



The Broadband Service Optimization Handbook



Chapter 10 - Breaking the Mold: New Service and Revenue Opportunities

It has become clear that the capabilities of an intelligent service control and optimization system based on deep packet inspection are what enable network service providers to move beyond best-effort, flat-fee services to aggressively compete in the broadband market. This chapter discusses new service and revenue opportunities that these systems enable in each of the following four customer segments:

- Residential
- Business
- Mobile/cellular
- Wholesale

Subscribers in each of these customer markets have different service requirements and expectations. A system with the intelligence to discern between different applications and services and to automatically control how they behave empowers service providers to target one or more of these subscriber groups with specialized offerings. Even deciding which services to offer can be determined, in part, by using deep packet inspection to track subscriber usage and identify general trends.

Residential Services

Residential broadband subscribers tend to be most attracted to socially oriented services. Among these are video entertainment, gaming, instant messaging, chat forums, email, and URL filtering, which provides parental control over which Web sites minors can access. When each of these applications and functions is identifiable by a DPI-based service optimization system, providers are able to offer a variety of services to the consumer market using tiered packaging and pricing.

Below are a few ideas for approaching the residential market with new and innovative offerings.

• **Live "podcast" forums.** A cross between a pre-recorded podcast and a live voice conference call, live discussions on any number of topics can be streamed to interested subscribers who can both listen and verbally participate for a fee. Subscribers could pay on a per-session basis, or subscribe to regular podcasts for a monthly fee.

Such discussions have become informally known as "Skypecasts" because E-Bay (which now owns Skype) offers the capability for live, moderated conversations in its Skype 3.0 VoIP software release. In the case of Skypecasts, which allow up to 100 people to converse, a host moderates the discussion and passes the virtual microphone to participants who indicate that they wish to speak.

Other models might be on the horizon for service providers, who could serve as the content providers themselves, providing hosts and discussion topics. Or, they could allow subscribers to “host their own” for a fee.

- **Gaming SLAs.** Consumers are generally the least tolerant of complexity in accessing and using their services. They expect transitions from one service to another to be transparent and automatic, a feature that can be bundled into their service package for a small fee.

For example, a provider could have a service-level agreement (SLA) option that if a subscriber starts an on-line gaming session, the provider will automatically allocate the minimum required bandwidth and quality of service (QoS) for the duration of the session. In return for being able to automatically receive the required QoS at the start of any gaming session, the subscriber would be willing to pay extra. If the subscriber has not already signed up for the Gaming SLA, a promotional note could pop up at the start of a session, asking if the gamer wants to purchase a special gaming package that will prioritize bandwidth and guarantee a high quality experience.

Value-Added Business Services

Business customers typically represent an IT, networking, or telecommunications group within an enterprise or other organization. Their responsibility is to make sure their business applications and Web-based services get the network resources they need to perform optimally.

Business, government, and academic organizations can install and manage intelligent service optimization devices themselves on their own premises to ensure that their traffic gets treated according to their internal business policies. This effort affects traffic behavior only in the last mile or access link to the nearest service provider point of presence.

- **Managed services.** Service providers have a couple of opportunities here. First, they might wish to install and manage the CPE that controls application traffic in the last mile as a managed service. As a complement, they could add end-to-end management of the business customer’s traffic by installing the intelligent traffic-shaping device in their own networks and providing per-application, per-customer guarantees as a backbone service. The traffic that each business subscriber deems most mission-critical could represent a “premium service” for which the customer pays something extra.

- **MPLS VPN revenue enhancement.** In particular, DPI-based systems present new value-added service opportunities for MPLS VPN providers who sell to business customers and seek additional value from their MPLS backbone investments. MPLS VPN technology does have general class-of-service (CoS) capabilities associated with it. However, MPLS VPNs do not inherently have the intelligence to discriminate between traffic flows at the application level. Today, the end customer generally marks IP traffic with a priority number in the IP packet header, and that priority is mapped to the provider’s MPLS CoS markings. In this way, MPLS VPNs enforce

relative prioritizations of groups of traffic over MPLS backbone networks. Even so, they still cannot guarantee resources to specific applications.

With a DPI overlay however, a provider *can* guarantee resources for specific application flows. For example, a small but steady amount of bandwidth can be allocated to VoIP sessions. VoIP doesn't require much bandwidth, but it does require a small amount to be consistently available so that voice conversations are not interrupted or dropped.

Similarly, a business customer may wish to guarantee a larger amount of bandwidth to a customer relationship management (CRM) application or other critical application, while limiting the bandwidth used by non-business-related applications.

The DPI capabilities of an intelligent service optimization system can accommodate these requirements on a per-customer (VPN) basis, thereby facilitating the creation of custom service packages for which business customers will pay a premium.

• **Management services and reports.** In addition to selling mission-critical bandwidth guarantees, providers can offer visibility and usage reports generated by their broadband optimization system as a chargeable business service. Also, there is the potential to offer "self-provisioning" services that allow business customers to access the DPI-based platform of the service provider to gain visibility into their organization's end-to-end bandwidth utilization and performance. For example, the business customer might pay a monthly fee for secure access and the ability to obtain regularly scheduled utilization and performance reports, or to make provisioning and policy changes independently, rather than having to submit a change order to the provider.

Mobile/Cellular Services

The mobile services environment is changing rapidly. Mobile network operators continue to add bandwidth to their network infrastructures with new generations of 3G-and-beyond technology and are quickly adding multimedia services to their portfolios.

Mobile operators have opportunities with intelligent service optimization systems to enforce the current restrictions that many have placed on their services, particularly in the United States, as well as to open up their networks to new models.

For example, cellular network operators tend to run one network for voice traffic and another broadband network for data services. Some providers currently prohibit VoIP usage on their data network services, because they see it as cannibalizing traditional voice cellular services. A DPI-based system allows the operator to measure over-the-top VoIP usage on the data network to either enforce these existing policies or to modify them.

An operator might allow subscribers some base quota of minutes of VoIP usage over the data network, and then charge by the minute for any additional use. Such a model could provide an incentive to customers to procure 3G data services by allowing VoIP sessions over that service, too.

Wholesale Services

In addition to consumer and business customers, a number of large broadband providers sell bandwidth in bulk to downstream ISPs. These wholesale providers can use their DPI-based service optimization system to divide up their broadband pipe and guarantee a specific minimum or maximum amount of bandwidth and QoS to each downstream provider. They can also monitor and provide reports of actual usage, and enforce the SLA that each customer has purchased.

Chapter Summary

These are just a few ideas about how service control and optimization based on deep packet inspection can help broadband network service providers create and profit from new types of competitive services. Bandwidth-on-demand “turbo button” services have applicability to residential subscribers wishing to temporarily use gaming, movie, and other high-bandwidth entertainment services. An ISP can also offer other content services—such as podcasts and live discussions—to this market for a fee, either with the ISP as the source of content or in partnership with a content provider.

Providers of MPLS VPN services to business customers can derive new revenues on top of their data VPN services. They can examine and shape traffic on a per-VPN basis in order to enforce those customers’ internal business policies for what should and should not be on the network, while delivering the resources required for specific critical traffic to each customer. Providers with business customers can also offer managed CPE services in conjunction with network-based QoS services for an end-to-end service-control offering that covers both their backbone networks and the customer’s “last-mile” access network. They can also deliver network visibility and self-provisioning capabilities directly to business customers.

Mobile network operators can find new business models for how they treat and charge for voice, data, and multimedia services. As convergence hits the mobile market, mobile operators will need to seek new terms and conditions—and ways to enforce them—about how their data networks are used. And wholesale companies need a way to apportion and monitor the amounts of bandwidth they have sold to retail ISPs so that customers of one ISP do not hog the capacity of another’s.