WHITE PAPER

THE EVOLUTION OF BUSINESS SERVICES: DELIVERING VALUE TO BOOST REVENUE

Service Providers Must Reposition Themselves to Remain Competitive in a Cost-Conscious Market Environment

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Executive Summary

Continued drive for ever increasing network bandwidth consumption, combined with the current cost cutting economy, represents a unique opportunity for service providers to increase revenue by offering cost-effective managed business services. Many enterprises that are considering migrating to managed services ultimately base their decision on three criteria: total cost of ownership (TCO), responsiveness to their changing needs, and measurable conformance to service-level agreements (SLAs). If service providers can meet these criteria, they will boost customer satisfaction levels and, in turn, improve customer relations by reshaping their images as trusted business partners instead of just basic commodity brokers. This new relationship will also produce larger and more sustainable revenue streams.

Significant increases in service offerings, however, could create new obstacles—specifically how to measure and validate these services. But this challenge is also an opportunity for revenue growth because service providers could charge premium fees for individual services according to service and quality of experience levels.

However, while ever increasing bandwidth demand and the current economic climate favor the idea of managed network services, sustainable profits will be more difficult to achieve if uncontrolled network buildout continues among service providers.

This paper will discuss current trends in business services, including why traditional service provider revenue streams are declining and what providers must do to reposition themselves to boost revenues. The paper will explain how Service Delivery Platform (SDP) solutions and implementation of identity and policy management capabilities can enable the value-added managed network services that will generate additional revenues for service providers. It will also highlight the tools which Juniper Networks® provides to make these solutions a reality.

Introduction: Trends in Business Services

In the late 1990s, most providers were competing based on their individual "reach" capabilities. This approach worked well while WAN capacity was scarce and margins for services remained high. Billions of dollars of investment later, WAN capacity was in surplus. Competition methods shifted from pure reach to reach/price. And now, increased competition between providers has primarily shifted to the quantity/price factor. As a result, traditional revenue sources in business/enterprise services are flattening or even declining in some cases.

Many service providers are further experiencing declining revenue as cost cutting enterprise customers migrate away from expensive legacy telecom services to new, cheaper Ethernet-based networks. In addition, "over-the-top"[1] (OTT) networked applications that siphon revenue through traditional service provider networks to content service providers (CSPs), and even broad outsourcing of IT services into the "network cloud" are coming into play.

If service providers are to become trusted partners offering new services, they must clearly articulate the value of these services to their enterprise customers by first assessing the needs of their clients and then detailing how the new services can be delivered by the network.

Service Level Agreements Define Acceptable Performance

When the application server is located on the same LAN or switch as its user, application performance is usually good. But if this server is moved to another city 200 miles away and multiple users are accessing it via the WAN, application performance might become very poor and, in some cases, even unacceptable. Hence, SLAs and contracts are put in place between enterprise customers and service providers that spell out acceptable levels of service.

This integrated network/applications/service package provides a way to monitor service delivery. The application has an endpoint view at the service delivery level while the network has a network view. It might be possible to combine both views if the network can be made intelligent and talk to the application. In this case, every verified transaction would create a service instance that can be monitored and checked against SLA compliance. Such monitoring would take normal service assurance to a micro-SLA level. And every micro-SLA met would generate an additional revenue opportunity for the service provider.

[1] "Over the top": Telecommunications industry term describing third-party digital entertainment content or application services that are delivered across ("on top" of) a broadband network without affiliation with the broadband service provider.

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Enterprise CIOs assess network value based on application performance, while business service providers make offers based on network bandwidth. However, service providers can resolve this discrepancy. The providers' managed network services and the applications sought by their enterprise customers must integrate into an efficient, dynamic service package that addresses the following CIO priorities:

- Low TCO
- Dynamic responsiveness—services that can be activated and delivered rapidly, seamlessly, and automatically as required by applications and that can be adapted quickly as application demands change
- Measurability—verifiable, reportable service that is delivered as expected in an assured manner

These are basic generic qualities which form customer opinion about the quality of services or products and ultimately result in customer satisfaction.

Losing Revenue to "Over the Top" Content Service Providers

Many service providers face the daunting challenge of satisfying today's network-savvy enterprise customers who demand more sophisticated, high-quality products and features faster and cheaper.

To further complicate this picture, enterprise IT departments, strongly committed to lowering costs, are replacing more expensive enterprise-grade IT systems with lower priced consumer-grade alternatives, and accessing OTT content and services directly from CSPs such as Google, Microsoft, and Yahoo. This phenomenon represents an unused or lost revenue opportunity for traditional service providers.

The same tendency is happening with voice applications like Skype, an indication of enterprise preferences for lower priced products that still provide acceptable quality as long as this quality is sufficient. And this is a key point—in order to offer quality services, OTT providers must use service provider network bandwidth. This drives bandwidth upgrades and network infrastructure expansion. The service provider bears the costs for this, but not all of the revenue.

In order to gain back some revenue, providers must stop overbuilding the network at their own expense. However, a new business trend is driving additional network expansion: Web Services, including service-oriented architecture (SOA), create new plug-and-play architectures where individual software components may be combined in large solutions with components arriving from multiple sources such as independent software and open source vendors. This development can only mean that there will be more OTT services and applications that flood service providers' networks with more traffic, forcing expansion.

Additionally, the modularity and openness of Web Services can facilitate integration of the network and application layers into one system. In this case, the building components may even come from non-traditional sources like service providers themselves.

The necessity of bringing application needs and network resources together has already been recognized in the emergence of IP Multimedia Subsystem (IMS) architectures. Web Services architectures are longtime native application-level interfaces that represent a large mature market. All this makes Web Services an attractive technology to explore for service providers. Juniper Networks realizes the potential of both technologies and provides support for both in our Identity and Policy Management solutions.

For the same reasons, some service providers already are building their Web Services footprint and expertise. Others are about to recognize this necessity.

While it is important for them to realize that cost-cutting enterprises seek more affordable service options such as OTT services, service providers must still meet their own profit goals. In order to ensure profitability, providers must take advantage of the growing demand for bandwidth driven by the growth in site-to-site connectivity and access to OTT third-party applications. Reduced barriers to competition, however, mean more players vying for business. Winning more business means offering services more cost-effectively than competitors—as well as less expensively than the enterprises can do it themselves.

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Value Service Providers Can Offer the Enterprise

Thanks to their strategic location between enterprise customers and applications, service providers will continue to bring value. However, providers initially have to solve some basic customer problems by delivering:

- Connectivity and segmentation (leased lines, VPNs)
- Differentiated experience (assured, enhanced, best effort)
- Network and application security
- Identity control—an intelligent authentication and authorization process that manages multiple user roles, credentials, and location

The above services can transform the network into a universal SDP ready to deliver any service anywhere and at any time with requested service quality, as long as the underlying infrastructure exists.

These four components combined enable the value that is already inherent in the network; it just must be extracted. Identity control, which is not managed properly today, is becoming more complicated as networks grow, because the actual controls are stored in different information silos. However, this service must be managed properly since it is an important ingredient within a universal platform. Juniper Networks offers correlated identity control that can be delivered by service providers as a value-added service.

Delivering and Packaging SDP Components

To this point, we have analyzed the state of the telecom industry from a business services perspective. We have looked at problems service providers must address to evolve their business models from offering mere commodities into true value-added service delivery. By doing this, they will be able to generate much needed, improved, and sustainable revenue. Also, service providers must institute an intelligent service delivery platform from which they can seamlessly and cost-effectively deliver business services to enterprise customers.

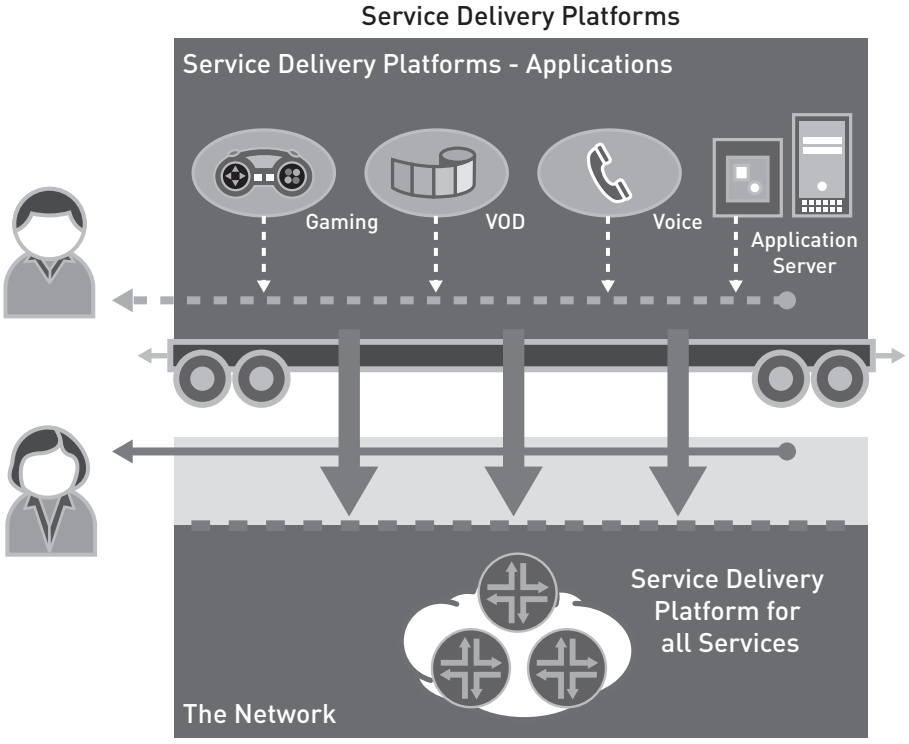

Figure 1: Today's Service Delivery Platforms provide only best-effort service delivery. Higher-level SDPs should deliver any service at any time with minimum effort.

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Network Becomes a Service Delivery Platform

There are multiple SDP definitions but some are more precise than others. Some important features that make up an SDP are:

- A modular system.
- Delivers services using horizontal communications layers within the network. Note—The Open System Interconnection (OSI) reference model is a great example of the "horizontal" telecommunication layers in which service delivery can take place. In this sense, an SDP can be defined as a horizontal modular system of functional blocks used to build and deliver services to users.
- Exposes functional capabilities to the upper layers of dependent services and signals the need for resources to lower layers through certain APIs.
- Increases reuse of service components that improve service operator agility.

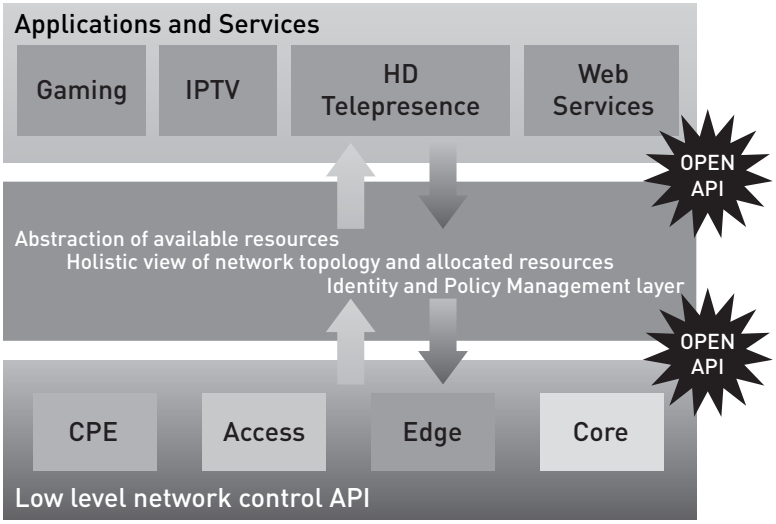

Figure 2: The integration of applications and the network

A VPN is an example of the network technology delivered to the customer with customer premises equipment (CPE) and network routers. If combined with a defined set of SLAs and contractual agreements, the VPN becomes a network service delivered by service providers to business customers. Thus, a VPN might be seen as a service, and either CPE or a network router can act as SDP.

Here are the key areas service providers must address in order to embrace new business models where the network delivers an assured applications and services experience to enterprise customers:

1. Using advanced modular capabilities and functions, featured in Juniper Networks products, to transform the network into an SDP that satisfies all three key qualities that enterprise customers seek:
   - Cost-optimized flexible technology framework
   - Rapid service creation and customization
   - Service level verification layer (micro-SLA) or measurable delivery
2. Standards-based modular networking technologies powered by Juniper's award-winning hardware and Juniper Networks Junos® operating system offer service providers a reliable, proven, cost-optimized networking platform. A rich feature set of these products can deliver modern Ethernet/IP/MPLS telecommunication services to subscribers on scalable hardware. Granularity of the software features and open APIs in Junos OS provide a basis for delivery of existing and new services in an assured, verified manner.

   Juniper's solutions create a whole layer for complex service creation and delivery, and increase the agility of service introduction while decreasing TCO.

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Available network bandwidth is a finite resource and should be treated as such by the applications. Instead of haphazardly admitting all traffic onto the network, operators should introduce service tiers, with top tiers reserved for high revenue traffic. Based on user identity, location, and policy, control of application admission will allow providers to manage access to network resources such as bandwidth and guarantee appropriate service levels. By investing in a Juniper Networks standards-based Identity and Policy Management layer, service providers can guarantee assured service delivery to their customers.

3. Solving the bandwidth shortage problem caused by OTT applications can guarantee assured delivery of user applications. Even if network utilization levels reach 80 percent, revenue-generating applications and services can still automatically signal their needs to a Juniper Networks standards-based Identity and Policy Management layer. This will enable differentiated and assured treatment by the network, and premium access to network resources proportionate to the revenue generated by the users of these services. By creating tiered, network-based services, service providers can:
   - Establish a cost-based service plan
   - Offer appealing premium service packages
   - Enforce service differentiation by "white listing" these premium services through the Identity and Policy Management layer

Functions the SDP Can Broker

Let's take a look at some examples of the functions a typical network-based business SDP can deliver:

- Deny access to a network resource or application
- Allocate resources for a specific event (conference, backup)
- Commit bandwidth for a session or application
- Measure and report service performance level
- Redirect traffic based on load or for recovery from failure
- Selectively inspect traffic for antivirus or other protections
- Reduce traffic between headquarters and remote sites
- Provide location information to add value to the service

These functions established the design guidelines for the solutions that Juniper is working on now.

Software as a Service

Software as a Service (SaaS) has become one of the primary areas of interest for service providers. This new business service can address lack of technical expertise in the enterprise sector in the areas of networking, enterprise applications, and business software suites. Essentially, it is a new way of IT and application outsourcing.

SaaS applications can interact with the IP multicast layer and signal their requirements to the network. Transaction admission control occurs for each request and availability of network resources can be continuously monitored.

In case there is a lack of resources or an outage occurs, the IP multicast layer provides a feedback signal and potentially enables recovery of the services, if there is an alternative path to the backup data center.

Flexible Service Packaging

Service providers can offer a business services solution based on only one product that features a number of services. Some of these services could be interdependent. Some could be complementary and optional. For example, when ordering a car, the customer can get a sport package with different features or options. This idea would be similar with a business services package.

Service providers can even partner together to offer their enterprise customers different basic packages with different options. Each basic package could have specific characteristics, but the package would consist of components from different providers, like a car engine from one manufacturer, wheels and tires from another, and the body of the car from a third supplier. In fact, this is what is being done now in the world of managed services. Business services would be the perfect next step for this type of partnership business model.

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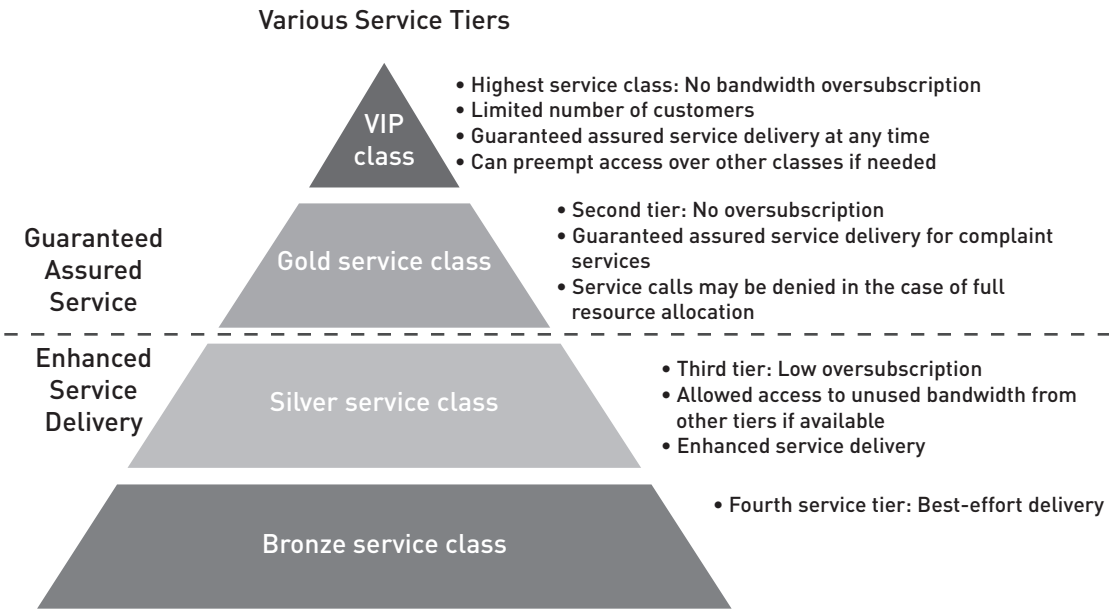

Figure 3: An example of service tiers

Not only is a massive "componetization" of services occurring, but there is also standardization work to make sure these components actually integrate together. This represents a tremendous opportunity for service providers to be true business service integrators with the flexibility to offer various and unique services to their enterprise customers.

Service providers could also produce partnership-type business services solutions by using the burgeoning TeleManagement Forum (TMF) IPsphere Framework. Using Web Services principles, the Juniper Networks-developed TMF IPsphere Framework defines a sophisticated business development layer that automates offer, purchase, and provisioning of service components among multiple stakeholders (for example, partner business service providers). The framework also offers support for a standardized registration and discovery process, payment for resource usage and quality assurance, and interworking with session-based service environments.

Service providers seeking to partner together to provide value-added business services to their enterprise customers will find that TMF IPsphere provides the perfect framework for service integration and delivery.

Juniper's Vision for Business Services Solutions

Juniper's vision for a business services solution uses IP multimedia, layered security, and a common OSS architecture to integrate the application with the network. Service providers have three options when choosing how to deliver their services to business customers. The exact method depends on each provider's particular network architecture and operational preferences.

The first option is CPE-based service delivery, where network value-added services are created and operated on the CPE. The CPE-based network solution conforms to SDP requirements by providing an optimized network infrastructure that enables rapid service creation and customization, and provides service level verification monitoring. This is the most flexible and easy to customize way to deliver new services to customers rapidly.

The second, network-based option provides the identical functions but all service creation and operations take place in the service provider's domain. There are certain economies of scale that make this approach more economical for large scale deployments. What is important for the service provider is that functions performed are identical or superior to the CPE-based network services, but more economical to create and operate.

The third option is to combine different capabilities on different platforms in the same solution. Regardless of the actual network topology implementation, such hybrid service delivery platforms based on Juniper Networks solutions will cost-effectively deliver all necessary functions rapidly, seamlessly, and fluently with verified and assured delivery.

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All three options will work well, but their effectiveness will vary in different scenarios. Important benefits are the same for all Juniper Networks SDP solutions. Service providers can count on:

- The same operational models for network security and routing
- The same network operating system
- Ease of installation and troubleshooting
- Scalable and simple upgrade and migration scenarios
- Service validation and verification

Service providers who deploy SDP solutions from Juniper Networks can communicate one simple "Go to Market" message to their customers for any service and deployment scenario. A uniform and normalized network operational environment will cut operational costs and speed new service deployments. After initial services deployment, it will be simple to up-sell additional value-added service sets to customers. Juniper Networks SDP solutions are uniquely positioned for assured service delivery and guaranteed customer experience.

Conclusion

The service provider who innovates first will become the leader in the business services segment, which is emerging as a key application for enterprise customers based on the following:

- Enterprise customer needs are different today as their budgets decline, a trend that represents a threat to service providers' traditional business model. However, this also offers an opportunity for providers to evolve and transform their networks into true service delivery platforms by adding or activating an IP multimedia layer equipped with service verification on an optimized network infrastructure.
- All required components are already available from Juniper Networks, which is currently working on making efficient, cost-effective, end-to-end solutions that will increase network value for service providers as they attempt to transform themselves from simple commodity brokers to true value-added business service providers. Juniper is working with several key partners whose products enable valuable services that can be delivered on the SDP comprised of Juniper Networks products.

Service providers who take advantage of Juniper-enabled business services solutions are at the leading edge of the first opportunity in a decade to truly innovate as they evolve their business models to enable sustainable, improved revenue generation. For more information about business services solutions from Juniper Networks please contact your sales representative or visit our 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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