

Washington State Ferries Provides Wireless Over Water ... with Siemens HiPath Wireless Solution



Customer Profile

Washington State Ferries operates the largest ferry system in the United States, serving eight counties in the State and a province in Canada. The ferry system has ten routes and 20 terminals that are served by 29 vessels.

Ferries in Washington state are a way of life for people in the area; every weekday morning more than 75,000 regional residents commute to work or school aboard the State Ferries. The ferries basically represent major moving highways.



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Recognizing that wireless consumer technologies are enabling commuters to be more productive during their travel times, the State Ferries system wanted to provide this amenity to its customers.

Washington State Ferries received a research and development grant from the federal government; the grant was also largely supported by a US Senator.

The Challenge

- Provide wireless connectivity to more than 27 million annual passengers, with a potential of 300 – 400 concurrent users per ferry.
- Ensure secure connectivity and rapid, seamless transitions between ferry terminals, parking lots and fast moving passenger ships.
- Offer passengers an easy-to-use system that does not require any client software.
- Provide access to multiple ISPs by allowing backend AAA (Authentication, Authorization and Accounting) system to operate with each unique ISP's AAA services.
- Enable wireless connections to be maintained in the event that the WAN connections become momentarily interrupted by passing ships.

HiPath Wireless Customer Benefits:

- Unprecedented wireless scalability and high availability
- Secure, seamless and continuous connectivity with fast roaming
- Support of multiple 'virtual' networks over one centrally managed WLAN
- Unique 'captive portal' allows interface to multiple ISP's

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The State Ferries had the "usual" WLAN challenges, as well as several situations unique to its business.

The easiest requirement was scalability. Like any large organization, the State Ferries needed to know that the system could handle 300 – 400 concurrent users in a timely manner. Anyone who recalls the days of slow dial-up Web access technologies understands that waiting for a connection or to send and receive a message can be frustrating and unproductive.

One of the basic promises of wireless access is to further productivity – therefore the speed of the system is invaluable for driving usage. That was the easy part. The other challenges were quite unusual.

For example, the wireless network needed to incorporate the moving ships as well as stationary parking lots and ferry terminals. Making wireless work for moving platforms involves an advanced network that requires complex switching to allow passengers to stay connected. Since the boats move rapidly, the WLAN had to provide the most seamless and fast hand-offs between access points and the central routers.

While the seamless hand-off of wireless traffic between the ferries and the ports may seem a unique application of wireless, it is not.



Washington State Ferries, with the development, deployment design and support of integrator Mobilisa, chose Siemens HiPath Wireless for its ability to provide multiple levels of service with unsurpassed scalability.

With HiPath Wireless, Mobilisa has provided a solution for maintaining a constant connection aboard the ferries as they move between land-based antennas. The system is architected to allow for deviations in the regular routes due to tides, ship rotation, weather and boat traffic.

The system also enables Mobilisa to offer wholesale access for ISPs by creating virtual networks that adapt to an ISP's AAA system and service offering.

Washington State Ferries wanted to be innovative in this space, recognizing that wireless access during commutes will soon be a "given" – regardless of the mode of transportation.

Just as drivers expect mobile phones to work while they are moving, consumers will soon expect PDAs and laptops to give them access to the Internet, regardless of where they are, their method of transportation and the speed at which they are traveling.

This ability to maintain an always-on connection while the consumer is "roaming" very rapidly among access points is vital to any high-speed transportation application.

Lastly, since the majority of the users will be consumers, the ferry system wanted to make certain its users did not need specialized software on the client side and did not force the users into connecting to one specific ISP.

As these consumers logged on to their ISPs, the State Ferries also needed a way to ensure accurate billing by tracking usage of the various ISPs by the consumers. Since the system will ultimately serve hundreds of consumers, the usage tracking needed to be complex and bulletproof.

The Solution

The State Ferries selected to work with Mobilisa, a 22-member telecommunications company located in the United States. Together, the ferry system and Mobilisa worked with a US Senator to secure a \$1 million grant from the Federal Transit Administration.

After evaluating several switch-based WLANs, Mobilisa decided Siemens HiPath Wireless was the only technology to meet the specific needs of the State Ferries system. Most significant in this decision-making process was HiPath Wireless' ability for unsurpassed seamless roaming and segmentation of the network traffic.

HiPath Wireless, which consists of the Wireless Controller routed WLAN controller and Wireless Access Points, and leverages Siemen's VNSWorks virtualization capabilities, is the market's only routed WLAN solution that facilitates data and voice communications directly over the existing Internet Protocol (IP) network.

Communications Layer 3, or the IP layer, is the underpinning of all Internet traffic; clearly, this is a well-tested and proven technology.

Siemen's VNS network virtualization capabilities provide multiple virtual subnets over one physical wireless network. This feature enables the State Ferries to segment and prioritize traffic for passengers and crew. These subnets can hand off wireless traffic amongst and between Access Points and Controllers – this is the core functionality that eliminates multiple re-authentication processes and makes seamless roaming possible.

In contrast, switch-based WLANs typically require re-authentication as users move from place to place, forcing latency upon the user and presenting potential dropped communications.

The ferries travel great distances and the Wireless over Water™ (WOW) system needs to provide a seamless connection for passengers regardless of how far they travel from port to port. In fact, some of the islands the ferries service do not have ISP service or reliable cellular service. Despite these inconveniences, Washington State Ferries wants to provide its passengers with reliable, business-quality wireless service.

As it rolls out the wireless network to its entire fleet, the State Ferries anticipate the network will need to scale to as

many as 300 – 400 concurrent users.

HiPath Wireless solutions are architected to handle the largest amounts of network traffic. The Siemens WLAN can scale to literally thousands of access points and routers. This ability to handle a heavy load of customers is vital to the success of the State Ferries wireless network.

Additionally, Siemens' Captive Portal and Walled Garden technologies address two other key requirements: the ability to let passengers connect to the ISP of choice and the ability for the State Ferries to charge for its services in the future.

Through the VNS capability, consumers will be "segmented" by ISPs. They will log on directly to their ISP's home page and be connected to their service. The "virtualization" aspect of HiPath Wireless enables the State Ferries to also "turn on" and "turn off" ISPs as needed. For example, should the State Ferries bring on a new ISP; they can dynamically offer the service to the ferry service passengers.



The State Ferries provides its passengers with reliable, business quality wireless service.

Siemens HiPath Wireless is the only solution on the market that is able to do this elegantly.

Because HiPath Wireless functions directly on Layer 3, it can communicate seamlessly with any ISP – without requiring specific programming or "work-arounds."

The Benefits

Washington State Ferries' passengers sometimes have long commutes in front of them. Passengers in vehicles are suggested to arrive at the terminal up to one hour before the ferry leaves the port.

Between the waiting time and the crossing time, many passengers want to make the most of their commute by using that time to log on to their laptops, PDAs and 802.11 enabled phones. Whether it is simply reading and sending email or actually working, commuters would like the option to work remotely – regardless of how remote the ship actually is.

Integrator Mobilisa's "Wireless over Water" project, based on Siemens HiPath Wireless, is the perfect solution for the State Ferries. When passengers log on to the system (from the parking lot or from the vessel), they are "greeted" by a home page from Siemens' Captive Portal technology. This lets the user log on, provides him or her with a choice of ISPs, and enters the user into the appropriate subnet.

The State Ferries can establish subnets by type of user – passenger or crew – and by vessel. This enables the ferry service to "turn on" and "turn off" boats as needed.

Once logged on to the HiPath Wireless system, the passenger's data traffic is prioritized (through the subnets) and seamless roaming is enabled.

As the deployment progresses, the ferry system is planning to offer credit card purchases to its customers – services and food vendors can use the wireless network to connect to receive purchase authorization.

Additionally, while the service is currently offered as a complimentary amenity, the ferry system has plans to charge for it in the future. Siemens' ability to manage subnets gives the ferry system the ability to charge users easily, with minimal administration costs.

In fact, Siemens' VNS feature enables the State Ferries to track usage and provides an easy "checks and balance" system for reconciling billing to ISPs with actual usage. This ensures that the ISP gets excellent service from the State Ferries, while it also generates revenue for both the ferry system and the ISP.

But most importantly, the system has demonstrated it can scale to the traffic demands of the passengers and meet the mobility demands associated with high-speed and remote travel.

About the HiPath Wireless Portfolio

The HiPath Wireless Portfolio provides a complete solution allowing companies to realize the benefits of true enterprise mobility. The Portfolio offers wireless handsets, access points and controllers, along with best of breed management software and professional services for planning and implementation.

Siemens' new generation of wireless networking solutions for the enterprise deliver more than just data connectivity without wires. Wireless 'untethers' your users, offering innovative new ways of doing business:

- integrated vertical solutions providing 'always on' access to corporate data and true user mobility across the enterprise through seamless roaming
- presence and location-aware real-time applications such as HiPath OpenScope and HiPath ProCenter Agile
- converged voice and data networks providing Voice over Wireless LAN, offering productivity with a lower cost of ownership compared to proprietary wireless voice solutions
- a wireless LAN architecture designed from the ground up for flexibility, scalability, manageability and enhanced user services.

HiPath Wireless Portfolio V3.0

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