

VMware vRealize Automation Advanced Extensibility Case Study

Delta Air Lines

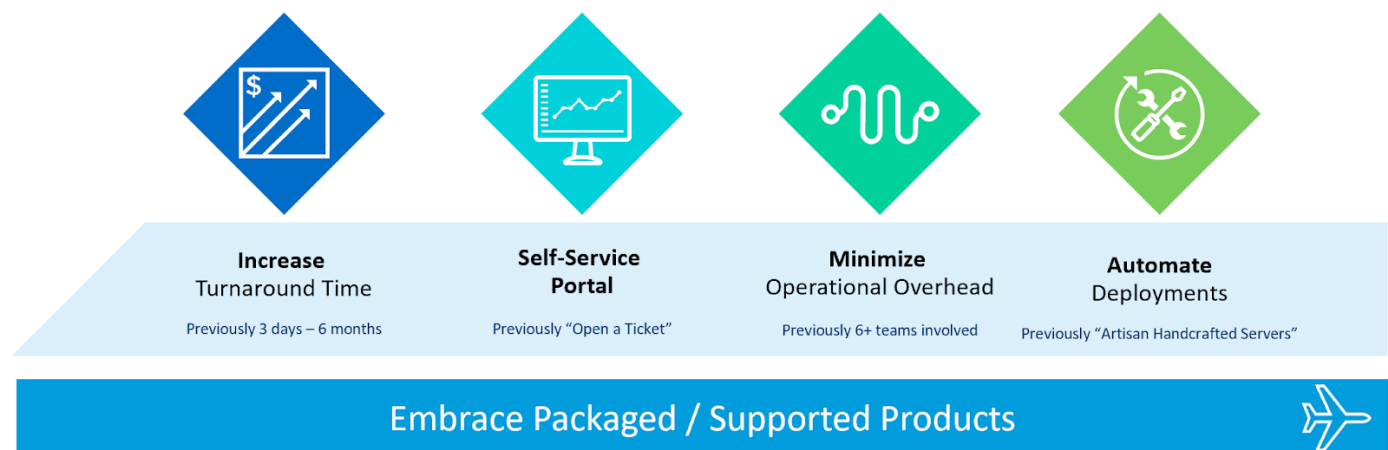
Delta Airlines, VMware, and SovLabs co-presented Session MGT2191BU at VMworld US 2018. The session addressed how Delta was able to implement a new cloud automation platform with vRealize Automation, SovLabs modules and Ansible Tower from inception to production in just three months. Delta also integrated Infoblox and F5 BIG-IP via SovLabs integration modules. Here is the full length video session.

New Technology Initiatives Require Cloud Automation Tools

Delta Airlines was working on two technology initiatives. The first was an application modernization including a tech stack upgrade, upgrading OS/middleware, and delivering APIs. They also were working on a data center modernization/migration initiative featuring new converged hardware and a new software defined networking (SDN) implementation. These initiatives required automation to build new infrastructure for their development teams.

Delta Air Lines | Goals

Goals and Objectives to Achieve



Delta was experiencing several challenges in the current environments, including:

- **Inconsistent turnaround** - users experienced in the request process might receive a new VM in 3 days while other users might wait up to 180 days to receive a VM.
- **Inconsistent automation** - some processes involved manual work, sometimes because the teams were not using the APIs available.
- **Heavy Operational Overhead** - more than 6 teams were involved in some virtual machine deployments requiring coordination and multiple points for delay.
- **Snowflake Deployments** - many builds were "artisan", one-off creations.

Additionally, there was a push to utilize more off-the-shelf and vendor-supported solutions to reduce the demand on the internal development teams.

Delta Air Lines

Cloud Management Phase 1

REQUIREMENTS

Produce a corporate compliant VM within 30 minutes of request submission

OBJECTIVES

Application and middleware deployments via Ansible



REQUIREMENTS

- Integrate with existing IPAM/DNS & SDN solution
- Dynamic Network selection
- Meet Operational Standards

CONSTRAINTS

Three months from inception to go-live

Strategic Goals Drive Cloud Automation Solutions

Delta outlined seven specific strategic requirements for the automation project.

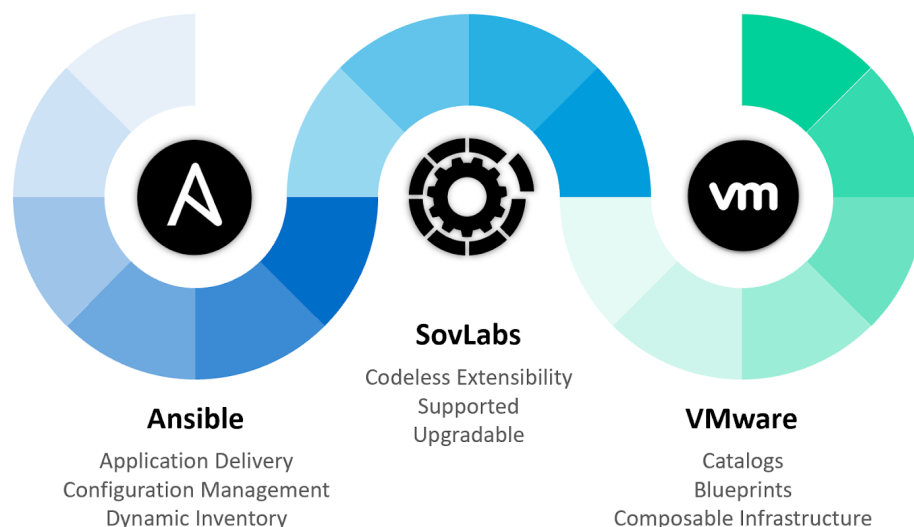
Deliver non-production VMs within 30 minutes, including patched VMs compliant with corporate standards and Infoblox (DNS/IPAM) registration

- [1] Dynamic network selection, including being compliant with the new SDN
- [2] F5 BIG-IP load balancers on demand
- [3] Policy-driven placement
- [4] An automation portal instead of a ticket portal
- [5] The orchestration required to talk to the various APIs
- [6] Sizing standards (t-shirt sizes) instead of “advisor”

The Automation team was given 12 weeks to stand up the new automation platform and have it running and live for end users in the dev and test environments.

Delta Air Lines | Strategic Partnership

Finding a Solution is the Next Step



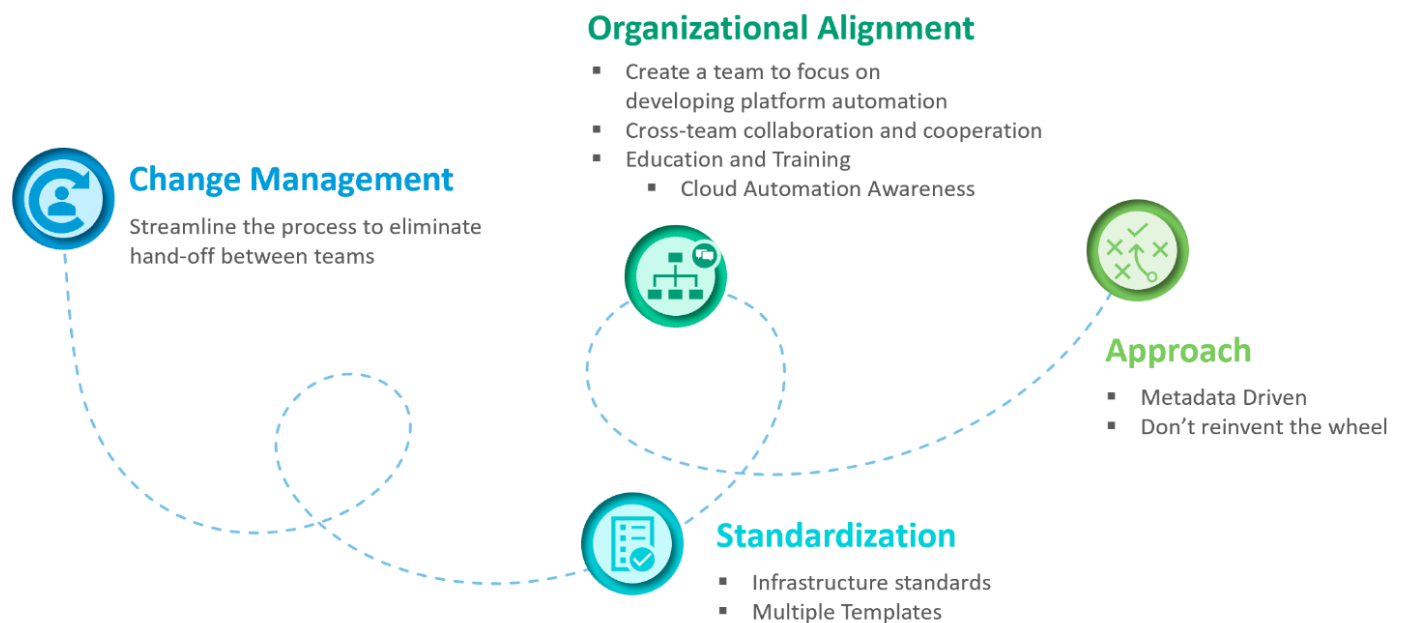
Choosing Cloud Automation Tools

For the end solution, the Delta team selected Ansible Tower for application delivery and configuration management, VMware's vRealize Automation as the Cloud Management Platform with SovLabs modules providing supported platform integrations and extensions.

Delta chose Red Hat Ansible Tower because Ansible was already in use for application deployment and the Delta team had already built some [Jenkins pipelines](#). Delta had already proven this solution in the environment, and the infrastructure and development teams already had experience with these tools.

VMware's vRealize Automation was selected because of Delta's significant investment in VMware technologies, VMware's existing market positioning, and the availability of supported extensibility modules.

Delta selected SovLabs Modules — including the SovLabs Ansible Tower and F5 Big-IP modules — because of the deep featureset, flexibility, and support posture aligned with Delta's preference for reducing the demand and operational overhead on the company's internal teams.

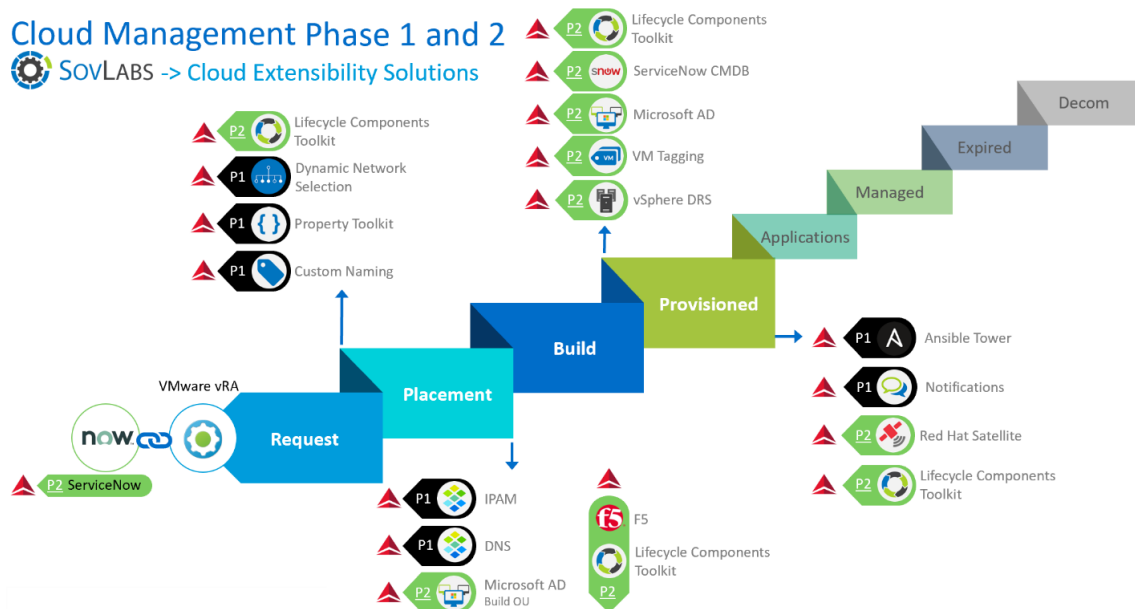


Creating A New Team to Remove Silos

The non-technical side of the solution involved creating a team to own the new platform — a Cloud Engineering Team, responsible for cloud management. The new team worked with the existing teams to break down silos, improve processes, and understand the APIs available in the environment. The Cloud Engineering Team is also responsible for providing “guardrails” and guiding the other teams to the best integration for the overall solution. They also worked to develop a standardized “code pipeline” for virtual machines, including initial patching and configuration.

Cloud Management Phase 1 and 2

SovLABS -> Cloud Extensibility Solutions

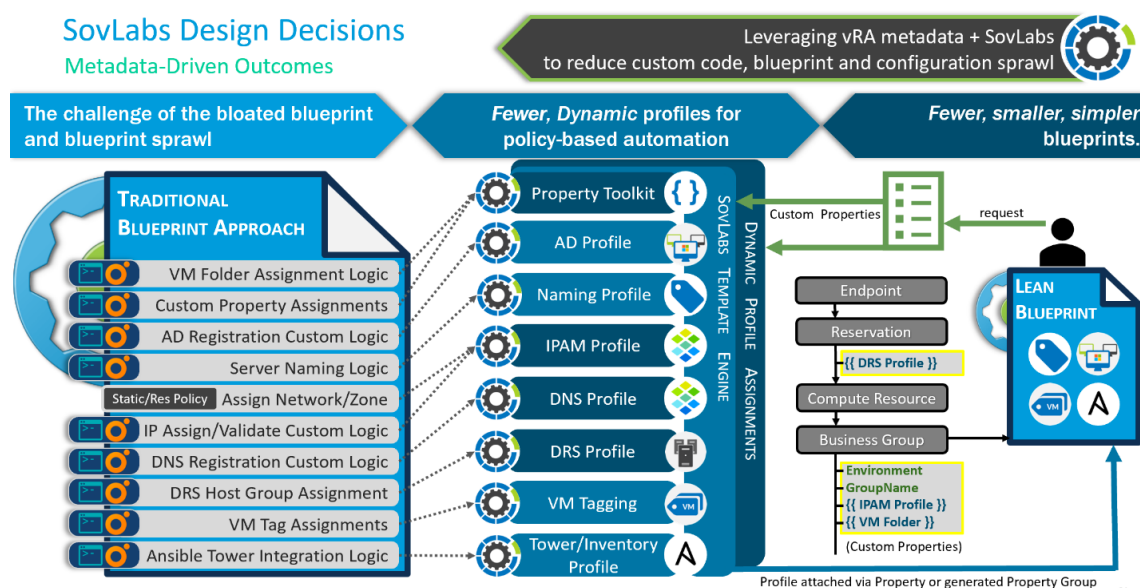


Two Phases of Solution Implementation

Delta divided the technical portion of the solution into two phases. The first phase covered IaaS, application deployment, and provisioning, which would include the vRealize Automation with SovLabs modules for Property Toolkit, Infoblox, and Ansible Tower integrations. The second phase called for additional SovLabs endpoint integrations, including F5 and additional modules for vSphere and Active directory.

SovLabs Design Decisions

Metadata-Driven Outcomes



One of the benefits of the SovLabs modules is a reduction in the number of required blueprints. Using SovLabs' policy-based profiles, Property Toolkit, and the SovLabs Template Engine for logic-driven scenarios, Delta now can make leaner, dynamic blueprints driven by their business logic and metadata. Because the Template Engine and Property Toolkit can also determine policy selection, Delta can dynamically drive configuration from the outside, further reducing the number and complexity of blueprints.

Delta Air Lines | Ansible Tower Design Decisions

Creating a Great Design



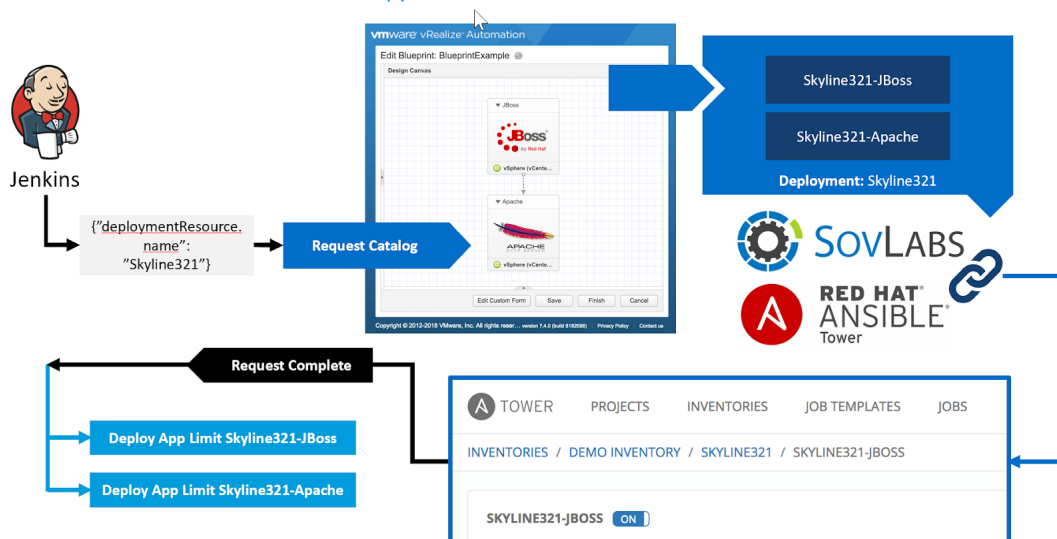
The Ansible design reduced the need for end users to log into Ansible Tower. To this end, Delta used vRO customizations for onboarding new teams to vRealize Automation and Ansible Tower, which also sped up adoption of the platform. The cloud automation team also developed reusable Ansible Tower job templates utilized in SovLabs Tower profiles to reduce administrative overhead.

The Final Result: Cloud Automation

After experimenting with several different approaches, the Delta Cloud Automation Team set up the Ansible structure with one org and no team admins (Active Directory drives team membership). The topology is Tower clusters with three nodes per datacenter. The inventories were created on a 1:1 basis with vRA business units, with the business units created on a team-and-environment strategy. Tower groups were created by vRA deployment name and component ID to group servers into types such as app servers.

Delta Air Lines | Automated Pipeline Delivery

Jenkins > vRA > SovLabs > Tower > App



The resulting Automated pipeline delivery process starts with a developer requesting a resource via Jenkins. Jenkins then requests a catalog item from vRA, which deploys the virtual machine(s), and then calls Ansible Tower playbooks for them to deploy any applications that the end user has requested. This process provides a clear responsibility delineation between the development, Cloud Engineering, and infrastructure teams.

With vRA and SovLabs in place along with Jenkins and Ansible, Delta was able to achieve their specific strategic requirements in the 3-month timeline.

View the VMworld session in its entirety [here](#).