
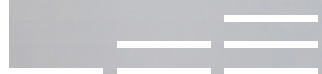


NET WORK

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QUICK REFERENCE GUIDE
IP



SIMPLY REWARDING RELATIONSHIPS

BROCADE QUICK REFERENCE GUIDE IP



NETWORK LAYER		ACCESS		ACCESS/AGGREGATION			
BROCADE MODEL		BROCADE ICX® 6430 AND 6450		BROCADE ICX 6610		BROCADE ICX 6650	
CAMPUS NETWORK SWITCHING AND ROUTING	PART NUMBERS	ICX 6430-C12, ICX 6430-24, ICX 6430-24P, ICX 6430-48, ICX 6430-48P, ICX 6450-C12-PD, ICX 6450-24, ICX 6450-24P, ICX 6450-48, ICX 6450-48P	FCX624S, FCX624S-F, FCX624S-HPOE, FCX648S, FCX648S-HPOE	ICX6610-24-E, ICX6610-24-I, ICX6610-24P-E, ICX6610-24P-I, ICX6610-24F-E, ICX6610-24F-I, ICX6610-48-E, ICX6610-48-I, ICX6610-48P-E, ICX6610-48P-I • I = power supply side intake airflow • E = power supply side exhaust airflow	ICX6650-32-E-ADV, ICX6650-32-I-ADV, ICX6650-40-E-ADV, ICX6650-40-I-ADV, ICX6650-48-E-ADV, ICX6650-48-I-ADV, ICX6650-56-E-ADV, ICX6650-56-I-ADV, ICX6650-80-E-ADV, ICX6650-80-I-ADV		
	TYPICAL DEPLOYMENTS	<ul style="list-style-type: none"> • Campus LAN • Converged edge (voice + data) • VoIP and Unified Communications (UC) • Wireless access • Small to medium enterprise • Branch offices • K-12 education 	<ul style="list-style-type: none"> • VoIP • Wireless access • Converged edge (voice + video + data) • Video surveillance • Remote video kiosks • Building management systems 	<ul style="list-style-type: none"> • Converged edge (voice + video + data) • VoIP and Unified Communications (UC) • Video streaming: HD video, IPTV, distance learning • VDI: Low jitter/low latency • Wireless APs deployment • Video surveillance • Remote video kiosks • Building management systems • Financial enterprises and trading floors 	<ul style="list-style-type: none"> • Data center Top-of-Rack 10 GbE server access • Data center 10 GbE aggregation • Small / medium size campus LAN aggregation • High-Performance Cluster Computing 		
	INTERFACE SLOTS	N/A	1 (uplink)	N/A	N/A		
	MAXIMUM PORTS	ICX 6430-C / ICX 6450-C: <ul style="list-style-type: none"> • 12 x 10/100/1000 MbE (RJ45) • 2 x 10/100/1000 MbE (RJ45) uplink • 2 x 1 GbE (SFP) dual-mode uplink (stacking not supported) ICX 6430: <ul style="list-style-type: none"> • Up to 48 x 10/100/1000 MbE (RJ45) • 4 x 1 GbE (SFP) dual-mode stacking/uplink • Stackable up to 192 x 10/100/1000 MbE (RJ45) and 16 x 1 GbE ICX 6450: <ul style="list-style-type: none"> • Up to 48 x 10/100/1000 MbE (RJ45) • Up to 4 x 10 GbE (SFP+) dual-mode stacking/uplink • Stackable up to 384 x 10/100/1000 MbE (RJ45) and 32 x 10 GbE 	<ul style="list-style-type: none"> • Up to 48 x 10/100/1000 MbE (RJ45) • Up to 24 x 100/1000 SFP ports on the FCX624S-F • 4 x combination (SFP) • Up to 2 x 10 GbE (XFP or SFP+) • 2 x 16 Gbps dedicated stacking ports • Stackable up to 384 x 10/100/1000 MbE (RJ45) PoE/Non-PoE 	<ul style="list-style-type: none"> • Up to 48 x 10/100/1000 MbE (RJ45) • Up to 24 x 100/1000 SFP • 8 x dual mode 1/10 GbE (SFP+) • 4 x 40 Gbps QSFP stacking ports • Stackable up to 384 x 10/100/1000 MbE (RJ45) PoE/Non-PoE and 64 x 10 GbE 	<ul style="list-style-type: none"> • ICX 6650-32: 32 x 10 GbE SFP+ (additional ports available with 8 x 10 GbE and 2 x 40 GbE ports-on-demand licenses) • ICX 6650-40: 40 x 10 GbE SFP+ (additional ports available with 8 x 10 GbE and 2 x 40 GbE ports-on-demand licenses) • ICX 6650-48: 48 x 10 GbE SFP+ (additional ports available with 8 x 10 GbE and 2 x 40 GbE ports-on-demand licenses) • ICX 6650-56: 56 x 10 GbE SFP+ (additional ports available with 2 x 40 GbE ports-on-demand licenses) • ICX 6650-80: 56 x 10 GbE SFP+, 2 x 4 x 10 GbE (breakout) QSFP+, and 4 x 40 GbE QSFP+ 		
	POWER OVER ETHERNET (POE)	<ul style="list-style-type: none"> • 802.3af PoE up to class-3 (15.4W) • 802.3at PoE+ up to class-4 (30W) 	<ul style="list-style-type: none"> • 802.3af PoE up to class-3 (15.4W) • 802.3at PoE+ up to class-4 (30W) 	<ul style="list-style-type: none"> • 802.3af PoE up to class-3 (15.4W) • 802.3at PoE+ up to class-4 (30W) 	N/A		
	HARDWARE FEATURES	ICX 6430-C / ICX 6450-C: <ul style="list-style-type: none"> • Up to 22 Gbps switching capacity • Up to 24 Mpps forwarding capacity • Fixed AC power supply • EEE (Energy Efficient Ethernet) ready • MACsec ready (ICX 6450-C only) ICX 6430: <ul style="list-style-type: none"> • Up to 104 Gbps switching capacity • Up to 77 Mpps forwarding capacity • Fixed AC power supply • EEE (Energy Efficient Ethernet) ready ICX 6450: <ul style="list-style-type: none"> • Up to 176 Gbps switching capacity • Up to 132 Mpps forwarding capacity • Fixed AC power supply • EEE (Energy Efficient Ethernet) ready • MACsec ready 	<ul style="list-style-type: none"> • Up to 200 Gbps switching capacity • Up to 150 Mpps forwarding capacity • 1+1 redundant AC power supplies • Hot-swappable power supplies 	<ul style="list-style-type: none"> • Up to 576 Gbps switching capacity • Up to 432 Mpps forwarding capacity (wire speed) • 1+1 redundant AC power supplies • Hot-swappable power supplies • 1+1 redundant fan trays • Hot-swappable fan trays • EEE (Energy Efficient Ethernet) ready • MACsec ready • 40 GbE ready • Reversible front-to-back airflow 	<ul style="list-style-type: none"> • Available ports-on-demand licenses • Low latency cut-through switching • Up to 1600 Gbps switching capacity • Up to 1190 Mpps forwarding capacity • 1+1 redundant, hot-swappable, 250W AC power supplies • 1+1 redundant, hot-swappable fan modules • Reversible airflow: -E (fan exhaust), -I (fan intake) 		
	MODULES AVAILABLE (S)	N/A	• 2-port 10 GbE uplink module (XFP or SFP+)	N/A	N/A		
	HEIGHT	1 RU	1 RU	1 RU	1 RU		
	MANAGEMENT MODULES	N/A	N/A	N/A	N/A		
	SWITCH FABRIC MODULES	N/A	N/A	N/A	N/A		
	POWER SUPPLIES	ICX 6430-C / ICX 6450-C: 1 (built-in) + 100W built-in AC power supply (PoE) ICX 6430: 1 (built-in) + 1 (optional external) + 36W or 65W built-in AC power supply + 525W built-in AC power supply (PoE) ICX 6450: 1 (built-in) + 1 (optional external) + 65W or 100W AC power supply + 525 or 880W AC power supply (PoE)	<ul style="list-style-type: none"> • 1 (base) + 1 (optional) • 210W hot-swappable AC power supply • 620W hot-swappable AC power supply (PoE) • Full 48-port PoE requires both power supplies 	<ul style="list-style-type: none"> • 1 (base) + 1 (optional) • 250W hot-swappable AC power supply • 1000W hot-swappable AC power supply (PoE) • 510W hot-swappable DC power supply • Full 48-port PoE+ requires both power supplies 	<ul style="list-style-type: none"> • 1+1 (base) • 250W hot-swappable AC power supply 		
	HOT-SWAPPABLE COMPONENTS	SFP/SFP+ transceivers	SFP/XFP transceivers, power supplies, fan module	SFP/XFP transceivers, power supplies, fan modules	Power supplies, fan modules, SFP/SFP+/QSFP+ transceivers		
	HARDWARE OPTIONS (S)	ICX 6430-C / ICX 6450-C: <ul style="list-style-type: none"> • Rack mount / Wall mount kit • Magnetic mount kit ICX 6430 / ICX 6450: <ul style="list-style-type: none"> • 1500W external optional AC power supply (except 6430-24) • 1 and 5 meter SFP stacking cable options • 6400 two-post rack mount kit, spare 	<ul style="list-style-type: none"> • 210W hot-swappable AC power supply • 620W hot-swappable AC power supply (PoE) • Rack mount kit 	<ul style="list-style-type: none"> • 250W hot-swappable AC power supply • 1000W hot-swappable AC power supply (PoE) • 510W hot-swappable DC power supply • Hot-swappable fan tray • 4 post rack mount kit • 1 meter QSFP stacking cable • 5 meter QSFP stacking cable • 2 post rack mount kit 	<ul style="list-style-type: none"> • Rack mount kit • 250W hot-swappable AC power supply • Hot-swappable fan tray 		
	STANDARD SW	ICX 6430-C / ICX 6430: <ul style="list-style-type: none"> • Advanced Layer 2 support ICX 6450 / ICX 6450-C: <ul style="list-style-type: none"> • Advanced Layer 2 support (including IPv4 static routes) 	<ul style="list-style-type: none"> • Advanced Layer 2 and full Layer 3 including edge security, 802.1x, QoS and comprehensive hardware based port and VLAN-based ACL policies • IP4/IP6 routing: RIPv1/v2 RIPng(IPv6), OSPFv2/v3, VRRP, VRRPE, VRRPv3, DVRRP, PIM 	<ul style="list-style-type: none"> • Advanced Layer 2 and base Layer 3 including edge security, 802.1x, QoS and comprehensive hardware based port and VLAN-based ACL policies • IP4/IP6 routing: static routes 	<ul style="list-style-type: none"> • Advanced Layer 2/3 feature set including QoS, 802.1x, comprehensive hardware-based ACL, Multi Chassis Trunking, and IPv6 routing 		
OPTIONAL SW	ICX 6450 / ICX 6450-C: <ul style="list-style-type: none"> • Premium L3: IPv4 routing - RIPv1/v2 OSPFv2/v3, VRRP, VRRPE • 2 x 10 GbE upgrade license: converts 1 GbE uplinks to 10 GbE 	<ul style="list-style-type: none"> • Advanced L3: BGP4, GRE, IPv6 over IPv4 tunnels, VRF 	<ul style="list-style-type: none"> • Premium L3: IP4/IP6 routing - RIPv1/v2 RIPng(IPv6), OSPFv2/v3, VRRP, VRRPE, VRRPv3, DVRRP, PIM • Advanced L3: BGP4, VRF, GRE, IPv6 over IPv4 tunnels 	N/A			
OTHER BASE FEATURES	Brocade Stacking Technology (except ICX 6430-C12 / ICX 6450-C12)	IronStack technology	N/A	Reversible airflow			



NETWORK LAYER	AGGREGATION/CORE	CORE	WIRELESS
BROCADE MODEL	BROCADE FASTIRON® SX 800/1600 SWITCH	BROCADE MLX®	AIRDEFENSE WLAN SECURITY APPLIANCES
PART NUMBERS	FI-SX800-AC/-DC, FI-SX1600-AC/-DC	BR-MLXE-4-MR2-M-AC/DC, BR-MLXE-4-MR2-X-AC/DC, BR-MLXE-4-MR-M-AC/DC, BR-MLXE-4-MR-X-AC/DC, BR-MLXE-8-MR2-M-AC/DC, BR-MLXE-8-MR2-X-AC/DC, BR-MLXE-8-MR-M-AC/DC, BR-MLXE-8-MR-X-AC/DC, BR-MLXE-16-MR2-M-AC/DC, BR-MLXE-16-MR2-X-AC/DC, BR-MLXE-16-MR-M-AC/DC, BR-MLXE-16-MR-X-AC/DC, BR-MLXE-32-MR2-M-AC/DC, BR-MLXE-32-MR2-X-AC/DC, BR-MLXE-32-MR-M-AC/DC, BR-MLXE-32-MR-X-AC/DC	SV-1250-P-1, SV-3650-P-1, SV-4250-P-1
TYPICAL DEPLOYMENTS	<ul style="list-style-type: none"> Converged edge (voice + video + data) VoIP and Unified Communications (UC) Video streaming, HD video, IPTV, distance learning VDI: Low jitter/low latency Wireless access Video surveillance Remote video kiosks Building management systems Financial enterprises and trading floors 	<ul style="list-style-type: none"> Voice, video and data Campus border routing Enterprise MPLS/VPLS and virtual routing MPLS enabled campus core Financial enterprises and trading floors 	<ul style="list-style-type: none"> Branch to campus to enterprise-level WLAN deployments
INTERFACE SLOTS	8, 16	4, 8, 16, 32	<ul style="list-style-type: none"> 1-2 RJ45 NIC connectors for 10/100/1000 Mb connections Stacked PS/2 ports for keyboard and mouse Video connector
MAXIMUM PORTS	<ul style="list-style-type: none"> Up to 384 x 10/100/1000 MbE (RJ45) POE/non-POE Up to 384 x 100/1000 MbE (SFP) Up to 36 x 10 GbE (XFP) Up to 128 x 10 GbE (SFP+) 	<ul style="list-style-type: none"> Up to 1,536 x 10/100/1000 MbE (RJ45/RJ21) Up to 768 x 100/1000 MbE (SFP) Up to 128 x 40 GbE (QSFP+) Up to 16 x 100 GbE (CFP) Up to 256 x 10 GbE (XFP/SFP+) Up to 256 x OC12/48 POS/SDH Up to 64 x OC192 POS/SDH 	No
POWER OVER ETHERNET (POE)	<ul style="list-style-type: none"> 802.3af PoE up to class-3 (15.4W) 802.3at PoE+ up to class-5 (30W) 	No	<ul style="list-style-type: none"> Active/Backup Clustering Intel Pentium 4 3.4 GHz, Intel 2.13GHz Core2 Duo, or Intel 2.33GHz Xeon 5140 1-8 MB RAM 250 GB-1 TB disk storage
HARDWARE FEATURES	<ul style="list-style-type: none"> Up to 1080 Gbps switching capacity Up to 636 Mpps forwarding capacity Redundant management modules Redundant fabric modules N+1 redundant AC/DC power supplies Hot-swappable modules Hot-swappable power supplies Hot-swappable fan units 	<ul style="list-style-type: none"> Up to 15.36 Tbps switching capacity Up to 12.8 Tbps forwarding capacity Side-to-side / front-to-back airflow Redundant management modules Redundant fabric modules M+N redundant power supplies Hot-swappable modules Hot-swappable power supplies Hot-swappable fan units 	N/A
MODULES AVAILABLE (SHARED)	<ul style="list-style-type: none"> 0-port management module 2-port 10 GbE management module Switch fabric module 24-port 10/100/1000 MbE RJ45 module 24-port 10/100/1000 MbE RJ45 PoE module 24-port 10/100/1000 MbE RJ45 PoE+ module (MACsec, EEE ready) 48-port 10/100/1000 MbE RJ45 PoE+ module 24-port 100/1000 SFP module (MACsec ready) 2-port 10 GbE XFP module 2-port 10 GbE SFP+ module (MACsec ready) 8-port 10 GbE SFP+ module (MACsec ready) 	<ul style="list-style-type: none"> Management module (MR/MR2-M) Switch fabric module and high-speed switch fabric module 1-port 100 GbE module 2-port 100 GbE module 4-port 40 GbE module (QSFP+) 8-port 10-GbE SFP+ module (D, -M, -X versions) 4-port 10-GbE XFP module 2-port 10-GbE XFP module 48-port 10/100/1000Base-T, MRJ21 module 24-port 1-GbE (ML) Copper (RJ-45) module 24-port 1-GbE (ML) Fiber (SFP) module 	N/A
HEIGHT	6 RU, 14 RU	4, 7, 14, 33 RU	1, 2 RU
MANAGEMENT MODULES	1 (base) + 1 (optional)	1 (base) + 1 (optional)	N/A
SWITCH FABRIC MODULES	2 (base)	2/2/3/8 (base) + 1/1/1/0 (optional)	N/A
AC POWER SUPPLIES	SX800 System: 1 (base) + 1 (optional) PoE: 0 (base) + 2 (optional) SX1600 System: 2 (base) + 2 (optional) PoE: 0 (base) + 4 (optional)	1/2/4/4 (base) + 2/2/4/4 (optional)	1 (base) + 1 (optional)
HOT-SWAPPABLE COMPONENTS	SFP/XFP transceivers, power supplies, fan assemblies, switch fabric modules, management modules, interface modules.	SFP/XFP transceivers, power supplies, fan assemblies, switch fabric modules, management modules, interface modules.	Power supply.
HARDWARE OPTIONS (S)	<ul style="list-style-type: none"> PoE DIMM for 24-port 10/100/100 MbE (RJ45) interface modules 1200W SYS power supply 1250W POE power supply 2500W POE power supply Mid-mount rack kit 8-slot 	<ul style="list-style-type: none"> 1200W AC/DC power supply 2400W AC/DC power supply 	<ul style="list-style-type: none"> 500W power supply
STANDARD SW	Advanced Layer 2 and Base Layer 3 including edge security, 802.1x, QoS and comprehensive hardware based port and VLAN-based ACL policies	Full Layer 3 MPLS +IPv4+IPv6 routing including BGP, OSPFv2/v3, ISIS, RIP, RIPv6, VRRP, VRRPE, PIM-SM/SSM/DM, MPLS, LDP, RSVP, VPLS, VLL, MPLS L3VPNs and multi-VRF	Collaborative intelligence with secure sensors for monitoring all 802.11 (a/b/g/n) wireless traffic in real time for the highest level of security, rogue mitigation, and policy enforcement
OPTIONAL SW	<ul style="list-style-type: none"> Full Layer 3 IPv4 upgrade including BGP-4, OSPFv2, RIPv1/v2, VRRP, VRRPE, DVMRP, PIM-SM and PIM-DM Full Layer 3 IPv4+IPv6 upgrade including RIPv6, OSPFv3, IPv6 static routes, VRF, 6-to-4 static tunneling. This upgrade also includes Full L3 IPv4 services 	N/A	<ul style="list-style-type: none"> For policy compliance, robust performance monitoring and troubleshooting, RF analysis, advanced forensics, and wireless vulnerability assessment
OTHER BASE FEATURES	IronStack technology	IronStack technology	N/A



NETWORK LAYER		WIRELESS	
BROCADE MODEL		BROCADE MOBILITY 1240	BROCADE MOBILITY 7131
PRODUCT OVERVIEW	High performance, reliable 802.11a/b/g/n access point with support for 3 spatial streams / radio and unique modular design to easily enable future expansion while protecting investments. Up to 450Mbps performance ensures high quality, reliable, and secure performance for client data access (UC and VDI), video, voice, and mesh networking.	Cost-effective 802.11a/b/g/n access point that delivers secure and resilient network services and enables high performance mobility applications. Working in a standalone mode or adopted by a controller, it provides 24/7 dedicated wireless IDS/IPS sensing, high-speed client access for data (VDI), voice and video traffic and mesh networking.	
GENERAL CHARACTERISTICS	<ul style="list-style-type: none"> • 802.11a/b/g/n; DSSS and ODFM • Tri, dual, and single radio options • 450Mbps / Radio • 802.3af (PoE) and 802.3at (PoE+) support • Mesh networking • Standalone or controller-adopted modes • 3G cellular backhaul extensibility options • Metal, plenum-rated housing (UL2043) • Space Time Block Coding and Beamforming support • 3 Spatial Stream / Radio support (450Mbps) • Up to 127 clients supported • Modular USB-base design • Above drop ceiling, under ceiling (T-Bar), or on wall (no additional hardware required) 	<ul style="list-style-type: none"> • 802.11a/b/g/n; DSSS and ODFM • Tri, dual, and single radio options • 300Mbps / Radio • 802.3af (PoE) and 802.3at (PoE+) support • Mesh networking • Standalone or controller-adopted modes • 3G cellular backhaul extensibility options • Metal, plenum-rated housing (UL2043) • Up to 127 clients supported • Above drop ceiling, under ceiling (T-Bar), or on wall (no additional hardware required) 	
DISTRIBUTED AP FORWARDING: NON-BLOCKING 802.11N PERFORMANCE			
DIRECT FORWARDING	Standalone or controller-adopted APs that forward traffic directly to the next AP via the best-quality path, with full QoS and security, minimizing wired traffic, eliminating controller bottleneck or single point of failure, and accelerating applications.		
UNMATCHED RELIABILITY			
QOS	Voice prioritization; WMM-power save with TSPEC Admission Control; WMM U-APSD; Layer 1-4 packet classification; 802.1p VLAN priority; DiffServ/TOS; 802.11e; 802.11k; SVP, SIP CAC (call admission control).		
FAILOVER ADAPTIVE NETWORK SERVICES AT EDGE	Standalone or controller-adopted APs forward traffic directly to the next AP even when connection to the controller is interrupted.		
SMART RF	Network optimization to ensure user quality of experience at all times by dynamic adjustments to channel and power (on detection of RF interference or loss of RF coverage/neighbor recovery). Available for both thin APs and Adaptive APs.		
MESH NETWORKING	Stand-alone mesh; Adaptive mesh; self-healing mesh failover; Layer 2 wired to Mesh failover.		
3G/4G WAN BACKHAUL	Optional ExpressCard WWAN slot (card not included) WWAN feature license required.		
GAP-FREE SECURITY			
AUTHENTICATION	Access Control Lists (ACLs); pre-shared keys (PSK); 802.1x/EAP—transport layer security (TLS), tunneled transport layer security (TTLS), protected EAP (PEAP); Kerberos Integrated AAA/RADIUS Server with native support for EAP-TLS, EAP-PEAP (includes a built-in user name/password database; supports LDAP), and EAP-SIM; local authentication database.	Access Control Lists (ACLs); pre-shared keys (PSK); 802.1x/EAP—transport layer security (TLS), tunneled transport layer security (TTLS), protected EAP (PEAP); Kerberos Integrated AAA/RADIUS Server with native support for EAP-TLS, EAP-PEAP (includes a built-in user name/password database; supports LDAP), and EAP-SIM; local authentication database.	
ENCRYPTION	WEP 40/128 (RC4); WPA-TKIP; WPA2-CCMP (AES); 802.11i WPA2-TKIP; Multi Cipher support		
IDS/IPS	Multimode rogue AP detection, rogue AP containment, 802.11n rogue detection, ad hoc network detection, Denial of Service (DoS) protection against wireless attacks, client blacklisting, excessive authentication/association, excessive probes; excessive disassociation/de-authentication; excessive decryption errors; excessive authentication failures; excessive 802.11 replay; excessive crypto IV failures (TKIP/CCMP replay); suspicious AP, authorized device in ad hoc mode, unauthorized AP using authorized SSID, EAP Flood, Fake AP Flood, ID theft, ad hoc advertising authorized SSID.		
GUEST ACCESS	Provides secure guest access for wired and wireless clients. Built-in captive portal, customizable login and welcome pages, URL redirection for user login, usage-based charging, dynamic VLAN assignment of clients, DNS white list, GRE tunneling of traffic to central site, API support for interoperability with custom web portals (for example, Wandering Wi-Fi), Amigopod, support for external authentication and billing systems.		
24/7 MONITORING FOR PREMIUM SECURITY	Brocade dual-purpose APs provide wireless traffic and dedicated dual-band sensing. This eliminates the need to purchase and manage a dedicated sensing infrastructure while providing a greener and more cost-effective approach to 24/7 security.		
IPSEC VPN	Supports DES, 3DES, AES-128, and AES-256 encryption, with site-to-site and client-to-site VPN capabilities.		
ROLE-BASED WIRED/WIRELESS FIREWALL	Role-based wired/wireless firewall (Layer 2-7) with stateful inspection for wired and wireless traffic; protects against IP spoofing and ARP cache poisoning.		
FAST ROAMING	Pre-emptive roaming; fast roaming with opportunistic channel scan; load balancing; Power Save Polling (PSP), Virtual AP and location-based access control.		
BEST RETURN ON INVESTMENT (ROI)—AND LOWEST TOTAL COST OF OWNERSHIP (TCO)			
INTEGRATED NETWORK SERVICES	Routing, security, and network services integration eliminates point products and appliances, saving significant CapEx and OpEx.		
EASE OF INSTALLATION	Controller provides centralized management for all Brocade Mobility Aps deployed locally or remotely. Plug-and-play deployments over Layer 2 and Layer 3 networks.		
802.3AF/AT SUPPORT	Eliminates the cost of running power to each AP.		
MESH NETWORKING	Eliminates the cost of running Ethernet cabling to each AP.		

WIRELESS



NETWORK LAYER		WIRELESS		
BROCADE MODEL	BROCADE MOBILITY 1220		BROCADE MOBILITY 650	BROCADE MOBILITY 6511
PRODUCT OVERVIEW	Designed for small and medium-size enterprises looking to lower costs of mobility capabilities while balancing the need for a secure and high-quality user experience. The Brocade Mobility 1220 Access Point adds site survivability and controller-less operation to the strengths of the Brocade Mobility 650 Access Point improving service availability.		A thin (dependent) multipurpose AP designed to lower the cost of deploying and operating a secure, reliable 802.11a/b/g/n wireless LAN. This highly efficient AP offers simultaneous high-speed access for data (VDI), voice and video traffic, and comprehensive, wireless intrusion-prevention sensing, and remote over-the-air help-desk support.	The Brocade Mobility 6511 AP is ideal for dormitories, patient rooms, guest rooms, and other multi-dwelling units where firewalls, metal doors, mirrors, plumbing, and wall tiles obstruct hallway Wi-Fi signals. It features a snap-in port for any keystone-style connector—such as RJ11 or TV coax—so multiple services can be supported on a single integrated AP and additional Ethernet ports for voice service, device monitoring, or even guest wireline access.
GENERAL CHARACTERISTICS	<ul style="list-style-type: none"> • 802.11a/b/g/n; DSSS and OFDM • Dual, and single radio options • 300Mbps / Radio • 802.3af (PoE) and 802.3at (PoE+) support • Standalone or controller-adopted modes • Metal, plenum-rated housing (UL2043) • Up to 127 clients supported • Ceiling mount (above tile); wall mount 		<ul style="list-style-type: none"> • 802.11a/b/g/n; DSSS and OFDM • Dual, and single radio options • 300Mbps / Radio • 802.3af (PoE) and 802.3at (PoE+) support • Thin (dependent) Access Point (AP) • Metal, plenum-rated housing (UL2043) • Up to 127 clients supported • Ceiling mount (above tile); wall mount 	<ul style="list-style-type: none"> • 802.11a/b/g/n; DSSS and OFDM • Dual, and single radio options • 300Mbps / Radio • 802.3af (PoE) and 802.3at (PoE+) support • Standalone or controller-adopted modes • Metal, plenum-rated housing (UL2043) • Up to 127 clients supported • Wall mount; Wallplate design
DISTRIBUTED AP FORWARDING: NON-BLOCKING 802.11N PERFORMANCE				
DIRECT FORWARDING	Standalone or controller-adopted APs that forward traffic directly to the next AP via the best-quality path, with full QoS and security, minimizing wired traffic, eliminating controller bottleneck or single point of failure, and accelerating applications.			
UNMATCHED RELIABILITY				
QOS	Voice prioritization; WMM-power save with TSPEC Admission Control; WMM U-APSD; Layer 1-4 packet classification; 802.1p VLAN priority; DiffServ/TOS; 802.11e; 802.11k; SVP, SIP CAC (call admission control).			
FAILOVER ADAPTIVE NETWORK SERVICES AT EDGE	Standalone or controller-adopted APs forward traffic directly to the next AP even when connection to the controller is interrupted.	N/A	Standalone or controller-adopted APs forward traffic directly to the next AP even when connection to the controller is interrupted.	
SMART RF	Network optimization to ensure user quality of experience at all times by dynamic adjustments to channel and power (on detection of RF interference or loss of RF coverage/neighbor recovery). Available for both thin APs and Adaptive APs.			
MESH NETWORKING	Stand-alone mesh; Adaptive mesh; self-healing mesh failover; Layer 2 wired to Mesh failover.	N/A	Stand-alone mesh; Adaptive mesh; self-healing mesh failover; Layer 2 wired to Mesh failover.	
3G/4G WAN BACKHAUL	N/A			
GAP-FREE SECURITY				
AUTHENTICATION	Access Control Lists (ACLs); pre-shared keys (PSK); 802.1x/EAP—transport layer security (TLS), tunneled transport layer security (TTLS), protected EAP (PEAP); Kerberos Integrated AAA/RADIUS Server with native support for EAP-TTLS, EAP-PEAP, and EAP-SIM.	Access Control Lists (ACLs); pre-shared keys (PSK); 802.1x/EAP—transport layer security (TLS), tunneled transport layer security (TTLS), protected EAP (PEAP); Kerberos Integrated AAA/RADIUS Server with native support for EAP-TTLS, EAP-PEAP, and EAP-SIM.	Access Control Lists (ACLs); pre-shared keys (PSK); 802.1x/EAP—transport layer security (TLS), tunneled transport layer security (TTLS), protected EAP (PEAP); Kerberos Integrated AAA/RADIUS Server with native support for EAP-TTLS, EAP-PEAP, and EAP-SIM.	
ENCRYPTION	WEP 40/128 (RC4); WPA-TKIP; WPA2-CCMP (AES); 802.11i WPA2-TKIP; Multi Cipher support			
IDS/IPS	Multimode rogue AP detection, rogue AP containment, 802.11n rogue detection, ad hoc network detection, Denial of Service (DoS) protection against wireless attacks, client blacklisting, excessive authentication/association; excessive probes; excessive disassociation/de-authentication; excessive decryption errors; excessive authentication failures; excessive 802.11 replay; excessive crypto IV failures (TKIP/CCMP replay); suspicious AP, authorized device in ad hoc mode, unauthorized AP using authorized SSID, EAP Flood, Fake AP Flood, ID theft, ad hoc advertising authorized SSID.			
GUEST ACCESS	Provides secure guest access for wired and wireless clients. Built-in captive portal, customizable login and welcome pages, URL redirection for user login, usage-based charging, dynamic VLAN assignment of clients, DNS white list, GRE tunneling of traffic to central site, API support for interoperability with custom web portals (for example, Wandering Wi-Fi), Amigopod, support for external authentication and billing systems.			
24/7 MONITORING FOR PREMIUM SECURITY	Brocade dual-purpose APs provide wireless traffic and dedicated dual-band sensing. This eliminates the need to purchase and manage a dedicated sensing infrastructure while providing a greener and more cost-effective approach to 24/7 security.			
IPSEC VPN	Supports DES, 3DES, AES-128, and AES-256 encryption, with site-to-site and client-to-site VPN capabilities.			
ROLE-BASED WIRED/WIRELESS FIREWALL	Role-based wired/wireless firewall (Layer 2-7) with stateful inspection for wired and wireless traffic; protects against IP spoofing and ARP cache poisoning.			
FAST ROAMING	Pre-emptive roaming; fast roaming with opportunistic channel scan; load balancing; Power Save Polling (PSP), Virtual AP and location-based access control.			
BEST RETURN ON INVESTMENT (ROI)—AND LOWEST TOTAL COST OF OWNERSHIP (TCO)				
INTEGRATED NETWORK SERVICES	Routing, security, and network services integration eliminates point products and appliances, saving significant CapEx and OpEx.			
EASE OF INSTALLATION	Controller provides centralized management for all Brocade Mobility APs deployed locally or remotely. Plug-and-play deployments over Layer 2 and Layer 3 networks.			
802.3AF/AT SUPPORT	Eliminates the cost of running power to each AP.			
MESH NETWORKING	Eliminates the cost of running Ethernet cabling to each AP.			

BROCADE QUICK REFERENCE GUIDE IP



NETWORK LAYER		ACCESS			AGGREGATION
BROCADE MODEL		BROCADE FCX SWITCH	BROCADE NETIRON® CES SWITCH	BROCADE TURBOIRON® 24X SWITCH	BROCADE VDX® 6710 SWITCH
DATA CENTER SWITCHING AND ROUTING	PART NUMBERS	FCX624-I/-E, FCX648-I/-E	NI-CES-2024C-AC/-DC, NI-CES-2024F-AC/-DC, NI-CES-2048C-AC/-DC, NI-CES-2048F-AC/-DC, NI-CES-2048CX-AC/-DC, NI-CES-2048FX-AC/-DC, NI-CES-2024C-4X-AC/-DC, NI-CES-2024F-4X-AC/-DC	TI-24X-AC	BR-VDX 6710-54-F/-R
	TYPICAL DEPLOYMENTS	<ul style="list-style-type: none"> Data center Top-of-rack 1 GbE server access iSCSI storage applications High performance computing 	<ul style="list-style-type: none"> Data center Top-of-rack 1 GbE server access Layer 3 virtualization Hosting solutions Content delivery networks 	<ul style="list-style-type: none"> Data center Top-of-rack 10 GbE server access Top-of-rack 1 GbE server access Data center aggregation High performance cluster computing 	<ul style="list-style-type: none"> Cost-effective 1 GbE fixed port switch with Brocade Virtual Cluster Switching (VCS®) Fabric technology
	INTERFACE SLOTS	1 (uplink)	1 (uplink)	N/A	N/A
	MAXIMUM PORTS	<ul style="list-style-type: none"> Up to 48 x 10/100/1000 MbE (RJ45) Up to 4 x 10 GbE (SFP+) 	<ul style="list-style-type: none"> Up to 48 x 10/100/1000 MbE (RJ45) Up to 48 x 100/1000 MbE (SFP) 4 x combination (SFP or RJ45) Up to 4 x 10 GbE (XFP/SFP+) 	<ul style="list-style-type: none"> 24 x 1/10 GbE (SFP/SFP+) 4 x 10/100/1000 MbE (RJ45) 	<ul style="list-style-type: none"> 48 x 1 GbE (RJ45) 6 x 1/10 GbE (SFP/SFP+)
	HARDWARE FEATURES	<ul style="list-style-type: none"> Up to 176 Gbps switching capacity Up to 132 Mpps forwarding capacity 1+1 redundant AC power supplies Hot-swappable power supplies 	<ul style="list-style-type: none"> Up to 136 Gbps switching capacity Up to 101 Mpps forwarding capacity Low latency Deep packet buffering 1+1 redundant AC/DC power supplies Hot-swappable power supplies Hot-swappable fan unit Front-to-back airflow 	<ul style="list-style-type: none"> Up to 488 Gbps switching capacity Up to 363 Mpps forwarding capacity Ultra-low latency (1.5 micro-second) 1+1 redundant AC power supplies Hot-swappable power supplies Hot-swappable fan unit Front-to-back airflow 	<ul style="list-style-type: none"> Up to 216 Gbps switching capacity, wire-speed on all ports ISL trunking in hardware Hot-swappable, redundant power and cooling Reversible front-to-back airflow
	MODULES AVAILABLE (INDIVIDUAL)	N/A	N/A	N/A	N/A
	MODULES AVAILABLE (SHARED)	<ul style="list-style-type: none"> 4-port 10 GbE SFP+ uplink module 4-port 1 GbE SFP uplink module 	<ul style="list-style-type: none"> 2-port 10 GbE XFP uplink module 2-port 10 GbE SFP+ uplink module 4-port 10 GbE SFP+ uplink module 	N/A	N/A
	HEIGHT	1 RU	1 RU	1 RU	1 RU
	MANAGEMENT MODULES	N/A	N/A	N/A	N/A
	SWITCH FABRIC MODULES	N/A	N/A	N/A	N/A
	AC POWER SUPPLIES	1 (base) + 1 (optional)	1 (base) + 1 (optional)	1 (base) + 1 (optional)	2 hot-swappable and redundant power supplies with integrated fans
	HOT-SWAPPABLE COMPONENTS	SFP/SFP+ transceivers, power supplies	SFP/XFP transceivers, power supplies, fan assembly	SFP/SFP+ transceivers, power supplies, fan assembly	SFP/SFP+ transceivers, power supplies with integrated fans
	HARDWARE OPTIONS (I)	N/A	N/A	N/A	N/A
	HARDWARE OPTIONS (S)	<ul style="list-style-type: none"> 210W AC power supply Rack mount kit (extra long ears) 	<ul style="list-style-type: none"> 500W AC/DC power supply 	<ul style="list-style-type: none"> 300W AC power supply 	<ul style="list-style-type: none"> 4-post fixed rack mount kit 2-post mid-rack mount kit
STANDARD SW	Advanced Layer 2 and enterprise Layer 3 including edge security, 802.1x, QoS and comprehensive hardware-based port and VLAN-based ACL policies.	Advanced Layer 2 and base Layer 3 including edge security, 802.1x, QoS and comprehensive hardware-based port and VLAN-based ACL policies.	Advanced Layer 2 and Layer 3 including QoS, 802.1x, BGP, and comprehensive hardware-based port and VLAN-based ACL policies.	<ul style="list-style-type: none"> Brocade VCS Fabric technology with multilayer multipathing Automatic migration of port profiles Full Layer 2 feature set VMware network automation VCS Logical Chassis Management Enhanced Layer 3 capabilities (eg BGP) 	
OPTIONAL SW	<ul style="list-style-type: none"> Advance Layer 3 license that includes BGP 	<ul style="list-style-type: none"> Full Layer 3 IPv4 upgrade including BGP-4, RIPv1/v2, OSPFv2, DVMRP, PIM Full metro upgrade including MPLS, VPLS, VLL, PBB 	N/A	<ul style="list-style-type: none"> VCS license 	
OTHER BASE FEATURES	<ul style="list-style-type: none"> Reversible front-to-back airflow Horizontal stacking (IronStack technology) 	N/A	<ul style="list-style-type: none"> Front-to-back airflow 	N/A	



NETWORK LAYER	AGGREGATION		
BROCADE MODEL	BROCADE VDX 6720 SWITCH	BROCADE VDX 6730 SWITCH	BROCADE VDX 6740 AND 6740T SWITCH
PART NUMBERS	BR-VDX6720-16-F/-R, BR-VDX6720-24-F/-R, BR-VDX6720-40-F/-R, BR-VDX6720-60-F/-R	BR-VDX6730-16-F/-R, BR-VDX6730-24-F/-R, BR-VDX6730-40-F/-R, BR-VDX6730-60-F/-R	BR-VDX6740-24-F/R, BR-VDX6740-48-F/R, BR-VDX6740-64-F/R, BR-VDX6740T-24-F/R, BR-VDX6740T-48-F/R, BR-VDX6740T-64-F/R
TYPICAL DEPLOYMENTS	<ul style="list-style-type: none"> 10 GbE fixed port switch with VCS fabric connectivity Scale-out Ethernet fabrics to flatten the network in virtualized data centers Converge storage traffic (FCoE, iSCSI) in the Ethernet fabric; multi-hop FCoE 	<ul style="list-style-type: none"> 10 GbE fixed port switch with VCS fabric connectivity Scale-out Ethernet fabrics to flatten the network in virtualized data centers Converge storage traffic (FCoE, iSCSI) in the Ethernet fabric; multi-hop FCoE Native FC ports bridging Brocade VCS Fabric technology to FC SAN 	<ul style="list-style-type: none"> 10 GbE fixed port top of rack switch with VCS fabric connectivity Scale-out Ethernet fabrics to flatten the network in virtualized data centers Converge storage traffic (FCoE, iSCSI) in the Ethernet fabric; multi-hop FCoE
INTERFACE SLOTS	N/A	N/A	N/A
MAXIMUM PORTS	<ul style="list-style-type: none"> Up to 24 x 1/10 GbE (SFP/SFP+) Up to 60 x 1/10 GbE (SFP/SFP+) 	6730-24: <ul style="list-style-type: none"> Up to 24 x 1/10 GbE and 8 x 8 Gbps FC ports (SFP/SFP+) 6730-60: <ul style="list-style-type: none"> Up to 60 1/10 GbE and 16 x 8 Gbps FC ports (SFP/SFP+) 	VDX 6740: <ul style="list-style-type: none"> Up to 64 x 1/10 GbE SFP/SFP+ 4 x 40 GbE QSFP+ VDX 6740T: <ul style="list-style-type: none"> 48 10 GbE BASET ports 4 x 40 GbE QSFP+ or 16 1/10 GbE SFP/SFP+ ports
HARDWARE FEATURES	<ul style="list-style-type: none"> Up to 1,200 Gbps switching capacity; wire-speed on all ports ISL trunking in hardware ports on demand Direct-attached copper and optical transceiver cabling options Hot-swappable, redundant power and cooling Reversible front-to-back airflow 	<ul style="list-style-type: none"> Up to 1,456 Gbps switching capacity; wire-speed on all ports ISL trunking in hardware Ports on demand Direct-attached copper and optical transceiver cabling options Hot-swappable, redundant power and cooling Reversible front-to-back airflow 	<ul style="list-style-type: none"> Up to 1.28 Tbps switching capacity; wire-speed on all ports ISL trunking in hardware Single ASIC design 1/10 GbE SFP+ 10 GbE BASET 40 GbE QSFP+ Direct-attached copper and optical transceiver cabling options Hot-swappable, redundant power and cooling Reversible front-to-back airflow Ports on demand
MODULES AVAILABLE (INDIVIDUAL)	N/A	N/A	N/A
MODULES AVAILABLE (SHARED)	N/A	N/A	N/A
HEIGHT	6720-16/-24: 1RU 6720-40/-60: 2RU	BR-VDX 6730-16/-24: 1RU BR-VDX 6730-40/-60: 2RU	BR-VDX 6740-24/-48/-64: 1 RU BR-VDX 6740T-24/-48/-64: 1 RU
MANAGEMENT MODULES	N/A	N/A	N/A
SWITCH FABRIC MODULES	N/A	N/A	N/A
AC POWER SUPPLIES	2 hot-swappable and redundant power supplies	2 hot-swappable and redundant power supplies	Two hot-swappable, load-sharing and redundant power supplies
HOT-SWAPPABLE COMPONENTS	BR-VDX 6720-16/-24: Integrated power/fans and SFP+ optics BR-VDX 6720-40/-60: Power supplies, fans, and SFP+ optics	BR-VDX 6730-16/-24: Integrated power/fans and SFP+ optics BR-VDX 6730-40/-60: Power supplies, fans, and SFP+ optics	VDX 6740: Power supplies and SFP+ optics VDX 6740T: Power supplies, fans, and SFP+ optics
HARDWARE OPTIONS (I)	N/A	N/A	N/A
HARDWARE OPTIONS (S)	<ul style="list-style-type: none"> 4-post fixed rack mount kit 2-post mid-rack mount kit 	<ul style="list-style-type: none"> 4-post fixed rack mount kit 2-post mid rack mount kit 	<ul style="list-style-type: none"> 4-post fixed rack mount kit 2-post mid rack mount kit
STANDARD SW	<ul style="list-style-type: none"> Brocade VCS Fabric technology Automatic migration of port profiles Full Layer 2 feature set VMware network automation VCS Logical Chassis Management Enhanced Layer 3 capabilities (eg BGP) 	<ul style="list-style-type: none"> Brocade VCS Fabric technology with multilayer multipathing Automatic migration of port profiles Full Layer 2 feature set VMware network automation VCS Logical Chassis Enhanced Layer 3 capabilities (eg BGP) 	<ul style="list-style-type: none"> Brocade VCS Fabric technology with multilayer multipathing Automatic migration of port profiles Full Layer 2 feature set Enhanced Layer 3 capabilities (eg BGP) VMware network automation VCS Logical Chassis Virtual Fabric Feature of VCS L3 multi-tenancy support, including VRF-Lite NAS Auto QoS VCS Gateway for NSX
OPTIONAL SW	<ul style="list-style-type: none"> Ports on demand licenses VCS license FCoE license 	<ul style="list-style-type: none"> Ports on demand licenses VCS license FCoE license 	<ul style="list-style-type: none"> Ports on demand licenses VCS license FCoE license
OTHER BASE FEATURES	N/A	N/A	N/A

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NETWORK LAYER	AGGREGATION	ACCESS/AGGREGATION	CORE
BROCADE MODEL	BROCADE VDX 8770	BROCADE ADX	BROCADE MLXe
PART NUMBERS	BR-VDX8770-4-BND-AC, BR-VDX8770-4-BND-DC, BR-VDX8770-8-BND-AC, BR-VDX8770-4-BND-DC	ADX 1000 Series: SI-1008-1, SI-1008F-1, SI-1016-2, SI-1016F-2, SI-1016-4, SI-1016F-4, SI-1216-4, SI-1216F-4 ADX 4000 Series: SI-4000, SI-4000-DC, SI-4000-PREM, SI-4000-ASM8-P-B, SI-4000-ASM4-P12-B ADX 10000 Series: SI-10000, SI-10000-DC, SI-10000-PREM Software License Upgrade Options for ADX 1000/1000F: ADX-1008-1-LIC-2PPLS, ADX-1016-2-LIC-4P, ADX-1016-2-LIC-4P10G, ADX-1016-4-LIC-10G, ADX-1K-1-2-LIC-SSL, ADX-1K-4-LIC-SSL, ADX-1K-LIC-PREM Software License Upgrade and Interchangeable Expansion Hardware Modules for ADX 4K and 10K: ADX-CH-LIC-PREM, SI-AEM-SSL, SI-ASM8, SI-MM, SI-MM-SSL, SI-SFM	BR-MLXe-4-MR2-M-AC/DC, BR-MLXe-4-MR2-X-AC/DC, BR-MLXe-4-MR-M-AC/DC, BR-MLXe-4-MR-X-AC/DC, BR-MLXe-8-MR2-M-AC/DC, BR-MLXe-8-MR2-X-AC/DC, BR-MLXe-8-MR-M-AC/DC, BR-MLXe-8-MR-X-AC/DC, BR-MLXe-16-MR2-M-AC/DC, BR-MLXe-16-MR2-X-AC/DC, BR-MLXe-16-MR-M-AC/DC, BR-MLXe-16-MR-X-AC/DC, BR-MLXe-32-MR2-M-AC/DC, BR-MLXe-32-MR2-X-AC/DC, BR-MLXe-32-MR-M-AC/DC, BR-MLXe-32-MR-X-AC/DC
TYPICAL DEPLOYMENTS	<ul style="list-style-type: none"> Data center Scale-out fabric Smaller scale VCS fabric configurations Medium scale VCS fabric configurations Large and very large VCS fabric configurations 	<ul style="list-style-type: none"> SP data center and service oriented IT and enterprise data center Layer 4 web and application load balancing Brocade Network Subscription (BNS) IPv6 migration/transition and Transparent Cache Switching (TCS) SSL offload/proxy DDoS and SYN protection Infrastructure applications, DNS/e-mail/AAA/firewall/cache Business continuity and disaster recovery 	<ul style="list-style-type: none"> Large multi-site enterprise Federal High-performance computing Research and education networks Healthcare Financial
INTERFACE SLOTS	<ul style="list-style-type: none"> 4 slot chassis – interface 1-4 8 slot chassis – interface 1-8 	2, n.A., n.A.	4, 8, 16, 32
MAXIMUM PORTS	VDX 8770-4: <ul style="list-style-type: none"> Up to 192 10 GbE ports, 48 40 GbE ports or a combination VDX 8770-8: <ul style="list-style-type: none"> Up to 384 10 GbE ports, 96 40 GbE ports or a combination 	Modular Platform (ADX 4000 and 10000): <ul style="list-style-type: none"> Up to 48 x 10/100/1000 Mbps (RJ45) Up to 48 x 1 Gbps fiber (SFP) Up to 16 x 10 Gbps (XFP) Fixed Platform (ADX 1000 and 1000F): <ul style="list-style-type: none"> Up to 16 x 10/100/1000 Mbps (RJ45) Up to 16 x 1 Gbps fiber (SFP) Up to 2 x 10 Gbps fiber (SFP+) 	<ul style="list-style-type: none"> Up to 1,536 x 10/100/1000 MbE (RJ45/RJ21) Up to 768 x 100/1000 MbE (SFP) Up to 768 x 10 GbE (XFP/SFP+) Up to 128 x 40 GbE (QSFP+) Up to 32 x 100 GbE (CFP)
HARDWARE FEATURES	<ul style="list-style-type: none"> Wire speed switching capacity on all ports ISL trunking in hardware 4 Tbps line-rate backplane design 1 GbE copper SFP 10 Gbps SFP+ 10 GbE SR and LR 40 GbE QSFP Hot-swappable power supply and fan tray Side-to-back airflow with front-to-back duct converter option on VDX 8770-4 and front-to-back airflow support for VDX 8770-8 	<ul style="list-style-type: none"> Up to 3 million L4 HTTP connections/sec Up to 70 Gbps L4 & L7 switching capacity Up to 32 tenants on multitenancy mode (virtualized mode in ADX) Up to 18 million DNS queries/sec Up to 320 Gbps raw switching Up to 120 million SYN protection/sec N+N redundant power supplies Hot-swappable fan unit 	<ul style="list-style-type: none"> Up to 15.36 Tbps switching capacity Up to 8.64 Bpps forwarding capacity Rear exhaust on all models Redundant management modules Redundant fabric modules M+N redundant power supplies Hot-swappable modules Hot-swappable power supplies Hot-swappable fan units
MODULES AVAILABLE (I)	<ul style="list-style-type: none"> 1 GbE: 48 x 1 GbE 10 GbE: 48 x 10 GbE 40 GbE: 12 x 40 GbE 	N/A	N/A
MODULES AVAILABLE (S)	<ul style="list-style-type: none"> Management module Switch fabric module 	<ul style="list-style-type: none"> Management module Application switch module Switch fabric module 12-port 10/100/100 Mbe RJ45 module 12-port 1 GbE SFP module 4-port 10 GbE XFP module New SSL module for connections with 2048-bit-key 	<ul style="list-style-type: none"> Management module High-speed switch fabric module 2-port 100 GbE module 4-port 40 GbE module 8-port 10 GbE SFP+ module (-D, -M, -X versions) 4-port 10 GbE XFP module 24-port 10 GbE SFP+ module (-DM version) 48-port 10/100/1000 Base-T, MRJ21 module 24-port 1 GbE (X) copper (RJ-45) module 24-port 1 GbE (X) fiber (SFP) module
HEIGHT	BR-VDX 8770-4-BND-AC: 8U BR-VDX 8770-4-BND-D: 8U BR-VDX 8770-8-BND-AC: 15U BR-VDX 8770-4-BND-DC: 15U	1, 4, 10 RU	MLXe-4: 5 RU MLXe-8: 7 RU MLXe-16: 14 RU MLXe-32: 33 RU
MANAGEMENT MODULES	BR-VDX 8770-MM1 supports RJ45 management port, USB port, console, AUX service port (RJ45 connector)	n.A./1/1 (base) + n.A./0/1 (optional, non-redundant)	1 (base) + 1 (optional)
SWITCH FABRIC MODULES	VDX 8770-4: supports up to 3 BR-VDX 8870-SM-1 modules VDX 8770-8: supports up to 6 BR-VDX 8870-SM-1 modules	n.A./1/2 (base)	2/2/3/7 (base) + 1/1/1/1 (optional)
AC POWER SUPPLIES	N/A	1/1/2 (base) + 1/1/2 (optional)	1/2/4/4 (base) + 2/2/4/4 (optional)
HOT-SWAPPABLE COMPONENTS	SFP/XFP transceivers, power supplies, fan assemblies, switch fabric modules, management modules, interface modules	SFP/XFP transceivers, power supplies, fan assemblies, interface modules	SFP/XFP transceivers, power supplies, fan assemblies, switch fabric modules, management modules, and interface modules.
HARDWARE OPTIONS (I)	<ul style="list-style-type: none"> 4 slot chassis (XBR-VDX 8770-4) 8 slot (XBR-VDX 8770-8) 	500W AC/DC power supply	<ul style="list-style-type: none"> 4-post rack mount kit (MLXe-4, -8, -16, -32) Mid-mount rack mount kit (MLXe-32)
HARDWARE OPTIONS (S)	<ul style="list-style-type: none"> Power supply unit (XBR-ACPWR-3000, XBR-BCPWR-3000) Fan FRU for 4 and 8 slot chassis 	1200W AC/DC power supply	<ul style="list-style-type: none"> 1200W AC/DC power supply 2400W AC/DC power supply
STANDARD SW	<ul style="list-style-type: none"> Brocade VCS Fabric technology with multilayer multipathing Automatic migration of port profiles Full Layer 2 feature set Enhanced Layer 3 capabilities (eg BGP) VMware network automation VCS Logical Chassis Virtual Fabric Feature of VCS L3 multi-tenancy support, including VRF-Lite NAS Auto QoS 	<ul style="list-style-type: none"> ADX hardware-based virtualization (multi-tenancy) Layer 2 (STP, RSTP, LACP, VLANs, 802.1q, Layer 3 capabilities routing (RIPv1/v2, Static), Layer 4-7 application delivery (SLB), L7 content inspection Brocade OpenScript engine Application health monitoring High-availability (active/active, active/passive) Multi-port binding and server group pools Comprehensive management (CLI, GUI, SNMP) Brocade Network Advisor and Application Resource Broker SOAP/XML API extensions and EBS and RoHS compliant 	<ul style="list-style-type: none"> Full Layer 3 MPLS +IPv4+IPv6 routing including BGP, OSPFv2/v3, ISIS, RIP, RIPvng, VRRP, VRRPE, PIM-SM/SSM/DM, MPLS, LDP, RSVP, VPLS, VLL, MPLS L3VPNs and multi-VRF, 6VPE Software-Defined Networking with OpenFlow support in Hybrid Port Mode
OPTIONAL SW	<ul style="list-style-type: none"> VCS fabric license FCoE license Layer 3 license 	<ul style="list-style-type: none"> Increased multi-tenancy capacity (for ADX 4000 and ADX 10000) Global Server Load Balancing (GSLB) Advanced Layer 3 routing, including OSPFv2 & v3, IS-IS, and multiprotocol BGP NAT64, SLB 446, SLB 664, SLB 666, dual stack (IPv4/IPv6) Full IPv6 Services Support (server load balancing services, OpenScript application scripting engine, CSW (Layer 7 content switching), SSL, GSLB, FWLB, Transparent Cache Switching (TCS), DNS, Layer 3 routing protocols) SSL proxy, SSL termination, 2048 bit key SSL encryption 	N/A
OTHER BASE FEATURES	N/A	<ul style="list-style-type: none"> Brocade Network Advisor Integration (BNA) Load Balancing as a Service (LBaaS) with (Apache) CloudStack Application Resource Broker (ARB) 	N/A

DATA CENTER SWITCHING AND ROUTING



NETWORK LAYER		WLAN CONTROLLERS			
BROCADE MODEL	BROCADE MOBILITY RFS4000	BROCADE MOBILITY RFS6000	BROCADE MOBILITY RFS7000	BROCADE MOBILITY RFS9510	
PRODUCT OVERVIEW	Tightly integrates wired, wireless, and network security features into a compact and easy-to-use form factor. It features an ExpressCard Slot for 3G WAN backhaul, enabling organizations to create survivable remote office networks using a single platform. Comprehensive software delivers advanced Layer 2 and Layer 3 networking services, onboard DHCP server, wired/wireless firewall, wireless IDS/IPS, AAA services, IP Security (IPsec) VPN gateway, Wi-Fi RFID locationing, QoS mechanisms for VDI, VoWLAN, and video services.	Provides a single platform capable of managing wireless data, voice, and video services for medium to large enterprises with 2,000 to 4,000 client devices. It delivers advanced capabilities such as Layer 2 and Layer 3 networking services, onboard DHCP server, wired/wireless firewall, wireless IDS/IPS, AAA services, IP Security (IPsec) VPN gateway, Wi-Fi RFID locationing, QoS mechanisms for VDI, VoWLAN, and video services, and an ExpressCard Slot for 3G WAN backhaul.	Provides a single platform capable of managing wireless data, voice, and video services for large enterprises with 8,000 to 16,000 client devices. It delivers advanced capabilities such as Layer 2 and Layer 3 networking services, onboard DHCP server, wired/wireless firewall, wireless IDS/IPS, AAA services, IP Security (IPsec) VPN gateway, Wi-Fi RFID locationing, QoS mechanisms for VDI, VoWLAN, and video services.	Provides a single platform for large, geographically dispersed Wireless LAN (WLAN) deployments, centrally manage up to 10,240 access points and 200,000 devices with centralized control, statistics aggregation for highly scalable mobility in enterprises and campuses distributed across small to medium-sized enterprise locations, Other services include DHCP/RADIUS/FTP services, and remote troubleshooting.	
GENERAL CHARACTERISTICS	<ul style="list-style-type: none"> Supports up to 6 Brocade Mobility 7131 802.11a/b/g/n access points and 12 per cluster Supports 24 WLANs/VLANs per AP Supports up to 2,000 clients per AP and 1,000 users per cluster ExpressCard slot for 3G/4G WWAN backhaul PCI/HIPAA/SOX capable out-of-the-box 	<ul style="list-style-type: none"> Supports up to 256 Brocade Mobility 7131 802.11a/b/g/n access points and 512 per cluster Supports 32 WLANs/VLANs per AP Supports up to 2,000 client per AP and 4,000 users per cluster ExpressCard slot for 3G/4G WWAN backhaul PCI/HIPAA/SOX capable out-of-the-box 	<ul style="list-style-type: none"> Supports up to 1024 Brocade Mobility 7131 802.11a/b/g/n access points and 2048 per cluster Supports 256 WLANs/VLANs per AP Supports up to 8,000 clients per AP and 16,000 users per cluster PCI/HIPAA/SOX capable out-of-the-box 	<ul style="list-style-type: none"> Supports up to 10,240 Brocade Mobility 802.11a/b/g/n access points, 200,000 devices Enables hot spot configuration and statistics aggregation 2 x 1TB hot-swappable HDs, 36GB RAM, 4 x 10GbE ports, Multithreaded CPU core DHCP/RADIUS/FTP services Remote troubleshooting 	
NON-BLOCKING 802.11N PERFORMANCE					
DIRECT FORWARDING	Standalone or controller-adopted APs that forward traffic directly to the next AP via the best-quality path, with full QoS and security, minimizing wired traffic, eliminating controller bottleneck or single point of failure, and accelerating applications.				
UNMATCHED RELIABILITY					
QOS	Voice prioritization; WMM-power save with TSPEC Admission Control; WMM U-APSD; Layer 1-4 packet classification; 802.1p VLAN priority; DiffServ/TOS; 802.11e; 802.11k; SVP, SIP CAC (call admission control).				
HIGH AVAILABILITY WITH CLUSTERING	Active; Standby; Active: Active and N+1 redundancy with access point and client load balancing for large deployments; critical resource monitoring.				
SMART RF	Network optimization to ensure user quality of experience at all times by dynamic adjustments to channel and power (on detection of RF interference or loss of RF coverage/neighbor recovery). Available for both thin APs and Adaptive APs.				
MESH NETWORKING	Stand-alone mesh; adaptive mesh; self-healing mesh failover; Layer 2 wired to mesh failover.				
LOAD BALANCING AND AP STEERING	AP licenses are shared between clustered controllers.				
3G/4G WAN BACKHAUL	Optional ExpressCard WWAN slot (card not included); WWAN feature license included.	Optional ExpressCard WWAN slot (card not included); WWAN feature license required.	N/A		
GAP-FREE SECURITY					
AUTHENTICATION	Access Control Lists (ACLs); pre-shared keys (PSK); 802.1x/EAP—transport layer security (TLS), tunneled transport layer security (TTLS), protected EAP (PEAP); Kerberos Integrated AAA/RADIUS Server with native support for EAP-TTLS, EAP-PEAP (includes a built-in user name/password database; supports LDAP), and EAP-SIM; local authentication database.				
ENCRYPTION	WEP 40/128 (RC4); WPA-TKIP; WPA2-CCMP (AES); 802.11i WPA2-TKIP; Multi Cipher support.				
IDS/IPS	Multimode rogue AP detection, rogue AP containment, 802.11n rogue detection, ad hoc network detection, Denial of Service (DoS) protection against wireless attacks, client blacklisting, excessive authentication/association; excessive probes; excessive disassociation/de-authentication; excessive decryption errors; excessive authentication failures; excessive 802.11 replay; excessive crypto IV failures (TKIP/CCMP replay); suspicious AP, authorized device in ad hoc mode, unauthorized AP using authorized SSID, EAP Flood, Fake AP Flood, ID theft, ad hoc advertising authorized SSID.				
GUEST ACCESS	Provides secure guest access for wired and wireless clients with built-in captive portal, customizable login/welcome pages, URL redirection for user login, usage-based charging, dynamic VLAN assignment of clients, DNS white list, GRE tunneling of traffic to central site, API support for interoperability with custom web portals (for example, Wandering Wi-Fi), Amigopod, support for external authentication and billing systems.				
24/7 MONITORING FOR PREMIUM SECURITY	Brocade dual-purpose APs provide wireless traffic and dedicated dual-band sensing. This eliminates the need to purchase and manage a dedicated sensing infrastructure while providing a greener and more cost-effective approach to 24/7 security.				
IPSEC VPN	Supports DES, 3DES, AES-128, and AES-256 encryption, with site-to-site and client-to-site VPN capabilities.	Supports DES, 3DES, AES-128, and AES-256 encryption, with site-to-site and client-to-site VPN capabilities. Supports 300 concurrent IPsec tunnels per controller without ADsec license, and 512 concurrent IPsec tunnels per controller with ADsec license.	Supports DES, 3DES, AES-128 and AES-256 encryption, with site-to-site and client-to-site VPN capabilities. Supports 512 concurrent IPsec tunnels per controller without ADsec license, and 1024 concurrent IPsec tunnels per controller with ADsec license.	Supports DES, 3DES, AES-128 and AES-256 encryption, with site-to-site and client-to-site VPN capabilities. Supports 512 concurrent IPsec tunnels per controller without ADsec license, and 1024 concurrent IPsec tunnels per controller with ADsec license.	
ROLE-BASED WIRED/WIRELESS FIREWALL	Role-based wired/wireless firewall (Layer 2-7) with stateful inspection for wired and wireless traffic; active firewall sessions—50,000 per controller and 600,000 per cluster; protects against IP spoofing and ARP cache poisoning. Advanced Security License for per user firewall included.	Role-based wired/wireless firewall (Layer 2-7) with stateful inspection for wired and wireless traffic; active firewall sessions—100,000 per controller and 1,200,000 per cluster; protects against IP spoofing and ARP cache poisoning. Per user firewall requires optional Advanced Security License.	Role-based wired/wireless firewall (Layer 2-7) with stateful inspection for wired and wireless traffic; active firewall sessions—205,000 per controller and 2,460,000 per cluster; protects against IP spoofing and ARP cache poisoning. Per user firewall requires optional Advanced Security License.	Role-based wired/wireless firewall (Layer 2-7) with stateful inspection for wired and wireless traffic; active firewall sessions—205,000 per controller and 2,460,000 per cluster; protects against IP spoofing and ARP cache poisoning. Per user firewall requires optional Advanced Security License.	
NAC SUPPORT	Integration with third-party systems from Microsoft, Symantec, and Bradford.				
GEOFENCING	Control or limit network or application access based on a user and their location.				
FAST ROAMING	Pre-emptive roaming; fast roaming with opportunistic channel scan; load balancing; Power Save Polling (PSP), Virtual AP and location-based access control.				
BEST RETURN ON INVESTMENT (ROI)—AND LOWEST TOTAL COST OF OWNERSHIP (TCO)					
INTEGRATED NETWORK SERVICES	PoE switching, AAA server, DHCP server, NAT, Guest Access Captive portal, RSSI-based triangulation for Wi-Fi assets, Wired/Wireless Firewall- all built-in with no additional cost.				
EASE OF INSTALLATION	Provides central management of Brocade Mobility Access Points deployed locally or at remote locations. Plug-and-play deployments over Layer 2 and Layer 3 networks.				
SMART LICENSING SHARING	Clustering capability allows for virtual license sharing among controllers to provide highly scalable and available networks.				

BROCADE QUICK REFERENCE GUIDE IP



NETWORK LAYER		ACCESS		AGGREGATION
BROCADE MODEL		BROCADE 6910 SWITCH	BROCADE NETIRON CES 2000 SWITCH	BROCADE NETIRON CER 2000 ROUTER
SERVICE PROVIDER NETWORK ROUTING	PART NUMBERS	BR-6910-EAS-ACBR-6910-EAS-DC, BR-6910-EAS-H-ACBR-6910-EAS-H-DC	NI-CES-2024C-AC/-DC, NI-CES-2024F-AC/-DC, NI-CES-2048C-AC/-DC, NI-CES-2048F-AC/-DC, NI-CES-2048CX-AC/-DC, NI-CES-2048FX-AC/-DC, NI-CES-2024C-4X-AC/-DC	NI-CER-2024C-AC, NI-CER2024C-ADVPREM-ACNI-CER-2024C-DC, NI-CER-2024C-ADVPREM-DCNI-CER-2024F-AC, NI-CER-2024F-ADVPREM-AC, NI-CER-2024F-DC, NI-CER-2024F-ADVPREM-DC, NI-CER-2048C-AC, NI-CER-2048C-ADVPREM-AC, NI-CER-2048C-DC, NI-CER-2048C-ADVPREM-DC, NI-CER-2048F-AC, NI-CER-2048F-ADVPREM-DC, NI-CER-2048F-DC, NI-CER-2048F-ADVPREM-DC, NI-CER-2048CX-AC, NI-CER-2048CX-ADVPREM-AC, NI-CER-2048CX-DC, NI-CER-2048CX-ADVPREM-DC, NI-CER-2048FX-AC, NI-CER-2048FX-ADVPREM-DC, NI-CER-2048FX-DC, NI-CER-2048FX-ADVPREM-DC, NI-CER-2024-2X10G, NI-CER-2024C-4X-DC, NI-CER-2024C-4X-AC, NI-CER-2024-ADVU, NI-CER-2048-ADVU. Advanced Scalability: NI-CER-2024C-RT-AC, NI-CER-2024C-RT-DC, NI-CER-2048C-RT-AC, NI-CER-2048C-RT-DC, NI-CER-2048CX-RT-AC, NI-CER-2048CX-RT-DC
	TYPICAL DEPLOYMENTS	<ul style="list-style-type: none"> Cell site switch for 4G backhaul and public safety networks Managed CPE device for business/enterprise services Access switch for Fiber-To-The-Home (FTTH) Layer 2 access switch for residential triple-play services 	<ul style="list-style-type: none"> Tier 2/3 Service Provider and MSO <ul style="list-style-type: none"> L2 VPN business services for metro access (QinQ, VPLS/VLL, PBB, G.8032 and OAM) Wireless back haul wholesale Internet access distribution/wholesale Regional SP/Power Utilities Remote Access Metro Ethernet Aggregation for multi-service FTTH (EPON/GPON/DSL,etc.) Data Center <ul style="list-style-type: none"> Cloud data center interconnect via L2VPN Data center wholesale connectivity 	<ul style="list-style-type: none"> Tier2/3 Service Provider and MSO <ul style="list-style-type: none"> Provider Edge Router (PE) in small/medium regions for L2/L3 VPN and internet access services BGP router reflector BGP peering Data Center <ul style="list-style-type: none"> BGP/OSPF border router BGP cloud internet peering
	INTERFACE SLOTS	N/A	1 (uplink)	1 (uplink)
	MAXIMUM PORTS	<ul style="list-style-type: none"> 12 x 10/100/1000 Base-T ports 12 x 100/1000 Base-X ports (SFP) 	<ul style="list-style-type: none"> Up to 48 x 10/100/1000 MbE (RJ45) Up to 48 x 100/1000 MbE (SFP) 4 x combination (SFP or RJ45) Up to 4 x 10 GbE (XFP, SFP+) 	<ul style="list-style-type: none"> Up to 48 x 10/100/1000 MbE (RJ45) Up to 48 x 100/1000 MbE (SFP) 4 x combination (SFP or RJ45) Up to 4 x 10 GbE (XFP, SFP+)
	HARDWARE FEATURES	<ul style="list-style-type: none"> Up to 24 Gbps forwarding capacity 8 Mbps of packet buffering 1+1 redundant AC/DC power supplies Fanless design 	<ul style="list-style-type: none"> Up to 136 Gbps switching capacity Up to 101 Mpps forwarding capacity Low latency Deep packet buffering 1+1 redundant AC/DC power supplies Hot-swappable power supplies Hot-swappable fan unit Front-to-back airflow 	<ul style="list-style-type: none"> Up to 136 Gbps switching capacity Up to 101 Mpps forwarding capacity Up to 1.5MM IPv4 FIB entries Low latency Deep packet buffering 1+1 redundant AC/DC power supplies Hot-swappable power supplies Hot-swappable fan unit Front-to-back airflow
	MODULES AVAILABLE (I)	N/A	N/A	N/A
	MODULES AVAILABLE (S)	N/A	<ul style="list-style-type: none"> 2-port 10 GbE uplink module 4-port 10 GbE uplink module 	<ul style="list-style-type: none"> 2-port 10 GbE uplink module 4-port 10 GbE uplink module
	HEIGHT	1 RU	1 RU	1 RU
	MANAGEMENT MODULES	N/A	N/A	N/A
	SWITCH FABRIC MODULES	N/A	N/A	N/A
	AC POWER SUPPLIES	2x (base)	1 (base) + 1 (optional)	1 (base) + 1 (optional)
	HOT-SWAPPABLE COMPONENTS	N/A	SFP/XFP transceivers, power supplies, fan assembly	SFP/XFP transceivers, power supplies, fan assembly
	HARDWARE OPTIONS (I)	N/A	N/A	N/A
	HARDWARE OPTIONS (S)	N/A	500W AC/DC power supply	500W AC/DC power supply
	STANDARD SW	<ul style="list-style-type: none"> Full Layer 2 features including Ethernet ring protection, spanning tree protocols, Virtual LAN (VLAN) tag translation, provider bridging, and IGMP snooping Layer 3 static routing for Internet connectivity 	<ul style="list-style-type: none"> Advanced Layer 2 and base Layer 3 including edge security, 802.1x, QoS and comprehensive hardware-based port and VLAN-based ACL policies 	Advanced Layer 2 and 3 functions: <ul style="list-style-type: none"> Full Layer 3, including RIP, OSPF, IS-IS, and BGP Virtual routing in non-MPLS environments through multi-VRF All classic Layer 2 capabilities QoS and ACLs Management through SNMP/CLI
OPTIONAL SW	N/A	<ul style="list-style-type: none"> Full Layer 3 IPv4 upgrade, including BGP-4, RIPv1/v2, OSPFv2, DVMRP, PIM Full metro upgrade, including MPLS, VPLS, VLL, PBB 	All functions in base plus: <ul style="list-style-type: none"> Multi-Protocol Label Switching (MPLS) Layer 2 VPNs using VPLS and VLLs Provider bridges (IEEE 802.1ad) Provider backbone bridges (IEEE 802.1ah) Connectivity fault management (IEEE 802.1ag) and Service OAM Ethernet service instance (ESI) framework 	
OTHER BASE FEATURES	N/A	N/A	N/A	



NETWORK LAYER	AGGREGATION	CORE
BROCADE MODEL	BROCADE SERVERIRON® ADX SWITCH	BROCADE MLXe CORE ROUTER
PART NUMBERS	BR-MLXE-4-MR2-M-AC/DC, BR-MLXE-4-MR2-X-AC/DC, BR-MLXE-4-MR-M-AC/DC, BR-MLXE-4-MR-X-AC/DC, BR-MLXE-8-MR2-M-AC/DC, BR-MLXE-8-MR2-X-AC/DC, BR-MLXE-8-MR-M-AC/DC, BR-MLXE-8-MR-X-AC/DC, BR-MLXE-16-MR2-M-AC/DC, BR-MLXE-16-MR2-X-AC/DC, BR-MLXE-16-MR-M-AC/DC, BR-MLXE-16-MR-X-AC/DC, BR-MLXE-32-MR2-M-AC/DC, BR-MLXE-32-MR2-X-AC/DC, BR-MLXE-32-MR-M-AC/DC, BR-MLXE-32-MR-X-AC/DC	BR-MLXE-4-MR2-M-AC/DC, BR-MLXE-4-MR2-X-AC/DC, BR-MLXE-4-MR-M-AC/DC, BR-MLXE-4-MR-X-AC/DC, BR-MLXE-8-MR2-M-AC/DC, BR-MLXE-8-MR2-X-AC/DC, BR-MLXE-8-MR-M-AC/DC, BR-MLXE-8-MR-X-AC/DC, BR-MLXE-16-MR2-M-AC/DC, BR-MLXE-16-MR2-X-AC/DC, BR-MLXE-16-MR-M-AC/DC, BR-MLXE-16-MR-X-AC/DC, BR-MLXE-32-MR2-M-AC/DC, BR-MLXE-32-MR2-X-AC/DC, BR-MLXE-32-MR-M-AC/DC, BR-MLXE-32-MR-X-AC/DC
TYPICAL DEPLOYMENTS	<ul style="list-style-type: none"> • SP (cloud, carrier, mobile, content provider) data center • Enterprise data center • High performance, low latency application delivery • IPv6 transition • SSL offload • Infrastructure applications - DNS/e-mail/AAA/firewall/cache 	<ul style="list-style-type: none"> • Transit • Cloud and hosting providers • Internet Exchange Provider (IXP) • Cable MSO • Content Delivery Network (CDN) • Web 2.0 • Regional Service Providers • Federal • High performance computing • Research networks
INTERFACE SLOTS	0, 2, 4	4, 8, 16, 32
MAXIMUM PORTS	Fixed platform (1000): <ul style="list-style-type: none"> • Up to 16 x 10/100/1000 Mbps (RJ45) • Up to 16 x 1 Gbps fiber (SFP) • Up to 2 x 10 Gbps fiber (XFP/SFP+) Modular platform (4000 and 10000): <ul style="list-style-type: none"> • Up to 48 x 10/100/1000 Mbps (RJ45) • Up to 48 x 1 Gbps fiber (SFP) • Up to 16 x 10 Gbps (XFP) 	<ul style="list-style-type: none"> • Up to 1,536 x 10/100/1000 MbE (RJ45/RJ21) • Up to 768 x 100/1000 MbE (SFP) • Up to 768 x 10 GbE (XFP/SFP+) • Up to 128 x 40 GbE (QSFP+) • Up to 32 x 100 GbE (CFP)
HARDWARE FEATURES	<ul style="list-style-type: none"> • Up to 3 million L4 HTTP connections/sec • Up to 70 Gbps L4 & L7 switching capacity • Up to 18 million DNS queries/sec • Up to 320 Gbps raw switching • Up to 120 million SYN protection/sec • N+N redundant power supplies • Hot-swappable fan unit 	<ul style="list-style-type: none"> • Up to 15.36 Tbps switching capacity • Up to 8.64 Bpps forwarding capacity • Rear exhaust on all models • Redundant management modules • Redundant fabric modules • M+N redundant power supplies • Hot-swappable modules • Hot-swappable power supplies • Hot-swappable fan units
MODULES AVAILABLE (INDIVIDUAL)	N/A	N/A
MODULES AVAILABLE (SHARED)	ADX 4000 and 10000: <ul style="list-style-type: none"> • Management module • Application switch module • Switch fabric module • 12-port 10/100/100 MbE RJ45 module • 12-port 1 GbE SFP module • 4-port 10 GbE XFP module 	<ul style="list-style-type: none"> • Management module • High-speed switch fabric module • 2-port 100 GbE module • 4-port 40 GbE module • 8-port 10 GbE SFP+ module (-D, -M, -X versions) • 4-port 10 GbE XFP module • 24-port 10 GbE SFP+ module (-DM version) • 48-port 10/100/1000 Base-T, MRJ21 module • 24-port 1 GbE (X) copper (RJ-45) module • 24-port 1 GbE (X) fiber (SFP) module
HEIGHT	1, 4, 10 RU	5, 7, 14, 33 RU
MANAGEMENT MODULES	0/1/1 (base) + 0/0/1 (optional, non-redundant)	1 (base) + 1 (optional)
SWITCH FABRIC MODULES	0/1/2 (base)	2/2/3/7 (base) + 1/1/1/1 (optional)
AC POWER SUPPLIES	1/1/2 (base) + 1/1/2 (optional)	1/2/4/4 (base) + 2/2/4/4 (optional)
HOT-SWAPPABLE COMPONENTS	SFP/XFP transceivers, power supplies, fan assemblies, interface modules.	SFP/XFP transceivers, power supplies, fan assemblies, switch fabric modules, management modules, and interface modules.
HARDWARE OPTIONS (I)	• 500W AC/DC power supply	<ul style="list-style-type: none"> • 4-post rack mount kit (MLXe-4, -8, -16, -32) • Mid-mount rack mount kit (MLXe-32)
HARDWARE OPTIONS (S)	• 1200W AC/DC power supply	<ul style="list-style-type: none"> • 1200W AC/DC power supply • 2400W AC/DC power supply
STANDARD SW	<ul style="list-style-type: none"> • Layer 2, L3 routing (RIPv1/v2, Static) • Layer 4-7 Application delivery (SLB), Graphical User Interface (GUI) management, XML API extensions, and hot-standby HA 	<ul style="list-style-type: none"> • Full Layer 3 MPLS+IPv4+IPv6 routing including BGP, OSPFv2/v3, ISIS, RIP, RIPng, VRRP, VRRPE, PIM-SM/SSM/DM, MPLS, LDP, RSVP, VPLS, VLL, MPLS L3 VPNs and multi-VRF • Software-Defined Networking with OpenFlow support
OPTIONAL SW	<ul style="list-style-type: none"> • Layer 3 routing including RIPv1/v2, OSPFv2 and v3, IS-IS, Static, and BGP, Global Server Load Balancing (GSLB) • IPv6 NAT64, IPv6 SLB, OpenSymmetric active-standby HA, symmetric active-active HA, multi-port binding, server group pools • SSL offload and acceleration, SYN and DDoS protection 	N/A
OTHER BASE FEATURES	Application Resource Broker (ARB) for integrated management in heterogeneous virtualization environment	N/A

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