SwitchBlade® x3112
Access Edge Chassis Switch

The Allied Telesis SwitchBlade® x3112 is a 12-slot access edge chassis switch, primarily targeted for service provider fiber access networks, and equally at home at the enterprise network edge and the data center. The x3112 was designed to deliver high availability, maximum performance with wirespeed non-blocking backplane functionality and high port count.

FTTx Service Provider Applications
The AT-SBx3112 is a versatile carrier-class FTTx platform for delivering Gigabit services to residential, Multi-Dwelling Unit (MDU) and business customers in the last mile. It features redundant power supplies, controllers and WAN ports to ensure reliability standards in carrier networks are met, along with powerful sub-50 millisecond failover protection using Ethernet Protection Switched Ring (EPSRing™) for link level protection. The AT-SBx3112 is available with either AC or DC power options.

As an FTTx platform, the AT-SBx3112 can support a maximum of 400 ports per chassis using 40-port 1000Mbps CSFP-based line cards (AT-SBx31GC40). The SBx3112 can also support redundant 10G uplinks using the four SFP+/ SFP+ ports on the powerful Allied Telesis CFC960s central fabric control card or using 6-port SFP+-based line card (AT-SBx31XS6) or 4-port XFP-based line card (AT-SBx31XZ4). The AT-SBx3112 can act as an aggregation hub for last mile FTTx applications using 10G line cards. It features 80 Gigabit non-blocking throughput to each slot, thus providing a maximum level of performance for FT Tx applications, both 1G and 10G. Coupled with ultra-fast Allied Telesis 960 Gigabits central fabric control cards, FT Tx services can operate at wirespeed connectivity.

An evolution of our tried and tested iMAP™ (Integrated Multiservice Access Platform) carrier-grade platform, the AT-SBx3112 delivers true IP Triple Play services such as IPTV, VoIP, tiered High-Speed Internet Access (HSIA) and other cloud-based services such as over-the-top video, remote storage and backup and cloud computing.

The raw performance, combined with high availability of the AT-SBx3112, also allows it to be deployed as both end-of-row and aggregation in data center applications, and in campus applications as the ultimate in network edge connectivity.

High-Availability Architecture
The SwitchBlade x3112 is designed to deliver 99.999% reliability, while offering high availability with sub-millisecond hitless failover for mission-critical applications where uptime is essential such as data centers, hospitality, government and financial institutions.

Dual redundant management/switch fabric modules inter-connected through redundant paths to the line cards over a passive backplane, and dual redundant power options, ensures maximum system up-time. Power is delivered via up to two AC or DC system power supplies, and two Power over Ethernet (PoE) supplies to ensure continual operation.

Power over Ethernet Plus (PoE+)
The SwitchBlade x3112 supports IEEE 802.3at PoE+ (30W) to enable customers to futureproof their networks. PoE+ provides greater power for applications such as IP surveillance cameras supporting Pan, Tilt and Zoom, IP video phones, RFID readers, Point-of-Sale (POS) or Wireless Access Points.

Secure Management
Only authorized administrators can access the management interface of the SwitchBlade x3112. Protocols such as SSH provide an encrypted interface for both local and remote connections, with out-of-band management achieved through a dedicated Gigabit port, if required.

Securing the Network Edge
To ensure the protection of the data, it is important to control access to the network. Protocols such as IEEE 802.1x authentication guarantee that only known users are connected to the network. Unknown users who physically connect can be isolated to a pre-determined part of the network, offering guests such benefits as Internet access while ensuring the integrity of private network data.

Secure Differentiation
QoS schemes for SwitchBlade x3112 access solutions are designed to ensure that application performance and availability are not impacted with network growth. Features such as IEEE 802.1p/Q enable tiered data services for residential, business and enterprise users or prioritize real-time applications such as IP phones and IP cameras.

Environmentally Friendly
In keeping with our commitment to environmentally-friendly processes and products, the SwitchBlade x3112 is designed to reduce power consumption and minimize hazardous waste. Features include the use of high-efficiency power supplies and low-power chip sets. The switches also include an eco-friendly button on the front panel allowing conservation of additional power by turning off all diagnostic LED indicators when they are not required.
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### Key Features

#### Performance
- Dual CFC960 central fabric control cards enable load sharing, providing 960Gbps throughput.

#### Power over Ethernet Plus
- Power over Ethernet Plus provides standards-based IEEE 802 at class 4 for up to 80 x 10/100/1000T ports or IEEE 802.3af at class 3 for up to 155 x 10/100/1000T ports.

#### Ethernet Protection Switched Ring (EPSRing™)
- EPSRing is a protection scheme for Ethernet networks, specifically for ring-based network topologies. EPSRing provides a sub 50 milliseconds switching time for an Ethernet-based ring network, to maintain Layer 2 redundancy in the network. EPSRing assists the multicast streams in being redirected around a faulty link in a ring network fast enough to result in an uninterrupted multicast service.

#### Spanning-Tree
- Supports STP, RSTP and MSTP.

#### Link Aggregation Group (LAG)
- The AT-SBx3112 supports a maximum of 127 LAGs configured on the system at one time. A maximum of eight member ports per LAG is supported.
- LACP functionality is also supported. With LACP, the AT-SBx3112 can exchange LACP messages with neighboring systems to allow for dynamic aggregation of links between systems.

#### VLAN and Tagging
- Supports 4K active VLANs.

#### Upstream Forwarding Only (UFO) Mode
- A VLAN can be created where all data on the VLAN from downstream ports must be forwarded only to the upstream port.

#### HVLAN (Port- and VLAN-based, VLAN Double Tagging)
- To help overcome the VLAN addressing limitations, an additional or outer tag can be added on top of the IEEE 802.1Q tagged or untagged frame. The use of the additional tag creates a Hierarchical VLAN (HVLAN).

#### IGMP Snooping
- IGMP snooping allows the product to conserve network bandwidth by limiting theLayer 2 forwarding of IP multicast packets only to the LAN segments that have expressed interest in receiving packets addressed to a multicast group.

#### Quality of Service (QoS)
- Classifies traffic based on user-defined flows such as voice, video or data services. Supports eight priority queues.

#### Access Control Lists (ACLs)
- Access Control Lists enable inspection of incoming frames and classify them based on various criteria. Specific actions can then be applied to these frames in order to more effectively manage the network traffic at Layer 2 through Layer 4. Typically, ACLs are used as a security mechanism, either permitting or denying entry (hence the name Access Control) for frames in a group, but can also be applied to QoS.

#### Egress Port Rate Limiting
- Supports egress rate limiting for customer- and network-facing ports.

#### RADIUS/TACACS+ Authentication
- TACACS+ and RADIUS authentication operates by using an external server as a means to authenticate logins to the system.

#### IEEE 802.1x Port Authentication
- IEEE 802.1x provides port-based network access control for restricting access to networks based on authentication information.

#### Secure Shell (SSHv2)
- Provides secure remote logins into the Command-Line Interface (CLI).

#### Address Resolution Protocol (ARP) Filtering
- ARP filtering provides the ability to “authenticate” ARP messages to ensure that unauthorized ARP spoofing is not permitted.

#### Simple Network Management Protocol (SNMP)
- Supports SNMPv1 and SNMPv2c.

#### Link Layer Discovery Protocol (LLDP)
- LLDP is an application protocol that runs directly over Layer 2 in network elements to facilitate a centrally located network manager to derive the physical network topology the network elements are part of.

#### Remote Network Monitoring (RMON)
- A collection of traffic statistics over port interfaces, accrued in a specified time period.

#### Securing the Network
- Supports three levels of security: User, Manager and Security Officer.

#### Secure Digital (SD) Card
- SD is used for file and log activities after the system has initialized.

#### Easy Setup
- A simple embedded web server allows commissioning of a system via an HTTP browser over the MGMT Ethernet port. Advanced configuration can then be easily performed using Allied Telesis AlliedView™ NMS.
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Specifications

System Capacity
AT-SBx31CFC (central fabric control card)
- 512MB DR2D SDRAM
- 512KB NVRAM
- 128MB flash memory
- 32K MAC address
- 4K active VLANs
- 16Mbit packet buffer memory
AT-SBx31CF (central fabric control card)
- 1GB DDR2 SDRAM
- 512KB NVRAM
- 128MB flash memory
- 32K MAC address
- 4K active VLANs
- 16Mbit packet buffer memory

Port Configurations
- Auto-negotiation, duplex, MDI/MDI-X, IEEE 802.3x flow control/flow control prevention
- Head of Line (HOL) blocking prevention

Ethernet Specifications
- RFC 894 Ethernet II encapsulation
- IEEE 802.1D MAC bridges
- IEEE 802.1Q Virtual LANs
- IEEE 802.2 logical link control
- IEEE 802.3ab 1000T
- IEEE 802.3x full-duplex operation
- IEEE 802.3 Power over Ethernet class 3
- IEEE 802.3at Power over Ethernet class 4

Spanning-Tree Protocol
- IEEE 802.1D Spanning-Tree Protocol
- IEEE 802.1w Rapid Spanning-Tree Protocol
- IEEE 802.1s Multiple Spanning-Tree Protocol

Resiliency
- EPSP
- EPSP Superloop
- Bi-directional forwarding detection
- Static Link Aggregation Groups (LAG)
- Link Aggregation Control Protocol (LACP)
- Layer 2 control plane prioritization
- Hot-standby controller redundancy
- System power redundancy
- PoE+ power redundancy

Multicast
- RFC 1112 IGMP snooping v1
- RFC 2236 IGMP snooping v2
- Dynamic multicast router detection
- Set-top box mobility control
- Configurable unknown multicast flooding

Security
- RADIUS client
- TACACS+
- User account management
- SSHv2
- BPDU protection
- DHCP snooping
- RFC 3042 DHCP relay
- DHCP option 82 insertion
- Auto IP filtering
- ARP filtering
- Local ARP discard
- Access Control Lists (ACLs)
- Password recovery

Convergence
- Eight QoS queues per port
- Policy-based QoS
- DSCP - based (Layer 3) QoS
- Configurable user priority-to-queue mapping
- Egress port rate limiting
- Egress queue rate limiting
- Priority tagging (IEEE 802.1p for ingress)
- Remarking
- Strict priority queue servicing
- IEEE 802.1ab Link Layer Discovery Protocol (LLDP)

Network Manageability
- CLI interface
- Command line help
- RFC 854 Telnet server
- Telnet client
- Out-of-band Ethernet / IP management interface
- In-band Ethernet / IP management interface
- Login banner

Performance and Fault Management
- RFC 1757 RMON groups 1,2,3,9
- RMON threshold crossing alerts
- User-defined packet counters
- CPU utilization statistics
- Alarm management
- Configurable alarm security
- Port outage alarm threshold
- Thermal monitoring
- Power-up diagnostics

Equipment Management
- Profile management
- Auto-provisioning
- Pre-provisioning
- PoE management

Layer 2 Switching and Control
- FIB management
- Configurable MAC removal modes
- Port-based VLAN double tagging (Q-in-Q)
- TPID editing
- MAC address learning limits
- Protocol tracing
- Jumbo frames (Layer 2 forwarding)

VLAN
- 4K VLANs (IEEE 802.1Q)
- VLAN management
- Configurable VLAN ingress check
- VLAN-based double tagging (Q-in-Q)
- VLAN translation
- Upstream Forwarding Only (UFO) VLANs
- UBO Control Protocol (UCP)

System Administration
- Software load management
- Network booting
- File management
- Binary database backup / restore
- Text config file backup / restore

Hardware
- Redundant controller / fabric card
- SD removable media supported only on AT-SBx31CFC
- Redundant 1200W system power supply units
- Load-sharing 1200W PoE power supply units
- Fan tray

RoHS Standards
- Compliant with European and China RoHS standards

Package Description
- AT-SBx3112 chassis
- Management cable (FJ-45 to DB-9)
- Hardware kit accessories
- Installation guide and CLI user’s guide available at alliedtelesis.com/support/software

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Physical Specifications

**Product** | **Dimensions (W x D x H)** | **Weight (kg / lbs)**
--- | --- | ---
AT-SBx3112 chassis | 48.03 cm x 38.79 cm x 31.01 cm (18.9 in x 15.27 in x 12.21 in) | 17.77 kg (39.10 lb)
AT-SBxPWRSYS1 AC system power supply | 10.16 cm x 32.21 cm x 4.34 cm (4.00 in x 12.68 in x 1.71 in) | 1.06 kg (2.34 lb)
AT-SBxPWRSYS2 AC system power supply | 10.16 cm x 32.21 cm x 4.34 cm (4.00 in x 12.68 in x 1.71 in) | 1.06 kg (2.34 lb)
AT-SBxPWROE1 AC PoE power supply | 10.16 cm x 32.21 cm x 4.34 cm (4.00 in x 12.68 in x 1.71 in) | 1.06 kg (2.34 lb)
AT-SBxPWRSYS1 DC system power supply | 10.16 cm x 34.2 cm x 4.34 cm (4.00 in x 13.46 in x 1.71 in) | 1.06 kg (2.34 lb)
AT-SBxPWRPOE1 power supply | 2.74 cm x 33.35 cm x 26.04 cm (1.08 in x 13.13 in x 10.25 in) | 1.11 kg (2.45 lb)
AT-SBxFAN12 tray module | 2.74 cm x 33.35 cm x 26.04 cm (1.08 in x 13.13 in x 10.25 in) | 1.82 kg (4.00 lb)

Power Specifications

AC voltage / frequency requirements | 100-240V AC, 50/60 Hz |
--- | --- | ---
AT-SBxPWRSYS1 | 16A maximum @ 100V |
AT-SBxPWROE1 | 16A maximum @ 100V |
AT-SBxPWRSYS1-80 | 25A maximum @ -40vDC to -60vDC |

Maximum power consumption

**Product** | **Power (W)**
--- | ---
AT-SBx31GT24 | 34.4W
AT-SBx31CFC | 48.3W
AT-SBx31CFC960 | 75W
AT-SBx31GP24 | 34.4W
AT-SBx31XZ4 | 48.3W
AT-SBx31X6 | 54.8W
AT-SBx31XS6 | 56.3W
AT-SBx31GC40 | 64.0W

Heat dissipation

**Line Card** | **BTU/hr**
--- | ---
AT-SBx31GT24 | 146.72
AT-SBx31GP24 | 146.72
AT-SBx31XS6 | 206.01
AT-SBx31XZ4 | 233.73
AT-SBx31CFC | 206.01
AT-SBx31XS6 | 272.80
AT-SBx31CFC960 | 225.91

PSU heat dissipation

**Line Card** | **BTU/hr**
--- | ---
AT-SBxPWRSYS1 (AC system PSU) | 5118.21
AT-SBxPWR-POE1 (PoE PSU) | 5118.21
AT-SBxPWRSYS1-80 (DC system PSU) | 4095

Power over Ethernet Specifications

Available Power over Ethernet 1200W @ 56vDC (using one PoE PSU)
IEEE 802.3at class 4 (30W/port) Max 40 ports
IEEE 802.3af class 3 (15.4W/port) Max 77 ports
IEEE 802.3af class 2 (7.0W/port) Max 171 ports
IEEE 802.3af class 1 (4.0W/port) Max 240 ports
Available Power over Ethernet 2400W @ 56vDC (using two PoE PSU)
IEEE 802.3at class 4 (30W/port) Max 80 ports
IEEE 802.3af class 3 (15.4W/port) Max 155 ports
IEEE 802.3af class 2 (7.0W/port) Max 240 ports
IEEE 802.3af class 1 (4.0W/port) Max 240 ports
IEEE 802.3at / IEEE 802.3af mode ➤ Alternative A (MDI)

Environmental Specifications

Operating temperature -0°C to 40°C (32°F to 104°F)
Storage temperature -25°C to 70°C (-13°F to 158°F)
Operating humidity 5% to 90% non-condensing
Storage humidity 5% to 95% non-condensing
Operating altitude range Up to 3,000 m (9,843 ft)

Acoustic Noise

Acoustic noise: 75.7dB
Acoustic noise measured at 40°C using the following products:

**Product** | **Quantity**
--- | ---
AT-SBx3112 chassis | 1
AT-SBx31CFC central fabric control card | 2
AT-SBx31GP24 PoE line card | 5
AT-SBx31XZ4 XFP line card | 5
AT-SBxPWRSYS1 system power supply | 2
AT-SBxPWROE1 PoE power supply | 2
AT-SBx31FAN tray | 1

Safety and Electromagnetic Emissions Certifications

EMI/RFI
FCC Class A, EN55022 Class A, CISPR Class A, ICES 003 Class A

Immunity
EN61000-4

Electrical safety
EN60950-1 (TÜV), UL60950-1 (CULUS), EN60950

Safety agency approvals
CULUS, TUV, C-TICK, CE

* Depends on PoE loading
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Ordering Information

AT-SBx3112-96POE+
96-port chassis bundle
1 x AT-SBx3112 chassis
1 x AT-SBx31CFC fabric control card
4 x AT-SBx31GP24 PoE line card
1 x AT-SBxPWRYSYS1 system power supply
1 x AT-SBxPWRSYS1 PoE power supply
1 x AT-SBx31FAN tray

AT-SBx3112-8XR
8 x 10G port, redundant starter bundle
1 x AT-SBx3112 chassis
2 x AT-SBx31CFC fabric control card
2 x AT-SBx31XZ4 XFP Ethernet line card
2 x AT-SBxPWRYSYS1 system power supply
1 x AT-SBx31FAN tray

AT-SBx3112-12XS-80
Redundant controller DC power chassis bundle
1 x AT-SBx3112 chassis (empty chassis including fan)
2 x AT-SBx31CFC fabric control card (+ NSP firmware)
2 x AT-SBxPWRYSYS1-80 DC system power supply (1200W)
2 x AT-SBx31X6 line card (6-port 10G SFP+)

AT-SBx3112
Rack-mount 12-slot chassis with fan tray

AT-SBx31CFC
Central fabric control card

AT-SBx31CFC960
Central fabric control card

AT-SBx31GP24
24-port 10/100/1000T PoE Ethernet line card

AT-SBx31XZ4
4-port 10GE XFP Ethernet line card

AT-SBx31XS6
6-port 10GE SFP+ Ethernet line card

AT-SBx31GS24
24-port SFP Ethernet line card

AT-SBx31GC40
40-port CSFP Ethernet line card

AT-SBxPWRYSYS1-xx
1200W AC system power supply

AT-SBxPWRYSYS1-80
1200W DC system power supply

AT-SBxPWROE1-xx
1200W AC PoE power supply

AT-SBx31FAN
Contains four fans, temperature sensors and controller board

Where xx =
10 for US power cord
20 for no power cord
30 for UK power cord
40 for Australian power cord
50 for European power cord

Power cords are only shipped with AT-SBxPWRSYS1-xx or AT-SBxPWROE1-xx power supplies.

Accessories

Small Form Pluggable Optics | Supported Platforms

AT-XPSR
XFP, MMF, 10Gbps, 300 m, 850 nm, LC
AT-SBx31X24

AT-XPLR
XFP, SMF, 10Gbps, 10 km, 1310 nm, LC
AT-SBx31X24

AT-XPER40
XFP, SMF, 10Gbps, 40 km, 1550 nm, LC
AT-SBx31X24

AT-XPER80
XFP, SMF, 10Gbps, 80 km, 1550 nm, LC
AT-SBx31X24

AT-SPSX
SFP, MMF, 1000Mbps, 220 / 500 m, 850 nm, LC
AT-SBx31G524

AT-SPEX
SFP, MMF, 1000Mbps, 2 km, 1310 nm, LC
AT-SBx31G524

AT-SPXL10
SFP, SMF, 1000Mbps, 10 km, 1310 nm, LC
AT-SBx31G524

AT-SPXL40
SFP, SMF, 1000Mbps, 40 km, 1310 nm, LC
AT-SBx31G524

AT-SPZX80
SFP, SMF, 1000Mbps, 80 km, 1550 nm, LC
AT-SBx31G524

AT-SPBD10-13
SFP, SMF, 1000Mbps, 10 km, 1310/1490 nm, LC-BiDi
AT-SBx31G524

AT-SPBD10-14
SFP, SMF, 1000Mbps, 10 km, 1310/1490 nm, LC-BiDi
AT-SBx31G524

AT-SPBD20Dual-14
CSFP, SMF, 1000Mbps dual BiDi, 20 km, Tx1490/Rx1310, 2 x LC
AT-SBx31GC40

AT-SPBD40Dual-14
CSFP, SMF, 1000Mbps dual BiDi, 40km, Tx1490/Rx1310, 2 x LC
AT-SBx31GC40

AT-SPFX/2
SFP, MMF, 1000Mbps, 2 km, 1310 nm, LC
AT-SBx31G524

AT-SPFXBD-LC-13
SFP, SMF, 1000Mbps, 10 km, 1310/1510 nm, LC-BiDi
AT-SBx31G524

AT-SPFXBD-LC-15
SFP, SMF, 1000Mbps, 10 km, 1510/1310 nm, LC-BiDi
AT-SBx31G524

AT-SPFX/15
SFP, SMF, 1000Mbps, 15 km, 1310 nm, LC
AT-SBx31G524

AT-SP10SR
SFP+, 10G, 300M, 850 nm, C temp
AT-SBx31X56

AT-SP10LR
SFP+, 10G, 10km, 1310 nm, C temp
AT-SBx31X56

AT-SP10TW1
SFP+ Twinax, 10G, 1 meter, copper C temp
AT-SBx31X56

AT-SP10TW-3
SFP+ Twinax, 10G, 3 meter, copper, C temp
AT-SBx31X56

AT-SP10TW-7
SFP+ Twinax, 10G, 7 meter, copper, C temp
AT-SBx31X56

Powered by Allied Telesis 

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