Allied Telesis

SWITCHBLADE® 4000

Layer 3 Modular Switch

AT-SB4004
4 line card capacity
Up to 96 Gb ports

AT-SB4008
8 line card capacity
Up to 192 Gb ports

Designed to meet the most demanding performance requirements of enterprise class networks, the SwitchBlade® 4000 Series Layer 3 modular switches are ideally suited to network aggregation and server connectivity. Packaged in four or eight slot modular chassis configurations, the SwitchBlade® 4000 Series blends state-of-the-art Layer 3 functionality with industry leading value. Redundancy and resiliency features including hot-swappable Power Supply Units (PSUs), fan trays, line cards and redundant controllers ensure high system availability. The switching architecture delivers wire-speed switching and IP/IPX routing with advanced, flexible policy-based quality of service and rich multicast support. Multiple user interface options provide a set of configuration and control features that facilitate effortless manageability while allowing maximum flexibility and control of the network.

Eliminate network bottlenecks and boost network performance

AT-SB4000 Series offers uncompromised packet switching performance, delivering Layer 2 and Layer 3 IP/IPX data at wire-speed on all ports regardless of packet size. With a switch capacity of up to 384 Gbps yielding 286 Mpps of throughput, the AT-SB4000 Series seamlessly meets the demands of education, government, and enterprise networks.

Secure your company

The AT-SB4000 Series offers many advanced features to ensure company security: Wire-speed Filtering, MAC control, Port-Intrusion Detection, Access Control Lists, Port Security, Secure Shell (SSH) and Secure Socket Layer (SSL). With 4096 VLANs available, which are Port, Protocol, Subnet, and MAC Address based, security across VLANs is assured. The security features (MAC & IP addresses, SYN, ACK bit level) are in the hardware.

Minimize the cost of downtime

The SwitchBlade® hot-swappable switch controllers, power supplies, and line cards ensure that this core network device keeps networks alive 24/7.

With N+1 power supply redundancy downtime is completely eliminated. Cooling is assured with up to 11 cubic meters / minute of airflow for the four fan AT-SB4004, and up to 19 cubic meters / minute of airflow for the six fan AT-SB4008.

Hot-swappable switch controllers provide redundancy and, when two switch controllers are installed, sharing of load for increased performance.

Port trunking is provided to assure very reliable high-speed connections. Combining multiple physical connections in a single logical connection provides both greater bandwidth and redundancy .

Virtual Router Redundancy Protocol (VRRP) provides automatic router backup in mission-critical environments. This feature enables multiple AT-SB4000 Series switches to share a virtual IP address, used as the default LAN gateway. Should the master fail, the virtual IP address is seamlessly assumed by the other switches. This results in a down-time of only three seconds. Meanwhile, LAN devices can continue to be configured (for example with DHCP) with a single default gateway address.

Rapid Spanning Tree Protocol (RSTP) prevents loops in Layer 2 networks and also provides rapid system recovery following a failure in the network.

Key Features

Performance

- Chassis based aggregation Layer 3 switch
- Wide variety of line cards including high density gigabit and 10 gigabit options
- Capable of non-blocking wire-speed Layer 2 and 3 switching
- Full multiprotocol routing capabilities
- Up to 384Gbps of switching capacity yielding 286Mpps of throughput
- Up to 4096 VLANs

Quality of Service

- Highly programmable QoS with independent latency and bandwidth controls based on Layer 2, 3, and 4 characteristics
- Two priority schedulers and eight queues per port

Multicast

- PIM DM, PIM SM, DVMRP

Resiliency

- High availability provided by two switch controllers and three PSUs
- Redundant failover protection when two switch controllers are installed
- Sharing of switching load when two switch controllers are installed
- Hot swappable to minimize network downtime
- STP, RSTP, VRRP

Management

- Comprehensive monitoring of environmental and operational conditions, with LED, alarm relay, event logging, and SNMP trap capability
- CLI or GUI switch management
- Management tools including – SNMP, HTTP Server, HTTP Client, TFTP Client, NTP, SSL, SSH

Quality of Service

The AT-SB4000 Series market leading Quality of Service (QoS) mechanism allows traffic shaping in a highly programmable manner, based on Layer 2 to Layer 4+ packet characteristics.
The resulting 128 different Classes of Traffic enable flexible policy enforcement with independent latency and 64kbps increment min/max bandwidth guarantees. AT-SB4000 Series units use IEEE 802.1p, DiffServ, Layer 4 filtering and RSVP along with sophisticated hardware based switching to deliver a rich QoS capability. The AT-SB4000 Series fits into education and government networks requiring separation of multicast traffic and dual staff and student networks all running over a single infrastructure. It is also scalable with a large number of traffic classes with varying requirements as is typical in today's converged application-based networks.

Multimedia capable multicasting

With multicast protocols such as IGMP, IGMP Snooping, DVMRP, PIM-SM, and PIM-DM, the AT-SB4000 Series delivers TV cable broadcasting, video conferencing, phone-conferences, phone, and web-browsing capabilities. Multicasting between VLANs at wire-speed is also offered for streaming server application with clients on different VLANs.

Broadcast storm control

A traffic storm occurs when packets flood the network, creating excessive traffic and degrading network performance. The broadcast storm control (BCSC) feature allows the user to set limits for each VLAN. This is useful to prevent traffic congestion of the network and inefficient usage of the core.

World class software

The AT-SB4000 Series includes AlliedWare® software, allowing simple configuration and control without compromising flexibility. The switches have built-in DHCP server; TFTP for image and configuration downloads; Network Time Protocol client and server capabilities; advanced, customizable triggers with an e-mail client allowing unmatched flexibility in monitoring and controlling events; standard CLI and highly intuitive GUI device configuration tools plus full SNMP and MIB support for network management - accessed either in-band or out-of-band via serial console or 10/100Base-T port. The AT-SB4000 Series leads the market with an extensive suite of Layer 2 and Layer 3 features, including static routing, routing protocols (RIP/RIPv2, OSPF), multicast protocols (IGMP, IGMP Snooping, DVMRP, PIM-SM, PIM-DM), IP, IPX, 4096 VLANs, and flexible port trunking with link aggregation. These features are bundled to suit the needs of a standard application or for an advanced architecture.

AlliedWare®

A common OS ensures the AT-SB4000 Series Switch will interoperate seamlessly with other Allied Telesis fixed function, modular routers and all Layer 3 to Layer 7 switch families, allowing operational investment protection for training, management and monitoring.

A standards-based implementation assures full interoperability with all other major network equipment vendors. The AT-SB4000 Series Switch is shipped "ready to run" with AlliedWare®, a comprehensive software suite that includes all the features, management capabilities and performance today's networks demand.

AlliedView - EMS

AlliedView-EMS is a Java-based device management solution from Allied Telesis that provides a user-friendly, window-based environment to manage the AT-SB4000 Series Switch, as well as the complete lineup of Allied Telesis managed devices. Whether managing a large network distributed across multiple sites or a small network with only a handful of nodes, AlliedView-EMS provides the tools needed to effectively monitor and proactively manage Allied Telesis's intelligent networking products.

Triggered Events

A trigger sets off an ordered sequence of scripts and commands to be executed when a certain event occurs, providing a powerful mechanism for automating the response to specific events. Each trigger may reference multiple scripts and any script can be used by any trigger. Using this feature, the AT-SB4000 Series Switch can, for example, send an email alert to the network manager when trouble occurs, or it can automatically shut down an interface to protect against suspected attacks.

Scripts

The scripting facility enables sequences of commands to be stored in a script and replayed at any time, allowing the AT-SB4000 Series Switch to be easily configured or quickly re-configured. This is useful when developing a complex configuration, making the same configuration change to several different Switches, or introducing a configuration change that must occur at a particular time. Scripts can be created on a PC and uploaded to the AT-SB4000 Series Switch, or they can be created using the AT-SB4000 Series Switch's own integrated text editor. They can be activated either from the command line or from a trigger.

Flexibility

With 8 Line Card slots supporting up to 384 ports of 10/100Base-TX (RJ45), 256 ports of 100Base-FX, 192 ports of 10/100/1000Base-T, 192 ports of 1000Base-X or combinations, the AT-SB4008 provides great porting flexibility.

The AT-SB4004 and its 4 Line Card slots support up to 192 ports of 10/100Base-TX (RJ45), 128 ports of 100Base-FX, 96 ports of 10/100/1000Base-T, 96 ports of 1000Base-X or combinations.

Cable management at the core of the network is often a major challenge. The AT-SB4008 Switch offers a detachable cable manager to help tame the cabling jungle.

Physical Characteristics

Ethernet Interface Connections

10/100/1000Base-T Shielded RJ-45
100Base-FX MT-RJ multi-mode fiber
1000Base-X SFP multi-mode and single-mode fiber
1000Base-X GBIC multi-mode and single-mode fiber
1000Base-X XFP multi-mode and single-mode fiber
10GBase-R

Power Characteristics

100-240vAC, 50 or 60Hz with a -48vDC version available

Power Supply Units

Each AC power supply is rated at a maximum of 420W with a worst-case efficiency of 65%, which equates to 3A at 230V (or 6A at 110V) on the mains input per power supply. Worst case AC PSU output load regulation is +/- 0.5%. The inrush current under cold start at 230V is 75A and at 110V is 37A. AC PSU MTBF is 84,160 hrs and weighs 3.8kg (8.4 lbs) unpackaged, or 4.3kg (9.5 lbs) packaged.

Each DC power supply is rated at a maximum of 420W with a worst-case efficiency of 65%, which equates to 11A at 59Vdc (or 18A at 36Vdc) per power supply on the input side. Worst case DC PSU output load regulation is +/- 0.5%. The inrush current under cold start at 72V is 50A and at 36V is 25A. DC PSU MTBF is 84,160 hrs and weighs 3.6kg (7.9 lbs) unpackaged, or 4.1kg (9.0 lbs) packaged.

SWITCHBLADE® 4000| Layer 3 Modular Switch

Fan Trays

The AT-SB4108 8 slot chassis has a fan tray of six fans with a power consumption of 43W and a weight of 3.7kg (8.2 lbs) unpackaged, or 4.5kg (9.9 lbs) packaged.

The AT-SB4104 4 slot chassis has a fan tray of four fans with a power consumption of 15W and a weight of 1.5kg (3.3 lbs) unpackaged, or 2.3kg (5.1 lbs) packaged.

Environmental Specifications

Operating Temp: 0°C to 40°C (32°F to 104°F)
Storage Temp: -25°C to 75°C (-13°F to 167°F)
Relative humidity range: 5% to 95% non-condensing
Altitude: 10,000ft max

Physical Dimensions

AT-SB4108: Chassis only
15U form factor, 19" rack mount
Height: 666mm (26.3")
Width: 440mm (17.3")
Depth: 343mm (14.2")

AT-SB4104: Chassis only
9U form factor, 19" rack mount
Height: 400mm (15.8")
Width: 440mm (17.3")
Depth: 343mm (14.2")

Weight

AT-SB4108: 19.0kg (41.8lbs) unpackaged, or 29.6kg (65.12 lbs) packaged.

AT-SB4104:13.0kg (27.3lbs) unpackaged, or 22.4kg (49.3 lbs) packaged.

Acoustic Noise

AT-SB4008: 60.0 dB
AT-SB4004: 59.0 dB

Electrical/Mechanical Approvals

EMC Emissions: EN55022 class A, FCC class A, VCCI class 1

Immunity: EN55024: EN61000-4 levels 2 (ESD), 3 (susceptibility), 4 (fast transients), 5 (power surge), 6 (RF immunity), and 11 (Voltage dips and sags; EN61000-3 levels 2 (Harmonics), and 3 (Flicker)

Safety: UL60950, CAN/CSA-C22.2NO. 60950-00, No. 950-M25 AS/NZ3260 EN60950, ACA TS001, IEC60950

Country of Origin

Singapore

Flexibility - SwitchBlade® Cards

The AT-SB4008 and AT-SB4004 offer a comprehensive set of line cards for complex networks.

Key Features

- Hot swappable
- Can be used in both AT-SB4108 and AT-SB4104 chassis
- LEDs identify port activity
- ASIC switching

Interface options to cover a variety of network needs.

A diverse range of interface options - including copper and fibre, short and long haul, (SFPs, and XFPs) - delivers network managers the flexibility and freedom needed to tame today's fast-paced yet price-conscious network environments.

Combining speed and reliability for the network core.

Capable of wire-speed non-blocking switching, and hot swappable to minimize downtime, SwitchBlade® line cards are designed to perform when performance is critical.

AT-SB4211A Switch Controller

- Two Application-Specific Integrated Circuit (ASIC) switch chips per switch controller
- 104 k-entry forwarding address database
- 128 MByte RAMBUS packet buffer

Processing Core

- 500 MHz IBM 750L PowerPC Processor
- 1 Mbyte of external L2 cache
- 256 MBytes Synchronous SDRAM
- 64 bit memory width
- 32 MBytes flash memory
- 512 kBytes Non-volatile Storage SRAM (NVRAM)
- Battery backed real time clock (RTC)

Asynchronous Serial Configuration Port

- Up to 115 kbps
- Standard DB9 female RS-232 connector
- Hardware or software flow control

10/100Base-TX Management Port

- 10/100Base-TX MDI port with RJ-45 connector
- LEDs indicate link activity, full/half-duplex, and collisions

Environmental and Fault Monitoring

Fault LEDs indicate:

- Switch controller or software malfunction
- PSU or PSU fan malfunction
- Fan tray fan failure
- Fan tray removal
- Excess temperature of CPU
- SDRAM (DIMM) not recognized
- SDRAM (DIMM) not compatible

Alarm relays can indicate:

- PSU status
- Fan tray removal
- Fan tray fan status
- Excess temperature of CPU
- Exceeding user settable temperature at CPU
- Port status change
- Manager login

Event logs and messages can also be generated for a range of fault and operational conditions

Power Consumption

- 60 W

MTBF

- 188,560 hrs

LEDs

- LEDs for system status, fault indication, and management port status

Weight

- 2.5 kg (5.5 lbs) unpackaged, or 3.3 kg (7.3 lbs) packaged

AT-SB4215 Bandwidth Expander

- Designed for use with the AT-SB4104 chassis
- An economical alternative to a second switch controller
- Unlocks the chassis's full bandwidth potential, without the need for a second switch controller
- Does not perform switching functions or switch controller redundancy
- Ideal for cost conscious networks where maximum bandwidth is a higher priority than switch controller redundancy

Power Consumption

- 0 W

Compatibility

- Use in slot B of the AT-SB4104 chassis only

Weight

- 2.3 kg (5.1 lbs) unpackaged, or 3.1 kg (6.7 lbs) packaged

SwitchBlade® Line Cards

All line cards have:

- ASIC switch chips operating in Layer 3 mode
- 40 k-entry forwarding address database
- Support for protocol-based VLANS and MAC address learning
- 64 MByte RAMBUS packet buffer per switch chip
- 33MHz 64bit PCI control bus

AT-SB4311 48-Port (RJ-45) Fast Ethernet Line Card

- 48 auto-negotiating 10/100Base-TX ports
- Auto MDI/MDI-X negotiation as default (MDI-X if negotiation is disabled)
- RJ-45 connectors

LEDs
Single (switchable) dual-mode LED per port
Indicates full/half duplex, collisions, and link activity and speed (10/100)

Power Consumption
30W

MTBF
322,560 hrs

Weight
2.3 kg (5.1 lbs) unpackaged, or 3.1 kg (6.7 lbs) packaged

AT-SB4352 32-Port (MT-RJ) 100Mb Line Card

- 32 100Base-FX ports
- MT-RJ connectors

LEDs
Two per port
Indicate full/half duplex, collisions, and link activity

Power Consumption
53W

MTBF
83,590 hrs

Weight
2.5 kg (5.5 lbs) unpackaged, or 3.3 kg (7.2 lbs) packaged

AT-SB4411A 8-Port (RJ-45) Gigabit Ethernet Line Card

- 8 auto-negotiating 10Base-T/100Base-TX/1000Base-T ports
- Auto MDI/MDI-X negotiation as default (MDIX if negotiation is disabled)
- RJ-45 connectors

LEDs
Two per port
Indicate full/half duplex, collisions, and link activity and bps speed (10/100/1000)

Power Consumption
30W

MTBF
456,137 hrs

Weight
2.2 kg (4.9 lbs) or 3.0 kg (6.5 lbs) packaged

AT-SB4412 24-Port (RJ-45) Gigabit Ethernet Line Card

- 24 auto-negotiating 10/100Base-TX/1000Base-T ports
- Auto MDI/MDI-X negotiation as default (MDI-X if negotiation is disabled)
- RJ-45 connectors

LEDs
Two per port
Indicate full/half duplex, collisions, and link activity and bps speed (10/100/1000)

Power Consumption
82W

MTBF
357,000 hrs

Weight
2.4 kg (5.3 lbs) unpackaged, or 3.2 (7.0 lbs) packaged

AT-SB4441A 8-GBIC Line Card

- 8 1000Base-X ports
- Compatible with copper (1000Base-T) and fibre (1000Base-SX and 1000Base-LX) GBICs
- Compatible with ATI GBICs (see Ordering information - Gigabit Interface Converter (GBIC) Modules)

LEDs
Two per port
Indicate link activity, half duplex, and GBIC status

Power Consumption
50W

MTBF
310,500 hrs

Weight
2.3 kg (5.1 lbs) or 3.1 kg (6.7 lbs) packaged

AT-SB4442 24-Port SFP Gigabit Line Card

- 24 1000Base-X
- SFP (small form pluggable) connectors

LEDs
Two per port
Indicate link activity, half duplex, and SFP status

Power Consumption
85W

MTBF
300,000 hours

Weight
2.4 kg (5.3 lbs) unpackaged, or 3.2 (7.0 lbs) packaged

AT-SB4541A 10 Gigabit Ethernet Line Card

- 1 x 10GBase-R
- Compatible with a hot-swappable XFP module

LEDs
Two
Indicate link activity and XFP status

Power Consumption
58W

MTBF
330,000 hrs

Weight
2.2 kg (4.9 lbs) unpackaged, or 3.0 kg (6.5 lbs) packaged

Power Outputs for Optical Ports

Card	Wave Length	Fibre Type	Transmitter dBm Min	Receiver Sensitivity Max dBm (of same card)	dBm loss allowed Max. [1]	Minimum distance using IEEE 802.3 fibre attenuation (Km)[2 3]	Received Power Max. dBm avg.[4]
AT-SB4352 32 port (MT-RJ)	1310nm	50.0um	-20	-31	6	4.0	-14
AT-SB4352 32 port (MT-RJ)	1310nm	62.5um	-23.5	-31	2.5	1.7	-14

Maximum fibre attenuation per km from IEEE 802.3 Table 38-12

Description	62.5um MMF		50um MMF		10um SMF Unit
Nominal fibre specification wavelength (nM)	850	1300	850	1300	1310
Fibre cable attenuation (max) (dB/km)[1]	3.75	1.5	3.5	1.5	0.5

[1] *dBm loss allowed Max = Transmitter dBm min avg. - Receiver sensitivity max avg. - (2 x 1dBm per connector) - 3dBm buffer*
[2] *Minimum distance using IEEE 802.3 fibre attenuation = dBm loss allowed max / Fibre cable attenuation (max)*
[3] *Note, when calculating the actual distance the attenuation of the fibre optical cable, and all attenuators, must be used. Measurements may be required to determine this attenuation.*
[4] *Max power received before transceiver stops receiving correctly.*
[5] *Maximum distances calculated based on an allocation of 1.5dB total connections and splice loss for multi-mode fibre and 2.0dB for single-mode.*

Protocol Highlights

Quality of Service	
Queues / port	8
Priority queuing levels	8
802.1p	Yes
IETF DiffServ	Yes
Strict priority queuing	Yes
BW slice resolution (bps)	64k
Weighted fair queuing (equivalent)	Yes
Random early detection	Yes
Min/Max BW control	Yes
Ports killed for BW cntl	0
VLANs	
VLANs	4096
Throughput between VLANs at wirespeed	Yes
802.1Q (VLANs and VLAN extension)	Yes
Port based VLANs	Yes
Protocol based VLANs	Yes
IP subnet based VLANs	Yes
MAC address based VLANs	Yes
GVRP	Yes
Spanning Tree	
Spanning Tree Protocol 802.1d (STP)	Yes
Multiple instances of STP and / or RSTP	Yes
Rapid Spanning Tree Protocol (RSTP)	Yes
Routing	
Max OSI Layer 3 Routing Interfaces	48/32 : 118 G24 : 118 G10 : 59 G8 GBIC : 59
RIP V1 / V2	Yes
OSPF	Yes
Redundant route protocol	VRRP
IPX in hardware	Yes
Appletalk in software	Yes
Layer 3 IP/IPX filtering	Yes
Border Gateway Protocol 4 (BGP-4)[6]	Yes (BGP-150 Routes)

Multicast	
ICMP hardware routing	Yes
IGMP & IGMP snooping	Yes
DVMRP	Yes (Full Layer 3)
PIM-DM & PIM-SM	Yes (Full Layer 3)
Link Aggregation	
802.3.ad (LACP)	Yes
Max ports per trunk	16
Max number of trunks	Equal to number of ports installed
Layer 4 Switching	
Supported	Yes
Wire-speed Security	
MAC address in HW	Yes
IP address in HW	Yes
SYN, ACK bit level in HW	Yes
Management	
SNMP, MIB II	Yes
RMON groups 1, 2, 3 and 9 (RFC 1757)	Yes
CLI	Yes
Telnet	Yes
Web configuration	Yes
Enterprise platform	Swim View & Manager, AT-ViewPlus, HP OV
Configuration stored in NVRAM (allowing automatic restart after power loss)	Yes
Back-up Operating System Stored	Yes
Port mirroring (port and VLAN based)	Yes
Status LEDs for power, management, traffic	Yes
Two Management Ports (Serial & 10/100BASET)	Yes

[6] *BGP-4 is restricted to 150 routes*

Standards and Protocols

Software Release 2.7.5A-06

Border Gateway Protocol 4 (BGP-4)[7]

RFC 1771 Border Gateway Protocol 4
RFC 1966 BGP Route Reflection
RFC 1997 BGP Communities Attribute
RFC 1998 Multi-home Routing
RFC 3065 Autonomous System Confederations for BGP
RFC 3392 Capabilities Advertisement with BGP-4
RFC 2858 Multiprotocol Extensions for BGP-4
RFC 2918 Route Refresh Capability for BGP-4
RFC 2439 BGP Route Flap Damping
RFC 2385 Protection of BGP Sessions via the TCP MD5 Signature Option
RFC 2104 HMAC

Ethernet

RFC 894 Ethernet II Encapsulation
IEEE 802.1D MAC Bridges
IEEE 802.1Q Virtual LANs
IEEE 802.1v VLAN Classification by Protocol and Port
IEEE 802.2 Logical Link Control
IEEE 802.3ab 1000BASE-T
IEEE 802.3ac VLAN TAG
IEEE 802.3ad (LACP) Link Aggregation
IEEE 802.3ae 10 Gigabit Ethernet
IEEE 802.3u 100BASE-T
IEEE 802.3x Full Duplex Operation
IEEE 802.3z Gigabit Ethernet

General Routing

RFC 768 UDP
RFC 791 IP
RFC 792 ICMP
RFC 1256 ICMP Router Discovery Messages
RFC 793 TCP
RFC 2822 Internet Message Format
RFC 826 ARP
RFC 903 Reverse ARP
RFC 925 Multi-LAN ARP
RFC 950 Subnetting, ICMP
RFC 1812 Router Requirements
RFC 1027 Proxy ARP
RFC 1055 SLIP
RFC 1122 Internet Host Requirements
RFC 1144 Van Jacobson's Compression
RFC 1288 Finger
RFC 2390 Inverse Address Resolution Protocol
RFC 2131 DHCP
RFC 1542 BootP
RFC 2132 DHCP Options and BOOTP Vendor Extensions.
RFC 1582 RIP on Demand Circuits
RFC 1918 IP Addressing
RFC 1701 GRE
RFC 1702 GRE over IPv4
RFC 3232 Assigned Numbers
RFC 1332 The PPP Internet Protocol Control Protocol (IPCP)
RFC 1378 The PPP AppleTalk Control Protocol (ATCP)
RFC 1570 PPP LCP Extensions
RFC 1661 The Point-to-Point Protocol (PPP)
RFC 1552 The PPP Internetworking Packet Exchange Control Protocol (IPXCP)
RFC 1762 The PPP DECnet Phase IV Control Protocol (DNCP)
RFC 1877 PPP Internet Protocol Control Protocol Extensions for Name Server Addresses
RFC 1962 The PPP Compression Control Protocol (CCP)
RFC 1968 The PPP Encryption Control Protocol (ECP)
RFC 1974 PPP Stac LZS Compression Protocol
RFC 1978 PPP Predictor Compression Protocol
RFC 1990 The PPP Multilink Protocol (MP)
RFC 2125 The PPP Bandwidth Allocation Protocol (BAP) / The PPP Bandwidth Allocation Control Protocol (BACP)
RFC 2516 A Method for Transmitting PPP Over Ethernet (PPPoE)
RFC 2661 L2TP
"IPX Router Specification", v1.2, Novell, Inc., Part Number 107-000029-001
AppleTalk

IP Multicasting

RFC 1075 DVMRP
RFC 1112 Host Extensions
RFC 1812 Router Requirements
RFC 2236 IGMPv2
RFC 2362 PIM-SM
RFC 2715 Interoperability Rules for Multicast Routing Protocols
draft-ietf-idmr-dvmrp-v3-9 DVMRP
draft-ietf-magma-snoop-02 IGMP and MLD snooping switches
draft-ietf-pim-dm-new-v2-04 PIM-DM
draft-ietf-pim-sm-v2-new-09 PIM-SM

Management

RFC 1155 MIB
RFC 1157 SNMP
RFC 1212 Concise MIB definitions
RFC 1213 MIB-II
RFC 1643 Ethernet MIB
RFC 1493 Bridge MIB
RFC 2790 Host MIB
RFC 1515 Definitions of Managed Objects for IEEE 802.3 MAUs
RFC 1573 Evolution of the Interfaces Group of MIB-II
RFC 1757 RMON (groups 1,2,3 and 9)
RFC 2011 SNMPv2 MIB for IP using SMIv2
RFC 2012 SNMPv2 MIB for TCP using SMIv2
RFC 2096 IP Forwarding Table MIB
RFC 2338 VRRP
RFC 2576 Coexistence between V1, V2, and V3 of the Internet-standard Network Management Framework
RFC 2578 Structure of Management Information Version 2 (SMIv2)
RFC 2579 Textual Conventions for SMIv2
RFC 2580 Conformance Statements for SMIv2
RFC 2665 Definitions of Managed Objects for the Ethernet-like Interface Types
RFC 2674 Definitions of Managed Objects for Bridges with Traffic Classes, Multicast Filtering and Virtual LAN Extensions (VLAN)
RFC 2856 Textual Conventions for Additional High Capacity Data Types
RFC 3164 Syslog Protocol
RFC 3410 Introduction and Applicability Statements for Internet-Standard Management Framework
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 the SNMP
RFC 3416 Version 2 of the Protocol Operations for SNMP
RFC 3417 Transport Mappings for the SNMP
RFC 3418 MIB for SNMP
draft-ietf-bridge-8021x-00.txt Port Access Control MIB

OSPF

RFC 1245 OSPF protocol analysis
RFC 1246 Experience with the OSPF protocol
RFC 2328 OSPFv2
RFC 1586 OSPF over Frame Relay
RFC 1793 Extending OSPF to Support Demand Circuits
RFC 1587 The OSPF NSSA Option

QoS

RFC 1349 Type of Service in the IP Suite
RFC 2205 Reservation Protocol
RFC 2211 Controlled-Load
RFC 2475 An Architecture for Differentiated Services
IEEE 802.1p Priority Tagging

RIP

RFC 1058 RIPv1
RFC 1723 RIPv2

Security

RFC 1492 TACACS
RFC 1858 Fragmentation
RFC 2865 RADIUS
RFC 2866 RADIUS Accounting
RFC 2868 RADIUS Attributes for Tunnel Protocol Support
RFC 3580 IEEE 802.1X Remote Authentication Dial In User Service (RADIUS) Usage Guidelines
draft-grant-tacacs-02.txt TACACS+
draft-ylonen-ssh-protocol-00.txt SSH Remote Login Protocol
IEEE 802.1x Port Based Network Access Control

Services

RFC 2821 SMTP
RFC 854 Telnet Protocol Specification
RFC 855 Telnet Option Specifications
RFC 856 Telnet Binary Transmission
RFC 857 Telnet Echo Option
RFC 858 Telnet Suppress Go Ahead Option
RFC 932 Subnetwork addressing scheme
RFC 1305 NTPv3
RFC 1091 Telnet terminal-type option
RFC 1179 Line printer daemon protocol
RFC 1350 TFTP
RFC 1510 Network Authentication
RFC 2049 MIME
RFC 1985 SMTP Service Extension
RFC 2156 MIXER
RFC 1945 HTTP/1.0

SSL

RFC 2246 The TLS Protocol Version 1.0
draft-freier-ssl-version3-02.txt SSLv3

STP / RSTP

IEEE 802.1t - 2001 802.1D maintenance
IEEE 802.1w - 2001 RSTP

[7] *BGP-4 is restricted to 150 routes*

Part Numbers

Chassis

AT-SB4108-00
8 slot 3 inlet AC chassis (no PSUs)

AT-SB4108-80
8 slot 2 inlet DC chassis (no PSUs)

AT-SB4104-00
4 slot 2 inlet AC chassis (no PSUs)

AT-SB4104-80
4 slot 2 inlet DC chassis (no PSUs)

Switch Controller Cards

AT-SB4211A
Switch Controller card
(AlliedWare 2.7.4 or higher required)

Line Cards

AT-SB4311
48-Port (RJ-45) Fast Ethernet Line Card
(AlliedWare 2.7.1 or higher required)

AT-SB4352
32-Port (MT-RJ) Fast Ethernet Line Card
(AlliedWare 2.7.4 or higher required)

AT-SB4411A
8-Port (RJ-45) Gigabit Ethernet Line Card
(AlliedWare 2.7.1 or higher required)

AT-SB4412
24-Port (RJ-45) Gigabit Ethernet Line Card
(AlliedWare 2.7.4 or higher required)

AT-SB4441A
8-GBIC Line Card
(AlliedWare 2.7.4 or higher required)

AT-SB4442[1]
24-Port (SFP) Gigabit Ethernet Line Card

AT-SB4541A
1 port 10GBASE-R Line Card
(AlliedWare 2.7.1 or higher required)

Bandwidth Expander Card

AT-SB4215
Bandwidth Expander Card
for the SB4104 (4 slot chassis)

Power Supply Units

AT-SB4162-xx
Power Supply Unit (All fully hot swappable)

Where xx = 10 for AC, US power cord
20 for AC, no power cord
30 for AC, UK power cord
40 for AC, Australia power cord
50 for AC, Europe power cord
80 for 48vDC power supply

Fan Trays

AT-SB4151
Fan Tray for AT-SB4104 (4 slot chassis)

AT-SB4152
Fan Tray for AT-SB4108 (8 slot chassis)

Accessories

AT-SB4172
Cable Management Kit for AT-SB4108 (8 slot chassis)
Includes Cable Management Panel & Loops for 8 slot chassis

AT-SB4191
Fan tray blank panel for SB4108 (8 slot chassis)

AT-SB4192
PSU blank panel

AT-SB4194
Fan tray blank panel for SB4104 (4 slot chassis)

AT-SB4195
Blade slot blank panel

Ordering Information

Gigabit Interface Converter Modules[8]

AT-G8T
1000T GBIC Copper

AT-G8SX-01
500m SX GBIC, based on 50 micron MMF
220m SX GBIC, based on 62.5 micron MMF

AT-G8LX10
10km LX GBIC, based on 9 micron SMF

AT-G8LX25
25km LX GBIC, based on 9 micron SMF

AT-G8LX40
40km LX GBIC, based on 9 micron SMF

AT-G8LX70
70km LX GBIC, based on 9 micron SMF

AT-G8ZX70/wwww
70km ZX GBIC, based on 9 micron SMF

Where wwww=	Where xx=	CWDM Wavelength
1610	00	1610NM
1590	01	1590NM
1570	02	1570NM
1550	03	1550NM
1530	04	1530NM
1510	05	1510NM
1490	06	1490NM
1470	07	1470NM
1450	08	1450NM
1430	09	1430NM
1410	10	1410NM
1390	11	1390NM
1370	12	1370NM
1350	13	1350NM
1330	14	1330NM
1310	15	1310NM

[8] *The GBICs listed are subject to change at any time without notice.*

SFP modules[9]

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

AT-SPSX
GbE multi-mode 850nm fiber

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

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

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

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

10GbE XFP modules[10]

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

AT-XPLRM - 10GBASE-LRM
(1310nm 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)

AT-XPER80 - 10GBASE-ER
(1550nm Long-haul, 80km with SMF)

Feature Licenses

AT-AR-SBFL3UPGRD
Full Layer 3 feature licence bundle

- Appletalk
- RSVP
- PIM DM
- PIM SM
- DVMRP
- VRRP

Order number: 980-10013-y

AT-SB4000BGP-15O
BGP-4 (restricted to 150 routes) license

- BGP-4

Order number: 980-000125-y

Where y = 00 for 1 shot
01 for 1 licence
05 for 5 licenses
10 for 10 licenses
25 for 25 licenses
50 for 50 licenses
100 for 100 licenses
250 for 250 licenses

[9] *When used in the AT-SB4442 24-Port SFP Gigabit Line Card, all SFPs operate at 1000 Base-X only.*

[10] *Please contact your Allied Telesis representative for availability.*

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.
www.alliedtelesis.com

USA Headquarters | 19800 North Creek Parkway | Suite 200 | Bothell | WA 98011 | USA | T: +1 800 424 4284 | F: +1 425 481 3895
European Headquarters | Via Motta 24 | 6830 Chiasso | Switzerland | T: +41 91 69769.00 | F: +41 91 69769.11
Asia-Pacific Headquarters | 11 Tai Seng Link | Singapore | 534182 | T: +65 6383 3832 | F: +65 6383 3830
www.alliedtelesis.com

 617-00482-00 Rev Y