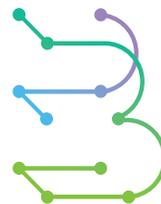# Secure, Performant Networks for Remote Workers

Extending Enterprise Connectivity to the Employee Edge

Now, more than ever, companies are embracing work-from-home policies in an effort to keep their staff safe and their businesses running. Some companies, like Facebook, Twitter, Shopify, Square, and Box among others, have announced that employees can work from home forever.   Thus, the "enterprise network" is changing, extending into a growing number of homes; but the enterprise-level requirements remain the same. Security can be a looming issue. Sharing bandwidth with other members of the household can constrain productivity and impact voice and videoconferencing quality. And downloading, configuring, and operating third-party clients for VPNs can be limiting and frustrating, putting strain on enterprise IT teams. Enterprises find themselves scrambling to provide a seamless transition from office to home working
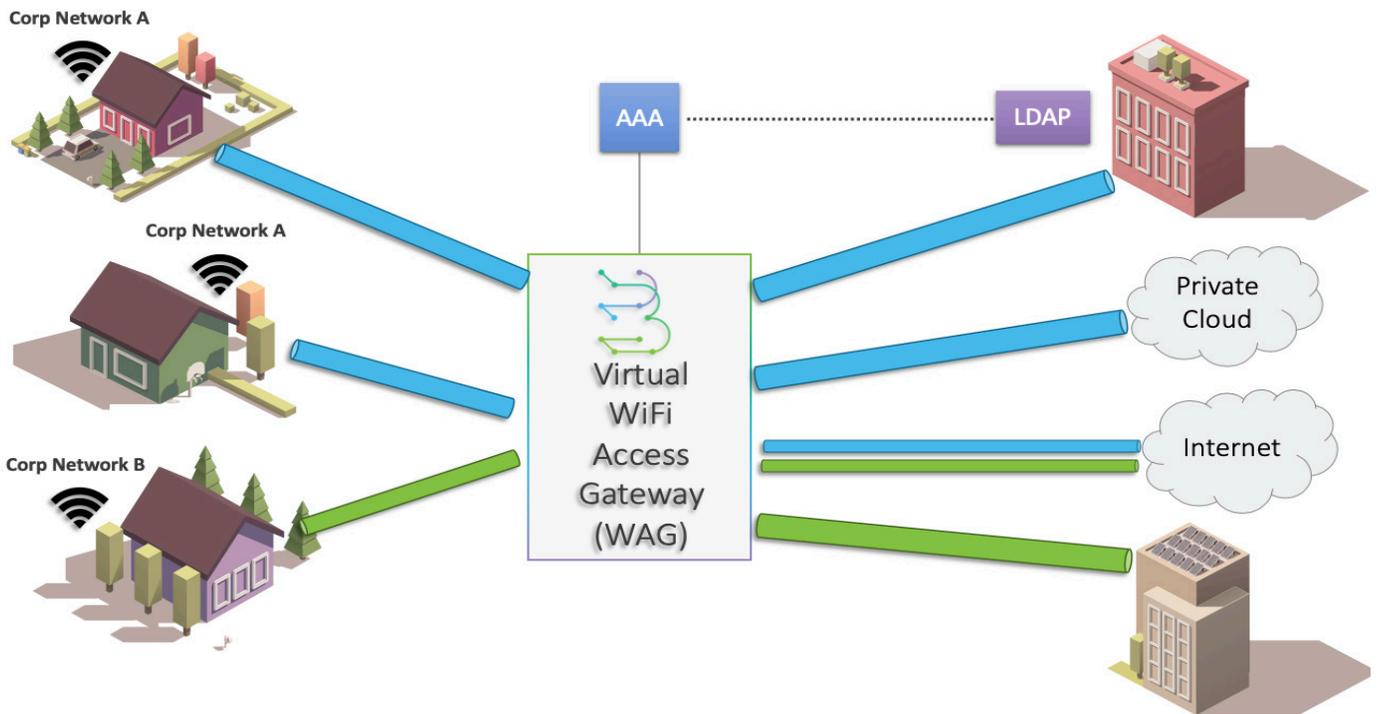
Teleworking Solution

With the Benu Networks Teleworking Solution, operators can offer Business and Enterprise customers a means to boost productivity, improve employee experience, and ensure that business critical activities remain on a secure network, without lots of IT headaches. The Benu Wi-Fi Access Gateway (WAG) is a Software-Defined Edge platform that enables carriers to provide a seamless extension of the enterprise network to the home. Simply enable a separate corporate teleworker SSID on the residential gateway and tunnel that traffic to the Benu WAG to ensure that every business activity takes place on a network up to par with enterprise standards. With this solution, enterprises benefit from:

- Traffic prioritization
- Superior performance and optimized connectivity to applications at the enterprise, the private cloud, or public cloud and Internet.
- Secure connectivity
- Extend enterprise VoIP connectivity seamlessly and securely into the home
- Device flexibility and freedom with no third-party clients required

Solution Brief

The solution leverages Benu Networks' Software-Defined Edge Platform (SD-Edge Platform), a robust virtual platform that provides next-generation packet processing and subscriber management functions, that empowers teams to have the performance, flexibility, and scale to rapidly provision services and scale up or down whenever necessary. Our highly programmable, fully virtualized platform provides increased service agility, optimal network performance, and reduced costs. Unmatched capacity and performance makes it easier than ever to meet and exceed enterprise demands for teleworker solutions.

In addition, the Benu SD-Edge Platform can be used for on-premise Business Access Gateways (BAG), Broadband Network Gateway (BNG), and other service functions, all while remaining open and interoperable with other network services and applications, including 3rd-party applications.

BENU NETWORKS
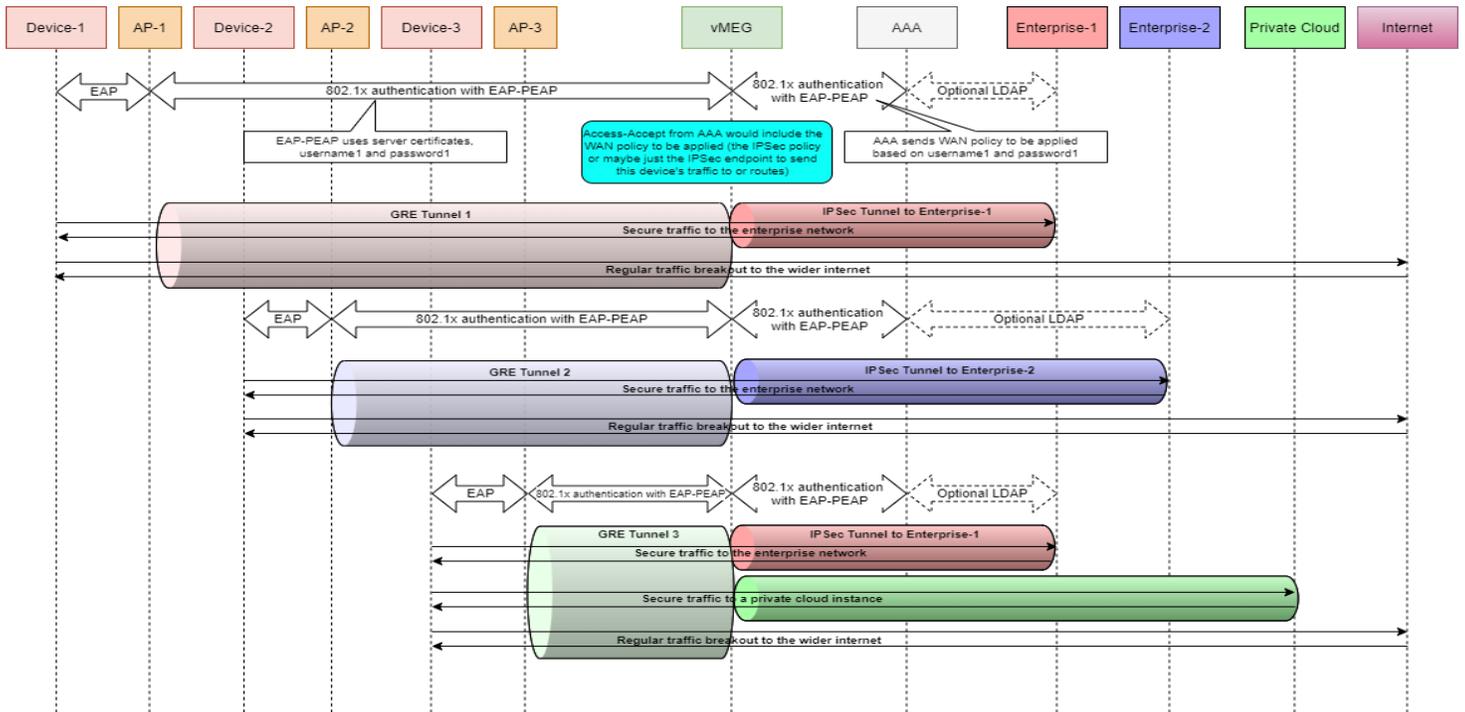
Architecture

The existing residential gateway (RG) broadcasts a second "teleworker" SSID that is configured with 802.1x authentication. When a user device attempts to connect to this SSID, it conducts an EAP exchange with the RG which sends the authentication credentials to the RADIUS proxy server built-in to the Benu Wi-Fi Access Gateway (WAG). The Benu WAG communicates with the AAA to retrieve the policy to be applied to that particular enterprise user. For enterprise-based authentication, the AAA can be configured to authenticate the user with the corresponding enterprise's LDAP servers, using the credentials passed in the RADIUS EAP message, such as in the case of EAP-PEAP or EAP-TTLS. After successful authentication, the policy to be applied to the user is communicated to the Benu WAG which then enforces the policy.

All subsequent traffic from this user device is tunneled to the Benu vMEG in a tunnel (typically EoGRE, L2TPv3, and/or with IPSec for encryption security), and then forwarded to the appropriate destination. Some traffic may need to be forwarded via an IPSec tunnel between the WAG and the enterprise site for secure access to the business' IT infrastructure, while other traffic is securely tunneled to a private cloud instance, and remaining traffic is sent to the Internet. By locating the WAG strategically in peering points with cloud providers, traffic can be more secure and routing optimized to reduce latency for cloud applications. In addition, a wide variety of policies can be applied to the traffic, such as rate-limiting the bandwidth, marking DSCP values for traffic prioritization on both upstream and downstream network nodes, or applying additional security such as firewall and NAT policies, content filtering, malware/phishing protection, or even stitching in advanced IDS/IDP and sandboxing support from leading third-party security providers.

About Benu Networks

Benu Networks is a leading software and solutions provider, simplifying the industry's most complex edge networks. With a comprehensive set of products and innovative solutions, Benu Networks delivers solutions to instantly transform legacy networks, elastically manage services, and carve the path to 5G.