

Broadband Triple Play Services



Pioneer Uses Smart Wi-Fi to Slash In-Home IPTV Deployment Costs, Speed Subscriber Installs

As one of the most advanced IPTV providers in the U.S. since launching its service in July 2004, Pioneer Telephone wanted to fix some problems at home. Having signed up more than 5,000 IPTV subscribers, Pioneer was finding that the in-home deployment costs and installation times were limiting the number of subscribers it could bring online each day.

The third-largest telephone cooperative in the United States and a leading provider of IPTV services throughout Oklahoma, Pioneer Telephone operates one of the more advanced broadband networks in the country. Pioneer's broadband network spans more than 72 exchanges through 11,000 miles of fibers providing high-speed ADSL2+ and IPTV services.

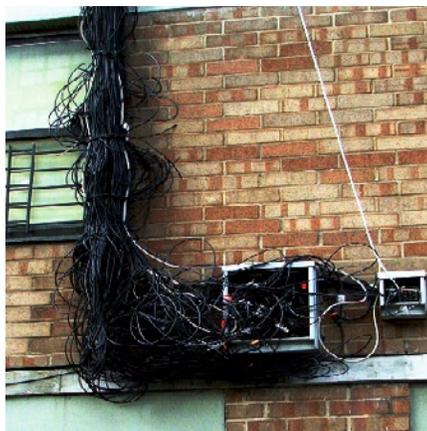
Over its network, designed to provide IPTV services to some 33,000 homes, Pioneer provides 20 Mbps of capacity, delivering over 150 channels of MPEG-2 compressed multicast IPTV. Pioneer's service delivers three concurrent streams of compressed standard definition video to support three TVs, along with data.

Because next generation broadband services use the computer line coming into the home to deliver digital voice, video and data, distributing this traffic around the home has become a major challenge. This multimedia traffic is typically encapsulated in the Internet Protocol (IP) and requires a reliable computer network within the home. The broadband connection often enters the home through the office or basement, far away from televisions and other multimedia devices. As a result, broadband providers are forced to wire or cable subscriber homes at great expense to ensure the highest quality of service.

From the time of each service request, Pioneer had a five-day installation timeline. This includes two truck rolls, one for line provisioning and conditioning and the other for in-home cabling and IPTV installation. Until now, Pioneer has budgeted two field technicians and 3 to 4 hours of time to conduct a complete rewiring of the subscriber's premise using Category 5 Ethernet cabling. This process includes carefully placing and concealing cables throughout attic spaces, fishing the cables through walls, installing Ethernet jacks and configuring set top boxes. This process severely limited Pioneer to a maximum of three installations a day.

"The in-home piece of the IPTV delivery chain is one of the most critical, and it often goes overlooked," said Scott Ulsaker, video business manager for Pioneer. "On a large scale, requiring 3 to 4 hours for two technicians to bring up a single subscriber can't be justified from a cost or resource perspective. Subscribers aren't keen, in the first place, to have us re-wire their homes. A wireless solution is ideal for Pioneer and our customers, but our experience with consumer-grade Wi-Fi was unacceptable."

Consumer-grade Wi-Fi is an unstable medium and has been developed for data applications that are tolerant of delay and latency. Conventional Wi-Fi technology broadcasts Wi-Fi signals in all directions



COMPANY OVERVIEW

Headquartered in Kingfisher, Oklahoma, Pioneer Telephone is the third-largest U.S. telephone cooperative and leading provider of IPTV serving the greater part of Oklahoma through 72 exchanges. Pioneer has over 140,000 customers throughout 30 cities in Oklahoma. Pioneer has deployed 11,000 miles of fiber over which it provides ADSL2+ connectivity to subscribers' homes.

REQUIREMENTS

- Reduce number of technicians and truck rolls required to install IPTV/triple play services
- Need plug-and-play in-home multimedia distribution solution
- Increase number of subscribers turned up per day
- Single platform to support voice, video and data
- Remote management of in-home distribution system
- Auto configuration
- Reduce install times
- Mitigate in-home RF interference

SOLUTION

- Ruckus Wireless MediaFlex router and adapters

BENEFITS

- Reduced cost by 75 percent
- Plug-and-play deployment
- Cut install times from 3.5 hours (average) to under 45 minutes
- Eliminated a truck roll
- Allows Pioneer to triple the number of subscribers turned on each day
- Automatically steers Wi-Fi traffic around in-home RF interference



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CASE STUDY Broadband Triple Play

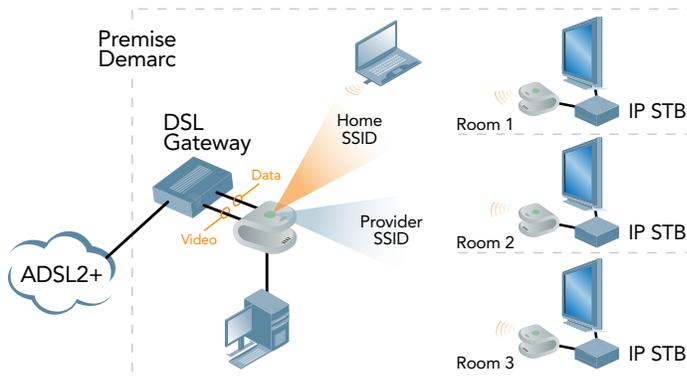
“One of the biggest obstacles facing the IPTV deployment is the high cost of wiring and the time associated with in-home installation.”

“We had never seen any Wi-Fi technology be able to mitigate interference and deliver a connection that was reliable enough to run a high definition TV stream.”

Scott Ulsaker
Video Products Manager
Pioneer Telephone

thereby limiting range and performance. Performance drastically degrades from interference of other RF devices such as cordless phones, nearby Wi-Fi networks, microwave ovens, etc., often causing packet error rates to exceed 15 percent.

In addition, the 802.11 Wi-Fi protocol handles multicast traffic as best effort UDP traffic, assigning it the minimum bandwidth available. Because IPTV traffic is multicast from Pioneer’s head end, this makes conventional consumer-grade Wi-Fi unable to support in-home distribution of IPTV. Conventional Wi-Fi products were unable to dedicate bandwidth to IPTV traffic or receive acknowledgements from end devices that IPTV traffic was successfully received. Additionally, there was no way for these systems to know the state or condition of the Wi-Fi link or take action if and when the link state changed.



Other surprising issues that Pioneer faced with its IPTV deployment using Cat 5 Ethernet dealt with interference from home appliances, washing machines, tread mills, power tools and other devices as well as the in-house power wiring - all of which caused troubleshooting problems. Finally, moves, adds and changes in the home require another truck roll.

Ulsaker noted that, from a business perspective, Pioneer’s goals have been to eliminate one of two truck rolls, cut home installation times and be able to triple the number of subscribers each day that could be brought online.

ENTER SMART WI-FI

Ulsaker and Pioneer then turned to smart Wi-Fi technology from Ruckus Wireless. “Because this is a production IPTV service, we needed to ensure that the user experience was not only predictable but the highest quality possible. Ultimately, if the end user experience is poor, it reflects negatively on the service,” said Ulsaker.

Pioneer began a rollout of the Ruckus MediaFlex system to IPTV subscribers, watching carefully how the system behaved in the face of interference and varying environmental conditions. The Ruckus MediaFlex router was attached to a DSL gateway through an Ethernet connection with a unique, encrypted SSID pre-programmed for the IPTV service. Ruckus MediaFlex adapters are attached to set top boxes through an Ethernet connection.

The Ruckus MediaFlex system has allowed Pioneer to eliminate one truck roll and reduce installation times from 3.5 hours to under 45 minutes, thereby tripling the number of subscribers brought online each day. And users can now enjoy location-free TV while surfing the Internet.

Because the Ruckus system integrates a multi-antenna array that is automatically software controlled, installers don’t need to aim or point the system in any direction. Ruckus BeamFlex technology automatically determines the best signal path for any given traffic type to each end device. If

that signal path experiences interference or poor quality, the system dynamically steers the traffic over a different antenna pair to ensure non-stop, high quality video.

The Ruckus system was able to uniquely support Pioneer’s multicast IPTV traffic through its SmartCast technology. SmartCast, a traffic inspection, classification and QoS engine, identifies multicast IPTV traffic, prioritizes it and directs it to the destined end device using advanced IGMP snooping techniques. End devices are forced to acknowledge packet receipts, allowing the system to track link conditions to a given end point.

