# AT-iMG646BD-ON

## Ethernet intelligent Multiservice Gateway for Outdoor Deployment

### AT-iMG646BD

6 x 10/100TX LAN ports, 4 x FXS ports,
1 x 100BX, SC/UPC fiber WAN port

### Ethernet intelligent Multiservice Gateway for IP Triple Play Services

A member of Allied Telesis' family of residential and intelligent Multiservice Gateways, the outdoor hardened iMG646BD-ON combines powerful Layer 2 and 3 functionality with VoIP support. The environmentally sealed enclosure mounts outside the customer premise for optimal service provider accessibility.

### Applications
#### Capitalizing on Existing Infrastructure

The AT-iMG646BD-ON offers a bi-directional optical interface over a single fiber allowing efficient use of fiber for new infrastructures and doubling of capacity for existing dual-fiber installations. The increase in density of fibers at aggregation points delivers economies of scale in cabinet space and cost of deployment. The AT-EN646 enclosure provides integrated fiber-optic drop cable management, with the ability to secure and ground the drop cable, as well as protect a fusion splice. Enclosures may be deployed at the time of fiber installation, allowing a single fiber crew to complete all fiber-splicing needs.

### Software Real-time Applications Optimization
#### Quality of Service

The AT-iMG646BD-ON ensures quality of service through ISO Layer 2 and 3 prioritization techniques including priority tagging with IEEE 802.1p and Type of Service (ToS).

### Optimization for IP Video Streaming

The AT-iMG646BD-ON 'snoops' IGMP packets in-transit allowing simultaneous delivery of different multicast transmissions such as different movies or TV channels. This results in high quality, high-bandwidth multiple video streaming without impacting Internet browsing or IP telephony while delivering the fast channel change that users expect from video services. MPEG video service management and diagnosis is possible using troubleshooting techniques. Furthermore, video quality can be monitored using the unique MPEG stream monitoring tool.

### IP Telephony

The AT-iMG646BD-ON offers 4 FXS interfaces leveraging H.323, SIP and MGCP Voice over IP (VoIP) protocols, with interoperability established with major softswitch vendors. The AT-iMG646BD-ON supports the connection of modems and faxes to voice interfaces for business applications in SoHo environments.

### Data Delivery and Security
#### Differentiated Bandwidth Internet Services

The AT-iMG646BD-ON provides extensive support for per-port rate-limiting that enables service providers to deliver tiered data services catering for the wide spectrum of end-customer profiles.

### Firewall Capability

The AT-iMG646BD-ON has an integral Stateful Inspection Firewall with NAT, Denial of Service (DoS) and an Intrusion Detection System (IDS) with blocking for protecting end-customer networks.

### Key Features

- Up to 100Mbps bandwidth delivery

- IP Triple Play ready

- Stateful Inspection Firewall / NAT for Security of customer and provider

- Single Bi-directional fiber presentation drives resource efficiencies and reduces deployment cost (CAPEX and OPEX savings)

- Zero Touch Configurator Software removes need for truck-roll deployment

- Major Softswitch Manufacturer Compatibility Established

- Service Specific Management and Monitoring – ensures Quality of Service to customers

- Environmentally hardened unit for outdoor deployments

- Installation flexibility through two part enclosure and electronics design

- Internal fiber management for fiber-optic drop cable termination

- 8 hour battery backup option for lifeline POTS support

## Management
### Easy to Deploy and Manage

Fiber-To-The-Home (FTTH) with the AT-iMG646BD-ON has never been easier. The AT-EN646 Outside Plant Enclosure may be pre-installed, and accommodates fiber termination and grounding for the iMG. When services are ordered, the iMG646BD-ON electronics chassis mounts easily into the enclosure, and will terminate in-home wiring and power connection.

### Zero Touch Configuration with the ZTC

The AT-iMG646BD-ON is designed to be easy to deploy and manage. With the Zero Touch Configurator (ZTC) software platform, the AT-iMG646BD can be provisioned and managed remotely. The Zero Touch Configurator is a distributed configuration system based on the industry's standard Lightweight Directory Access Protocol (LDAP) database architecture. This provides secure authentication and registration plus intelligent, automatic configuration of remote iMG units. Its XML-based structure enables seamless integration with service providers' existing OSS platforms.

## Specifications
### User's Ports

6 x 10/100TX (RJ45)
4 x VoIP FXS ports (RJ-11)

### WAN Ports

100BX Single-Fiber (BX, SC/UPC)
TX 1310 nm, RX 1550 nm
Range           15 Km
Power Budget    17 dB

### 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 (32,000 steps)
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

G.711 a-law and μ-law 64kbps
G.723 (optional)
G.726 16/24/32/40kbps
G.729 8kbps
G.168 LEC 8-32m/sec
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
RTP voice packet encapsulation

## Class 5 Services

Call transfer
Call waiting
Call hold
Message waiting
Caller ID

## Network Management

Zero Touch Configurator
Local console port
Telnet
Remote software upgrade
DHCP
Web GUI (optional)

## LED Status Indicators

| | |
|---|---|
| Power | |
| System | |
| POTS | Use/Ready/Ringing |
| WAN | Link/Activity |
| LAN | Link/Activity |

## Technical Specifications
### Power Characteristics

External power supply
| | |
|---|---|
| Input | 12vDC, 1.5A |
| Power Consumption | 10W (typical) |
| | 18W (maximum) |

## Environmental Specifications

| | |
|---|---|
| Operating Temperature | -40°C to +60°C |
| Storage Temperature | -40°C to +80°C |
| Operating Humidity | 5% to 95% RH |

## Physical Characteristics
### AT-EN646 Enclosure

| | |
|---|---|
| Dimensions | 16.7 x 11.7 x 4.7 in. (H x W x D) |
| Weight | 3.6 lbs |

### AT-iMG646BD-ON

| | |
|---|---|
| Dimensions | 12 x 8.7 x 1.2 in. (H x W x D) |
| Weight | 2.65 lbs |

## Protocols and Standards

| | |
|---|---|
| IPv4 | RFC 791 |
| TCP, UDP | RFC 1144 |
| IGMP (v1/v2) | RFC 1112, 2236 |
| PPPoE | RFC 2516 |
| 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 | |
| Saftey | EN60950-1 (TUV), EN60825-1, UL 60950-1 (cULus), CSA C22.2 No. 60950-1 |
| Emission | FCC Part 15 Class B 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

## Warranty

Two years

## Ordering Information

The AT-iMG646BD-ON has two ordering options, for installation flexibility.
The enclosure and electronics may be ordered together, for a single installation step:

### iMG646BD

| Model | Description | Part # |
|---|---|---|
| iMG646BD-ON-B01 | Bundle, Outdoor intelligent Multiservice Gateway 646BD-ON and enclosure AT-EN646. Single Mode BiDi WAN, 6 x 10/100TX LAN, 4 x FXS. Requires power supply RG005G. | AT-iMG646BD-ON-B01 |
| Or, the enclosure may be ordered in advance of the electronics, for pre-installation. | | |
| EN646 | Outdoor Enclosure for iMG646BD-ON, iMG646PX-ON | AT-EN646 |
| iMG646BD-ON | Outdoor Multiservice Gateway, Single Mode BiDi WAN, 6 x 10/100TX LAN, 4 x FXS. Requires enclosure AT-EN646, Power Supply RG005G. | AT-iMG646BD-ON |
| Battery Backup: order with the following: | | |
| RG005G | APC PowerShield Grounded battery backup (indoor) — for RG/iMG series (Requires relevant battery back up cable: RG006, RG007 or RG008) | AT-RG005G-XX* |
| RG013 | Battery Backup Cable - for use with iMG646BD-ON and iMG646PX-ON. 15' connectorized UV rated cable for connection between APC Powershield and iMG | AT-RG013 |

### Configuration Cable

| Model | Description | Part # |
|---|---|---|
| RGCONSOLE CABLE | Configuration cable | AT-RGCONSOLECABLE-00 |

### Zero Touch Configurator Software

| Model | Description | Part # |
|---|---|---|
| ZTC 500 | ZTC Package 1 - License for up to 500 users/nodes | AT-ZTC500-NA / AT-ZTC500-EU |
| ZTC 5000 | ZTC Package 2 - License for up to 5000 users/nodes | AT-ZTC5000-NA / AT-ZTC5000-EU |
| ZTC Unlimited | ZTC Package 3 - unlimited users/nodes | AT-ZTCUNLIMITED-NA / AT-ZTCUNLIMITED-EU |
| ZTC Upgrade | Upgrade from AT-ZTC5000 to AT-ZTCUNLIMITED | AT-ZTCUPGRADE-NA / AT-ZTCUPGRADE-EU |
| ZTC License 250 | Per node license fee to be added over initial licenses, extra licenses available in packages of 250 | AT-ZTCLIC250-NA / AT-ZTCLIC250-EU |

### Related iMAP Line Cards and Chassis

| Model | Description | Part # |
|---|---|---|
| FX10BX | 10 ports, 100Mbps BX Single-mode Single fiber | AT-TN109-A |
| iMAP 9700 | 17-slot chassis with DC power | AT-TN-250G / 250GF |
| iMAP 9400 | 7-slot chassis with DC power | AT-TN-251G / 251GF |
| MiniMAP 9101 | 3-slot mini chassis with DC power | AT-TN-9101-A-80 |
| MiniMAP 9102 | 3-slot mini chassis with AC power | AT-TN9102-A-XX* |

*Power Supply Information    Where XX = region specific power cord / adapter
10 =    US power cord
30 =    UK power cord
50 =    European power cord (excluding UK)

Connecting The (IP) World

Allied Telesis