AT-AR770S
Secure Gigabit VPN Router

Flexible High Speed WAN Options
The AT-AR770S is the first Allied Telesis router to offer gigabit connectivity for both the LAN switch and WAN Ethernet ports. Eth0 and Eth1 are combo ports. This means that they can make use of an SFP instead of the standard copper RJ-45 connection.

Both the SFP and RJ-45 physical ports are managed by the same interface IC, providing a single ‘port’ with two connectivity options. When using an SFP port on the AT-AR770S, the corresponding RJ-45 port is disabled. However, when the SFP transceiver is removed, the RJ-45 port becomes operational again.

Secure Modular Routing Solution
The AT-AR770S has been designed to meet the needs of small to medium enterprises/businesses or branch office businesses. The AT-AR770S offers significant advances in processing performance, Quality of Service (QoS), routing, remote connectivity and security.

Extensive VPN Capability
The AT-AR770S provides extensive IPSec-based VPN capability, allowing the interconnection of offices, remote tele-workers, and other users who require secure access to a corporate network. The integrated hardware acceleration, standard on the AT-AR770S, maximizes encryption throughput and removes the need to purchase a hardware upgrade package. The AT-AR770S is compatible with industry standard IPSec VPN clients.

Performance
The AT-AR770S provides superior performance over other secure VPN routers in this market space. While most secure routers have stateful firewalls with NAT, QoS, and IPsec VPN termination capability, very few can perform all three functions and still provide excellent performance with the mixed packed sizes seen in real networks. The AT-AR770S can support up to 1000 concurrent VPN tunnels or up to 500 Mbps AES or 3DES throughput.

This level of performance enables secure site-to-site VPNs over multiple WAN interfaces while still firewalling the local network across multiple LAN ports.

Key Features

Hardware
- 2 x SFP or 10/100/1000TX WAN interfaces
- 2 x Port Interface Card (PIC) slots
- 4 x 10/100/1000TX LAN ports
- 1 x Asynchronous console / modem port
- DMZ port: configurable on any of the WAN/LAN ports
- 128MB RAM
- 32MB Flash
- RoHS compliant

Security
IP Filtering
- Stateful Inspection Firewall
- 802.1x
- NAT-T
- Authentication: RADIUS, TACACS, MDS, PAP, CHAP

VPN/Encryption
- DES, AES, 3DES encryption
- 5,000 configured IPsec VPN tunnels
- (1000 active tunnels)
- HW accelerated IPsec performance: Up to 500Mbps
- Supports industry standard VPN clients
- Manageability
- CLI management
- SNMPv3

Manageability
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Extensive routing support
- WAN load balancer
- Software QoS
- RIPv1 and v2
- OSPFv1 and v2
- GRE
- IPX
- VRRP
- IPv6 – optional
- BGP-4 – optional
- RIPng – optional

Multicast routing protocols
- PIM-DM
- PIM-SM
- DVMRP
- IGMPv2
- IGMP Snooping
- IPv6 Multicast – optional
- PIMv6 – optional
- MLD – optional

Support for traditional network protocols
- X.25
- Frame Relay

NOTES
1. Performance figure estimates from pre-production units.
2. AES & 3DES disabled in AR770S-99.
Security
In addition to hardware-based encryption, the AT-AR770S comes with other advanced security features such as traffic filtering with event logging. Traffic filtering uses the source and destination address, port, protocol and TCP packet type to provide control over traffic that passes through the AT-AR770S. A Stateful Inspection Firewall provides an increased level of security and complements the packet filtering function. HTTP and SMTP proxies on the AT-AR770S provide improved control over web and mail communications.

Quality of Service
Allied Telesis’ QoS implementation enables the AT-AR770S to dynamically identify high priority voice, video and application traffic, so that appropriate service levels can be maintained in congested networks. Advanced QoS allows voice, video, and data traffic to have QoS applied within individual IPSec tunnels, over GRE, as well as IPv6 to IPv4 tunnels.

Comprehensive Management and Configuration
The AT-AR770S comes with a comprehensive suite of management features and is also compatible with SNMP-based management packages. An extensive command set is available via the Command Line Interface (CLI). Allied Telesis’ SNMP support extends to SNMPv3 to provide secure management.

WAN Load Balancer
The AT-AR770S’ WAN Load Balancer enables the router to combine bandwidth from multiple WAN connections for increased throughput, redundancy and reliable WAN connectivity. When a router simultaneously connects to multiple WAN networks, the WAN Load Balancer will distribute the traffic based on any one of a number of selectable balancing algorithms. A typical example would be a router that has two Internet connections each exchanging data to remote sites via different Internet providers. In this case an outage limited to one network will not result in a loss of connectivity to these sites.

Feature Summary

**Hardware Features**
- 2 x WAN combo ports (SFP or 10/100/1000TX)
- 4 x LAN 10/100/1000TX ports
- 2 x PIC
- 1 x Asynchronous console / Modem port
- DMZ port: Obtained by configuring one of the WAN or LAN ports

**Processor**
- 833MHz
- Internal security encryption engine

**Memory**
- 128MB Ram
- 32MB Flash

**Power Characteristics**
- Input Voltage: 100-240 VAC, 50-60 Hz
- Max Power Consumption: 40W
- Internal Battery Backup (1 year)

**Physical**
- Dimensions: 1 RU rack mount
- Depth: 239mm
- Width: 440mm
- Height: 44mm
- Weight: 2.95 kg

**Environmental**
- Operating Temp: 0°C to 50°C
- Storage Temp: -25°C to 70°C
- Operating relative humidity: 5 to 80% non-condensing
- Acoustic: General Office @ 40dB V. Measured in accordance with ANSI S12.10
- Operating Altitude: Up to 10,000 feet

**Approvals & Certifications**
- UL
- TUV
- UL60950-1
- CAN/CSA-C22.2 No. 60950-1-03
- EN60950-1
- AS/NZS 60950
- EN60825-1
- EN55022 class A
- EN55024
- FCC class A
- VCCI class A
- AS/NZS CISPR22 class A
- CE

**Reliability**
- MTBF: > 120 000 hrs (telcordia methodology; data path only)

Optional Extras

**Port Interface Cards:**
- AT-AR020: Single configurable E1/T1 interface that supports channelized/unchannelized Primary Rate ISDN/Frame Relay
- AT-AR021S (V2): Single Basic Rate ISDN S/T interface
- AT-AR023: Single Synchronous port up to 2Mbps to an external CSU/DSU (AT-V.35-DTE-00 or AT-X.21-DTE-00 cable required)
- AT-AR024: Four Asynchronous RS-232 interfaces to 115Kbps

Software Features

**Routing and Multicast**
- PPP and IP Routing
- RIP v1 & v2
- OSPF v1 & v2
- BGP-4 (optional)
- IPX
- IGMPv2
- PIM-SM / DM
- DVMRP (including draft_ietf_idmr_dvmrp_v3_10)
- DECNet

**WAN Protocols**
- X.25
- Frame Relay

**Security**
- IP Filtering
- Stateful Inspection Firewall
- NAT-T
- SMTP & HTTP Proxy
- B02.1x
- Authentication: RADIUS, TACACS, MDS, PAP, CHAP
- SSH
- SSLv1

**VPN**
- L2TP
- GRE
- IPSec
- IKE
- ISAKMP
- PKI
- Encryption: DES, 3DES, AES
- Microsoft Windows XP VPN client interoperability
- Hardware acceleration
QoS
Extensive Traffic classifiers of L2 to L5 traffic to allow appropriate queuing of traffic
IP: IP source / destination address, TOS & DiffServ
Ethernet: MAC source / destination, 802.1q
TCP / UDP: Port numbers
VoIP: RTP source & destination
Queuing:
• Low latency queuing (LLQ)
• Class-based weighted fair queuing (CBWFQ)
• Deficit Round Robin (DRR)
Supported tunnel interfaces: PPP, L2TP, IPsec, GRE, RSVP

Management
CLI
SNMPv3

IPv6
RIPv6 RFC 2460
Neighbour discovery RFC 2461
Stateless address auto configuration RFC 2462
ICMPv6 RFC 2463
Transmission of IPv6 packets RFC 2464
Connection of IPv6 domains via IPv4 clouds RFC 3056
DHCPv6

Country of Origin
China

Standards and Protocols
Software Release 2.9.2

BGCP-4
RFC 1771 Border Gateway Protocol 4
RFC 1966 BGP Route Reflection
RFC 1997 BGP Communities Attribute
RFC 1998 Multi-home Routing
RFC 2285 Protection of BGP Sessions via the TCP MDS 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 MDS
RFC 2104 HMAC
RFC 2451 The ESP CBC-Mode Cipher Algorithms
FIPS 180 SHA-1
FIPS 186 RSA
FIPS 197 AES1
FIPS 46-3 DES
FIPS 46-3 3DES1
FIPS 140-2 Compliant

Ethernet
RFC 894 Ethernet II Encapsulation
IEEE 802.10 MAC Bridges
IEEE 802.16 Remote MAC Bridging
IEEE 802.1Q Virtual LANs
IEEE 802.2 Logical Link Control
IEEE 802.3ac VLAN TAG
IEEE 802.3u 100BASE-T and 802.3u 1000 Base-T
IEEE 802.3x Full Duplex Operation

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 1334 PPP Authentication Protocols
RFC 1377 The PPP OSI Network Layer Control Protocol (OSINLCP)
RFC 1378 The PPP AppleTalk Control Protocol (ATCP)
RFC 1518 EDD
RFC 1519 CID
RFC 1542 BootP
RFC 1213 MIB-II
RFC 1212 Concise MIB definitions
RFC 1157 SNMP
Addresses Management Information Base for IP Version 6: IPv6
RFC 3810 Multicast Listener Discovery Version 2 (MLDv2) for IPv6
RFC 3596 DNS Extensions to support IPv6
RFC 3587 IPv6 Global Unicast Address Format
RFC 3513 IPv6 Addressing Architecture
RFC 3484 Default Address Selection for IPv6
RFC 3318 DHCPv6
RFC 3306 IPv6 Addressing Architecture
RFC 3287 IPv6 Global Unicast Address Format
RFC 3296 DNS Extensions to support IPv6
RFC 3210 Multicast Listener Discovery Version 2 (MLDv2) for IPv6
Addresses Management Information Base for IP Version 6: Textual Conventions and General Group

Management
RFC 1155 MIB
RFC 1157 SNMP
RFC 1212 Concise MIB definitions
RFC 1213 MIB-II
RFC 1493 Bridge MIB

RFC 1463 Ethernet MIB
RFC 1457 Definitions of Managed Objects for BGP-4 using SNMPv2
RFC 2011 SNMPv2 MIB for IP using SNMPv2
RFC 2012 SNMPv2 MIB for TCP using SNMPv2
RFC 2096 IP Forwarding Table MIB
RFC 2576 Consistency between V1, V2, and V3 of the Internet-standard Network Management Framework
RFC 2578 Structure of Management Information Version 2 (SNMPv2)
RFC 2579 Textual Conventions for SNMPv2
RFC 2580 Conformance Statements for SNMPv2
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 2839 RMGR (groups 1,2,3 and 9)
RFC 2856 Textual Conventions for Additional High Capacity Data Types
RFC 2863 The Interfaces Group MIB
RFC 3164 Sylogon Protocol
RFC 3289 Management Information Base for the Differentiated Services Architecture
CDP
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 3436 Definitions of Managed Objects for IEEE 802.3 MAUs
RFC 3768 VRAP
draft-ietf-idmr-dvmrp-v3-00.txt DVMRP
RFC 2866 RADIUS Accounting
RFC 3280 X.509 Certificate and CRL profile
draft-grant-tacacs-02.txt TACACS+
Draft-IEFT-PKX-CMP-Transport-Protocols-01 Transport Protocols for CMP
draft-ylonen-sec-http-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 1305 TFTP
RFC 1510 Network Authentication
RFC 1542 Clarifications and Extensions for the Bootstrap Protocol
RFC 1985 SMTP Service Extension
RFC 1945 HTTP/1.0
RFC 2049 MIME
RFC 2068 HTTP/1.1
RFC 2156 MIXER
RFC 2217 Telnet Com Port Control Option
RFC 2281 SMTP

OSPF
RFC 1245 OSPF protocol analysis
RFC 1246 Experience with the OSPF protocol
RFC 2328 OSPFv2
RFC 1586 OSPF over Frame Relay
RFC 1793 Extending OSPF to Support Demand Circuits
RFC 1587 The OSPF NSSA Option
RFC 3101 The OSPF Not-So-Stubby Area (NSSA) Option

QoS
RFC 2205 Reservation Protocol
RFC 2211 Controlled-Load
RFC 2474 DSCP in the IPv4 and IPv6 Headers
RFC 2475 An Architecture for Differentiated Services
RFC 2597 Assured Forwarding PHB Group
RFC 2697 A Single Rate Three Color Marker
RFC 2698 A Two Rate Three Color Marker
RFC 3246 An Expedited Forwarding PHB (Per-Hop Behavior)
IEEE 802.1p Priority Tagging

RIP
RFC 1058 RIP-1
RFC 2453 RIP-2
RFC 2082 RIP-2 MD5 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 3280 X.509 Certificate and CRL profile
draft-grant-tacacs-02.txt TACACS+
Draft-IEFT-PKX-CMP-Transport-Protocols-01 Transport Protocols for CMP
draft-ylonen-sec-http-00.txt SSH Remote Login Protocol
IEEE 802.1x Port Based Network Access Control
PKCS #10 Certificate Request Syntax Standard
Diffie-Hellman

STP / RSTP
IEEE 802.1d - 2001 802.1D maintenance
IEEE 802.1w - 2001 RSTP

X.25
RFC 1356 Multiprotocol Interconnect on X.25 and ISDN in the Packet Mode

Allied Telesis | Secure Gigabit VPN Router
ISDN

ANSI T1.231-1997 Digital Hierarchy - Layer 1 In-Service Digital Transmission Performance Monitoring Standardization
ANSI T1.403-1995 Telecommunications - Network-to-Customer Installation - OSI Metallic Interface
ANSI T1.408-1990 ISDN Primary Rate - Customer Installation Metallic Interfaces, Layer 1 Specification
AT&T TR S4016-1988 Requirements for Interfacing Digital Terminal Equipment to Services Employing the Extended Superframe Format
Austel TS 013.1:1990 General Requirements for Customer Equipment Connected to ISDN Basic Rate Access - Vol 1: Customer Equipment Access Interface Specifications
Bellcore SR-3887 1997 National ISDN Primary Rate Interface
ETS 300 012-1992 Integrated Services Digital Network (ISDN);
Basic user-network interface; Layer 1 specification and test principles
ETS 300 102-1:1990 Integrated Services Digital Network (ISDN);
User-network interface layer 3;Specifications for basic call control
ETS 300 102-2:1990 Integrated Services Digital Network (ISDN);
User-network interface layer 3; Specifications for basic call control; Specification Description Language (SDL) diagrams
ETS 300 125:1991 Integrated Services Digital Network (ISDN);
User-network interface data link layer specification;
Application of CCITT Recommendations Q.920/1.446 and Q.921/1.441
ETS 300 153:1992 Integrated Services Digital Network (ISDN);
Attachment requirements for terminal equipment to connect to an ISDN using ISDN basic access (Candidate NET 3 Part I)
ETS 300 156:1992 Integrated Services Digital Network (ISDN);
Attachment requirements for terminal equipment to connect to an ISDN using ISDN primary rate access (Candidate NET 5)
ETS 300 011:1992 Integrated Services Digital Network (ISDN);
Primary rate user-network interface; Layer 1 specification and test principles
G.794 (1988) Characteristics of 24-channel transmultiplexing equipments
German Monopol (BAPT 221) Type Approval Specification for Radio Equipment for Tagging and Identification
LS120 (1988) Integrated services digital networks (ISDNs)
L.121 (1988) Broadband aspects of ISDN
L.411 (1988) ISDN user-network interface reference configurations
L.430 (1988) Basic user-network interface - Layer 1 specification
L.431 (1988) Primary rate user-network interface - Physical layer specification
ITU-T G.703 Physical/electrical characteristics of hierarchical digital interfaces
ITU-T G.704 Synchronous frame structures used at 1544, 6312, 2048, 4088 and 44736 kbit/s hierarchical levels
ITU-T G.706 Frame Alignment and CRC Procedures Relating to Basic Frame Structures Defined in G.704
ITU-T G.792 ISDN data link layer specification for frame mode bearer services
ITU-T G.703 (1972) Physical/electrical characteristics of hierarchical digital interfaces

Japan NTT 1.430-a Leased Line Basic Rate User-Network Interface Layer 1-Specification
New Zealand Telecom TN-134 Telecom ISDN User-Network Interface Layer 3: PART B Basic Call Control Procedures
Q.920 (1988) Digital subscriber Signalling System No.1 (DSS1) - ISDN user-network interface data link layer - General aspects
Q.921 (1988) ISDN user-network interface - Data link layer specification
Q.930 (1988) Digital subscriber Signalling System No.1 (DSS1) - ISDN user-network interface layer 2 - General aspects
Q.931 (1988) Digital subscriber Signalling System No.1 (DSS1) - ISDN user-network interface layer 3 specification for basic call control
Rockwell B3730 Fully Integrated T1/E1 Framers and Line Interface data sheet
ACA TS 013.2:1990 General Requirements for Customer Equipment Connected to ISDN Basic Rate Access, Vol 2: Conformance Testing Specifications
ACA TS 014.1:1990 General Requirements for Customer Equipment Connected to ISDN Primary Rate Access, Vol 1: Customer Access Interface Specifications
ACA TS 014.2:1990 General Requirements for Customer Equipment Connected to ISDN Primary Rate Access, Vol 2: Conformance Testing Specifications

Frame Relay
ANSI T1S1 Frame relay
RFC 1490, 2427 Multiprotocol Interconnect over Frame Relay

Ordering Information

AT-AR770S
Order number: 990-000818-00
Includes power cords for US, UK, Australia & Europe

AT-AR770S-99
Order number: 990-000818-99
No AES & 3DES encryption enabled

Port Interface Card (PIC) Options

AT-AR020
Single software configurable E1/T1 interface that supports channelized/unchannelized Primary Rate ISDN/Frame Relay
Order Number: 990-001304-00

AT-AR0215 (V2)
(AT-AR0215V1 card is not supported on the AT-AR770S)
Single basic rate ISDN S/T interface
Order Number: 990-001103-00

AT-AR023
Single synchronous port up to 2Mbps to an external CSU/DSU (AT-V.35-DTE-00 or AT-X.21-DTE-00 cable required)
Order number: 990-001104-00

AT-AR024
Four Asynchronous RS-232 interfaces to 115Kbps
Order number: 990-001105-00

SFP Options

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

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

AT-SPFX/40
100BASE-FX 1310nm fiber up to 40km

AT-SPTX
1000 BASE-T 100m Copper

AT-SPSX
1000BASE-SX
GbE multi-mode 850nm fiber

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

AT-SPLX40
1000BASE-LX
GbE single-mode 1310nm fiber up to 40km

AT-SPLX40/1550
1000BASE-LX
GbE single-mode 1550nm fiber up to 80km

Feature License

AT-AR700 – ADVL3UPGRD
AR700 series advanced Layer 3 upgrade – includes:
• IPv6
• BGP-4
• Server Load Balancing
Order Number: 980-10022-00

AT-FL-17
SIP-ALG (Application Layer Gateway)
Order Number: 980-000038

AT-AES/3DES-00
AES/3DES encryption activation key
Order number: 980-10037-00

3Please check with your sales representative for ROHS compliance on SFP modules.
About Allied Telesis

Allied Telesis is part of the Allied Telesis Group. Founded in 1987, the company is a global provider of secure Ethernet/IP access solutions and an industry leader in the deployment of IP Triple Play networks over copper and fiber access infrastructure. Our POTS-to-10G iMAP integrated Multiservice Access Platform and iMG intelligent Multiservice Gateways, in conjunction with advanced switching, routing and WDM-based transport solutions, enable public and private network operators and service providers of all sizes to deploy scalable, carrier-grade networks for the cost-effective delivery of packet-based voice, video and data services.

Visit us online at www.alliedtelesis.com.

Service and Support

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

RoHS

Allied Telesis RoHS-compliant product conforms to the European Union Restriction of the Use of Certain Hazardous Substances (RoHS) in Electrical and Electronic equipment. Allied Telesis ensures RoHS conformance by requiring supplier Declarations of Conformity, monitoring incoming materials, and maintaining manufacturing process controls.