

Managed Business Network Solution

'Zero IT' Small Business Solution



Benu Networks' Managed Business Network (MBN) solution delivers a "zero IT" experience, enabling small businesses (SMBs) such as restaurants, cafés, medical/dental offices, salons, real estate offices, automotive shops and so on, to not only offer free Wi-Fi as an amenity, but also to grow their business through detailed customer analytics and social media outreach.

A service delivery platform (the Benu Platform) combined with a rich application suite (MBN) that instantly transforms the Telco or MSO into an agile cloud managed service provider for the SoHo/SMB market.

The MBN solution empowers a service provider to enhance their small office/home office (SoHo) and SMB offering with enterprise-class cloud service delivery and managed networking services on an open platform that is integrated into their network infrastructure. This includes IT managed cloud network services for Wi-Fi, LAN, WAN, security, storage, and more. Unlike other similar offerings, MBN is designed to be owned, controlled and implemented by the service provider.

With this solution, fixed, mobile and converged operators can increase customer affinity to the service, drive ARPU through value added services, and differentiate their offering relative to competitors.

Some features include:

- Operations and Management Portal for Service Provider control
- 4G Backup
- Static IP Service
- Deep Analytics
- SAML and OpenID support for SSO
- Public APIs for service provisioning and vertical integration
- SmartBridge specification support

Key Highlights

Cloud-Based Subscription Model

- Multi-functional Platform- growing the service catalogue requires no development spend, just annual subscription costs for every user so service providers only pay when they profit.

Configurable Controls

- Profile, access, and content controls

Device Intelligence

- Device fingerprinting and controls

Integrated and Advanced Security

- Comprehensive protection against malware, ransomware, phishing, DDoS threats
- Deep packet inspection (DPI) and application security

Network Personalization

- Bandwidth management, LAN settings and quality of service (QoS)

Analytics

- Guest Wi-Fi analytics, usage data, network utilization patterns at the device/profile level

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Features

Cloud Delivered IP Services

- Delivery of IP services from the service provider's network.
- High-scale IP services across a large footprint.
- Visibility and policy control.
- Offer unique, per-user services not otherwise available.
- Real-time instrumentation and analytics.

Cloud Managed Services

- Moving the business logic from the CPE to a cloud application is a powerful enabler of an unparalleled user experience.

Intuitive Customer Portal

- User friendly dashboard for the customer to manage their account including guest Wi-Fi network, promotions, bandwidth and cloud services.
- Intuitive control and configurability options.

Streamlined CPE

- Centralize CPE functions including DHCP Server, RADIUS authentication, RADIUS accounting, Carrier Grade NAT, Service Edge Routing, port forwarding, ACLs, Hierarchical QoS enforcement per device/VLAN/premise, Layer 3 VPNs.
- Shift IP service delivery and management into the service provider's network so the premise deployed equipment can be streamlined and purpose-built for best-in-class access technologies.
- The CPE no longer is laden with complex business logic- shorten upgrade cycles, deploy more equipment in the same location, and enhance the value of the same CPE by adding capability in the network.

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Features

Guest Wi-Fi

- Control over guest Wi-Fi network and experience
- Guest Wi-Fi promotions
- Guest Wi-Fi analytics engine
- Social Network integration

Network and Device Controls

- Control bandwidth and usage time
- Device-level analytics and control
- Content control and filtering

Multi-Site VPN

- User friendly dashboard for the customer to manage their account including guest Wi-Fi network, promotions, bandwidth and cloud services.
- Intuitive control and configurability options.

Integrated and Advanced Security

- Deep packet inspection (DPI), and application security
- Inline anti-virus and anti-spyware: HTTP, IMAP, POP3, SMTP, MAPI, FTP
- Protection using SSL certificate inspection:
- Reputation based threat protection and URL filtering
- Intrusion detection and prevention
- Ransomware detection and prevention
- Sandbox within the service provider's cloud
- Anti-Spam filtering and monitoring: Tag or quarantine spam emails
- Application identification, monitoring, and control
- Proxy for: HTTP, SMTP, POP3, IMAP, FTP, NNTP, MAPI, DNS
- SSL proxy/inspection
- Safe search: Ability to add safe search to a specific customer network and/or device
- Real time logging and support: Identify and report on blocked sites, viruses, and documents

Platform Architecture



Benu Platform architecture has the following sub-components which work together to enable the MBN solution:

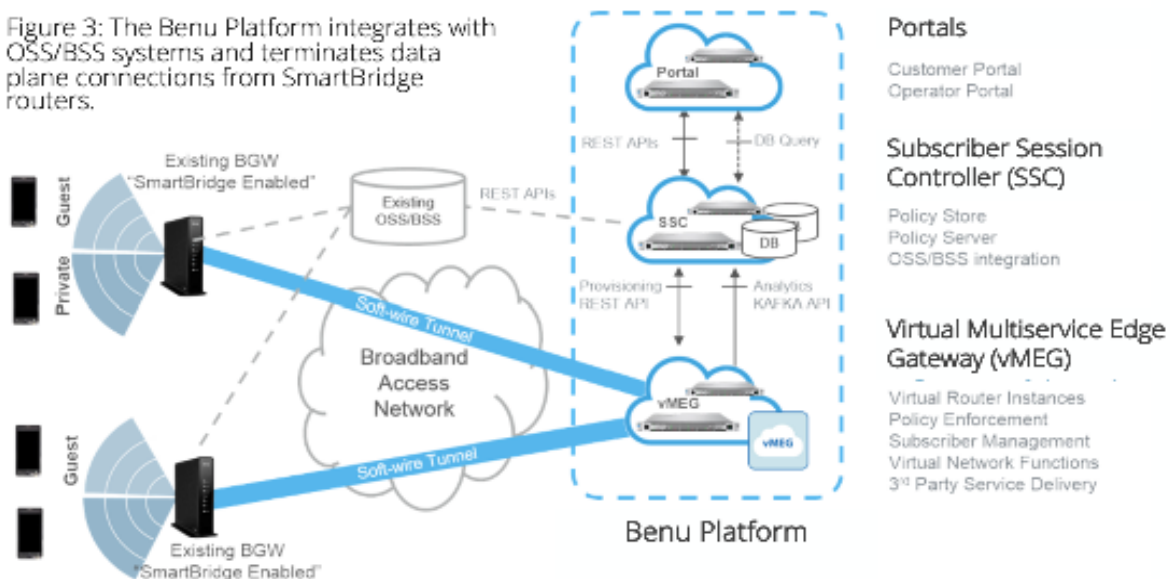
Subscriber Session Controller

The Subscriber Session Controller (SSC) is the policy engine and the service analytic broker of the Platform architecture. For customer on-boarding, the SSC manages and stores all the end user profiles and the operator's service templates in a highly scalable and persistent database infrastructure. For each MHN or user account, the SSC allows the creation of sets of rules with device granularity that can enable rich use cases from personal to IoT traffic classification and policing. Web services APIs are available for an agile integration with the OSS and provisioning platforms, including ACS systems for Wi-Fi management.

Virtual Mobile Edge Gateway (vMEG)

The virtual Mobile Edge Gateway (vMEG) is the aggregation point for the user traffic. It is a programmable data plane controlled by Benu Networks' Subscriber Session Controller (SSC) policy engine via RESTful APIs that reside in the service provider's cloud or service network. The vMEG terminates the EoGRE tunnels (L2 overlay technology) from the CPEs and enforces policies based on service template (e.g. gold, silver, bronze service level), and MHN account specifics (e.g. personal or IoT device). The vMEG also performs other in-line IP services like DHCP, Carrier Grade NAT, packet accounting, access control, service edge routing, and more. Network analytics are then exported via Apache Kafka architecture for large volumes of data.

Figure 3: The Benu Platform integrates with OSS/BSS systems and terminates data plane connections from SmartBridge routers.



Platform Architecture

Benu Platform architecture has the following sub-components which work together to enable the MBN solution:



MHN Portal

The MHN Portal is the Web server front end for both the end user and the service provider administrator. The end user dashboard is designed to offer an intuitive path through the functions available with two-layers design being the common routine actions followed by advanced sections where a complete set of capabilities are exposed to a user. The MHN Portal also offers a single pane of glass for the service provider network operation center NOC and service administrator. From the administrator's view, the provider's support team can assist customers, maintain the platform and troubleshoot the service.

SmartBridge

This service moves the NAT/router functions of the customer premise router into the service provider's core network. These functions now run in a virtual router (vRouter) instance also referred to as virtual CPE. The vRouter supports the virtualization of the CPE router functions such as NAT, NAT-PMP, UPnP, DHCP, and DNS etc. The SmartBridge utilizes Ethernet over a GRE tunnel from the CPE to the vRouter instance on the Benu platform.

Feature Bundles

A feature comparison of Benu Networks' MBN feature bundles are shown in the chart on the right. There are four bundles available as part of the solution:

1. Private
2. Guest
3. Standard
4. Advanced

FEATURES	Private Only	Guest Only	Standard	Advanced
Private Wi-Fi Management	Yes	No	Yes	Yes
LAN/WAN Management	Yes	No	Yes	Yes
Network/Device Policies and Metrics	Yes	No	Yes	Yes
Stateful Firewall	Yes	No	Yes	Yes
NAT-PMP, UPnP	Yes	No	Yes	Yes
Guest Wi-Fi Management	No	Yes	Yes	Yes
Guest Wi-Fi Metrics and Analytics	No	Yes	Yes	Yes
Guest Wi-Fi Portal Design	No	Yes	Yes	Yes
Guest Wi-Fi Promotion Manager	No	Yes	Yes	Yes
Social Networking Integration	No	Yes	Yes	Yes
Facebook Check-In	No	Yes	Yes	Yes
Cloud Service Integration	No	Yes	Yes	Yes
Site-to-Site VPN (Layer 2 VPN)	No	No	No	Yes
Public Static IP/Static Subnet	No	No	No	Yes

Figure 10: MBN Feature Bundles

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Deployment Options

The MBN solution provides CAPEX and OPEX efficiency to the service provider. Since the platform is deployed in the service provider's core network, it seamlessly integrates with the existing access network technology. With MBN, service providers can:

- Deploy using the existing Wi-Fi capable broadband CPE e.g. Wi-Fi DOCSIS gateways or Wi-Fi DSL gateways
- Activate services remotely on the customer's existing Wi-Fi capable broadband gateway
- Orchestrate MBN in a virtualized infrastructure (IaaS) or as an integrated COTS appliance

In both deployment scenarios, a software based platform approach allows the service provider to operate at Web scale (i.e.: rapidly deliver new features) at a low upfront investment. The components of the MBN solution can be centralized and used to deploy services across a large logical and physical footprint.

European Tier 1 Business Case for vCPE-based Managed Business Network

Subscriber Adoption:

- Guest Wi-Fi: Starting at 21K subs and growing to 66K subs in 5 years
- Security: Starting at 10K subs and growing to 33K subs in 5 years

5yr Revenue: \$55M

5yr Profit*: \$47M

* Net of CapEx 10-yr straight-line depreciation

MBN Business - Growth to 66K Guest WiFi + 33K Advanced Security Subscribers

