Allied Telesis™

SwitchBlade® x908
Advanced Layer 3 Modular Switch

2002/95/EC **RoHS** COMPLIANT

AlliedWare Plus™ OPERATING SYSTEM

The Allied Telesis SwitchBlade® x908 industry leading modular switch incorporates eight high-speed 60Gbps expansion bays, delivering a new generation of high performance. The SwitchBlade x908 provides scalable and versatile switching solutions for today's Enterprise networks.

The highly configurable SwitchBlade x908 3RU modular switch combines an advanced IPv4 L3 feature set and comprehensive IPv6 routing features, with wire-speed IPv6 hardware capability, future proofing the network.

Featuring dual hot-swap PSUs, an advanced QoS feature set, multicasting support, and LAN resiliency support, the SwitchBlade x908 also provides Service Provider capabilities such as a large L3 route table, and EPSR support.

Stacking between two units is supported via fixed stacking connectors on the rear of the chassis, providing 160Gbps of stacking bandwidth. Stacking of more than two units is via expansion modules (XEMs) on the front panel.

The SwitchBlade x908 incorporates the AlliedWare Plus™ Operating System, using an industry standard Command Line Interface (CLI), facilitating effortless manageability.

Expansion module options:

- AT-XEM-STK Stacking XEM
- AT-XEM-1XP 1 x 10GbE (XFP)
- AT-XEM-12S 12 × 100/1000BASE-X SFP ports
- AT-XEM-12T 12 × 10/100/1000BASE-T (RJ-45) ports
- Future modules to include 12 × GbE with PoE[1] and 2 × 10GbE[2]

Port Density:

- 96 × GbE ports per switch (with PoE[1])
- 8 × 10GbE ports (16 with XEM-2XP)[2] per switch
- 1344 × GbE ports per rack (14 units)
- 112 ×10GbE ports per rack (224 with XEM-2XP)[2]

Key Features

Expandability
- 8 high speed 60Gbps expansion bays
- 2 x 80Gbps stacking connectors on the rear of the chassis, for use as high availability stacking links for 2 SwitchBlade x908s[3]
- Stacking of up to 4 SwitchBlade x908s using the stacking module, XEM-STK[4]
- IPv6 routing option

Performance
- 640Gbps Switching fabric
- 262Mpps forwarding rate (with current XEM modules. Fabric is capable of up to 476Mpps)
- Extensive wire-speed traffic classification for ACLs and QoS
- Supports 10KB Jumbo frame size for data center and server aggregation applications
- Wire-speed multicasting

Flexibility & Compatibility
- Eight 60Gbps expansion bays supporting a choice of modules, including 1x 10GbE, 12 x 1GbE (SFP), 12 x 1GbE (RJ45), and stacking for port flexibility and application versatility
- XEM modules compatible with x900-24X and x900-12XT/S
- Gigabit SFP ports will support any combination of 10/100/1000BASE-T, 100BASE-FX, 100BASE-BX, 1000BASE-SX, 1000BASE-LX, 1000BASE-ZX or 1000BASE-ZX CWDM SFPs

Reliability
- Modular AlliedWare Plus operating system
- Dual hot swappable PSUs with 1 + 1 redundancy
- Dual feed support - a separate power circuit can feed each power supply providing extra reliability
- Hot-swappable XEMs
- Hot swappable fan modules
- Full environmental monitoring of PSUs, fans, temperature and internal voltages, with SNMP traps to alert network managers in case of any failure

Resiliency
- STP, RSTP, MSTP (802.1s)
- Link Aggregation (802.3ad LACP)
- VRRP
- EPSR

VLAN Support
- Supports 4096 VLANs
- Private and Dynamic VLANs
- VLAN Double Tagging

Security
- Private VLANs, providing security and port isolation of multiple customers using the same VLAN
- 802.1x support

Quality of Service
- Policy based QoS features
- Highly configurable traffic classification
- Extensive remarking capabilities, to fit in with any network's QoS scheme
- Control plane traffic prioritization
- Mixed scheduling, to support complex traffic queuing requirements
- 8 QoS queues per port
- Two-rate three-color (green, yellow, red) bandwidth metering, with burst sizes for improved TCP-IP bandwidth limiting performance and bandwidth resolution down to 1Kbps
- Low switching latency essential for Voice over IP (VoIP) and real-time streaming media applications

Management
- Out of band 10/100/1000 Ethernet management port and console management port, both on the front panel for ease of access
- An SD memory card socket on the front panel, allowing software release files, configurations and other files to be stored for backup and distribution to other switches
- Port mirroring
- SSH and SNMPv3 for secure management
- RADIUS Authentication

SwitchBlade® x908 | Advanced Layer 3 Modular Switch

Performance

Wire speed switching

The SwitchBlade x908 has fully non-blocking switching on all ports, so IPv4 Layer 2 switching and Layer 3 routing occur at wire speed. This is ideal for high-end server deployments, and when aggregating gigabit connections.

Aggregation at Layer 2 and Layer 3

Ideal for access aggregation applications at Layer 2. A large L3 route table provides support for thousands of IP interfaces, essential when aggregating complex IP networks.

Industry-leading Quality of Service

Operating at wire-speed, QoS boosts network performance and guarantees the delivery of business-critical Ethernet services and applications.

Enterprise and Education customers can be sure that time-critical services like voice and video applications will take precedence over non-essential services like file downloads. Unmatched QoS accuracy is achieved with a bandwidth limit resolution down to 1Kbps, which is ideal for precise control of Enterprise desktop-based VoIP applications.

Service Providers (SPs) can offer customers bandwidth and performance profiles tailored to their needs.

Reliability

The SwitchBlade x908 switch operates with one Power Supply Unit (PSU); installing a second PSU provides redundancy. Internal PSUs eliminate the need for an external Redundant Power Supply (RPS) that occupies valuable rack space. Built-in redundancy guarantees the continued delivery of essential services. The SwitchBlade® x908 also features front-to-back cooling, which increases its reliability.

Multicasting

The SwitchBlade x908 has a high multicast group capacity. This allows SPs to offer as many video services to their customers as possible, maximizing their per-port revenue. Extensive multicast protocol support includes PIM-SM and IGMPv3.

Security

The SwitchBlade x908 has 802.1x user authentication. This is essential for Enterprise networks needing to prevent intruders from accessing their network. Other security features include Private VLANs.

Easy management options

Administrators can choose from a range of secure remote management options including SNMPv3 and SSH.

Flexibility

The high speed expansion modules provide copper or fiber connectivity possibilities, delivering the ultimate in flexibility.

Expansion module options:

- AT-XEM-STK   Stacking XEM
- AT-XEM-1XP   1 × 10GbE (XFP)
- AT-XEM-12S   12 × 100/1000BASE-X SFP ports
- AT-XEM-12T   12 × 10/100/1000BASE-T (RJ-45) ports

The XEMs are also compatible with the x900-24X and x900-12XT/S.

All of these modules provide non-blocking performance, while the ten gigabit uplinks make the SwitchBlade x908 ideal for aggregating gigabit to the desktop or for gigabit uplinks from Fast Ethernet switches.

Ethernet Protected Switched Rings

Ethernet Protected Switched Rings (EPSR) and 10 GbE modules allow the SwitchBlade x908, with a number of x900 switches or iMAPs, to form a protected ring with sub 50ms failover. This feature is perfect for high performance at the core of Enterprise or Provider Access networks.

Stacking

Virtual Chassis Stacking provides a highly available system where network resources can be spread out across a number of stacked nodes, thus reducing the impact of any one of the stacked nodes failing. Switch ports on different nodes across the stack can be aggregated together to provide excellent high availability characteristics. Excellent scalability can be achieved in that individual stacked nodes can be inserted into, and removed from, the stack as bandwidth and feature requirements in the network evolve.

On the SwitchBlade x908, stacking can be achieved by using the two connectors on the rear of the chassis, where each connector is capable of providing 80Gbps of stacking bandwidth. When stacking more than two units, this can be achieved via a XEM module on the front panel. The stacking XEM module provides two proprietary 30Gbps stacking links allowing up to 4 nodes to be aggregated.

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[1] *PoE XEM, expected availability late 2008. Standard copper XEM available now.*

[2] *XEM-2XP (2 x XFP) XEM module, expected availability, late 2008.*

[3] *It is not possible to use the rear stacking ports and the XEM-STK in the same stack.*

[4] *AlliedWare Plus software release 5.2.1 supports stacking of 2 units. Support for more than 2 units will be available in a future release.*

Medium Business

- Flexibility
- Room to Grow

Internet

AR750S

SwitchBlade x908

Security Cameras

VoIP

AP
Wireless Access Point

8600

8000S

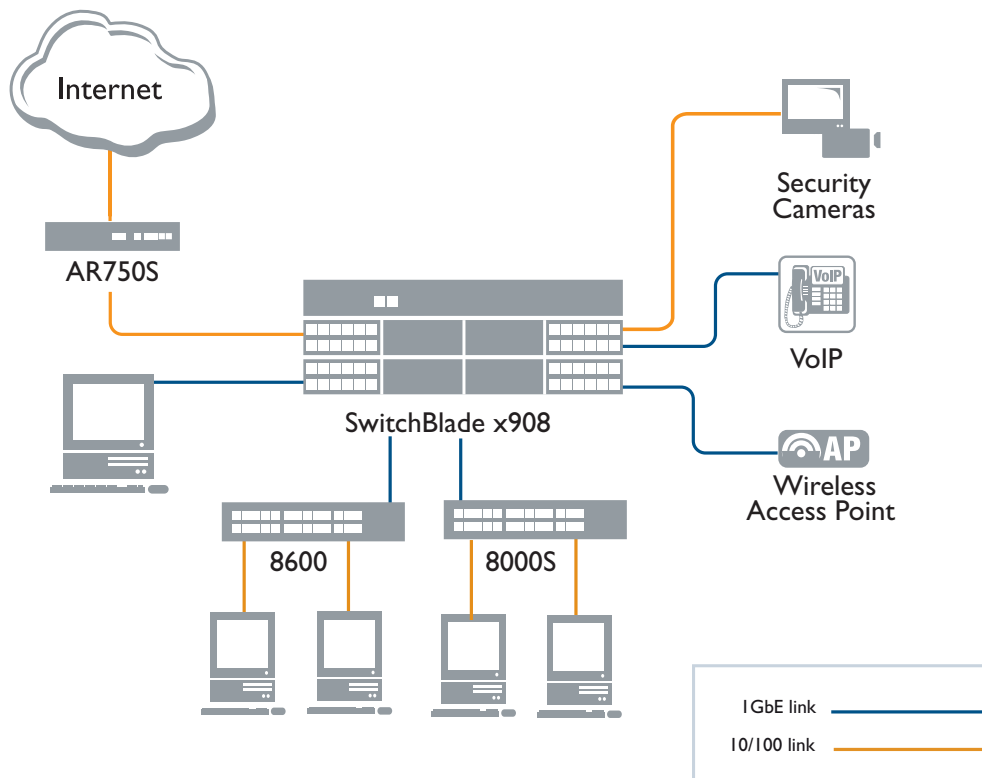|	
1GbE link	
10/100 link	

Diagram 1: Medium Business

Diagram 1 illustrates the SwitchBlade x908 in a Medium Business network. This is ideal for customers who want to deploy a network solution that will accommodate today's needs as well as scale to meet their future needs. Inherent in the architecture of Allied Telesis products is the ability to implement modular growth as necessary.

Gigabit Ethernet ports are added to provide connectivity directly to the SwitchBlade x908. These ports are used to provide Video and VoIP connectivity directly to the center of the network. Further copper ports are added to allow for direct connection of servers to the SwithBlade x908. Copper ports are added through the XEM-12T, a 12 port Gigabit Ethernet copper module. The SwitchBlade x908 links the network to the Internet over a 100Mbps copper link via an AR750S router.

A XEM-12S, a 12 port (100/1000 BASE-X SFP) expansion module, is added to allow for fiber uplinks from the edge switches to the SwitchBlade x908. As the company expands, additional fiber and copper XEM modules can be added, allowing the network to adapt in response to business needs.

The high-speed expansion bays provide copper or fiber connectivity possibilities, delivering the ultimate in flexibility and providing complete non-blocking traffic throughput.

Campus

- Expandibility
- Flexibility
- Bandwidth
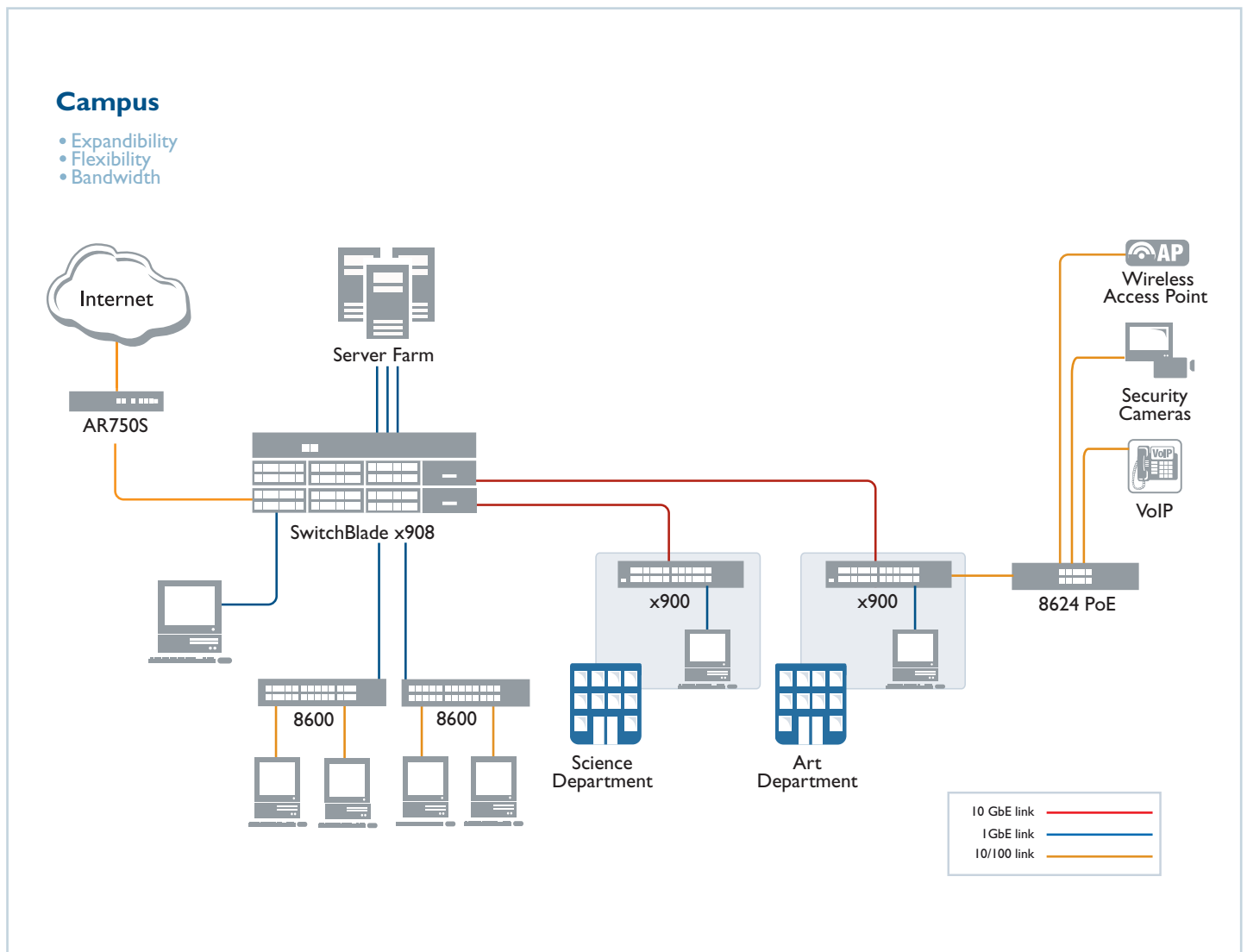
Diagram 2 illustrates the SwitchBlade x908 in an Enterprise Campus network.

Education providers are able to offer high speed connection to the desktop for power users and utilize high-capacity uplinks for maximum throughput of high-density traffic.

Servers and management work stations are attached directly to the core of the network using Gigabit Ethernet via XEM-12T modules. Links from the server farm to the core can be trunked to allow for greater bandwidth and resiliency. Industry leading QoS features on the SwitchBlade x908 allow important server traffic to be prioritized over less critical network traffic.

In the main building, edge switches uplink to the SwitchBlade x908 core switch, using fiber connections to the XEM-12S, a 12 port (100/1000 BASE-X SFP) expansion module. Other buildings uplink to the core using 10 Gigabit Ethernet links from x900 switches to the XEM-1XP modules on the SwitchBlade x908. This enables large files, video and voice to be transferred without compromising service agreements.

For further expansion in the core, or in the other departments, the XEM-STK stacking module provides two proprietary 30Gbps stacking links using special stacking cables. Excellent scalability can be achieved in that individual stacked nodes can be inserted into, and removed from, the stack as bandwidth and feature requirements in the network evolve. Further to this, the SwitchBlade x908 supports proprietary 80Gbps stacking links allowing a further SwitchBlade x908 to be added to the core without compromising bandwidth between the units.

SwitchBlade® x908 | Advanced Layer 3 Modular Switch

Enterprise Core
- Redundancy
- Resiliency
- Reliability

Server Aggregation

Servers

x900

Core

Link Aggregation

Stacking

Switchblade x908   Switchblade x908

Distribution

Link Aggregation

x900   x900

Edge

9400   8000S   8600   9400   8000S   8600

Stacking link
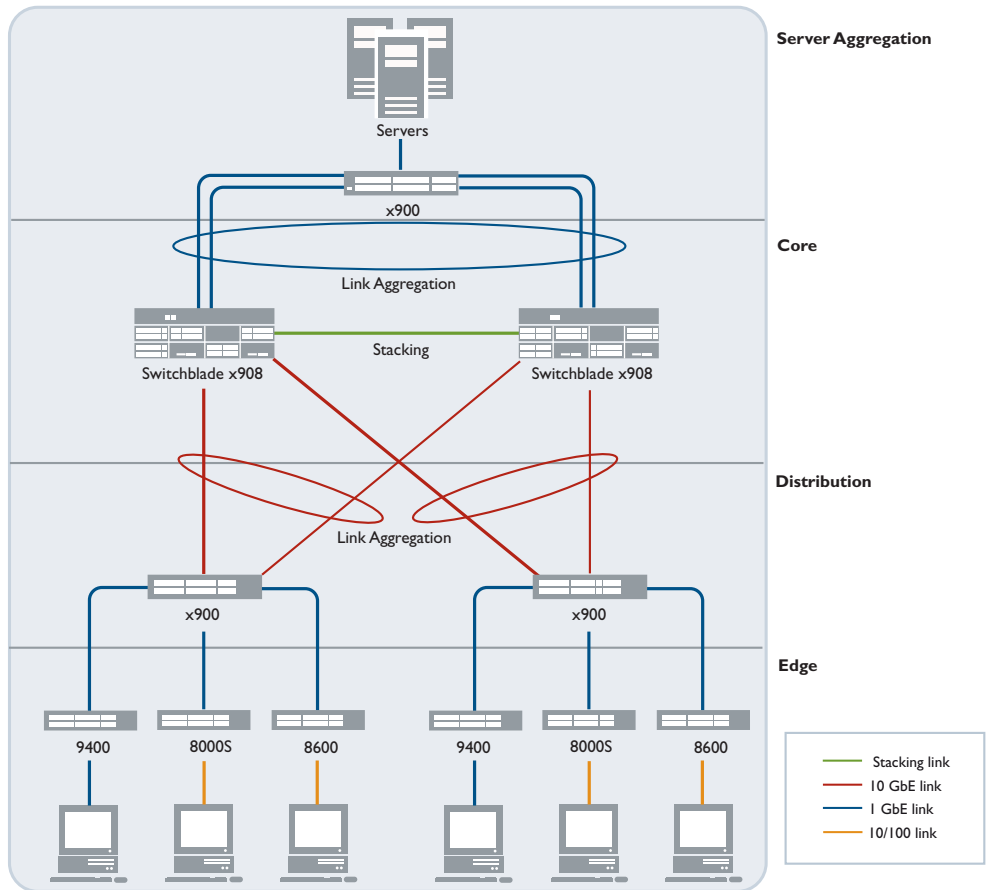10 GbE link
1 GbE link
10/100 link

Diagram 3: Enterprise Core

With two 80Gbps stacking ports on the rear of the device, the SwitchBlade x908 is an ideal solution for Enterprises wanting to create a resilient core without going to the expense of a full chassis solution. The use of stacking across the two devices allows them to appear as a single node on the network.

10GbE expansion modules and hotswappable XFPs provide high-speed, high-capacity fiber uplinks.

Link aggregation between the stacked core and distribution layer, as illustrated in Diagram 3, provides increased bandwidth as well as resiliency. Link aggregation to the servers creates a resilient connection to important data.

The SwitchBlade x908 switch allows two power supplies to be installed. Able to operate with one Power Supply Unit (PSU), installing a second PSU provides redundancy and the ability to support dual feed where needed.
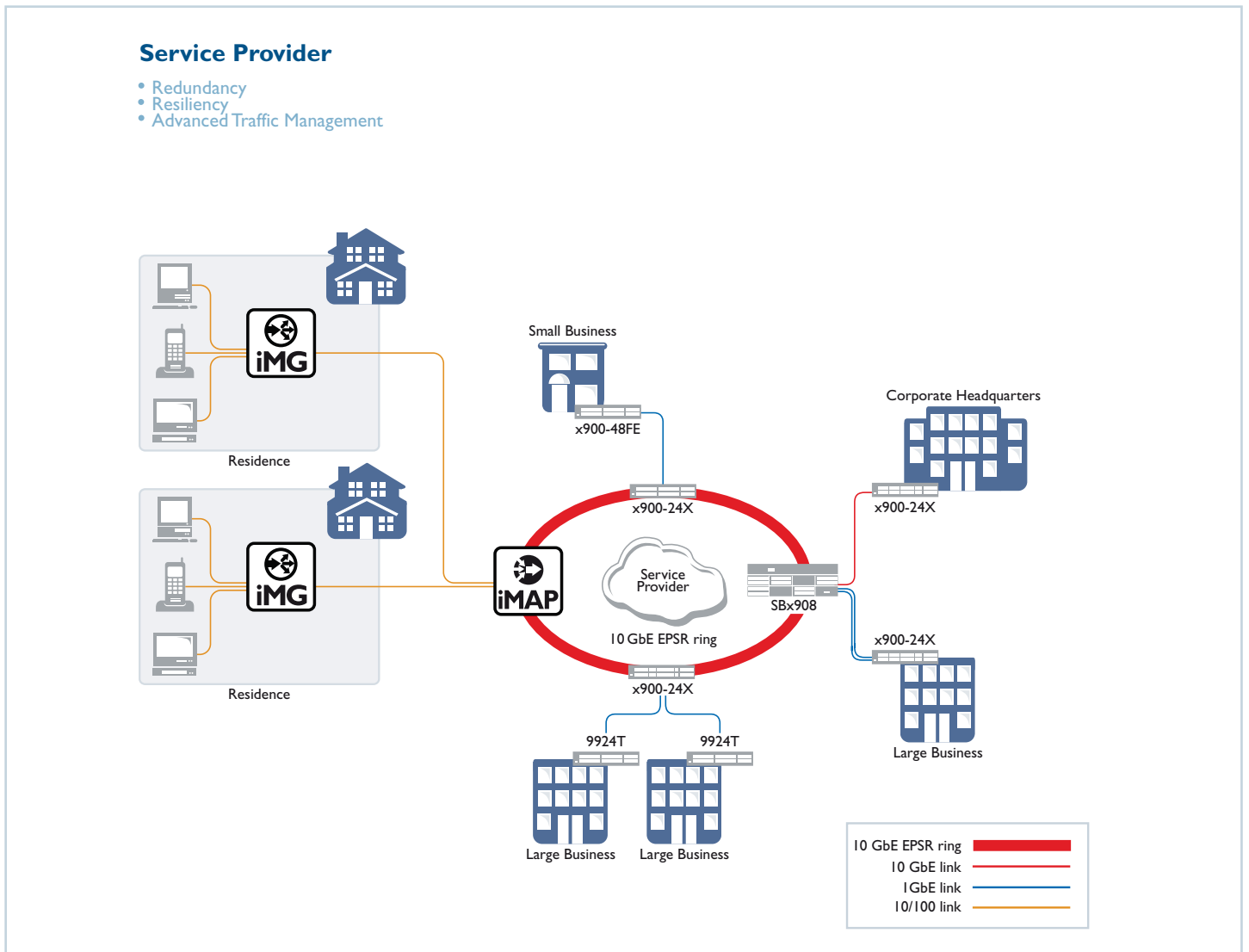
Service Provider

- Redundancy
- Resiliency
- Advanced Traffic Management

Small Business
x900-48FE

Corporate Headquarters
x900-24X

x900-24X

Service Provider
10 GbE EPSR ring

SBx908

x900-24X
Large Business

x900-24X

9924T 9924T

Large Business **Large Business**

10 GbE EPSR ring	
10 GbE link	
1GbE link	
10/100 link	

Residence

Residence

iMG

iMG

iMAP

Diagram 4: Service Provider

Ethernet Protected Switched Rings (EPSR) and 10 GbE modules allow the SwitchBlade x908, with a number of x900 switches or iMAPs, to form a high speed protected ring with sub 50ms failover, as illustrated in Diagram 4 above. This feature is perfect for high performance at the core of enterprise or provider access networks.

The SwitchBlade x908 QoS features are ideal for Service Providers wanting to ensure maximum availability of premium voice, video and data services, and at the same time manage customer service level agreements. Comprehensive, low latency Quality of Service (QoS) features operating at wire-speed provide flow-based traffic management with full classification, prioritization, traffic shaping and min/max bandwidth profiles.

The SwitchBlade x908 has a high multicast group capacity. This allows Service Providers to offer as many video services to thier customers as possible, maximizing their per-port revenue. The SwitchBlade x908 Advanced Modular switch provides maximum Gigabit Ethernet port density in a 3RU chassis. A high degree of flexibility future-proofs your investment against changes in network infrastructure, topologies, and physical link requirements.

New XEM modules will provide greater Ethernet connectivity options in the future allowing the network to adapt in response to business needs.

Able to operate with one Power Supply Unit (PSU), installing a second PSU provides redundancy and the ability to support dual feed where needed. Internal PSUs eliminate the need for an external Redundant Power Supply (RPS) which occupies valuable rack space. Built-in redundancy guarantees the continued delivery of essential services.

SWITCHBLADE® x908 | Advanced Layer 3 Modular Switch

Internal PSUs eliminate the need for an external Redundant Power Supply (RPS) which occupies valuable rack space. Built-in redundancy guarantees the continued delivery of essential services.

Comprehensive low-latency Quality of Service (QoS) features operating at wire-speed, provide flow-based traffic management with full classification, prioritization, traffic shaping and min/max bandwidth profiles. For Enterprise customers, the SwitchBlade x908 QoS features protect productivity by guaranteeing performance of business-critical applications (including VoIP services), and help to restore and maintain responsiveness of Enterprise applications in the workplace.

Performance
640Gbps Switching Fabric
Up to 256K IPv4 routes
Up to 16K MAC addresses
Up to 4K layer 2 multicast groups
Up to 1K layer 3 IPv4 multicast groups
4K VLANs
512MB DDR SDRAM SODIMM
Separate packet buffer memory
64MB Flash Memory

Reliability
MTBF
SwitchBlade x908: 150K Hours
(calculated using Telcordia SR-332 (Issue 1, May 2001) at 25°C ambient operating temperature)

Power Characteristics
AC Voltage: 100 to 240V (+10% auto ranging)
Frequency: 47 to 63Hz

DC Voltage: 36 to 72V

Power Consumption[5]
SwitchBlade x908: 510W (maximum)

Environmental Specifications
Operating Temperature Range:
0°C to 40°C (32°F to 104°F)
Derated by 1°C per 305 Meters (1000ft)

Storage Temperature Range:
-30°C to 70°C (-13°F to 158°F)

Operating Relative Humidity Range:
5% to 80% non-condensing

Storage Relative Humidity Range:
5% to 95% non-condensing

Altitude:
3,050 Meters maximum (10,000ft)

SBx908 Physical Dimensions
Height: 132mm
Width: 440mm
Depth: 456mm
Mounting: 3 RU form-factor

XEM Physical Dimensions
Height: 45mm
Width: 109mm
Depth: 253mm

PSU Physical Dimensions
Height: 40mm
Width: 84mm
Depth: 299mm

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[5] *Excludes PoE*

SBx908 Weights
Chassis with blanking plates
(shipping config)   14.32 kg

Packaged chassis
(shipping config)   ~16.7 kg

Chassis with
4 x PSUs & 8 x XEMs   ~25.2 kg

XEM Weights
XEM Weight   0.82 kg
XEM weight packaged   ~ 1.4 kg

PSU Weights
PSU weight   1.32 kg

PSU weight
packaged with 1 cable   ~ 1.9 kg

Electrical Approvals and Compliances
EMC: EN55022 class A, FCC class A, VCCI class A
Immunity: EN55024, EN61000-3-levels 2 (Harmonics), and 3 (Flicker)

Safety
Standards: UL60950-1, CAN/CSA-C22.2 No. 60950-1-03, EN60950-1, EN60825-1, AS/NZS 60950

Certification: UL, cUL, TUV

Restrictions on Hazardous Substances (RoHS) Compliance
EU RoHS Compliant

Country of Origin
Singapore

Standards and Protocols

AlliedWare Plus™ Operating System Version 5.2.1

Authentication

RFC 1321 MD5 Message-Digest Algorithm
RFC 1828 IP Authentication using Keyed MD5
RFC 2082 RIP-2 MD5 Authentication

Border Gateway Protocol (BGP)

BGP Dynamic Capability
BGP Graceful Restart
BGP Outbound Route Filtering
Extended Communities Attribute
RFC 1771 Border Gateway Protocol 4 (BGP-4)
RFC 1772 Application of the Border Gateway Protocol in the Internet
RFC 1997 BGP Communities Attribute
RFC 2385 Protection of BGP Sessions via the TCP MD5 Signature Option
RFC 2439 BGP Route Flap Damping
RFC 2796 BGP Route Reflection - An Alternative to Full Mesh IBGP
RFC 2858 Multiprotocol Extensions for BGP-4
RFC 2918 Route Refresh Capability for BGP-4
RFC 3065 Autonomous System Confederations for BGP
RFC 3107 Carrying Label Information in BGP-4
RFC 3392 Capabilities Advertisement with BGP-4

Encryption

FIPS 180-1 Secure Hash Standard (SHA-1)
FIPS 186 Digital Signature Standard (RSA)
FIPS 46-3 Data Encryption Standard (DES & 3DES)

Ethernet

IEEE 802.2 Logical Link Control
IEEE 802.3 Ethernet CSMA/CD
IEEE 802.3ab 1000BASE-T
IEEE 802.3ad Link Aggregation
IEEE 802.3ad (LACP) Link Aggregation Control Protocol
IEEE 802.3ae 10 Gigabit Ethernet
IEEE 802.3u 100BASE-T
IEEE 802.3x Flow Control - Full Duplex Operation
IEEE 802.3z Gigabit Ethernet

General Routing

ECMP Equal Cost Multi Path routing
RFC 768 User Datagram Protocol (UDP)
RFC 791 Internet Protocol (IP)
RFC 792 Internet Control Message Protocol (ICMP)
RFC 793 Transmission Control Protocol (TCP)
RFC 826 Address Resolution Protocol (ARP)
RFC 894 Standard for the transmission of IP datagrams over Ethernet networks
RFC 903 Reverse ARP
RFC 919 Broadcasting Internet datagrams
RFC 922 Broadcasting Internet datagrams in the presence of subnets
RFC 925 Multi-LAN ARP
RFC 932 Subnetwork addressing scheme
RFC 950 Internet Standard Subnetting Procedure
RFC 951 Bootstrap Protocol (BootP)
RFC 1027 Proxy ARP
RFC 1035 DNS Client
RFC 1042 Standard for the transmission of IP datagrams over IEEE 802 networks
RFC 1071 Computing the Internet checksum
RFC 1122 Internet Host Requirements
RFC 1191 Path MTU discovery
RFC 1256 ICMP Router Discovery Messages
RFC 1518 An Architecture for IP Address Allocation with CIDR

RFC 1519 Classless Inter-Domain Routing (CIDR)
RFC 1541 DHCPv4 Client & Server
RFC 1542 Clarifications & Extensions for the Bootstrap Protocol
RFC 1700 Assigned Numbers
RFC 1812 Requirements for IPv4 Routers
RFC 1918 IP Addressing
RFC 2131 DHCP
RFC 2132 DHCP Options and BOOTP Vendor Extensions.
RFC 2581 TCP Congestion Control
RFC 3046 DHCP Relay Agent Information Option (DHCP Option 82)
RFC 3232 Assigned Numbers
RFC 3993 Subscriber-ID Suboption for DHCP Relay Agent Option

IPv6 Support

RFC 1886 DNS Extensions to support IPv6
RFC 1981 Path MTU Discovery for IPv6
RFC 2460 IPv6 specification
RFC 2461 Neighbour Discovery for IPv6
RFC 2462 IPv6 Stateless Address Autoconfiguration
RFC 2463 ICMPv6
RFC 2464 Transmission of IPv6 Packets over Ethernet Networks
RFC 2526 Reserved IPv6 Subnet Anycast Addresses
RFC 2711 IPv6 Router Alert Option
RFC 2893 Transition Mechanisms for IPv6 Hosts and Routers
RFC 3056 Connection of IPv6 Domains via IPv4 Clouds
RFC 3484 Default Address Selection for IPv6
RFC 3513 IPv6 Addressing Architecture
RFC 3587 IPv6 Global Unicast Address Format

Management

IEEE802.1-PAE-MIB Port Access Control MIB
IEEE802.3-LAG-MIB Link Aggregation MIB
IGMP MIB
MSTP MIB
PIM MIB
RFC 1155 Structure and Identification of Management Information for TCP/IP-based Internets
RFC 1157 Simple Network Management Protocol (SNMP)
RFC 1212 Concise MIB definitions
RFC 1213 MIB for Network Management of TCP/IP-based internets: MIB-II
RFC 1215 Convention for defining traps for use with SNMP
RFC 1227 SNMP MUX protocol and MIB
RFC 1239 Standard MIB
RFC 1493 Bridge MIB
RFC 1724 RIPv2 MIB Extension
RFC 1757 RMON (groups 1,2,3 and 9)
RFC 1850 OSPFv2 MIB
RFC 2011 SNMPv2 MIB for IP using SMIv2
RFC 2012 SNMPv2 MIB for TCP using SMIv2
RFC 2096 IP Forwarding Table MIB
RFC 2239 Definitions of Managed Objects for IEEE 802.3 Medium Attachment Units (MAUs)
RFC 2674 Definitions of Managed Objects for Bridges with Traffic Classes, Multicast Filtering
RFC 2787 Definitions of Managed Objects for VRRP
RFC 2790 Host MIB
RFC 2819 RMON MIB
RFC 2863 Interfaces Group MIB
RFC 2932 IPv4 Multicast Routing MIB
RFC 3164 Syslog Protocol
RFC 3411 An Architecture for Describing SNMP Management Frameworks
RFC 3412 Message Processing and Dispatching for the SNMP

RFC 3413 SNMP Applications
RFC 3414 User-based Security Model (USM) for SNMPv3
RFC 3415 View-based Access Control Model (VACM) for SNMP
RFC 3416 Version 2 of the Protocol Operations for SNMP
RFC 3417 Transport Mappings for the SNMP
RFC 3418 MIB for SNMP
RFC 3635 Definitions of Managed Objects for the Ethernet-like Interface Types

Multicast Support

Bootstrap Router for PIM-SM
IGMP & MLD snooping switches
IGMP Proxy
IGMP Snooping
RFC 1112 Host extensions for IP multicasting
RFC 2236 Internet Group Management Protocol, version 2 (IGMPv2)
RFC 2362 PIM-SM
RFC 2715 Interoperability Rules for Multicast Routing Protocols
RFC 3376 IGMPv3

Open Shortest Path First (OSPF)

Graceful OSPF Restart
OSPF Link-local Signaling
OSPF Restart Signaling
OSPF TE Extensions
Out-of-band LSDB Resync
RFC 1245 OSPF protocol analysis
RFC 1246 Experience with the OSPF protocol
RFC 1370 Applicability Statement for OSPF
RFC 1765 OSPF Database Overflow
RFC 2328 OSPFv2
RFC 2370 OSPF Opaque LSA Option
RFC 3101 OSPF Not-So-Stubby Area (NSSA) Option
RFC 3509 Alternative Implementations of OSPF Area Border Routers

Quality of Service

Differentiated Services
IEEE 802.1p Priority Tagging
Combined strict priority & WRR queuing
RFC 2211 Specification of the Controlled-Load Network Element Service
RFC 2474 Definition of the Differentiated Services Field (DS Field)
RFC 2475 An Architecture for Differentiated Services
RFC 2597 Assured Forwarding PHB Group
RFC 2697 A Single-Rate Three-Color Marker
RFC 2698 A Two-Rate Three-Color Marker
RFC 3246 Expedited Forwarding PHB (Per-Hop Behavior)

Redundancy

EPSR Ethernet Protection Switched Rings
IEEE 802.1D Spanning Tree Protocol (STP) - MAC Bridges
IEEE 802.1s Multiple Spanning Tree Protocol (MSTP)
IEEE 802.1t - 2001 802.1D maintenance
IEEE 802.1w - 2001 Rapid Spanning Tree Protocol (RSTP)
RFC 3768 Virtual Router Redundancy Protocol (VRRP)

Routing Protocols

RFC 1058 Routing Information Protocol (RIP)
RFC 2080 RIPng for IPv6
RFC 2453 RIP version 2

Security Features

802.1x Authentication protocols (TLS, TTLS & PEAP)
IEEE 802.1x Port Based Network Access Control Port Security (intrusion detection)
Bridge Protocol Data Unit Protection
RFC 2246 TLS Protocol v1.0
RFC 3546 Transport Layer Security (TLS) Extensions
RFC 3748 PPP Extensible Authentication Protocol (EAP)

RFC 4251 Secure Shell (SSHv2) Protocol Architecture
RFC 4252 Secure Shell (SSHv2) Authentication Protocol
RFC 4253 Secure Shell (SSHv2) Transport Layer Protocol
RFC 4254 Secure Shell (SSHv2) Connection Protocol
SSH Remote Login
SSLv2
SSLv3

Services
RFC 854 Telnet protocol specification
RFC 855 Telnet Option Specifications
RFC 857 Telnet Echo Option
RFC 858 Telnet Suppress Go Ahead Option
RFC 1091 Telnet terminal-type option
RFC 1305 Network Time Protocol, version 3 (NTPv3)
RFC 1350 Trivial File Transfer Protocol (TFTP)
RFC 1985 SMTP Service Extension
RFC 2049 MIME
RFC 2554 SMTP Service Extension for Authentication
RFC 2821 Simple Mail Transfer Protocol (SMTP)
RFC 2822 Internet Message Format
SCP Secure Copy

VLAN Support
IEEE 802.1ad VLAN double tagging (Q-in-Q)
IEEE 802.1Q Virtual LANs
IEEE 802.1v VLAN classification by protocol & port
IEEE 802.3ac VLAN tagging

Ordering Information

AT-SBx908
Advanced Layer 3 Modular Switch
8 x High Speed Expansion Bays
Order Number: 990-001305-00

Note that NO power supplies ship with the base chassis product, they must be ordered separately.

Power supply and fan module
AT-PWR05 Hot-swappable AC load-sharing power supply
Order number: 990-002013-zz

AT-PWR05-80[6] Hot-swappable DC load-sharing power supply
Order number: 990-002107-80

AT-PWR07[7] PoE power supply
Order number: 990-002110-zz

Where zz = 10 for U.S. power cord
20 for no power cord
30 for U.K. power cord
40 for Asia/Pacific power cord
50 for European power cord

AT-FAN03[8] Spare Fan Module
Order number: 990-002032-00

Expansion Modules
AT-XEM-1XP
1 x 10GbE (XFP)
Order number: 990-000997-00

AT-XEM-12S
12 x 100/1000BASE-X SFP ports
Order number: 990-000998-00

AT-XEM-12T
12 x 10/100/1000BASE-T (RJ-45) ports
Order number: 990-000999-00

AT-XEM-STK[9]
2 x High Speed Stacking Ports
Order number: 990-001626-00

XEM Stacking Cables
AT-XEM-STK-CBL0.5
0.5 meter stacking cable
Order number: 990-002063-00

AT-XEM-STK-CBL2.0
2.0 meter stacking cable
Order number: 990-002064-00

Rear Chassis Stacking Cable
AT-HS-STK-CBL1.0
1.0 meter stacking cable
Order number: 990-002116-00

SFP Modules[10]
AT-SPFXBD-LC-13
100BASE-BX Bi-Di (1310nm Tx, 1550 Rx) fiber up to 15km

AT-SPFXBD-LC-15
100BASE-BX Bi-Di (1550nm Tx, 1310 Rx) fiber up to 15km

AT-SPFX/2
100BASE-FX 1310nm fiber up to 2km

AT-SPFX/15
100BASE-FX 1310nm fiber up to 15km

AT-SPFX/40
100BASE-FX 1310nm fiber up to 40km

AT-SPTX
10/100/1000 BASE-T 100m Copper

AT-SPSX
1000BASE-SX
GbE multi-mode 850nm fiber

AT-SPLX10
1000BASE-LX
GbE single-mode 1310nm fiber up to 10km

AT-SPLX40
1000BASE-LX
GbE single-mode 1310nm fiber up to 40km

AT-SPLX40/1550
1000BASE-LX
GbE single-mode 1550nm fiber up to 40km

AT-SPZX80
1000BASE-LX
GbE single-mode 1550nm fiber up to 80km

10GbE XFP Modules
For use with XEM-1XP

AT-XPSR
10GBASE-SR
850nm Short-haul, 300m with MMF

AT-XPLR
10GBASE-LR
1310nm Medium-haul, 10km with SMF

AT-XPER40
10GBASE-ER
1550nm Long-haul, 40km with SMF

Feature licenses

AT-FL-SBX9-01
SBx908 Advanced Layer 3 license:
• OSPF
• BGP4
• PIMv4
• VLAN double tagging (Q in Q)
Order number: 980-000130

AT-FL-SBX9-02[7]
SBx908 IPv6 Pack:
• IPv6 Static Routes
• IPv6 Management
• RIPng
Order number: 980-000131

About Allied Telesis

Allied Telesis is part of the Allied Telesis Group. Founded in 1987, the company is a global provider of secure Ethernet/IP access solutions and an industry leader in the deployment of IP Triple Play networks over copper and fiber access infrastructure. Our POTS-to-10G iMAP integrated Multiservice Access Platform and iMG intelligent Multiservice Gateways, in conjunction with advanced switching, routing and WDM-based transport solutions, enable public and private network operators and service providers of all sizes to deploy scalable, carrier-grade networks for the cost-effective delivery of packet-based voice, video and data services. Visit us online at www.alliedtelesis.com.

Service and Support

Allied Telesis provides value-added support services for its customers under its Net.Cover programs. For more information on Net.Cover support programs available in your area, contact your Allied Telesis sales representative or visit our website.

RoHS

Allied Telesis RoHS-compliant product conforms to the European Union Restriction of the Use of Certain Hazardous Substances (RoHS) in Electrical and Electronic equipment. Allied Telesis ensures RoHS conformance by requiring supplier Declarations of Conformity, monitoring incoming materials, and maintaining manufacturing process controls.

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[6] *Available Q2, 2008*

[7] *Available late 2008*

[8] *For spares only - Fan modules are included with chassis.*

[9] *The XEM-STK does not ship with any stacking cables.*

[10] *Please check with your sales representative for ROHS compliance on SFP modules*

Connecting The (IP) World

Allied Telesis