Addressing fundamental cloud questions for the enterprise

Take the first steps toward cloud computing
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Organizations across the business spectrum are harnessing cloud services to drive agility, innovation, and further positive business outcomes. But to realize that potential, you must first address the most basic cloud issues.

- When to use cloud services
- Which type of cloud is best
- What are the bottom-line business benefits and implications
- How to integrate, govern, and manage cloud services across the hybrid delivery spectrum

By recognizing and asking the tough questions and demanding informed solutions, businesses can take the first important steps toward a successful cloud evolution.

**Introduction**

A master mariner requires skill, experience, and tools such as a highly accurate compass to navigate the world's oceans. It's the same for a modern enterprise that needs to chart a passage through today's ever-evolving business models, rapid technology advancements, and changing workforce demographics.

Given today's furious pace of change, enterprises must adapt more quickly than ever before to the threats and opportunities of new competition, new technologies, and new demands from customers and stakeholders.

Yet in all too many organizations, information technology (IT) often simply lacks the skills needed to address the new requirements, the funding to acquire new technology, or the flexibility needed to meet the rapid pace of those business demands.

The storm is abating somewhat, though; organizations can now find the agility needed to survive and succeed. Cloud computing establishes a new paradigm for IT—enabling better ways to source, deliver, and govern highly flexible, scalable, business-driven services.

**The evolving cloudscape**

The fact is: No single cloud type, solution, or delivery approach can possibly satisfy all enterprise requirements. For most organizations, cloud computing is an evolutionary path along which they can and should select the cloud type and service model that best meets their business requirements. In this hybrid delivery environment, enterprises should examine cloud types and services based on functionality and fit, and deploy those that deliver the desired business outcomes.

In this viewpoint paper, HP discusses how to make this new computing paradigm relevant for enterprise-class, mission-critical services. HP is positioned to help navigate the cloud ecosystem, blending the hardware, software, consulting, and service management experience needed to gain the full benefits of cloud services while understanding how to integrate these new services alongside traditional IT delivery models.

**When to use cloud services**

Cloud computing and the adoption of cloud services enable organizations to drive innovation and optimization, to reduce risk and costs, and to gain greater enterprise agility.

By adopting a well-planned and integrated cloud services model, an enterprise can deliver everything needed to run and access key business processes and applications over a secure set of infrastructure and network services, whether through private cloud, public cloud, or a managed cloud.

Thus—by consuming rapidly available, scalable business-related cloud-provisioned services rather than investing in internal IT infrastructure—organizations can shift spending away from capital investments and operational costs and toward supporting their growth and innovation agenda. To accelerate the evolution needed to fully leverage cloud services, an organization should take a systematic approach toward:

- Modernizing its applications footprint, reducing complexity, and improving process efficiency
- Transforming its siloed infrastructure environments into pools of converged infrastructure that can seamlessly expand, contract, or reach out to other cloud services for capacity
- Better securing the organization's assets across multiple cloud services
- Optimizing by provisioning the right cloud type or consuming the right cloud service at the right point along the evolutionary journey
- Delivering by using the appropriate partner to integrate the support of your enterprise's cloud services delivery model

**Choosing the best cloud solution**

Given the various terms and definitions used to describe cloud computing, it is perhaps not surprising that many people remain confused about this still-emerging technology model. HP accepts the U.S.-based National Institute of Standards and Technology (NIST) definition of cloud computing, which says:

> “Cloud computing is a model for enabling convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction.”

The NIST notes that the cloud computing industry is a varied and dynamic ecosystem, and that as cloud computing evolves, we should expect continued changes in the language, technologies, use, and benefits of the cloud paradigm.

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That said, we can readily identify the essential characteristics of cloud computing. Cloud is a self-service, instant capacity model in which pooled resources and services are accessed over a broad and standardized network. Capabilities can be rapidly accessed and provisioned, and services are measured to control and optimize cloud resources. There are several basic types of cloud computing solutions, with public and private clouds discussed most often.

- **Public cloud**
  The cloud infrastructure is made available to the general public or a large industry group and is owned by an organization selling off-premises cloud services.

- **Virtual private cloud**
  The cloud infrastructure is made available to enterprise organizations with a need for tighter security and risk-management criteria and is owned and managed by an organization selling off-premises cloud services.

- **Private cloud**
  The cloud infrastructure is operated solely for an organization. It may be managed by the organization or a third party and may exist on premises or off premises. Cloud-based solutions can be accessed through a number of service models, such as infrastructure-as-a-service (IaaS), platform-as-a-service (PaaS), application-as-a-service (AaaS), and others.

**Hybrid delivery**

What is important, regardless of service model descriptions, is for organizations to choose the right cloud type and cloud service model for their business need. When making that choice, they should base that selection on the unique characteristics of the workloads that will run in the cloud.

Often a grouping or blend of these cloud service models, in combination with more traditional IT models, will best meet a particular business need. For example, to fulfill the business demands of end-of-year financial reporting, an organization would likely deploy a combination of hosted enterprise resource planning (ERP) and compute resources delivered from an IaaS environment.

HP terms this best combination of services models “hybrid delivery,” as every enterprise is positioned differently on the traditional IT and cloud evolutionary continuums. Very few enterprises will be in a position to move completely to a fully cloud-enabled model instantaneously. And given the previous investment in much of their traditional IT estate, they may well choose to pick the best-in-class solutions from a portfolio of solutions and services to support their business objectives.

The HP approach provides the industry’s leading technology and services for efficient and flexible hybrid delivery models. The hybrid model is essentially an integration of different operational IT and service management models—such as private, public, virtual private (shared), utility, and traditional IT suitably combined. The precise form of a given hybrid model will be determined by a specific organization’s application infrastructure requirements, security and data concerns, regulatory environment, and other variables such as the required degrees of automation, standardization, and virtualization.

It will be a while, for example, before we can expect to see the majority of standard applications delivered in a full software-as-a-service model from the cloud. As a result, enterprises are exploring other consumption-based models to achieve greater degrees of flexibility and agility already today. A recent HP-sponsored international survey of 783 individual participants found that 73 percent of the participants believe utility services models to be a compelling option. Eighty-two percent of executives surveyed believe the utility pricing model to be most compelling.

Traditional in-house and outsourced services are combined with consumption-based models that require no capital investment and are flexible, scalable, and automated. The resulting as-a-service hybrid delivery model enables organizations to fully leverage previous investments while adjusting more quickly, paying only for what is required, and more closely aligning IT with their true business imperatives.

Business leaders increasingly recognize the importance of selecting the optimum cloud approach. In primary research conducted on behalf of HP, 72 percent of respondents preferred private clouds, but only 7 percent of executives expected to host cloud solutions internally.

**Bottom-line implications**

What can organizations expect to gain through the deployment of cloud-based services?

**Agility**

Improved business agility is perhaps the single greatest benefit of enterprise-class cloud computing. The enterprise cloud approach reduces the need for physical IT infrastructure while driving standardization and automation. This results in a secure, controlled, and well-governed environment, while in-built orchestration and automation tooling support more efficient workflows, policies, and business models across the entire organization.

Cloud computing measurably reduces the time needed to select and provision key applications and services. Adopting cloud-related services is not only about the speed of provisioning compute resources in a matter of minutes, but is fundamentally about enabling the business to provision and consume business processes at the right time.

“The setup of an SAP operation and a communications infrastructure in only five months was a critical business requirement for OXEA. HP helped us to reduce the project and investment risk. Furthermore, we are now able to adapt the SAP costs and capacity based on our business needs.”

**Juan Soto, Vice President, Information Technology, OXEA Group**
In fact, by focusing standardization in the crucial applications tier, the cloud approach helps organizations to gain the maximum return on their service investment.

Forward-looking organizations can leverage that cloud-driven agility to gain market traction, pursue new opportunities, and drive more positive business outcomes.

Optimization
Increased optimization of both business processes and IT services from the adoption of cloud services can only improve an enterprise’s control and exploitation of its assets.

“DreamWorks Animation and HP have a long history of collaborating on on-demand off-site compute—cloud computing before it was even called cloud. Leveraging flexible compute services allows us to quickly scale our digital resources both up and down to meet the ambitious plans of our filmmakers. By leveraging partner solutions like HP’s Enterprise Cloud Services, DreamWorks will be able to flex a significant amount of our render capacity into the cloud by the end of the year.”

Derek Chan, head of Digital Operations, DreamWorks Animation

Cloud computing encourages the redesign of infrastructure and the service management wrapper—not just applications. This approach enables organizations to reduce costs and realize greater optimization. The cloud approach replaces many error-prone human interfaces and physical systems with more efficient automated and optimized virtualized solutions. The adoption and sound implementation of ITIL V3 and its future evolution for cloud will be critical in supporting the realization of even further cloud service benefits.

HP can provide enterprises with optimized cloud services that drive more positive business outcomes.

Innovation
Adoption of cloud services can drive innovation in several important ways. By enabling organizations to consume business-related services rather than infrastructure components, an enterprise cloud can dramatically improve enterprise flexibility.

Basic cloud qualities certainly contribute to cost-reduction efforts, thus encouraging a shift of capital away from maintenance-oriented spending and toward strategic growth and innovation-oriented investments.

“Trillux is specialized on the innovative usage of LED technology—acting in a market that demands ongoing innovation. To cope with innovation speed, we need a flexible and efficient IT solution. With HP Utility Services, we found a solution platform that meets these specific requirements.”

Mr. Huxol, Chief Executive Officer, Trillux

Cloud services can be used to accelerate development, process, and time to market. In a cloud model, hardware, software, and services can be made available in minutes or hours, compared to weeks or more in a traditional IT environment. HP can provide cloud services that help the enablement of our clients’ innovation agendas.

Security and risk management
When adopting cloud services, organizations must carefully consider the management of security and risk.

Due to the levels and layers of abstraction used in cloud architectures, security should be incorporated into any enterprise cloud from the earliest planning and design phase. It must address governance, risk, and compliance; data protection and privacy management; identity and access management; and infrastructure security.

Along with the benefits attributable to the use of cloud services, enterprises must also recognize that cloud computing presents significant security and risk implications. By understanding those challenges—and by choosing the correctly designed, architected, and supported cloud service—enterprises can realize those beneficial cloud returns.

HP will digitize Sir Paul McCartney’s library of music, images, artwork, film, and video and then design a secure content management system to deliver those materials to select fans across a private cloud.

HP champions a holistic view of security in the cloud environment—one that addresses the need for secure cloud solutions and the opportunity to use cloud services to improve security and compliance.
Cloud integration, governance, and management

All cloud services must fit in the enterprise architectural framework, but cloud services naturally must be seamless, automated, resilient, secure, and open—qualities that can affect existing enterprise architectures and IT delivery models. So it is important to understand how cloud services should be integrated, governed, and managed in this new hybrid delivery state.

Governance in a cloud

Governance in a cloud is about the whole lifecycle and value chain of the cloud and its services—from design of the services through the coding of workflow and how the service is assured, secured, operated, provisioned, and consumed. Enterprise service management (ESM) must comprehend the evolving system integration and management model, as cloud assumes many integration points, supplier interactions, and SLA complexity.

Federation between clouds and cloud services

The evolution of ESM will need to address how one cloud connects to another. Integrating and managing cloud services requires more than measuring, monitoring, and reporting, but must also provide tracking, assuring, multilevel policy compliance, and more.

Orchestrating the cloud

Advanced automation and orchestration should be incorporated into every layer and function within the cloud stack and hybrid delivery model applied. It should address policy and the application of rules, and orchestrators should connect seamlessly to each other and to the traditional IT ESM framework.

Traditional ESM and cloud

Yes, traditional ESM is still relevant, because IT departments will still have to measure, monitor, and report. But in a hybrid delivery model, reporting extends beyond infrastructure or application components and must address the end-to-end service, its health and compliance, availability, usage, security, and other variables. ESM is particularly relevant in federated cloud service environments, which require integration among clouds, cloud services, and traditional IT service management frameworks. In a hybrid delivery model, ESM becomes more about business intelligence analytics than traditional IT component monitoring and reporting.

ITIL V3 in a hybrid delivery model

ITIL V3, although much improved on V2, is still only a framework of a traditional IT service lifecycle. ITIL may need to evolve to comprehend the new hybrid delivery model and the core supporting characteristics of enterprise-class cloud services, such as automation, resilience, openness, security, and seamlessness.
Recommendations

HP recognizes that when it comes to cloud computing, one size does not fit all. For most organizations, cloud computing is an evolutionary path along which they can and should select the cloud type and service model that best meet their current business requirements. To address complex organizational needs, HP has created a robust portfolio of cloud services, part of the HP Converged Cloud strategy, that delivers immediate benefits, a stable path forward, and ongoing innovative value.

HP Enterprise Services has embraced the new cloud paradigm and is leading HP Cloud Solutions with enterprise-class cloud services. HP Enterprise Cloud Services is built on our heritage of highly reliable, secure managed infrastructure services and our innovative Utility Services. HP Enterprise Cloud Services brings a secure, flexible cloud server compute cloud suitable for clients’ mission-critical needs. Organizations can access HP Enterprise Cloud Services to gain the full benefit of a reliable and automated infrastructure made available on a consumption basis and backed by HP security, service level management, and professional services solutions.

With the HP Enterprise Cloud Services portfolio, organizations inherit robust new capabilities and easy-to-use features—while opening a seamless and cost-effective evolutionary pathway to new cloud-based innovations. Organizations can access solutions at any point along that spectrum to reduce cost and complexity, leverage automation and integration, and drive other positive business outcomes.

By leveraging HP Enterprise Cloud Services, organizations can:

• Select and deploy cloud services—often an enterprise-class hybrid approach—that best meet their needs today and into the future
• Leverage innovative pricing models to pay only for the capacity needed, when it is needed, and nothing more
• Reduce costs while shifting spending away from maintenance and operations—and toward growth and innovation
• Gain the full benefit of automation and the shared services environment
• Turn new services on or off instantly, and thus respond more quickly and intelligently to changing business conditions
• Improve customer service and satisfaction ratings

Businesses and industry observers recognize the qualities of HP cloud computing solutions.

HP recommends a multistep approach to adopting cloud services:

• Assess IT assets and business needs and create a roadmap and timeline to move select offerings to cloud.
• Deploy private cloud workloads and enterprise cloud services.
• Integrate private and enterprise-class clouds into existing IT infrastructure, transform applications to cloud, and integrate third-party solutions.
• Broker services and composite applications and then manage service quality across the seamlessly integrated hybrid delivery environment.

The rationale and requirements of employing a virtual private (shared) or dedicated private cloud vary greatly from sector to sector. HP has gained decades of domain-specific expertise in delivering service-oriented and cloud-based solutions across a wide range of industries.

Conclusion

Change is a core reality for today’s enterprise.

To compete and succeed in a dynamic and globalized environment, organizations must seek innovation, optimization, and security. But above all—they must have the agility needed to confront emerging threats, to pursue new opportunities, and to ensure long-term and positive business outcomes.

In this paper, HP examined the maturing cloud computing and services paradigm: its forms, challenges, requirements, and benefits. Organizations across a wide spectrum of industry and government activities are now leveraging cloud-oriented solutions to manage cost and risk, to improve operational performance, and to gain enterprise-wide flexibility.

When evaluating cloud options, choose wisely, not hastily.

Although there are many cloud types and service models, a successful cloud service must be closely aligned to your key business requirements. It often makes sense to start small and to use pilot deployments to test the actual impacts and real-world benefits of selected value targets.

An enterprise cloud does not solve every IT issue, but when integrated and implemented in a strategically focused way, an enterprise-class cloud service can deliver immediate and substantial benefits. By better understanding the promise, requirements, and benefits of the enterprise cloud, organizations can better navigate to a successful cloud experience.
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