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The Path to a Production-Grade ONAP

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OVERVIEW

- TATA Communications has deployed all ONAP versions since Beijing release
- Deployed & configured cloud Infrastructure and Kubernetes to support ONAP
- Deployed ONAP core components needed for use case (e.g., SDC, SO, SDN-C, A&AI, DCAE, OOM, Consul, External APIs, DMaaP, MSB, AAF, Portal, LOG, etc…) and identify what requires development and what can be used as-is.
- Deployed and configured monitoring & troubleshooting tools needed for production-grade readiness
- Enhanced the centralized logging system to capture information to operate, troubleshoot and report on performance of the platform and its components

DEPLOYMENT TIMELINE

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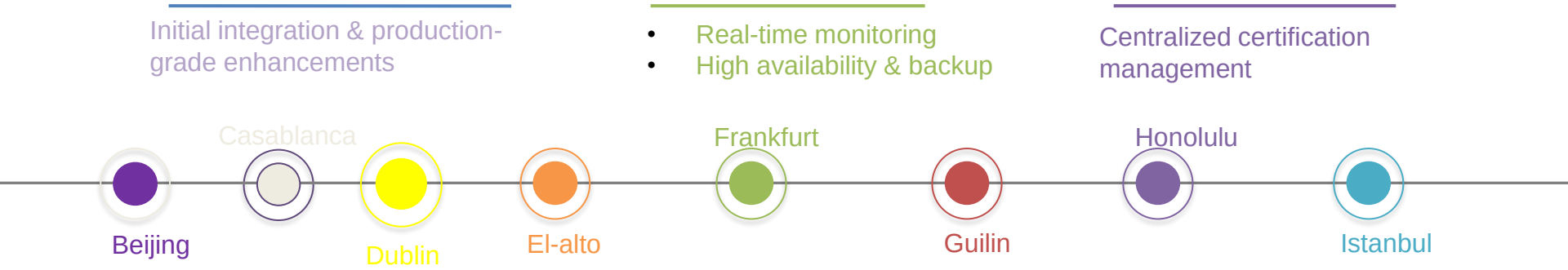
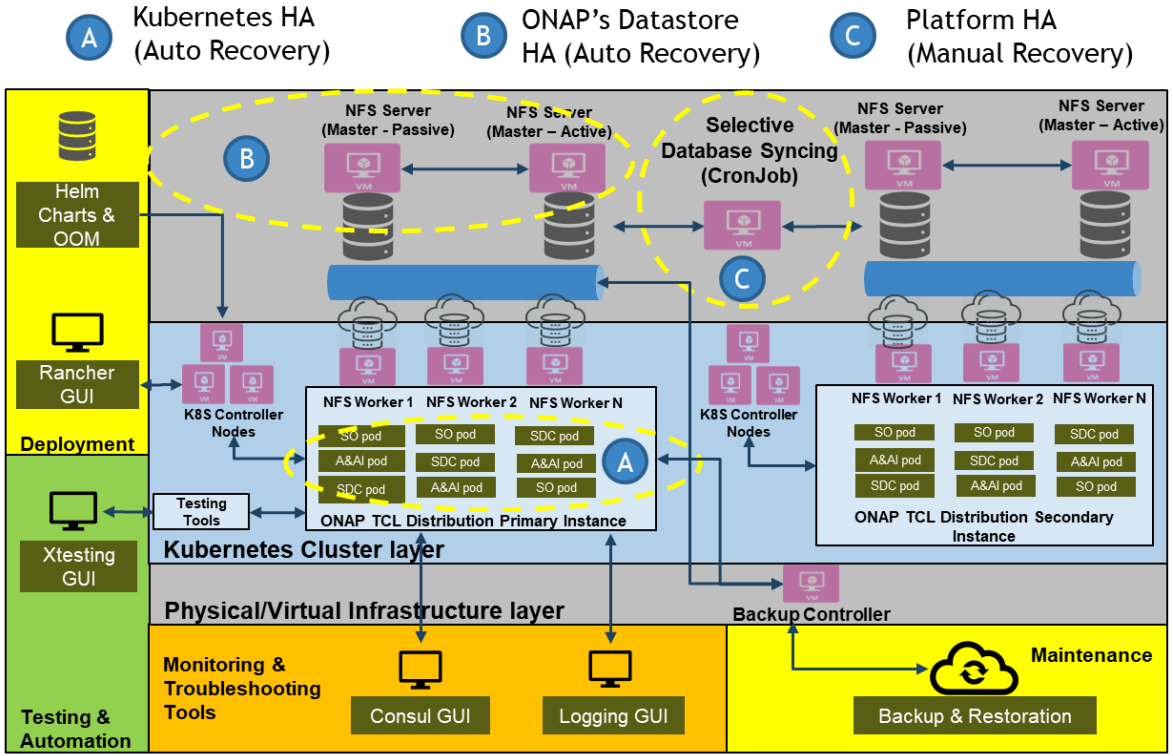


DEPLOYMENT & SUPPORT

- Deployed high available ONAP on application/pod level, Kubernetes/datastore level as well as platform level
- Disaster recovery is ensured by Frequent backup of the states of the platform to external storages
- Developed Helm Charts as well as manual procedure to support rolling upgrade from old to new release including data migration of developed artifacts. This used to automate upgrade process and impacted: MariaDB, Cassandra, PostgreSQL, A&AI, SDC, DMAAP, SDNC
- Consul GUI: Developed/configured scripts to ensure a complete and healthy deployment of ONAP custom image that is specific to TCL use case with proper real-time monitoring for fast support, including the deployment of the required disaster recovery options.
- Logging GUI: Developed/configured tools and integrate them with ONAP to ensure proper and fully functional ONAP centralized logging system (Elasticsearch, Logstash, and Kibana)



Real-Time Health Check Monitoring

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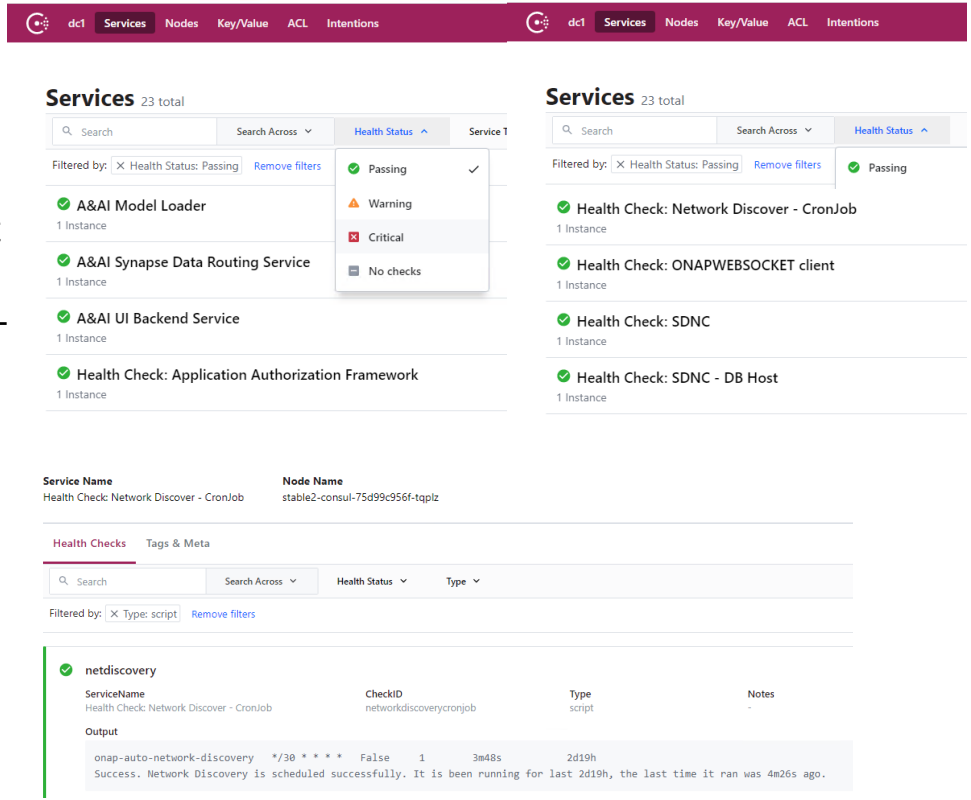
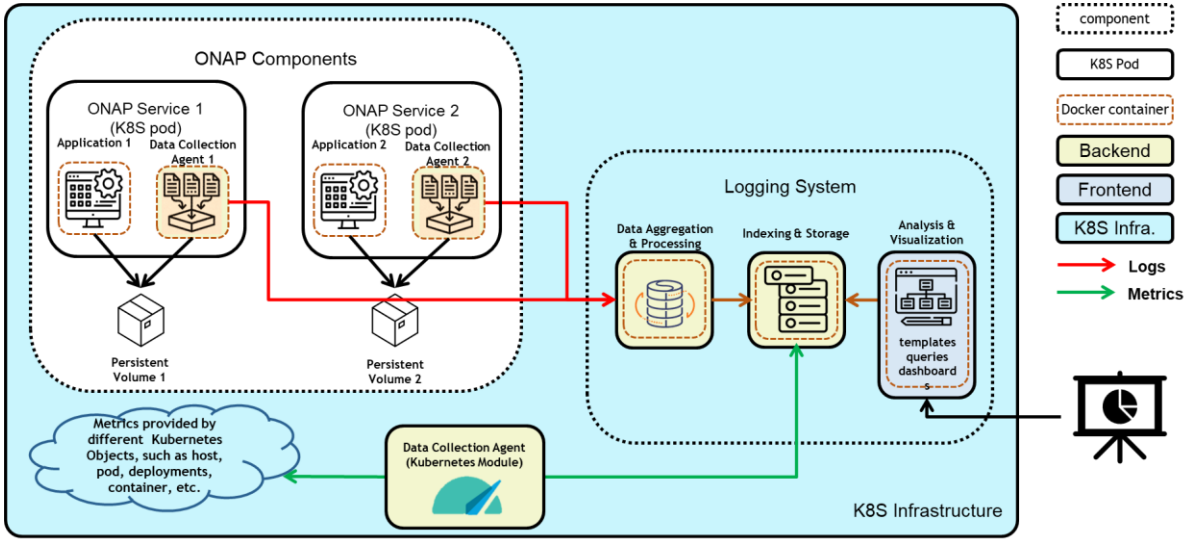
- Consul is fully customized and is used to monitor the Health-check of 20+ micro-services related to use case
- Developed scripts and configured consul to collect and show outcomes in dashboard (Network discovery, websocket client for 3rd party controller - DMaaP integration, verification of deployed services on underlying network, etc…)
- Customized severity of alarms to - Critical (Red): service is not responding at all, Warning (Yellow): service is responding but not working as desired and Healthy (Green): Service is running
- More comprehensive customization can be achieved based operational rules



LOGS & METRICS: ARCHITECTURE

- Data Collection by “Filebeat” & “Metricbeat”
  - Both agents are installed on servers and custom-configured
- Data Aggregation & Processing by “Logstash”
  - Deployed to be used as a data pipeline for Elasticsearch
- Indexing & Storage by “Elasticsearch”
  - Elasticsearch in installed and custom-configured
- Analysis & Visualization by “Kibana”



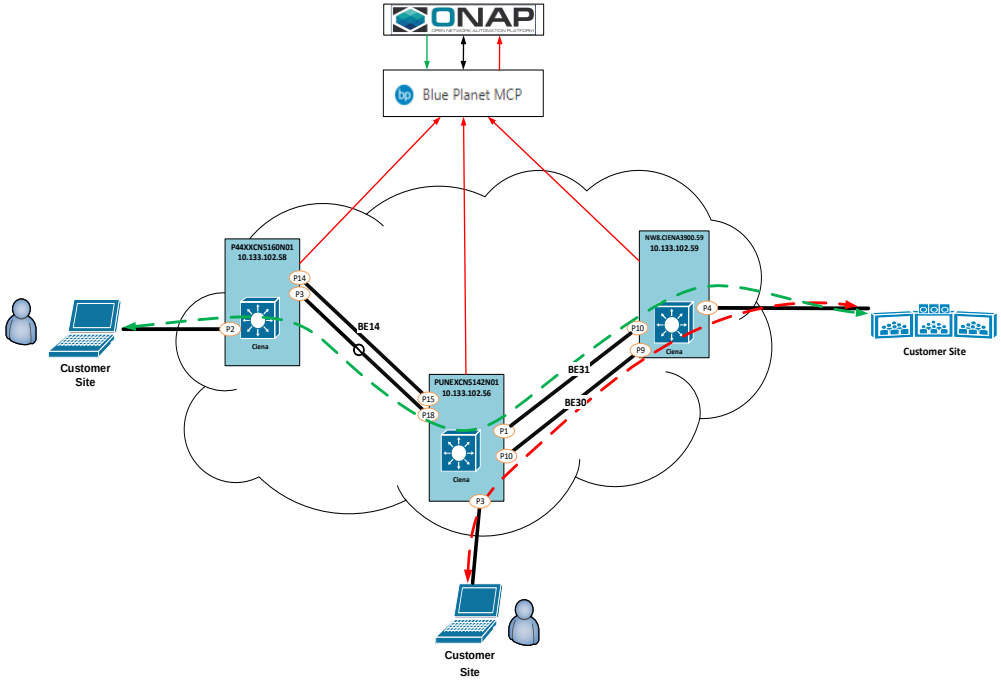
MONITORING & TROUBLESHOOTING

- Performance Monitoring: Configured Kibana to monitor current and historical metrics that show the state of infrastructure components (Node, POD resource allocations, usage and limits, etc...)
  - This will allow us to proactively adjust the required resources for each ONAP component before resource starvation and cause slowness to tasks performed by impacted PODs.
- Infrastructure troubleshooting: Configured the domain controller (also possible for NEs) to route their logs into ONAP's Logging system for a centralized location for troubleshooting to address failures in the network: node, interface, service, LAG, ring, etc…
- ONAP troubleshooting: Configured Filebeat agent to collect logs from ONAP component PODs and send it to Logging system (e.g., during a service provisioning, the operator can see the logs in the backend to get more insights and debug in case of failures)
- K8S troubleshooting using ELK Logging: This enable us to get all the infrastructure-related logs into centralized logging system to facilitate debugging and deep analysis on infrastructure issues on both Worker and Controller nodes, check the real-time logs on deployment issues, etc…

Demo

1. Demo Test Case #1: Scheduling a BoD (Customer Experience)
   - Feasibility Check to upgrade a provisioned service (i.e., BoD)
   - Feasibility Rejection/Approval by user
   - Service Provisioning for a BoD
   - Disconnection of a provisioned BoD on its end time

2. Demo Test Case #2: Network Monitoring & Troubleshooting (Tata Comm. Operation Experience)
   - Enhanced Real-time Monitoring
   - Enhanced Logging system
   - Performance monitoring: infrastructure & ONAP



Q&A

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