Many enterprise IT departments have begun adopting public cloud. Public cloud offers many advantages, including:

- Computing resources can be provisioned quickly and abandoned with similar rapidity
- Users are charged only for the amount of service they use
- Fees are highly affordable

On the other hand, best practices have not yet been established for companies seeking to incorporate the benefits of public cloud while managing the IT infrastructure they have invested in for many years.

For example, modern web systems have multiple stateless web servers deployed under the control of a load balancer to guarantee high availability by the application architecture. For most legacy systems, however, availability is assured using IT infrastructure features such as clustering. In order to migrate such legacy applications to public cloud while preserving the same level of availability, major application changes are required. Applications need to be refactored to be stateless and to be aware of parallel distributed processing.
Is there any way to migrate existing IT assets to public cloud without modifying applications? Or can virtual infrastructures which are widely used as the existing IT infrastructure be migrated into the public cloud as they are?

In fact, it is possible to migrate existing IT assets to public cloud without updating applications by leveraging virtual infrastructure. In order to understand how public cloud and virtual infrastructure can be successfully combined, let’s review the characteristics of virtual infrastructure.

**Virtual Infrastructure and the Public Cloud: An Ideal Relationship**

Some ten years before the current “Cloud First” trend, there was a “Virtualization First” trend. All public cloud offerings were built using some form of virtual infrastructure. Virtual infrastructure offers many benefits, including:

- The number of physical servers can be reduced
  - It is not unusual to be able to consolidate more than 20 physical servers to one server by virtualizing them
  - Decreasing the number of physical servers reduces data center space cost, electrical bills and operation person-hours proportionally (1/20!)
  - The competitive pricing of public cloud is achieved by maximizing consolidation rates while avoiding performance degradation
- Entire server can be backed up and migrated
- Application infrastructure services such as high-availability, automated load balancing can be provided without application changes
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While public cloud is a revolution of how IT is consumed, virtualization was a revolution of how IT is deployed. The effectiveness and convenience of public cloud is achieved by maximizing its use of virtualization technology.

Migrating physical servers to virtual servers (P2V) can be done without making changes to applications. The industry’s best practices for P2V to maximize the cost reductions that virtualization offers are well established over a decade of refinement and can be implemented without significant risk.

Deploying virtual infrastructure in public cloud makes it possible to migrate existing IT assets to public cloud without making any changes to the applications.

NTT Communications’ enhanced Enterprise Cloud Service with new functionalities offers IT infrastructure hardware as a cloud service, making it possible to deploy a familiar virtual infrastructure in a public cloud environment. This allows applications to be migrated to the cloud unchanged while still enjoying the advantages of the public cloud mentioned above.

“Asset free virtualization” or “Virtual infrastructure as a service” of this kind is not very well known at the moment, but I believe it could become the de facto standard for cloud migration while leveraging existing IT assets.

Virtual infrastructure as a service should certainly be investigated by those seeking to migrate existing applications to the cloud and realize an easy-to-operate hybrid cloud infrastructure.

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