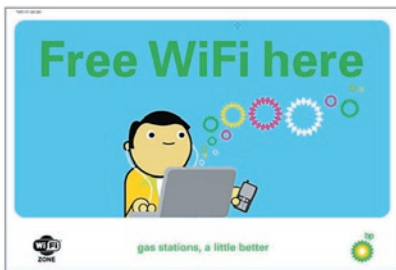# Smart Hotspots

HarborLink
LAND · SEA · AIR

HarborLink Network Uses Smart Wi-Fi to Monetize Large-Scale Hotspot Deployments

HarborLink Network, Ltd. (HarborLink), a national provider of hotspot access, integration and network management services, had a real opportunity. One of its clients, BP North America, wanted to begin offering free Wi-Fi services across 9,000 gas stations and truck stops throughout the U.S.

Committed to building *"a little better gas station,"* BP North America wanted to develop and offer innovative new services such as giving customers convenient, reliable and free Wi-Fi connectivity. With 60 percent of its outlets having some kind of food service. BP also wanted to localize and provide customer-specific content about products, promotions and other items of interest to patrons.

For BP-branded marketers (eg. franchisees or jobbers), a free Wi-Fi service meant attracting more customers that would stay longer - enabling new sources of revenue through promoting activities, items, food and other services at each gas station.

HarborLink Network developed a turnkey Wi-Fi package for BP North America and its franchisees to offer free Wi-Fi services at retail gas outlets.

BP provides a complete promotional package with items such as this "Yard Card" to franchisees interested in offering Free Wi-Fi at their gas stations.

But building a massive hotspot network isn't as easy as just plugging in a Wi-Fi access point and walking away.

HarborLink needed a way to cost-effectively manage, monitor and upgrade thousands of remote Wi-Fi access points (APs) with virtually no human intervention.

And because retail gas outlets have no IT support, the solution needed to be robust, affordable and ultra-easy to deploy (plug and play in under 3 minutes). BP wanted to offer BP branded marketers a turnkey Wi-Fi package that would pay for itself in a matter of months.

"Vanilla Wi-Fi, and even a number of enterprise Wi-Fi solutions, just weren't up for the task," said Rick Tangeman, president of HarborLink Network. "We needed a carrier-class Wi-Fi system with exceptional coverage and remote management capabilities at a compelling price point."

Each retail gas outlet was equipped with a Layer 2 broadband satellite or DSL connection. According to HarborLink, this made remote management difficult.

"With the existing flat, L2 topology, we were unable to 'punch holes' in the network to manage in-store access points," said Travis Tangeman, chief technical officer at HarborLink Network. "Solving this problem would have required us to deploy an expensive router at each location and paying the broadband provider a monthly service fee. And managing these devices using SNMP would be an inefficient, two-way polling process that wouldn't scale for thousands of locations. We needed a simple, yet elegant solution to this problem."

Each remote AP needed to automatically and periodically contact the Wi-Fi management system at HarborLink's network operations center (NOC) in Dayton, using Web-based protocols over the broadband network.

COMPANY OVERVIEW

Founded in 1999 and headquarted in Dayton, Ohio, HarborLink Network is a national provider of hotspot, access, integration and network management services.

REQUIREMENTS

- Advanced Wi-Fi APs for thousands of remote hotspot locations
- Simple and robust remote management of Wi-Fi devices and services
- Automatic redirection of client sessions to remote authentication domains and Web servers
- Reliable signal coverage
- Plug-and-play installation of Wi-Fi AP in under 3 minutes
- Multiple SSIDs
- User thresholds per SSID
- Detail reporting and event information
- Affordable solution that eliminates the need for additional VPN equipment

SOLUTION

- Ruckus ZoneFlex 2942 Smart Wi-Fi APs
- Ruckus FlexMaster Remote Management Wi-Fi Platform

BENEFITS

- Streamlined Wi-Fi hotspot CAPEX and OPEX
- Turnkey Wi-Fi system that can be self installed in minutes by retail outlet
- Elimination of manual management of Wi-Fi devices
- Reliable signal and ubiquitous coverge
- Adaptable Wi-Fi signals allow reliable coverage within hostile RF environment

Ruckus
WIRELESS

Running a VPN tunnel from each remote device in thousands of locations was an option. But this approach would be extremely cumbersome, complex and cost prohibitive, requiring extra gear at each gas station.

After evaluating a number of Wi-Fi systems, HarborLink standardized on the Ruckus ZoneFlex 2942 802.11g Smart Wi-Fi AP and FlexMaster Wi-Fi management platform.

SMARTER HOTSPOTS TO THE RESCUE

"This was the only carrier-class Wi-Fi system we could find designed for more sophisticated hotspot deployments but still affordable and simple to use," said Tangeman.

Using the ZoneFlex 2942, HarborLink created a turnkey Wi-Fi package that could be sent to each outlet to install in a matter of minutes. Prior to distribution, HarborLink pre-configures each Ruckus Smart AP with the requisite security, user and management parameters.

"Though this is a very sophisticated system that does a lot, we needed to make it simple enough so we could mail a Wi-Fi kit to a franchisee and have them plug it in and turn it on without doing anything else," Tangeman commented.

With Ruckus ZoneFlex system, APs automatically connect to the remote FlexMaster management system to update status and download new versions of firmware upgrades and configuration changes without any human intervention. This eliminated the requirement to purchase and deploy VPN equipment for each remote site.

With ZoneFlex and FlexMaster, standard Web ports are used for management and control information between Ruckus APs at remote sites and HarborLink's central NOC.
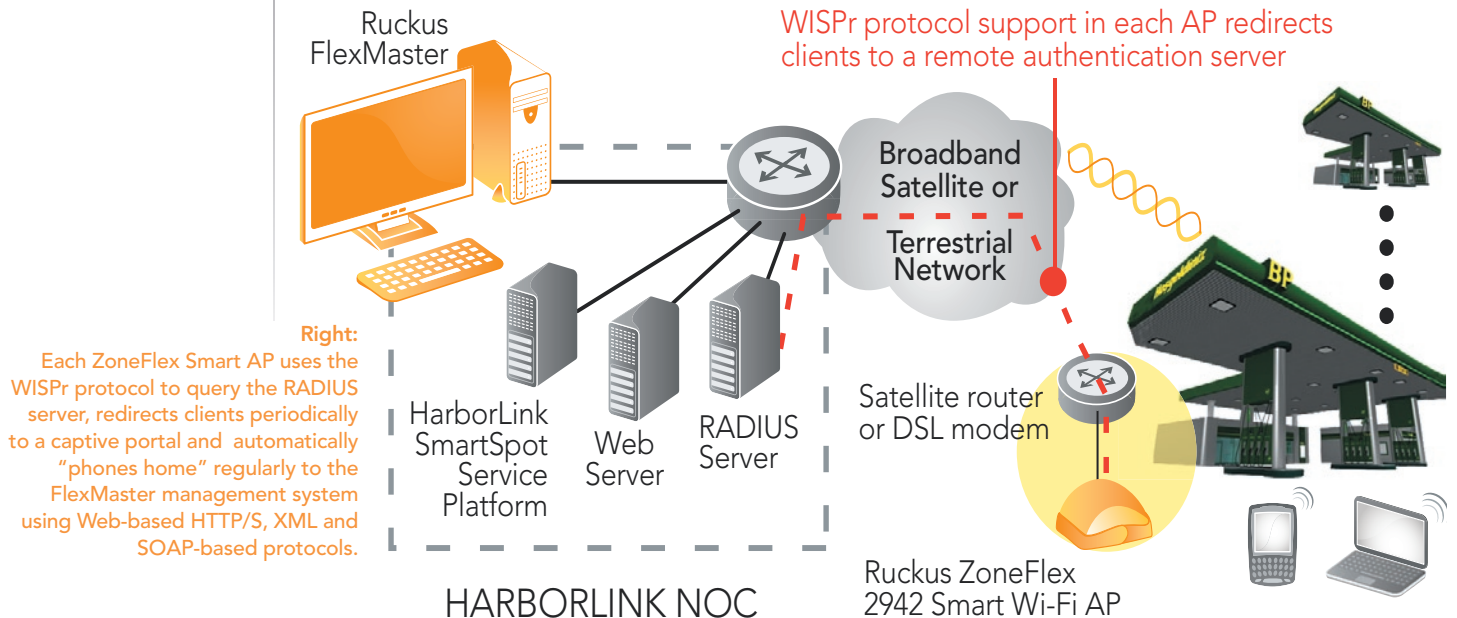
At the edge of the network, ZoneFlex APs let HarborLink control access to the free Wi-Fi service so users can't access local resources or the Internet prior to accepting terms of use and being authenticated to its centralized system.

The initial response from BP branded marketers has been positive. "We're always looking for ways to attract new customers and to keep customers here longer," said John Strickland, Jr., owner of Wayne Oil, a BP franchisee. "But the thing that really astounded us was how simple and easy it was too install. We literally took it out of the box, powered it up and plugged it into our network and in less than two minutes we were surfing the Internet."

Strickland noted that being able to provide connectivity is increasingly important to customers now equipped with a myriad of Wi-Fi enabled devices. "This only adds value to our business at a very, very low cost of entry."

HOW IT ALL REALLY WORKS

When a client associates with a Ruckus ZoneFlex AP, traffic is redirected to a remote Web server within the HarborLink NOC - through the use of the WISPr (Wireless Internet Service Provider roaming) protocol integrated in each Ruckus AP.

Ruckus FlexMaster

WISPr protocol support in each AP redirects clients to a remote authentication server

Broadband Satellite or Terrestrial Network

Satellite router or DSL modem

Right:
Each ZoneFlex Smart AP uses the WISPr protocol to query the RADIUS server, redirects clients periodically to a captive portal and automatically "phones home" regularly to the FlexMaster management system using Web-based HTTP/S, XML and SOAP-based protocols.

HarborLink SmartSpot Service Platform

Web Server

RADIUS Server

HARBORLINK NOC

Ruckus ZoneFlex 2942 Smart Wi-Fi AP

Smart Hotspots

Left:
Once users successfully authenticate, the Ruckus ZoneFlex 2942 redirects clients to the HarborLink SmartSpot Service Platform that provides customized and/or localized content.

A first step toward standardizing hotspot authentication WISPr is a protocol from the Wi-Fi Alliance that allows users to roam between wireless internet service providers. WISPr addresses how to authenticate users via the Universal Access Method (UAM), a browser-based login at a captive portal hotspot. It requires that RADIUS be used for AAA and defines the required RADIUS attributes.

Once redirected, users are presented with a terms and conditions page. This information is then passed back to the RADIUS server through the ZoneFlex 2942. Upon successful authentication, the Ruckus ZoneFlex 2942 redirects the user to HarborLink's SmartSpot engine, a service platform that provides accounting, advertisement and content insertion.

Constant communication between the ZoneFlex 2942s, using WISPr, and the remote RADIUS server tells the AP the status of each client session.

HarborLink's SmartSpot platform then displays a landing page with custom content, and the client is now free to surf the Internet.

With WISPr, the ZoneFlex 2942 also passes location attributes to HarborLink's service platform which periodically redirects clients to custom content based on geography so retail outlets can promote special offers, discounts and other amenities. Franchisees can now control what content their customers see.

With the ZoneFlex APs, HarborLink can also set user bandwidth thresholds per SSID to ensure user fairness. The ZoneFlex 2942 also provides local, Layer 2 client isolation to ensure unauthorized access to local subnet resources.

With the Ruckus ZoneFlex system and FlexMaster, HarborLink has been able to give its customers a compelling, low-cost service that brings new revenue and provides unique differentiation. HarborLink also plans to use the Smart Wi-Fi platform to offer digital signage services where Ethernet cabling might not exist.

"Combining a best-of-class AP with robust, scalable remote management opens the world to a whole new set of hotspot services that, until now, just haven't been possible without a lot of pain and anguish."

"Wi-Fi is by far the most economical and pervasive technology for next generation hotspots services," said Tangeman. "Ruckus Wireless has made huge advances in making Wi-Fi much more robust, reliable and affordable - moving it well beyond merely a technology of convenience."

"Many forward-thinking retailers are looking at Wi-Fi as a compelling and economical way to offer and promote new services.

Combining a best-of-class Wi-Fi access point with advanced remote management capabilities opens the world to a whole new set of hotspot services and business models that, until now, just haven't been possible without a lot of pain and anguish."

Rick Tangeman

President
HarborLink Network