EXECUTIVE SUMMARY
Leveraging cloud computing, specifically Infrastructure-as-a-Service (IaaS), has the potential to substantially lower an organization’s infrastructure costs. However, like all new technologies, the majority of the benefits are only truly realized if the cloud is used properly and for the right purposes. Cloud computing is evolving quickly and is a fairly broad concept, which is why it is important to choose the right type of cloud for the right workload and application needs.

Due to the emergence of cloud computing, IT departments will drastically evolve over the next five years to better serve the organization. As the true cost of IT infrastructure and management becomes more visible, IT and the business units within the organization will work together to make better decisions about IT resources and spending. Organizations can now forecast future spending and avoid unnecessary spending in the cloud using tools such as Bluelock Portfolio™ to access real-time information about infrastructure costs. It is tools such as this, combined with self-service technologies like VMware vCloud® Director, that will enable this important shift in managing IT cost to occur.

EVOLVING ROLE OF IT AND BUSINESS UNITS IN THE CLOUD
As a business unit, application owner or an IT department, the ability to understand and manage your infrastructure cost is becoming vital to ensuring a beneficial experience in the cloud, as well as to maximize the return on investment. The business must create sustainable value while being able to react to a variety of changing business conditions. Businesses must constantly change in order to compete in the marketplace.

The business unit is playing the role of a technology consumer in a quest for greater agility. IT plays the role of technology supplier to provide the business with technology services that attempt to facilitate agility, but they must do so with a strong focus on efficiency. The simultaneous struggle for efficiency and agility creates a natural tension between IT and the business, which is healthy, but which can be difficult to manage. This tension is the true driving force behind the need for the public cloud as we see it today.

Traditionally, IT has played the role of both the supplier and the producer of technology resources. As the role of IT evolves in the Cloud Era to be a more effective supplier to the business, IT will continue to make its existing datacenter technology more efficient. This often begins with the deployment of a private cloud. Similarly, as part of their hybrid cloud strategy, IT will expand its supply chain to include other sources of production capacity by engaging with cloud service providers. In that scenario, IT will take on managing the governance of multiple suppliers in addition to the capital and staffing costs they manage today. This implementation of a hybrid cloud strategy brings change and efficiency that allows IT to function as more of a service provider.
Service orientation is one of the biggest challenges for conventional IT departments as they evolve in the Cloud Era. IT has traditionally determined their priorities based on overall organizational priorities. Because IT is generally under-resourced and under a great deal of pressure to be more efficient, deferring smaller, more tactical needs and department requests has unfortunately become a recurring by-product, which can be frustrating for the business units. Cloud computing providers are highly incentivized to deliver good service and are therefore very eager to ensure success. As an IT department begins to rely on the combination of cloud computing service providers and its own private cloud, IT is able to become more service-oriented itself. This also enables IT to gain governance over the cloud computing platforms its business units are using, while at the same time giving business units the freedom to use IT-approved providers and services to get projects launched quickly.

One of the main reasons business units are using the cloud is because they don’t have to know exactly what resources are needed, which can be a time-consuming project for both IT and the business. With cloud, the application owners pay only for what is used and can add or subtract capacity as needed. As they begin to learn more about resource needs and trends, that application owner can begin to make more calculated decisions in the cloud and be confident in its needs if the application ever needs to move back into the company’s private cloud.

THE HYBRID CLOUD TRANSITION
Core IT departments are struggling with cloud for good reason. They are challenged with not only the transition to cloud but also with rapid changes in mobile devices, big data, Software as a Service and Social Media. IT is trying to do all of this while under a lot of duress due to economy-driven budgets and headcount cuts. Being the sole caretakers for so many diverse, mission-critical technologies, applications and data in the company is not an easy task. This can be a cause for reluctance for IT to move to the cloud.

IT organizations are more frequently building or evolving their existing datacenters into what are commonly known as private clouds. Most enterprise private clouds are based on VMware technology making them highly efficient. Combine that efficiency with technologies like VMware vCloud Director and VMware Chargeback and businesses have a powerful combination of self-service and cost transparency. While building a private cloud can take a lot of time, it is a step in the right direction and will ultimately enable a powerful VMware hybrid cloud strategy. As a business unit, the best approach is to make sure that any public cloud services they seek out are fully compatible with the technology IT is using to build its private cloud. A very common technology for both public and private cloud environments is VMware vSphere, which is essentially a cloud operating system. Applications running in a VMware-based public cloud will be compatible if or when IT needs to move them back into the private cloud.

CONSIDERING COST IN THE CLOUD
As mentioned previously, public cloud Infrastructure-as-a-Service enables customers to get started with fewer decisions and less complexity. Cloud buyers should consider the public cloud environment as a virtual datacenter, or a pool of technology resources. When building a virtual
In the cloud, the business pays only for what is needed, which can result in savings or excess resources that can be used for additional projects. When comparing the cost of cloud computing infrastructure to traditional IT costs, the IT organization typically won’t include the cost of people and operations management because those costs are hard to scope down to a specific department or application.

One of the main reasons a business might decide to embrace the hybrid approach is to reduce their total cost of ownership. The best way to reduce total cost of ownership is to maximize resource utilization. Many workloads go into the cloud with one set of requirements, only to find that over time, they have settled down but are over-provisioned. In the cloud, there is an easy opportunity to lower the provisioning quickly and save money. With Bluelock Portfolio™, businesses concerned about reducing the resources because of occasional spikes, can look at the history of the workload to see if the current plateau is a temporary phenomenon or a trend. If the workloads have been stable for some time, it is likely safe to take the cost savings and turn down the resources. Cloud providers can help companies through these types of decisions. Likewise, if there is a spike coming, business units or application owners can simply add the resources back by using VMware vCloud Director.
PUBLIC CLOUD COST MANAGEMENT SCENARIOS
There are many types of workloads or applications that might be put into a public cloud environment. Each has a distinctive usage pattern typical of that type of workload. For example, disaster recovery workloads typically use very minimal compute and memory resources because there are not many resources running under normal conditions. These workloads more heavily use storage because they require replicating a copy of the data into the cloud. Bluelock’s Software as a Service (SaaS) and production application customers tend to use more CPU and RAM in real time, because the actual users of the applications are “live” in the environment. Understanding the usage patterns and characteristics of a particular application can provide insight into how to manage the costs associated with it.

Growing Applications
Many times, it is hard to tell how successful an application will be, or more specifically how much or how quickly it will grow. With cloud computing, managing that growth becomes easier. The buyer simply starts out with the current resource needs, but should make sure there is plenty of burst room overhead for growth. Thanks to the pay-per-use model of cloud, the customer simply pays for what is used, growing the environment as needed. In a traditional scenario as seen in figure 1, there would have been an abundance of excess capacity at the beginning driving costs up, and the growth projections could be too low, causing a poor end-user experience, or too high, causing wasted capital. In the cloud, those risks are contained.

Slow or Declining Growth Applications
Pay as you go and dynamic capacity have previously been foreign concepts in IT organizations before cloud. IT is accustomed to doing a lot of work to determine what the needs might be for a certain application or project, and the process can often take several weeks if not months. That scenario becomes even more painful if the application does not last long or grow as much as planned. With cloud, the customer can get started quickly and if the project tapers off, the resources can easily be re-allocated to a different project or turned down. In the traditional model, much more work must go into the re-allocation of resources and the capital investment of time and money is frustrating.
Mixing Multiple Workloads for Greater ROI

The most efficiency can be gained when running multiple workload types inside a cloud environment. As workloads come and go or when they go through peaks and valleys of usage, they often complement each other. By leveraging the peaks against the valleys of workloads usage effectively, customers can more fully maximize the return on investment. This ROI can be achieved by running multiple workloads of different types or simply by running development and test environments in addition to production.

Flexibility with a Virtual Datacenter

Once a business has designed its initial virtual datacenter and launched or migrated the applications, in addition to right-sizing your resources and cost over time, they are also able to adjust the components inside the virtual datacenter. It is very easy to do this while staying within the current spending budget. Whether it’s for a single virtual machine, a virtual application or the entire virtual Datacenter, the business can change the blend of components when needed. For example, an application owner might initially believe they will need a lot of storage, but could learn over time that they really needed more CPU and RAM to support additional users and less overall storage, because they have become efficient at purging unnecessary data. It is very easy to adjust Bluelock Virtual Datacenter resources accordingly.

Bluelock Portfolio: True Cost Transparency

To help make it easier to understand how making changes to a workload or application affects IT spending, Bluelock created a web-based tool called Bluelock Portfolio. Bluelock Portfolio allows users to analyze Virtual Datacenters, vApps and VMs from both a utilization and cost perspective. This enables customers to know ahead of time if someone made a change that greatly increased
the projected monthly cost before the bill comes. With that knowledge the admin can either make a new change to decrease those resources/costs or be prepared for the increase, which could very likely be tied to an increase in application usage that is also driving up revenue for the customer. Bluelock Portfolio also ensures that customers have the proper amount of resources in place in time to avoid any kind of service disruption. By using Portfolio to spot trends in utilization, the admin can log into VMware vCloud® Director to make any necessary adjustments to increase resources before they run out. As one can see in figure 6 below, the trend on CPU consumption appears to be consistently increasing in a linear fashion. Due to this visibility, the business unit can quickly increase the CPU before it becomes an issue or advise the application owner to make a change. Likewise, if resources are over-provisioned, the admin can change or alert someone that there are under-utilized resources and work to re-allocate those resources or lower costs.
**SUMMARY**

While cloud computing continues to deliver on the promise of enabling businesses to be more agile, today’s information workers face an increasing pressure to deliver the most value for every dollar spent on technology. While helpful, this new more agile infrastructure comes with a cost that can quickly spin out of control if left unchecked. However, with effective visibility and control, it becomes much easier to align utilization and spending. Bluelock Portfolio™, the first cloud-aware decision support tool, is designed to deliver on this promise by enabling the business unit to make fast, effective decisions and wrench the most value out of the cloud.

**Bluelock Virtual Datacenters**

Bluelock Virtual Datacenters offer companies a resilient, scalable public cloud hosting environment designed specifically for midsize and larger enterprises with complex infrastructure needs. This certified VMware vCloud Datacenter Service uses the same market-leading VMware virtualization technology that its enterprise clients use, providing a common framework that enables workloads to move between internal data centers and Bluelock Virtual Datacenters. Companies can protect their in-house IT investments and augment existing application infrastructures with Bluelock Virtual Datacenter public cloud resources for a hybrid cloud strategy that can transform IT into a significantly leaner, more responsive business entity.

**VMware vCloud Datacenter Service**

As one of the first certified VMware vCloud Datacenter providers, Bluelock enables hybrid cloud computing that is consistent with the technology and management tools VMware virtualization clients currently use to manage their own private clouds internally. The VMware vCloud Datacenter is built on proven VMware solutions, including VMware vSphere, VMware vCloud Director, VMware vCenter Chargeback and VMware vShield products. The service delivers ready-to-use cloud infrastructures to Bluelock clients, enabling rapid, self-service provisioning IT.

Meeting security and compliance requirements consistent with Bluelock’s rigorous security standards, VMware vCloud Datacenter requires either SAS 70 Type II or ISO 27001 compliance, application-aware firewall capabilities, Layer 2 isolation, role-based access control and directory services integration. With the security inherent in VMware vCloud Datacenter, organizations can extend the logical boundaries of their datacenters and leverage compatible public cloud services while retaining complete control over security and compliance.

More than 250,000 customers worldwide trust VMware’s proven, production-ready technology. Now Bluelock clients can leverage their existing VMware implementations in combination with Bluelock Virtual Datacenters to support their enterprise-class cloud computing objectives with a certified VMware vCloud Datacenter Service.

**About Bluelock**

Bluelock provides mid-size and large enterprises flexible IT infrastructure solutions with its Bluelock Virtual Datacenters hosted in the public cloud. Bluelock’s unique customer approach leads to innovative solutions that offer unprecedented visibility and control, helping customers make better decisions about risk, agility and operational efficiency. Bluelock, a VMware vCloud Datacenter service provider, facilitates a true hybrid cloud approach for IT departments and business units seeking choice, platform compatibility, and a proven cloud partner that focuses on each customer’s unique infrastructure needs.