Cisco Service Control Technology: Create New Broadband Tiers of Service

As flat-fee-based Internet access becomes commoditized, a universal billing structure is subject to price competition and providers need to expand service offerings. By creating service levels using Cisco® Service Control and providing compelling new content, operators can differentiate IP services at the application level. In doing so, they can expand their subscriber base, increase average revenue per user (ARPU), and improve customer retention.

Challenge

Providers of broadband services—whether cable, fiber, xDSL, satellite, or fixed wireless—are seeking to deliver advanced IP services profitably on their existing infrastructure, but the market for premium service delivery has been slow to develop on current IP networks that are optimized for subscriber access and packet transport. Providers have begun to introduce service offerings like music downloads and gaming. However, to truly capitalize on rich media services, providers must be able to move beyond the flat-fee business models that are currently in place. If network providers can find ways to profitably deliver higher-margin, higher-value services, they can establish new business models and overcome price wars on commoditized transport.

Premium IP service offerings must meet two criteria:

- Customers must be willing to adopt and pay for them.
- Providers must be able to segregate services such that they are differentiated in the network for performance management and billing purposes.

To meet these requirements, providers need to control and meter their network. The ability to control the network allows providers to go from selling connectivity and bandwidth to selling services and application performance on a tiered basis.

Speed Tiers Versus Application-Level Tiers

Some operators have begun to incrementally charge for speed-based tiers of service. The difference between dial-up and broadband speeds is immediately discernible, but as subscribers move, for example, from a 1-Mb to 3-Mb throughput, the differential is less obvious, and operators typically find that the price premium the market allows for increased performance does not justify the cost of delivering it. Service differentiation at the application level is a much more compelling proposition for subscribers. To differentiate at this level, operators must create rich media or content-based offerings that appeal to a variety of market niches and can be tailored to meet individual subscribers' needs. Only by doing so can operators attract new subscribers and compete against alternative broadband offerings.

An All-Encompassing IP Network

The key to successfully creating tiers of service is a single, all-encompassing IP network as opposed to multiple, service-specific networks. However, unless the common IP network can identify a subscriber, classify an application, apply application-level performance, and meter and charge for the application or service bundle, creating broadband service tiers remains beyond a provider's reach. Profitability is essential to the delivery of multiple tiers of Internet access, and a service infrastructure that can control and manage differentiated services minimizes operational costs and maximizes capital investment as well as the return on that investment.

Solution

Service-control capabilities extend network infrastructure to facilitate the delivery of premium-quality service offerings and applications. When the network is conditioned to provide differentiated services, providers can meter and bill for these services. Moreover, metering helps the service provider deliver the promised level of service and quality to subscribers.

The Cisco Service Control solution creates a programmable, intelligent service layer for IP networks. Using stateful deep packet inspection at multigigabit speeds, the solution provides detection, monitoring, and control of virtually any service application, including complex Session Initiation Protocol (SIP) and Real Time Streaming Protocol (RTSP)-based applications. Providers can obtain immediate visibility into their network usage with subscriber- and application-level awareness, to better understand who is doing what on their networks. The granular analysis and management capabilities of Cisco Service Control offer providers a means to analyze, control, and profit from premium IP services.

Cisco Service Control Engines fully reconstruct data flows analyzing the Layer 7 state of each individual application. True application awareness is the ability to statefully track all subscriber data flows by application and content, and today only Cisco Service Control technology has the ability to maintain application state while tracking network data flows at multigigabit speeds. Typically, the Cisco Service Control Engine resides "in traffic" behind an IP aggregation point and can be configured redundantly to meet high-availability requirements.

Differentiation by Application and Service Level

By using the Cisco Service Control solution, operators can introduce truly innovative offerings and create service tiers that are differentiated by application and service. Subscribers can get services they want at price points that make sense, and providers can serve them at cost levels that help ensure profitability.

By using a common IP network enhanced with service-control capabilities, providers can test service offerings, trial pricing models, and promote services free of the business risks associated with single-purpose network build-outs. The ability to dictate network-resource usage based on Layer 7 application classification and a per-subscriber policy creates limitless opportunities for operators to tier Internet access and develop new service bundles. Here are three examples.

Broadband “Light” Service

Historically, operators have created “light” broadband services targeted at customers who may use the network infrequently or wish to limit their spending on Internet services. The assumption is that after users are “hooked,” the experience motivates them to spend more on services. Traditional approaches using a low-speed tier or a global monthly allowance have failed to increase penetration or even resulted in cannibalizing existing revenues as some users migrate to the lower-cost option.

Using Cisco Service Control, operators can create a differentiated broadband service that provides broadband speed for traditional applications, but limits more advanced applications to dial-up speeds. The idea is to demonstrate how speed can enhance or degrade an overall application-level experience. An example of such an offering might include providing the following:

- Web and mail traffic at full broadband (1.5 Mbps) speed and sophisticated applications such as peer-to-peer streaming, voice over IP (VoIP), or video at lower dial-up rates (for example, 64 kbps).

This approach has the following advantages:

- Dial-up users receive a high-speed experience for their basic applications, introducing them to the advantages of full broadband performance.
- The likelihood of negatively impacting existing broadband revenue flow is small.
- Operator expenses to offer such a service are comparatively low because applications needing much bandwidth, such as peer-to-peer, are throttled to prevent network congestion. This allows the operator to price this type of bundle at a charge that is appropriate for the target subscriber without incurring cost of price elasticity.
- When “light” subscribers are on the broadband infrastructure, they can select higher-value packages and are motivated to do so by an improved user experience. This makes them candidates for other applications and services, and operators can increase overall average revenue per subscriber (ARPU).

One challenge many service providers face is the need to create a low-end service. Cisco Service Control allows providers to control services at the application and subscriber level, which permits operators to experiment with different pricing and tiering schemes without incurring additional costs. Offerings can be quickly deployed and analyzed for broader deployment. Without the granular analysis and control capabilities of Cisco Service Control, operators cannot easily track and manage new packaging alternatives, resulting in a less systematic approach to the marketplace.

SOHO and Telecommuter Package

Small office or home office (SOHO) users as well as telecommuters are a primary target market for a dedicated broadband package. Using their broadband connection for business purposes, these customers are likely to pay for value-added services on top of their basic service. Connection throughput is an important capability that operators can offer, but additional features can help attract and retain these customers by addressing other concerns.

Using Cisco Service Control, operators can offer SOHO and telecommuter customers the ability to control how their broadband connection is used and prioritize it according to their individual needs. For example, a telecommuter may elect to turn off peer-to-peer or Xbox applications or limit them so that VPN or email traffic receives higher priority over file exchanges or gaming transactions that other household Internet subscribers may be attempting to use in parallel from the same home connection.

This approach offers clear advantages:

- Operators are offering a self-selected capability to home users as a value-added service for additional fees, increasing ARPU.
- Self-managing a broadband connection helps customers gain personal control over their service, improving customer satisfaction and increasing their loyalty. Additionally, value-added enhancements can be offered to further strengthen the provider-to-subscriber relationship. Such enhancements might include:
  - Spam zombie, virus, or denial-of-service (DoS) attack identification, notification, and protection
  - Parental controls that make certain websites and video content inaccessible by minors
- Content protection facilitates third-party content distribution by providing new ways to protect copyrighted content by managing access rights from accounts or device types on the network

Application-Based Bandwidth on Demand

Providers can also use Cisco Service Control to offer quota-based or time-based bandwidth-on-demand capabilities and allow customers to select application-level options. For example, younger subscribers may find it enticing to subscribe to packages that selectively accelerate bandwidth or use a “turbo-button” option for temporary higher bandwidth.

Flexible alternatives can be structured for subscribers in a variety of ways:

- Providers can offer users a quota-based limit for music or video downloads at higher speeds. When this limit is reached, the subscriber returns to a lower speed or is directed to a portal to select another fee-based increment.
- Subscribers can choose to accelerate a selected application for a period of time, such as a 2-hour block of accelerated performance of interactive gaming per day.
- A “turbo button” could allow for faster, metered bandwidth for as long as it is on and return to lower speeds when it is off.

Options like these have obvious advantages for both providers and subscribers. Subscribers can select usage increments on a scalable basis or elect to pay for bandwidth acceleration for prescribed periods. Providers can increase ARPU by offering selectable, granular options to users who otherwise might not pay for full-time, high-speed Internet access. As these subscribers become accustomed to services enhanced by accelerated bandwidth, they may be more willing to upgrade their connections.

Granular Analysis and Control Increases Tier Options

Developing different levels or tiers of service becomes possible with Cisco Service Control because the service provider can identify individual subscribers, classify applications, deliver application-level performance, and meter and charge for services or service bundles. The creation of multiple tiers of service allows providers to expense multiple services across the same operational structure as non-tiered services. Any change that the service provider can make to increase the number of subscribers while keeping costs steady leads to profit with an aggressive return on investment (ROI).

The Cisco Service Control solution can be used to optimize network bandwidth for specific applications and users. Service providers can cater to their customers by actively dictating how network bandwidth is used at the application and subscriber level. This makes it possible to attract new customers and retain current ones without expensive network upgrades or bandwidth acquisition.

Moreover, reporting and usage information can be fed to billing systems or other business-intelligence applications. With the Cisco solution, operators are able to capitalize on their current infrastructure investments to increase profitability and attract customers. New products and services are easy to deploy and launch. Cisco Service Control helps providers become more efficient, better informed, and in better control of their networks.

Business Benefits

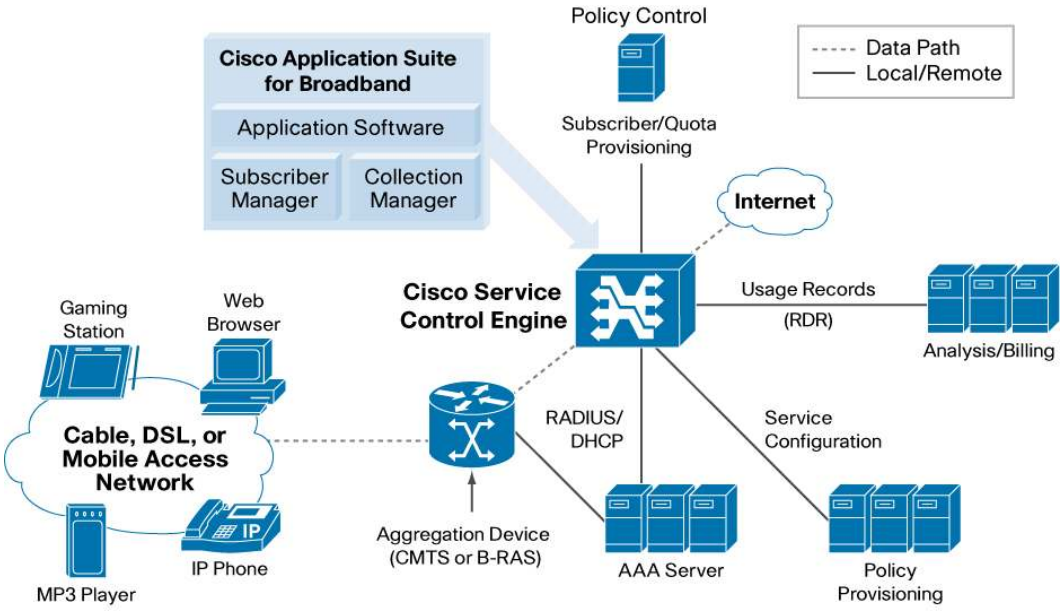
The Cisco Service Control solution helps service providers to make better use of their existing networks and enhance their overall management and control. Providers can:

- Decrease costs for network services and products
- Take advantage of usage analysis, capacity planning, and quality of service (QoS) enhancements to develop and manage new billing models by application or service bundle
- Use subscriber-aware reporting to evaluate and manage customer requirements
- Institute policies to control individual usage or high-bandwidth applications
- Improve customer satisfaction by reducing network congestion and improving performance
- Accurately report on application traffic to increase visibility into network activity and perform informed capacity planning
- Maintain user-or application-based quotas to create quota-based services, manage acceptable usage policies, and ensure fairness between subscribers
- Reduce operational costs by monitoring the use of expensive transit links
- Eliminate unnecessary network upgrades by extending the programmable solution to new and emerging protocols and applications
- Increase the long-term strength of their network environment with a programmable and extensible solution that can easily adapt to changes in peer-to-peer networking
- Reserve bandwidth for exclusive application use
- Allocate bandwidth for tier-1 customers and applications

Architecture

Figure 1 depicts the network architecture of a Cisco Service Control implementation.

Figure 1. Cisco Service Control in the Network



Product Offerings

The Cisco Service Control solution includes the following product offerings:

- Cisco SCE 1000 Series Service Control Engine
- Cisco SCE 2000 Series Service Control Engine
- Cisco SCE 8000 Series Service Control Engine
- Cisco Service Control Application for Broadband
- Cisco Service Control Collection Manager
- Cisco Service Control Subscriber Manager

Why Cisco

Cisco offers industry-leading service control solutions, adding intelligence, multigigabit analysis, and stateful deep packet inspection to existing network infrastructure and providing worldwide technical assistance and support. Cisco is speeding the evolution of networks from generic transport systems to platforms offering higher-value, higher-margin services. Programmable, scalable, and purpose-built for the communications sector, Cisco Service Control technology accelerates network delivery of advanced IP services. The Cisco Service Control platform enables carriers to identify and charge for dissimilar content applications while simultaneously managing different application-performance requirements. The Cisco Service Control solution is deployed in more than 450 companies worldwide.

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