

Benu Operations Subscriber Simulator (BOSS)



Real-Time Network Analytics

The Challenge

Ensuring an optimized WiFi user experience, even during peak network usage, is at the critical core of any service provider's business. The user experience has a tremendous effect on revenue growth, subscriber satisfaction/churn, ROI, and overall profitability and success.

With wireless access gateways (WAGs), organizations can take advantage of various revenue opportunities by unlocking a wide set of WiFi-based applications such as, community Wi-Fi (Indoor/Outdoor), HotSpot 2.0/roaming, and mobile data offload. Traditionally, network administrators have struggled to control the quality of experience (QoE) on WiFi networks – constantly challenged with managing end user and network demands while meeting all service commitments.

BOSS Transforms Network Visibility

Benu's Operations Subscriber Simulator (BOSS) addresses these critical challenges with proactive network performance monitoring. BOSS is an operations tool that helps predict and understand end-user experience in a variety of real-world scenarios. With real-time QoE analytics, network administrators can make informed decisions quickly, mitigating of costly network issues and user churn.

Key Highlights

Real-Time Subscriber KPIs

- Provides critical insights on the user experience to monitor service level agreements (SLAs)

Intuitive UI

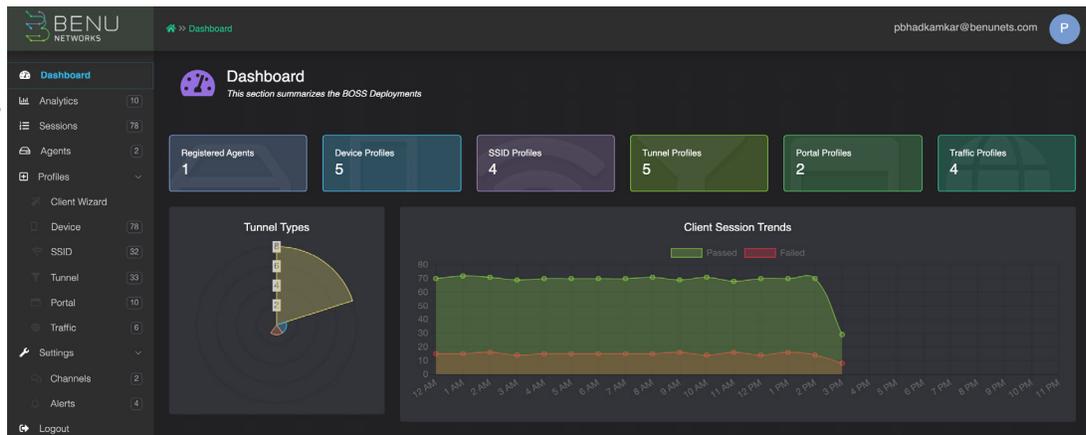
- Intuitive operator dashboard for easy navigation, predictive modeling and reporting
- Out of the box tool ensures a quick and effortless installation

Proactive Alerting

- Automatic alerts for change in QoE and network conditions

Pinpoint Performance Issues

- Detailed measurements allow for the immediate detection of network issues
- Avoid expensive customer site visits
- Monitor subscriber experience remotely from anywhere



Data Sheet | BOSS

BOSS is built on the following components:

| Boss Component | Functionality Provided |
|------------------------|---|
| Boss Controller | <ul style="list-style-type: none"> Operator Dashboard Analytics Engine Speed Test Server Selection |
| Boss Agent | <ul style="list-style-type: none"> End-User Client Simulator Packet Analyzer Tunnel Simulator |

Table 1: BOSS Components

The Operator Dashboard provides real-time alerts for changes in network conditions including changes in customer-experience metrics. It produces real-time user experience charts that allow customers to take immediate remedial action. BOSS runs as a container on a Linux server and is accessed via HTTPS using a standard browser.

Each BOSS agent runs as a virtual machine (VM) or on bare metal, and can simulate up to 20 client sessions. The session types may include different client types (e.g. IPv4, v6) and may also use different types of tunnels (e.g. GRE, L2TPv3, VLAN, etc.). Agents may be placed in different locations within a building or venue to test different locations within that environment. Alternatively, agents could be placed in different buildings in a campus or other multiple-building environment to simulate real usage conditions.

Multi-Building Deployment

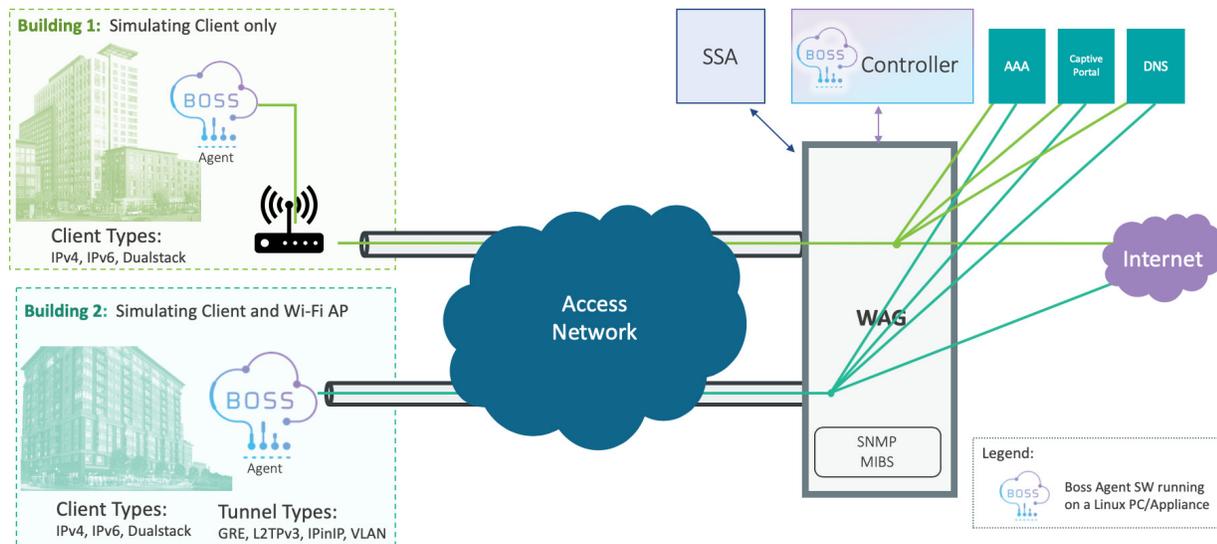


Figure 1: BOSS Multi-Building Deployment Example

Large Building Deployment

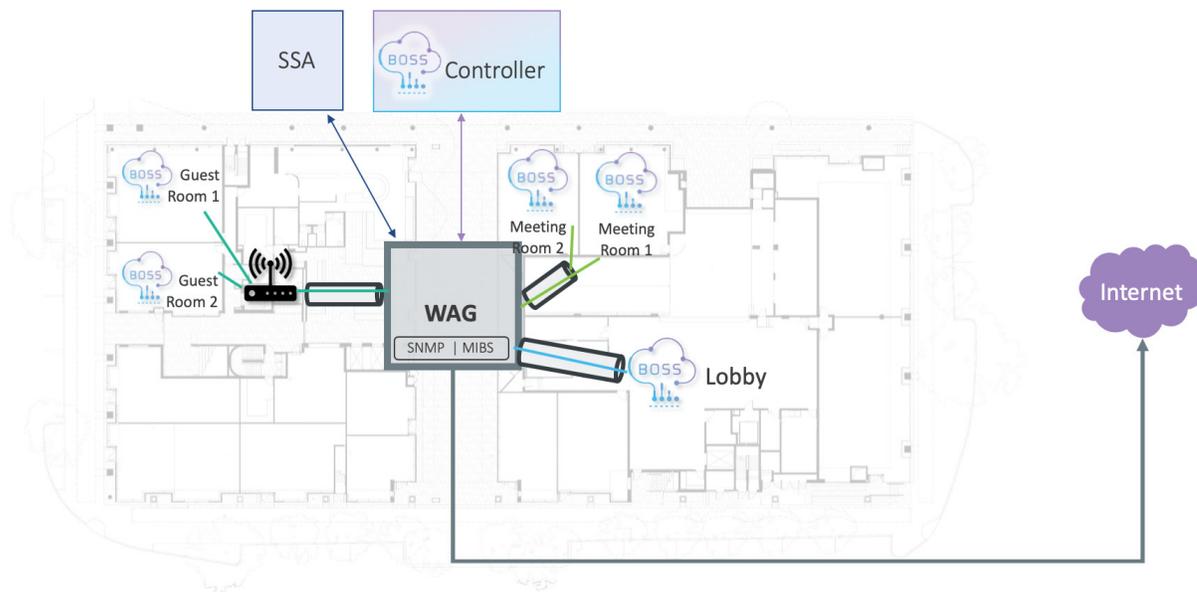


Figure 2: BOSS Large Building Deployment Example

BOSS allows you to create a user session by selecting the device, agent, SSID, tunnel, URL or captive portal, and traffic profile. Once this is created, BOSS will run through the scenario and report on the network performance. With this, your team has complete visibility into network performance and user experience for all types of users- employees, contractors, guests, etc. BOSS collects the following key analytics:

| Metric | Data Collected |
|------------------------|--|
| Onboarding time | <ul style="list-style-type: none"> Guest Wi-Fi onboarding time via portal Subscriber onboarding time (min, max, avg, current) |
| DNS | <ul style="list-style-type: none"> Transaction counts Response time (min, max, avg, current) Success and Failure rates A and AAAA Record Response time |
| DHCP | <ul style="list-style-type: none"> Response time (min, max, avg, current) |
| HTTPS and HTTP | <ul style="list-style-type: none"> Response time (min, max, avg, current) |

Table 2: Benu BOSS Key Analytics

Data Sheet | BOSS

Figure 4 below outlines the process flow of the BOSS agents simulating client sessions:

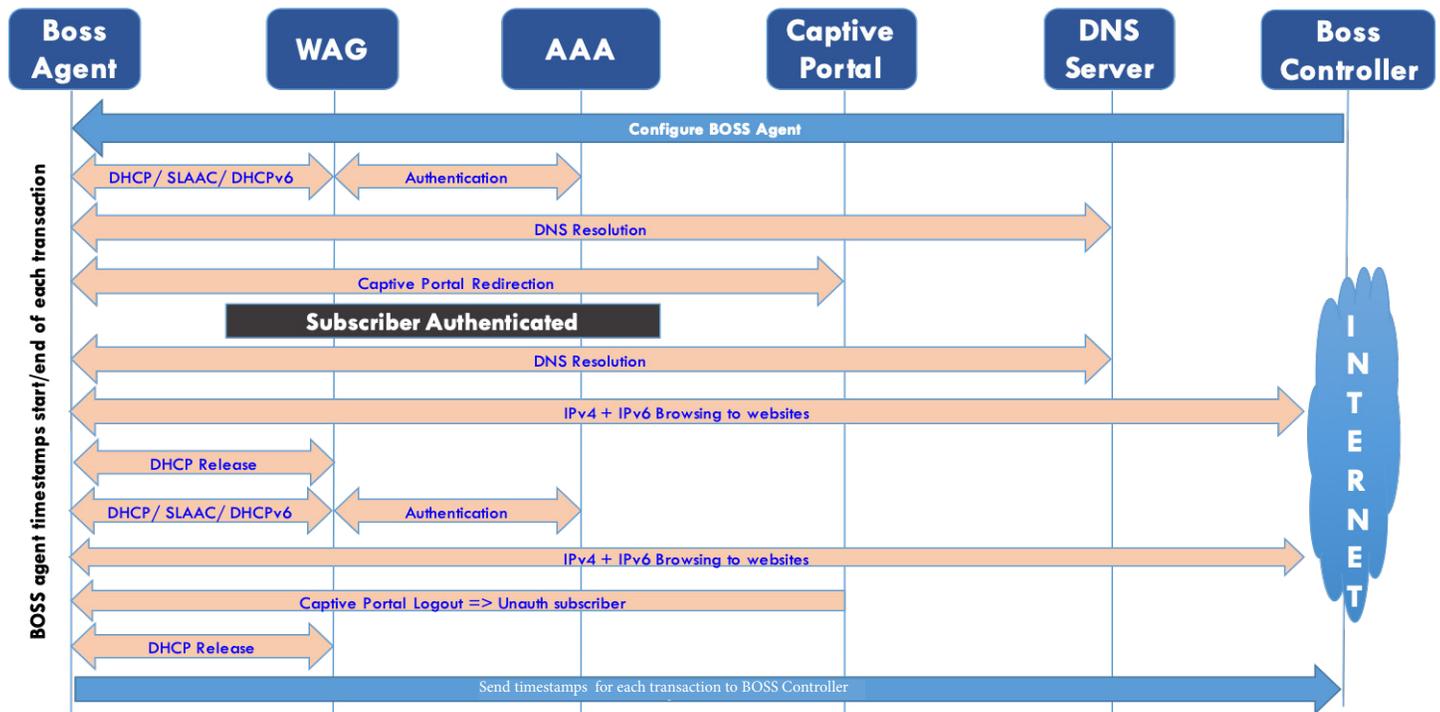


Figure 4: Benu BOSS Agent timestamps each transaction and sends to Controller for aggregate analysis and reporting

Figures 5 and 6 show additional examples of BOSS reports available to the customer. BOSS features include SNMP Traps for flow events, and a built-in analytics engine.

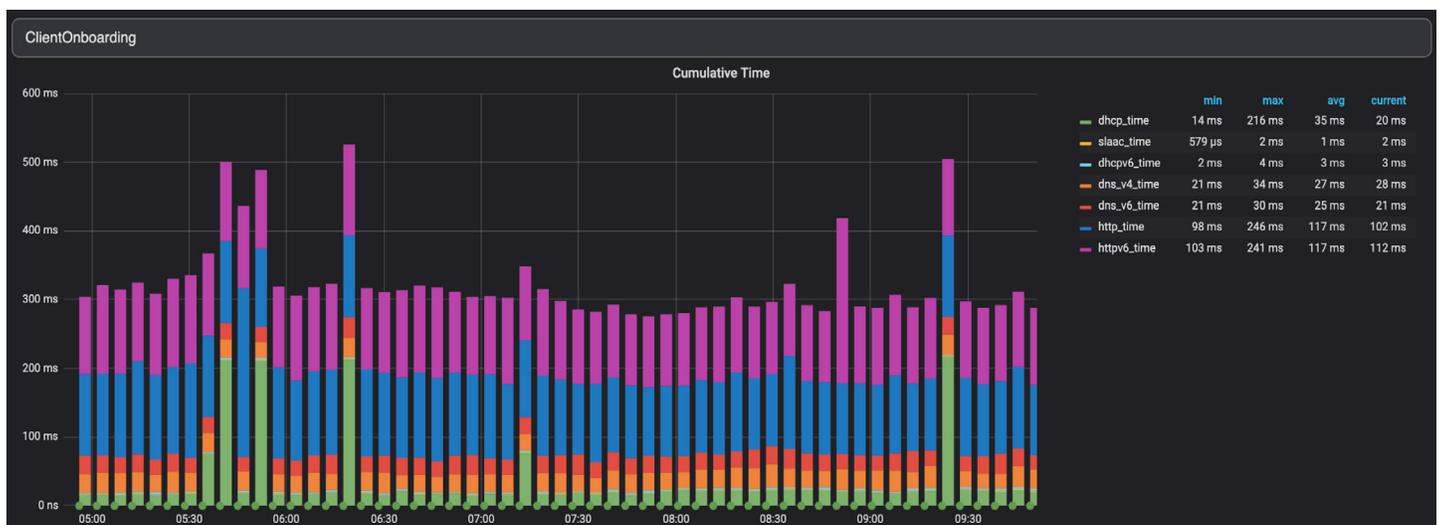


Figure 5: BOSS Performance Monitoring Outputs (using simulated clients)

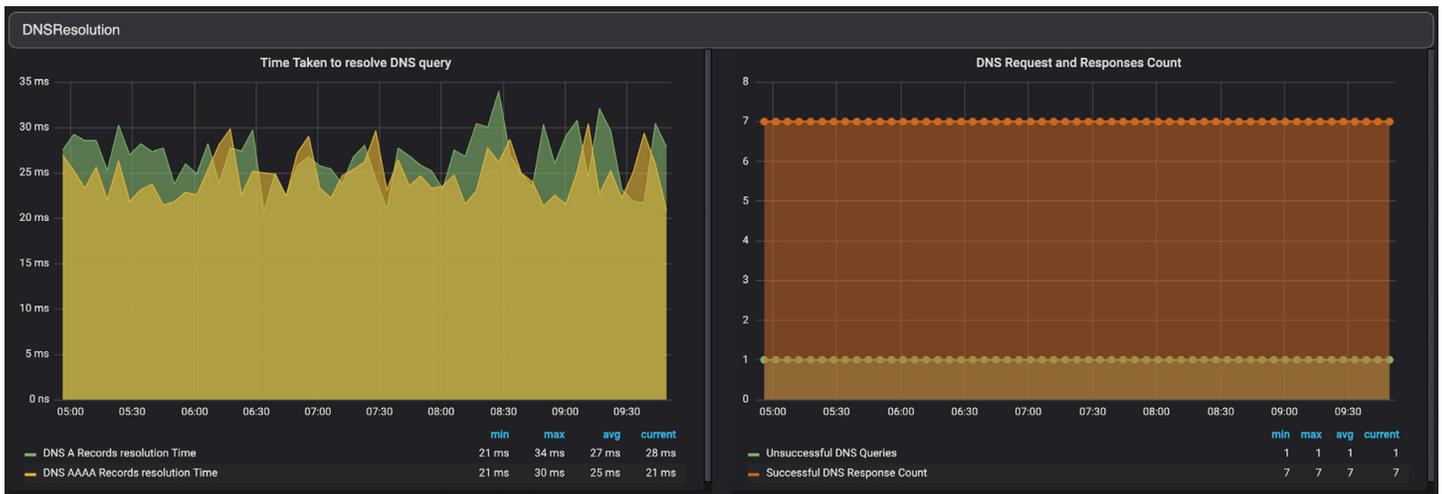


Figure 6: Benu BOSS DNS Response Time Displays

Summary

Benu analytics provides customers with the information they need to effectively manage and monitor their systems to achieve their service goals. These insights help prevent costly customer site visits, empowering network administrators to get immediate visibility into network and client performance. Additionally, with BOSS, SLAs are easy to monitor, manage, and report on. Such reports can be used to demonstrate SLA compliance. By adhering to SLAs, managed WiFi service providers can not only charge premium fees, but they can differentiate themselves as proactive in stark contrast to other more reactive competitors.

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.