



Infrastructure as a Service: Accelerating Time to Profitable New Revenue Streams

Cisco Infrastructure as a Service

Cisco has made a significant investment in understanding customer needs around data center evolution. Some customers assert that, 5 to 10 years from now, data centers will not exist in their current form because they do not have the scale to be cost effective. Others recognize that the complexity of services will also increase, requiring more specialized knowledge to deliver and manage them. In many cases, enterprises might not have the internal knowledge base to take this on, and, increasingly, they are putting in place strategies to outsource a range of current activities, ranging from individual IT services such as email, to expecting complete data centers to be delivered as on-demand, online services.

Infrastructure as a service (IaaS), a cloud service where the enterprise uses a pay-as-you-go infrastructure from a service provider, offers a highly attractive, cost-effective solution that benefits both parties.

IaaS is one of the three main categories of cloud computing services. It provides compute on demand services using a shared platform. Software as a service enables an enterprise application to be run on a multitenant platform and delivered using Internet protocol to any device. Platform as a service provides a platform to create and run applications in a preproduction environment.

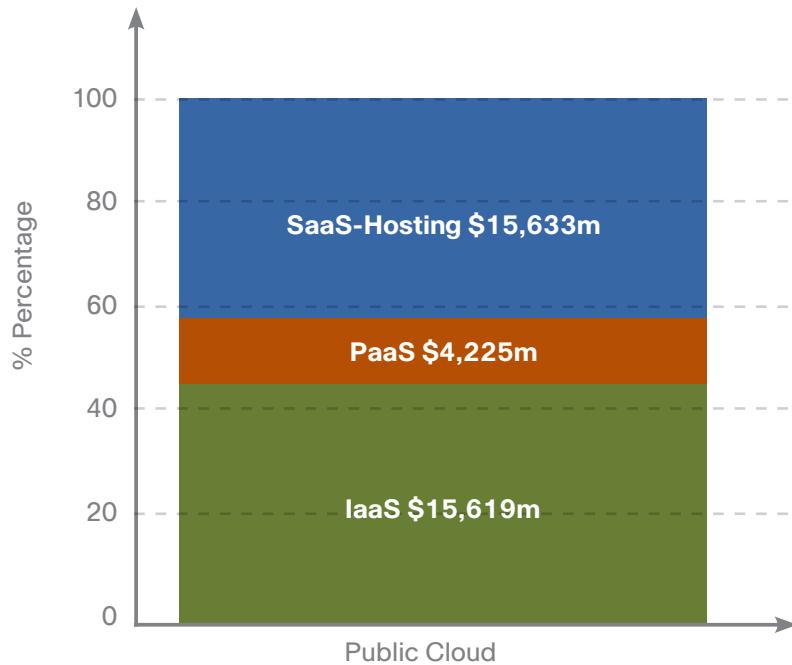
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"Cloud-based infrastructure services are expected to see significant adoption through 2013."

Gartner

Figure 1. Worldwide Services IaaS Revenue in 2013
 Cloud Computing: Services Revenue (Estimate - 2013 - \$M)



*SaaS revenues only include SaaS enablement by hosting apps for ISVs

Source: Cisco IBSG

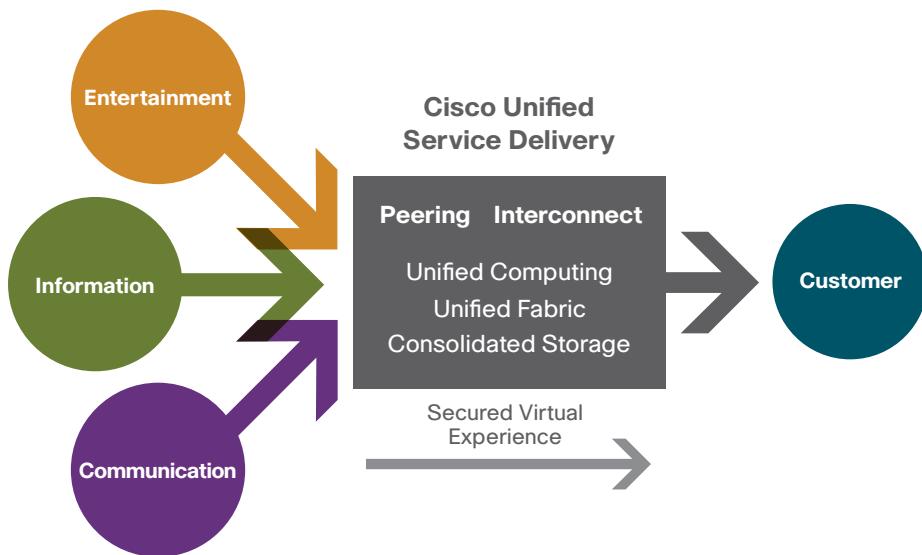
By 2013, service revenues from IaaS are forecast to be approximately \$15.6 billion out of total cloud revenues of \$35.4 billion, according to Cisco research. IaaS has the potential to accelerate growth and deliver massive new revenue streams, while moving service providers up the value chain. It can provide better return on investments through high-margin multitenancy services, improved ability to create new competitive offerings, and open market opportunities with enterprise customers.

The business case for IaaS is compelling. Cisco's findings, which are based on modelling from real market data, highlight realistic costs and potential revenues for a 5000 sq ft data center with 16,000 virtual machines:

- Annual revenue: \$100 million +
- Gross margin: 80 percent
- Net margin: 60 percent
- Annual revenue growth: 10 percent
- Net present value of cash flow over 6 years: \$350 million +.

Cisco offers a holistic IaaS enabling architecture that builds on a unified service delivery (USD) platform and offers the fast track to IaaS. The USD strategy was discussed in detail in an earlier Cisco briefing paper: Transforming data center complexity to velocity. USD represents a new way of thinking about service delivery infrastructure in the data center and the network all the way to the end customer. As well as delivering immediate cost, quality, revenue, and performance benefits, a USD solution helps ensure that service providers are prepared for a later transition to other cloud services as they evolve.

Figure 2. Cisco Unified Service Delivery



However, to gain the full benefits of an IaaS approach, service provider decision makers responsible for strategy development must balance significant tradeoffs that include competitive advantage, operational change, capex/opex investments, new or evolved technical and business architectures, and business risk. Cisco can provide the expertise through a range of professional services to support evaluation of the most appropriate business strategy, architecture, and orchestration design and implementation. This expertise is based upon extensive inside track experience of designing complex data centers across multiple technology areas that underpin IaaS architectures. Cisco's professional services are the enabler for faster, safer deployment, reduced time to revenue, and improved customer experience.

"CIOs need to ensure that their IT operations are ready for the ongoing challenges and shifts that are sure to emerge."

Gartner

Service Provider Opportunities

Meeting Changing Enterprise Needs

With continuing economic uncertainty and high levels of business risk, the focus for the enterprise is flexibility and renewed business agility. CEOs need to help ensure that their IT operations are ready for the ongoing challenges and shifts that are sure to emerge. IT resources must achieve financial and strategic objectives with cost-efficient resources, scalability and capacity, agility and productivity, flexibility to meet changing customer demands, and greener operations.

Data from Forrester reflects these concerns. According to their research, IaaS is an area of cloud computing that currently receives the most market attention, with 25 percent of enterprises planning to adopt IaaS via an external provider. They report that larger enterprises report greater awareness, interest, and adoption of IaaS than SMEs. Primary factors for the enterprise are instant provisioning of services and pay per use model, and enterprises want to integrate onsite infrastructure with anything deployed to external service provider (source: Forrester Research: Cloud and Virtualization Survey Data).

Gartner's research indicates the scale of that interest. They report that worldwide cloud services were worth \$56.3 billion in 2009, up 21.3 percent from 2008, and forecast to rise to \$150.1 billion by 2013. IaaS took 6 percent of that total in 2009 and is expected to grow strongly to 2013 (source: Gartner: Forecasting the Cloud: Understanding Opportunities in Cloud Computing, 2009).

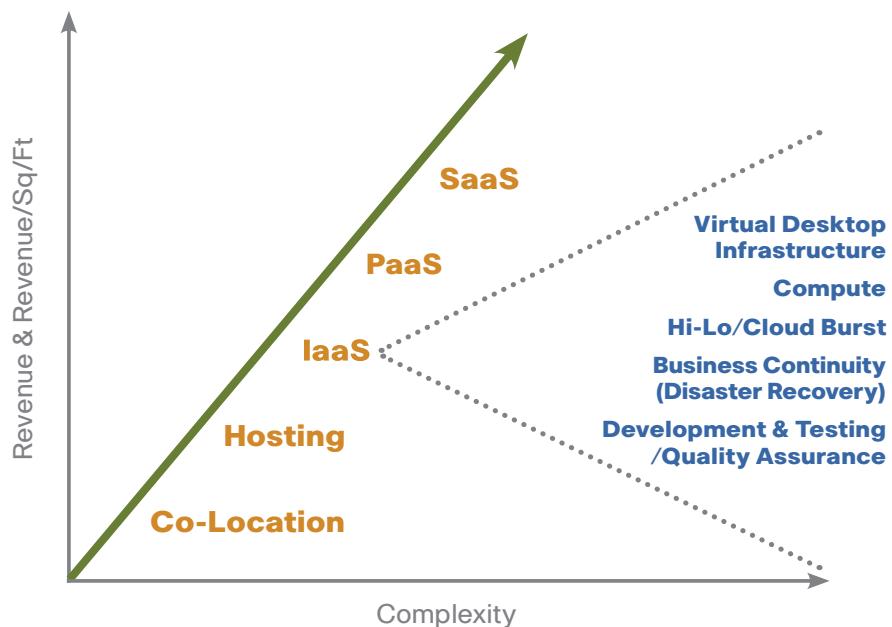
Overcoming Business Challenges

While that represents a massive revenue opportunity, worldwide, service providers continue to face significant business challenges. They report low and declining margins on traditional data center services, with the added burden of increasing operating expenses. As an example, services such as colocation and hosting are low-complexity, low-revenue services. Offering IaaS and associated cloud services has the potential to generate much higher revenue per square foot.

Service providers recognize that they need to support growth while addressing competitive pressures. However, complexity in existing data center setups leaves them with an inability to quickly provision new services to customers. According to IDC, there is a global transformation in how services are delivered, and service providers will need to be open and aware of these new emerging business models. Information technology, they report, is becoming a service, open to new business opportunities and becoming network centric instead of device centric. They believe that simplifying the data center is an important step in improving the ability to deliver new services in a rapid and cost-effective manner (source IDC: Transforming the Service Delivery Model. 2009).

IaaS enabled by Cisco® technology can help service providers take advantage of these opportunities by providing the foundation technologies for higher-value IT service offerings and capitalizing on IP NGN and existing data center assets while significantly cutting operational costs and complexity compared to traditional data center designs.

Figure 3. Service Providers move up the Value Chain
Evolution of Service Provider Services: SPI Model

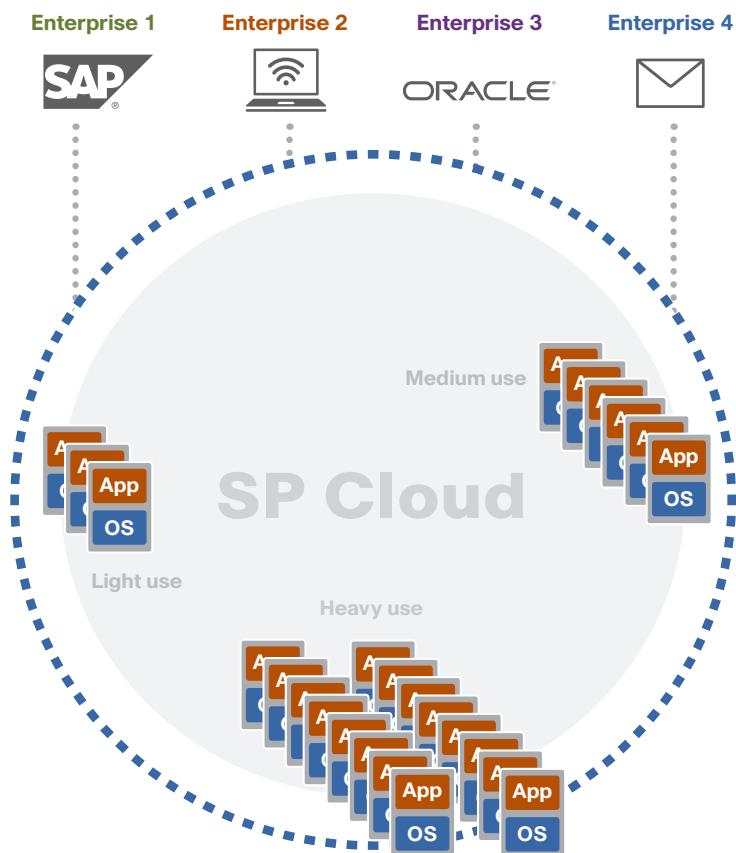


Toward New High-Value Services

IaaS helps service providers to accelerate the introduction and delivery of new high-value revenue-generating services while improving competitiveness with advanced security and application performance capabilities. IaaS is a large category and includes services such as:

- **Disaster Recovery:** Today, many disaster recovery systems remain expensive, seldom used cost centers. IaaS offers the capability to consolidate multiple disparate disaster recovery systems into a single virtualized instance, shared across multiple IT applications, to increase asset utilization and reduce cost. Potential worldwide revenue in 2013 is forecast to be \$1.1 billion.
- **Compute as a Service:** A pay-as-you-go service that provides enterprise customers with rapid access to virtual servers for a wide range of applications. Enterprise decision support systems, for example, require large data sets that are expensive to manage, while seasonal variations and short-term projects stretch capacity. An IaaS solution provides capacity on demand. Potential worldwide revenue for decision support systems applications in 2013 is forecast to be \$1.2 billion.

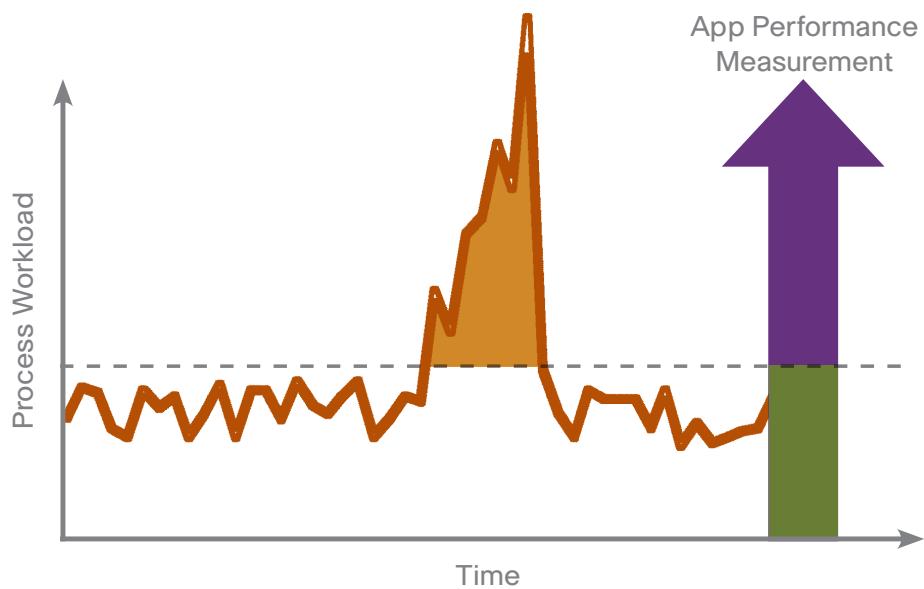
Figure 4. IaaS Example: Compute as a Service



- **Storage as a Service:** Unstructured enterprise storage cannot cope with the exponential growth of data and increasing requirements for compliance and data protection. Enterprises can cope with unpredictable growth of user-generated storage by adopting storage as a service, reducing costs and cutting space, personnel, and hardware requirements. Potential worldwide revenue in 2013 is forecast to be \$1.1 billion.

- **Data Center as a Service:** Enterprise customers with compute-intensive data center requirements can utilise data center as a service to provide capacity for processing and storage on the fly. Grid computing, for example, can pose massive short-term requirements, but is a noncore business for most enterprises. An IaaS-based solution provides capacity to that level. Potential worldwide revenue for grid computing applications in 2013 is forecast to be \$1.0 billion.
- **Virtual Desktop Infrastructure (VDI):** VDI provides the infrastructure for hosting a desktop operating system within a virtual machine on a central server. Upfront server investment reduces VDI project ROI, while variable utilization can limit potential virtualization benefits. Using IaaS to support VDI increases the security of end user environments and reduces IT service delivery costs. Potential worldwide revenue in 2013 is forecast to be \$0.4 billion.
- **Hi-I/O/Cloudburst:** By combining corporate infrastructure with cloud-based infrastructure, the enterprise can create a flexible, highly scalable application hosting environment with rapid access to additional capacity for peaks of demand. ERP financials, for example, impose seasonal resource demands and incur the sunk cost of customizing financial applications. An IaaS service increases business agility with lower costs and caters for changing or seasonal demand. Potential worldwide revenue for ERP financial system applications in 2013 is forecast to be \$0.8 billion.

Figure 5. Cloud bursting provides peak load capacity for variable processes. Automatic deployment of additional resources in the cloud when on-site application performance is low.



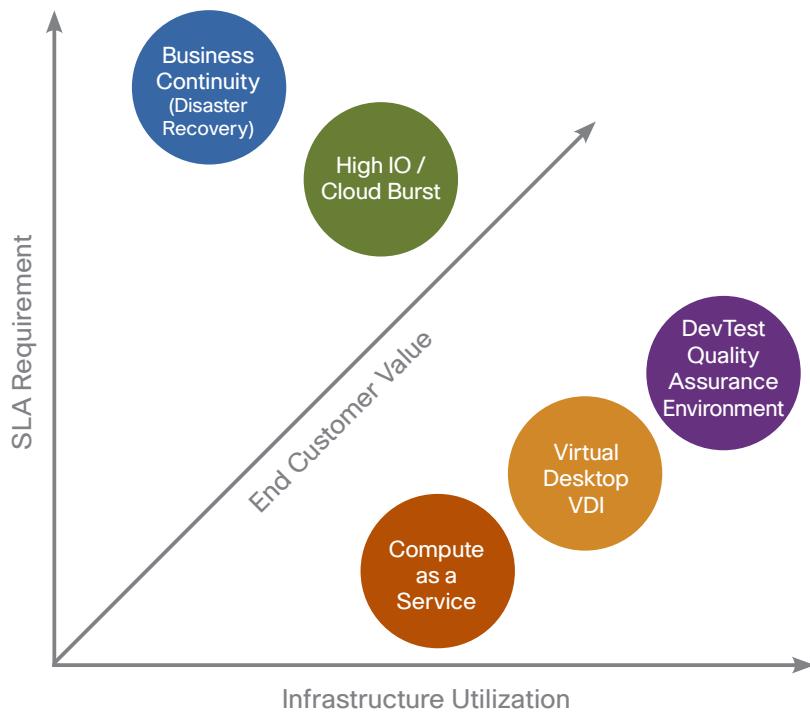
Development/testing environment: Requirements on testing environments are volatile, with frequent short-term, unplanned resource requests. An IaaS solution enables developers to reduce or eliminate underutilized capacity and equipment and supports all software development phases, including unit test, systems test, and scalability testing to increase responsiveness in responding to development and test environment requests from IT business units. Potential worldwide revenue in 2013 is forecast to be \$4.7 billion (revenue forecasts source Cisco IBSG, 2009).

Cisco research indicates that three of the IaaS services offer are already proving attractive to both service providers and enterprise customers:

- Compute as a service uses the service provider's high degree of virtualization to achieve economies of scale and uses tight SLAs and rapid provisioning via orchestration automation to offer "burst" capability to the enterprise.
- Disaster recovery represents a low-risk service for the enterprise since they still own primary infrastructure. For the service provider, it offers a high-value service, but with low asset utilization and reduced delivery costs. Provisioning is rapid via orchestration automation.
- Development/test environment offers a quick win opportunity for the service provider by using security and SLAs to support enterprise critical development programs. A high degree of virtualization achieves economy of scale and reduces service delivery costs.

Improved Service to Customers

Figure 6. Top IaaS Offerings: Relative Advantages



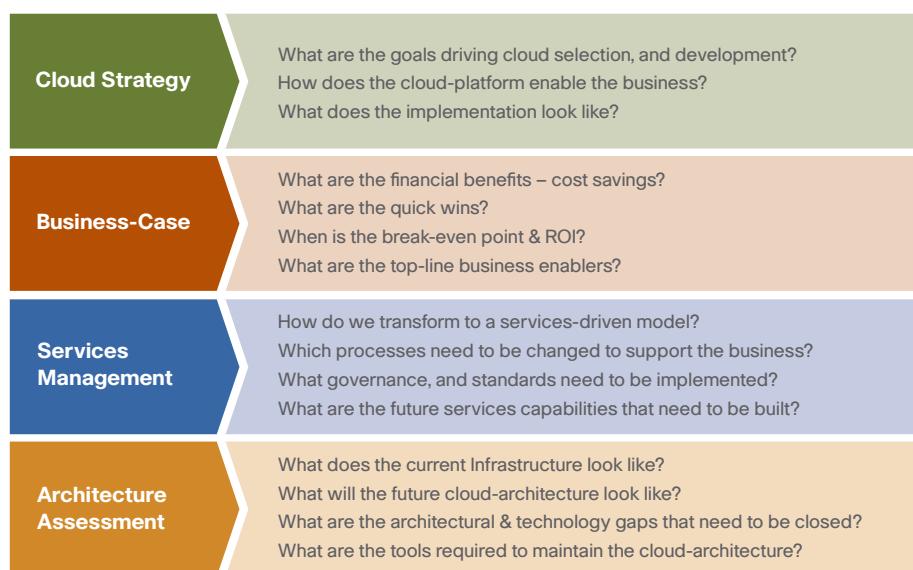
Implementing IaaS allows service providers to improve the service they offer to enterprise customers, increasing revenue and account control with existing customers and opening new business opportunities. Service providers can improve their competitive advantage by offering enterprise customers a range of strategically important benefits, including:

- **Greater financial flexibility:** Enterprises can host their IT systems in a highly available service provider class computing environment, reducing capex on servers, software, data center space, and network equipment.
- **Wider choice of services:** Service providers can offer enterprise customers a wider range of services that are ubiquitously available, easily accessible, and available as well-defined service options.
- **Increased business agility:** Enterprise customers can access IT and networking resources at service provider scale without the cost or complexity of managing a large-scale IT infrastructure. Customers can increase their agility and flexibility, improving their ability to respond to changing business opportunities.
- **Cost-effective scalability:** IaaS offers a pay-as-you-go model, giving enterprise customers the flexibility to scale up or down in line with business needs. Services are paid for by auditable metered usage.
- **High availability with SLAs:** Service providers can offer enterprise customers high availability with SLAs based on fault-tolerant technologies, helping ensure that enterprise infrastructure is available 24 hours a day, 365 days a year.
- **Increased security:** High levels of service provider security provide enterprise customers with a secure environment for applications and data.

Developing an IaaS Strategy

Service provider CIOs and business unit leaders must consider what their IaaS strategy should be to maximize business benefit. Embarking on an IaaS architecture design without first detailing the strategic objectives and assessing return on investment may result in an IaaS project that fails to deliver measurable business benefit.

Figure 7. Cloud Business Strategy Service



What is crucial to successful realization of IaaS business benefits is to take a holistic approach across strategy, ROI-driven architectural decisions, tools, people, and process changes required to deliver the promise of IaaS. Cisco's IaaS Strategy Service addresses these needs, helping service providers determine whether IaaS is appropriate and strategize, justify financially, and roadmap a transition to IaaS. Service providers can develop an IaaS business model, including a financial ROI model, establish primary metrics and performance indicators to evaluate investments and returns and assess costs, benefits, and operational changes needed to benefit. This service will help them identify the strategy that will accelerate time to revenue, with proposals for both quick wins and longer-term gains.

As part of the strategy development process, service providers can measure their IaaS deployment on four basic metrics:

- How long it takes to acquire and deploy new third-party services or to enhance existing services
- The cost of delivering, supporting, and managing each service
- The relative complexity of services
- The revenue uplift that can be gained from adding new capabilities and serving new markets

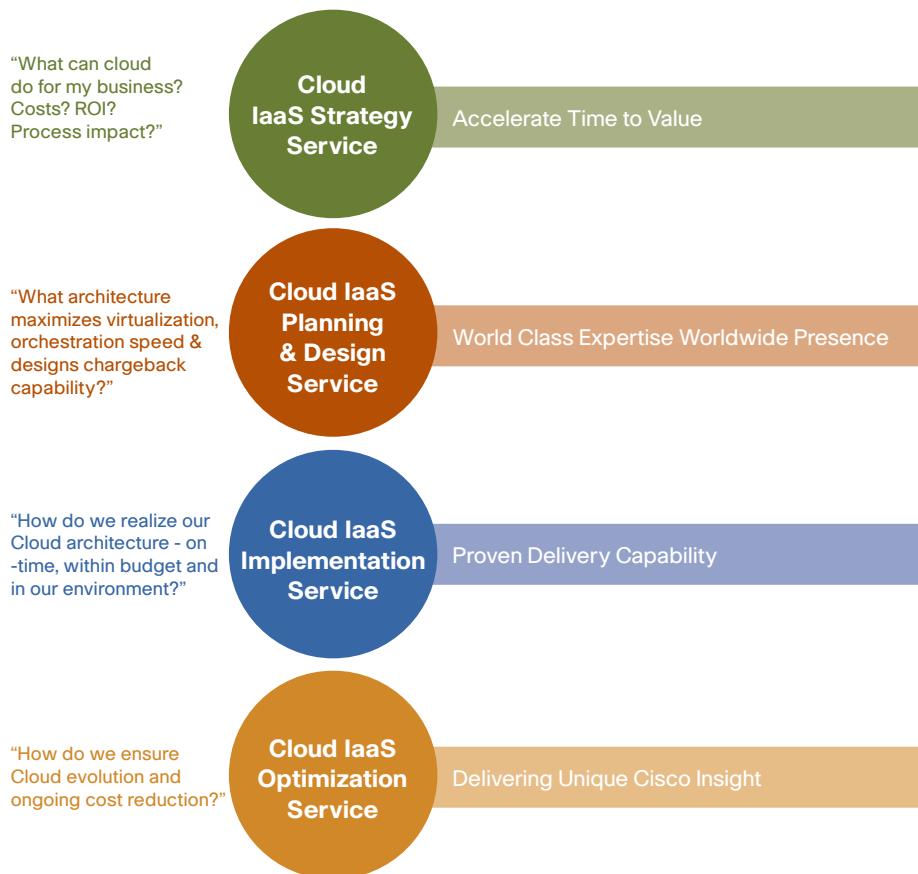
With an overarching strategy and the right metrics in place, there is a clear journey to cloud services.

Fast Track to Cloud Services

Service providers may be at different operational stages of the journey to IaaS. Cisco has a range of IaaS Enablement Services that map the different stages of the journey so that evolution can take place from the most appropriate point. The services are:

- Cisco IaaS Strategy Service to help evaluate the most appropriate strategy for IaaS adoption. This service answers the question: What can IaaS deliver for my business, and at what cost and return?
- Cisco IaaS Planning and Design Service, which answers the question: What end-to-end architectural approach is most appropriate to deliver for my chosen IaaS strategy?
- Cisco IaaS Implementation Service, which addresses the question: How do I accelerate my progress to implementation and go-live of my chosen IaaS operational model?

Figure 8. Cisco Advanced Services Cloud Enablement Services Summary



These services cut the time to successful deployment and operation of complex IaaS solutions and reduce risk by using experts who have substantial experience already around IaaS. Cisco has an architectural blueprint for rapid transition to IaaS, utilizing proven architectures, products, technologies, designs, processes, and services. The Cisco approach enables service providers to minimize additional investment by utilizing foundation technologies based on a USD strategy and capitalizing on their IP next-generation network (IP NGN) and data center assets.

Cisco IaaS Enablement Services take the service provider through the complex journey from strategy formation to go-live of the IaaS operational model. They help service providers to accelerate the development of a financially justified strategy, while helping ensure IT services, management, people, and process alignment to the business objectives.

Why Cisco?

Cisco's IaaS offer enables service providers to move up the value chain away from low-complexity, low-value services. It provides a massive revenue and growth opportunity by enabling service providers to accelerate the delivery of new high-value services without further investment and reach or expand into new markets while reducing costs.

IaaS from Cisco also incorporates features that enhance the service provider's competitive and operational advantage, including industry-leading security and application performance to differentiate the service, an ability to offer SLAs that guarantee service quality to enterprise customers, reduced risk, and faster deployment in deploying new services to keep ahead of the market.

Cisco's approach and differentiation in IaaS comes from a heritage of network capabilities and the inside track on IaaS foundation technologies. This is in contrast with alternative approaches that fail to recognize that IaaS is not so much a technology, but a new operational model for delivery of IT services.

Further information

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