



Juniper 1Gb EX2200 Ethernet Switch for IBM System x satisfies connectivity requirements of high-performance businesses

Table of contents

1 Overview	8 Technical information
2 Planned availability date	17 Terms and conditions
2 Description	22 Prices
4 Product number	29 Order now
8 Publications	30 Corrections

At a glance

Four new models of the Juniper 1Gb EX2200 Ethernet Switch for IBM® System x® (6630):

- Juniper 24 Port 1Gb EX2200 Ethernet Switch for IBM System x - 6630-HC1, (HVEC 6630010)
- Juniper 24 Port 1Gb EX2200 Ethernet Switch with PoE for IBM System x - 6630-HC2, (HVEC 6630011)
- Juniper 48 Port 1Gb EX2200 Ethernet Switch for IBM System x - 6630-HC3 (HVEC 6630012)
- Juniper 48 Port 1Gb EX2200 Ethernet Switch with PoE for IBM System x - 6630-HC4, (HVEC 6630013)

These new models offer:

- 24 or 48 ports of Gigabit Ethernet
- PoE and non-PoE versions of both switches
- Consistent modular JUNOS control plane feature implementation
- Single management interface

For ordering, contact your IBM representative, an IBM Business Partner, or IBM Americas Call Centers at 800-IBM-CALL (Reference: YE001).

Overview

Featuring complete Layer 2 and basic Layer 3 switching capabilities, the Juniper 1Gb EX2200 Ethernet Switch line of fixed configuration Ethernet switches satisfies the branch and low-density wiring closet connectivity requirements of today's high-performance businesses. Four platform configurations are available offering 24 and 48 10/100/1000BASE-T ports with or without Power over Ethernet (PoE). The PoE-enabled EX2200 models include a maximum system budget of 405 watts to deliver up to 15.4 watts of standards-based 802.3af Class 3 PoE or 30 watts of standards-based 802.3at PoE+ for supporting networked devices such as telephones, video cameras, multiple radio IEEE 802.11n wireless LAN (WLAN) access points, and video phones in converged networks.

Additional features include:

- Four front panel small form-factor pluggable transceiver (SFP) GbE uplink ports provide high-speed connectivity to aggregation layer switches or other upstream devices.
- Fixed power supply and uplink ports ensure operational simplicity.
- Low power consumption, low-acoustic fans, and small 10-inch wide footprint enable flexible, environmentally friendly deployment.
- Support for L2 protocols as well as L3 protocols such as RIP and static routing in base license.
- Single release train for Junos operating system ensures consistent control plane feature implementation.
- Modular Junos OS prevents a switch reboot if a single protocol feature fails.
- Integration with Unified Access Control to provide per-user access control and policing.
- Built-in web interface (J-Web Software).

Feature exchange

None

Planned availability date

February 4, 2011:

U.S.A. includes U.S. Territories: Puerto Rico, U.S. Virgin Islands, Northern Mariana, and Guam.

Description

The Juniper 1Gb EX2200 line of Ethernet switches offers a compact, high-performance solution for supporting today's converged network access deployments.

Each EX2200 switch includes an application-specific integrated circuit (ASIC)-based Packet Forwarding Engine (PFE) with an integrated CPU to consistently deliver wire-rate forwarding, even with all control plane features enabled. Based on existing, field proven technology, the PFE brings the same level of carrier-class performance and reliability to the EX2200 switches that IBM Ethernet j-type routers bring to the world's largest service provider networks.

Architecture and key components

The Juniper EX2200 occupies a single rack unit, delivering a compact solution for crowded wiring closets and access locations where space and power are at a premium. The EX2200 switch's 10-inch depth and low acoustics also make it ideal for open office deployments.

Each EX2200 switch supports either 24 or 48 ports of copper-based GbE ports (RJ45), and four fixed front panel GbE optical uplink ports that use SFPs with pluggable optics (purchased separately) for high-speed backbone or link aggregation connections between wiring closets and upstream aggregation switches. All ports can be supported simultaneously, making the total number of connections 28 or 52 ports. The EX2200 also features a front panel mode button that offers a simple interface for bringing devices up and selecting LED modes.

High availability features

- Redundant Trunk Group (RTG): To avoid the complexities of the Spanning tree protocol, the EX2200 employs a redundant trunk group to provide the necessary port redundancy and simplify switch configuration.
- Power resiliency through external redundant power supply: The EX2200 supports an optional redundant power supply (RPS) unit which provides power resiliency.

A dedicated rear panel RJ-45 Ethernet port is available for out-of-band management, while a rear panel USB port can be used to easily upload the Junos operating system and configuration files.

Junos operating system

The Juniper 1Gb EX2200 Ethernet Switch for System x runs the same Junos OS used by other j-type Ethernet Switches and all of the j-type routers; j-type delivers a consistent implementation and operation of control plane features across all products. To maintain that consistency, Junos OS adheres to a highly disciplined development process that uses a single source code, follows a single quarterly release train, and employs a highly available modular architecture that prevents isolated failures from bringing down an entire system.

These attributes are fundamental to the core value of the software, enabling all Junos OS-powered products to be updated simultaneously with the same software release. All features are fully regression-tested, making each new release a true superset of the previous version; customers can deploy the software with complete confidence that all existing capabilities will be maintained and operate in the same way.

Converged environments

The EX2200 provides the highest levels of flexibility and features in its class for the most demanding converged data, voice, and video environments, delivering a reliable platform for unifying enterprise communications.

By providing a full 15.4 watts of Class 3 PoE to VoIP telephones, closed-circuit security cameras, wireless access points, and other IP-enabled devices, the EX2200 delivers a solution for converging disparate networks onto a single IP infrastructure well into the future. The EX2200 PoE switches also support 802.3at standards-based PoE+ for powering networked devices such as multiple radio IEEE 802.11n wireless access points, and video phones that may require more power than available with IEEE 802.3af.

To ease deployment, the EX2200 supports the industry-standard Link Layer Discovery Protocol (LLDP) and LLDP-Media Endpoint Discovery (LLDP-MED) protocol, enabling the switches to automatically discover Ethernet-enabled devices, determine their power requirements, and assign virtual LAN (VLAN) membership.

In addition, the EX2200 supports rich quality-of-service (QoS) functionality for prioritizing data, voice, and video traffic. The switches support eight class-of-service (CoS) queues on every port, enabling them to maintain multilevel, end-to-end traffic prioritizations. The EX2200 also supports a wide range of policy options, including strict priority, low-latency, weighted random early detection (WRED), and shaped deficit weighted round-robin (SDWRR) queuing.

Features of Ethernet SFP Transceivers

- 1GE COPPER RJ-45 100M SFP (45W4475): This feature provides one 10/100/1000BASE-T SFP with RJ-45 connector. Supports up to 100 m over unshielded twisted pair.
- SFP 100BASE-FX; LC connector; 1310 nm; 2 km reach on multimode fiber.
- SFP 100BASE-BX; LC Connector; TX 1310 nm/rx1550 nm; 20 km reach on single strand, single-mode fiber.
- SFP 100 BASE-BX; LC Connector; TX 1550 nm/rx 1310 nm; 20 km reach on single-strand, single mode fiber.
- SFP 1000Base-SX; LC connector; 850 nm, 550 m reach on multimode fiber.
- SFP 1000Base-LX; LC connector; 1310 nm, 10 km reach on single mode fiber.
- SFP 1000BASE-LH; LC connector; 1550 nm, 70 km reach on single mode fiber.

Product number

The following are newly announced features on the specified models of the IBM xSeries® 6630 machine type.

Description	MT	Model	Feature
6630-HC1	6630	HC1	
6630-HC2	6630	HC2	
6630-HC3	6630	HC3	
6630-HC4	6630	HC4	
EMEA Long Leadtime Configurations	6630	HC1	1763
		HC2	
		HC3	
		HC4	
Hungary CHW plant 9SH	6630	HC1	1764
		HC2	
		HC3	
		HC4	
Guad CHW plant 9KQ	6630	HC1	1765
		HC2	
		HC3	
		HC4	
ISTC CHW 9K2	6630	HC1	1766
		HC2	
		HC3	
		HC4	
RTP CHW 9NR	6630	HC1	1767
		HC2	
		HC3	
		HC4	
Offload Manufacturing to Guadalajara HVEC	6630	HC1	1768
		HC2	
		HC3	
		HC4	
Offload Manufacturing to RTP HVEC	6630	HC1	1769
		HC2	
		HC3	
		HC4	
Offload Manufacturing to ISTC	6630	HC1	1770
		HC2	
		HC3	
		HC4	
Capacity Scheduling Service	6630	HC1	1772
		HC2	
		HC3	
		HC4	
Custom SLA Scheduling Service	6630	HC1	1796
		HC2	
		HC3	
		HC4	
Custom Asset Tagging - Standard	6630	HC1	2200
		HC2	
		HC3	
		HC4	
Custom Asset Tagging - Enhanced	6630	HC1	2201
		HC2	
		HC3	
		HC4	
Request for Global Trade Number (UPC or EAN)	6630	HC1	2207
		HC2	
		HC3	
		HC4	
Custom Labeling	6630	HC1	2220
		HC2	
		HC3	
		HC4	
Custom Palletization	6630	HC1	2221
		HC2	

Request for a new Vendor Logo Hardware	6630	HC3 HC4 HC1	2247
Request for an existing IBM Feature	6630	HC2 HC3 HC4 HC1	2248
Request for an existing Public RPQ	6630	HC2 HC3 HC4 HC1	2249
Department of Defense UID Label	6630	HC2 HC3 HC4 HC1	2320
0.6m Yellow Cat5e Cable	6630	HC2 HC3 HC4 HC1	3791
1.5m Yellow Cat5e Cable	6630	HC2 HC3 HC4 HC1	3792
3m Yellow Cat5e Cable	6630	HC2 HC3 HC4 HC1	3793
10m Yellow Cat5e Cable	6630	HC2 HC3 HC4 HC1	3794
25m Yellow Cat5e Cable	6630	HC2 HC3 HC4 HC1	3795
0.6m Green Cat5e Cable	6630	HC2 HC3 HC4 HC1	3796
1.5m Green Cat5e Cable	6630	HC2 HC3 HC4 HC1	3797
3m Green Cat5e Cable	6630	HC2 HC3 HC4 HC1	3798
10m Green Cat5e Cable	6630	HC2 HC3 HC4 HC1	3799
25m Green Cat5e Cable	6630	HC2 HC3 HC4 HC1	3800
0.6m Blue Cat5e Cable	6630	HC2 HC3 HC4 HC1	3801
1.5m Blue Cat5e Cable	6630	HC2 HC3 HC4 HC1	3802
3m Blue Cat5e Cable	6630	HC2 HC3 HC4 HC1	3803
10m Blue Cat5e Cable	6630	HC2 HC3 HC4 HC1	3804

25m Blue Cat5e Cable	6630	HC1 HC2 HC3 HC4	3805
2.8m, 10A/100-250V, C13 to IEC 320-C20 Rack Power Cable	6630	HC1 HC2 HC3 HC4	6204
Line cord - 4.3M, 10A/125V, C13 to NEMA 5-15P (US)	6630	HC1 HC2 HC3 HC4	6207
4.3m, 10A/100-250V, C13 to IEC 320-C14 Rack Power Cable	6630	HC1 HC2 HC3 HC4	6263
2.8m, 10A/100-250V, C13 to IEC 320-C14 Rack Power Cable	6630	HC1 HC2 HC3 HC4	6311
Line cord - 2.8m, 10A/250V, C13 to NEMA 6-15P (US)	6630	HC1 HC2 HC3 HC4	6372
Customer Solution Center Services	6630	HC1 HC2 HC3 HC4	7831
Consolidate Shipment	6630	HC1 HC2 HC3 HC4	8031
TAA Compliant Order	6630	HC1 HC2 HC3 HC4	8067
Ship Uninstalled (Safety)	6630	HC1 HC2 HC3 HC4	8972
IBM Ethernet Switch J22E-24	6630	HC1	A13L
IBM Ethernet Switch J22E-24P	6630	HC2	A13M
IBM Ethernet Switch J22E-48	6630	HC3	A13N
IBM Ethernet Switch J22E-48P	6630	HC4	A13P
1GE Copper RJ-45 100m SFP	6630	HC1 HC2 HC3 HC4	
1000B-LX GbE 1310nm 10km SFP	6630	HC1 HC2 HC3 HC4	
100B-FX 100Mb 1310nm 2km SFP	6630	HC1 HC2 HC3 HC4	
1000B-SX GbE 850nm 550m SFP	6630	HC1 HC2 HC3 HC4	
1000B-LH GbE 1550nm 70km SFP	6630	HC1 HC2 HC3	

			HC4
100BASE-BX, TX1310nm/RX1550 nm 20km SM SFP	6630	HC1 HC2 HC3 HC4	
100BASE-BX, TX1550nm/RX1310 nm 20km SM SFP	6630	HC1 HC2 HC3 HC4	
1m LC-LC Fiber Cable (networking)	6630	HC1 HC2 HC3 HC4	
5m LC-LC Fiber Cable (networking)	6630	HC1 HC2 HC3 HC4	
25m LC-LC Fiber Cable (networking)	6630	HC1 HC2 HC3 HC4	

SEO
number Description

6630010	Juniper 24 Port 1Gb EX2200 Ethernet Switch for IBM System x
6630011	Juniper 24 Port 1Gb EX2200 Ethernet Switch with PoE for IBM System x
6630012	Juniper 48 Port 1Gb EX2200 Ethernet Switch for IBM System x
6630013	Juniper 48 Port 1Gb EX2200 Ethernet Switch with PoE for IBM System x

Options

SEO
number Description

88Y6839	1000B-LX GbE 1310nm 10km SFP
88Y6830	100B-FX 100Mb 1310nm 2km SFP
88Y6836	1000B-SX GbE 850nm 550m SFP
88Y6842	1000B-LH GbE 1550nm 70km SFP
88Y6845	100BASE-BX, TX1310nm/RX1550 nm 20km SM SFP
88Y6848	100BASE-BX, TX1550nm/RX1310 nm 20km SM SFP
88Y6851	1m LC-LC Fiber Cable (networking)
88Y6854	5m LC-LC Fiber Cable (networking)
88Y6857	25m LC-LC Fiber Cable (networking)
88Y6833	1GE Copper RJ-45 100m SFP

Business Partner information

If you are a Direct Reseller - System Reseller acquiring products from IBM, you may link directly to Business Partner information for this announcement. A PartnerWorld® ID and password are required (use IBM ID).

<https://www.ibm.com/partnerworld/mem/sla.jsp?num=110-252>

Publications

None

Services

Global Technology Services

IBM services include business consulting, outsourcing, hosting services, applications, and other technology management.

These services help you learn about, plan, install, manage, or optimize your IT infrastructure to be an On Demand Business. They can help you integrate your high-speed networks, storage systems, application servers, wireless protocols, and an array of platforms, middleware, and communications software for IBM and many non-IBM offerings. IBM is your one-stop shop for IT support needs.

For details on available services, contact your IBM representative or visit

<http://www.ibm.com/services/>

For details on available IBM Business Continuity and Recovery Services, contact your IBM representative or visit

<http://www.ibm.com/services/continuity>

For details on education offerings related to specific products, visit

<http://www.ibm.com/services/learning/index.html>

Select your country, and then select the product as the category.

Technical information

Specified operating environment

Physical specifications

The base model of the Juniper 1Gb EX2200 Ethernet Switch consists of the following components:

- Juniper 24 Port 1Gb EX2200 Ethernet Switch for System x
 - Twenty-four 10/100/1000BASE-T Ethernet ports
 - Four SFP Gigabit Ethernet uplink ports
- Juniper 24 Port 1Gb EX2200 Ethernet Switch with PoE for System x
 - Twenty-four 10/100/1000BASE-T Ethernet ports with PoE
 - Four SFP Gigabit Ethernet uplink ports
- Juniper 48 Port 1Gb EX2200 Ethernet Switch for System x
 - Forty-eight 10/100/1000BASE-T Ethernet ports
 - Four SFP Gigabit Ethernet uplink ports
- Juniper 48 Port 1Gb EX2200 Ethernet Switch with PoE for System x
 - 48 10/100/1000BASE-T Ethernet ports with PoE
 - 4 SFP Gigabit Ethernet uplink ports

Optional features:

- SFP Transceivers

- Cables
- Power cords
- L3 Software Upgrade (Roadmap Item)

Dimensions

- Height: 1.75 in (4.45 cm); 1U
- Width: 17.4 in (44.1 cm) for desktop installations
- Width: 17.5 in (44.6 cm) with rack mount brackets
- Depth: 10 in (25.43 cm)
- Weight:
 - 24 port - 6 lb (2.7 kg)
 - 24 port with PE - 8 lb (3.6 kg)
 - 48 port - 8 lb (3.6 kg)
 - 48 port with PoE - 10 lb (4.5 kg)

Power consumption

	24 port	24 port	48 port	48 port
Maximum System Power Consumption	50W	PoE 60W	76W	PoE 91W
Total PoE Power Budget	0	405W	0	405W

Operating environment

- Operating temperature: 32° F to 113° F (0° C to 45° C)
- Storage temperature: -40° F to 158° F (-40° C to 70° C)
- Operating altitude: up to 10,000 ft (3,049 m)
- Non-operating altitude: up to 16,000 ft (4,877 m)
- Relative humidity operating: 10% to 85% (noncondensing)
- Relative humidity non-operating: 0% to 95% (noncondensing)

Cooling

- Field-replaceable fan tray with multiple blowers
- Switch remains operational even if one blower fails

Standards

Safety Certifications

- UL-UL60950-1 (First Edition)
- C-UL to CAN/CSA 22.2 No.60950-1 (First Edition)
- TUV/GS to EN 60950-1, Amendment A1-A4, A11
- CB-IEC60950-1, all country deviations

Electromagnetic Compatibility Certifications

- FCC 47CFR Part 15 Class A
- EN 55022 Class A
- ICES-003 Class A
- VCCI Class A
- AS/NZS CISPR 22 Class A
- CISPR 22 Class A
- EN 55024

- EN 300386
- CE

NEBS

- GR-63-Core: NEBS, Physical Protection
- GR-1089-Core: EMC and Electrical Safety for Network Telecommunications Equipment
- Non PoE models: 24 port and 48 port

Environmental

- Reduction of Hazardous Substances (ROHS) 6

The IBM Ethernet products in this announcement are not approved to be sold for connecting to the public telecommunication networks in all countries.

Homologation certificates and telecommunication certificates and approvals are in place, or are not required, for the following list of countries. For any country not listed below, IBM is not currently in a position to ship to that country due to homologation and or telecommunication activities not being completed for that country. IBM continues working to obtain approval to connect to public telecommunication networks in the currently restricted countries. Availability will be published in the future.

Acores
 Argentina
 Aruba
 Australia
 Austria
 Bangladesh
 Belgium
 Bermuda
 Bolivia
 Brazil
 British Virgin Islands
 Bulgaria
 Canada
 Canarias
 Chile
 China
 Colombia
 Costa Rica
 Croatia
 Cyprus
 Czech Republic
 Denmark
 Dominican Republic
 Ecuador
 Egypt
 El Salvador
 Estonia
 Finland
 France
 Georgia
 Germany
 Gibraltar
 Greece
 Greenland
 Guadeloupe
 Guam
 Guyane
 Hong Kong
 Hungary
 Iceland
 India
 Indonesia
 Ireland
 Israel

Italy
Jamaica
Japan
Latvia
Leichtenstein
Lithuania
Luxembourg
Macau
Madeira
Malaysia
Malta
Martinique
Mexico
Monaco
Morocco
Netherlands
Netherlands Antilles
New Zealand
Northern Mariana
Norway
Oman
Pakistan
Panama
Paraguay
Peru
Philippines
Poland
Portugal
Puerto Rico
Qatar
Reunion
Romania
Russia
Saudi Arabia
Singapore
Slovakia
Slovenia
South Korea
Spain
Sweden
Switzerland
Taiwan
Turkey
UK
Unites States
Uruguay
U.S. Virgin Islands
Venezuela
Yemen

In Japan, customers need to notify their telecommunication service provider of their intent to attach any of the networking products in this announcement to the public telephone network. Such notification should include a detailed description of the product to be used, date and time of installation, and a completed public telecommunications networks service request form.

Compatibility

Supported servers

The Juniper 1Gb EX2200 Ethernet Switch for System x is designed to support network connectivity for the following servers:

- IBM Power Systems™
- IBM System p® servers
- IBM System i® servers
- IBM System x servers

Planning information

Hardware

- Switching Engine Model: Store and forward
- DRAM: 512 MB
- Flash: 1 GB
- CPU: 800 MHz ARM CPU
- GbE port density per system:
 - 24 port: 28 (24 host ports plus four-port GbE uplinks)
 - 48 port: 52 (48 host ports plus four-port GbE uplinks)

Optics

- 10/100/1000BASE-T connector type RJ-45.
- 1 GE COPPER RJ-45 100M SFP (45W4475): This feature provides one 10/100/1000BASE-T SFP with RJ-45 connector. Supports up to 100 m over unshielded twisted pair.
- SFP 100BASE-FX; LC connector; 1310 nm; 2 km reach on multimode fiber.
- SFP 100BASE-BX; LC Connector; TX 1310 nm/rx1550 nm; 20 km reach on single strand, single-mode fiber.
- SFP 100 BASE-BX; LC Connector; TX 1550 nm/rx 1310 nm; 20 km reach on single-strand, single mode fiber.
- SFP 1000Base-SX; LC connector; 850 nm; 550 m reach on multimode fiber.
- SFP 1000Base-LX; LC connector; 1310 nm; 10 km reach on single mode fiber.
- SFP 1000BASE-LH; LC connector; 1550 nm; 70 km reach on single mode fiber.

Physical layer

- Physical port redundancy: Redundant Trunk Group (RTG)
- Time-domain reflectometry (TDR) for detecting cable breaks and shorts
- Auto MDI/MDIX (medium-dependent interface/medium-dependent interface crossover) support
- Port speed downshift/setting maximum advertised speed on 10/100/1000BASE-T ports

Packet switching capacities

- 24 port: 56 Gbps
- 48 port: 104 Gbps Layer 2 Throughput (Mpps)
- 24 port: 41.7 Mpps (wire speed)
- 48 port: 77.4 Mpps (wire speed) Layer 2 Switching
- Maximum MAC addresses per system: 8,000
- Static MAC entries: 8,000
- Jumbo frames: 9216 bytes
- Number of VLANs: 1,024
- Port-based VLAN
- MAC-based VLAN
- Voice VLAN
- Compatible with Per-VLAN Spanning Tree Plus (PVST+)
- RVI (Routed VLAN Interface)
- IEEE 802.1AB: Link Layer Discovery Protocol (LLDP)
- LLDP-MED with VoIP integration

- IEEE 802.1D: Spanning Tree Protocol
- IEEE 802.1p: CoS prioritization
- IEEE 802.1Q: VLAN tagging
- IEEE 802.1s: Multiple Spanning Tree Protocol (MSTP)
- Number of MST instances supported: 64
- IEEE 802.1w: Rapid Spanning Tree Protocol (RSTP)
- IEEE 802.1X: Port Access Control
- IEEE 802.3: 10BASE-T
- IEEE 802.3u: 100BASE-T
- IEEE 802.3ab: 1000BASE-T
- IEEE 802.3z: 1000BASE-X
- IEEE 802.3af: PoE
- IEEE 802.3at: PoE+
- IEEE 802.3x: Pause Frames/Flow Control
- IEEE 802.3ad: Link Aggregation Control Protocol (LACP)

Layer 3 features: IPv4

- Maximum number of Address Resolution Protocol (ARP) entries: 2,000
- Maximum number of IPv4 unicast routes in hardware: 6500
- Routing protocols: RIPv1/v2
- Static routing
- IP directed broadcast

Layer 3 features: IPv6 Management Functionality

- Neighbor discovery, Syslog, Telnet, SSH, J-Web, SNMP, NTP, DNS, RADIUS over IPv6

Supported RFCs

- RFC 2925 MIB for remote ping, trace
- RFC 1122 Host requirements
- RFC 768 UDP
- RFC 791 IP
- RFC 783 Trivial File Transfer Protocol (TFTP)
- RFC 792 Internet Control Message Protocol (ICMP)
- RFC 793 TCP
- RFC 826 ARP
- RFC 894 IP over Ethernet
- RFC 903 Reverse ARP (RARP)
- RFC 906 TFTP bootstrap
- RFC 1027 Proxy ARP
- RFC 2068 HTTP server
- RFC 1812 Requirements for IP Version 4 routers
- RFC 1519 Classless Interdomain Routing (CIDR)
- RFC 1256 IPv4 ICMP Router Discovery (IRDP)
- RFC 1058 RIP v1
- RFC 2453 RIP v2
- RFC 1492 TACACS+
- RFC 2138 RADIUS authentication

- RFC 2139 RADIUS accounting
- RFC 3579 RADIUS Extensible Authentication Protocol (EAP) support for 802.1X
- RFC 5176 Dynamic Authorization Extensions to RADIUS
- RFC 2267 Network ingress filtering
- RFC 2030 Simple Network Time Protocol (SNTP)
- RFC 854 Telnet client and server
- RFC 951, 1542 BootP
- RFC 2131 BOOTP/DHCP relay agent and DHCP server
- RFC 1591 Domain Name System (DNS)
- RFC 2474 DiffServ Precedence, including 8 queues/port
- RFC 2598 DiffServ Expedited Forwarding (EF)
- RFC 2597 DiffServ Assured Forwarding (AF)
- LLDP Media Endpoint Discovery (LLDP-MED), ANSI/TIA-1057, draft 08

Security

- MAC limiting
- Allowed MAC addresses - configurable per port
- Dynamic ARP inspection (DAI)
- Proxy ARP
- Static ARP support
- DHCP snooping
- IP source guard
- 802.1X port-based
- 802.1X multiple supplicants
- 802.1X with VLAN assignment
- 802.1X with authentication bypass access (based on host MAC address)
- 802.1X with VoIP VLAN support
- 802.1X dynamic ACL based on RADIUS attributes
- 802.1X Supported EAP types: Message Digest 5 (MD5), Transport Layer Security cted Extensible Authentication Protocol (PEAP)
- Access control lists (ACLs) (Junos OS firewall filters)
- Port-based ACL (PAACL) - ingress
- VLAN-based ACL (VAACL) - ingress and egress
- Router-based ACL (RAACL) - ingress and egress
- ACL entries (ACE) in hardware per system: 1,500
- ACL counter for denied packets
- ACL counter for permitted packets
- Ability to add/remove/change ACL entries in middle of list (ACL editing)
- L2-L4 ACL
- Trusted Network Connect (TNC) certified
- Static MAC authentication
- MAC-RADIUS
- Control plane DoS protection

High availability

- External redundant power supply (RPS) option
- Link Aggregation
- 802.3ad (LACP) support:

- Number of LAGs supported: 32
- Maximum number of ports per LAG: 8
- LAG load sharing algorithm - Bridged Unicast Traffic:
 - IP: S/D MAC, S/D IP
 - TCP/UDP: S/D MAC, S/D IP, S/D Port
 - Non-IP: S/D MAC
- LAG sharing algorithm - Routed Unicast Traffic:
 - IP: S/D IP
 - TCP/UDP: S/D IP, S/D Port
- LAG load sharing algorithm - Bridged Multicast Traffic:
 - IP: S/D MAC, S/D IP
 - TCP/UDP: S/D MAC, S/D IP, S/D Port
 - Non-IP: S/D MAC
- LAG sharing algorithm - Routed Multicast Traffic:
 - IP: S/D IP
 - TCP/UDP: S/D IP, S/D Port
- Tagged ports support in LAG

Quality of Service (QoS)

- Layer 2 QoS
- Layer 3 QoS
- Ingress policing: 1 rate 2 color
- Hardware queues per port: 8
- Scheduling methods (egress): Strict Priority (SP), shaped deficit weighted round-robin (SDWRR)
- 802.1p, DSCP /IP precedence trust and marking
- L2-L4 classification criteria: Interface, MAC address, Ethertype, 802.1p, VLAN, IP address, DSCP/IP precedence, TCP/UDP port numbers, and so on
- Congestion avoidance capabilities: Tail drop

Multicast

- IGMP snooping entries: 1,000

Services and manageability

- Junos OS CLI
- Web interface (J-Web)
- Out-of-band management: Serial, 10/100BASE-T Ethernet
- ASCII configuration
- Rescue configuration
- Configuration rollback
- Image rollback
- Element management tools: Network and Security Manager
- Proactive services support via Advanced Insight Solutions (AIS)
- Simple Network Management Protocol (SNMP): v1, v2c, v3
- Remote monitoring (RMON) (RFC 2819) Groups 1, 2, 3, 9
- Network Time Protocol (NTP)
- DHCP server
- DHCP client and DHCP proxy

- DHCP relay and helper
- RADIUS authentication
- TACACS+ authentication
- SSHv2
- Secure copy
- HTTP/HTTps
- DNS resolver
- Syslog logging
- Temperature sensor
- Configuration backup via FTP/secure copy

Supported MIBs

- RFC 1155 Structure of Management Information (SMI)
- RFC 1157 SNMPv1
- RFC 1905 RFC 1907 SNMP v2c, SMIV2 and revised MIB-II
- RFC 2570-2575 SNMPv3, user-based security, encryption, and authentication
- RFC 2576 Coexistence between SNMP Version 1, Version 2 and Version 3
- RFC 1212, RFC 1213, RFC 1215 MIB-II, Ethernet-like MIB, and TRAPS
- RFC 2578 SNMP Structure of Management Information MIB
- RFC 2579 SNMP Textual Conventions for SMIV2
- RFC 2925 Ping/traceroute MIB
- RFC 2665 Ethernet-like interface MIB
- RFC 1643 Ethernet MIB
- RFC 1493 Bridge MIB
- RFC 2096 IPv4 Forwarding Table MIB
- RFC 2011 SNMPv2 for IP using SMIV2
- RFC 2012 SNMPv2 for transmission control protocol using SMIV2
- RFC 2013 SNMPv2 for user datagram protocol using SMIV2
- RFC 2863 Interface MIB
- RFC 3413 SNMP Application MIB
- RFC 3414 User-based security model for SNMPv3
- RFC 3415 View-based Access Control Model for SNMP
- RFC 3621 PoE-MIB (PoE switches only)
- RFC 1724 RIPv2 MIB
- RFC 2863 Interface Group MIB
- RFC 2819 RMON MIB
- RFC 2287 System Application Packages MIB
- RFC 4188 STP and extensions MIB
- RFC 4363 Definitions of managed objects for bridges with traffic classes, multicast filtering, and VLAN extensions
- RFC 2922 LLDP MIB
- Draft - blumenthal - aes - usm - 08
- Draft - reeder - snmpv3 - usm - 3desede - 00

Troubleshooting

- Debugging: CLI via console, telnet, or SSH
- Diagnostics: Show and debug command statistics
- Traffic mirroring (port)

- Traffic mirroring (VLAN)
- ACL-based mirroring
- Mirroring destination ports per system: 1
- LAG port monitoring
- Multiple destination ports monitored to 1 mirror (N:1)
- Maximum number of mirroring sessions: 1
- Mirroring to remote destination (over L2): 1 destination VLAN
- IP tools: Extended ping and trace

These switches are designated as customer setup (CSU). CSU allowance is one day.

Cable orders

None

Security, auditability, and control

The customer is responsible for evaluation, selection, and implementation of security features, administrative procedures, and appropriate controls in application systems and communications facilities.

Terms and conditions

IBM Global Financing

No

To obtain copies of the IBM Statement of Limited Warranty, contact your reseller or IBM.

In the United States, call 800-IBM-SERV (426-7378), or write to:

Warranty Information
 P.O. Box 12195
 Research Triangle Park, NC 27709
 Attn: Dept JDJA/B203

Warranty period

- Three years - Customer Replaceable Unit
- Optional features - One year

An IBM part or feature installed during the initial installation of an IBM machine is subject to a full warranty effective on the date of installation of the machine. An IBM part or feature which replaces a previously installed part or feature assumes the remainder of the warranty period for the replaced part or feature. An IBM part or feature added to a machine without replacing a previously installed part or feature is subject to a full warranty effective on its date of installation. Unless specified otherwise, the warranty period, type of warranty service, and service level of a part or feature is the same as the machine it is installed.

The following has been designated as a consumable or supply item and is, therefore, not covered by this warranty:

- Battery

Warranty service

If required, IBM provides repair or exchange service, depending on the type of warranty service specified below for the machine. IBM will attempt to resolve your problem over the telephone or electronically by access to an IBM website. Certain

machines contain remote support capabilities for direct problem reporting, remote problem determination, and resolution with IBM. You must follow the problem determination and resolution procedures that IBM specifies. Following problem determination, if IBM determines On-site Service is required, scheduling of service will depend upon the time of your call, machine technology and redundancy, and availability of parts. Service levels are response-time objectives and are not guaranteed. The specified level of warranty service may not be available in all worldwide locations. Additional charges may apply outside IBM's normal service area. Contact your local IBM representative or your reseller for country- and location-specific information.

The type of service is Customer Replaceable Unit (for example, keyboard, mouse, speaker, memory, or hard disk drive) Service and On-site Service.

Customer Replaceable Unit (CRU) Service

IBM provides a replacement CRU to you for you to install. CRU information and replacement instructions are shipped with your machine and are available from IBM at any time on your request. A CRU is designated as being either a Tier 1 (mandatory) or a Tier 2 (optional) CRU. Installation of Tier 1 CRUs, as specified in this announcement, is your responsibility. If IBM installs a Tier 1 CRU at your request, you will be charged for the installation. You may install a Tier 2 CRU yourself or request IBM to install it, at no additional charge, under the type of warranty service designated for your machine.

Based upon availability, a CRU will be shipped for next-business-day (NBD) delivery. IBM specifies in the materials shipped with a replacement CRU whether a defective CRU must be returned to IBM. When return is required, return instructions and a container are shipped with the replacement CRU, and you may be charged for the replacement CRU if IBM does not receive the defective CRU within 15 days of your receipt of the replacement.

The following parts or features have been designated as Tier 1 CRUs:

- Rackswitch unit w/o Power Supplies and Fans
- Hot-swap fan
- Hot-swap power supply
- Transceiver
- Cables and Serial Cable Kit

On-site Service

At IBM's discretion you will receive CRU service or IBM or your reseller will repair the failing machine at your location and verify its operation. If required, On-site Repair is provided, 9 hours per day, Monday through Friday excluding holidays, NBD response. You must provide a suitable working area to allow disassembly and reassembly of the IBM machine. The area must be clean, well lit, and suitable for the purpose. On-site Service is not available in all countries, and some countries have kilometer or mileage limitations from an IBM service center. In those locations where On-site Service is not available, the normal in-country service delivery is used.

Call IBM at 1-800-IBM-SERV (426-7378) to assist with problem isolation for hardware to determine if warranty service is required. Telephone support may be subject to additional charges, even during the limited warranty period.

Calls must be received by 5:00 p.m. local time in order to qualify for NBD service.

International Warranty Service

International Warranty Service (IWS) is available in selected countries or regions.

The warranty service type and the service level provided in the servicing country may be different from that provided in the country in which the machine was purchased.

Under IWS, warranty service will be provided with the prevailing warranty service type and service level available for the IWS-eligible machine type in the servicing country, and the warranty period observed will be that of the country in which the machine was purchased.

To determine the eligibility of your machine and to view a list of countries where service is available, visit

<http://www-304.ibm.com/jct01004c/systems/support/supportsite.wss/warrantyform?brandind=5000008>

For more information on IWS, refer to Services Announcement 601-034, dated September 25, 2001.

Licensing

Programs included with this product are licensed under the terms and conditions of the License Agreements that are shipped with the system.

Maintenance services

ServicePac®, ServiceSuite™, ServiceElect, and ServiceElite

ServicePac, ServiceSuite, ServiceElect, and ServiceElite provide hardware warranty service upgrades, maintenance, and selected support services in one agreement.

Warranty service upgrade

During the warranty period, a warranty service upgrade provides an enhanced level of On-site Service for an additional charge. A warranty service upgrade must be purchased during the warranty period and is for a fixed term (duration). It is not refundable or transferable and may not be prorated. If required, IBM will provide the warranty service upgrade enhanced level of On-site Service acquired by the customer. Service levels are response-time objectives and are not guaranteed.

IBM will attempt to resolve your problem over the telephone or electronically by access to an IBM website. Certain machines contain remote support capabilities for direct problem reporting, remote problem determination, and resolution with IBM. You must follow the problem determination and resolution procedures that IBM specifies. Following problem determination, if IBM determines On-site Service is required, scheduling of service will depend upon the time of your call, machine technology and redundancy, and availability of parts.

CRUs will be provided as part of the machine's standard warranty CRU Service except that you may install a Tier 1 CRU yourself or request IBM installation, at no additional charge, under one of the On-site Service levels specified below.

IBM will repair the failing machine at your location and verify its operation. You must provide a suitable working area to allow disassembly and reassembly of the IBM machine. The area must be clean, well lit, and suitable for the purpose.

Maintenance service

If required, IBM provides repair or exchange service, depending on the type of maintenance service specified below for the machine. IBM will attempt to resolve your problem over the telephone or electronically by access to an IBM website. Certain machines contain remote support capabilities for direct problem reporting, remote problem determination, and resolution with IBM. You must follow the problem determination and resolution procedures that IBM specifies. Following problem determination, if IBM determines On-site Service is required, scheduling of service will depend upon the time of your call, machine technology and redundancy,

and availability of parts. Service levels are response-time objectives and are not guaranteed.

CRU Service

If your problem can be resolved with a CRU (for example, keyboard, mouse, speaker, memory, or hard disk drive), IBM will ship the CRU to you for you to install. CRU information and replacement instructions are shipped with your machine and are available from IBM at any time on your request.

IBM specifies in the materials shipped with a replacement CRU whether a defective CRU must be returned to IBM. When return is required, return instructions and a container are shipped with the replacement CRU, and you may be charged for the replacement CRU if IBM does not receive the defective CRU within 15 days of your receipt of the replacement.

On-site Service

IBM will repair the failing machine at your location and verify its operation. You must provide a suitable working area to allow disassembly and reassembly of the IBM machine. The area must be clean, well lit, and suitable for the purpose.

Maintenance service (ICA)

Maintenance services are available for ICA legacy contracts.

Alternative service (warranty service upgrades)

During the warranty period, a warranty service upgrade provides an enhanced level of On-site Service for an additional charge. A warranty service upgrade must be purchased during the warranty period and is for a fixed term (duration). It is not refundable or transferable and may not be prorated. If required, IBM will provide the warranty service upgrade enhanced level of On-site Service acquired by the customer. Service levels are response-time objectives and are not guaranteed.

IBM will attempt to resolve your problem over the telephone or electronically by access to an IBM website. Certain machines contain remote support capabilities for direct problem reporting, remote problem determination, and resolution with IBM. You must follow the problem determination and resolution procedures that IBM specifies. Following problem determination, if IBM determines On-site Service is required, scheduling of service will depend upon the time of your call, machine technology and redundancy, and availability of parts.

A CRU will be provided as part of the machine's standard warranty CRU Service except that you may install a Tier 1 CRU yourself or request IBM to install it, at no additional charge, under the type of warranty service designated for your machine.

IBM will repair the failing machine at your location and verify its operation. You must provide a suitable working area to allow disassembly and reassembly of the IBM machine. The area must be clean, well lit, and suitable for the purpose.

Maintenance service

If required, IBM provides repair or exchange service, depending on the type of maintenance service specified below for the machine. IBM will attempt to resolve your problem over the telephone or electronically by access to an IBM website. Certain machines contain remote support capabilities for direct problem reporting, remote problem determination, and resolution with IBM. You must follow the problem determination and resolution procedures that IBM specifies. Following problem determination, if IBM determines On-site Service is required, scheduling of service will depend upon the time of your call, machine technology and redundancy, and availability of parts. Service levels are response-time objectives and are not guaranteed.

CRU Service

If your problem can be resolved with a CRU (for example, keyboard, mouse, speaker, memory, or hard disk drive), IBM will ship the CRU to you for you to install. CRU information and replacement instructions are shipped with your machine and are available from IBM at any time on your request.

IBM specifies in the materials shipped with a replacement CRU whether a defective CRU must be returned to IBM. When return is required, return instructions and a container are shipped with the replacement CRU, and you may be charged for the replacement CRU if IBM does not receive the defective CRU within 15 days of your receipt of the replacement.

On-site Service

IBM will repair the failing machine at your location and verify its operation. You must provide a suitable working area to allow disassembly and reassembly of the IBM machine. The area must be clean, well lit, and suitable for the purpose.

Non-IBM parts support

Warranty service

IBM is now shipping machines with selected non-IBM parts that contain an IBM field replaceable unit (FRU) part number label. These parts are to be serviced during the IBM machine warranty period. IBM is covering the service on these selected non-IBM parts as an accommodation to its customers, and normal warranty service procedures for the IBM machine apply.

Warranty service upgrades and maintenance services

Under certain conditions, IBM Integrated Technology Services repairs selected non-IBM parts at no additional charge for machines that are covered under warranty service upgrades or maintenance services.

IBM Service provides hardware problem determination on non-IBM parts (for example, adapter cards, PCMCIA cards, disk drives, or memory) installed within IBM machines covered under warranty service upgrades or maintenance services and provides the labor to replace the failing parts at no additional charge.

If IBM has a Technical Service Agreement with the manufacturer of the failing part, or if the failing part is an accommodations part (a part with an IBM FRU label), IBM may also source and replace the failing part at no additional charge. For all other non-IBM parts, customers are responsible for sourcing the parts. Installation labor is provided at no additional charge, if the machine is covered under a warranty service upgrade or a maintenance service.

IBM hourly service rate classification

One

Field-installable features

Yes

Model conversions

No

Machine installation

Customer setup. Customers are responsible for installation according to the instructions IBM provides with the machine.

Graduated program license charges apply

No

Licensed Machine Code

IBM Machine Code is licensed for use by a customer on the IBM machine for which it was provided by IBM under the terms and conditions of the IBM License Agreement for Machine Code, to enable the machine to function in accordance with its specifications, and only for the capacity authorized by IBM and acquired by the customer. You can obtain the agreement by contacting your IBM representative or visiting

http://www-1.ibm.com/servers/support/machine_warranties/machine_code.html

IBM may release changes to the Machine Code. IBM plans to make the Machine Code changes available for download from the IBM System x technical support website

<http://www-304.ibm.com/systems/support/>

If the machine does not function as warranted and your problem can be resolved through your application of downloadable Machine Code, you are responsible for downloading and installing these designated Machine Code changes as IBM specifies. If you would prefer, you may request IBM to install downloadable Machine Code changes; however, you may be charged for that service.

Prices

For current prices, contact IBM at 888-Shop-IBM (746-7426) or visit

<http://www-03.ibm.com/systems/x/>

The following are newly announced features on the specified models of the IBM xSeries 6630 machine type.

Description	Model Number	Feature Number	Initial/MES/Both/Support
Juniper 24 Port 1Gb EX2200 Ethernet Switch			
	HC1		
Juniper 24 Port 1Gb EX2200 Ethernet Switch w/POE			
	HC2		
Juniper 48 Port 1Gb EX2200 Ethernet Switch			
	HC3		
Juniper 48 Port 1Gb EX2200 Ethernet Switch w/POE			
	HC4		
EMEA Long Leadtime Configurations			
	HC1	1763	Initial
	HC2		Initial
	HC3		Initial
	HC4		Initial
Hungary CHW plant 9SH			
	HC1	1764	Initial
	HC2		Initial
	HC3		Initial
	HC4		Initial
Guad CHW plant 9KQ			

	HC1	1765	Initial
	HC2		Initial
	HC3		Initial
	HC4		Initial
ISTC CHW 9K2			
	HC1	1766	Initial
	HC2		Initial
	HC3		Initial
	HC4		Initial
RTP CHW 9NR			
	HC1	1767	Initial
	HC2		Initial
	HC3		Initial
	HC4		Initial
Offload Manufacturing to Guadalajara HVEC			
	HC1	1768	Initial
	HC2		Initial
	HC3		Initial
	HC4		Initial
Offload Manufacturing to RTP HVEC			
	HC1	1769	Initial
	HC2		Initial
	HC3		Initial
	HC4		Initial
Offload Manufacturing to ISTC			
	HC1	1770	Initial
	HC2		Initial
	HC3		Initial
	HC4		Initial
Capacity Scheduling Service			
	HC1	1772	Initial
	HC2		Initial
	HC3		Initial
	HC4		Initial
Custom SLA Scheduling Service			
	HC1	1796	Initial
	HC2		Initial
	HC3		Initial
	HC4		Initial
Custom Asset Tagging - Standard			
	HC1	2200	Initial
	HC2		Initial
	HC3		Initial
	HC4		Initial
Custom Asset Tagging - Enhanced			
	HC1	2201	Initial
	HC2		Initial
	HC3		Initial
	HC4		Initial
Request for Global Trade Number (UPC or EAN)			
	HC1	2207	Initial
	HC2		Initial
	HC3		Initial
	HC4		Initial
Custom Labeling			
	HC1	2220	Initial
	HC2		Initial
	HC3		Initial
	HC4		Initial
Custom Palletization			
	HC1	2221	Initial
	HC2		Initial
	HC3		Initial
	HC4		Initial
Request for a new Vendor Logo Hardware			
	HC1	2247	Initial
	HC2		Initial
	HC3		Initial
	HC4		Initial
Request for an existing IBM Feature			
	HC1	2248	Initial
	HC2		Initial
	HC3		Initial
	HC4		Initial

Request for an existing Public RPQ	HC1	2249	Initial
	HC2		Initial
	HC3		Initial
	HC4		Initial
Department of Defense UID Label	HC1	2320	Initial
	HC2		Initial
	HC3		Initial
	HC4		Initial
0.6m Yellow Cat5e Cable	HC1	3791	Initial
	HC2		Initial
	HC3		Initial
	HC4		Initial
1.5m Yellow Cat5e Cable	HC1	3792	Initial
	HC2		Initial
	HC3		Initial
	HC4		Initial
3m Yellow Cat5e Cable	HC1	3793	Initial
	HC2		Initial
	HC3		Initial
	HC4		Initial
10m Yellow Cat5e Cable	HC1	3794	Initial
	HC2		Initial
	HC3		Initial
	HC4		Initial
25m Yellow Cat5e Cable	HC1	3795	Initial
	HC2		Initial
	HC3		Initial
	HC4		Initial
0.6m Green Cat5e Cable	HC1	3796	Initial
	HC2		Initial
	HC3		Initial
	HC4		Initial
1.5m Green Cat5e Cable	HC1	3797	Initial
	HC2		Initial
	HC3		Initial
	HC4		Initial
3m Green Cat5e Cable	HC1	3798	Initial
	HC2		Initial
	HC3		Initial
	HC4		Initial
10m Green Cat5e Cable	HC1	3799	Initial
	HC2		Initial
	HC3		Initial
	HC4		Initial
25m Green Cat5e Cable	HC1	3800	Initial
	HC2		Initial
	HC3		Initial
	HC4		Initial
0.6m Blue Cat5e Cable	HC1	3801	Initial
	HC2		Initial
	HC3		Initial
	HC4		Initial
1.5m Blue Cat5e Cable	HC1	3802	Initial
	HC2		Initial
	HC3		Initial
	HC4		Initial
3m Blue Cat5e Cable	HC1	3803	Initial
	HC2		Initial
	HC3		Initial

	HC4		Initial
10m Blue Cat5e Cable	HC1	3804	Initial
	HC2		Initial
	HC3		Initial
	HC4		Initial
25m Blue Cat5e Cable	HC1	3805	Initial
	HC2		Initial
	HC3		Initial
	HC4		Initial
2.8m, 10A/100-250V, C13 to IEC 320-C20 Rack Power Cable	HC1	6204	Initial
	HC2		Initial
	HC3		Initial
	HC4		Initial
Line cord - 4.3M, 10A/125V, C13 to NEMA 5-15P (US)	HC1	6207	Initial
	HC2		Initial
	HC3		Initial
	HC4		Initial
4.3m, 10A/100-250V, C13 to IEC 320-C14 Rack Power Cable	HC1	6263	Initial
	HC2		Initial
	HC3		Initial
	HC4		Initial
2.8m, 10A/100-250V, C13 to IEC 320-C14 Rack Power Cable	HC1	6311	Initial
	HC2		Initial
	HC3		Initial
	HC4		Initial
Line cord - 2.8m, 10A/250V, C13 to NEMA 6-15P (US)	HC1	6372	Initial
	HC2		Initial
	HC3		Initial
	HC4		Initial
Customer Solution Center Services	HC1	7831	Initial
	HC2		Initial
	HC3		Initial
	HC4		Initial
Consolidate Shipment	HC1	8031	Initial
	HC2		Initial
	HC3		Initial
	HC4		Initial
TAA Compliant Order	HC1	8067	Initial
	HC2		Initial
	HC3		Initial
	HC4		Initial
Ship Uninstalled (Safety)	HC1	8972	Initial
	HC2		Initial
	HC3		Initial
	HC4		Initial
IBM Ethernet Switch J22E-24	HC1	A13L	Initial
IBM Ethernet Switch J22E-24P	HC2	A13M	Initial
IBM Ethernet Switch J22E-48	HC3	A13N	Initial
IBM Ethernet Switch J22E-48P	HC4	A13P	Initial
1GE Copper RJ-45 100m SFP	HC1	A1AE	Initial
	HC2		Initial
	HC3		Initial
	HC4		Initial
1000B-LX GbE 1310nm 10km SFP	HC1	A1AF	Initial

	HC2		Initial
	HC3		Initial
	HC4		Initial
100B-FX 100Mb 1310nm 2km SFP	HC1	A1AG	Initial
	HC2		Initial
	HC3		Initial
	HC4		Initial
1000B-SX GbE 850nm 550m SFP	HC1	A1AH	Initial
	HC2		Initial
	HC3		Initial
	HC4		Initial
1000B-LH GbE 1550nm 70km SFP	HC1	A1AJ	Initial
	HC2		Initial
	HC3		Initial
	HC4		Initial
100BASE-BX, TX1310nm/RX1550 nm 20km SM SFP	HC1	A1AK	Initial
	HC2		Initial
	HC3		Initial
	HC4		Initial
100BASE-BX, TX1550nm/RX1310 nm 20km SM SFP	HC1	A1AL	Initial
	HC2		Initial
	HC3		Initial
	HC4		Initial
1m LC-LC Fiber Cable (networking)	HC1	A1DS	Initial
	HC2		Initial
	HC3		Initial
	HC4		Initial
5m LC-LC Fiber Cable (networking)	HC1	A1DT	Initial
	HC2		Initial
	HC3		Initial
	HC4		Initial
25m LC-LC Fiber Cable (networking)	HC1	A1DU	Initial
	HC2		Initial
	HC3		Initial
	HC4		Initial

SEOs

Description	SEO Numbers	Initial/ MES/ Both/ Support	CSU
Juniper 24 Port 1Gb EX2200 Ethernet Switch for IBM System x	6630010	Both	Yes
Juniper 24 Port 1Gb EX2200 Ethernet Switch with PoE for IBMSYSTEM x	6630011	Both	Yes
Juniper 48 Port 1Gb EX2200 Ethernet Switch for IBM System x	6630012	Both	Yes
Juniper 48 Port 1Gb EX2200 Ethernet Switch with PoE for IBM System x	6630013	Both	Yes

Option SEOs

Description	SEO Numbers	Initial/ MES/ Both/ Support	CSU
1000B-LX GbE 1310nm 10km SFP	88Y6839	Both	Yes
100B-FX 100Mb 1310nm 2km SFP	88Y6830	Both	Yes
1000B-SX GbE 850nm 550m SFP	88Y6836	Both	Yes
1000B-LH GbE 1550nm 70km SFP	88Y6842	Both	Yes
100BASE-BX, TX1310nm/RX1550 nm 20km SM SFP	88Y6845	Both	Yes

100BASE-BX, TX1550nm/RX1310 nm 20km SM SFP	88Y6848	Both	Yes
1m LC-LC Fiber Cable (networking)	88Y6851	Both	Yes
5m LC-LC Fiber Cable (networking)	88Y6854	Both	Yes
25m LC-LC Fiber Cable (networking)	88Y6857	Both	Yes
1GE Copper RJ-45 100m SFP	88Y6833	Both	Yes

ServicePac for Warranty and Maintenance

						ServicePac	
						SEO	MTM
4273 - E48 4 Year Onsite Repair 9x5 Next Business Day	91Y6169	67567JX					
4273 - E48 4 Year Onsite Repair 9x5 4 Hour Response	91Y6170	67567JY					
4273 - E48 4 Year Onsite Repair 24x7 4 Hour Response	91Y6171	67567JZ					
4273 - E48 4 Year Onsite Repair 24x7 2 Hour Response	91Y6172	67567K0					
4273 - E48 5 Year Onsite Repair 9x5 Next Business Day	91Y6173	67567K1					
4273 - E48 5 Year Onsite Repair 9x5 4 Hour Response	91Y6174	67567K2					
6630 - 010 3 Year Onsite Repair 9x5 4 Hour Response	91Y6175	67567K3					
6630 - HC1 3 Year Onsite Repair 9x5 4 Hour Response	91Y6175	67567K3					
6630 - 010 3 Year Onsite Repair 24x7 4 Hour Response	91Y6176	67567K4					
6630 - HC1 3 Year Onsite Repair 24x7 4 Hour Response	91Y6176	67567K4					
6630 - 010 3 Year Onsite Repair 24x7 2 Hour Response	91Y6177	67567K5					
6630 - HC1 3 Year Onsite Repair 24x7 2 Hour Response	91Y6177	67567K5					
6630 - 010 4 Year Onsite Repair 9x5 Next Business Day	91Y6178	67567K6					
6630 - HC1 4 Year Onsite Repair 9x5 Next Business Day	91Y6178	67567K6					
6630 - 010 4 Year Onsite Repair 9x5 4 Hour Response	91Y6179	67567K7					
6630 - HC1 4 Year Onsite Repair 9x5 4 Hour Response	91Y6179	67567K7					
6630 - 010 4 Year Onsite Repair 24x7 4 Hour Response	91Y6180	67567K8					
6630 - HC1 4 Year Onsite Repair 24x7 4 Hour Response	91Y6180	67567K8					
6630 - 010 4 Year Onsite Repair 24x7 2 Hour Response	91Y6181	67567K9					
6630 - HC1 4 Year Onsite Repair 24x7 2 Hour Response	91Y6181	67567K9					
6630 - 010 5 Year Onsite Repair 9x5 Next Business Day	91Y6182	67567KA					
6630 - HC1 5 Year Onsite Repair 9x5 Next Business Day	91Y6182	67567KA					
6630 - 010 5 Year Onsite Repair 9x5 4 Hour Response	91Y6183	67567KB					
6630 - HC1 5 Year Onsite Repair 9x5 4 Hour Response	91Y6183	67567KB					
6630 - 010 5 Year Onsite Repair 24x7 4 Hour Response	91Y6184	67567KC					
6630 - HC1 5 Year Onsite Repair 24x7 4 Hour Response	91Y6184	67567KC					
6630 - 010 5 Year Onsite Repair 24x7 2 Hour Response	91Y6185	67567KD					
6630 - HC1 5 Year Onsite Repair 24x7 2 Hour Response	91Y6185	67567KD					
6630 - 011 3 Year Onsite Repair 9x5 4 Hour Response	91Y6194	67567KF					
6630 - HC2 3 Year Onsite Repair 9x5 4 Hour Response	91Y6194	67567KF					
6630 - 011 3 Year Onsite Repair 24x7 4 Hour Response	91Y6195	67567KG					
6630 - HC2 3 Year Onsite Repair 24x7 4 Hour Response	91Y6195	67567KG					
6630 - 011 3 Year Onsite Repair 24x7 2 Hour Response	91Y6196	67567KH					
6630 - HC2 3 Year Onsite Repair 24x7 2 Hour Response	91Y6196	67567KH					
6630 - 011 4 Year Onsite Repair 9x5 Next Business Day	91Y6197	67567KJ					
6630 - HC2 4 Year Onsite Repair 9x5 Next Business Day	91Y6197	67567KJ					
6630 - 011 4 Year Onsite Repair 9x5 4 Hour Response	91Y6198	67567KK					
6630 - HC2 4 Year Onsite Repair 9x5 4 Hour Response	91Y6198	67567KK					
6630 - 011 4 Year Onsite Repair 24x7 4 Hour Response	91Y6199	67567KM					
6630 - HC2 4 Year Onsite Repair 24x7 4 Hour Response	91Y6199	67567KM					
6630 - 011 4 Year Onsite Repair 24x7 2 Hour Response	91Y6200	67567KN					
6630 - HC2 4 Year Onsite Repair 24x7 2 Hour Response	91Y6200	67567KN					
6630 - 011 5 Year Onsite Repair 9x5 Next Business Day	91Y6201	67567KP					
6630 - HC2 5 Year Onsite Repair 9x5 Next Business Day	91Y6201	67567KP					
6630 - 011 5 Year Onsite Repair 9x5 4 Hour Response	91Y6202	67567KQ					
6630 - HC2 5 Year Onsite Repair 9x5 4 Hour Response	91Y6202	67567KQ					
6630 - 011 5 Year Onsite Repair 24x7 4 Hour Response	91Y6203	67567KR					
6630 - HC2 5 Year Onsite Repair 24x7 4 Hour Response	91Y6203	67567KR					
6630 - 011 5 Year Onsite Repair 24x7 2 Hour Response	91Y6204	67567KS					
6630 - HC2 5 Year Onsite Repair 24x7 2 Hour Response	91Y6204	67567KS					
6630 - 012 3 Year Onsite Repair 9x5 4 Hour Response	91Y6213	67567KT					
6630 - HC3 3 Year Onsite Repair 9x5 4 Hour Response	91Y6213	67567KT					
6630 - 012 3 Year Onsite Repair 24x7 4 Hour Response	91Y6214	67567KU					
6630 - HC3 3 Year Onsite Repair 24x7 4 Hour Response	91Y6214	67567KU					
6630 - 012 3 Year Onsite Repair 24x7 2 Hour Response	91Y6215	67567KV					
6630 - HC3 3 Year Onsite Repair 24x7 2 Hour Response	91Y6215	67567KV					
6630 - 012 4 Year Onsite Repair 9x5 Next Business Day	91Y6216	67567KW					
6630 - HC3 4 Year Onsite Repair 9x5 Next Business Day	91Y6216	67567KW					
6630 - 012 4 Year Onsite Repair 9x5 4 Hour Response	91Y6217	67567KX					
6630 - HC3 4 Year Onsite Repair 9x5 4 Hour Response	91Y6217	67567KX					
6630 - 012 4 Year Onsite Repair 24x7 4 Hour Response	91Y6218	67567KY					

6630	-	HC3	4	Year	Onsite	Repair	24x7	4	Hour	Response	91Y6218	67567KY
6630	-	012	4	Year	Onsite	Repair	24x7	2	Hour	Response	91Y6219	67567KZ
6630	-	HC3	4	Year	Onsite	Repair	24x7	2	Hour	Response	91Y6219	67567KZ
6630	-	012	5	Year	Onsite	Repair	9x5			Next Business Day	91Y6220	67567M0
6630	-	HC3	5	Year	Onsite	Repair	9x5			Next Business Day	91Y6220	67567M0
6630	-	012	5	Year	Onsite	Repair	9x5	4	Hour	Response	91Y6221	67567M1
6630	-	HC3	5	Year	Onsite	Repair	9x5	4	Hour	Response	91Y6221	67567M1
6630	-	012	5	Year	Onsite	Repair	24x7	4	Hour	Response	91Y6222	67567M2
6630	-	HC3	5	Year	Onsite	Repair	24x7	4	Hour	Response	91Y6222	67567M2
6630	-	012	5	Year	Onsite	Repair	24x7	2	Hour	Response	91Y6223	67567M3
6630	-	HC3	5	Year	Onsite	Repair	24x7	2	Hour	Response	91Y6223	67567M3
6630	-	013	3	Year	Onsite	Repair	9x5	4	Hour	Response	91Y6232	67567M4
6630	-	HC4	3	Year	Onsite	Repair	9x5	4	Hour	Response	91Y6232	67567M4
6630	-	013	3	Year	Onsite	Repair	24x7	4	Hour	Response	91Y6233	67567M5
6630	-	HC4	3	Year	Onsite	Repair	24x7	4	Hour	Response	91Y6233	67567M5
6630	-	013	3	Year	Onsite	Repair	24x7	2	Hour	Response	91Y6234	67567M6
6630	-	HC4	3	Year	Onsite	Repair	24x7	2	Hour	Response	91Y6234	67567M6
6630	-	013	4	Year	Onsite	Repair	9x5			Next Business Day	91Y6235	67567M7
6630	-	HC4	4	Year	Onsite	Repair	9x5			Next Business Day	91Y6235	67567M7
6630	-	013	4	Year	Onsite	Repair	9x5	4	Hour	Response	91Y6236	67567M8
6630	-	HC4	4	Year	Onsite	Repair	9x5	4	Hour	Response	91Y6236	67567M8
6630	-	013	4	Year	Onsite	Repair	24x7	4	Hour	Response	91Y6237	67567M9
6630	-	HC4	4	Year	Onsite	Repair	24x7	4	Hour	Response	91Y6237	67567M9
6630	-	013	4	Year	Onsite	Repair	24x7	2	Hour	Response	91Y6238	67567MA
6630	-	HC4	4	Year	Onsite	Repair	24x7	2	Hour	Response	91Y6238	67567MA
6630	-	013	5	Year	Onsite	Repair	9x5			Next Business Day	91Y6239	67567MB
6630	-	HC4	5	Year	Onsite	Repair	9x5			Next Business Day	91Y6239	67567MB
6630	-	013	5	Year	Onsite	Repair	9x5	4	Hour	Response	91Y6240	67567MC
6630	-	HC4	5	Year	Onsite	Repair	9x5	4	Hour	Response	91Y6240	67567MC
6630	-	013	5	Year	Onsite	Repair	24x7	4	Hour	Response	91Y6241	67567MD
6630	-	HC4	5	Year	Onsite	Repair	24x7	4	Hour	Response	91Y6241	67567MD
6630	-	013	5	Year	Onsite	Repair	24x7	2	Hour	Response	91Y6242	67567MF
6630	-	HC4	5	Year	Onsite	Repair	24x7	2	Hour	Response	91Y6242	67567MF

ServicePac for Maintenance Agreement

											ServicePac	
											SEO	MTM
6630	-	010	1	Year	Onsite	Repair	9x5			Next Business Day	91Y6186	6756MJ5
6630	-	HC1	1	Year	Onsite	Repair	9x5			Next Business Day	91Y6186	6756MJ5
6630	-	010	1	Year	Onsite	Repair	9x5	4	Hour	Response	91Y6187	6756MJ6
6630	-	HC1	1	Year	Onsite	Repair	9x5	4	Hour	Response	91Y6187	6756MJ6
6630	-	010	1	Year	Onsite	Repair	24x7	4	Hour	Response	91Y6188	6756MJ7
6630	-	HC1	1	Year	Onsite	Repair	24x7	4	Hour	Response	91Y6188	6756MJ7
6630	-	010	1	Year	Onsite	Repair	24x7	2	Hour	Response	91Y6189	6756MJ8
6630	-	HC1	1	Year	Onsite	Repair	24x7	2	Hour	Response	91Y6189	6756MJ8
6630	-	010	2	Year	Onsite	Repair	9x5			Next Business Day	91Y6190	6756MJ9
6630	-	HC1	2	Year	Onsite	Repair	9x5			Next Business Day	91Y6190	6756MJ9
6630	-	010	2	Year	Onsite	Repair	9x5	4	Hour	Response	91Y6191	6756MJA
6630	-	HC1	2	Year	Onsite	Repair	9x5	4	Hour	Response	91Y6191	6756MJA
6630	-	010	2	Year	Onsite	Repair	24x7	4	Hour	Response	91Y6192	6756MJB
6630	-	HC1	2	Year	Onsite	Repair	24x7	4	Hour	Response	91Y6192	6756MJB
6630	-	010	2	Year	Onsite	Repair	24x7	2	Hour	Response	91Y6193	6756MJC
6630	-	HC1	2	Year	Onsite	Repair	24x7	2	Hour	Response	91Y6193	6756MJC
6630	-	011	1	Year	Onsite	Repair	9x5			Next Business Day	91Y6205	6756MJD
6630	-	HC2	1	Year	Onsite	Repair	9x5			Next Business Day	91Y6205	6756MJD
6630	-	011	1	Year	Onsite	Repair	9x5	4	Hour	Response	91Y6206	6756MJF
6630	-	HC2	1	Year	Onsite	Repair	9x5	4	Hour	Response	91Y6206	6756MJF
6630	-	011	1	Year	Onsite	Repair	24x7	4	Hour	Response	91Y6207	6756MJG
6630	-	HC2	1	Year	Onsite	Repair	24x7	4	Hour	Response	91Y6207	6756MJG
6630	-	011	1	Year	Onsite	Repair	24x7	2	Hour	Response	91Y6208	6756MJH
6630	-	HC2	1	Year	Onsite	Repair	24x7	2	Hour	Response	91Y6208	6756MJH
6630	-	011	2	Year	Onsite	Repair	9x5			Next Business Day	91Y6209	6756MJJ
6630	-	HC2	2	Year	Onsite	Repair	9x5			Next Business Day	91Y6209	6756MJJ
6630	-	011	2	Year	Onsite	Repair	9x5	4	Hour	Response	91Y6210	6756MJK
6630	-	HC2	2	Year	Onsite	Repair	9x5	4	Hour	Response	91Y6210	6756MJK
6630	-	011	2	Year	Onsite	Repair	24x7	4	Hour	Response	91Y6211	6756MJM
6630	-	HC2	2	Year	Onsite	Repair	24x7	4	Hour	Response	91Y6211	6756MJM
6630	-	011	2	Year	Onsite	Repair	24x7	2	Hour	Response	91Y6212	6756MJN
6630	-	HC2	2	Year	Onsite	Repair	24x7	2	Hour	Response	91Y6212	6756MJN
6630	-	012	1	Year	Onsite	Repair	9x5			Next Business Day	91Y6224	6756MJP

6630 - HC3 1 Year Onsite Repair 9x5 Next Business Day	91Y6224	6756MJP
6630 - 012 1 Year Onsite Repair 9x5 4 Hour Response	91Y6225	6756MJQ
6630 - HC3 1 Year Onsite Repair 9x5 4 Hour Response	91Y6225	6756MJQ
6630 - 012 1 Year Onsite Repair 24x7 4 Hour Response	91Y6226	6756MJR
6630 - HC3 1 Year Onsite Repair 24x7 4 Hour Response	91Y6226	6756MJR
6630 - 012 1 Year Onsite Repair 24x7 2 Hour Response	91Y6227	6756MJS
6630 - HC3 1 Year Onsite Repair 24x7 2 Hour Response	91Y6227	6756MJS
6630 - 012 2 Year Onsite Repair 9x5 Next Business Day	91Y6228	6756MJT
6630 - HC3 2 Year Onsite Repair 9x5 Next Business Day	91Y6228	6756MJT
6630 - 012 2 Year Onsite Repair 9x5 4 Hour Response	91Y6229	6756MJU
6630 - HC3 2 Year Onsite Repair 9x5 4 Hour Response	91Y6229	6756MJU
6630 - 012 2 Year Onsite Repair 24x7 4 Hour Response	91Y6230	6756MJV
6630 - HC3 2 Year Onsite Repair 24x7 4 Hour Response	91Y6230	6756MJV
6630 - 012 2 Year Onsite Repair 24x7 2 Hour Response	91Y6231	6756MJW
6630 - HC3 2 Year Onsite Repair 24x7 2 Hour Response	91Y6231	6756MJW
6630 - 013 1 Year Onsite Repair 9x5 Next Business Day	91Y6243	6756MJX
6630 - HC4 1 Year Onsite Repair 9x5 Next Business Day	91Y6243	6756MJX
6630 - 013 1 Year Onsite Repair 9x5 4 Hour Response	91Y6244	6756MJY
6630 - HC4 1 Year Onsite Repair 9x5 4 Hour Response	91Y6244	6756MJY
6630 - 013 1 Year Onsite Repair 24x7 4 Hour Response	91Y6245	6756MJZ
6630 - HC4 1 Year Onsite Repair 24x7 4 Hour Response	91Y6245	6756MJZ
6630 - 013 1 Year Onsite Repair 24x7 2 Hour Response	91Y6246	6756MK0
6630 - HC4 1 Year Onsite Repair 24x7 2 Hour Response	91Y6246	6756MK0
6630 - 013 2 Year Onsite Repair 9x5 Next Business Day	91Y6247	6756MK1
6630 - HC4 2 Year Onsite Repair 9x5 Next Business Day	91Y6247	6756MK1
6630 - 013 2 Year Onsite Repair 9x5 4 Hour Response	91Y6248	6756MK2
6630 - HC4 2 Year Onsite Repair 9x5 4 Hour Response	91Y6248	6756MK2
6630 - 013 2 Year Onsite Repair 24x7 4 Hour Response	91Y6249	6756MK3
6630 - HC4 2 Year Onsite Repair 24x7 4 Hour Response	91Y6249	6756MK3
6630 - 013 2 Year Onsite Repair 24x7 2 Hour Response	91Y6250	6756MK4
6630 - HC4 2 Year Onsite Repair 24x7 2 Hour Response	91Y6250	6756MK4

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Corrections

(Corrected on June 20, 2011)

Standards/Environmental section modified to include Mexico, Argentina, and China in list of countries.

(Corrected on April 6, 2011)

Standards/Environmental section modified to include Brazil in list of countries.