Allied Telesis™

9400 SERIES
Managed Gigabit Ethernet Switches
with Enhanced Security and Layer 2-4 Intelligence

AT-9424T/GB-xx**
Layer 2+ switch with 24 ports of 10/100/1000T plus 2 combo GBIC slots (unpopulated)

AT-9424T/SP-xx
Layer 2+ switch with 24 ports of 10/100/1000T plus 2 combo SFP slots (unpopulated)

AT-9408LC/SP-xx
Layer 2+ switch with 8 ports 1000SX (LC connectors) plus 4 SFPs (active) plus memory flash card slot

Smarter, More Secure and More Cost-effective
The 9400 series is an advanced Layer 2 managed Gigabit switch for the access edge that brings enhanced security to Gigabit networks. Many network administrators demand easy to manage, cost-effective, intelligent switches at the LAN edge, and the 9400 switch answers such demands, with the optimal balance of features, performance, and value. More intelligent than simple Layer 2 switches, the cost-effective 9400 offers advanced attack detection and suppression capabilities for increased security and advanced QoS to support converged applications.

The 9400 series provides the perfect solution for:
• Traditional Enterprise LAN (wiring closet)
• Service-provisioned leased offices or MTUs
• Security-conscious government institutions
• Security-conscious financial institutions
• Cost/security-conscious educational institutions

Management Stacking
Stacking provides CLI-based management of up to 24 switches with the same effort as for one switch. The Allied Telesis solution uses open standards interfaces as stacking links so that many switches can be stacked across different sites.

Layer 2-4 Intelligence
The 9400 series packs a lot of features in one rack unit. With advanced AlliedWare® technology the 9400 switches allow network administrators to configure the switch to examine packet formats and content from Layer 2, Layer 3, or Layer 4 (also known as the MAC, IP and TCP/UDP layers). After these layer parameters are defined and detected, network security can be improved with Access Control lists (ACLs) and DoS attack detection features. Rate limits can be established for excessive bandwidth usage and converged applications are supported.

Securing the LAN Edge
To address the heightened concern of network attacks in the form of Denial of Services (DoS), Allied Telesis now makes security features its primary focus. Assisted by the Layer 2-4 intelligence, network administrators can deploy 9400 switches to complement WAN firewalls and PC anti-virus protections to fortify the network against malicious attacks. The 9400 switches come pre-programmed to detect six well-known DoS attacks. Coupled with security features such as IEEE 802.1x (port-based network access control) and Radius/ TACACS+, the 9400 series provides tiered security on each port. Deploying tiered security in unsecured areas such as visitors' meeting rooms and lounges provide cost-effective protections at the network layer.

Service Features for Revenue Generation
In a global economic climate, network administrators must focus on managing capital spending—a concern that forces resource utilization to center stage. Allied Telesis designed the 9400 to allow smart management of network resources with two key features:
• Ingress and egress rate-limiting to provision bandwidth intelligently.
• QoS support with IEEE 802.1p and DSCP for priority traffic. The 9400 series also includes CoS to DSCP remarking, allowing Layer 2 QoS priorities to be preserved over the WAN.

Network administrators can configure the 9400 to control bandwidth-wasting traffic—such as music streaming to desktops—by dynamically lowering the priority and limiting bandwidth to a trickle. Such features benefit metropolitan providers by enabling them to charge a fee to provision different bandwidth and QoS priorities as value-added services for customers.

** Contact local sales representative for availability

Key Features

Layer 2-4 Intelligence
• Packet look-up at MAC, IP, TCP/ UDP layers
• For QoS, ACL, mirroring, rate-limiting

Advanced Security
• DoS attack protection
• Radius/ TACACS+
• Port security
• Secure Telnet
• IEEE 802.1x
• Layer 2-4 ACL

Advanced Services
• Rate limiting (ingress and egress)
• Eight levels of services
• IEEE 802.1p for MAC-based QoS
• DSCP for IP-based QoS

Layer 2 Redundancy
• IEEE 802.1s Multiple STP (compatible with PVST+)
• IEEE 802.3ad link aggregation (static)
• IEEE 802.1D Spanning-Tree
• IEEE 802.1w Rapid STP

Stacking
• Management stacking of up to 24 switches with Enhanced Stacking™

Hardware Specification
Physical Characteristics
Dimensions (H x W x D):

AT-9408LC/SP	4.4cm x 43.8cm x 22.2cm (1.75" x 17.25" x 8.75")
AT-9424T/GB	4.4cm x 43.8cm x 22.2cm (1.75" x 17.25" x 8.75")
AT-9424T/SP	4.4cm x 43.8cm x 22.2cm (1.75" x 17.25" x 8.75")

Weight:

AT-9408LC/SP	3.00kg (6.65 lb.)
AT-9424T/GB	3.11kg (6.85 lb.)
AT-9424T/SP	3.11kg (6.85 lb.)

Recommended minimum ventilation on all sides
10cm (4.0 in.)

System Capacity
32MB RAM
16MB flash memory
200MHz PowerPC CPU
4096 VLANs
16000 MAC addresses
8 megabytes file system

Performance
Latency:
<81 microseconds latency between 10Mbps ports
<11 microseconds latency between 100Mbps ports
<4 microseconds latency between 1000Mbps ports
Wirespeed switching on all Ethernet ports
14,880pps for 10Mbps Ethernet
148,800pps for 100Mbps Fast Ethernet
1,488,000pps for 1000Mbps Gigabit

Ethernet throughput:

AT-9424TSP/GB	35.7Mpps
AT-9424TSP/SP	35.7Mpps
AT-9408LC/SP	17.8Mpps

Chipset switching capacity:

AT-9424TSP/GB	48Gbps (Full-duplex)
AT-9424TSP/SP	48Gbps (Full-duplex)
AT-9408LC/SP	24Gbps (Full-duplex)

Auto MDI/MDI-X

Software Specification
Interface Standards

IEEE 802.3	10T and 10FL
IEEE 802.3u	100TX and 100FX
IEEE 802.3z	1000SX
IEEE 802.3ab	1000T

General Standards

IEEE 802.1d	Bridging
IEEE 802.3ac	VLAN tag frame extension
IEEE 802.3x	BackPressure/ flow control

Head of line blocking
Eight egress queues per port

Redundancy

IEEE 802.1D	Spanning-Tree Protocol
IEEE 802.1w	Rapid Spanning-Tree
IEEE 802.1s	Multiple Spanning-Tree (compatible with PVST+)
IEEE 802.3ad	LACP link aggregation (with three trunk groups and up to eight port in a trunk)

Static port trunk
Router Redundancy Protocol (RRP) snooping

Quality of Services (QoS)
Layer 2, 3 and 4 criteria
Flow groups, traffic classes and policies
DSCP replacement
IEEE 802.1Q priority replacement
Type of Service replacement
Type of Service to IEEE 802.1Q priority replacement
IEEE 802.1Q priority to Type of Service replacement
Maximum bandwidth control
Burst size control
Support for ingress and egress ports

IEEE 802.1p Class of Service with strict and weighted round robin scheduling

VLANs

IEEE 802.1Q	VLAN tagging

Port-based VLANs
Compliant and non-compliant IEEE 802.1Q VLAN modes
Protected port VLAN
MAC address-based VLANs (AT-9448Ts/XP only)
Selectable management VLAN

GARP VLAN Registration Protocol (GVRP)

Multicast

RFC 1112	IGMP snooping (v1)
RFC 2236	IGMP snooping (v2)
RFC 2710	Multicast Listener Discovery (MLD) snooping (v1)
RFC 3810	Multicast Listener Discovery (MLD) snooping (v2)

Management and Monitoring

RFC 1157	SNMPv1
RFC 1901	SNMPv2
RFC 3411	SNMPv3
RFC 1213	MIB-II
RFC 1215	TRAP MIB
RFC 1493	Bridge MIB
RFC 2863	Interfaces group MIB
RFC 1643	Ethernet-like MIB
RFC 1757	RMON 4 groups: Stats, History, Alarms and Events
RFC 2674	IEEE 802.1Q MIB
AlliedTelesis	Private MIB
RFC 1866	HTML
RFC 2068	HTTP
RFC 2616	HTTPS
RFC 854	Telnet server
RFC 1350	TFTP client

IP address allocation:
RFC 951 / RFC1542 BOOTP client
RFC 2131 DHCP client
Manual

RFC 2030 SNTP, Simple Network Time Protocol

Syslog client

Dual software images, dual configuration files

Two event logs:
4,000 event capacity in temporary memory
2,000 event capacity in permanent memory

Management Access Methods
Enhanced Stacking
Two 10Gbps full-duplex stacking port per port
Single IP address for management
Resilient bi-directional ring architecture

Out of band management (serial port)
In-band management (over the network) using Telnet, web browser or SNMP

Management Interfaces
Menus
Command line
Web browser
SNMPv1/ v2/ v3

Security

RFC 1492	TACACS+
RFC 2865	RADIUS Client
RFC 2866	RADIUS Accounting
IEEE 802.1x	Port-based network aaccess control with multiple supplicants per port

Ingress and egress control of broadcast, multicast and unknown unicast traffic
Ingress rate limiting
MAC address security/lockdown
Layer 2/3/4/ Access Control Lists (ACLs)
SSHv2 for Telnet mgmt
SSLv3 for Web mgmt
Management access control list

Fault Protection
DoS attack protection
Smurf
SYN flood
Teardrop
Land
IP option
Ping of Death
SNMP attack
Bad cable detection
Broadcast storm control

Miscellaneous Specifications

Power Characteristics

Voltage	100-240V AC
Current	4.0/2.0A
Frequency	50-60Hz

Maximum power consumption:

AT-9408LC/SP	58 watts
AT-9424T/GB	54 watts
AT-9424T/SP	54 watts

Environmental Specifications

Operating temp.	0°C to 40°C (32°F to 104°F)
Storage temp.	-25°C to 70°C (-13°F to 158°F)
Operating humidity	5% to 90% non-condensing
Storage humidity	5% to 95% non-condensing
Maximum operating altitude	3,048m (10,000ft)

Electrical/Mechanical Approvals

Safety UL 60950-1, CSA C22.2 No. 60950-1-03, EN60950, EN60825 (TUV)
EMI FCC Class A, EN55022 Class A, VCCI Class A, C-TICK, EN61000-3-2, EN61000-3-3
Immunity EN55024

Country of Origin

China

Ordering Information

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AT-9408LC/SP-xx
Layer 2+ switch with 8 ports 1000SX plus 4 SFP slots (active)

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

Accessories

Redundant Power Supply

AT-RPS3204	Chassis for up to 4 redundant power supplies (chassis includes one power supply and one cable)
AT-PWR3202	Additional 200w redundant power supply with cable

GBICs

AT-G8T	1000T GBIC Copper
AT-G8SX-01	550m SX GBIC, based on 50 Micron fiber 220m SX GBIC, based on 62.5 micron fiber

Small Form Pluggables (SFPs)

AT-SPSX	Multi-mode fiber, GbE Small Form-factor Pluggable (SFP) 850nm
AT-SPLX10	Single-mode fiber, 10km, GbE SFP, 1310nm
AT-SPLX40	Single-mode fiber, 40km, GbE SFP, 1310nm
AT-SPLX40/1550	Single-mode fiber, 40km, GbE SFP, 1550nm
AT-SPZX80	Single-mode fiber, 80km, GbE SFP, 1550nm

Connecting The (IP) World

Allied Telesis