VMWare Launch - Working with Cloud

Management & Operations

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Class Roadmap

Metrics, Measurement & Assessment

"Every line is the perfect length if you don't measure it."

- Marty Rubin

"What gets measured gets managed."

- Pearl Zhu

"If you don't collect any metrics, you're flying blind. If you collect and focus on too many, they may be obstructing your field of view."

- Scott M. Graffius

"What science has failed to notice is that the measurement has become more real than the thing being measured."

- R.A. Delmonico

Metrics, Measurement & Assessment

"That which cannot be measured cannot be proven."

- Anthony W. Richardson

"All conflict in the world is essentially about our differences in measurement."

- Joseph Rain

"It is impossible to escape the impression that people commonly use false standards of measurement – that they seek power, success and wealth for themselves and admire them in others, and that they underestimate what is of true value in life."

- Sigmund Freud

Monitoring Across Hybrid Cloud

- Monitoring & logging are key considerations in any Cloud environment
- Systems (you hope) will be running around-the-clock – maximizing business benefit
- Unless you want to directly "babysit" those systems around-the-clock, you will need automated monitoring, logging and alerting to notify you of any issues
- Allows you to optimize handling for those exceptional cases when there is a problem

Monitoring Across Hybrid Cloud

- Capabilities exist to log and aggregate log data from the public Cloud
- There are likely already processes in place to monitor on-premise systems
- The goal is a strategy that allows you to pull that data together so you can analyze and make decisions holistically

Monitoring Across Hybrid Cloud

- Key tasks include:
  - Discovery – where are the critical data sources and how do I connect
  - Aggregation – bringing the data together in a systematic way
  - Normalization – converting data from disparate data sources into a canonical format
  - Security – data scrubbing (if required) and prevention of exposure of sensitive data

- Not just about identifying problems but also using the data to effectively identify opportunities

Monitoring Across Hybrid Cloud

Develop Intelligence

Potential Challenges

- You will need secure and performant connectivity between your on-premise and Cloud components
- Data formats may be very different between the different systems comprising your Hybrid Cloud environment
- You will need a strategy for gaining intelligence from the aggregated data while driving the benefit of that intelligence back into disparate systems

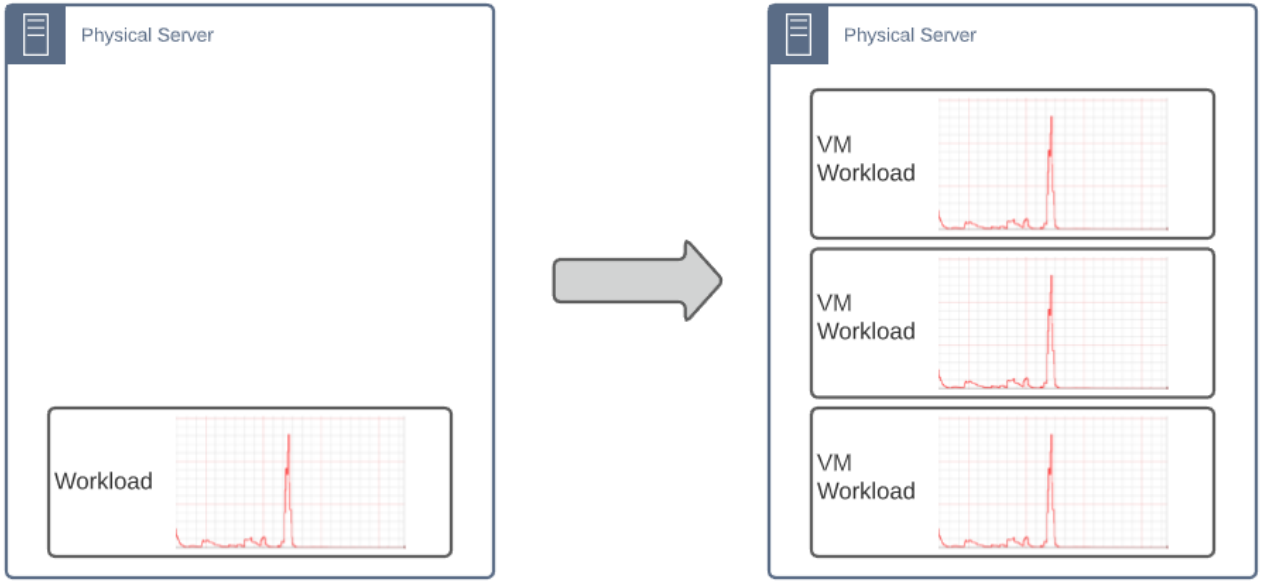
Virtualization & Orchestration

- Virtualization is not a Cloud-only concept, but the Cloud would not exist without it
- Virtualization enables an organization to get more value out of its infrastructure investments
- As we discussed, in the past, companies would try and estimate compute, network and storage capacity to cover 3 – 5-year growth

Virtualization & Orchestration

- Could result in two areas of challenge:
  - Underestimating – lack sufficient coverage to power the business
  - Overestimating – left with idle capacity, paid for but not adding value

- Virtualization enables the relatively quick spin up of right-sized infrastructure (and more of it in response to demand)



Virtualization & Orchestration

- Whether VM's, managed services or containers, more available instances require coordination
- Otherwise, the added complexity of "more" could impede rather than benefit
- Orchestration enables effective and efficient management as a ***unit*** so the "more" can be used to satisfy the business need

Potential Challenges

- Coordinating across multiple instances (sometimes very many) can be difficult – at either the infrastructure or application level
- Effectively combining the “many” into a pool of processing power, but still allow management at the individual instance level
- Optimal orchestration requires the ability to monitor the “many” and quickly respond

Elastic Scalability

Develop Intelligence

- As highlighted previously, one of the main “draws” for Cloud is the ability to quickly scale up or scale down workloads
- In concert with virtualization & orchestration, the Cloud allows the automated spin up of “more” to handle:
  - Response to a specific schedule event (e.g. seasonal demand)
  - Response to an alert from a monitored event indicating that current configuration is being taxed with volume (using multiple metrics)
- It is elastic because the platform supports both scale up and down
- Key to optimizing cost vs. capability – paying for only what you need when you need it

Potential Challenges

- Being able to determine what is needed and when can be challenging
- In the Hybrid Cloud environment, scalability may look different depending on whether you're talking on-premise services vs. Cloud services
- Determining optimal what & when may require usage data that you don't yet have with a newly deployed system
- Balancing capability against cost and ensuring "just enough"

Business Continuity/Disaster Recovery (BC/DR)

Develop Intelligence

- A BC/DR strategy enables a company to plan for continued operations even in the face of a regional disaster
- Usually geographically-based – instances of services existing in ***both*** a primary region and in another physically-separated, secondary region
- That way, if the primary region goes down (for whatever reason), theoretically the company could continue to do business
- Doesn't have to be a permanent issue – could be a transient failure

Business Continuity/Disaster Recovery (BC/DR)

- Design and operational considerations:
  - Latency – because of physics, data can only travel over-the-wire at a certain speed
  - Active-Active or Active-Passive – does the system require / support actively servicing requests in both geographic locations at the same time?
  - Cost – depending on the configuration, a company may be required to pay for 2x the infrastructure

Business Continuity/Disaster Recovery (BC/DR)

- Most public Cloud platforms support “stickiness” to the region that is geographically closest to the request (to minimize latency)

- Two key concepts relative to data:
  - RTO – Recovery Time Objective (how much downtime can I absorb?)
  - RPO – Recovery Point Objective (how much data loss can I absorb?)

Potential Challenges

- As discussed, latency can be a challenge – will a secondary region perform at the level needed to meet your SLA's?
- If the profile is Active-Active, it can be challenging to coordinate data collection and intelligence gathering across the two regions
- If the profile is Active-Passive, what is the process for spinning up the secondary region, how do you keep data in sync (and then undo once the disaster scenario resolves)?
- As with elastic scalability, balancing capability against cost and ensuring "just enough"

Endpoint Protection & Security

Develop Intelligence

- The services exposed by a company used to provide its business value are critical
- The data consumed by a company in the provision of that business value could be very sensitive
- There are multiple regulations in place requiring the protection of sensitive data (e.g. PCI, SOX, HIPAA and GDPR)
- Failure to adhere to those regulations can cost a company significantly – either in actual $'s or in reputation (which can be more damaging)

Endpoint Protection & Security

- The issue is not only one of data security – there are “bad actors” that work to take down sites and services
- One of the ways that service can be hindered is through a DDoS (Distributed Denial of Service) attack
- For DDoS, attackers will attempt to “flood” a service with so much bogus volume that it becomes unable to satisfy real business requests

Endpoint Protection & Security

- Most Cloud platforms provide services to help you protect against a DDoS attack
- Can include API management services (subscriptions, key-based access, throttling)
- Web Application Firewall (or WAF) is another service provide by Cloud platforms to monitor, filter and block (if required) incoming traffic

Potential Challenges

- The threat and regulatory landscapes are constantly evolving
- In a Hybrid Cloud scenario, creating a solution that gives you comprehensive protection across your on-premise resources, your Cloud resources and the connectivity between the two is not trivial
- Optimal application security and infrastructure security requires planning and specialized skillsets
- Good architectural practices (e.g. Least Privilege and Secure-by-Default) can help limit the “blast radius”

Break (10 min.)

THANK YOU

Develop
Intelligence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Intelligence