

## 1. **What is Cloud Computing?**

Cloud computing is an IT delivery model that provides infrastructure and computer resources as a service. By implementing a private cloud, IT leverages the power of sharing to maximize the utilization of compute, networking and storage resources within an organization. The result is more rapid and efficient delivery of IT services, faster time to market, and reduced IT capital and operating expenditures.

## 2. **What is Platform ISF?**

Platform ISF is computing infrastructure sharing software for private cloud management. It creates a shared IT infrastructure from physical and virtual resources and delivers application environments according to workload and resource scheduling policies.

## 3. **Is virtualization the same as cloud computing?**

No, but server virtualization is a key building block to cloud computing that enables application isolation, mobility, and partitioning of individual servers in the cloud. Applications are placed into virtual machines (VM's) which simplify the provisioning and configuration of application environments in the cloud, allowing for easier reconfiguration of resources to meet business demand.

## 4. **Is grid similar to cloud computing?**

Grid computing is an evolutionary step that precedes cloud adoption in many medium and large organizations. Grid data centers are typically among the first areas in an organization where departments and applications are already successfully sharing infrastructure and resources. It also provides workload scheduling and the ability to efficiently manage a large scale environment. The grid evolves into a private cloud with the addition of server virtualization, provisioning and self-service tools.

## 5. **What's driving the need for cloud computing?**

The traditional approach to IT is not working. The current model of building application and server silos does not meet the dynamic needs of an organization in a competitive market place. Today IT is expensive, unresponsive and consumes vast amounts of capital, delivering resources which in the end are grossly underutilized. Most servers are utilized only 20% or less. This approach of throwing expensive assets at every business need, is inflexible, time consuming and costly. This would be analogous to deploying a small generator to supply each of your offices with electricity. In the future, IT must offer a competitive service model delivering infrastructure and computer resources in plug-play and bill-me-for-use service. This is where cloud is taking us.

## 6. **Is public cloud the way to start?**

Public clouds can offer valuable resources to an enterprise depending on their workload and applications but by themselves do not deliver the entire value of cloud computing, nor are they expected to. Private cloud computing represents a broader offering that includes internal computer resources and public resources. Organizations should leverage the value of public cloud but this is best achieved within the envelope of a private cloud environment. IT organizations should recognize that if their users are leveraging public clouds then their organizations are prime candidates for an IT managed private cloud.

## 7. **Why adopt a private cloud if public clouds are available?**

Private clouds offer organizations a responsive, cost effective IT model that delivers critical resources and added value to the organization. It does so while supporting IT's obligation to oversee fundamental corporate requirements including governance, compliance, business continuity, cost management and risk management. While public clouds can offer infrastructure and computer resources quickly on a pay-per-use basis, many of the benefits are not realized through the use of public clouds alone. Private clouds give an organization the control layer for pulling resources into a unified cloud environment. The value of a private cloud management platform is independent of location and ownership of resources.

## 8. **What is the impact and benefits of cloud on the enterprise?**

For IT the advent of private cloud will, in the fullness of time, have a very positive impact. Private clouds deliver a means to manage both external and internal resources within a safe environment. It also positions IT as strategic to the organization and the business user.

Organizations will see cost savings, both in capital expenditures and operating costs. Service to business users will improve with the IT organizations new agility. Instead of waiting months for a new system or some additional compute horsepower, users will be able to tap into additional infrastructure quickly and easily.

The CFO and CIO will be able to see where the resources are being used with complete transparency and business units will be charged accordingly.

## 9. **What are the key characteristics of a private cloud?**

A private cloud is above all an agile service model designed to respond to mixed infrastructure requirements. The key features that enable this service model include:

- **Heterogeneous systems support:** The private cloud must support the organization's existing (and future) heterogeneous infrastructure including server, storage and networking hardware, operating systems, hypervisors, storage capabilities, and file systems.
- **Integration with management tools:** The private cloud must be easily configurable and extensible to integrate with the variety of IT management tools used for security, provisioning, directory, reporting and billing, data management, management console, internal regulation, compliance, and invoke them as needed during the appropriate points of cloud operations.
- **Integration with workload managers, middleware and applications:** Clouds exist to run applications, therefore Cloud Management software must provide flexible programmable interfaces to enable easy integration with the enterprise's essential workload managers, middleware and applications.
- **Configurable resource allocation policies:** The cloud must be workload-aware as well as resource-aware – in order to be capable of determining the most efficient placement of the various workloads flowing into the cloud, and guaranteeing resource reservations to its customers based on well-defined policies to meet SLAs cost effectively.

- Support IT and business processes: Clouds must provide support for various IT and business processes and allow IT to automate many of its operations.
- Enterprise solution: The private cloud must be scalable and flexible enough to enable the integration of IT across LOBs and locations, as needed, by reconfiguring rather than replacing the Cloud Management software.

## 10. What are the best use cases to start with cloud?

Test/Dev and HPC, where self-service IT is mandatory and already exists albeit in a more rudimentary fashion. Areas where dynamic and changing demand requires a highly responsive and agile IT environment will migrate to cloud, such as J2EE, analytics applications and BI applications. Anywhere where IT responsiveness has a direct impact on product delivery and the business will benefit.

## 11. How and where do I get started on private cloud?

The roads to cloud computing from the existing client-server computing are many. There are at least three major paths available and followed by business users:

- Organizations that run applications hosted in VMs on servers can consolidate these servers to form a VM cluster. Adding automatic resource allocation, load balancing across VM clusters, and self-service access to resources results in a private cloud run by the IT department.
- Organizations that operate distributed systems on grids, managed by IT staff and shared by technical applications that are typically compute- or data-intensive can deploy cloud management software to generalize the grids to support more types of applications. Incorporating VM technologies and application environment provisioning tools from Data Center Automation products transforms the grid into a private cloud.
- Finally some organizations move directly from their desktops or any client devices allowing users to access applications hosted in cloud computing centers run by internal or external service providers.

An organization may choose to follow one path to cloud or another, and often several at the same time for different applications or parts of its business. To ensure success, the adoption of cloud computing should follow a sequence of evolutionary steps rather than an overnight revolution. Motivation for the use of cloud computing comes from users and progress is driven by the needs of specific applications for scalability, cost-effectiveness, or capabilities such as business process automation. Platform believes the best approach is to start small and build a private cloud using internal resources as a first step that can be used in a Test/Dev, HPC, or other specific application environment for example and then expanded.

## 12. Why should I work with Platform?

As the global leader in grid computing, Platform has leading technology and extensive experience in infrastructure sharing and workload scheduling, the two key capabilities that are required for the adoption of private clouds. Platform also has experience in deploying large scale distributed computing environments that leverage both physical and virtual resources, clusters and grids. Platform is one of the few vendors that deliver a cloud computing management platform (Platform ISF) which is technology agnostic supporting the leading hardware, OS and VM offerings. This means that existing resources can be leveraged to deploy a private cloud.

## 13. What are the common concerns with respect to the adoption of cloud computing?

Typically business users are reluctant to give up their dedicated resources and pool them in a shared environment due to concerns of resource availability, service levels and the responsiveness of a cloud

computing environment. Also, in many organizations IT has not developed into a dependable strategic partner. This is an evolution IT must take if cloud computing is to become less daunting. Platform ISF helps you start, or accelerate this journey.

From IT's perspective, concerns of security and compliance (even inside the firewall) remain, as confidential information does not usually reside on shared servers. It is a misconception that a private cloud is deployed across the entire organization. It is expected that you will have pockets of dedicated resources for some legacy applications and those with static workload using up all the resources on a server. Finally, fears of upfront investment costs and complexity can be addressed through the availability of packaged cloud computing management software (like Platform ISF) designed to leverage existing infrastructure.

**14. What are the barriers to cloud adoption within the enterprise?**

The greatest barrier to the adoption of private cloud computing is the existing mindset within organizations and within their IT operations. The role of IT must change; a challenge for both IT and the organization overall, which has a preconceived notion of the role and capabilities of IT. Once this hurdle is crossed other barriers include the lack of a proof point, IT maturity (even after the mindset issue has been tackled), the need for project investment, and application suitability.

**15. What is the role of public cloud within an enterprise?**

Public cloud represents an important resource available to the enterprise and should be considered by cloud developers as valuable computer resources within a private cloud construct. It provides rapid access to compute resources on demand within a cloud environment and can save organizations capital costs, especially for organizations with spikes in demand or cyclical resource requirements. Resources from external providers can be incorporated into your private cloud as needed.

**16. What industries will readily be able to take advantage of private cloud?**

IT environments with elastic or variable demands for infrastructure and multiple overlapping applications can readily take advantage of private cloud computing today. These demands are often driven by internal application development, simulation, testing and business processes which have spikes in demand as a result of business cycle or project demands. Initially these would likely be in the functional areas which leverage HPC, Web apps and SOA applications. However the private cloud computing paradigm is suitable for medium and large enterprise spanning many industries including Financial Services, Retail, Manufacturing, Energy, Healthcare, High-tech and the Government sector.

**17. Should I wait for standards to be adopted before I deploy my cloud?**

Standards are important but enterprises should start proof-of-concepts and production deployments today. Business users are not waiting for standards, or their own IT organizations for that matter, as they move to use public cloud. Standards will evolve as a result of the success of these early deployments. IT must offer users a viable private cloud alternative to the risky and limited service public clouds. Cloud computing will inevitably evolve. Better to be part of that process and gain experience, educate the organization and commence the corporate mind shift. Through these efforts IT organizations will be able to contribute to the standards discussion.

**18. What's the right kind of company to work with to adopt a cloud computing model?**

When deploying a private cloud, organizations will need a management framework that can leverage existing hardware and software investments and support key business applications. This framework must facilitate the pooling of physical and virtual resources and offer this infrastructure as a service to business users in a flexible self-service fashion. A cloud computing management platform should be agnostic to the underlying building-block technologies (Hardware, OS and VM). This way companies can leverage the market trends, and avoid vendor lock-in. The vendor must also have the expertise in delivering value in large complex enterprise environments that can scale, and has a history of supporting those environments as well. This vendor must be well positioned within your entire eco-system to integrate and partner with other parties including:

- Hardware vendors
- OS vendors
- Virtualization vendors
- System Integrators
- System management software vendors
- Application and middleware vendors

**19. If you've already deployed virtualization are you part of the way to cloud?**

Absolutely. Virtualization is a key building block to a complete cloud implementation, enabling flexibility, isolation and mobility within a cloud environment. Organizations which have deployed virtualization are already receiving some of the benefits that a complete private cloud solution will provide. From an education and deployment perspective they are already ahead of others in the adoption of cloud. Cloud computing brings resource sharing, service delivery model for IT and integration with applications and middleware to complete the picture.

**20. If you have already deployed grid are you part of the way to cloud?**

Grid is an underlying evolutionary stage that provides tools for infrastructure sharing, workload scheduling, and the ability to scale the environment. These are key elements to an effective and efficient private cloud solution. Organizations which have already deployed clusters and grids have already embraced this technology, understand it and are further ahead on the learning curve. These organizations have also made the cultural shift towards "sharing" which in itself is one of the barriers to cloud adoption. The addition of virtualization, provisioning and self-service tools completes the evolution of a grid into a private cloud.

**21. Is cloud a flash in the pan or the next wave?**

Cloud is absolutely not a flash in the pan. It is a logical next step in the evolution of the data center from mainframe to client-server, and now to clouds. There is a lot of hype though that needs to be separated from the substance. The hype creates confusion and conceals the fact that cloud is a means to an end and it is up to every organization to assess the value of cloud within that context. Public cloud computing has advanced the commoditization of computing. Accordingly, it has provided the impetus for IT to make a much needed shift (enabled by innovative technology from vendors like Platform Computing). It is time for IT to "up" its game and delivers cost effective service. For many medium and large enterprises a private cloud will prove to be the way to achieve this goal.

## 22. How do I measure the ROI of clouds?

The best way to assess the value of the cloud is in terms of the economic drivers that are pushing medium and large enterprises to adopt private clouds. Implementing a private cloud allows IT to leverage the power of sharing by maximizing the efficiency of computing, networking and storage resources, while reducing the cost and speeding up the delivery of IT services. This results in:

**Faster delivery of IT services** – By removing or streamlining the organization’s entrenched silos, IT moves to an infrastructure that responds to new business needs in real time.

**Reducing IT costs** – More efficient utilization of IT resources means fewer servers are required and the data center’s footprint and power and cooling requirements are reduced. CapEx is lowered because IT no longer needs to provide over-provisioned infrastructure silos that are specific to each application to meet anticipated peak demands.

## 23. If cloud computing is still evolving what’s the urgency to get involved today?

While most of the IT industry (hardware and software included) are still struggling to understand their value in the cloud world, cloud computing management platforms already exist today that allow users to get started immediately. In addition, business users have already started to take advantage of public cloud services, a trend which, if unmanaged, will cause problems for enterprise IT. These users should be able to do this inside their firewalls leveraging investments the corporation has already made. IT needs to respond to them today.

## 24. How must IT evolve to support a cloud computing world?

IT has to stop acting as simply the de-facto caretaker of technology and start behaving like a value-added deliverer of fundamental services to business users. Infrastructure must be offered as service, not as equipment, and this service offering must be competitive and easy to use. This transition will not happen overnight and will require that IT organizations develop, and the mindset of the organization change. In some case this may involve IT “marketing” the cloud services internally to the business users.

# Platform™

Platform Computing is the leader in grid and cloud computing software that dynamically connects IT resources to workload demand according to business policies. Over 2,000 of the world’s largest organizations rely on our solutions to improve IT productivity and reduce data center costs. Platform has strategic relationships with Cray, Dell™, HP, IBM®, Intel®, Microsoft®, Red Hat®, and SAS®. Building on 17 years of market leadership, Platform continues to help data centers be more efficient, responsive and dynamic. Visit [www.platform.com](http://www.platform.com).

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