

ERICSSON ENABLES BROADBAND OVER POWER LINE FOR NORTH AMERICAN ELECTRIC COMPANY

North America



The SmartEdge Multi-Service Edge Router helps electric companies address the technical and operational challenges they face when offering broadband over power lines. The service creation capabilities enable a broad range of services from high speed Internet access to IPTV and personalized video-on-demand.

Ericsson worked with a regional electricity transmission and distribution company to deliver broadband over power lines (BPL). The service offers high-speed Internet access with speeds of up to 50 times faster than dial-up and includes value-added services such as multiple email accounts, spam blocking, and antivirus protection. With its plans to offer voice and video applications, the company required a platform that could manage multiple services and ensure the delivery of those services given the challenges of the BPL environment. The SmartEdge® Multi-Service Edge Router (MSER) was chosen because of its combination of bandwidth control for individual subscribers and services and industry leading system resiliency. The new broadband infrastructure also has the potential to enable smart grid applications for electric grid monitoring and preventative maintenance, which may improve the delivery of reliable electricity.

Situation

As BPL technologies mature and develop, more and more electric utilities around the world are beginning to offer broadband services such as high speed Internet to their customer base. Ericsson worked closely with a North American utility and a partner to provide access speeds similar to DSL technology to capitalize on this promising technology. In addition to BPL for Internet access, the customer also has plans to offer IPTV, VoIP, and smart grid applications in the future.

Unlike traditional broadband network operators, the customer faced some unique challenges specific to delivering BPL. The shared nature of power lines meant that end user bandwidth was also shared, meaning that one discourteous user could consume an inordinate amount of bandwidth. The customer also realized that there was no connection to the physical or geographic boundaries, making the distinction between the LAN and WAN irrelevant.

These challenges significantly impacted the end user's experience and were critical to the success of a BPL service. Both DSL and cable modem services now provide a predictable broadband service with consistent performance. Any successful BPL offering would need to live up to this minimum performance standard.

The customer planned to implement smart grid applications in the future to handle automatic meter reading, real time demand monitoring, and detection and

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diagnosis of events at capacitors and regulators. This type of application required a network with maximum uptime.

To overcome these challenges, the customer realized a centralized subscriber control and service creation point was required to enable scalable BPL services. This service creation framework leverages the built in bandwidth throttling capability of TCP/IP through the SmartEdge platform's advanced subscriber management capabilities to control the bandwidth usage of discourteous end users.

Solution

Recognizing that the BPL network required advanced subscriber awareness and service control capabilities, the customer selected the SmartEdge MSER. With its granular subscriber control and service creation capabilities, the platform allowed the customer to control each individual broadband user's bandwidth usage. This ensured that each end user received their fair share of bandwidth, resulting in a positive end user experience.

The redundant hardware, software, and modular operating system provided the resiliency for future services such as IPTV, VoIP, and smart grid applications. Even in the event of a hardware failure, the SmartEdge platform continues to forward traffic, which results in a network with maximum uptime.

Centralized Subscriber Control

Due to the shared nature of power lines as a broadband medium, all the users being serviced broadcast their traffic to everybody else. Unlike Wi-Fi or Ethernet, a BPL network cannot be segmented by using different radio frequencies or implementing VLANs.

The customer utilized the SmartEdge platform's centralized subscriber control capabilities to ensure that the correct network and QoS policies were applied from the moment an end user came on to the network. Once authenticated, the appropriate QoS policies were applied to an individual user's traffic. This centralized approach ensured that the bandwidth and QoS requirements could support the services being offered.

Centralized Service Creation

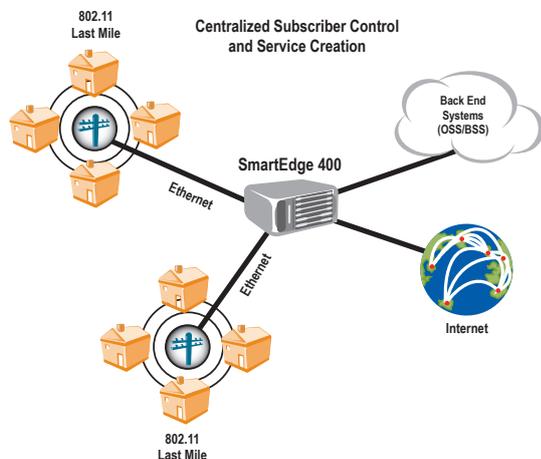
While planning for future services such as IPTV and VoIP, the electric utility customer realized that the SmartEdge platform's centralized service creation approach was much more scalable than those of other vendors. Centralized service creation meant that the network was subscriber aware and automatically provisioned and allocated the necessary bandwidth for new services, such as IPTV.

Other approaches that were considered involved the provisioning and managing of separate VLANs for every service to which the end user subscribed. From a service perspective, the customer quickly realized that this was not a scalable approach.

Carrier Resiliency for Smart Grid Applications

In addition to next generation IP services, the electric utility also has plans to implement smart grid applications. These applications would allow the power operator to increase the safety and efficiency of their electric network. With potential applications such as remote load control, tariff switching, and fault monitoring and diagnosis, these applications would become critical to the day-to-day operations of the company.

Understanding the importance of these applications, the customer selected the SmartEdge platform for its carrier class reliability and resiliency features. The modular operating system allows for upgrades without service interruption similar to a Class 5 PBX. In addition, the platform features redundant hardware and software for maximum reliability.



Benefits

The SmartEdge platform enabled the North American electric utility customer to provide high speed BPL services. The combination of subscriber control, service creation, and carrier class reliability allowed the customer to design BPL services that provided a positive end user experience. These capabilities also laid the foundation for future services that might generate additional revenue and improve the operations of the utility itself. The customer was able to authenticate and control the individual bandwidth usage of each end user to ensure that a discourteous end user did not use a disproportionate amount of bandwidth. This was critical given that electric lines are a shared broadband medium and the overall bandwidth initially available is more limited than with traditional data networking technologies.

The centralized service creation capability also created a network that could deliver any number of future services such as IPTV, Video-on-Demand, and VoIP in an operationally scalable manner. To enable such services, the SmartEdge platform ensured that the necessary bandwidth and QoS policies were in place for each individual end user.

The carrier class reliability also provides benefits to the customer with reduced down time for the BPL service. As

electric utilities begin to introduce broadband services, a positive end user experience is critical to form a positive first impression.

With the advancements in BPL technology, the customer can now become a viable competitor to the traditional broadband access companies. In addition to providing high speed Internet access, the customer can also provide future video and voice services, which may increase revenue.

In addition to these new IP services, the customer looks forward to providing safer and more efficient electricity service through the implementation of advanced smart grid applications.

Highlights

Customer

Based in North America, the company is a regional leader in the transmission and delivery of electricity to its customer base. They have a number of subsidiary companies that complement their core electric utility business.

Customer Objective

The technical and operational challenges for BPL required service creation capabilities above and beyond what was available in traditional broadband networking equipment.

Ericsson Solution

The company selected the SmartEdge MSER for its service creation capabilities, which allows for innovative broadband services and overcomes the challenges of providing BPL.

Customer Benefits

Implemented a scalable broadband service architecture that can provide flexible broadband services with plenty of room for future growth into next generation services such as IPTV and VoIP.

Applications

Broadband over Power Line (BPL)