



AT-9800 SERIES

Flexible Gigabit Layer 3 Switches

AT-9816GB V2

16 x 1000BASE-X GBIC ports

AT-9812T V2

12 x 10/100/1000BASE-T copper ports
4 x 1000BASE-X GBIC ports

Industry Leading Features

Packaged in a 1.5RU standard rack mount chassis, the AT-9800 Series incorporates a 32Gbps switching core that yields 24 Million packets per second wire-speed Layer 3 IP and IPX switching performance.

Flexibility and Reliability

GBIC interfaces provide port flexibility, supporting any combination of gigabit copper or fiber for short haul and long haul. GBIC interfaces are hot-swappable.

Policy-Based Quality of Service (QoS)

Combined with very low latency, comprehensive quality of service features operating at wire speed provide flow based traffic management with full prioritisation and classification, and min/max bandwidth profiles. An ideal solution for high-end aggregation in multicasting and combined voice, data, and video applications.

Power to Perform

The AT-9800 switches are built to meet the needs of high performance network services. Together with Allied Telesis's advanced software feature set, AlliedWare, the AT-9800 Series is a superior switching solution in the mid-tier aggregation layer.

Traffic Management

Industry leading QoS features with independent bandwidth and latency control allow multi-faceted tuning of network traffic. Minimum and

maximum bandwidth limiting in 64Kbps increments and low latency for voice applications operating at wire speed.

Multiprotocol Service

Wire-speed IPv4 and IPX are complimented with advanced IPv6 for full multiprotocol capability. Many routing protocols RIPv1/v2, OSPFv2, BGP4, IS-IS, VRRP, IGMP, DVMRP, PIM-DM/SM ensuring operation within almost any architecture.

About Allied Telesis

Allied Telesis was founded in 1987 and now has offices around the globe, more than 2,800 employees and over \$500M of worldwide annual revenue. The attributes which have led Allied Telesis to achieve its leading position in the enterprise, operator and connectivity business segments can be summarised by four key elements: its business focus on networking technology for professional markets, where Allied Telesis has proved to be the only company capable of providing a total end-to-end solution at a high price/performance ratio; the ability to handle every aspect of its own products from design to marketing; the development of components and solutions which accommodate flexible, efficient and reliable network construction; and support from sound warranty terms and quality services. Allied Telesis connects the IP world efficiently thanks to affordable and highly reliable network solutions. For more information see: www.alliedtelesis.com

Service and Support

Allied Telesis provides value-added support services for its customers under its Net.CoverSM programs. For more information on Net.CoverSM support programs available in your area, contact your Allied Telesis sales representative or visit our website: www.alliedtelesis.com

Key Features Performance

- Wire-speed traffic classification
- Wire-speed IPv4 and IPX routing (Layer 3 and 4)
- 32 Gbps non-blocking switch fabric
- Wire-speed multicasting services
- Provides up to 232,000 Layer 2 or 3 address entries
- 4096 VLANs
- Advanced routing protocols OSPF, BGP4, IS-IS, RIP and RIPv2, DVMRP, PIM-SM, PIM-DM
- 24 Million packets per second performance
- Low latency for voice support

Availability

- Load balancing (optional)

QoS

- Policy based QoS features
- Class of Service (CoS)
- IEEE 802.1p prioritisation
- DiffServ
- Bandwidth limiting (64KB increments)

Management

- IEEE 802.1x
- SNMPv3 with extensive MIB support
- Secure SSH capability on management and access
- TACACS+
- Web based management with GUI
- Port trunking with link aggregation

Flexibility

- IPv6 support
- GBIC modules enhance port flexibility
- Will support any combination of 1000BASE-T, 1000BASE-SX, or 1000BASE-LX GBICs
- Huge capabilities and flexibility compressed into 1.5RU form factor
- Compact Flash Socket for operational cost reduction
- Auto-ranging 100-240V AC
- 48vDC power supply option* (factory installed)

Security

- Stateful Inspection Firewall

* Check with your sales representative for availability

AT-9800 SERIES | Flexible Gigabit Layer 3 Switches

Performance

Reliability

MTBF
AT-9816GB V2 260,000 hours
AT-9812T V2 480,000 hours

Acoustic Noise

46.0 dB

Power Characteristics

Voltage 100-240V A.C. auto ranging
Frequency 50-60Hz

Power Consumption

AT-9816GB V2 132Watts (451BTU/hour)
maximum
86Watts (294BTU/hour) typical
AT-9812T V2 131Watts (448BTU/hour)
maximum
112Watts (383BTU/hour) typical

Where: maximum = with all BASE-T GBICs
and CAM installed
typical = with all BASE-SX fiber GBICs
and CAM installed and measured with
230V A.C. supply

Environmental Specifications

Operating Temperature: 0°C - 40°C
(32°F - 104°F)
Storage Temperature: -25°C - 75°C
(-13°F - 158°F)
Relative Humidity Range: 5% - 95%
non condensing
Altitude: 3,050 Meters max
(10,000ft)

Physical Dimensions

AT-9800:
Height: 66mm (2.6")
Width: 440mm (17.3")
Depth: 360mm (14.2")
Mounting: 19" rack mountable, 1.5 RU form-factor
Weight: (AT-9816GB V2) 6.5kg (14.3 lbs) or
8.5kg (18.7 lbs) packaged
Weight: (AT-9812T V2) 6.3kg (13.9 lbs) or 8.3kg
(18.3 lbs) packaged

Electrical Approvals & Compliances EMC

Emissions AT-9816GB V2:
EN55022 class B, FCC class B, AS/NZS
CISPR22 class A, VCCI class B
(the use of BASE-T GBICs may
cause class A compliance)
Immunity: EN55024, EN61000-3-2/3

Safety

UL60950-1, CAN/CSA-C22.2 No. 60950-1-03,
EN60950-1, AS/NZS60950, EN60825-1
Certification: UL, cUL, TUV

Country of Origin

Singapore

Standards and Protocols Software Release 2.9.1

BGP-4

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

Encryption

RFC 1321 MD5
RFC 2104 HMAC
FIPS 180 SHA-1
FIPS 186 RSA
FIPS 46-3 DES

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 802.3u 100BASE-T
IEEE 802.3x Full Duplex Operation
IEEE 802.3z Gigabit Ethernet
GARP
GVRP

General Routing

RFC 768 UDP
RFC 791 IP
RFC 792 ICMP
RFC 793 TCP
RFC 826 ARP
RFC 903 Reverse ARP
RFC 925 Multi-LAN ARP
RFC 950 Subnetting, ICMP
RFC 1027 Proxy ARP
RFC 1035 DNS
RFC 1055 SLIP
RFC 1122 Internet Host Requirements
RFC 1142 OSI IS-IS Intra-domain Routing Protocol
RFC 1144 Van Jacobson's Compression
RFC 1256 ICMP Router Discovery Messages
RFC 1288 Finger
RFC 1332 The PPP Internet Protocol Control Protocol
(IPCP)
RFC 1378 The PPP AppleTalk Control Protocol (ATCP)

RFC 1518 CIDR
RFC 1519 CIDR
RFC 1542 BootP
RFC 1552 The PPP Internetworking Packet Exchange
Control Protocol (IPXCP)
RFC 1570 PPP LCP Extensions
RFC 1582 RIP on Demand Circuits
RFC 1661 The Point-to-Point Protocol (PPP)

RFC 1762 The PPP DECnet Phase IV Control Protocol
(DNCP)
RFC 1812 Router Requirements
RFC 1877 PPP Internet Protocol Control Protocol
Extensions for Name Server Addresses
RFC 1918 IP Addressing
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 2131 DHCP
RFC 2132 DHCP Options and BOOTP Vendor Extensions
RFC 2390 Inverse Address Resolution Protocol
RFC 2516 A Method for Transmitting PPP Over Ethernet
(PPPoE)
RFC 2661 L2TP
RFC 2822 Internet Message Format
RFC 3046 DHCP Relay Agent Information Option
RFC 3232 Assigned Numbers
RFC 3993 Subscriber-ID Sub-option for DHCP Relay
Agent Option*
"IPX Router Specification", v1.2, Novell, Inc., Part
Number 107-000029-001
ISO 10589, ISO 10589 Technical Corrigendums 1, 2, 3,
ISO Intermediate System-to-Intermediate System
"ISO 8473, relevant parts of ISO 8348(X.213), ISO
8343/
Add2, ISO 8648, ISO 8648, ISO TR 9577 Open System
Interconnection"
ISO 9542 End System to Intermediate System Protocol

General Routing and Firewall

RFC 3022 Traditional NAT

IP Multicasting

RFC 1075 DVMRP
RFC 1112 Host Extensions
RFC 2236 IGMPv2
RFC 2362 PIM-SM
RFC 2715 Interoperability Rules for Multicast Routing
Protocols
RFC 3973 PIM-DM
draft-ietf-idmr-dvmrp-v3-9 DVMRP
draft-ietf-magma-snoop-02 IGMP and MLD snooping
switches

IPv6

RFC 1981 Path MTU Discovery for IPv6
RFC 2080 RIPng for IPv6
RFC 2365 Administratively Scoped IP Multicast
RFC 2375 IPv6 Multicast Address Assignments
RFC 2460 IPv6
RFC 2461 Neighbour Discovery for IPv6
RFC 2462 IPv6 Stateless Address Autoconfiguration

RFC 2463 ICMPv6
RFC 2464 Transmission of IPv6 Packets over Ethernet Networks
RFC 2465 Allocation Guidelines for IPv6 Multicast Addresses Management Information Base for IP Version 6: Textual Conventions and General Group
RFC 2466 Management Information Base for IP Version 6: ICMPv6 Group
RFC 2472 IPv6 over PPP
RFC 2526 Reserved IPv6 Subnet Anycast Addresses
RFC 2529 Transmission of IPv6 over IPv4 Domains without Explicit Tunnels
RFC 2710 Multicast Listener Discovery (MLD) for IPv6
RFC 2711 IPv6 Router Alert Option
RFC 2851 Textual Conventions for Internet Network Addresses
RFC 2893 Transition Mechanisms for IPv6 Hosts and Routers
RFC 3056 Connection of IPv6 Domains via IPv4 Clouds
RFC 3307 Allocation Guidelines for IPv6 Multicast Addresses
RFC 3315 DHCPv6
RFC 3484 Default Address Selection for IPv6
RFC 3513 IPv6 Addressing Architecture
RFC 3587 IPv6 Global Unicast Address Format
RFC 3596 DNS Extensions to support IPv6
RFC 3810 Multicast Listener Discovery Version 2 (MLDv2) for IPv6

Management

RFC 1155 MIB
RFC 1157 SNMP
RFC 1212 Concise MIB definitions
RFC 1213 MIB-II
RFC 1493 Bridge MIB
RFC 1643 Ethernet MIB
RFC 1657 Definitions of Managed Objects for BGP-4 using SMIv2
RFC 2011 SNMPv2 MIB for IP using SMIv2
RFC 2012 SNMPv2 MIB for TCP using SMIv2
RFC 2096 IP Forwarding Table MIB
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 2790 Host MIB
RFC 2819 RMON (groups 1,2,3 and 9)
RFC 2856 Textual Conventions for Additional High Capacity Data Types
RFC 2863 The Interfaces Group MIB-II
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
RFC 3636 Definitions of Managed Objects for IEEE 802.3 MAUs
RFC 3768 VRRP
draft-ietf-bridge-8021x-00.txt Port Access Control MIB CDP
IEEE 802.1AB LLDP

OSPF

RFC 1245 OSPF protocol analysis
RFC 1246 Experience with the OSPF protocol
RFC 2328 OSPFv2
RFC 3101 The OSPF Not-so-Stubby Area (NSSA) Option

QoS

RFC 2205 Reservation Protocol
RFC 2211 Controlled-Load
RFC 2474 DSCP
RFC 2475 An Architecture for Differentiated Services
IEEE 802.1p Priority Tagging

RIP

RFC 1058 RIPv1
RFC 2453 RIPv2
RFC 2082 RIP-2MDS Authentication

Security

RFC 959 FTP
RFC 1413 IDP
RFC 1492 TACACS
RFC 1779 X.500 String Representation of Distinguished Names.
RFC 1858 Fragmentation
RFC 2284 EAP
RFC 2510 PKI X.509 Certificate Management Protocols
RFC 2511 X.509 Certificate Request Message Format
RFC 2559 PKI X.509 LDAPv2
RFC 2585 PKI X.509 Operational Protocols
RFC 2587 PKI X.509 LDAPv2 Schema
RFC 2865 RADIUS
RFC 2866 RADIUS Accounting
RFC 2868 RADIUS Attributes for Tunnel Protocol Support
RFC 3280 X.509 Certificate and CRL profile
RFC 3580 IEEE 802.1X Remote Authentication Dial In User Service (RADIUS) Usage Guidelines
draft-grant-tacacs-02.txt TACACS+
Draft-IETF-PKIX-CMP-Transport-Protocols-01 Transport Protocols for CMP
draft-ylonen-ssh-protocol-00.txt SSH Remote Login Protocol
IEEE 802.1x Port Based Network Access Control
PKCS #10 Certificate Request Syntax Standard
Diffie-Hellman

Services

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 951 BootP
RFC 1091 Telnet terminal-type option
RFC 1179 Line printer daemon protocol
RFC 1305 NTPv3
RFC 1350 TFTP
RFC 1510 Network Authentication
RFC 1542 Clarifications and Extensions for the Bootstrap protocol
RFC 1945 HTTP/1.0
RFC 1985 SMTP Service Extension
RFC 2049 MIME
RFC 2068 HTTP/1.1
RFC 2156 MIXER
RFC 2821 SMTP

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

AT-9800 SERIES | Flexible Gigabit Layer 3 Switches

Ordering Information

AT-9816GB V2-xx

16 GBIC port layer 3-7 switch with power supply
Ordering information: 990-001381-xx RoHS compliant

AT-9812T V2-xx

4 GBIC + 12 copper ports layer 3-7 switch with power supply
Ordering information: 990-000576-xx (not RoHS compliant)

Where xx = 10 for U.S. power cord
20 for no power cord
30 of U.K. power cord
40 for Asia/Pacific power cord
50 for European power cord
80 for 48v DC power supply

NB: All AT-9800 Series switches are shipped with 128MB of SDRAM (upgraded to 256MB) and 40 k-entries of CAM.

SDRAM

AT-SD256A-00
256MB SDRAM (upgrade)
Order number: 990-001345-00

Compact Flash

AT-CF128A-00
128MB compact flash card
Order number: 990-000819-00

Gigabit Interface Converter (GBIC)

Modules

AT-G8T
1000T GBIC Copper
Order number: 990-97208-00

AT-G8SX-01

500m SX GBIC, based on 50 micron MMF
220m SX GBIC, based on 62.5 micron MMF
Order number: 990-02023-00

AT-G8LX10

10km LX GBIC, based on 9 micron SMF
Order number: 990-11138-00

AT-G8LX25

25km LX GBIC, based on 9 micron SMF
Order number: 990-11643-00

AT-G8LX40

40km LX GBIC, based on 9 micron SMF
Order number: 990-11644-00

AT-G8LX70

70km LX GBIC, based on 9 micron SMF
Order number: 990-11645-00

AT-G8ZX70/wwww

70km ZX GBIC, based on 9 micron SMF
Order number: 990-01999-xx

Where www=	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

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

Feature Licences

AT-AR-9800FL3UPGRD¹

AT-9800 full Layer 3 upgrade

- IPX routing
- RSVP
- PIM DM
- PIM SM
- DVMPRP
- VRRP

Order number: 980-10033-00

AT-9800ADVL3UPGRD

AT-9800 series advanced Layer 3 upgrade

- IPv6
- BGP4
- Load balancing

Order number: 980-10025-00

AT-9800SecPk

AT-9800 Layer 3 switch security pack

- Firewall
- SMTP Proxy
- HTTP Proxy

Order number: 980-10031-y

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

¹ Included in North American products as part of their base configuration. Free registration required in other regions.

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

2006 Allied Telesis Inc. All rights reserved. Information in this document is subject to change without notice. All company names, logos, and product designs that are trademarks or registered trademarks are the property of their respective owners. 617-00455-00 Rev P