RG6x4 SERIES

ADSL2/2+ Residential Gateways

AT-RG624A/B
ADSL Residential Gateway

AT-RG634A/B
ADSL Residential Gateway with analog VoIP

AT-RG644A/B
ADSL Residential Gateway with ISDN VoIP

The Residential Gateway

Allied Telesis' Residential Gateways deliver multiple IP-based broadband services to home over high-speed, always-on broadband connection. RG6x4 series enables the delivery of voice, data and video to customer premises offering benefits both to service providers and to final users. Service providers can quickly deliver to their customers advanced services such as fast Internet, VoIP, Video on Demand in a fully scalable way and remotely manageable. End users benefit from a unique device interconnecting all peripherals, computers, telephones using a single uplink broadband connection.

VLAN Operation with Integral 4 x 10/100Mbps Switch

The RG6x4 series supports up to 16 IEEE 802.1Q tagged VLAN across it's 4 x 10/100Mbps switch ports. Hence, it offers a potent combination of wirespeed Layer 2 switching between VLANs as well as high performance Layer 3 routing between VLANs in one highly cost-effective unit.

ADSL Access

Asymmetric Digital Subscriber Line (ADSL) is used to provide cost-effective, high-speed local loop access for Internet and other applications where data flows downstream to end users faster than it does upstream from end users. ADSL provides asymmetric transmission over ISDN or POTS telephone wires with downstream data transmission rates ranging from 32kbps to 24Mbps with ADSL2+. One single ISDN or POTS telephone line can be used simultaneously for voice and data transmission.

RG6x4 ADSL interface is designed to meet the following standards:

- ANSI T1.413 (8Mbps)
- ITU G.992.1 Annex A/B also known as G.DMT (10Mbps)
- ITU G.992.2 also known as G.Lite (4Mbps)
- ITU G.992.3/4 also known as ADSL2 or G.DMT.bis (12Mbps)
- ITU G.992.5 also known as ADSL2+ (24Mbps)
- G.Span

Interoperability tests have been successfully performed with Allied Telesis DSLAMs as well as with major equipment vendors. Performance tests have demonstrated distance coverage of 5.4 km with ADSL and 4.8 km with ADSL2+ on a standard copper pair.

Firewall

The RG6x4 has an integral Stateful Inspection Firewall with NAT and Denial of Service intrusion detection and blocking for protecting customer networks. Each VLAN can be configured to be external, internal or DMZ. With the Virtual Server features, a web or e-mail server can sit beyond the NAT and appear like being on the public interface. The RG6x4 NAT supports the most popular protocols and applications including NetMeeting (H.323 and SIP), IPSec and PPTP.

Port Rate Limiting

The RG6x4 offers the possibility to limit the egress and ingress bandwidth on each port and queue with a granularity of 32kbps. This feature allows the Service Operator to offer differentiated services to each customer and protect its network from malicious packet flooding.

Key Features

- ADSL G.992.1/2 Annex A/B
- ADSL2 G.992.3 Annex A/B
- ADSL2+ G.992.5 Annex A/B
- Tagged-based VLAN (IEEE 802.1Q)
- Layer 2 and Layer 3 QoS
- IGMP Snooping and Proxying
- PPPoEoA, PPPoA, IPoA protocol support
- DHCP client, server and relay support
- Stateful Inspection Firewall
- Network Address Translations (NAT)
- H.323, SIP or MGCP VoIP protocol support
- G.711, G.726, G.729 VoIP codecs
- T.38 fax operation
- External Power Supply
- External Battery Backup support
- ZTC, Web GUI (optional), SNMP serial and telnet CLI for management and configuration

Voice over IP (AT-RG634A/B and AT-RG644A/B)

The RG6x4 offer a choice of Voice over IP signaling methods, namely H.323, SIP and MGCP including NCS 1.0 profile. H.323 provides compatibility with existing H.323 services (e.g. Microsoft NetMeeting) whilst SIP and MGCP are newer protocols, optimized for operation over IP networks. This multiple protocol support provides maximum flexibility for service providers, allowing them to provide an IP telephony service based on cost and feature-set, rather than being limited by the protocol used.

Similarly, a choice of different voice and data encoding algorithms are also available comprising G.711 A-law, µ-law (64kbps), G.729 (8kbps), T.38, so that maximum VoIP interworking is assured with carrier class IP Gateways and network switches. Quality of Service is provided through mechanisms such as the Type of Service (ToS) field in the IP packet, priority tagging of voice traffic using IEEE 802.1p, as well as silence suppression and local generation of comfort noise – the result is excellent voice quality.

The AT-RG634A/B allows the connection of two standard analog phones, modems or faxes through 2x FXS ports, or digital devices can can be connected to the AT-RG644A/B through 1x ISDN BRI port. Class 5 services are supported and the VoIP interoperability has been certified versus major softswitch vendors.

Video Streaming

The RG6x4 offers unique features to optimize the delivery of video contents to customers on copper pair, namely VLAN, extended interleave memory, IGMP snooping and proxying. It supports full IGMP snooping capability (v1/v2) and individual LAN ports can receive different multicast transmissions e.g. different movies or TV channels. The RG6x4 'snoops' IGMP packets in-transit, so it knows which port to forward the particular multicast data to. This results in high quality, high bandwidth video streaming without affecting Internet browsing or IP telephony on adjacent ports. Moreover, the RG6x4 supports IGMP proxying to allow forwarding of multicast packets at Layer 3 with or without NAT.

Management and Configuration

The RG6x4 is designed for high volume ADSL access network deployment; this is reflected in the Zero Touch Configurator (ZTC), whereby no user intervention is required when installing a unit. ZTC is a distributed configuration system based on the industry standard Lightweight Directory Access Protocol (LDAP). ZTC provides intelligent and automatic configuration of remote RG units. It analyzes incoming status information from each RG unit and dynamically creates the appropriate configuration file or operating system download as required, it then selects the appropriate download mechanism (e.g. TFTP, HTTP, HTTPS etc.) to complete the process. The ZTC client in the RG initiates the download process on power up, or on expiry of its DHCP lease timer. ZTC provides secure authentication of client devices, resilience through distributed server operation and in-built scalability for very large networks.

The RG6x4 also offers the following conventional management and configuration interfaces:

- Telnet (using Command Line Interface)
- SNMP v1/v2/v3

Specifications

User's Ports

4 10/100TX (RJ45)

2 VoIP FXS ports (RJ-11)	AT-RG634A/B
1 VoIP EuroISDN LT-S BRI	AT-RG644A/B

WAN Port

1 ADSL (RJ-11) Annex A
1 ADSL (RJ45) Annex B

Layer 2 Operation

Layer 2 wirespeed packet switching
IGMP v1/v2 Multicast support
Tag based IEEE 802.1Q VLANs (16 max.)
IEEE 802.1p prioritization
IEEE 802.1Q tag insertion and stripping
Programmable Rate limiting ingress/egress Port Mirroring ingress/egress traffic
Double QoS queue on each port
Port speed selection 10, 100 or 10/100
1,000 MAC addresses

Layer 3 Operation

NAT
PPPoE
Stateful Inspection Firewall
Intrusion Detection and Blocking System
IPSec/VPN passthrough
Virtual Server
Global IP address pool
Dynamic port opening
DHCP client, server and relay
DNS proxy
PAP/CHAP authentication
Static and Dynamic IP address assignment
RIPv1/v2

VoIP Protocols

H.323	3.0
SIP	2.0
MGCP/NCS	1.0

VOIP Ports (AT-RG634A/B and AT-RG644A/B)

G.711 a-law and µ-law 64kbps
G.723 (optional)
G.726 16/24/32/40kbps
G.729 8kbps
G.168 LEC 8-32 msec
T.38 Fax Relay
Automatic Fax/Modem Detection
Voice Activity Detection (VAD)
Comfort Noise Generation (CNG)
Error Mitigation/Bad Frame Interpolation
Adaptive jitter buffer

REN:	5 per FXS port (AT-RG634A/B)
ISDN BRI Power feed:	100mA, 4W (AT-RG644A/B)

RTP voice packet encapsulation

RG6x4 SERIES | ADSL2/2+ Residential Gateways

Class 5 Service
Call transfer
Call waiting
Call hold
Message waiting
Caller ID

Management
Zero Touch Configurator
Telnet
Remote Software Upgrade
DHCP
Web GUI (optional)

Status LEDs
Power
System

VoIP	Use/Ready/Ringing
ADSL	Link/Activity
LAN	Link/Activity

Power Characteristics
External Power Supply
Input 12vDC, 1.5A
Power Consumption 10W (typical)

Environmental Specifications

Operating Temperature	0°C to 50°C
Storage Temperature	-10°C to 70°C
Operating Humidity	5% to 95% RH

Physical Characteristics

Height	4.6cm
Depth	14.9cm
Width	19.8cm
Weight	0.45kg

Protocols and Standards

ADSL	ANSI T1.413 i2 ITU G.992.1 (ADSL G.DMT), Annex A/B ITU G.992.3 (G.DMT.bis, also referred to as ADSL2) ITU G.992.5 (ADSL2+)
IPv4	RFC 791
TCP, UDP	RFC 1144
IGMP (v1/v2)	RFC 1112, 2236
PPPoE	RFC 2516
PPPoA	RFC 2364
IPoA	RFC 1577
AAL5	RFC 1483
PAP	RFC 1334
CHAP	RFC 1994
NAT	RFC 1631
DHCP	RFC 2131
VLAN	IEEE 802.1p/Q, IEEE 802.1d, IEEE 802.2, IEEE 802.3x
SNMP	v1,v2,v3
RTP/RTCP	
TFTP	RFC 1350
Telnet	RFC 318
ARP	RFC 826
H.323	4.0
SIP 2.0	RFC 3261
MGCP/NCS	1.0
Codecs	G.711, G.726, G.729

Approvals
CE Marking

Safety	EN 60950 CSA 950/US UL 1950
Emission	FCC Part 15 Class B Part 68 EN 55022 Class B
Immunity	EN 55024

Softswitch Interoperability
Cirpack, Net Centrex, Sonus Networks, Marconi, Siemens, Alcatel, Audiocodes, Mediatrix, Arelnet, HotSIP, Iptel, Italtel, Lucent, Netmeeting, Nuera, OKI, Open H.323

Ordering Information

AT-RG624A-xx
Residential Gateway ADSL Annex A port (RJ-11), 4 x 10/100TX

AT-RG624B-xx
Residential Gateway ADSL Annex B port (RJ45), 4 x 10/100TX

AT-RG634A-xx
Residential Gateway ADSL Annex A port (RJ-11), 2 x FXS, 4 x 10/100TX

AT-RG634B-xx
Residential Gateway ADSL Annex B port (RJ45), 2 x FXS, 4 x 10/100TX

AT-RG644A-xx
Residential Gateway ADSL Annex A port (RJ-11), 1 x ISDN BRI, 4 x 10/100TX

AT-RG644B-xx
Residential Gateway ADSL Annex B port (RJ45), 1 x ISDN BRI, 4 x 10/100TX

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

AT-iMG005G
Battery Backup Unit

AT-RG006
Battery Backup Cable

AT-RGCONSOLECABLE-00
Console cable

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