

## OUR APPLIANCE YOUR BUSINESS

### One appliance that can acquire, provision, control, secure & bill your customers.

Running an ISP business is hard enough. Competitive threats from large operators keep smaller Internet service providers under constant pressure. Pressure to expand network reach, adopt new access technologies and offer an ever more attractive service plan.

Inventum's MSG ISP-in-a-Box is an ideal partner for your business. Whether you're building a new wireless/wire-line broadband network or managing an existing one, the MSG appliance has a clear value proposition - it consolidates your entire NOC equipment & key software systems into a single, easy-to-manage, affordable appliance.

### Consolidating the NOC

On-board the MSG are all the key building blocks your business requires - advanced IP router, RADIUS, session manager, bandwidth manager, subscriber database, self-care dashboard, WAN load balancer and even a pre-pay billing system!

For example, in public wireless deployments, the MSG can replace less powerful access controllers & provide the following key features:

- Acquire new subscribers using web based self registration.
- Provision IP addresses, manage leases, selectively NAT and policy route traffic on a per subscriber basis.
- Authenticate every session using login pages, IP, MAC & VLAN.
- Provision sessions with personalized bandwidth & quota limits.
- Meter & bill each session, including real-time pre-paid plans.

MSG's web services API is used to interface with external IT systems like roaming providers, third party billing, NMS and financial systems.

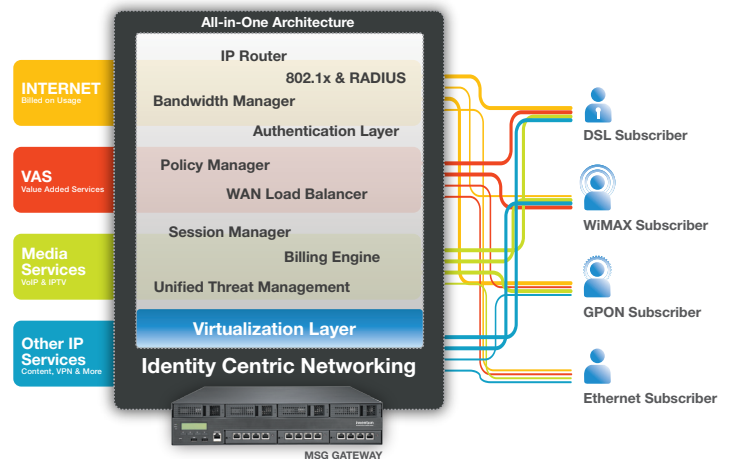
### Subscriber Centric Virtualization

Similar to virtualization technology found on modern servers, the MSG brings *identity centric virtualization* to the network. Each subscriber session executes inside a personalized environment which allows unprecedented control of his/her traffic. For example, each subscriber can have unique routing tables, security filters & QoS.

### Virtual Engines

MSG is driven by the following functional blocks or engines:

- **IP Router** - Standards based static and dynamic routing. Identity based session routing.
- **Unified Threat Management (UTM)** - Subscriber identity specific IP filtering, gateway anti-virus, anti-spam, personalized content filtering & IPS with on-board hardware acceleration engine to boost performance.
- **Policy & Identity Management Engine** - Design, store & enable user policies directly on the MSG. Support real-time query



**Powerful identity centric network virtualization. Each subscriber session handled in a virtual layer for unprecedented control.**

of external policy servers (RADIUS, LDAP, Windows ADS) on a per subscriber basis.

- **Bandwidth Management Engine** - Enable dynamic QoS capabilities based on nature of traffic & subscriber identity. Integrated with subscriber plans, the engine enforces per session CIR/BIR & other QoS parameters. Automatic, differential bandwidth policies based on peak/off-peak hours, time-of-day, day-of-week and other service plan policies. For example, create plans like *2 Mbps daytime & 5 Mbps night burst speeds with a monthly download quota of 5GB.*
- **WAN Link Load Balancer** - Manages multiple ISP uplinks. Split, policy route or use as active-passive configuration to optimize your WAN bandwidth providers. Specify link affinity based on subscriber's service plan, for example, pre-paid traffic to link 1, others to link 2.
- **Session Metering & Billing Engine** - Create multi service billable packages & plans. Native session CDR creation directly on appliance. Rate & charge CDR to subscriber accounts in real-time. Support auto-disconnection in case of balance expiry on pre-paid plans. Export CDR/IPDR to external systems.
- **Analytics Engine** - On device reporting and analysis including session metrics, URL logs, security logs, trends, alerts and alarms.
- **Lawful Tracking** - protect network from unlawful use particularly to comply with government regulations in specific countries.

### Multiple Modular Appliances



MSG-3000 Series

Feature	Description
<b>Identity Aware Platform</b>	<ul style="list-style-type: none"> <li>Virtual networking per subscriber with unprecedented session personalization.</li> </ul>
<b>Complete UTM for Subscriber Security*</b>	<ul style="list-style-type: none"> <li>Firewall, per subscriber content filtering.</li> <li>Anti-virus, anti-spam &amp; anti-malware</li> </ul>
<b>Subscriber Access Gateway</b>	<ul style="list-style-type: none"> <li>Static &amp; dynamic routing, DHCP, DNS, NAT, SNAT &amp; DNAT.</li> <li>Support PPPoE &amp; custom dialers.</li> </ul>
<b>AAA</b>	<ul style="list-style-type: none"> <li>On-board or external RADIUS* support.</li> <li>Authenticate using forced portal, IP/CIDR, MAC, VLAN or combination of any.</li> <li>802.1x support. Authorize other gateways, controllers, access points or RADIUS compliant devices on the network.</li> <li>Account time, volume &amp; session usage.</li> <li>Support automatic disconnection, running session upgrades &amp; downgrades.</li> <li>Payment gateways* and roaming support.</li> </ul>
<b>Usage Based Billing</b>	<ul style="list-style-type: none"> <li>Design quota plans with limit on time, bytes, billing cycle &amp; speed.</li> <li>Support bandwidth schedules for peak, off-peak, day-of-week &amp; holiday plans.</li> <li>Pre-pay &amp; advance-pay <i>top-up</i> plans.</li> </ul>
<b>PIN Management*</b>	<ul style="list-style-type: none"> <li>Generate PIN for new subscribers or recharging existing accounts. Bind PIN to specific service plan/package.</li> <li>Custom branding for vouchers.</li> </ul>
<b>Bandwidth Management</b>	<ul style="list-style-type: none"> <li>Committed or burstable limit on each subscriber session or shared groups.</li> <li>Unique 3-tier queuing algorithm. Allows service plan or package affinity to specific WAN links e.g. pre-pay plan to link #1.</li> </ul>
<b>Role Based Administration</b>	<ul style="list-style-type: none"> <li>Restrict administration rights based on roles.</li> </ul>
<b>Gateway Load Balancing &amp; Automatic Fail-over*</b>	<ul style="list-style-type: none"> <li>Weight &amp; affinity based load balancing.</li> <li>Automatic failure detection &amp; switch over to surviving link(s).</li> </ul>
<b>Subscriber Portal &amp; Self-care</b>	<ul style="list-style-type: none"> <li>Customizable self care portal.</li> <li>Online registration, top-up, report viewing, bandwidth graphs, usage logs &amp; more.</li> <li>Messages &amp; announcements.</li> </ul>
<b>Reporting &amp; Analytics</b>	<ul style="list-style-type: none"> <li>Graphical &amp; textual reports.</li> <li>Customize your own reports using API*.</li> </ul>
<b>High Availability*</b>	<ul style="list-style-type: none"> <li>Models with high-availability options.</li> <li>Active-passive with heartbeat &amp; bypass.</li> </ul>

\* Optional modules. Please check with sales.

## SOLVING PROBLEMS

### Which networks can the MSG work with?

The MSG is transport agnostic and works with any IP network. Depending on your choice of last-mile technology, certain features may have specific bearing. For example, VLAN & Ethernet MAC based session authentication will not work if your access equipment does not support bridging these layer 2 technologies.

The MSG has been widely deployed in Ethernet, WiFi, WiMAX, MESH, Satellite, EPON, GPON and cable DOCSIS networks. Choose from sub gigabit to multi-gigabit appliance versions that can support thousands of concurrent subscribers.

### What is Identity Centric Networking?

Unlike ordinary routers and switches, the MSG handles traffic with the context of who the traffic belongs to. To identify the owner of the traffic and hence establish the identity, the MSG uses multiple techniques. These include analyzing packets as well as forcing subscribers to authenticate before permitting network sessions. Authentication can be for humans or even network devices (CPE) using a variety of well established standards - 802.1x, web page login, Windows ADS, LDAP & RADIUS. Once identity is established, the MSG creates a personalized, virtual network for each user. Inventum refers to this as *Identity Centric Networking*.

### Can I use the MSG for launching public Wi-Fi?

MSG appliances can completely replace the function of wireless access controllers to enable public wireless services. Simply add any WiFi access points on your network and route them to the MSG. With support for 802.1x (WPA/WPA2), one-time visitor passwords, PPPoE, and custom dialers the MSG can authenticate and provision subscribers easily. If using multiple SSID or virtual AP, MSG can securely segregate traffic to pre-determined VLAN based on identity. The MSG can also record session history (private and public IP, URL visited).

### What type of billing can the MSG support?

Both pre-paid and advance-pay billing is supported by the MSG. This includes services limited by time, volume & validity cycle. External RADIUS query on per subscriber basis is possible, though not required as subscriber & billing database is kept on the MSG.

Tools for PIN generation, account top-up & an account ledger are provided. Customizable subscriber self-care portal is also bundled with features to check usage & manage services.

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