

WIMAX ACCESS SERVICE NETWORK (ASN) WIRELESS SERVICE GATEWAY (WSG)

EION's Wireless Services Gateway (WSG) is a complete solution for all 4G Packet Switched services starting at the gateway level to deep into the core network.



INNOVATION DELIVERS PERFORMANCE

The innovative approach taken in the design of EION Wireless' WSG utilizes field-proven Juniper routers to be used for 4G purposes while retaining all the current functionality of the Juniper Networks® routers in the network. With the WSG, both core routing needs and packet processing needs for 4G wireless systems are met at the same time in the same network, without compromise.

The unique design of the WSG delivers a solution that can grow as the network grows. The WSG starts with 5K subscribers and can be upgraded to support hundreds of thousands of active subscribers.

DISTRIBUTED ARCHITECTURE

The EION Wireless Services Gateway decomposes the ASN-GW architecture into separate control and data/bearer paths that are processed by separated and specialized systems.

EION Wireless has developed a unique interface between the specialized systems that support control and management between the separate processing paths. This patent-pending interface was rewarded 1st Place "Emerging Technology Award" for 4G Services at the CTIA Wireless 2009 Conference.

The Control path processing is performed by the ASN -Controller (ASN-C), and the Data path processing is performed by the WSG-Router (WSG-R) using widely deployed and reliable M Series routers.

With the division of bearer and control channel functionality, the EION Wireless ASN-GW solution has scalability to support even the largest Tier 1 service provider networks in the world.

The EION Wireless ASN-GW solution provides significant latency reductions that enable advanced voice applications as well as improved handover decision and control.

KEY FEATURES

- WiMAX Forum NWG Profile C compliant
- High capacity and scale
- Standards-based NWG R3 and R6 interfaces
- Subscriber address allocation and management
- AAA Integration – Radius client support
- Advanced Accounting and Billing
- Per subscriber/per flow accounting statistics
- Time and volume based accounting
- Pre paid and post paid accounting
- QoS and Bandwidth Management Support
- Mobility and Handover
- Mobile IP Support with integrated Foreign Agent
- Carrier Grade Design for High Availability
- Control Path separation from Data Path via R7 interface
- Multiple Platform Support
- Flexible Management Support and Integration with ProVision™
- Designed to meet NEBS Level 3
- FCC Class B/CE/UL 60950 compliant services



INTEGRATED WITH JUNIPER NETWORKS

The WSG solution uses Juniper Networks' high performance networking equipment for the data path routing. Juniper is a well established network provider for Service Providers. Juniper delivers unmatched routing performance, and is well respected for reliably accelerating the IP core networks of many top-tier mobile and fixed operators.

The WSG-router uses the Juniper Networks routers. These multi-service routers boast a reliable, hardware based architecture that ensures rich packet processing with uncompromising forwarding performance to support latency sensitive applications such as voice, video and mission critical applications.

The Juniper routing platform features can deliver greater routing capability and flexibility than any other routing platform on the market. This platform is more advanced, more efficient and more reliable than other routers that deliver ASN functionality.

FUNCTIONALITY WITHOUT COMPROMISE

The WSG-R is integrated into field-proven, world-class Juniper Networks routers that excel in their reliability, scalability and interoperability within telecom networks.

The WSG-R does not compromise or remove any functionality from the Juniper routers. It operates in the data path only for those packets that belong to a WiMAX network.

For all other packets, the WSG-R is not used—packets processed by the Juniper router completely bypass the WSG-R function.

In this arrangement, any network already operating with Juniper routers can easily upgrade with the addition of the WSG-R functionality, knowing that all existing performance and features of the Juniper routers in their network are unaffected.

SCALABILITY WITHOUT COMPROMISE

Because of the scalable design of the Juniper M-series routers, the number of active and inactive subscribers and service flows supported can scale significantly through additional processing cards.

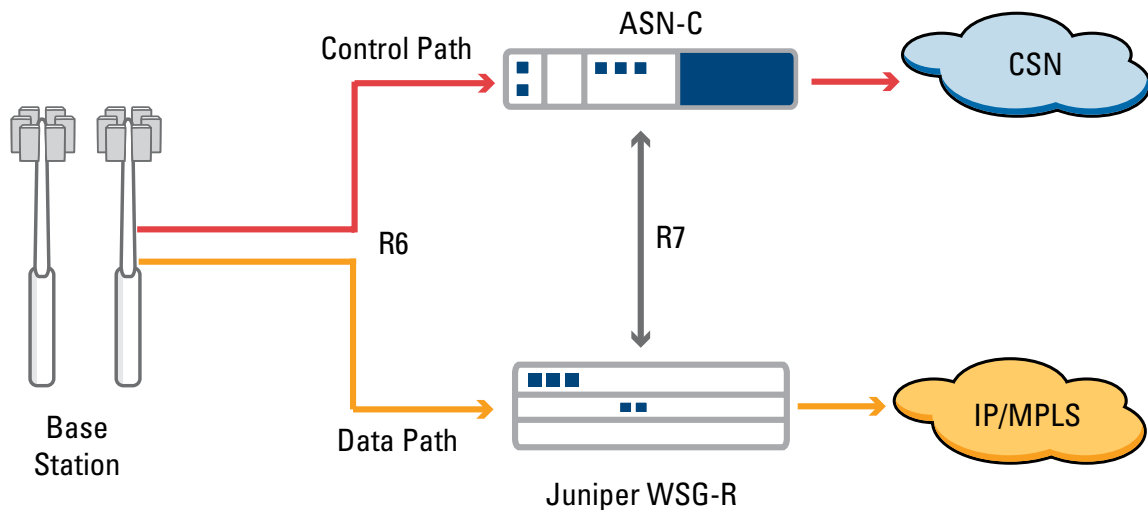
Because the ASN-C to WSG-R relationship is a many-to-many relationship, scaling is greatly simplified.

A single ASN-C can control a large area by controlling one WSG-R.

This arrangement allows network operators to more closely align their capital expenses with actual subscriber or capacity growth.

FLEXIBILITY WITHOUT COMPROMISE

In the decomposed ASN-GW architecture, the WSG solution uses the R7 interface between the WSG-R and the ASN-C. This separation enables networks to scale with multiple ASN-Cs at the network edge, with centralized WSG-R. In mixed deployments, existing routers are supported by centralized WSG-Rs reserved for roaming subscribers, keeping network delay in check.



ASN-CONTROLLER SPECIFICATIONS

ASN MODULE
TRANSPORT CONTROL
Support for IP convergence sub-layer
Encryption Control
AUTHENTICATION
Radius client support
WiMAX-compliant authenticator functionality including key generation and distribution
Subscriber authentication through single EAP over Internet Key Exchange version 2 (IKEv2)
AAA proxy support
Dynamic Host Control Protocol (DHCP) relay and proxy support
Static and dynamic address management
Dynamic Host Control Protocol (DHCP) Server functionality
MOBILITY AND HANDOVER
Predictive terminal-initiated hard handover
Intra-ASN and Inter-ASN seamless mobility handover
R6 and R3-based mobility as per Profile C ASN Structure
ACCOUNTING AND BILLING
Support for prepaid and postpaid billing options
Flow based charging
Statistics based on (time, capacity, per subscriber, and service flow)
MANAGEMENT
SNMPv2, CLI/SSH, CLI/Serial
ProVision™ and NetBoss®
PLATFORM AND SCALING
1U 6 Slot Carrier-Grade Chassis
Up to six AMC-121 modules
Each slot supports up to 100k subscribers
PROCESSOR
Intel Core 2 Dual-core Architecture
FRONT PANEL INTERFACES
2x10/100/1000 Ethernet Ports
One USB 2.0 Port
Serial Port
LEDs: In-Service, Out-of-Service, Hot-Swap, User-Defined LED, Reset Switch
POWER CONSUMPTION
35W typical
ENVIRONMENTAL
Operating: 0 to 55°C (32° to 131°F)
Non-operating: -20° to 80°C (-4° to 176°F)
Humidity: 5 to 90% RH non-condensing
AGENCY CERTIFICATIONS
FCC Class B, CE, UL 60950, EN 60950, EN 300 386, Designed to meet NEBS Level 3

ASN-CONTROLLER PLATFORM SPECIFICATIONS

PICMG SPECIFICATIONS
MicroTCA Compliant and AMC Compliant
POWER
AC input: 100-240 VAC, 50 to 60 Hz, 4 to 2 A
DC input: -40.5 to -60 VDC, 10 to 50 A
Height 1U, 44 mm (1.75 in.)
Width: 436 mm (17.2 in.) without rack-mount flanges (rack mount flanges allow mounting to 19 in. racks)
Depth: 457 mm (18 in.)
Weight 6.76 kg (14.90 lb)
ENVIRONMENTAL
Operating Temperature: 5° to 40° (41° to 104° F), up to 55° C (131°F) for 96 hours for both AC and DC power supplies
Storage: -40° to 70° C (-40° to 158° F)
Relative Humidity: 5 to 85%, up to 90% for 96 hours, non-condensing
CERTIFICATIONS
Designed for NEBS Level 3 and ETSI Installations
SAFETY
UL/cUL 60950 Safety for Information Technology Equipment E179737 UL File Number E179737
EN/IEC 60950 Safety for Information Technology Equipment CD Certificate and Report Scheme CE Certificate
EMISSIONS TEST REGULATION
FCC, Class A
Additional Certifications available upon request



ASN-Controller



M10i



M7i

DATASHEET

WIMAX ACCESS SERVICE NETWORK

WSG ROUTER SPECIFICATIONS

(JUNIPER M SERIES ETHERNET SERVICES ROUTERS)

WS-PIC FOR WSG ASN-ROUTER

COMPATIBILITY

Compatible with Juniper M-series routers

TUNNELING SUPPORT

GRE (WiMAX R6)

IP-in-IP (Mobile IP)

GTP

VLAN

MPLS

QOS SUPPORT

Hierarchical Congestion Control

DSCP packet marking

Traffic policing and shaping

ACCOUNTING

Flow Based and Micro Flow Based

Subscriber Based

WSG ROUTER PLATFORM SPECIFICATIONS

ROUTING AND MULTICAST

OSPF, BGP, RIPv2, Static routes, IS-IS

Multicast (IGMPv3, PIM, SDP, DVRMRP, Single Source)

IP ADDRESS MANAGEMENT

Static, DHCP relay

MPLS

LDP, RSVP-TE Traffic Engineering

Layer 3 2547 VPN, Layer 2 VPN

Virtual Private LAN Service (VPLS)

Diffserv-aware Traffic Engineering

MPLS Detour, Fast Reroute Link Protection

MPLS Fast Reroute Node Protection

MPLS Point-to-Multipoint (P2MP) Traffic Engineering

ENCAPSULATIONS

Ethernet (MAC+VLAN Tagged)

PPP (Synch), PPPoA

Frame Relay, ATM, HDLC

Serial (RS-232, RS-449, X.21, V.35, EIA-530)

802.1q support

MLPPP, MLFR (FRF.15, FRF.16)

L2TP (M7i, M10i and M120 can act as LNS)

TRAFFIC MANAGEMENT

Policing and Shaping, Class Based Queuing with Prioritization

WRED

Queuing based on VLAN/VC/VP/DLCI/Interface/Bundle

VOICE SUPPORT

FRF.1, LFI, cRTP

SECURITY

Stateful Firewall, Attack detection and prevention

DOS and DDOS protections

IPsec DES (56-bit), 3DES (168 bit) encryption3

MD5 and SHA-1 authentication

Packet filters

MANAGEMENT

ProVision™ and NetBoss®

JUNOS CLI, JUNOScope, J-Web

Service Deployment System (SDX)

SNMPv2

JUNOScript XML API

SLA AND MEASUREMENT

Real-Time Performance Measurement (delay/jitter)

Alarm generation on SLA violation, J-Flow2

LOGGING AND MONITORING

Syslog, Traceroute, MPLS Ping

HIGH AVAILABILITY

VRRP, IETF Graceful Restart

Redundant forwarding and routing engines (M10i)

Graceful Routing Engine Switchover (M10i)

ADMINISTRATION

External administrator database RADIUS

Configuration rollback, Commit confirm for changes

In-service Software upgrades

PLATFORM AND SCALING

M7i - 2U/4-slot chassis

M10i - 5U/8-slot chassis

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