

Compute, Storage, and Network

Corporate Infrastructure Challenges

- Isolated and Inelastic Pools of Compute, Storage, and Network within Data Centers
- Lack of Elastic Infrastructure drives Over-Provisioned Hardware with limited efficiency in utilization
- Highly Heterogeneous Hardware & Software Infrastructure
- Multiple Forms of Compute, Storage & Network Equipment with limited standardization
- Fragmented Infrastructure Automation
- Limited Virtualization of Storage and Network even if Servers are virtualized
- Result: Inefficient Infrastructure which hinders projects, is complex to use, and expensive to operate



What customers looking for?

- Software Defined Virtualized Data Center in the Cloud
- Broad range of cost effective, highly elastic Compute, Storage, and Network Resources
- Ability to migrate their existing Software without needing to re-write them
- Provide deep control of infrastructure along with security, governance, and performance



Cloud Infrastructure

- Compute
- Storage
- Networking



Compute

- Elastic Compute — Shared
- Dedicated Compute
- Bare Metal

Note: Each vendor provides different services and names and packages also vary.



Elastic Compute

- Customer gets virtual machine of selected operating system
 - Shared amongst many
- VM is configured based upon customer needs
 - Core, storage, etc.
- Shared resource that can grow on demand
 - Elasticity — Accommodate growth or short-term spikes
 - Auto-scaling
- Multiple Os — Linux, Windows, Solaris, etc.
- Self-service UI to start/stop instances
- Provided by almost all providers



Dedicated Compute

- Some may not want to share hardware resources
- Fully isolated compute service
 - Dedicated physical servers and cores
 - Dedicated network
- No noisy neighbor
- Helps with compliance requirements
 - Not sharing hardware with others
- Virtual machines work the same way as in Elastic Compute
- Elasticity is very limited



Bare Metal

- Forrester defines Bare Metal cloud service as:

“IaaS offerings that deliver dedicated physical infrastructure that does not include virtualization and is provisioned via the same type of cloud interface with the common characteristics of VM-based cloud offerings, including on-demand access, unlimited scale, and detailed resource accounting.”

- Not every cloud provider provides this service



Storage

- Different tiers of storage options available
- Block Storage
 - Persistent storage accessible by VM instances
 - High Performance
- Object Storage
 - Backup applications, Database, user files, etc.



Storage

- Archive
 - Long-Term inexpensive option for storing data
 - Usually costs more to retrieve the data
 - Eliminate the need for offsite tape backups
- Highly available — usually 99.9999% or higher
- Secure
 - Some provide data transfer using SSL
- Data redundantly stored across multiple facilities & devices



Network

- How to connect to the public cloud?
- Having resources in the cloud is good but also need good connection
- Each provide gives multiple connectivity options
 - Public Network
 - VPN
 - Direct Connection

