MAXIMIZING REVENUE WITH MULTIPLAY NETWORKS

Building a Services-Aware Network

Challenge

Offering additional revenue-generating services requires significant investment to extend fiber closer to the subscriber.

Solution

A "services-aware" multiplay network which dynamically adjusts the bandwidth available to each subscriber individually, allowing the operator to sell additional services without requiring more bandwidth to each subscriber.

Benefits

- Additional revenue by offering services such as gaming
- Ability to offer broadband service tailored to the specific needs of each subscriber
- Improved protection against network attacks

Multiplay networks promise to increase revenue but need an underlying services aware architectural approach that will deliver each service with the required quality. A services-aware architecture requires an intelligent, open, flexible network which allows each subscriber to easily create a self-provisioned customized service offering from a palate of dozens of services.

In short, a services-aware network dramatically increases the potential revenue per subscriber while increasing satisfaction, thereby reducing churn and associated costs.

The Challenge

The key to driving revenue is offering a wide selection of services which move beyond transporting voice, television and Internet traffic on a single broadband connection. The new broadband offering must combine a wide range of differentiating services including:

Existing "single play" business and residential applications such as voice, television, Internet access, (virtual) leased lines and VPNs.

Networked applications which provide a better user experience than non-networked applications. Video on demand (VOD) replaces video rentals, and music services replace CDs. Both offer instant gratification by providing flexible access to an unlimited collection. Customized ringtones for telephones enable subscribers to instantly know who is calling.

Integration of existing applications. Examples of enhancements to traditional applications which can generate revenue include email and instant messaging from your TV, blogging with friends about the show you are all watching, having the DVR automatically begin recording when the phone rings, selecting electronic coupons from the TV electronic programming guide and purchasing products featured on programming.

New applications. Examples of new applications which can generate revenue include hosted gaming, video telephony, sharing photos and personal video with friends and family, accessing content stored on your home media center while traveling, home monitoring and network-based storage.

Many network architectures limit the number of services which can be offered to three or four—the traditional "triple play" or "quad play" offerings. Bandwidth is pre-assigned to each service, and every subscriber has exactly the same service choices. This simplifies service provisioning but removes the ability to easily customize service bundles. But it does not enable a service provider to easily add new applications, since bandwidth must be reallocated across all applications and all subscribers. In addition, pre-allocating bandwidth limits the total number of services which can be supported, reducing the ability of the subscriber to create a truly customized bundle.

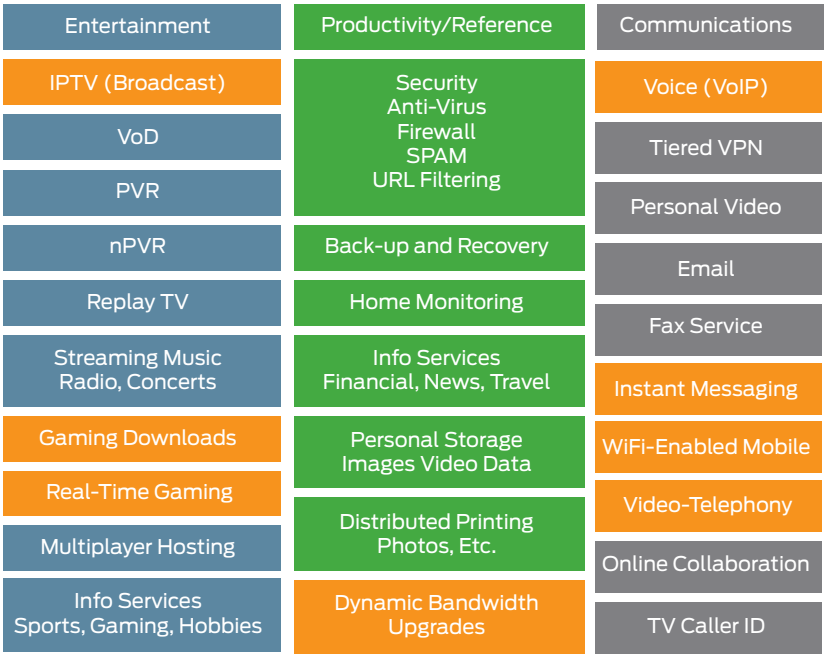

Figure 1: A broad view of the applications which should be supported by the network.

Juniper Networks® Multiplay Solution

A Juniper-based services-aware network has the flexibility to easily support dozens of services in any mix. Each subscriber is able to create their own customized package.

Offering this level of customization requires network intelligence to assure delivery of each service. Bandwidth must be dynamically allocated to each application upon initiation, such as turning on the set-top box. In addition, bandwidth allocations may change within an application session, such as when a subscriber is flipping between channels, or when backing up a server across a VPN connection. Table 1 illustrates the dynamic "on-demand" bandwidth allocation provided by services-aware networks.

In addition, the network must be flexible enough to ensure high quality for each subscriber's unique service mix. If a new application cannot be supported adequately or would affect others, then the request to access this application must be denied ("sorry, can only view one HD channel at a time within your home") or modified ("the movie you requested is being sent to your PC and will begin in two minutes").

The services-aware network must rely on open standards, ensuring the ability to integrate with applications. Adapting to service requests such as viewing VOD content requires that the network work in conjunction with the application servers to understand the application's requirements and jointly decide how to deal with error conditions. The VOD system will need to request from the network a supporting path that will ensure that the user can view the VOD content with acceptable service quality. The network can check whether bandwidth can be reserved from the target server to the subscriber, and confirm to the VOD system once the path is established—or deny the request if the path does not meet the service delivery requirements.

Features and Benefits

The key advantage of a services-aware network is the ability to maximize revenue by dynamically adapting to each subscriber's unique requirements. Let's consider some typical subscribers connected to a network which offers just a few of these services:

- Greg is a road warrior with three homes and a family. He uses his cell phone extensively both in the car and at home. His teenage daughter listens to online music and frequently uses email and instant messaging. They rarely watch television, although Greg is a history buff who enjoys occasionally watching content catering to this interest.
- Yue frequently works from home at night because he works extensively with colleagues in Asia, and so subscribes to a VoIP service to minimize costs. His son frequently plays on-line games—although parental controls limit the games which he can access.
- Mary works in the office, rarely traveling or working nights and weekends. She has thrown away her DVD and CD collection in favor of on-line movies and music, and uses video telephony to talk with distant relatives.
- Dave is a techno-savvy Internet surfer and avid gamer. His mobile phone is his primary voice line.

- Allen runs a small business and uses the Internet for exchanging information with customers and suppliers. He needs high capacity access to his application service provider (ASP) for customer transactions and for data backup. His cell phone is his lifeline. He also subscribes to a security service which monitors his office.

Each of these subscribers could select a diverse set of services to create a unique service offering. By adding incentives to bundle multiple services, you can design an even more compelling service offering which increases subscriber stickiness.

The network must easily support each customized package, and allow each subscriber to update the package whenever desired.

	GREG	YUE	MARY	DAVE	ALLEN
Internet Access					
Premium Internet service ($40)	▪			▪	▪
Basic Internet service ($20)		▪	▪		
PC security ($10)	▪	▪			▪
Premium VPN service ($25)					▪
Communications					
VoIP ($20)		▪	▪		
International VoIP ($10)		▪			
Video telephony ($30)			▪		
Cellular					
Cellphone – 300 minutes ($20)			▪	▪	
Cellphone – unlimited minutes ($50)	▪				▪
LAN/WAN mobile roaming –unlimited minutes ($10)	▪			▪	▪
IPTV					
Premium tier ($50)			▪		
Basic tier ($30)				▪	
A la carte channels ($2-$10 / channel)	▪ (10 @ $2)				
Video on demand (per view)		▪ (5 @ $2)			
Other					
Music on demand ($10)	▪	▪			
Premium gaming ($20)		▪		▪	
Site monitoring ($20)	▪				▪
Undiscounted total	$160	$100	$140	$120	$155
Discounts					
Save $10 for Internet and IPTV (basic/premium)			▪	▪	
Save $5 on cellular service when using landline from same company	▪		▪		
Music and gaming on demand for $15 (save $5)		▪			
Communications package: VoIP, internat'l VoIP, video telephony for $45			▪		
Free LAN/WAN ($10) when sign up for unlimited cellphone	▪				
Business package: Save $10 on premium Internet with PC security & unlimited cellphone					▪
Discounted totals	$145	$95	$120	$110	$145
Bundle discounts	9%	5%	14%	8%	6%

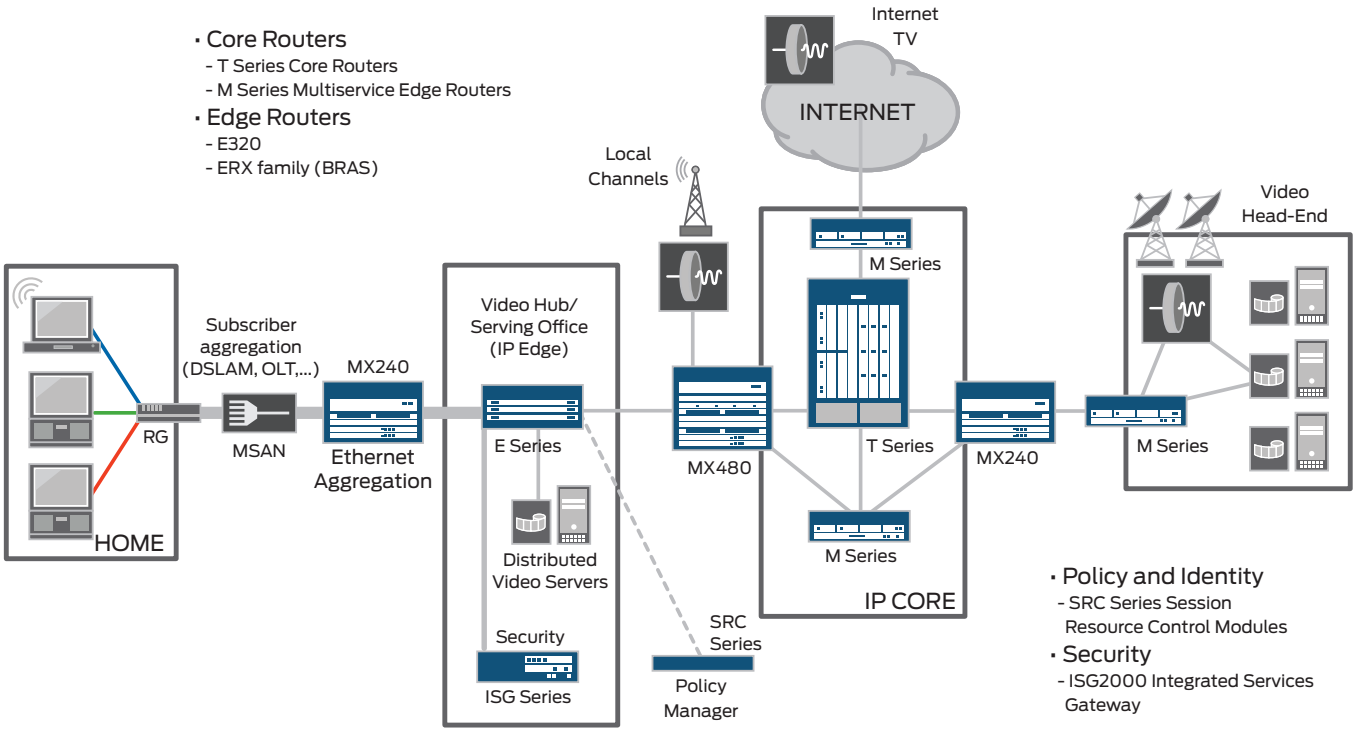

Figure 2: Typical network supporting triple play services.

Solution Components

Key components for this network include:

- **Backbone routers.** The Juniper Networks M Series Multiservice Edge Routers and Juniper Networks T Series Core Routers provide the performance, reliability and scalability required to support the world's largest multiplay networks. They work in conjunction with the Juniper Networks SRC Series Session and Resource Control Module portfolio to dynamically establish and reserve bandwidth for VOD and other remote application sessions.
- **Edge routers.** Juniper Networks E Series Broadband Services Routers provide scalable subscriber management at the edge of the backbone network. These broadband services routers (BSRs) work in conjunction with Juniper Networks SBR Service Provider Series Steel-Belted Radius Servers and SDX policy manager to provide complete control over the subscriber, and the subscriber's experience.
- **Policy manager.** Juniper Networks SDX300 Service Deployment System works with the applications to ensure that the network can appropriately support every application to each subscriber. The open APIs and partnership program of the SDX300 allow applications to integrate with the Juniper network.
- **Security products.** Juniper's security products work in conjunction with IPTV middleware and conditional access systems to protect the network from attack.

Increasing Revenue Potential with Juniper's Services-Aware Network

Juniper Networks enables a services-aware network solution which increases revenue potential by allowing each subscriber to create a customized service offering, while simplifying your ability to offer new services. A services-aware network dynamically adapts to what each subscriber is doing, the flexibility to allow each subscriber to customize their own bundle, and the openness to communicate with networked applications. This provides the personalization and assured delivery which increases market penetration, ensures high customer satisfaction, improves time to market and lowers operational costs.

Next Steps

For more information please refer to the Juniper Networks website at **www.juniper.net**.

About Juniper Networks

Juniper Networks, Inc. is the leader in high-performance networking. Juniper offers a high-performance network infrastructure that creates a responsive and trusted environment for accelerating the deployment of services and applications over a single network. This fuels high-performance businesses. Additional information can be found at **www.juniper.net**.

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