x930 Series

Advanced Gigabit Layer 3 Stackable Switches with 10G and 40G Uplinks

The Allied Telesis x930 Series of stackable Gigabit Layer 3 switches provide resiliency, reliability and high performance, making them ideal for distribution and network core solutions.

Allied Telesis x930 Series switches are a high-performing and feature-rich choice for today's networks. With a choice of 24- and 48-port models with 10 Gigabit and 40 Gigabit uplink ports, plus the power of Allied Telesis Virtual Chassis Stacking (VCStack™) with up to 160Gbps of stacking bandwidth per switch, the x930 Series have the flexibility and performance for key network connectivity.

Network automation

Vista Manager™ EX bundled with Allied Telesis Autonomous Management Framework™ (AMF) meets the increasing management requirements of modern networks. While AMF allows an entire network to be securely and easily managed as a single virtual device, Vista Manager EX provides an intuitive and powerful graphical tool for monitoring and managing AMF wired and Autonomous Wave Control (AWC) wireless devices.

Device and network management

The Device GUI on the x930 Series enables graphical monitoring of key switch features to support easy management.

Integrated into the Device GUI, Vista Manager™ mini supports visibility and management of AMF wired and AWC wireless network devices, making it ideal as a one-stop solution for small to medium-sized networks.

AWC is an intelligent, easy to use Wireless LAN controller that automatically maintains optimal wireless coverage. Vista Manager mini includes AWC floor and heat maps showing wireless coverage. It also supports AWC Channel Blanket hybrid operation, providing maximum performance and seamless roaming, as well as AWC Smart Connect for simplified deployment, and a resilient Wi-Fi network solution using wireless uplink connectivity.

Resilient

Allied Telesis Ethernet Protection Switched Ring (EPSRing™), G.8032 Ethernet Ring Protection, and Media Redundancy Protocol (MRP) ensure that distributed ring-based network segments have resilient access to online resources.

Allied Telesis Virtual Chassis Stacking (VCStack™), in conjunction with link aggregation, provides a network with no single point of failure for high-availability applications. The x930 Series can stack up to eight units for enhanced resiliency and simple device management. Plus, Long Distance Stacking (VCStack LD) allows stacks to be created over fiber links, making the x930 the perfect choice for distributed environments too.

Reliable

The x930 Series was designed with reliability in mind, and guarantees continual delivery of essential services. With dual hot-swappable load-sharing power supplies and near-hitless online stack reconfiguration, maintenance may be performed without affecting network uptime.

Secure

Advanced security features protect the network from the edge to the core. The x930 Series offers powerful control over network traffic types, protection against network attacks, secure management options, loop guard to detect cabling mistakes, and tri-authentication for comprehensive end-point access control.

Future proof

The x930 Series ensures a futureproof network, with superior flexibility and ability to stack multiple units, plus 10 Gigabit and 40 Gigabit uplink ports.

The x930 Series is Software Defined Networking (SDN) ready, supporting OpenFlow v1.3 and a comprehensive IPv6 feature set to ensure they are ready for future network traffic demands.

Environmentally friendly

The x930 Series supports Energy Efficient Ethernet (EEE), automatically reducing the power consumed by the switch whenever there is no traffic on a port—thus reducing operating costs.

Key Features

- Allied Telesis Autonomous Management Framework™ (AMF)
- Bidirectional Forwarding Detection (BFD)
- VCStack™ up to 8 switches
- VCStack LD for long distance stacking
- EPSR Master
- G.8032 Ethernet Ring Protection
- Continuous PoE
- Precision Time Protocol (PTP) Transparent Mode
- 40G Ethernet uplink/stacking ports
- Active Fiber Monitoring (AFM) for fiber data and stacking links
- OpenFlow for SDN
- Upstream Forwarding Only (UFO)
- VLAN Translation
- Media Access Control Security (MACSec)
- Media Redundancy Protocol (MRP)
- Modbus support
- Multicast Source Discovery Protocol (MSDP)
- Link Monitoring
- AT-Vista Manager mini enables:
  - Wired and wireless network visibility
  - AWC wireless network management
  - AWC-Smart Connect wireless uplinks

Key Features

Vista Manager mini

- Integrated into the Device GUI, Vista Manager mini provides full network visibility of AMF wired and AWC wireless devices. Manage and simplify wireless deployment with AWC-Smart Connect, and support optimal wireless performance from AWC hybrid operation with maximum throughout and a seamless Wi-Fi user experience.

Allied Telesis Autonomous Management Framework™ (AMF)

- Allied Telesis Management Framework (AMF) is a sophisticated suite of management tools that provide a simplified approach to network management. Powerful features like centralized management, auto-backup, auto-upgrade, auto-provisioning and auto-recovery enable plug-and-play networking and zero-touch management.
- Any x930 Series switch can operate as the AMF network master, storing firmware and configuration backups for other network nodes. The AMF master enables auto-provisioning and auto-upgrade by providing appropriate files to new network members. New network devices can be pre-provisioned making installation easy because no on-site configuration is required.
- AMF secure mode encrypts all AMF traffic, provides unit and user authorization, and monitors network access to greatly enhance network security.
- AMF Guestnode allows Allied Telesis wireless access points and further switching products, as well as third party devices such as IP phones and security cameras, to be part of an AMF network.

AWC Wireless Management

- Optimize wireless network performance with the Autonomous Wave Controller (AWC), built-in to the x930 Series. AWC analyzes wireless traffic patterns and automatically reconfigures access points to meet demand.
- Wireless network operation in multi-channel, single-channel (Channel Blanket), and hybrid (multi-channel and Channel Blanket) modes, supports maximum data throughput and seamless roaming for the most flexible wireless solution available.
- AWC-Smart Connect (AWC-SC) enables plug-and play wireless network growth, as new APs only need a power connection, and will then automatically create resilient wireless uplink connections to other APs.

Virtual Chassis Stacking (VCStack™)

- Create a VCStack of up to eight units with 40Gbps (or 160Gbps with the StackQS model) of stacking bandwidth on each unit. Stacking links are connected in a ring so each device has dual connections to further improve resiliency. VCStack provides a highly available system where network resources are spread out across stacked units, reducing the impact if one of the units fails. Aggregating switch ports on different units across the stack provides excellent network resiliency.

Long Distance Stacking (VCStack LD)

- Long distance stacking allows a VCStack to be created over longer distances, perfect for a distributed network environment.

Bidirectional Forwarding Detection (BFD)

- BFD enables fast detection of link failures, so recovery time is minimized. BFD can work alongside protocols such as BGP supporting faster shutdown of neighbor connections if a peer session goes down.

Ethernet Protection Switched Ring (EPSRing™)

- EPSRing and 10 Gigabit Ethernet allow several switches to form high-speed protected rings capable of recovery within as little as 50ms. The x930 Series switches can act as the EPSR Master.
- This feature is perfect for high performance and high availability at the core of enterprise or provider access networks.
- Superloop Protection enables a link between two EPSR nodes to be in separate EPSR domains, improving redundancy and network fault resiliency.

G.8032 Ethernet Ring Protection

- G.8032 provides standards-based high-speed ring protection, that can be deployed stand-alone, or interoperate with Allied Telesis EPSR.
- Ethernet Connectivity Fault Monitoring (CFM) proactively monitors links and VLANs, and provides alerts when a fault is detected.

Media Recovery Protocol (MRP)

- MRP enables high-availability automation networks, and is specified for rings with up to 50 devices, where it guarantees fully deterministic switchover behavior.

Virtual Routing and Forwarding (VRF Lite)

- VRF Lite provides Layer 3 network virtualization by dividing a single switch into multiple independent virtual routing domains. With independent routing domains, IP addresses can overlap without causing conflict, allowing multiple customers to have their own secure virtual network within the same physical infrastructure. VRF Lite on the x930 supports both unicast and multicast traffic.

Active Fiber Monitoring

- Active Fiber Monitoring prevents eavesdropping on fiber communications by monitoring received optical power. If an intrusion is detected, the link can be automatically shut down, or an operator alert can be sent. Active Fiber Monitoring is supported on fiber data and fiber stacking links.

UniDirectional link Detection

- UniDirectional Link Detection (UDLD) is useful for monitoring fiber-optic links between two switches that use two single-direction fibers to transmit and receive packets. UDLD prevents traffic from being sent across a bad link by blocking the ports at both ends of the link in the event that either the individual transmitter or receiver for that connection fails.

Power over Ethernet Plus (PoE+)

- With PoE, a separate power connection to media endpoints such as IP phones and wireless access points is not necessary. PoE+ reduces costs and provides even greater flexibility, providing the capability to connect devices requiring more power (up to 30 Watts) such as pan, tilt and zoom security cameras.

Continuous PoE

- Continuous PoE allows the switch to be restarted without affecting the supply of power to connected devices. Smart lighting, security cameras, and other PoE devices will continue to operate during a software upgrade on the switch.

Modbus

- Modbus enables communication with Supervisory Control and Data Acquisition (SCADA) systems for industrial automation.

High Reliability

- The x930 series switches feature front to back cooling and dual power supply units (PSUs). The x930 features dual hot-swappable load sharing power supplies for maximum uptime, and the option of either front-to-back or back-to-front cooling. This makes it ideal for use as a top-of-rack data center switch.

VLAN Mirroring (RSPAN)

- VLAN mirroring allows traffic from a port on a remote switch to be analysed locally. Traffic being transmitted or received on the port is duplicated and sent across the network on a special VLAN.

sFlow

- sFlow is an industry-standard technology for monitoring high-speed switched networks. It provides complete visibility into network use, enabling performance optimization, usage accounting/billing, and defense against security threats. Sampled packets sent to a collector ensure it always has a real-time view of network traffic.

Precision Time Protocol (PTP)

- PTP (IEEE 1588v2) sychronizes clocks throughout the network with micro-second accuracy, supporting industrial automation and control systems.

Key Features

Software Defined Networking (SDN)

- OpenFlow is a key technology that enables the use of SDN to build smart applications that unlock value and reduce cost.

AMF Application Proxy

- Allied Telesis SES (Secure Enterprise SDN) solution enables internal LAN threat detection and automatic end-point isolation to protect the network. The AMF Application Proxy enables the SES controller to communicate with the AMF master when a threat is detected, so the AMF master can take action to block the threat at source by quarantining the infected end-point.

Upstream Forwarding Only (UFO)

- UFO lets you manage which ports in a VLAN can communicate with each other, and which only have upstream access to services, for secure multi-user deployment.

VLAN Translation

- VLAN Translation allows traffic arriving on a VLAN to be mapped to a different VLAN on the outgoing paired interface.
- In Metro networks, it is common for a network Service Provider (SP) to give each customer their own unique VLAN, yet at the customer location give all customers the same VLAN-ID for tagged packets to use on the wire. SPs can use VLAN Translation to change the tagged packet's VLAN-ID at the customer location to the VLAN-ID for tagged packets to use within the SP's network.
- This feature is also useful in Enterprise environments where it can be used to merge two networks together, without manually reconfiguring the VLAN numbering scheme. This situation can occur if two companies have merged and the same VLAN-ID is used for two different purposes.

Media Access Control Security (MACSec)

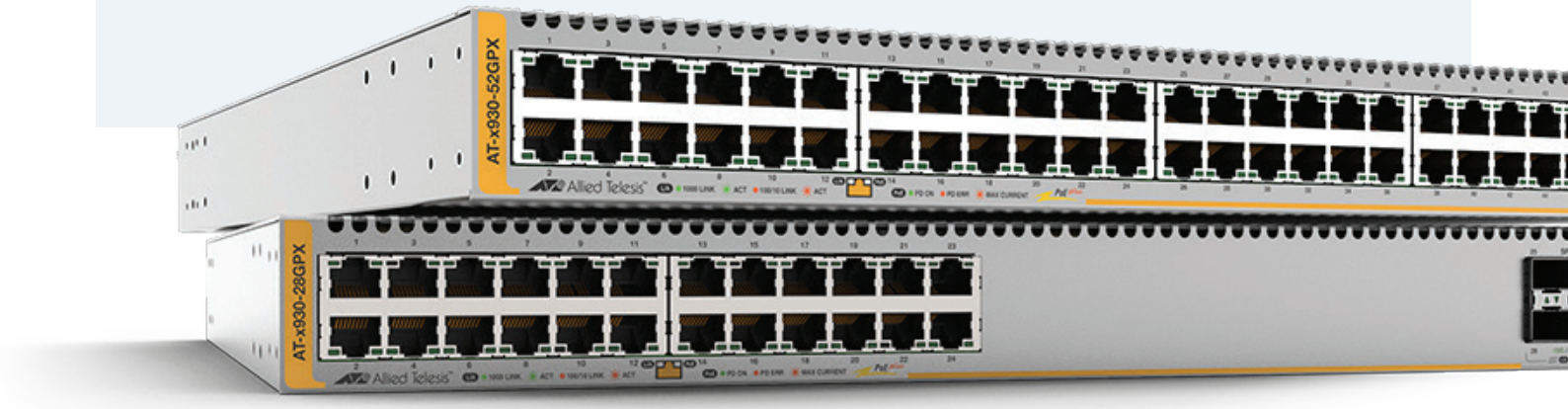
- 802.1AE MACSec secures all traffic on point-to-point Ethernet links between directly connected nodes, ensuring protection against security threats such as denial of service, intrusion, man-in-the-middle, passive wiretapping, and playback attacks.

Multicast Source Discovery Protocol (MSDP)

- MSDP enables two or more PIM-SM (Sparse Mode) domains to share information on active multicast sources, for more efficient forwarding of multicast traffic.

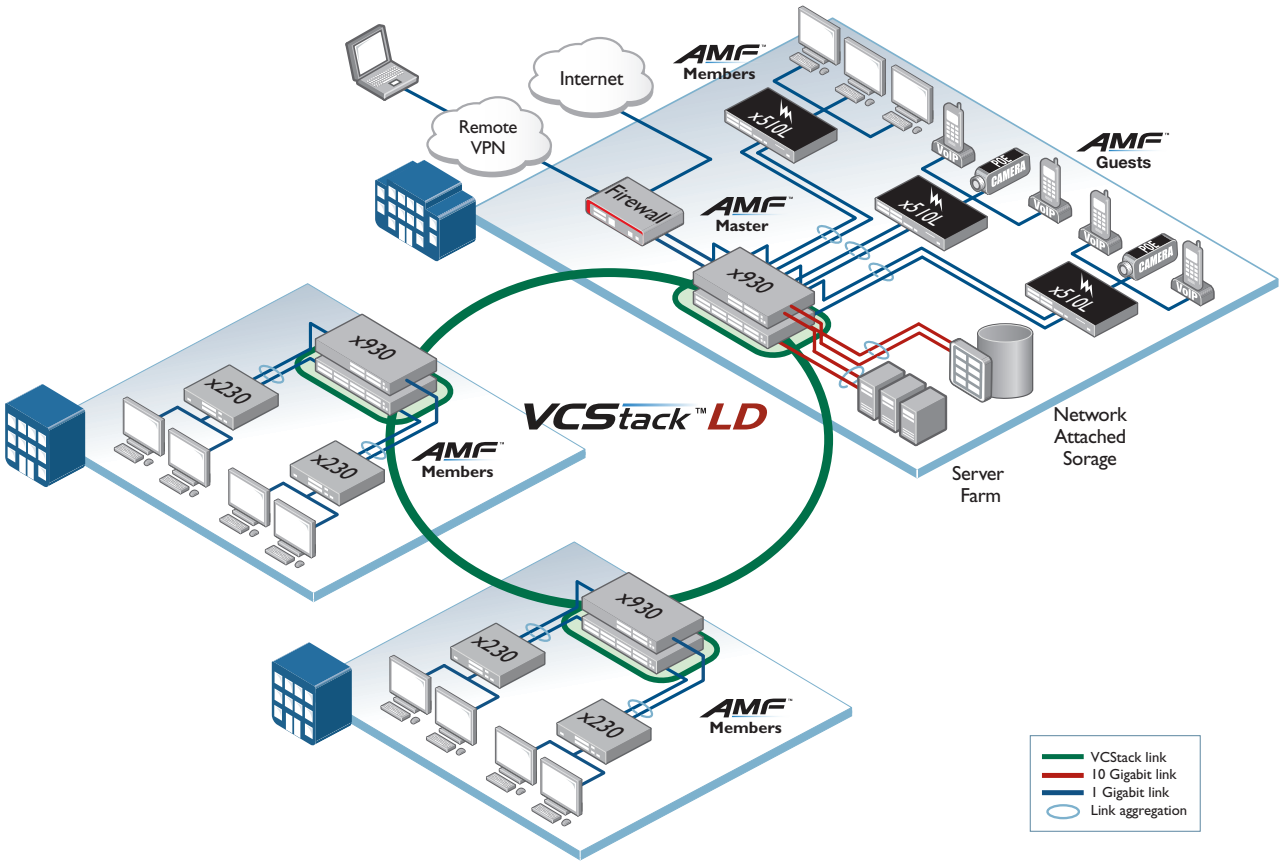
Link Monitoring (Linkmon)

- Linkmon enables network health monitoring by regularly sending probes over key links to gather metrics comprising latency, jitter, and probe loss. This supports pro-active network management, and can also be used with triggers to automate a change to device or network configuration in response to the declining health of a monitored link.



Key Solutions

Distributed Network Core



Distributed network core

Allied Telesis x930 Series switches are ideal for core and distributed solutions, where resiliency and flexibility are required. In the above diagram, long distance Virtual Chassis Stacking (VCStack LD) is used to create a single virtual unit out of multiple devices. The increased distance provided by fiber stacking connectivity means that members of the virtual chassis do not need to be co-located. Instead, they can be kilometers apart—perfect for a distributed network environment.

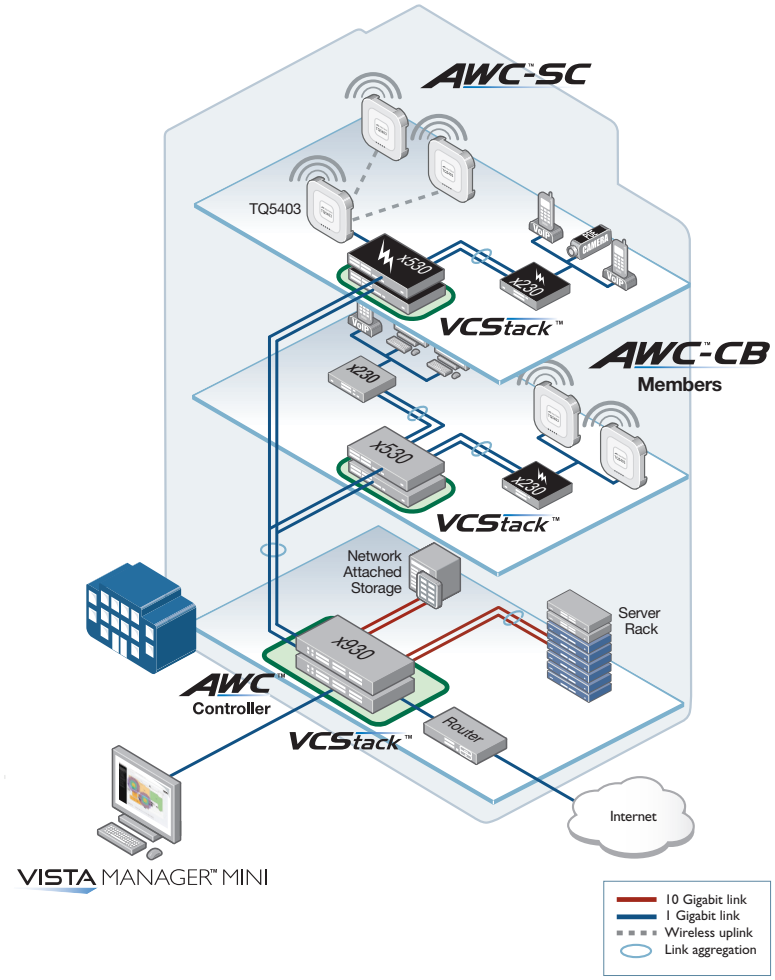
When combined with link aggregation to access switches, this provides a solution with no single point of failure that fully utilizes all network bandwidth, and ensures high availability of data for network users.

AMF allows this large distributed network to be managed as a single virtual entity, greatly reducing administration and automating many day-to-day tasks.

Allied Telesis x930 Series switches support enterprises and their use of business-critical online resources and applications, with a resilient and reliable solution.

Key Solutions

Integrated wireless LAN management



Allied Telesis Autonomous Wave Controller (AWC) offers solutions for two of the most common problems with Wireless LANs: initial setup complexity and on-going performance degradation. Initial WLAN set-up usually requires a site survey to achieve the best coverage; and performance of WLANs can often change over time as external sources of radio interference reduce coverage and bandwidth. These issues can be time-consuming to identify and resolve.

AWC features an intelligent process that automatically re-calibrates the signal strength and radio channel of each Access Point (AP) for optimal WLAN performance.

AWC Smart Connect (AWC-SC) uses wireless uplink connections between APs, so deployment is as easy as plugging in and powering on the new APs, which automatically extend the Wi-Fi network, creating a resilient solution.

Vista Manager mini is integrated into the Device Gui of the x930 Series and provides an ideal solution for modern enterprise networks, enabling management of both the wired (with AMF) and wireless (with AWC) networks to be automated. This reduces both the time and cost of network administration, as well as maximizing network performance for a superior user experience.

Up to 5 TQ Series wireless APs can be managed for free, and up to a further 120 APs (max 125) with feature licenses, available separately.

On some AP models, hybrid channel blanket enables multi-channel and single-channel WiFi operation simultaneously. This supports seamless roaming and maximum throughput. Channel Blanket licenses are available for up to 120 APs. For plug-and-play wireless deployment AWC-SC licenses are available for up to 120 APs.

Specifications

PRODUCT	10/100/1000T (RJ-45) COPPER PORTS	100/1000X SFP PORTS	1/10 GIGABIT SFP+ PORTS	10 GIGABIT STACKING PORTS	MODULE SLOTS	POE+ ENABLED PORTS	SWITCHING FABRIC	FORWARDING RATE
x930-28GTX	24	-	4 (2 if stacked)	2*	1	-	288Gbps	214.3Mpps
x930-28GPX	24	-	4 (2 if stacked)	2*	1	24	288Gbps	214.3Mpps
x930-28GSTX	24 (combo)	24 (combo)	4 (2 if stacked)	2*	1	-	288Gbps	214.3Mpps
x930-52GTX	48	-	4 (2 if stacked)	2*	1	-	336Gbps	250Mpps
x930-52GPX	48	-	4 (2 if stacked)	2*	1	48	336Gbps	250Mpps

* Stacking ports can be configured as additional 1G/10G Ethernet ports when unit is not stacked, or if StackQS module is used

Performance

- 40Gbps of stacking bandwidth per switch using front panel 10G SFP+ ports
- 160Gbps of stacking bandwidth per switch using optional AT-StackQS expansion module
- 13KB L2 and 9KB L3 Jumbo frames
- Wirespeed multicasting
- 4094 configurable VLANs
- Up to 64K MAC addresses
- Up to 16,000 OSPF routes
- Up to 2K IPv4 multicast entries
- Up to 2000 OpenFlow v1.3 entries
- Up to 128 Link Aggregation Groups (LAGS) - any combination of static and dynamic (LACP)
- 2GB DDR SDRAM, 256MB flash memory
- Packet buffer memory: x930-28 - 2MB, 52 - 4MB

Reliability

- Modular AlliedWare Plus operating system
- Internal dual hot-swappable PSUs, providing uninterrupted power and extra reliability
- Full environmental monitoring of PSUs, fans, temperature and internal voltages. SNMP traps alert network managers in case of any failure

Expandability

- Stack up to eight units in a VCStack
- Versatile licensing options for additional features

Flexibility and Compatibility

- Gigabit SFP ports on x930-28GSTX will support any combination of Allied Telesis 100Mbps and 1000Mbps SFP modules listed in this document under Ordering Information
- 10G SFP+ ports will support any combination of Allied Telesis 1000Mbps SFP and 10GbE SFP+ modules and direct attach cables listed in this document under Ordering Information
- Port speed and duplex (full duplex only) configuration can be set manually or by auto-negotiation
- Front-panel SFP+ stacking ports can be configured as additional 1G/10G Ethernet ports

Diagnostic Tools

- Active Fiber Monitoring detects tampering on optical links
- Built-In Self Test (BIST)
- Cable fault locator (TDR)
- Connectivity Fault Management (CFM) Continuity Check Protocol (CCP) for use with G.8032 ERPS
- Find-me device locator
- Hardware health monitoring
- Automatic link flap detection and port shutdown
- Optical Digital Diagnostic Monitoring (DDM)
- Ping polling and TraceRoute for IPv4 and IPv6
- Port and VLAN mirroring (RSPAN)
- Uni-Directional Link Detection (UDLD)

IPv4 Features

- Black hole routing
- Directed broadcast forwarding
- DNS relay
- Equal Cost Multi Path (ECMP) routing
- Policy-based routing
- Route maps and route redistribution (OSPF, BGP, RIP)
- Static unicast and multicast routing for IPv4
- UDP broadcast helper (IP helper)
- Up to 64 Virtual Routing and Forwarding (VRF lite) domains (with license)

IPv6 Features

- DHCPv6 client and relay
- DNSv6 client and relay
- IPv4 and IPv6 dual stack
- IPv6 over IPv4 tunneling (manual configuration only)
- IPv6 aware storm protection, QoS and hardware ACLs
- Device management over IPv6 networks with SNMPv6, Telnetv6 and SSHv6
- NTPv6 client and server
- Static unicast and multicast routing for IPv6
- Log to IPv6 hosts with Syslog v6
- IPv6 Ready certified

Management

- Front panel 7-segment LED provides at-a-glance status and fault information
- Allied Telesis Management Framework (AMF) enables powerful centralized management and zero-touch device installation and recovery
- Try AMF for free with the built-in Starter license
- Console management port on the front panel for ease of access
- Eco-friendly mode allows ports and LEDs to be disabled to save power
- Web-based Graphical User Interface (GUI)
- Industry-standard CLI with context-sensitive help
- Out-of-band 10/100/1000T Ethernet management port
- Comprehensive SNMP MIB support for standards-based device management
- Built-in text editor and powerful CLI scripting engine
- Event-based triggers allow user-defined scripts to be executed upon selected system events
- USB interface allows software release files, configurations and other files to be stored for backup and distribution to other devices

Quality of Service

- 8 priority queues with a hierarchy of high priority queues for real time traffic, and mixed scheduling, for each switch port
- Limit bandwidth per port or per traffic class down to 64kbps
- Wirespeed traffic classification with low latency essential for VoIP and real-time streaming media applications
- IPv6 QoS support
- Policy-based QoS based on VLAN, port, MAC and general packet classifiers
- Policy-based storm protection
- Extensive remarking capabilities
- Taildrop for queue congestion control
- Queue scheduling options for strict priority, weighted round robin or mixed scheduling
- IP precedence and DiffServ marking based on layer 2, 3 and 4 headers

Resiliency Features

- BPDU forwarding
- 10G and 40G stacking ports can be configured as Ethernet ports
- Control Plane Prioritization (CPP) ensures the CPU always has sufficient bandwidth to process network control traffic
- EPSRing (Ethernet Protection Switched Rings) with SuperLoop Protection (SLP) and enhanced recovery for extra resiliency
- G.8032 Ethernet Ring Protection
- Media Redundancy Protocol (MRP)
- Bidirectional Forwarding Detection (BFD)
- Long-Distance VCStack (LD-VCStack) using SFP+ or QSFP+ modules
- Loop protection: loop detection and thrash limiting
- PVST+ compatibility mode
- STP root guard
- VCStack fast failover minimizes network disruption

Security Features

- Access Control Lists (ACLs) based on layer 3 and 4 headers
- Configurable ACLs for management traffic
- Dynamic ACLs assigned via port authentication
- ACL Groups enable multiple hosts/ports to be included in a single ACL, reducing configuration
- Auth fail and guest VLANs
- Authentication, Authorisation and Accounting (AAA)
- Bootloader can be password protected for device security

- BPDU protection
- DHCP snooping, IP source guard and Dynamic ARP Inspection (DAI)
- DoS attack blocking and virus throttling
- Dynamic VLAN assignment
- MAC address filtering and MAC address lock-down
- Media Access Control Security (MACSec)
- Network Access and Control (NAC) features manage endpoint security
- Learn limits (intrusion detection) for single ports or LAGs
- Private VLANs provide security and port isolation for multiple customers using the same VLAN
- RADIUS group selection per VLAN or port
- Secure Copy (SCP) and Secure File Transfer Protocol (SFTP) client
- Strong password security and encryption
- TACACS+ command authorisation
- Tri-authentication: MAC-based, web-based and IEEE 802.1x

Software Defined Networking (SDN)

- OpenFlow v1.3 with support for encryption, connection interruption and inactivity probe

Environmental Specifications

- Operating temperature range:
  0°C to 50°C (32°F to 122°F) AT-x930-GTX models and AT-x930-28GSTX
  0°C to 45°C (32°F to 113°F) AT-x930-GPX models
  Derated by 1°C per 305 meters (1,000 ft)
- Storage temperature range:
  -25°C to 70°C (-13°F to 158°F)
- Operating relative humidity range:
  5% to 90% non-condensing
- Storage relative humidity range:
  5% to 95% non-condensing
- Operating altitude:
  3,048 meters maximum (10,000 ft)

Electrical Approvals and Compliances

- EMC: EN55022 class A, FCC class A, VCCI class A, ICES-003 class A
- Immunity: EN55024, EN61000-3-levels 2 (Harmonics), and 3 (Flicker) – AC models only

Power Supply Requirements

- AC voltage: 90 to 260V (auto-ranging)
- Frequency: 47 to 63Hz
- DC voltage: 40 to 60VDC (for PWR250-80 PSU only)

Safety

- Standards: UL60950-1, CAN/CSA-C22.2 No. 60950-1-03, EN60950-1, EN60825-1, AS/NZS 60950.1
- Certification: UL, cUL, TUV

Restrictions on Hazardous Substances (RoHS) Compliance

- EU RoHS compliant
- China RoHS compliant

Physical Specifications

PRODUCT	WIDTH X DEPTH X HEIGHT	MOUNTING	WEIGHT		PACKAGED DIMENSIONS
			UNPACKAGED	PACKAGED	
x930-28GTX	440 x 420 x 44 mm (17.32 x 16.54 x 1.73 in)	Rack-mount	5.1 kg (11.2 lb)	7.1 kg (15.7 lb)	56 x 53 x 15 cm (22.1 x 20.9 x 5.9 in)
x930-28GPX	440 x 420 x 44 mm (17.32 x 16.54 x 1.73 in)	Rack-mount	5.1 kg (11.2 lb)	7.1 kg (15.7 lb)	56 x 53 x 15 cm (22.1 x 20.9 x 5.9 in)
x930-28GSTX	440 x 420 x 44 mm (17.32 x 16.54 x 1.73 in)	Rack-mount	5.1 kg (11.2 lb)	7.1 kg (15.7 lb)	56 x 53 x 15 cm (22.1 x 20.9 x 5.9 in)
x930-52GTX	440 x 420 x 44 mm (17.32 x 16.54 x 1.73 in)	Rack-mount	5.1 kg (11.2 lb)	7.1 kg (15.7 lb)	56 x 53 x 15 cm (22.1 x 20.9 x 5.9 in)
x930-52GPX	440 x 420 x 44 mm (17.32 x 16.54 x 1.73 in)	Rack-mount	5.2 kg (11.5 lb)	7.2 kg (15.9 lb)	56 x 53 x 15 cm (22.1 x 20.9 x 5.9 in)
StackQS	141 x 96.5 x 40.3 mm (5.56 x 3.80 x 1.59 in)	Module	0.2 kg (0.44 lb)	1.2 kg (2.65 lb)	40 x 25 x 10 cm (15.8 x 9.8 x 3.9 in)
x9EM/XT4	141 x 96.5 x 40.3 mm (5.56 x 3.80 x 1.59 in)	Module	0.2 kg (0.44 lb)	1.2 kg (2.65 lb)	40 x 25 x 13 cm (15.8 x 9.8 x 5.1 in)

Power and Noise Characteristics

PRODUCT	NO POE LOAD			FULL POE+ LOAD (PWR800)			FULL POE+ LOAD (PWR1200)		
	MAX POWER CONSUMPTION	MAX HEAT DISSIPATION	NOISE	MAX POWER CONSUMPTION	MAX HEAT DISSIPATION	NOISE	MAX POWER CONSUMPTION	MAX HEAT DISSIPATION	NOISE
x930-28GTX	84W	285 BTU/h	39.7 dBA	-	-	-	-	-	-
x930-28GPX	84W	286 BTU/h	44.7 dBA	564W	287 BTU/h	45.8 dBA	808W	301 BTU/h	56.0 dBA
x930-28GSTX	97W	329 BTU/h	39.7 dBA	-	-	-	-	-	-
x930-52GTX	95W	323 BTU/h	39.7 dBA	-	-	-	-	-	-
x930-52GPX	97W	330 BTU/h	44.7 dBA	577W	331 BTU/h	45.8 dBA	880W	341 BTU/h	56.0 dBA

Noise: tested to ISO7779; front bystander position

Latency (microseconds)

PRODUCT	PORT SPEED				
	10MBPS	100MBPS	1GBPS	10GBPS	40GBPS
x930-28GTX/GPX	47.4µs	7.9µs	3.7µs	2.6µs	-
x930-28GSTX	47.4µs	7.6µs (Fiber)	3.6µs (Fiber)	2.6µs	-
x930-52GTX/GPX	47.4µs	7.9µs	3.7µs	2.6µs	-
StackQS	-	-	-	-	2.5µs
x9EM/XT4	-	-	3.7µs	2.6µs	-

Power over Ethernet Power Supply Combinations

PSU INSTALLED	POE POWER AVAILABLE	MAXIMUM POE PORTS SUPPORTED				MAX REDUNDANT POE POWER
		CLASS 1 (4.0W)	CLASS 2 (7.0W)	CLASS 3 (15.4.W)	CLASS 4 (30W)	
PWR800	380W	48	48	24	12	-
PWR800 + PWR800	740W	48	48	48	24	380W
PWR1200	740W	48	48	48	24	-
PWR1200 + PWR1200	1440W	48	48	48	48	740W

Standards and Protocols

AlliedWare Plus Operating System
Version 5.5.1

Border Gateway Protocol (BGP)
BGP dynamic capability
BGP outbound route filtering
RFC 1772 Application of the Border Gateway Protocol (BGP) 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 2545 Use of BGP-4 multiprotocol extensions for IPv6 inter-domain routing
RFC 2858 Multiprotocol extensions for BGP-4
RFC 2918 Route refresh capability for BGP-4
RFC 3392 Capabilities advertisement with BGP-4
RFC 3882 Configuring BGP to block Denial-of-Service (DoS) attacks
RFC 4271 Border Gateway Protocol 4 (BGP-4)
RFC 4360 BGP extended communities
RFC 4456 BGP route reflection - an alternative to full mesh iBGP
RFC 4724 BGP graceful restart
RFC 4893 BGP support for four-octet AS number space
RFC 5065 Autonomous system confederations for BGP

Cryptographic Algorithms
FIPS Approved Algorithms (CAVP Certified*)
Encryption (Block Ciphers):
- AES (ECB, CBC, CFB and OFB Modes)
- 3DES (ECB, CBC, CFB and OFB Modes)

Block Cipher Modes:
- CCM
- CMAC
- GCM
- XTS

Digital Signatures & Asymmetric Key Generation:
- DSA
- ECDSA
- RSA

Secure Hashing:
- SHA-1
- SHA-2 (SHA-224, SHA-256, SHA-384. SHA-512)

Message Authentication:
- HMAC (SHA-1, SHA-2(224, 256, 384, 512)

Random Number Generation:
- DRBG (Hash, HMAC and Counter)

Non FIPS Approved Algorithms
RNG (AES128/192/256)
DES
MD5

Ethernet
IEEE 802.1AE Media Access Control Security (MACSec)
IEEE 802.2 Logical Link Control (LLC)
IEEE 802.3 Ethernet
IEEE 802.3ab 1000BASE-T
IEEE 802.3ae 10 Gigabit Ethernet
IEEE 802.3af Power over Ethernet (PoE)
IEEE 802.3an 10GBASE-T
IEEE 802.3az Energy Efficient Ethernet (EEE)
IEEE 802.3ba 40GBASE-X
IEEE 802.3u 100BASE-X
IEEE 802.3x Flow control - full-duplex operation
IEEE 802.3z 1000BASE-X
IEEE 1588v2 Precision clock synchronization protocol v2

IPv4 Features
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 919 Broadcasting Internet datagrams
RFC 922 Broadcasting Internet datagrams in the presence of subnets
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 1542 Clarifications and extensions for BootP
RFC 1591 Domain Name System (DNS)
RFC 1812 Requirements for IPv4 routers
RFC 1918 IP addressing
RFC 2581 TCP congestion control

IPv6 Features
RFC 1981 Path MTU discovery for IPv6
RFC 2460 IPv6 specification
RFC 2464 Transmission of IPv6 packets over Ethernet networks
RFC 2711 IPv6 router alert option
RFC 3484 Default address selection for IPv6
RFC 3587 IPv6 global unicast address format
RFC 3596 DNS extensions to support IPv6
RFC 4007 IPv6 scoped address architecture
RFC 4193 Unique local IPv6 unicast addresses
RFC 4213 Transition mechanisms for IPv6 hosts and routers
RFC 4291 IPv6 addressing architecture
RFC 4443 Internet Control Message Protocol (ICMPv6)
RFC 4861 Neighbor discovery for IPv6
RFC 4862 IPv6 Stateless Address Auto-Configuration (SLAAC)
RFC 5014 IPv6 socket API for source address selection
RFC 5095 Deprecation of type 0 routing headers in IPv6
RFC 5175 IPv6 Router Advertisement (RA) flags option
RFC 6105 IPv6 Router Advertisement (RA) guard

Management
AT Enterprise MIB including AMF MIB and SNMP traps
Optical DDM MIB
SNMPv1, v2c and v3
IEEE 802.1AB Link Layer Discovery Protocol (LLDP)
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 the SNMP
RFC 1227 SNMP MUX protocol and MIB
RFC 1239 Standard MIB
RFC 1724 RIPv2 MIB extension
RFC 2578 Structure of Management Information v2 (SMIv2)
RFC 2579 Textual conventions for SMIv2
RFC 2580 Conformance statements for SMIv2
RFC 2674 Definitions of managed objects for bridges with traffic classes, multicast filtering and VLAN extensions
RFC 2741 Agent extensibility (AgentX) protocol
RFC 2787 Definitions of managed objects for VRRP
RFC 2819 RMON MIB (groups 1,2,3 and 9)
RFC 2863 Interfaces group MIB
RFC 3176 sFlow: a method for monitoring traffic in switched and routed networks
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 the SNMP
RFC 3417 Transport mappings for the SNMP
RFC 3418 MIB for SNMP
RFC 3621 Power over Ethernet (PoE) MIB
RFC 3635 Definitions of managed objects for the Ethernet-like interface types
RFC 3636 IEEE 802.3 MAU MIB
RFC 4022 MIB for the Transmission Control Protocol (TCP)
RFC 4113 MIB for the User Datagram Protocol (UDP)
RFC 4188 Definitions of managed objects for bridges
RFC 4292 IP forwarding table MIB
RFC 4293 MIB for the Internet Protocol (IP)
RFC 4318 Definitions of managed objects for bridges with RSTP
RFC 4560 Definitions of managed objects for remote ping, traceroute and lookup operations
RFC 5424 Syslog protocol
RFC 6527 Definitions of managed objects for VRRPv3

Multicast Support
Bootstrap Router (BSR) mechanism for PIM-SM
IGMP query solicitation
IGMP snooping (IGMPv1, v2 and v3)
IGMP snooping fast-leave
IGMP/MLD multicast forwarding (IGMP/MLD proxy)
MLD snooping (MLDv1 and v2)
PIM-SM and PIM-SSM for IPv6
RFC 1112 Host extensions for IP multicasting (IGMPv1)
RFC 2236 Internet Group Management Protocol v2 (IGMPv2)
RFC 2710 Multicast Listener Discovery (MLD) for IPv6
RFC 2715 Interoperability rules for multicast routing protocols
RFC 3306 Unicast-prefix-based IPv6 multicast addresses
RFC 3376 IGMPv3
RFC 3618 Multicast Source Discovery Protocol (MSDP)
RFC 3810 Multicast Listener Discovery v2 (MLDv2) for IPv6
RFC 3956 Embedding the Rendezvous Point (RP) address in an IPv6 multicast address
RFC 3973 PIM Dense Mode (DM)
RFC 4541 IGMP and MLD snooping switches
RFC 4601 Protocol Independent Multicast - Sparse Mode (PIM-SM): protocol specification (revised)
RFC 4604 Using IGMPv3 and MLDv2 for source-specific multicast
RFC 4607 Source-specific multicast for IP

Open Shortest Path First (OSPF)
OSPF link-local signaling
OSPF MD5 authentication
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 2740 OSPFv3 for IPv6
RFC 3101 OSPF Not-So-Stubby Area (NSSA) option
RFC 3509 Alternative implementations of OSPF area border routers
RFC 3623 Graceful OSPF restart
RFC 3630 Traffic engineering extensions to OSPF
RFC 4552 Authentication/confidentiality for OSPFv3
RFC 5329 Traffic engineering extensions to OSPFv3
RFC 5340 OSPFv3 for IPv6 (partial support)

Quality of Service (QoS)
IEEE 802.1p Priority tagging
RFC 2211 Specification of the controlled-load network element service

* Cryptographic Algorithm Validation Program (CAVP) validated by the National Institute of Standards and Technology (NIST)

RFC 2474 DiffServ precedence for eight queues/port
RFC 2475 DiffServ architecture
RFC 2597 DiffServ Assured Forwarding (AF)
RFC 2697 A single-rate three-color marker
RFC 2698 A two-rate three-color marker
RFC 3246 DiffServ Expedited Forwarding (EF)

Resiliency Features

IEC 61439-2 Media Redundancy Protocol (MRP)
ITU-T G.8023 / Y.1344 Ethernet Ring Protection Switching (ERPS)
IEEE 802.1ag CFM Continuity Check Protocol (CCP)
IEEE 802.1AX Link aggregation (static and LACP)
IEEE 802.1D MAC bridges
IEEE 802.1s Multiple Spanning Tree Protocol (MSTP)
IEEE 802.1w Rapid Spanning Tree Protocol (RSTP)
IEEE 802.3ad Static and dynamic link aggregation
RFC 5798 Virtual Router Redundancy Protocol version 3 (VRRPv3) for IPv4 and IPv6
RFC5880 Bidirectional Forwarding Detection (BFD)

Routing Information Protocol (RIP)

RFC 1058 Routing Information Protocol (RIP)
RFC 2080 RIPng for IPv6
RFC 2081 RIPng protocol applicability statement
RFC 2082 RIP-2 MD5 authentication
RFC 2453 RIPv2

Security Features

SSH remote login
SSLv2 and SSLv3
TACACS+ Accounting, Authentication and Authorisation (AAA)
IEEE 802.1X Authentication protocols (TLS, TTLS, PEAP and MD5)
IEEE 802.1X Multi-supplicant authentication
IEEE 802.1X Port-based network access control
RFC 2560 X.509 Online Certificate Status Protocol (OCSP)
RFC 2818 HTTP over TLS ("HTTPS")
RFC 2865 RADIUS authentication
RFC 2866 RADIUS accounting
RFC 2868 RADIUS attributes for tunnel protocol support
RFC 2986 PKCS #10: certification request syntax specification v1.7
RFC 3546 Transport Layer Security (TLS) extensions
RFC 3579 RADIUS support for Extensible Authentication Protocol (EAP)
RFC 3580 IEEE 802.1x RADIUS usage guidelines
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
RFC 5246 Transport Layer Security (TLS) v1.2
RFC 5280 X.509 certificate and Certificate Revocation List (CRL) profile
RFC 5425 Transport Layer Security (TLS) transport mapping for Syslog
RFC 5656 Elliptic curve algorithm integration for SSH
RFC 6125 Domain-based application service identity within PKI using X.509 certificates with TLS
RFC 6614 Transport Layer Security (TLS) encryption for RADIUS
RFC 6668 SHA-2 data integrity verification for SSH

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 1350 Trivial File Transfer Protocol (TFTP)
RFC 1985 SMTP service extension
RFC 2049 MIME
RFC 2131 DHCPv4 (server, relay and client)
RFC 2132 DHCP options and BootP vendor extensions
RFC 2616 Hypertext Transfer Protocol - HTTP/1.1
RFC 2821 Simple Mail Transfer Protocol (SMTP)
RFC 2822 Internet message format
RFC 3046 DHCP relay agent information option (DHCP option 82)
RFC 3315 DHCPv6 (server, relay and client)
RFC 3633 IPv6 prefix options for DHCPv6
RFC 3646 DNS configuration options for DHCPv6
RFC 3993 Subscriber-ID suboption for DHCP relay agent option
RFC 4330 Simple Network Time Protocol (SNTP) version 4
RFC 5905 Network Time Protocol (NTP) version 4

VLAN Support

Generic VLAN Registration Protocol (GVRP)
IEEE 802.1ad Provider bridges (VLAN stacking, Q-in-Q)
IEEE 802.1Q Virtual LAN (VLAN) bridges
IEEE 802.1v VLAN classification by protocol and port
IEEE 802.3ac VLAN tagging

Voice over IP (VoIP)

LLDP-MED ANSI/TIA-1057
Voice VLAN

Feature Licenses

NAME	DESCRIPTION	INCLUDES	STACK LICENSING
AT-FL-x930-01	x930 premium license	▶ OSPF4[1] (16,000 routes) ▶ BGP4[1] (5,000 routes) ▶ PIMv4-SM, DM and SSM (2,000 entries) ▶ VLAN double tagging (Q-in-Q) ▶ RIPng (5,000 routes) ▶ OSPFv3 (8,000 routes) ▶ BGP4+ (5,000 routes) ▶ MLDv1 and v2 ▶ PIM-SMv6/SSMv6 (1,000 entries) ▶ VRF lite (64 domains) ▶ RADIUS Full ▶ UDLD ▶ PTP Transparent Mode	▶ One license per stack member
AT-SW-AM10-1YR[2]	Cumulative AMF Master license	▶ AMF Master license for up to 10 nodes for 1 year	▶ One license per stack
AT-SW-AM10-5YR[2]	Cumulative AMF Master license	▶ AMF Master license for up to 10 nodes for 5 years	▶ One license per stack
AT-FL-x930-0F13-1YR	OpenFlow license	▶ OpenFlow v1.3 for 1 year	▶ Not supported on a stack
AT-FL-x930-0F13-5YR	OpenFlow license	▶ OpenFlow v1.3 for 5 years	▶ Not supported on a stack
AT-FL-x930-AAP-1YR	AMF Application Proxy license	▶ AMF Application Proxy license for 1 year	▶ One license per stack
AT-FL-x930-AAP-5YR	AMF Application Proxy license	▶ AMF Application Proxy license for 5 years	▶ One license per stack
AT-FL-x930-8032	ITU-T G.8032 license	▶ G.8032 ring protection ▶ Ethernet CFM	▶ One license per stack member
AT-FL-x930-CPOE	Continuous PoE license	▶ Continuous PoE power for GPX models only	▶ One license per stack member

[1] The standard switch software supports 64 OSPF and BGP routes
[2] Purchase one license per 10 nodes (up to 120 nodes maximum)

Feature Licenses continued

NAME	DESCRIPTION	INCLUDES	STACK LICENSING
AT-FL-x930-MSEC[3]	MACSec license	▶ Media Access Control Security	▶ One license per stack member
AT-FL-x930-MODB	Modbus license	▶ Modbus for industrial applications	▶ One license per stack member
AT-FL-x930-MRP	MRP license	▶ Media Redundancy Protocol	▶ One license per stack member
AT-SW-AWC10-1YR[4]	Cumulative AWC license	▶ Autonomous Wave Control (AWC) license for up to 10 access points for 1 year	▶ One license per stack
AT-SW-AWC10-5YR[4]	Cumulative AWC license	▶ Autonomous Wave Control (AWC) license for up to 10 access points for 5 years	▶ One license per stack
AT-SW-CB10-1YR[5]	Cumulative AWC-CB license	▶ AWC Channel Blanket license for up to 10 access points for 1 year	▶ One license per stack
AT-SW-CB10-5YR[5]	Cumulative AWC-CB license	▶ AWC Channel Blanket license for up to 10 access points for 5 years	▶ One license per stack
AT-SW-SC10-1YR[6]	Cumulative AWC-SC license	▶ AWC Smart Connect license for up to 10 access points for 1 year	▶ One license per stack
AT-SW-SC10-5YR[6]	Cumulative AWC-SC license	▶ AWC Smart Connect license for up to 10 access points for 5 years	▶ One license per stack

[3] MACSec is only supported on 1GbE downlink ports
[4] 5 APs can be managed for free. Purchase one license per 10 additional APs (up to 120 APs maximum)
[5] Channel Blanket is not available as a free service. Both an AWC-CB license and an AWC license are required for Channel Blanket to operate. Purchase one AWC-CB license per 10 APs (up to 120 APs maximum). This feature is supported on TQ5403 and TQ5403e access points
[6] Smart Connect is not available as a free service. Both an AWC-SC license and an AWC license are required for Smart Connect to operate. Purchase one AWC-SC license per 10 APs (up to 120 APs maximum). This feature is supported on TQ5403, TQ5403e and TQm5403 access points

Ordering Information

Switches

AT-x930-28GTX-00
24-port 10/100/1000T stackable switch with 4 SFP+ ports and dual hotswap PSU bays

AT-x930-28GPX-00
24-port 10/100/1000T PoE+ stackable switch with 4 SFP+ ports and dual hotswap PSU bays

AT-x930-28GSTX-00
24-port 10/100/1000T and 24-port 100/1000 SFP stackable switch with 4 SFP+ ports and dual hotswap PSU bays

AT-x930-52GTX-00
48-port 10/100/1000T stackable switch with 4 SFP+ ports and dual hotswap PSU bays

AT-x930-52GPX-00
48-port 10/100/1000T PoE+ stackable switch with 4 SFP+ ports and dual hotswap PSU bays

AT-RKMT-SL01
Sliding rack mount kit

Expansion Module

AT-StackQS
2 x QSFP+ expansion module

AT-x9EM/XT4
4 x 10GBASE-T expansion module

Power Supplies (for all models)

AT-PWR150-xx[7]
150W system power supply

AT-PWR250-80[7]
250W DC system power supply

AT-PWR800-xx[7]
800W PoE+ power supply

AT-PWR1200-xx[7]
1200W PoE+ power supply

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

[7] Power supplies must be ordered separately

Fan accessories

AT-FAN09
Spare x930 fan module

AT-FAN09ADP
Spare x930 fan adaptor board

40G QSFP+ Modules For use with AT-StackQS module

AT-QSFP1CU
1 meter QSFP+ direct attach stacking cable

AT-QSFPSR4
40GSR4 850 nm short-haul up to 150 m with MMF

AT-QSFPLR4
40GLR4 1310 nm medium-haul, 10 km with SMF

AT-QSFPER4
40GER4 1310 nm long-haul, 40 km with SMF

AT-QSFPSR
40GSR 850 nm short-haul up to 150 m with MMF

AT-MTP12-1
1 meter MTP optical cable for AT-QSFPSR

AT-MTP12-5
5 meter MTP optical cable for AT-QSFPSR

Breakout Cables
For 4 x 10G connections

AT-QSFP-4SFP10G-3CU
QSFP to 4 x SFP+ breakout direct attach cable (3 m)

AT-QSFP-4SFP10G-5CU
QSFP to 4 x SFP+ breakout direct attach cable (5 m)

10G SFP+ Modules
(Note that any Allied Telesis 10G SFP+ module can be used for stacking with the front panel 10G ports)

AT-SP10SR
10GSR 850 nm short-haul, 300 m with MMF

AT-SP10SR/I
10GSR 850 nm short-haul, 300 m with MMF industrial temperature

AT-SP10LRM
10GLRM 1310 nm short-haul, 220 m with MMF

AT-SP10LR
10GLR 1310 nm medium-haul, 10 km with SMF

AT-SP10LRa/I
10GLR 1310 nm medium-haul, 10 km with SMF industrial temperature

AT-SP10ER40/I
10GER 1550 nm long-haul, 40 km with SMF industrial temperature

AT-SP10ZR80/I
10GER 1550 nm long-haul, 80 km with SMF industrial temperature

AT-SP10BD10/I-12
10 GbE Bi-Di (1270 nm Tx, 1330 nm Rx) fiber up to 10 km industrial temperature, TAA[8]

AT-SP10BD10/I-13
10 GbE Bi-Di (1330 nm Tx, 1270 nm Rx) fiber up to 10 km industrial temperature, TAA[8]

AT-SP10BD20-12
10 GbE Bi-Di (1270 nm Tx, 1330 nm Rx) fiber up to 20 km, TAA[8]

AT-SP10BD20-13
10 GbE Bi-Di (1330 nm Tx, 1270 nm Rx) fiber up to 20 km, TAA[8]

AT-SP10BD40/I-12
10 GbE Bi-Di (1270 nm Tx, 1330 nm Rx) fiber up to 40 km industrial temperature, TAA[8]

AT-SP10BD40/I-13
10 GbE Bi-Di (1330 nm Tx, 1270 nm Rx) fiber up to 40 km industrial temperature, TAA[8]

AT-SP10TM
1G/2.5G/5G/10G, 100m copper, TAA[8]

AT-SP10TW1
1 meter SFP+ direct attach cable

AT-SP10TW3
3 meter SFP+ direct attach cable

AT-SP10TW7
7 meter SFP+ direct attach cable

1000Mbps SFP Modules

AT-SPTX
1000T 100 m copper

AT-SPSX
1000SX GbE multi-mode 850 nm fiber up to 550 m

AT-SPSX/I
1000SX GbE multi-mode 850 nm fiber up to 550 m industrial temperature

AT-SPEX
1000X GbE multi-mode 1310 nm fiber up to 2 km

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

AT-SPLX10/I
1000LX GbE single-mode 1310 nm fiber up to 10 km industrial temperature

AT-SPBD10-13
1000LX (LC) GbE Bi-Di (1310 nm Tx, 1490 nm Rx) fiber up to 10 km

AT-SPBD10-14
1000LX (LC) GbE Bi-Di (1490 nm Tx, 1310 nm Rx) fiber up to 10 km

AT-SPBD20-13/I
1000LX (SC) GbE Bi-Di (1310 nm Tx, 1490 nm Rx) fiber up to 20 km industrial temperature

AT-SPBD20-14/I
1000LX (SC) GbE Bi-Di (1490 nm Tx, 1310 nm Rx) fiber up to 20 km industrial temperature

AT-SPBD40-13/I
1000LX (LC) GbE single-mode Bi-Di (1310 nm Tx, 1490 nm Rx) fiber up to 40 km, industrial temperature

AT-SPBD40-14/I
1000LX (LC) GbE single-mode Bi-Di (1490 nm Tx, 1310 nm Rx) fiber up to 40 km, industrial temperature

AT-SPLX40
1000EX (LC) GbE single-mode 1310 nm fiber up to 40 km

AT-SPZX120/I
1000ZX (LC) GbE single-mode 1550 nm fiber up to 120 km, industrial temperature

100Mbps SFP Modules
100Mbps SFP modules are only compatible with the SFP ports on the AT-x930-28GSTX switch)

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

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

AT-SPFXBD-LC-13
100BX Bi-Di (1310 nm Tx, 1550 nm Rx) fiber up to 10 km

AT-SPFXBD-LC-15
100BX Bi-Di (1550 nm Tx, 1310 nm Rx) fiber up to 10 km

[8] Trade Act Agreement compliant

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