

Containerization and Infrastructure as Code

One of many challenges large enterprises face in the era of cloud services is difficulty to keep up with ever changing technological landscape due to their highly regulated policies, which makes them relatively slow in reacting to customer's demands.

Li9 worked with the largest for-profit provider of managed health insurance with a customer base of more than 40 million members. This presents unique challenges that can be answered by container technologies and Infrastructure as Code approach (IaC).

Li9 was engaged by Red Hat in Q1 2019 in order to help this customer embrace containerization and DevOps practices. Li9 consulting's expertise in Haschicorp Packer and Terraform products played a crucial role in implementing multiple OpenShift Container Platform environments.

Pain points:

- Manual cloud infrastructure provisioning.
- Slow application delivery.
- Lack of container related expertise in the context of application delivery and security.
- Fragmentation of knowledge leading to over-reliance on one employee.
- Highly regulated environment that makes delivery time critical.

Solution:

- Li9 leveraged Packer, Terraform and Ansible to automate provisioning of virtual resources and deploying OpenShift on both AWS and VMWare.
- A strategy was developed for containerizing applications, carried out by Customer developers.
- 8 OpenShift clusters were deployed for managing and scanning containerized applications.
- Working sessions were conducted to train member of the infrastructure team on how to use new tools.

- At the moment, the following environments were deployed at Customer:

On-Premise:

Li9 Technology Solutions helps companies optimize their existing IT infrastructures, leverage hybrid cloud environments, and build DevOps infrastructures that modernize and automate application development. Li9 enables businesses to transform their IT service delivery to help them accelerate innovation and application delivery.

Li9 has helped some of the greatest companies in the world by leveraging the Li9 Solutions Portfolio of best-in-class technologies and services to deliver business services fast, at scale, and more effectively to provide them a competitive advantage. With an extensive array of elite technical certifications and credentials, Li9 is recognized by partners for commitment to excellence and its focus on delivering business focused IT Solutions.

- Development (3 master nodes, 3 infrastructure nodes, and 10 application nodes = 16 nodes total)
- Load testing (3 master nodes, 3 infrastructure nodes, and 10 application nodes = 16 nodes total)
- Production (3 master nodes, 3 infrastructure nodes, and 10 application nodes = 16 nodes total)

AWS:

- Development (3 master nodes, 3 infrastructure nodes, and 10 application nodes = 16 nodes total)
- Load testing (3 master nodes, 3 infrastructure nodes, and 10 application nodes = 16 nodes total)
- Production (3 master nodes, 3 infrastructure nodes, and 10 application nodes = 16 nodes total)
- Disaster recovery (3 master nodes, 3 infrastructure nodes, and 10 application nodes = 16 nodes total)

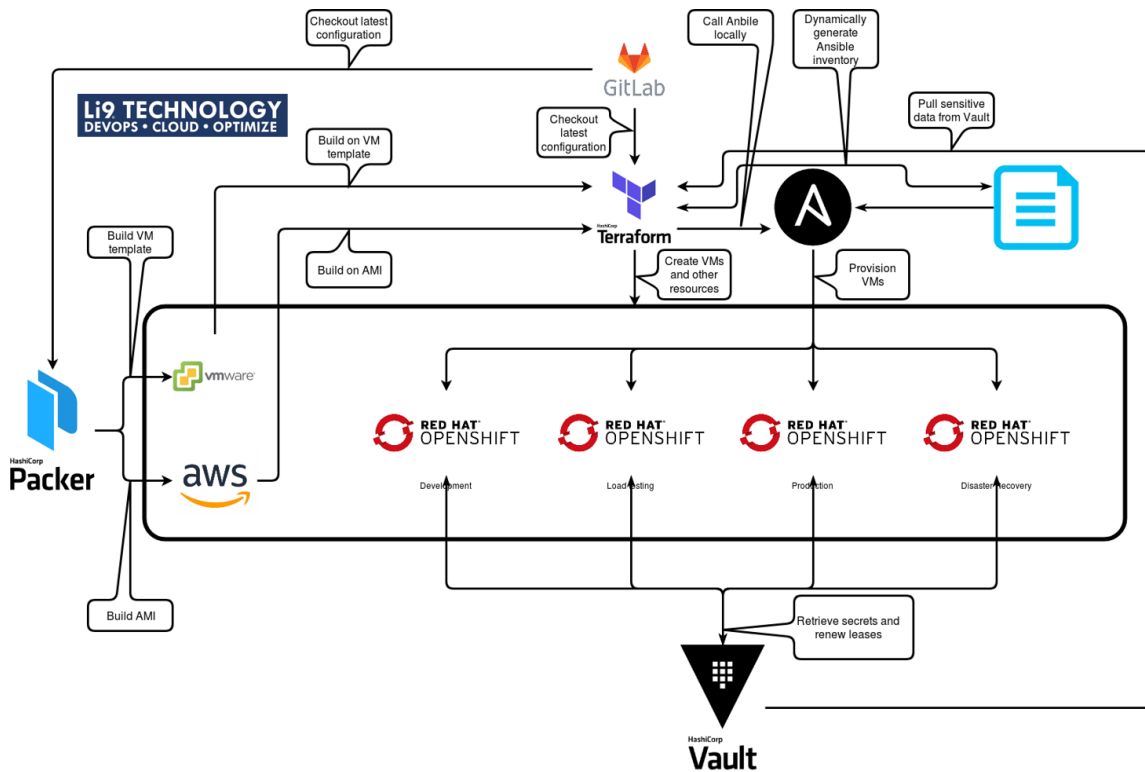


Figure 1. Customer AWS Container Environment

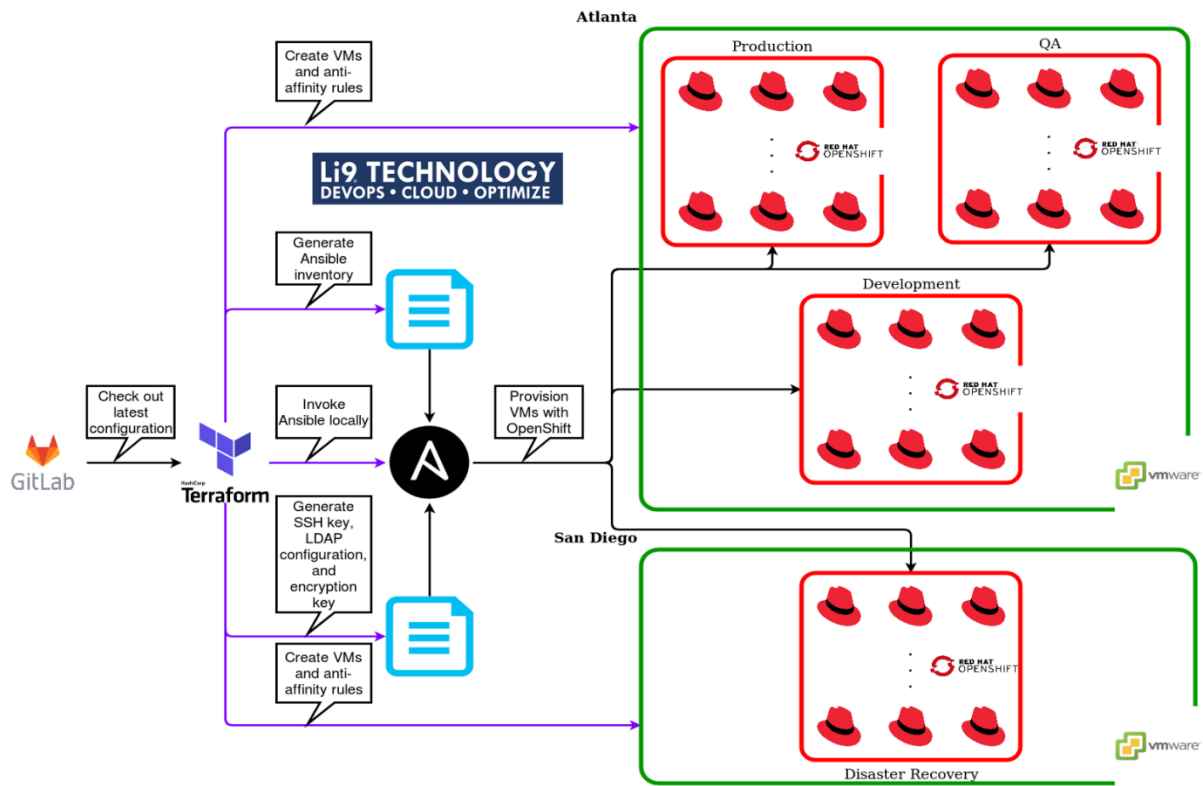


Figure 2. Customer VMWare Container Environment

Benefits:

- Average total time for deploying a fresh OpenShift cluster and adding new nodes to an existing one were reduced from ~8 hours to ~1.5 hours.
- The learning curve has lowered dramatically for the team, enabling more members of the team to provision new OpenShift environments. Before the solution was implemented, no member of the infrastructure had skills across all areas needed to perform an OpenShift installation from A to Z, so it had to be carried out by a member of the consulting team.
- With Li9’s automation in place, the OpenShift installation process can be delegated to 1 of 4 members of the customer infrastructure team, allowing for a 4X improvement in the ability to create OpenShift Container environments.
- Previous OpenShift installations had errors, usually due to a misconfigured inventory parameter or a missing prerequisite. Now that these details are contained in a Terraform configuration, the only point where errors can be introduced is the configuration of Terraform variables, at the beginning of the build.
- Lowered time cost of standing up a new OpenShift Cluster open the possibility of testing new changes to the configuration in a sandbox environment.