Virtual Private Cloud:
## Service Provider Opportunities

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Introduction to Infrastructure
as a Service and Virtual Private Clouds

The cloud infrastructure services market, and in particular the virtual private cloud (VPC) market, is a compelling opportunity for network and infrastructure service providers. Cloud infrastructure services - also known as Infrastructure as a Service (IaaS) - involve the provisioning of prepackaged managed infrastructure in the form of virtual server instances. Virtual instances include components of varying size or capacity such as storage, RAM, and CPU processing power, as well as a preferred server operating system (for example, Windows or Linux). These services allow customer organizations to deploy and manage their own applications on virtualized servers that are hosted offsite at a service provider data center, thus enabling customers to focus on managing their application workloads without needing to maintain the underlying server infrastructure.

According to "Sizing the Cloud," an April 2011 report by Forrester Research, Inc. cloud infrastructure spending - including public cloud, private cloud, and VPC- will leap from US$11.23 billion in 2012 to more than US$28 billion by 2020.

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Seeing Through the Clouds: Definitions for Cloud Computing Models
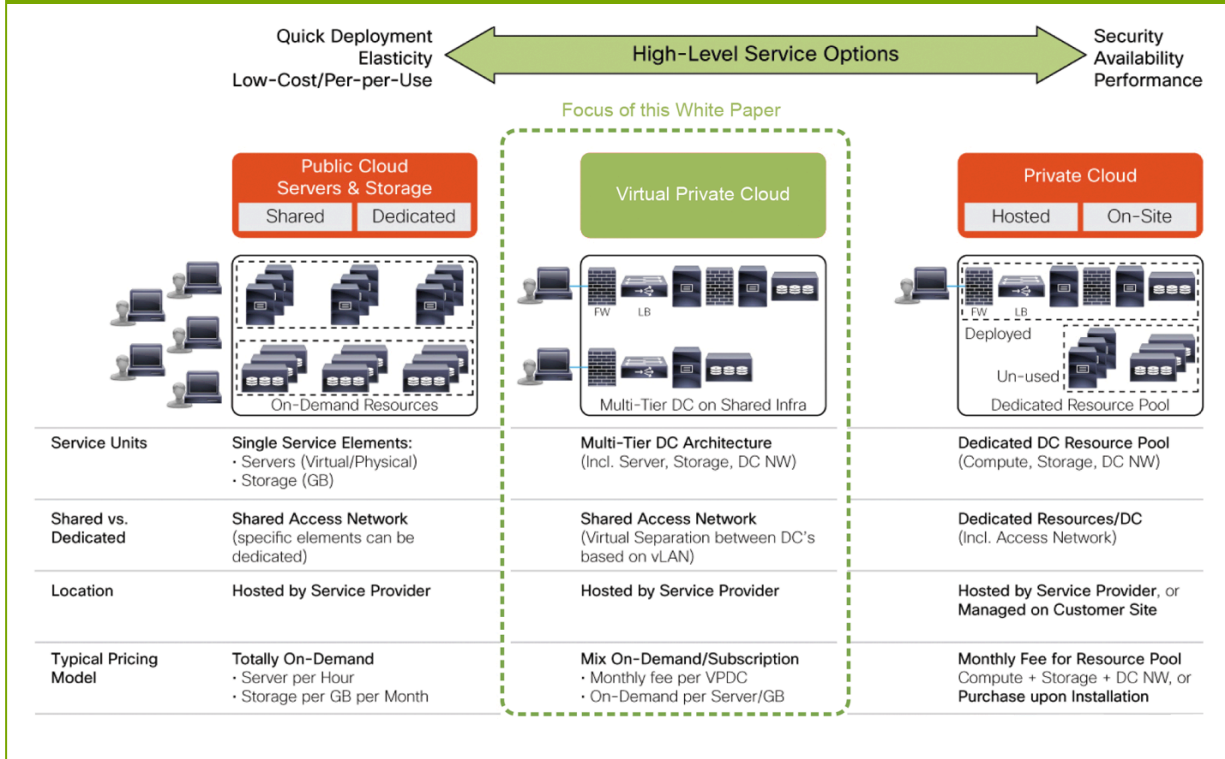
Source: Cisco IBSG 2010, Company Websites.

Public cloud: An IaaS environment that provides access to a shared pool of computing resources for use by anyone who wants to purchase the services. Public cloud services are typically available through a self-service model whereby customers provision new servers using a web application and pay for the computing resources they use on a pay-as-you-go basis - also known as utility or metered computing. Public clouds are operated by service providers and made available to the general public.

Virtual private cloud (VPC): An IaaS computing, networking, and storage environment operated by a service provider for a single organization that is a subset of a larger cloud infrastructure (for example, a public cloud). A VPC (also known as a virtual private data center) is virtually partitioned from the larger cloud, typically through a firewall and VLAN, rather than completely physically separated. VPCs are operated by service providers, and typically come packaged with a set of enterprise data center services.

Private cloud: A dedicated IaaS computing, networking and storage environment operated exclusively for a single organization. Private clouds might be managed by a service provider (either on the customer's premises or at an offsite location), or managed internally by the organization.

VPC in the Fast Lane

In its growth projections, Forrester predicts the public cloud market will peak in 2014 and "then enter a period of significant commoditization, price deterioration, and margin pressure." While the public cloud market declines, the VPC infrastructure services market will continue to grow, from US$2.54 billion in 2012 to US$21.04 billion in 2020. This sustained growth will largely be attributed to the "enterprise-nature" of VPC services, including higher levels of security, privacy, and control not offered by public cloud solutions, and not easily commoditized.

With the cloud services market likely to undergo significant market shifts over the next few years, service providers may be well positioned to compete against existing IaaS market leaders by offering VPC services. To position for success moving forward and capitalize on this opportunity, service providers must carefully craft VPC service offerings that meet five separate criteria:

- Emphasize "enterprise-strength" services with comprehensive security capabilities
- Appropriately differentiate service levels and value-added services that go above and beyond basic compute capabilities
- Accentuate the ability to provide true end-to-end cloud computing infrastructure and networking services, all covered by service level agreements (SLAs) from a single service provider (for example, covering not only cloud computing infrastructure availability, but network availability as well)
- Properly balance service prices between the desire to be competitive and the desire to capture price premiums
- Target the right customers and workloads

To gain deeper insight into the criteria above, Cisco® commissioned a global research initiative by Schireson Associates (see Table 1). This document will discuss the study's findings, and explore how service providers can take advantage of new revenue opportunities by effectively pricing and packaging VPC services.

TABLE 1: Schireson Study Overview

|	
Problem	Cloud service providers need to better understand how to package and price enterprise-class VPC services, gauge which attributes of VPC services are valued by end customers, and assess which end customers to target for VPC services
Who researchers interviewed	• Organizations with over 100 employees • Decision makers and significant influencers on infrastructure and networking solutions, especifically for target workloads • Organizations that are open to considering deployment of essential workloads in an IaaS environment in the next 24 months
Where	13 countries: U.S., Mexico, Brazil, U.K., France, Germany, Spain, Russia, Korea, Japan, China, India, and Australia
How	Designed a Discrete Choice Model (DCM) survey to assess pricing and packaging of VPC services and value promoters
When	Fielded during November and December 2011
How many	Total sample of 2,529 technical decision maker and influencer respondents

The Value of the Network

To differentiate their service offerings, service providers should promote their network as a crucial asset.

In the Schireson Associates study, potential customers show significant interest and willingness to pay for premium SLAs, both in terms of the guaranteed availability (or "number of 9s"), and seamless SLAs, where both network SLA and cloud infrastructure SLAs are delivered, managed, and guaranteed by a single provider under one master service contract.

Although the research shows that many customers are willing to pay the higher prices associated with guaranteed 99.999 percent (five 9s) availability, the accompanying increase in revenue may not be enough to make a business case for building out a solution with this level of service - the costs may be too high. Importantly though, the research also shows that seamless SLAs can generate more revenue for service providers and command a higher price than cloud infrastructure-only SLAs, even when the infrastructure-only SLAs have higher guaranteed availability.

For instance, under a wide variety of scenarios tested in Schireson's research, end customers customers are more willing to pay for a seamless SLA with 99.99 percent availability than an infrastructure-only SLA with 99.999 percent availability for a premium VPC "Gold" service offering. Figure 1 illustrates this point. It shows the relative increase in price that customers are willing to pay on average for a premium VPC offering having a seamless SLA with 99.99 percent availability compared to an Infrastructure-only SLA with 99.999 percent (higher) availability.

FIGURE 1: Willingness to Pay for Premium VPC Service with Varying SLAs

125% Premium

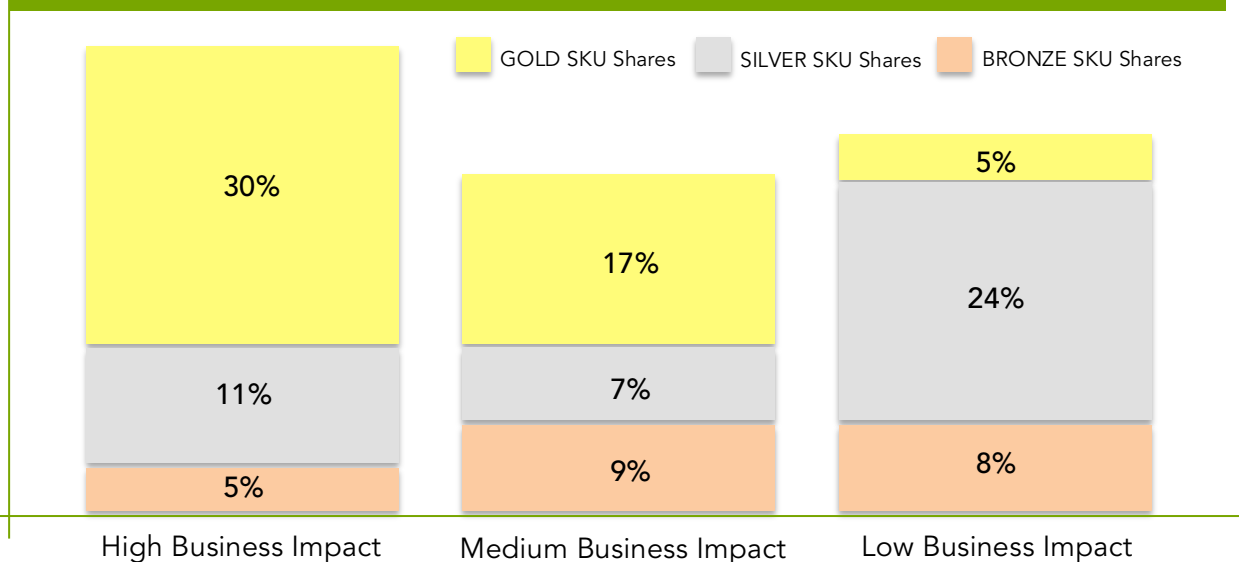Seamless SLA 99.99%   Infrastructure-Only SLA 99.99%
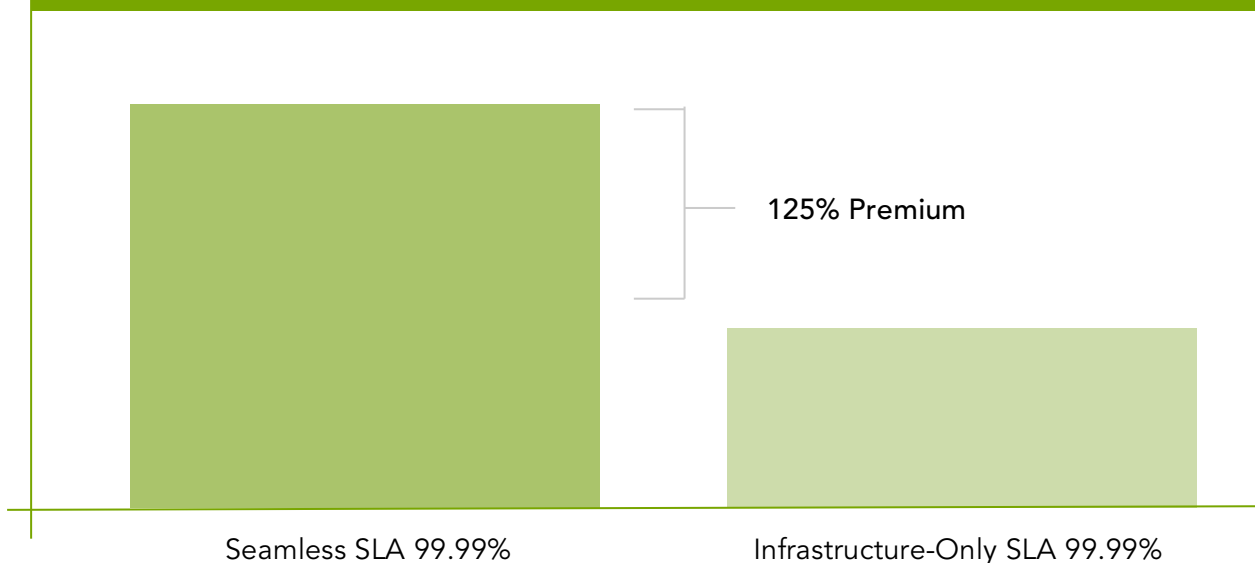
Beyond seamless SLAs, other top VPC service features also speak to the value of the network. Features such as premium support with 5-minute response times, application response time reporting, and application performance acceleration are among the top revenue boosters for service providers offering VPC services.

The conventional wisdom regarding cloud computing is that many organizations are hesitant to migrate their mission-critical, high-impact applications into a cloud environment because they fear security issues, performance interruptions, or other availability issues that could result in a loss of revenue or other negative business impacts. However, along with their willingness to pay premiums for seamless SLAs and application performance acceleration in service provider VPC solutions, end customers also appear more likely to migrate applications they consider mission critical (high business impact), as well as applications with little to no downtime - applications that are traditionally less prone to deployment in a cloud environment. In addition, end customers indicate a willingness to pay a higher premium to host high business impact applications with a VPC service offered by cloud service providers, as evidence by the high proportion of customers indicating a preference for Gold service.

FIGURE 2: Cloud Service Provider Share Distribution by Application Criticality (Business Impact)

GOLD SKU Shares   SILVER SKU Shares   BRONZE SKU Shares

High Business Impact: Gold 30%, Silver 11%, Bronze 5%
Medium Business Impact: Gold 17%, Silver 7%, Bronze 9%
Low Business Impact: Gold 5%, Silver 24%, Bronze 8%
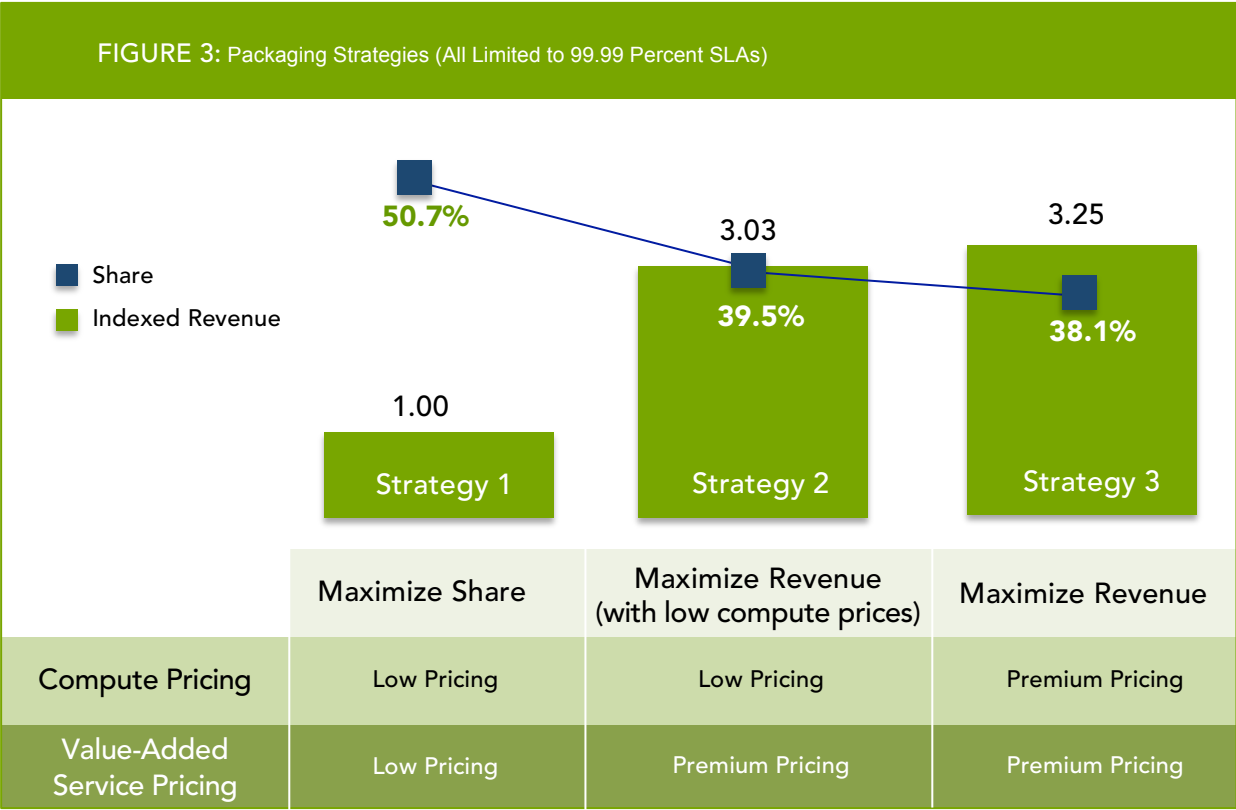
Packaging Strategies

The Schireson Associates study examined the revenue and market share impacts of several different packaging and pricing strategies, identifying the optimal service-tiering and configuration of compute capabilities and value-added services for each scenario.

Maximizing market share involves offering premium configurations at very low prices, at the expense of foregoing a substantial revenue opportunity. On the other hand, maximizing revenue involves maintaining price premiums on both compute and service configurations, making the configurations less competitive with offerings currently on the market.

However, each of these strategies depend upon the ability to guarantee 99.999 percent availability, and while many potential customers are willing to pay for this premium feature, offering this level of service may not make business sense - perhaps costing more to build and maintain than the additional revenue it brings in.

Therefore, it may make sense to instead focus on packaging strategies that limit the SLAs to 99.99 percent and appropriately differentiate service levels, and then identify areas where it may make sense to charge price premiums, and where it may make sense to keep prices more competitive to increase market share.

Figure 3 illustrates some of the basic tradeoffs in pursuing a share maximization strategy (Strategy 1) compared with strategies designed to maximize revenue (Strategies 2 and 3). These strategies all assume that 99.999 percent SLAs are not cost effective and therefore limit the "best" SLAs available to 99.99 percent availability.

FIGURE 3: Packaging Strategies (All Limited to 99.99 Percent SLAs)

Legend:
- Share
- Indexed Revenue

	Strategy 1	Strategy 2	Strategy 3
Indexed Revenue	1.00	3.03	3.25
Share	50.7%	39.5%	38.1%
	Maximize Share	Maximize Revenue (with low compute prices)	Maximize Revenue
Compute Pricing	Low Pricing	Low Pricing	Premium Pricing
Value-Added Service Pricing	Low Pricing	Premium Pricing	Premium Pricing

While charging very low prices for VPC compute offerings and associated value-added services maximizes share (Strategy 1), it can have a significant negative impacts on revenue. Charging low prices for value-added services is particularly harmful to revenue. Such commoditization of value-added services would forego a significant revenue opportunity, as many end customer firms indicate a willingness to pay a premium for these services when offered by trusted service providers. If competitive pricing is a priority (for instance, to gain share), lowering the price of compute offerings and maintaining premium prices for other value-added services (Strategy 2) is superior to lowering the price of other value-added services (Strategy 1). Further, maintaining competitive compute pricing and premium pricing for value-added services (Strategy 2) results in only 7 percent less revenue compared to the maximum revenue opportunity (Strategy 3). While Strategy 2 may not be the right choice for every service provider, it does indicate that service providers would likely be "leaving money on the table" if they were to commoditize the prices they charge for value-added services.

Targeting and Profiling

The Schireson Associates study surveyed more than 2,500 decision makers from wide variety of organization sizes, and obtained feedback on over 6,500 applications. Within this population, Schireson identified subsets of organizations with high, medium, and low interest in service provider VPC solutions and profiled them to provide actionable targeting information.

"High-interest organizations" generally indicated a relatively high willingness to pay for VPC solutions offered by trusted network and infrastructure service providers, at a wide variety of price levels tested, including premium prices for both compute offerings and value-added services.

Major Facts About High-Interest Organizations, Decision Makers, and Influencers

- Target decision makers in central IT organizations: Of those supporting their headquarters' IT, 19 percent are "high-interest" decision makers, compared to only 9 percent found in organizations not supporting their headquarters' IT. In addition, 58 percent of those not supporting their headquarters' IT are decision makers with particularly low interest in service provider VPC solutions.

- Target organizations with high availability needs: They are more likely to be "high-interest" and willing to pay for service provider solutions. An indicator of high availability is having 100 percent redundant backup power for their data center (32 percent of these are high-interest, compared to only 12 percent in organizations with less than 100 percent redundant backup power).

- 19 percent of organizations that have seen revenue growth over the past 3 years are high-interest compared to 13 percent high interest in organizations that have either maintained or lost revenue over the past 3 years.

Major Facts About Industries

- 20 percent of high-interest organizations are in manufacturing, compared with only 12 percent of low-interest organizations. Consistently, IT-supported warehouses, logistics, and shipping facilities are also prominent indicators of high-interest organizations.

- 15 percent of high-interest organizations are in finance, banking, insurance, or accounting, compared with only 7 percent of low-interest organizations.

- Other industries likely to produce high revenue are professional services (such as business, IT, and legal), education, and health care.

Major Facts About Organization Sizes

- Target organizations with 2,500+ employees: They account for approximately a third of projected revenue in scenarios where service providers charge a premium for services, as they are likely to need more capacity and tend to opt for higher-priced service levels in scenarios where service providers charge a premium for value-added services.

- Also target organizations with 250-499 employees: They also account for a disproportionate percentage of projected revenue and tend to opt for larger compute and higher service levels relative to other organization sizes in scenarios where service providers charge a premium for value-added services.

Major Facts About Workloads

This study also produced insights to help target customers by workload - the workloads that are the largest revenue opportunities, particular workloads to focus on by industry, and much more. For example, the research showed data management to be a good target - particularly among education, finance and banking, and business services organizations. Further, it showed records and retention, transactional databases, and storage management to be strong targets within the data management category.

For More Information

For information about Cisco SP Cloud Smart Solutions to deliver enterprise-class services, go to http://www.cisco.com/go/cloud. To learn more about this study and the ways Cisco enables partners to develop cloud services, contact your Cisco account manager.

To learn more about Schireson Associates, visit http://www.schireson.com.

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