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CloudExpo 2019, Santa Clara, USA: Cloud Chaos & Path Forward

The Important

- **Cloud chaos:** keeping up with a fast-moving landscape
- **Key challenge:** making private/public cloud choices
- **Lessons Learned:** DevOps revisits velocity vs quality
- **Transformation:** change is about people
- **Tradeoffs:** Cloud Strengths and Weaknesses
- **Important Trend:** AIOps

Key concepts

- Virtual Machine: instance of a full operating system
- Container: instance of an application without the overhead of a full operating system
- Serverless: instance of a function, stateless, short lifetime, event-driven, micro-billing

Cloud Chaos: keeping up with a fast-moving landscape

- Cloud has moved quickly from virtual machines, to containers, to serverless
- Each represent an evolution of IT economics, programming methodology, and scaling
- All three require different tools, skillsets, and development mindsets
- Virtual machines are mature
- Containers is where many are moving, but can be complex with a skills shortage
- Serverless is immature with respect to the needs of a broad range of enterprises
- Consultants, integrators, managed services providers, and tools startups emerge to fill gaps

Key challenge: making private/public cloud choices

- A big issue for enterprises is determining whether a workload should execute on a public cloud, private cloud, or pre-cloud data center architecture. When choosing public cloud, a related question is which public cloud is best for which workloads
- The utility model provided by public cloud offers an attractive upfront cost model
- The utility model can become expense over time for workloads that are not bursty*
- It can be difficult to compare costs between private cloud and public cloud, especially if comparing over provisioned private cloud resources with over provisioned public cloud resources
- Rewriting existing applications for public cloud may not be cost effective, especially if they are continuously running applications
- Augmenting existing applications with cloud native software is a potential strategy for extending capabilities, but there are gaps in connecting the different code bases. It is an area that is getting some attention by entrepreneurs
- There is multiple technology, financial, and skillset considerations in making decisions about shift and lift, cloud-first, and legacy application augmentation

* This is an issue that bohcaj will do more analysis on in the Network Strategy practice as this comes up in the networking context as well. There is a bigger question of what business model best fits different purposes / objectives

Lessons Learned: DevOps revisits velocity vs quality

- DevOps as a coined-term / concept turns ten in 2019
- There is a general recognition that the focus on the last few years on velocity, came at the expense of quality, with some notable fails
- The biggest cloud providers can update software as much as a hundred times a day, and with reasonably good quality. Few enterprises have anywhere near that capability
- There are a number of companies focusing on quality: where and why are errors happening
- Some applications have a staggering number of uncaught errors / exceptions leading to a meaningful waste of resources. There is a quantifiable cost to these exceptions beyond bad customer experiences

- What is DevOps? Beyond the literal integration of development and operations, it is the shortest time from code to cash. However, it is a focus on achieving the fastest time, highest efficiency, and best quality. DevOps→Site reliability must address all three

Transformation: Change is about people

- Many would argue that many of the technical challenges with new ways of working are reasonably easily addressed
- The consistent challenge across all kinds of changes, no less in the move to DevOps / Site Reliability, is people
- The bigger the enterprise, the greater the separation between development and operations
- The bigger the enterprise, the less likely there is necessary incentives to change
- The bigger the enterprise, the more resistance to change
- The bigger the enterprise, the more likely that people are working in silos, disconnected from the overall desired outcome / impact
- Big enterprises can change, but there are enormous leadership changes
- Unintuitively, some attention is being given to claims that heavy weight change management processes make it harder to manage change

Tradeoffs: Cloud Strength and Weaknesses

Strengths

- Easy to get started / Pay per use
- Built-in scalability
- Service and ecosystem scope/strength
- Agility / speed
- UpToDate Managed infrastructure
- Focus on value-add / application

Source: Emil Sayegh, CEO Hostway

Challenges

- 30-45% of spend is wasted (note, there is wasted spend in private cloud as well)
- IT professionals often list security as their greatest concern
- Compliance fog: for example, small number of IT professionals understand how GDPR impacts cloud services

Source: Emil Sayegh, CEO Hostway

Tradeoffs

- Cloud use maturity comes with understanding tradeoffs
- Own DC when there is a need for consistently large scale and a strong security concern

- Managed hosting when packaged applications are required
- Colocation: legacy code running on bare metal
- Public cloud for bursty / transient workloads, test/development, and new tech like AI/ML
- Gartner: By 2020, 75% of organizations will have deployed multicloud or hybrid cloud. One “size” does not fit all

Source: Emil Sayegh, CEO Hostway

Important Trends: AIOps

There are a number of interesting companies, investors, and entrepreneurs looking at how AI can improve cloud operations. Companies include OpsRamp. While this is ultimately just more “[greater Taylorism](#)”, it may also be important foundational capabilities for the longer term health of the cloud ecosystem / increasing IT productivity. Some would go so far as to say that AIOps exists at the intersection of DevOps, ITOps, SecOps, CloudOps, and DataOps. Is this FutureOps? (GodBoxOps?)

Interesting Companies

- **OverOps**: Bringing to Enterprises the software velocity and quality of the large cloud providers.
- **Nimbella**: Headed by Ankeena/Juniper Alum Anshu Agarwal, looking to plug the maturity gaps in serverless.
- **Datathorem**: API / Automation-oriented security company
- **Diamanti**: Performance-oriented NVMe-enabled Kubernetes solution
- **Rafay**: Life-cycle container management across “any” environment
- **ScaleMP**: Uses NVMe to extend the addressable memory of baremetal/EC2 instances
- **Apptio**: Finance-oriented cost/resource optimization for public cloud
- **Densify**: automated resource optimization/automation
- **Platform9**: Bringing public cloud Kubernetes experiences on-prem with centralized management

Conclusion

While there are many gaps in cloud computing, the size of those gaps depends on whether an enterprise is operating in a virtual machine, container, or serverless environment. The closer to serverless, the greater immaturity an Enterprise must navigate. The closer to serverless, the greater the potential for compute efficiency. As always, the size and maturity of an Enterprise IT organization impacts where on this spectrum an Enterprise will operate. As always, entrepreneurs, consultants, integrators, and solution providers look to fill maturity gaps. Cloud has been and remains disruptive. Few Enterprises can afford to ignore this approach to IT, whether public, hybrid, multicloud, or private cloud. At the same time, Enterprise IT professionals need to understand the tradeoffs inherent in different clouds, how new solutions can plug gaps, and what workloads should execute where – there is no single approach for optimizing all workload execution.