ONAP
OPEN NETWORK AUTOMATION PLATFORM

Spark Embarks on Telco Cloud Automation Journey with ONAP

New Zealand carrier automates disaggregated network in just 6 months

Spark nz

Overview

As Spark New Zealand Limited (Spark) approached 5G deployment, they started analyzing the status of automation across network and infrastructure and realized they needed an automation suite that would support future use cases 5G could enable, such as network slicing, and closed loop automation.

They also determined that their orchestration and automation layer did not support Network Service Deployment and application lifecycles management of network functions. Significantly, they saw that their IT automation and network infrastructure automation were siloed from each other.

That drove Spark to create Telco Cloud: a converged business unit that combines the skills and responsibilities of IT with those of network infrastructure. They then turned to finding an automation framework that would meet the needs of the entire unit.

"We knew that we needed something open, that could orchestrate and automate the disaggregated network we operate in," says Nilay Rathod, domain chapter lead in the Telco Cloud unit. "We invited several partners to propose solutions. Because Spark is competent in orchestration and automation, and we already had a track record with open source in IT, Infosys suggested the Open Networking Automation Platform (ONAP)."

Spark then asked Infosys to help them implement ONAP, an open source platform for orchestration, management, and automation for their core network.

"For us, the most important thing in ONAP is its core network automation capability. Because it contains a lot of intellectual property around automation already, we chose ONAP and got involved in open source instead of starting something new or proprietary."

– NILAY RATHOD, DOMAIN CHAPTER LEAD FOR ORCHESTRATION AND AUTOMATION, SPARK NEW ZEALAND LIMITED

Opportunity: Identifying initial use cases

Spark has a history of owning architecture, so they didn't want the partner to assume all the work of implementation. More importantly, the core network was their least-automated area in the context of network lifecycle and new features. So, they carefully considered their initial use cases for ONAP.

"We also had a 3G network with a huge lifecycle," says Rathod. "It needed some platform upgrades and a minor upgrade of the software. So, we decided to integrate ONAP to production with a few deployment automation use cases as the first step."

Another factor in Spark's outlook on automation was its focus on consolidating platforms. With five different, vendor-specific implementations of OpenStack for building and managing private and public clouds, they did not want to automate multiple platforms. Their goal was to build a horizontal cloud platform, free of vendor silos, by consolidating. The ONAP roll out provided an opportunity to accelerate this effort and harmonize network infrastructure (NFVI).

"We chose to implement ONAP for three core network applications," says Vishal Sharma, solutions architect. "First was Intelligent Signaling Transfer Point (ISTP), which connects signaling of Calling Control plane server and Media Gateway to PSTN networks intelligently and enabling specialized network routing to launch Value added Service. The second was Mobile Switching System (MSS), which serves 3G subscribers in the network from the control frame perspective. It works in line with many of the other nodes and infrastructure of core networks. The third application was Short Message Service Center (SMSC), which serves the SMS node for 3G and 4G mobile messaging." Initial VNF deployment automation explored varied capabilities of ONAP for day 0 and day 1 activities like direct instantiation on OpenStack deployment via VNF Manager, configurations via CDS. This established confidence to take ONAP further for IMS and 5G automation.

Why ONAP? Openness, and Modularity

It took Spark a relatively short six months to go from kickoff to implementation of ONAP for those three use cases. Once Spark and Infosys had identified the right team, progress accelerated. Rathod points out that having the right people with the right skills helped them navigate the twists and turns in the project.

"We had decided to deploy on OKD in our dev cluster, the community version of OpenShift, rather than using Kubernetes, which was a new approach. Because there was no documentation in this area, we had to make many changes in our HELM charts, Codes and build in support for the locally cached Docker image. We hardened a few ONAP components for Spark Network Functions specific requirements and Improved reliability for carrier grade deployment. Also, we Integrated our ONAP Platform with Spark Security Infrastructure (PKI, Load Balancer) and Spark Service Assurance tools for Monitoring, Logging and Backup Solution, to be managed fully as a Product orchestrator. We had the advantage of deep competence in OpenShift, container platforms and DevOps–and once our people came up to speed on ONAP–deploying on OpenShift was pretty straightforward."

Spark took advantage of the modularity inherent to ONAP, allowing them to pick and choose different parts to implement. Sharma says other carriers considering ONAP should carefully consider which of their use cases are most amenable: "We picked the specific modules required for the complete lifecycle management of network functions. That meant both design-time and run-time components. For example, it made sense for us to adopt service orchestration (SO) in ONAP because it's implemented using Camunda, a platform on which we have in-house expertise. For software-defined networking (SDN) on the other hand, we're building our own framework that will expose APIs that could be used by ONAP or other frameworks for provisioning any fixed network."
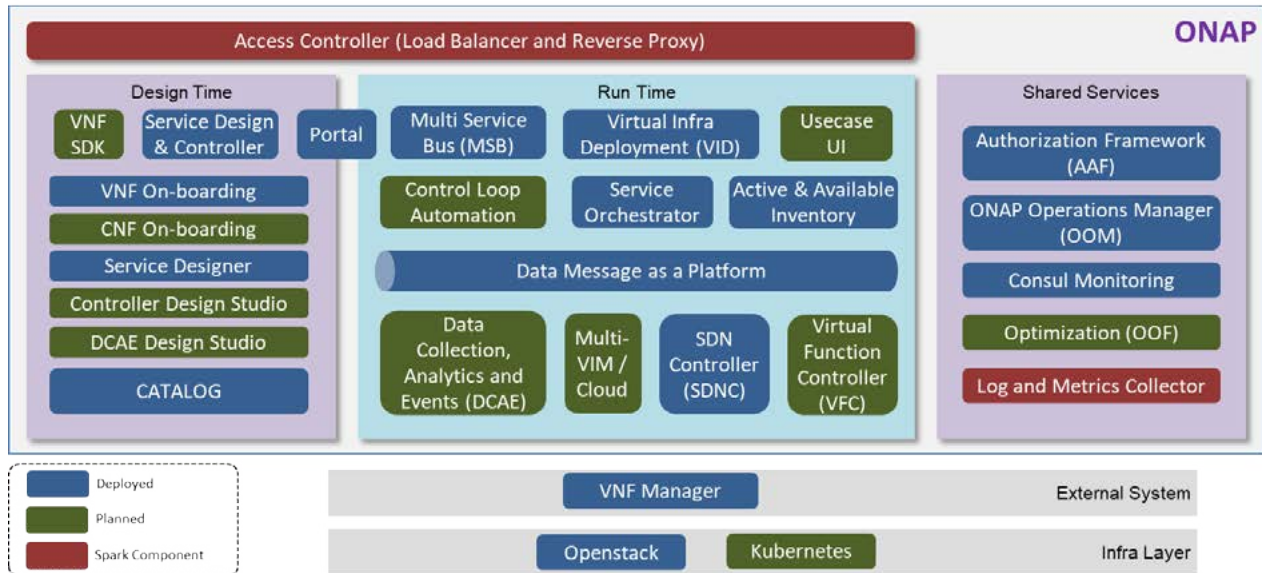
Ultimately, Spark's success in rolling out ONAP in production in only six months was due to several factors:

- They had strong, in-house competence in building and deploying cloud-ready products.
- Phased approach for initial roll out -- exploring with sample Network Functions (NFs), and gradually moving to complex NFs.
- There was good support from vendors and the internal team when working on network functions.
- Focused effort on necessary hardening of platform with respect to security and availability.
- The platforms team was part of the implementation group, so any platform problems could be quickly resolved.
- The security team was involved in implementation and contributed in design of Secure, Unified Access and Integration of ONAP platform.
- The leadership of Spark strongly backed the project, helping to overcome internal hurdles.
- Close collaborations with OEMs to align on standard interfaces.

Platform Reliability and Integration

The Spark and Infosys team hardened ONAP for production readiness and enhanced reliability in HA mode in the following ways:

- Updated OOM installation artifacts for deployment over OKD.
- Improved platform availability metrics, i.e., survive OKD Node failures and rolling upgrades.
- Implemented Backup-Restore of ONAP databases.
- Support for External SSL certificates for VNF Manager and VIM integration
- Service Orchestrator updates for integrating with 3rd Party VNF Manager.

Infosys worked with Spark IT and network teams to do extensive reliability testing and cleared the blockers.

Benefits: Standardization and lower costs

Nishi Mathur, Infosys says "Automation is core to drive innovation and efficiencies with 5G and ONAP has the potential to accelerate this by leveraging collective industry efforts while CSPs have better ownership on their implementation."

"We're at the beginning of the journey right now," says Rathod. "But over the next couple of years we look forward to standardizing the services in our core network using the ONAP framework. Spark currently operates three main data centers in New Zealand and ONAP allows them to deploy Network Services across them without having to spend time, effort, and money doing the same thing at each DC.

Automated VNF deployments through ONAP have replaced manual, often error-prone steps spanning multiple weeks of effort for the Client Network operations team with a highly deterministic provisioning system taking just a couple of hours.

Rathod is confident that, for all carriers, 5G is going to demand a lot of automation. "My advice to other carriers, and what has worked for us, is the converged competence," he says. "You bring the people into IT who know how to operate cloud native applications, bring people who know how the network operates, and seek good vendor support. If those three things are right, then the journey in deploying ONAP and going live with something like this is quite easy."