Using MuleSoft to Accelerate Application Deployment to the Cloud

BACKGROUND

The customer is a global leader in digital services with annual revenue of approximately €12 billion and nearly 100,000 employees in over 70 countries. Serving a global client base, the organization with which we engaged provides Consulting and Systems Integration services, Managed Services and BPO, Cloud operations, Big Data, and Cyber-security solutions. Sierra-Cedar worked collaboratively with the team in the organization that hosts and manages a very large private Cloud infrastructure to support all State agencies in the State in which its regional headquarters is based.

OBJECTIVE

Key business initiative: automate the build and provisioning of the agency private Cloud infrastructure as part of the Hybrid Cloud Orchestration (HCO) initiative:

- HCO encompasses several key automation and service improvement initiatives in a strategic approach to support the Hybrid Cloud projects.
- The HCO project envolves the State's Department of Computing Services (DCS) service platforms into an integrated, highly flexible, and scalable operations ecosystem on which the foundations of the next generation of DCS' services can be built.
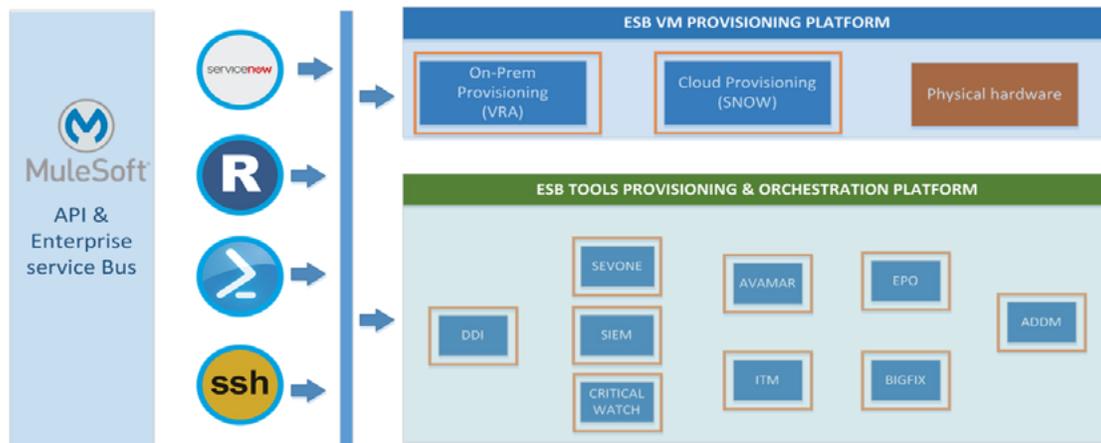

Figure 1

SOLUTION

An on-premise implementation of MuleSoft's Anypoint Platform serves as the "Business Services Orchestration" (BOS) layer for the Hybrid Cloud Orchestration (HCO) offering. It provides the following:

- A fully integrated environment with an Enterprise Services Bus (ESB) serving as the core integration platform.
- The primary platform for Cloud operations management.
- The development platform on which the customers can jointly develop new SaaS solutions.

Key Integrations

- Creation and provisioning of servers:
  - On-premise: VMware VRA
  - Cloud: ServiceNow (AWS and Azure)
- Backup software (Avamar)
- Security information and event management platform (SIEM)
- Group management (SevOne)
- Database monitoring (ITM)
- Discovery and dependency management engine (ADDM)
- Endpoint management software (ePO)
- Antivirus agent (BigFix)
- IP management (InfoBlox)
- Directory, DNS and IP (DDI)
- Vulnerability management (Critical Watch)
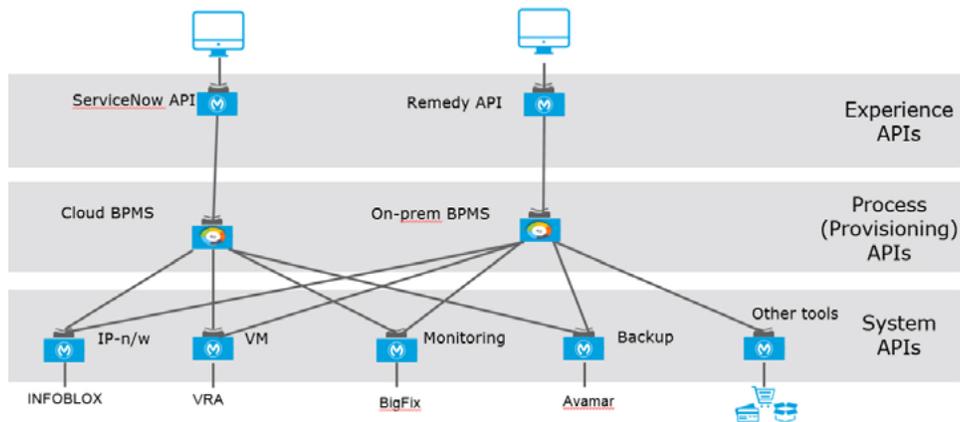
DESIGN APPROACH

Figure 2

- Developed using MuleSoft's API-led connectivity approach
- All tools exposed as System APIs, encapsulated as RAML conformant REST API
- Built simple BPM engine for local business management processes, exposed as Process APIs
- Entry points to the platform for ServiceNow and Remedy, exposed as Experience APIs
- Completely rules driven, requiring zero code change in BOS Core Platform for onboarding or offboarding (new) tools
- Event-driven architecture, provides robust ability to restart a failed process at logical check-points
- System APIs that follow a common design pattern, making it future proof and easy to include as part of a business process or execute individually

Technologies Used

- MuleSoft
  - ESB cluster
  - API Gateway cluster
  - Mule API Portal: Exchange and API Manager
- RabbitMQ cluster
- Jenkins, GIT, BitBucket on premise

CHALLENGES

- Most existing tools lacked SOAP/REST APIs
- Resources with limited knowledge on tools, integration, or background in application development
- Cultural uncertainty about automation
- Inexperience with adapting to new technologies and visualizing future State
- Multi-level decision process affecting pace of development

BUSINESS IMPACT

- Server build and provisioning time reduced from 3–4 days to 15–45 minutes
- Build and operations team significantly reduced, reassigning those resources to enhance build automation processes.
- Fully automated Cloud provisioning system for the State
- On-demand billing and usage data for State agencies
- Foundational platform offering for Customer to replicate at other State agencies

FUTURE VISION

The customer has created a comprehensive platform that can be expanded to enable the agencies to develop an API-Led Connectivity strategy that allows for easy integration within and across all DCS agencies.
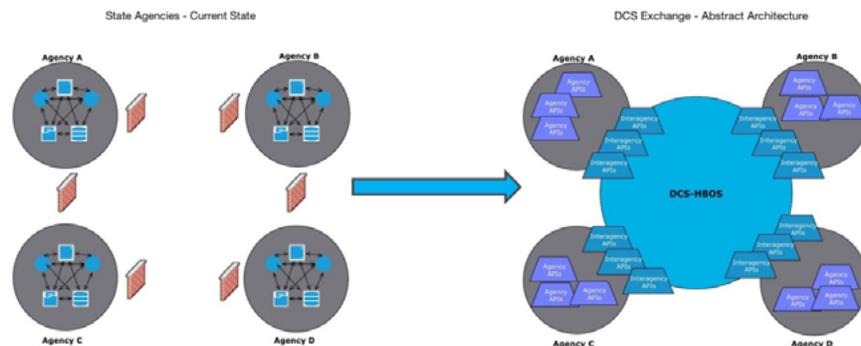

Figure 3

- The Customer wants to provide Mule-as-a-Service to State agencies where they would host the platform, but any agencies can run their ESB application on it.
- All State agencies under DCS have incentives to use MuleSoft for any application integration initiative.
- This service can be extended to large multi-agency (department) scenarios.