



AT-9000 Series

Managed Layer 2~4 Gigabit Ethernet ECO-Switches



AT-9000 Series

The AT-9000 Series of high performance Layer 2~4 28- and 52-port Gigabit Ethernet switches brings advanced enterprise features to a more affordable level while supporting the changing needs of the SMB market space to improve the delivery of converged data. Support for jumbo Ethernet frames enables higher throughput of time-sensitive data.

The **AT-9000/28** is a 28-port Gigabit Managed switch with 24 fixed configuration 10/100/1000T ports and 4 additional 100/1000 SFP ports combined with 4 10/100/1000T ports.

The **AT-9000/28SP** is a 28-port Gigabit Managed switch with 24 100/1000 SFP ports and 4 additional 10/100/1000T ports combined with 4 10/100/1000T ports.

The **AT-9000/52** is a 52-port Gigabit Managed switch with 4 fixed configuration 10/100/1000 ports and 4 additional 100/1000 SFP ports.

Management Stacking

Enhanced Stacking™ provides CLI-based management of up to 24 switches with the same effort as for one switch. The Allied Telesis solution uses open standard Ethernet interfaces as stacking links so that many switches can be remotely managed as one IP entity across different sites.

Secure Management

Only authorized administrators can access the management interface of the AT-9000 Series. Security protocols such as SSL, SSH and SNMPv3 facilitate this protection of your network for both local or remote connections.

Environmentally Friendly ECO-Switch

In keeping with our commitment to environmentally friendly processes and products, the AT-9000 Series is a green range of products designed to reduce power consumption, minimize hazardous waste and even reduce office noise pollution. Features include the use of high efficiency power supplies and low power chipsets. We have also included an ECO-Switch button on the front panel of all AT-9000 Series switches. This allows you to conserve additional power by turning off the port and mode LEDs when they are not required.

Low Power Consumption with Near Silent Operation

Specifically designed to be usable in a classroom or retail store environment, the AT-9000 Series uses the latest in low power technologies to minimize power consumption and operational noise.

Key Features

Easy, Well Known Management

- Industry Standard AlliedWare Plus® CLI
- Simple, intuitive, full featured Allied Telesis/V2C/V3 Web Interface
- Secure encrypted Web and CLI management with SSHv2 and SSLv3
- SNMP

Ideal for Classroom or Retail Environments

- 28 or 52 active ports
- Lower power consumption
- Near silent operation

Management Stacking

- Enhanced stacking up to 24 units
- Single IP address stack management

All the QoS Needed for an Open Office, Classroom or Retail Store Environment

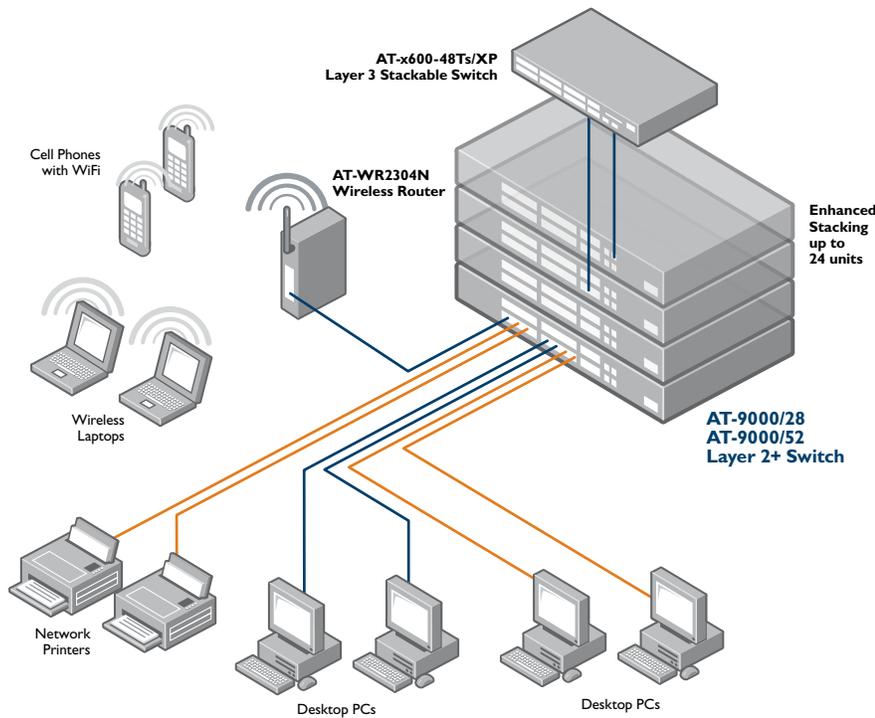
- Eight priorities queues
- IEEE 802.1p for Layer 2 QoS
- DSCP (Diffserv) for Layer 3 QoS
- IEEE 802.1p to DSCP remarking traffic ready for transport to the Layer 3 core of the network
- Layer 2 ~ 4 Access control lists (ACL)

Securing the Network at its Most Vulnerable Point

- IEEE 802.1x and RADIUS network login: for advanced control for user authentication and accountability
- Guest VLAN: to ensure visitors or unauthorized users connect only to services defined by IT, for example, Internet
- Dynamic VLAN
- TACACS+: for ease of management security administration

Access Control Lists

- 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.



Ideal Branch Office and Wiring Closet Connectivity

Powerful line rate performance makes this switch ideal for branch offices or the wiring closet of larger offices. The state-of-the-art QoS capability of this product ensures reliable delivery of advanced network services such as voice and video, while effectively controlling the continually increasing traffic needs found in today's networks.

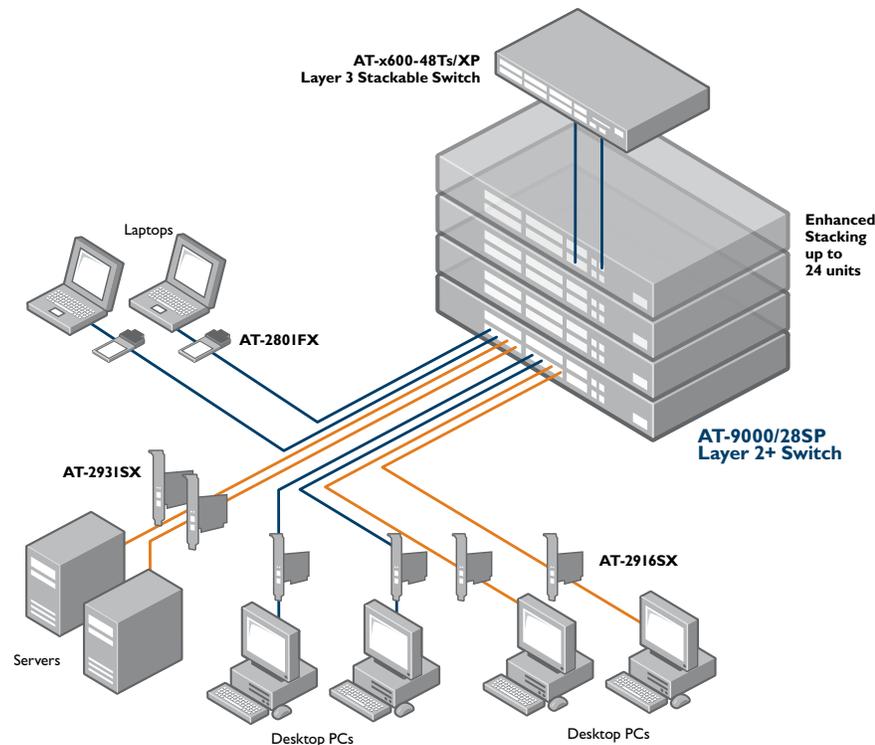
Securing the Network Edge

To ensure the protection of your data, it is important to control access to your network. Protocols such as IEEE 802.1x port-based 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 your network, offering guests such benefits as Internet access while ensuring the integrity of your private network data.

The switch is also fully compliant with Microsoft Network Access Protection (NAP) and Symantec Network Access Control (NAC).

Easy Access Networking

Featuring an industry standard AlliedWare Plus® CLI and the Allied Telesis intuitive Web interface, the advanced features of the AT-9000 series are accessible to a wide range of system administrators. The well-known CLI and Web interfaces significantly reduce learning time and minimize the cost of deployment.



Product Specifications

System Capacity

128MB RAM
16MB flash memory
8K MAC address
4094 VLANs
4Mbit packet buffer memory

Maximum Bandwidth

Non-blocking for all packet sizes

| | AT-9000/28 | AT-9000/28SP | AT-9000/52 |
|---------------------|------------|--------------|------------|
| Throughput | 41.6 Mpps | | 77.35 Mpps |
| Switching capacity | 56 Gbps | | 104 Gbps |
| Switch fabric speed | 62 Gbps | | 125 Gbps |

Supports 9216 byte jumbo packets

Wirespeed Switching on all Ethernet Ports

14,880pps for 10Mbps Ethernet
148,800pps for 100Mbps Ethernet
1,488,000pps for 1000Mbps Ethernet

Latency

| | AT-9000/28 | AT-9000/28SP | AT-9000/52 |
|----------|------------|--------------|------------|
| 10Mbit | 78.77µsec | 78.77µsec | 76.86µsec |
| 100Mbit | 11.25µsec | 25.22µsec | 11.43µsec |
| 1000Mbit | 3.79µsec | 3.84µsec | 4.18µsec |

Power Characteristics

AC input electrical ratings 100-240V AC, IA
Frequency 50/60Hz

| | AT-9000/28 | AT-9000/28SP | AT-9000/52 |
|--|--------------|--------------|--------------|
| Typical power consumption in ECO-friendly mode | 29.58W* | 35.65W* | 44.92W* |
| Maximum power consumption | 30.74W | 37.42W | 46.13W |
| Maximum power supply efficiency | 83% | 85% | 83% |
| Heat dissipation | 104.09BTU/hr | 127.76BTU/hr | 153.30BTU/hr |

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 meters (9,843 feet)

| | AT-9000/28 | AT-9000/28SP | AT-9000/52 |
|------------------------|------------|--------------|------------|
| Maximum acoustic noise | 37.4dB | 41.7dB | 44.3dB |

Port Configurations

Auto-negotiation, MDI/MDI-X
IEEE 802.3x Flow control / Back Pressure
Head of line (HOL) Blocking Prevention
Broadcast Storm Control
Broadcast, Multicast, Unknown unicast rate limiting
Port mirroring
Ethernet statistics
Bad Cable Detection
Redundant Master / Slave Management

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 802.3ad (LACP) Link Aggregation

IEEE 802.3u 100T
IEEE 802.3x Full Duplex Operation
IEEE 802.3z Gigabit Ethernet

Quality of Service (QoS)

IEEE 802.1p QoS
Eight priority queues
Strict Priority and Weighted Round Robin
DSCP
Rate Limiting
Voice VLAN

Spanning Tree Support

IEEE 802.1D Spanning-Tree Protocol (STP)
IEEE 802.1w Rapid Spanning-Tree (RSTP)
BPDU guard
Loop guard

Management

Web-based GUI
Industry Standard AlliedWare Plus®
Enhanced Stacking
RFC 854 Telnet Client
Telnet Sever
NTP
RFC 2616 HTTP
RFC 1350 TFTP Download/Upload
Zmodem Download/Upload
RFC 1157 SNMPv1/v2c
RFC 2570 SNMPv3
RFC 1215 SNMP Traps
RFC 1757 RMON 4 Groups: Stats, History, Alarms, Events
Event Log
RFC 3176 sFlow

MIB Support

ATI Private MIB
RFC 1155 MIB
RFC 1213 MIB-II
RFC 1493 Bridge MIB
RFC 1643 Ethernet MIB
RFC 2096 IP Forwarding Table MIB
RFC 2790 Host MIB
RFC 2863 The Interfaces Group MIB
RFC 3176 sFlow MIB

VLANs

Supports up to 4094 VLAN IDs
Support for 255 active VLANs
IEEE 802.1Q VLAN Tag
Port-based and MAC-based VLANs
Port Protected VLANs
IEEE 802.1P GVRP
Double VLAN Tagging (Q-in-Q)

Link Aggregation

Static trunking
IEEE 802.3ad Link Aggregation Control Protocol (LACP)
Support for 12 groups per device and trunk can support up to 8 members per group

Link Discovery

IEEE 802.1ab Link Layer Discovery Protocol (LLDP)
Link Layer Discovery Protocol-Media Endpoint Discovery (LLDP-MED)

General Protocols

RFC 768 UDP
RFC 791 IP
RFC 792 ICMP
RFC 793 TCP
RFC 826 ARP
RFC 951 BootP
RFC 1027 Proxy ARP
RFC 1122 Internet Host Requirements

IP Multicast

L2 Multicast Forwarding and Filtering up to 256 groups
RFC 1112 IGMPv1 Snooping
RFC 2236 IGMPv2 Snooping
RFC 3376 IGMPv3 Snooping

Security / 802.1x

L2-L4 Permit/Deny/Mirror ACLs
SSHv2
SSLv3
RFC 2865 Radius
RFC 1492 TACACS+
Port Security (limited/dynamic)
802.1x Port Base
802.1x Multiple Host Mode
IEEE 802.1x Supplicant
IEEE 802.1x Authenticator
IEEE 802.1x MD-5
IEEE 802.1x LEAP
IEEE 802.1x PEAP
IEEE 802.1x EAP-TLS
IEEE 802.1x TTLS
IEEE 802.1x Dynamic VLANs
IEEE 802.1x Guest VLANs
IEEE 802.1x Secure VLANs
IEEE 802.1x Multiple Supplicant Mode
IEEE 802.1x Piggy-Back Mode
Per-Port MAC Address Limiting
Per-Port MAC Address Filtering
Per-Port MAC Address Lockdown
Microsoft NAP compliant
Symantec NAC support

IPv6

IPv6 Host

Compliance Standards

IEEE 802.3 — 10T
IEEE 802.3u — 100X with Auto-Negotiation
IEEE 802.3ab — 1000T Gigabit Ethernet
100FX SFP support
1000X SFP support

Safety and Electromagnetic Emissions Certifications

EMI: FCC Class A, CISPR 22 Class A, EN55022 Class A, C-TICK, VCCI
Immunity: EN55024, EN61000-3-2 and EN61000-3-3
Safety: UL 60950 (cULus), EN60950-1 (TUV)
Quality and Reliability: MTBF — 340,000 hours

RoHS Standards

Compliant with European and China RoHS standards

Package Description

AT-9000/XX switch
AC power cord
Management cable (RJ-45 to DB-9)
Rubber feet for desktop installation and 19" rack-mountable hardware kit accessories
Install guide and CLI user's guide on CD

Physical Specifications

| AT-9000/28 | |
|------------------------|---|
| Dimensions (W x D x H) | 440 mm x 256 mm x 44 mm (17.33" x 10.08" x 1.73") |
| Weight | 3.62 kg (8.00 lbs) |
| AT-9000/28SP | |
| Dimensions (W x D x H) | 440 mm x 256 mm x 44 mm (17.33" x 10.08" x 1.73") |
| Weight | 4.01 kg (8.85 lbs) |
| AT-9000/52 | |
| Dimensions (W x D x H) | 440 mm x 256 mm x 44 mm (17.33" x 10.08" x 1.73") |
| Weight | 4.06 kg (8.95 lbs) |

* Typical power is measured running 85% ports using 30m cable on a sample unit.

Ordering Information



Stackable Gigabit Ethernet Switches

AT-9000/28-xx
 24 x 10/100/1000T RJ45 Ports
 4 Combo Ports (4 x 10/100/1000T RJ45 Ports or 4 x 100/1000 SFP Ports)
 Internal AC Power Supply



AT-9000/28SP-xx
 24 x 10/100/1000T SFP Ports
 4 Combo Ports (4 x 10/100/1000T RJ45 Ports or 4 x 100/1000 SFP Ports)
 Internal AC Power Supply



AT-9000/52-xx
 48 x 10/100/1000T RJ45 Ports
 4 x 100/1000 SFP Ports
 Internal AC Power Supply

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

Country of Origin
 Singapore

Accessories

Small Form Pluggables (SFPs)

AT-SPEX
 Multi-mode Fiber, 2km, GbE, SFP, 1310nm

AT-SPSX
 Multi-mode Fiber, 2km, GbE, SFP, 850nm

AT-SPSX/I
 Multi-mode Fiber, 2km, GbE, SFP, 850nm

AT-SPFX/2
 Multi-mode Fiber, 2km, 100FX, SFP, 850nm

AT-SPFX/I5
 Single-mode Fiber, 15km, 100FX, SFP, 1310nm

AT-SPLX10
 Single-mode Fiber, 10km, GbE SFP, 1310nm

AT-SPLX10/I
 Single-mode Fiber, 10km, GbE SFP, 1310nm

AT-SPLX40
 Single-mode Fiber, 40km, GbE SFP, 1310nm

AT-SPLX40/I550
 Single-mode Fiber, 40km, GbE SFP, 1550nm

AT-SPZX80
 Single-mode Fiber, 80km, GbE SFP, 1550nm

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USA Headquarters | 19800 North Creek Parkway | Suite 100 | 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

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