Whitepaper

Leveraging Applications to Improve Retention and Increase ARPU

Background

As competition heats up in the residential broadband market, **customer satisfaction and retention become paramount.** Speed and price can no longer be the primary focus for differentiation, as broadband services have become highly commoditized and competition based on price alone will erode already thin margins and create an unsustainable race to the bottom. Rather, broadband service providers must bring unique value to their customers through reliability, unmatched customer support, and value-added services that are easy to access and can't be found elsewhere.

Part 1: The Value of Bundles

Over the past decade, bundled services (i.e. triple play/quad play) have been touted as the key to broadband success. By packaging voice, video, and data services together, service providers can streamline account management for consumers (i.e. one bill to pay), as well as reduce customer churn compared with their pure-play counterparts.

A 2009 study from Parks Associates found that service bundles did boost customer satisfaction (Figure 1). As shown, the number of services a subscriber has directly translates into satisfaction levels — **more services means higher satisfaction**.

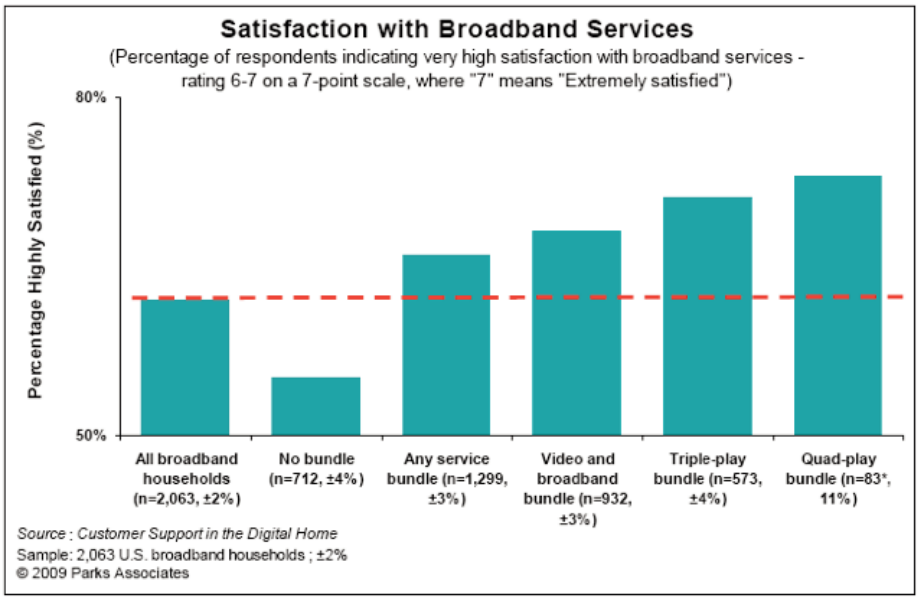


Figure 1

Parks Associates also found that satisfaction was essential to subscriber retention:

- "A highly **satisfied** broadband subscriber is **46% less likely** to churn"
- "Highly **dissatisfied** customers are **384% more likely** to leave their current broadband provider"

Bundled services deliver another strategic advantage to providers — an increase in average revenue per user (ARPU). As shown in Figure 2, published data from U.S. provider Enhanced Telecommunications Corporation, **revenue per subscriber INCREASES with the number of services.**

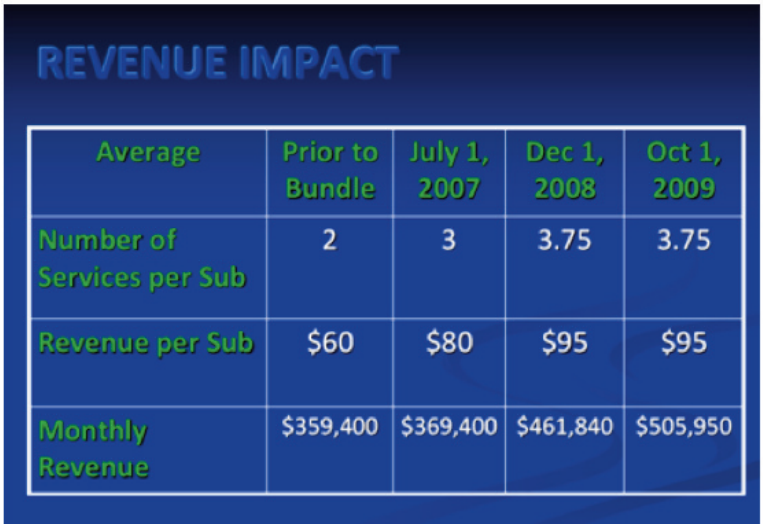


Figure 2
Source: Enhanced Telecommunications Corp, Nov 2009

Bundled Applications

Service providers can further differentiate their offerings through value-added applications and services (particularly as voice/video/data packages become more commonplace in the market). Enhanced entertainment, home control, and technical support applications create new revenue opportunities and increase customer satisfaction. Specific examples of value-add applications include:

- Access to exclusive online video or gaming content
- Home monitoring and security (i.e. monitor web cameras from the TV or laptop)
- Home automation (lights, heat, appliances)

- Video conferencing
- Online backup services
- Personal media management (photos, videos) and storage
- Enhanced technical support (chat, remote troubleshooting of devices and home network)

Parks Associates examined consumer interest for a range of these value-added services, as seen in Figure 3.

Consumers favored: premium technical support, online file backup services, broadband home security services, and anti-virus services.

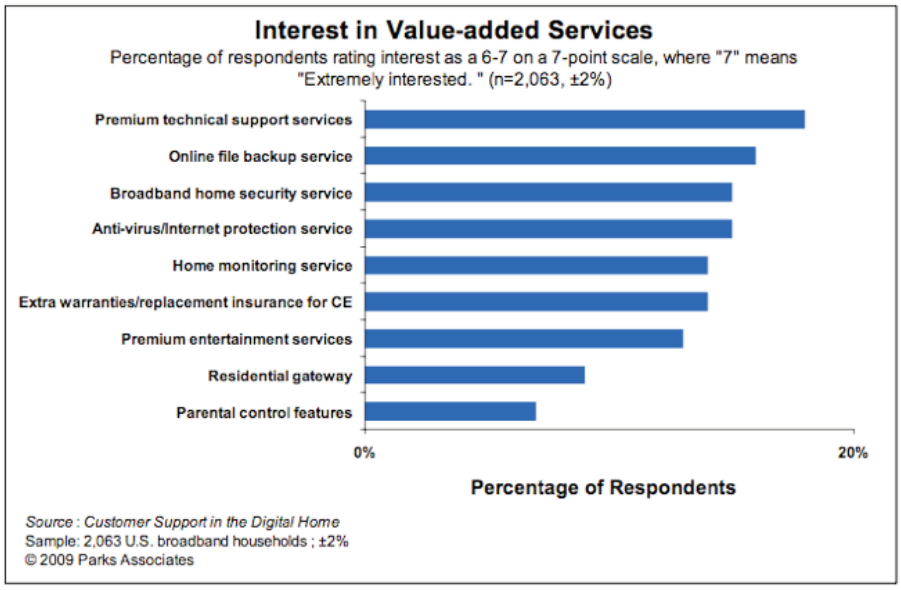


Figure 3

We suspect that as enhanced entertainment and lifestyle packages become more widely available, the increased familiarity with these applications will also fuel greater interest.

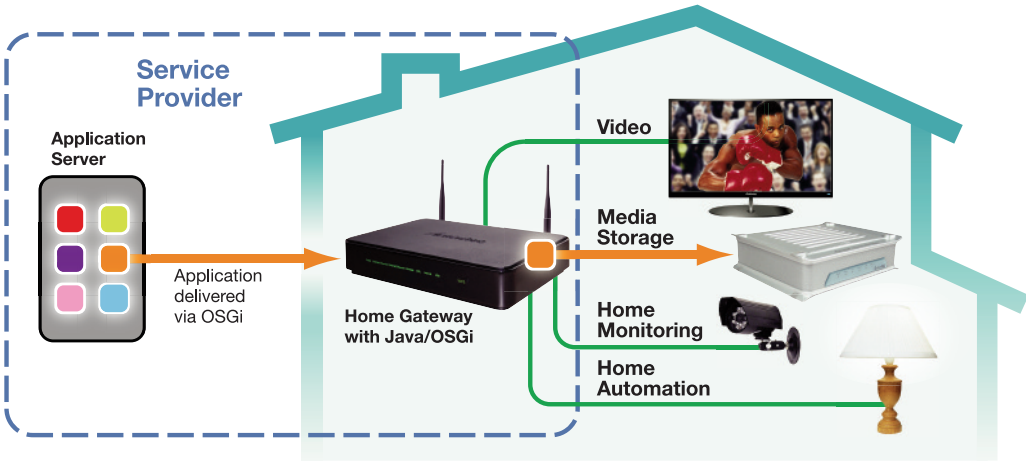
Part 2: Deploying Applications and the Connected Home

As the number of applications increase, service providers will need to find a streamlined way to manage them across their subscriber base. Traditionally, app management has presented a dilemma for providers, as there has been no single standard to control devices, services, and applications in the home. This fact has forced broadband subscribers to juggle multiple home gateways in their home, and forced service providers to support multiple dedicated protocols in order to control each device, service, or application deployed in the home. As a result, the increase in ARPU is quickly offset by the increased cost and complexity associated with this patchwork of devices and protocols.

Universal framework: Java/OSGI

A universal framework for home applications tames the complexity. Applications from different application developers can be delivered on the same gateway, and applications can be dynamically enabled/disabled with ease.

This unified architecture makes the potential of a connected home a reality, as providers can now bring a full range of applications from a vibrant and creative developer ecosystem into the home. Two technologies enable this standard framework: Java and OSGi.



Java

As a platform independent language, Java enables the same applications to be run on cell phones, set top boxes, and home routers. This 'write once-run anywhere' model lowers the time and costs associated with application development. Java opens up a much broader universe of potential applications, where CPE manufacturers, service providers, and 3rd party vendors can all create revenue-generating applications. **And hundreds of thousands of applications are currently available in Java format.**

Another benefit of Java is the ability to remove old or unused applications automatically, through a feature called 'garbage collection.' When a user no longer uses a specific application, it is automatically purged from the device's main memory. This feature improves memory efficiency and simplifies dynamic memory management.

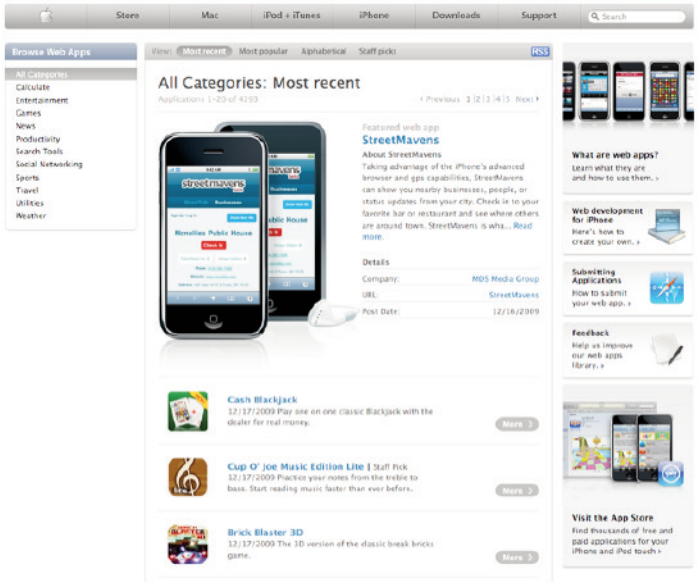
OSGi

OSGi is the universal middleware for Java that helps service providers manage the distribution of Java applications on the home gateway. Service bundles (applications) can be dynamically loaded and unloaded onto the gateway without having to upgrade the CPE firmware (operating system and drivers), reboot the router, or restart the OS. Because applications are dynamically loaded and unloaded, OSGi ensures efficient CPE and memory utilization — resources are consumed only by the applications that are actually running at a given time.

Think of OSGi as a coin-operated jukebox for Java apps. This 'application jukebox' dispenses applications to the home gateway just like a jukebox loads, plays, and unloads CDs. **Service providers can dynamically turn on/off applications based on subscriber orders**. And OSGi can help manage how an application can be consumed — whether it's one-time use, unlimited use, or subscription. With OSGi, broadband service providers can offer the smooth and uncomplicated end user experience that will encourage future application orders.

Example: Apple's App Store for the iPhone

Apple's App Store for the iPhone/iPod touch exemplifies the incredible popularity and potential of an easy-to-use application model and a robust third-party developer network. As of November 2009, the App Store boasted more than **100,000 applications and 2 billion downloads**.



How it works: Implementing Java/OSGi architecture for residential broadband

The app model for the connected home can be quite similar to that used for cell phones and mobile devices. The broadband service provider needs to host a server that stores all the available Java applications, in addition to implementing an ordering/billing mechanism for charging customers.

Subscribers can browse for applications on their computer or television. Once they select and pay for their application, the app will be automatically downloaded to their home router/gateway. And once downloaded, the application will begin to run (without any

kind of firmware load). The entire process can be completed within minutes — giving subscribers instant access to their new application. Multiple applications can run on the router simultaneously, limited only by the hardware capabilities (i.e. available RAM, processing power) of the device. Applications can be developed by the service provider, CPE vendor, as well as by third party app developers.

Conclusion

In the increasingly competitive broadband market, value-added applications can help improve customer satisfaction and retention, along with increase ARPU. By leveraging the universal framework of Java/OSGi, service providers can streamline application management, dynamically enabling/disabling different applications with ease. Standard protocols open the home broadband platform up to wide range of applications and a vibrant developer ecosystem — so service providers can offer a diverse portfolio of enhanced communication, entertainment, security, and home control applications.

About Actiontec

Actiontec Electronics develops broadband connectivity and broadband-powered solutions that simplify and enrich the digital life – delivering a unified experience that encompasses communications, entertainment, home management, and more. Actiontec offerings range from the market's broadest selection of IPTV-capable broadband home gateways for bringing IP-based video services into the home, to DSL modems, wireless networking devices, routers and digital entertainment devices. The company's carrier-class products are easy to install, manage, and use, and are sold through retail channels and broadband service providers. The company is committed to protecting the environment through energy efficient products and other green-friendly practices. Founded in 1993, Actiontec is headquartered in Sunnyvale, CA, and maintains branch offices in Colorado Springs, CO; Shanghai, China; and Taipei, Taiwan