DevOps Automation with a Private Cloud

Delivers Tremendous Business Benefits

Business Goals

To increase market share by lowering subscription prices and offering more product features faster while maintaining profitability.

Solution

Provide developers continuous delivery and continuous integration to automate and improve the software delivery process, thus accelerating the build, deploy, test, and release processes.

Benefits

Time to market new product features dropped by 20% and Engineering expenses reduced by 37% owing to better asset reuse and adopting self-service.

Customer Situation

A software product company headquartered in San Francisco was looking to increase its competitiveness by lowering subscription prices and launching new features faster.

To maintain profitability, a 15% YoY cost reduction from IT operations was targeted. To achieve the target, an internal study identified following challenges with product engineering and professional services activities, which were increasing IT operating costs:

- *Implementation lead time had increased from three weeks to almost two months over the past 3 years.*
- *Developers were spending too much time migrating code between local, development, user acceptance testing (UAT), and production environments.*
- *Twenty percent of the development time was lost in environment configurations and tuning.*

Imaginea's Engagement

Imaginea's Cloud Services team was engaged to look at the IT operations with objectives being:

- *Shorten development cycle duration and Improve asset utilization.*
- *Slash Operating Expenditure and Capital Expenditure.*

This engagement was planned alongside a private cloud implementation.

Agile DevOps

One of the key approaches identified was to automate DevOps tasks and bringing Continuous Integration (CI) and Continuous Deployment (CD) to Engineering. Automating these tasks aids organizations in setting up and configuring infrastructure consistently and free from errors.

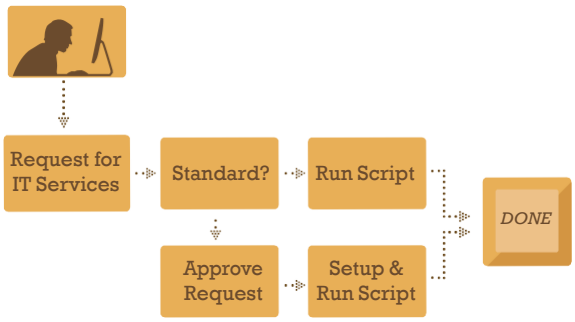
- A Gartner survey estimates that downtime caused by incorrect manual configurations cost small and medium sized businesses $42,000 an hour, with figures in the millions for larger enterprises.
- According to the 451 Group Research Senior Analyst Jay Lyman, "Today's market demands the speed and efficiency of IT automation. Rather than sacrificing quality or uptime because of avoidable human errors, DevOps methodology and practices of agility and automation can reduce human interaction with code and infrastructure, allowing development and other teams to focus on their primary objectives and business. This continuous deployment approach to infrastructure can accelerate release time and time-to-market for applications and features by reducing errors and test time and supporting DevOps processes."

Imaginea believes in agile philosophy for DevOps automation. Imaginea's DevOps automation sprint follows a five-step iterative process to continuously improve and progressively automate DevOps activities. Over four sprints, most of the repetitive DevOps activities were automated.

DevOps Automation

Imaginea used Razor, an infrastructure provisioning toolkit to provision the hardware/software environment that would be needed.

App Development Infrastructure Requests



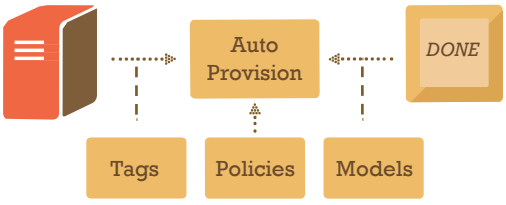
For application automation, manual processes in moving applications between different stages of application development (Dev/Testing/UAT/Production) were completely eliminated using Puppet IT and Ansible automation software tools.

For Staging/Testing/Production system with low loads (such as websites), Ansible-based scripts were used to automate the application movement.

Puppet Master and Node were deployed to track the configuration of the various nodes and enable change management.

Templates for different configurations were created and made available to developers through a self-service portal. All standard service requests were serviced by the self-service portal using one of the available templates. Non-standard requests were processed through an inline approval process as shown in the adjacent diagram.

Real Time Requests



For complex applications where expansion decisions are to be taken in real time, custom scripts along with Puppet were developed to automate the infrastructure expansion

Imaginea scripted the Tags, Policies, and Models in the Razor application to suite the client's needs.

1. **Tagging Rules**: Scripting the purpose best suited for a given type of hardware asset, for example, Cisco UCS to be used in vSphere cluster and Old Dell servers for development.
2. **Policy and Models**: Defining how an asset has to be configured through policy and models. Different models were defined, based on the application, environment, etc. Using these policies, Razor decides the most suitable model that should be used for the specific purpose and configures accordingly.
3. **Hand Over**: Defined the mechanism to handover the "modeled" the infrastructure to Puppet master.
4. **Puppet**: Puppet scripting was used to take the model from Razor and create the environment, and complete the provisioning task.

Automation

Cost reduction

Better control

Conclusions

Imaginea automated most of the mundane, internal DevOps tasks that let the customer to not just transform their IT, but morph it from a *cost center* to a *cost optimized center.*

- *Increased delivery speed, lowered infrastructure costs compared with conventional hosting, and reduced the cost and complexity of scaling up.*
- *Enhanced developer productivity for initial and ongoing delivery by removing infrastructure configuration complexity.*

Business Results

- *Reduced standard infrastructure setup and configuration time from 8 hours to 15 minutes*
- *Reduced non-standard infrastructure setup and configuration time from 2 weeks to 3 hours*
- *YoY engineering cost reduction of 37% was achieved from asset reuse, saving manpower for setups and configurations.*
- *Time to market for new features reduced by 20% from 2 months.*

imaginea EMPOWERING INNOVATION

Based in Silicon Valley, California, Imaginea Technologies is a solutions-driven organization that helps its customers drive innovation through disruptive cloud computing technologies to capture new opportunities in the marketplace. Imaginea engages with its clients in the entire Cloud Lifecycle Management:

Business Consulting
DevOps Optimization Self-Service Enablement Cloud Migration
Cloud Testing
Cloud Performance Optimization
Cloud Operations and Maintenance
Security Audit and Evaluation

Cloud Competency Center at Imaginea is set to become a global hub of excellence in Cloud conceptualization. Aimed to support industries taking a lead in the global Cloud Computing space, we have a state-of-the-art cloud center powered with OpenStack, Amazon Web Services, Eucalyptus and Hadoop integration. We have support for various networking technologies, such as Cisco, Brocade Networks, Floodlight OpenFlow Controller, Juniper Networks, and Open vSwitch.

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