G
XBR-AC-FAN-F	AC fan, non-port-side exhaust airflow, Brocade VDX 6740T, 6740T-1G
XBR-AC-FAN-R	AC fan, port-side exhaust airflow, Brocade VDX 6740T, 6740T-1G
XBR-R000291	FRU, Brocade VDX 6740 fixed rack-mount kit for 4-post racks
XBR-R000292	FRU, Brocade VDX 6740 mid-mount kit for 2-post racks
XBR-R000293	Flush-mount kit for 2-post racks for Brocade VDX 6740
XBR-R000294	FRU, universal 2-post mid-mount kit/flush-mount kit, Brocade VDX 6740T/6740T-1G
XBR-R000295	FRU, universal rack-mount kit, 4-post, 24- to 32-inch depth rack, Brocade VDX 6740T/6740T-1G

Corporate Headquarters
San Jose, CA USA
T: +1-408-333-8000
info@brocade.com

European Headquarters
Geneva, Switzerland
T: +41-22-799-56-40
emea-info@brocade.com

Asia Pacific Headquarters
Singapore
T: +65-6538-4700
apac-info@brocade.com

BROCADE

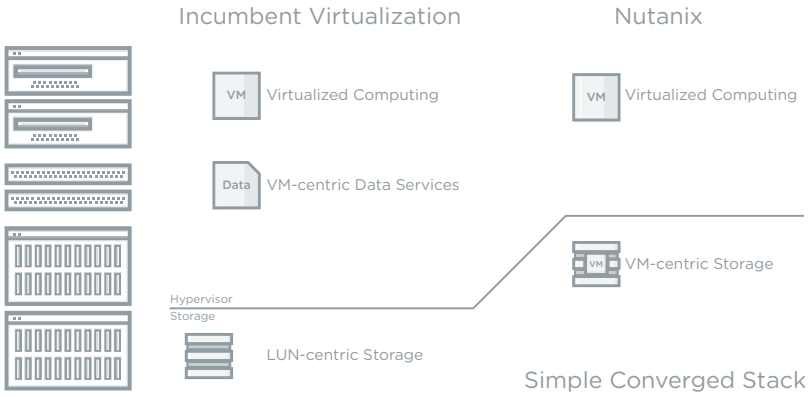
Nutanix AHV

Nutanix Acropolis is a turnkey infrastructure platform that delivers enterprise-class storage, compute, and virtualization services to run nearly any application. Together with Prism, the consumer-grade management platform, Nutanix provides a comprehensive enterprise cloud platform for organizations of all sizes. As a fully integrated IT solution, it eliminates the cost and complexity of legacy datacenter products that are individually deployed and separately managed.

In addition to supporting VMware vSphere and Microsoft Hyper-V, Acropolis includes a built-in virtualization solution, AHV. AHV is built on proven open-source KVM technology and is shipped at no additional cost with every Nutanix deployment. AHV supports core virtualization capabilities including high availability, VM migration that applications today need, as well as a simplified management solution. To further simplify hypervisor choice, the platform also includes the Acropolis App Mobility Fabric (AMF) that enables easy workload migration between hypervisors and different runtime environments. Together, AHV and AMF decouple applications from the underlying infrastructure, enabling enterprise IT to choose the runtime environments that are ideal for their applications and services.

VIRTUALIZATION SOLUTION BUILT FOR THE CLOUD ERA

Public clouds have redefined expectations of IT infrastructure. Explicit choices are not made about hypervisors or storage when applications are deployed on Amazon Web Services or Microsoft Azure.



With AHV, Nutanix collapses virtualization as a checkbox feature to enable quicker time to value within enterprise datacenters. AHV is shipped from the factory floor enabling application deployment within minutes once the solution is racked and powered on.

AHV includes all of the core virtualization capabilities that enterprises need, such as:

- Automated HA to failover virtual machines from one node to another without downtime
- Intelligent placement of virtual machines based on hosts based on ideal fit
- Live migration of virtual machines across the cluster
- Integrated DHCP server for IP address management
- Converged backup and DR
- Unlimited scale to support clusters of all sizes

NUTANIX™
The Enterprise Cloud Company

CONSUMER-GRADE MANAGEMENT WITH ONE-CLICK SIMPLICITY

Prism is a distributed, highly available management solution that provides consumer-grade management and intelligent operational analytics. Prism is natively integrated into the Nutanix solution and is not installed or managed separately. From a virtualization perspective, Prism provides:

- One-click VM operations, including create, delete, update, power, pause/resume, snapshot, and clone VMs
- Image management: Convert and upload disk / ISO images to Nutanix clusters for simplified deployments
- Cross-Hypervisor Migration to migrate VMs between virtual environments running different hypervisors easily
- Detailed performance alerts and analysis with simplified root cause analysis

ECOSYSTEM

AHV has a comprehensive and a burgeoning ecosystem with partners and system integrators building solutions. Additionally, AHV is certified to work on the most common enterprise applications, including all Microsoft and Citrix workloads, and is supported by application vendors as well as Nutanix.

USE CASES

AHV is widely used by customers today for a wide range of use cases, from mission-critical database workloads to Citrix-based desktop virtualization solutions:

- Microsoft workloads – Microsoft workloads are officially supported through Microsoft SVVP certification for AHV
- Desktop Virtualization – AHV is Citrix Ready and is certified for Citrix XenApp and XenDesktop
- OpenStack – Through Nutanix OVM drivers, OpenStack deployments can instantly leverage AHV
- Dev/Test and DR – Reduce licensing cost with AHV for Dev/Test and DR environments
- Service Providers/KVM shops – Service providers who currently run KVM or are exploring a low-cost virtualization solution will find AHV beneficial

CUSTOMERS

AHV is the fastest growing hypervisor for Nutanix-based deployments, with hundreds of customers using it for a variety of use cases. More information can be found at: nutanix.com/resources/case-studies/

ADS AUTOMOTIVE DATA SOLUTIONS

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T. 855.NUTANIX (855.688.2649) | F. 408.916.4039
info@nutanix.com | www.nutanix.com | @nutanix

Nutanix delivers invisible infrastructure for next-generation enterprise computing, elevating IT to focus on the applications and services that power their business. The company's software-driven Xtreme Computing Platform natively converges compute, virtualization and storage into a single solution to drive simplicity in the datacenter. Using Nutanix, customers benefit from predictable performance, linear scalability and cloud-like infrastructure consumption. Learn more at www.nutanix.com or follow us on Twitter@nutanix.