

Cambium Networks and Benu Networks

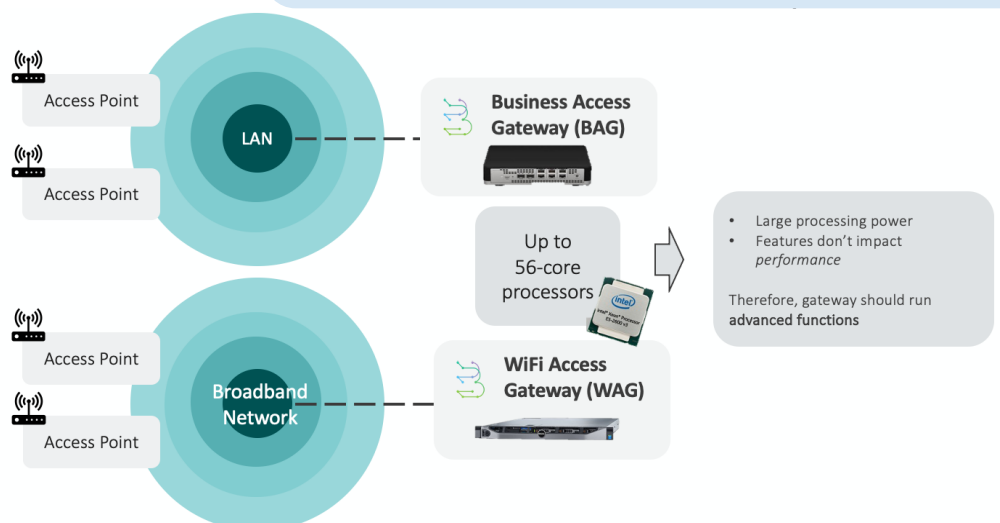
Delivering Seamless Connectivity and Unparalleled User Experience

End users have high expectations these days when it comes to WiFi. In response, WiFi networks need to become more sophisticated in subscriber management and control, security, mobility, and quality of experience capabilities. To address these needs in a simple, unified, consistent manner across the WiFi network, businesses use a WiFi Access Gateway (WAG). A WAG also enables the use of cost-effective WiFi Access Points (APs) or multi-vendor Wi-Fi networks without having to compromise on functionality.

Cambium Networks offers indoor and outdoor WiFi 5 (802.11ac) and WiFi 6 (802.11ax) wireless access points that ensure high-speed connection. It has partnered with Benu Networks, a leading software and solutions provider, to create a comprehensive Wi-Fi solution that enables seamless connectivity, rapid service delivery, and easy network management.

This solution couples the Cambium Network offerings with the Benu Networks' WiFi Access Gateway (WAG), virtual WiFi Access Gateway (vWAG), and the Business Access Gateway (BAG), which serve as the subscriber access and policy control function to ensure secure and seamless subscriber experiences for large WiFi networks, hotspot networks, and carrier WiFi networks. The BAG offers a low scale business access gateway for on-premise (customer premise). These gateways bring advanced security, mobility, and routing capabilities while simplifying the management of any WiFi traffic.

This partnership provides customers with reliable high-speed WiFi as well as a full suite of portals and services, so that operators can continuously improve their offerings, scale up/down as needed, and offer frictionless deployment options.



KEY FEATURES OF OUR SOLUTION

Feature Rich at Wi-Fi 6 Speeds

- Gateway can run advanced features without impact on performance

Intelligent Security

- Protection from unauthenticated and authenticated guests and users
- Network access control including dynamic micro-segmentation of users and per-user policies (QoS prioritization, data rates, ACLs, content filtering, web security, data volumes)
- Layer 3-4 security including stateful firewall and NAT, DNS attacks, DoS attacks, Control plane (SSH, SNMP, Radius, etc.) attacks, Malformed packet and fragmentation attacks, Policy-based packet drop mirroring
- Layer 7 security including Content filtering, Web security, Malware protection, Phishing protection

End-to-End Scalability

- Benu's gateway consolidates network elements (gateways/controllers, routers, firewall, DHCP servers) at cost-effective scale

Real-Time User Experience Visibility

- Immediate insight into end-user experience and network performance

WHAT DOES IT DO?

The Benu WAG provides the market-leading solution for WiFi networks that have a large number of guest users as well as a diverse user base of employees, partners, and IoT devices. Benu Networks' WAG is used in a variety of deployment use cases including Public & Community WiFi, Mobile Network Offload, Smart Cities, Venue WiFi, Hospitality WiFi, Multi-Dwelling Units (MDU), and more.

Benu's WAG simplifies:

- Distributed WiFi networks in multiple physical locations
- Networks that require enhanced security
- Administration of subscriber policies
- Multi-vendor WiFi networks

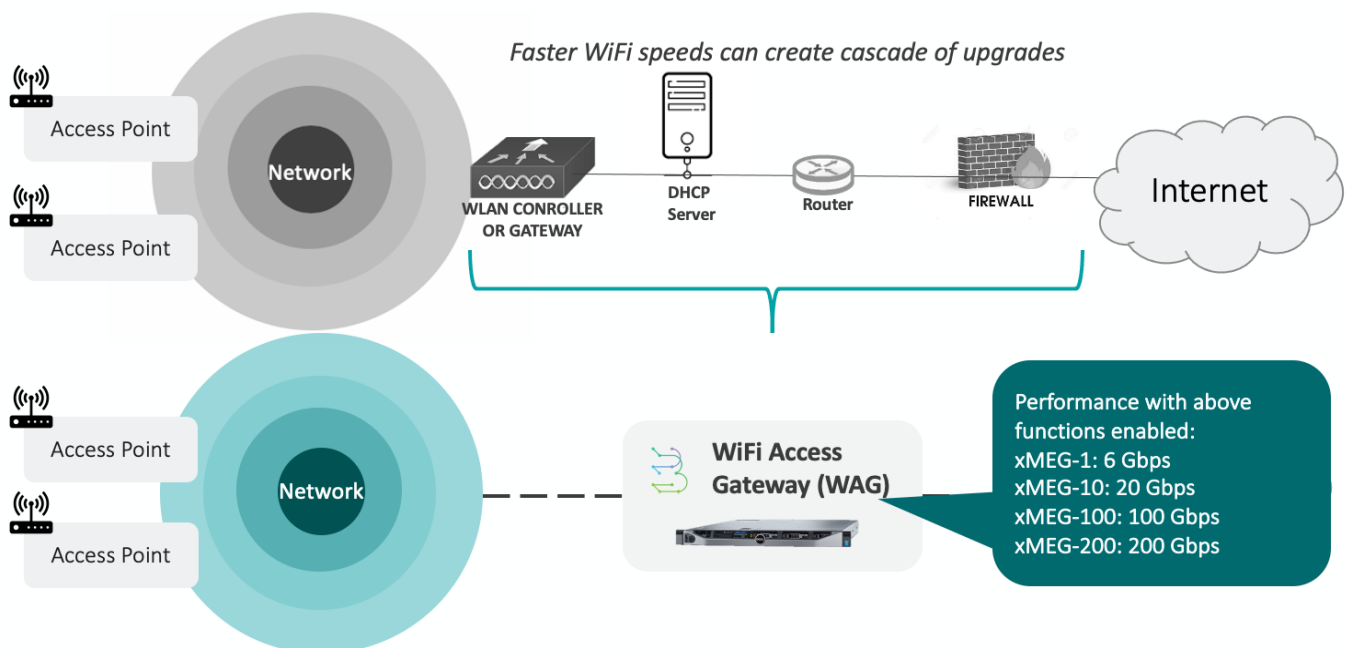
The Benu Networks & Cambium partnership delivers a best-in-class solution, fit to meet the needs of the modern consumer.

Our joint solution ensures:

- High speed connectivity
- Centralized policy enforcement
- Dynamic segmentation
- High scale control plane and data plane functionalities
- Interoperability & more

With the Cambium & Benu solution, customers can rapidly deploy carrier grade end-to-end WiFi networks with unmatched capacity/box at a price point they can afford, and instantly offer high quality WiFi services, maximize investment with mobile off-load, and quickly realize ROI.

Consolidate Network Functions – at Scale



DEPLOYMENT OPTIONS

The WAG offers deployment flexibility, including virtual machine, appliance, KVM, and more. All options are versatile network gateways for fixed and mobile broadband service providers deploying next generation IP services to the edge and core of their networks. With packet processing and service intelligence, these platforms are optimized to address low latency and bandwidth intensive IP services that require high performance packet processing, intelligent service control, and policy enforcement. Providing a new level of scalability and ROI, these platforms deliver dramatically improved CAPEX and OPEX for the most demanding, mission critical IP services such as converged WiFi access gateway, IP service gateway, and service edge routing.

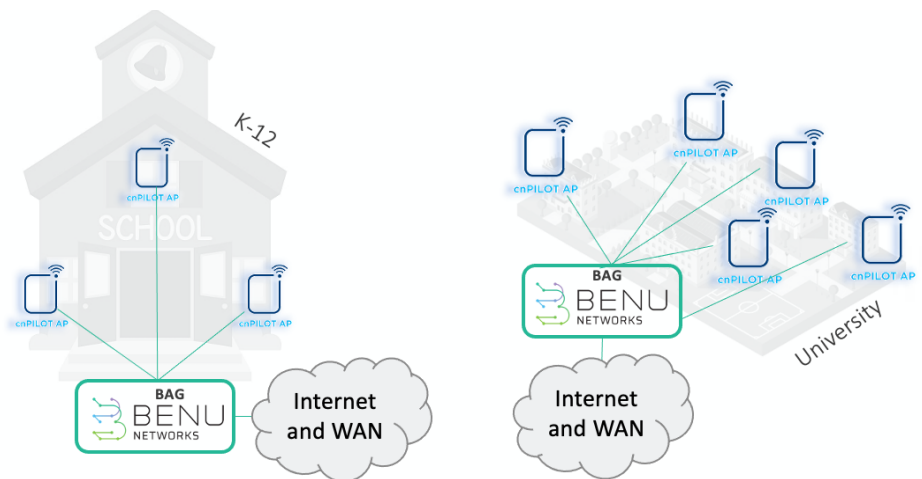
ADVANCED SECURITY & FIREWALL

Traditional perimeter-only firewalls are effective for private enterprise deployments, but they are not effective in deployments that have a large guest user base, such as in venues, MDUs, hospitality, retail businesses, and public WiFi networks. In all of these scenarios, there is a mix of trusted users (employees and staff), trust devices (Internet-of-Things), partially trusted users (vendors or suppliers), and untrusted users (guests).

For all these different types of users, even trusted users, Benu supports a zero-trust approach. Zero-trust security restricts users to only the parts of the network and applications that they need, thereby reducing the attack surface and minimizing access to sensitive parts of the network. Microsegmentation creates separate zones within the network to maintain separate layers of access to applications and network resources. In addition, unlike typical firewalls, Benu's SD-Edge platform supports per-user policy enforcement which is essential in environments with a high number of untrusted or partially trusted guests. These per-user policies include network access controls, QoS and rate limiting, content filtering, and data volume limits. Benu's security protects against malware and phishing attacks with network-wide, per VLAN, per WiFi AP, or per user protection from bot nets, malware sites, phishing and other frauds, proxy avoidance and anonymizers, spam URLs, and spyware and adware.

USE CASES & FEATURES

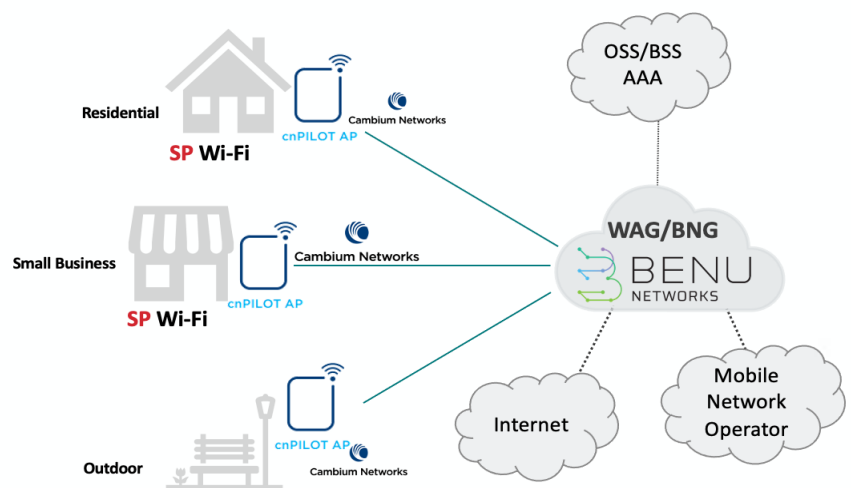
Benu Networks' WAG is used in a variety of deployment uses cases including Public / Community WiFi, Mobile Network Offload, Smart Cities, Venue WiFi, Hospitality WiFi, Multi-Dwelling Units (MDU). All of these environments have a common theme: a large volume of guest WiFi users. While enterprise WiFi solutions primarily serve the needs of employees, they are not well-suited for serving large guest WiFi populations. The Benu WAG provides the market-leading solution for WiFi networks that have a large number of guest users as well as a diverse user base of employees, partners, and IoT devices.



Education Deployment Architecture

Benu Networks WAG provides best-in-class wireless gateway (WLAN-GW) functions, including:

- Multi-vendor WiFi aggregation via Soft-GRE; VLANs, or L2TPv3 from the CPE/WiFi access point
- User and device authentication
- High capacity in-line DHCP and CGNAT services
- OAM & TAC integration via SNMP/CLI, etc.
- Application & service steering: e.g. in-browser ads (HTTP-mirror)
- Charging and policy control
- Lawful intercept integration
- Firewall and security services



Public Hotspot WiFi Deployment Architecture

Benu Networks' WAG is used in a variety of deployment uses cases:

USE CASE	DESCRIPTION	BENEFITS
Public / Community WiFi	Service providers provide a WiFi hotspot network across existing home, business, and/or outdoor WiFi networks	<ul style="list-style-type: none"> Builds brand: users see operator's SSID everywhere Increases subscriber retention: subscribers benefit from easy, free out-of-home WiFi access Easy upsell to managed networks services: guest WiFi, network security, LTE backup, etc.
Mobile Network Offload	3GPP cellular network operators can offload mobile traffic to WiFi networks while maintaining subscriber visibility and management	<ul style="list-style-type: none"> Fill in coverage gaps: particularly inside buildings Reduce network load: improves subscriber network speeds
Smart Cities	Cities use WiFi to support Internet-of-Things (IoT) monitoring and automation related to utility billing, traffic, parking, public transport, public safety, and street lighting.	<ul style="list-style-type: none"> Reduces operations costs: increased automation Improves constituent satisfaction: more efficient delivery of city services Green: reduces waste in transportation costs
Venue WiFi	Provide critical amenity for convention centers, stadiums, shopping malls, airports and train stations	<ul style="list-style-type: none"> Improves customer satisfaction Reduces operations costs: support IoT for automation Revenue opportunities: enable commerce opportunities, location-based services, and sponsored WiFi opportunities
Education WiFi	Consistent WiFi services in classrooms, common areas, meeting rooms, and cafeterias.	<ul style="list-style-type: none"> Enhances school cybersecurity from threats outside and within Reduces operations costs: support IoT for automation Revenue opportunities: upsell enhanced broadband Internet support
Multi-Dwelling Units (MDU)	Apartment complexes, retirement homes, university housing, and military housing all need support for tenant WiFi, guest WiFi, staff WiFi, and often IoT.	<ul style="list-style-type: none"> Support wide user base: create separate "networks" on single physical WiFi infrastructure Control and visibility of individual subscribers: don't treat the MDU as just one large wholesale subscriber Improve tenant satisfaction: seamless WiFi mobility and services Reduce operational costs: IoT for automation

SUMMARY

Cambium Networks offers reliable high-speed infrastructure that supports WiFi marketing and location services in large- and small-scale deployments. The Benu Networks partnership creates an unparalleled WiFi solution for small- and large-scale projects alike. Contact your local Distributor/Reseller to learn how Cambium Networks together with Benu Networks created an industry leading WiFi solution.

To learn more about Cambium Networks Enterprise Wi-Fi and Switching solutions, please visit:

www.cambiumnetworks.com/wifi/

For more information on WiFi Access Gateways and Benu's Advanced Security, please visit:

www.benunetworks.com/wag

www.benunetworks.com/security