MANAGING PUBLIC CLOUD WORKLOADS

Challenges and best practices.
By 2nd Watch & Melbourne IT Enterprise Services.
Large companies are shifting more aggressively to the public cloud today for running a variety of production applications at scale. CFOs are interested in the pricing advantages of running workloads in the cloud instead of the internal data center. CEOs are spurred on by the possibility of using IT as a strategic business advantage with new revenue-driving applications, deployed faster in the cloud. CIOs are intrigued by the maturity of public cloud services and the rapid pace of innovation. In just a few years, cloud IaaS providers now offer far more than on-demand elastic computing, but full-scale enterprise services with increasing options for security, reliability and design.

By 2018, public IT cloud services will account for more than half of worldwide software, server, and storage spending growth, according to IDC. Public IT cloud services spending will reach $56.6 billion in 2014 and grow to more than $127 billion in 2018, the research firm predicts.

Promisingly, the advent of infrastructure-as-code is fueling new use cases for moving high priority workloads to the cloud. With relative ease compared to the days of months-long procurement cycles, even a Fortune 500 company could choose to host its entire data center infrastructure from a single cloud IaaS vendor. The need to navigate hardware vendors and contracts is becoming irrelevant to IT purchasers, as companies begin to plan at a higher level: infrastructure as a service, Software as a Service and Managed Service platforms, all consumed on month by month OPEX models. The objective today is in finding the optimal service providers, partners and tools that can help IT manage all the pieces holistically as a dynamic, adaptable environment.

Despite the untapped promise in the public cloud, a recent survey by 2nd Watch found that most enterprise IT managers and directors (70%) say that managing public cloud workloads is difficult. Of that group, nearly half (30% overall) say it’s extremely difficult, while the remainder (40% overall) said it is as difficult as managing internal systems.

Three of the top challenges for IT departments, long accustomed to the slower cadence and predictability of physical infrastructure include:

• Determining which workloads the company should migrate to the public cloud and when;

• Determining which public cloud provider to select, and;

• Determining how to monitor and maximize the performance of the workloads in the cloud service after migration.

The very nature of cloud infrastructure requires a different approach to workload management: Cloud resources can be provisioned and decommissioned quickly and the underlying infrastructure often changes without IT knowing about it. Automated tools and best practices for change management and real-time monitoring are imperative.

CIOs and CTOs wishing to move to the cloud are struggling to shift due to a dearth of internal skills in cloud architecture and design, outdated tools for monitoring cloud resources for both price and performance, and a lack of business engagement to prioritize workloads and set strategy. Helping IT staff work well within the world of cloud IaaS is a perennial challenge. “Most IT professionals are too busy reacting to the daily firefights associated with managing their legacy systems and software,” says Jeff Kaplan, Managing Director of THINKstrategies, Inc, a strategic consulting firm for companies adopting SaaS, cloud computing and managed services.
FIRST STEPS: OVERCOMING BARRIERS TO CHANGE

The entire manner for delivering IT services is changing from technology that you can touch, see and control to virtual resources managed by other companies across distributed data centres connected by the public Internet. CIOs can help ease concerns of this transition in the following ways:

1. BE STRATEGIC

A common challenge for enterprise IT is not knowing what to do first. A proper assessment of applications, specific technology requirements and licensing issues that may affect migrating workloads to the cloud can help prevent a negative experience and foster a positive environment for change. Ideally, both IT and business people participate in these assessments. Categorize applications based on their cloud readiness and then devise a plan for migration.

2. MINIMISE RISK THROUGH METRICS

IT people are often risk-averse. They don't like to feel as if they're losing control or can't see every moving part behind an application, and for good reason. Their job is to keep applications and services up and running smoothly for the business. Using tools that compare application performance in the cloud with the on-premise environment, across key measures such as latency and customer experience, gives IT the opportunity to make necessary fixes to application code or infrastructure design and thereby eliminate unpleasant surprises after migration.

3. CREATE EVENT DASHBOARDS

Per the previous point, IT employees don't want to be left in the dark. Implement a visual dashboard of the cloud environment that shows status of applications and resources at any time as well as changes to the environment. When troubleshooting for an outage, possible breach or performance blip, a picture is worth a thousand lines of code.

REALIGNING IT INFRASTRUCTURE SKILLS FOR THE CLOUD

When infrastructure was managed on premises, IT infrastructure managers were concerned about CPU and preventing hardware failures. Engineers specialized in hardware platforms, such as IBM or Cisco and there was no standardization between these vendor platforms. Today, these relatively narrow and hardware specific skill sets are going away as companies push their environments into the cloud. IT employees are now responsible for speed, user experience and application functionality; this means thinking in terms that are above the component layer and closer to the business. Here are a few guidelines for transitioning IT skills to the public cloud:

- **Adapt for speed**: Rethink deployment and planning processes for the on-demand and rapid model of the cloud. People who used to be responsible for procurement and installation will need new responsibilities, such as managing relationships with cloud vendors. IT employees must also understand business expectations and strive to meet them, instead of making the business play by IT rules and timelines.

- **Understand the application, not the machine**: Instead of managing hardware, infrastructure staff is now charged with managing and optimizing the software. Monitoring, analyzing and reporting on application characteristics continually informs the cloud strategy and helps employees make changes in time to prevent issues.
Invest training on cloud platforms, such as AWS: The major cloud IaaS platforms have unique design and architectural differences that can have a dramatic effect on the deployment and management of workloads. Redshift, for example, is a data warehousing product offered by AWS that has changed the way companies think about BI. The infrastructure team will need to understand those differences, and keep pace with new features, tools and services from the major providers.

Unlimited infrastructure and pay for use require new skills: The real benefit of the cloud is that you no longer need to over-provision for future growth or have rigid business cases that require high ROI to afford the infrastructure. The nearly unlimited nature of public cloud infrastructure and the pay for use concept shifts IT planning and operations on its head. Think about experimentation more. Try before you buy. Consider elastic workloads: Batch processing, disaster recovery and analytics are perfect candidates for public cloud optimization.

Eliminate traditional silos: In the transition to cloud infrastructure, there's little need to organize employees by functional areas such as storage, compute and networks. Instead, cloud architects, cloud developers and cloud workload managers will work across all infrastructure areas, with cross functional knowledge and responsibilities.

Business orientation: It used to be that only the major application managers and senior IT directors had to engage with the business. Now enterprise architects and engineers need to understand business priorities, help set expectations and work toward improvements over time. Infrastructure experts can help the business understand opportunities in the cloud, as well as possible limitations and the need for governance. This requires clear communication skills, negotiation skills and a measure of diplomacy from individuals who previously were hidden in data centers.

MANAGING THE AGILE CLOUD INFRASTRUCTURE

As infrastructure becomes software, it brings possibilities like never before. A cloud developer can write code to launch a full application environment in a matter of minutes.

The data center can be replicated in the cloud to prevent any downtime or mishaps during upgrades. Yet this means more moving parts and more change all the time for IT managers that used to work within predictable deployment cycles. Cloud sprawl is a reality today, and without proper oversight, it can lead to higher cost, waste, compliance issues and security risks. IT needs to manage cloud infrastructure as a lifecycle; it requires targeted approaches and toolsets for change management, releases, patches and governance. What’s needed, says Kaplan is “a new generation of cloud-based IT solutions that enables companies to automate many of the deployment and management processes.”
MANAGING PUBLIC CLOUD WORKLOADS: CHALLENGES AND BEST PRACTICES

NEXT-GENERATION CLOUD INFRASTRUCTURE MANAGEMENT TOOLS DELIVER:

**Self-correcting action** - Because of the dynamic nature of the cloud, the tools should be highly automated and responsive, applying fixes and configuration changes automatically as needed according to demand and load.

**Cloud aware monitoring and mapping** - Compared with legacy systems management applications that focus on physical servers and virtual machines, the newer tools understand and can visualize a much broader world of cloud services such as load balancers, virtual private consoles (VPCs) and AWS Elasti-Cache. Tools will also focus on application performance and end user metrics versus disk I/O or cache hit ratio.

**Infrastructure as a unit** - In the cloud, it’s possible to treat a workload or set of workloads as a single unit. For instance, if a business wanted to put an application into hibernation for a period of time to save money, that’s possible. New tools can visualize many components as a single unit, enabling IT to apply changes as needed from one screen. Imagine describing your entire datacentre – thousands of servers and applications – as a system that can be managed as a whole or as workload parts.
There’s ample pressure on chief IT directors to lead their companies to the cloud and quickly reap benefits of cost savings, agility and IT efficiency. Companies are in transition, struggling to leap from monolithic, legacy technologies and internally managed systems to on-demand cloud computing.

“Managing and optimizing production workloads inside a public cloud infrastructure is not a simple task and the challenges we face are very different from the ones we dealt with when we had our infrastructure on premise” says Vimal Thomas, VP of the Information Technology Division at Yamaha. “Partnering with an experienced company with qualified engineers on staff and a tested process is very important to our ongoing success in the cloud.”

There are three core challenges that 2nd Watch and Melbourne IT - both Premier AWS partners - are focusing on to help enterprise IT in this journey: Detailed visibility into cloud usage and billing chargeback, simpler visualization and editing of cloud workload templates, and centralized tools for monitoring and change management.

These features and capabilities are part of their Managed Workload Services, a public cloud managed service and application set to help CIOs automate governance, operations, procurement and financial management of enterprise workloads in AWS with industry-leading service level agreements. Core tenets of the service offering include:

**Financial transparency** - To ease the complexity of cloud billing, 2nd Watch has developed 2W Insight, an application that maps billing data from AWS to a company's enterprise finance cost center categories. This unique financial tool helps the CFO move from a CAPEX to an OPEX orientation of cloud computing, using terms that the business understands. Additionally, enterprises can charge back to each business unit or project the actual costs for cloud usage, managed workload services, software and third-party tools. This eliminates the business friction caused by budget allocations and reveals the true cost of each project as well as the return. (Fig. 1.0)
Cloud Formation Catalogs - An application called WorkBench helps IT departments manage and visualize the cloud environment. WorkBench is a catalogue of cloud formation templates that provide a central place for IT to create, edit and chart the high level map of the company's cloud resources. The application shows details on users, applications, CPU and storage, load balancers and security configurations and integrates with the AWS console. WorkBench allows for a reduction in time to market, a library of approved architectures and a control point for corporate governance. The application can also build an estimate on pricing, before migrating anything. (Figure 2.0)

Cloud Change Management - Understanding and tracking the high volume of changes to the cloud environment is critical for risk management and troubleshooting. 2nd Watch WorkBench includes a change management console that helps IT departments visualize change events and be proactive when it comes to cloud application performance and threat monitoring. The application provides an audit trail of all changes made to the cloud environment - when and by whom. AWS are also expanding the service offerings in this area to create core components that together provide a comprehensive solution suite e.g. AWS CloudTrail & AWS config.
Moving to the public cloud is where many enterprises want to go, whether to save money, conserve IT resources for business innovation, speed time to market for new customer-facing products and services - or all of the above. With a focus on IT skills, experienced partners and cloud-ready management tools, CIOs can take advantage of all the cloud has to offer for their business, with lower risks and faster results.

**Melbourne IT Enterprise Services** designs, builds and operates custom cloud solutions for Australia’s leading enterprises. Its expert staff help enterprises solve business challenges and build cultures that enable organisations to use technology investments efficiently to improve long-term value. With more than 15 years’ experience in delivering managed outcomes to Australian enterprises, Melbourne IT has been long associated with enabling success. Its certified cloud, consulting, and security experts repeatedly deliver results. This is why so many of the brands you already know and trust rely on Melbourne IT.

**2nd Watch** is an enterprise workload management provider that helps companies accelerate data center capacity growth through adoption of the public cloud. The company’s public cloud-native services and tools implement and automate critical workload management processes including migration, procurement, provisioning, operations, financial management, and governance. 2nd Watch has helped hundreds of customers increase agility and lower operation costs by shifting workloads into more than 75,000 instances in the public cloud. The venture-backed company is headquartered in Seattle, Washington.