SEBA Operations and FCAPS

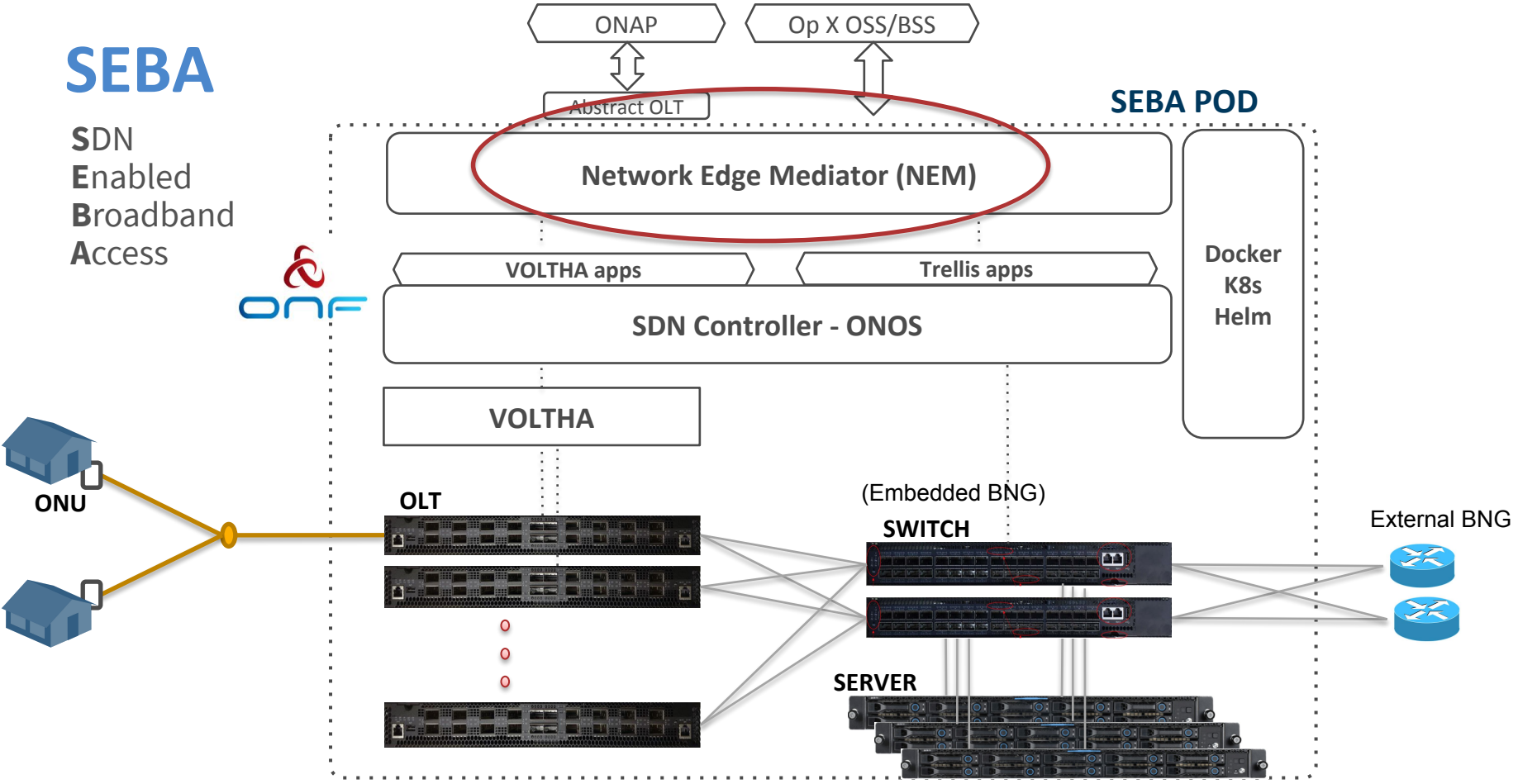
Session 3: 1:30pm - 3pm

In this session

- How are operator workflows implemented in XOS, and what are its internal models and services?
- How is SEBA doing monitoring, telemetry and FCAPS with ELK stack, Prometheus and Grafana?
- How do we troubleshoot the system?
- How is the lifecycle of the pod managed?

SEBA

SDN
Enabled
Broadband
Access

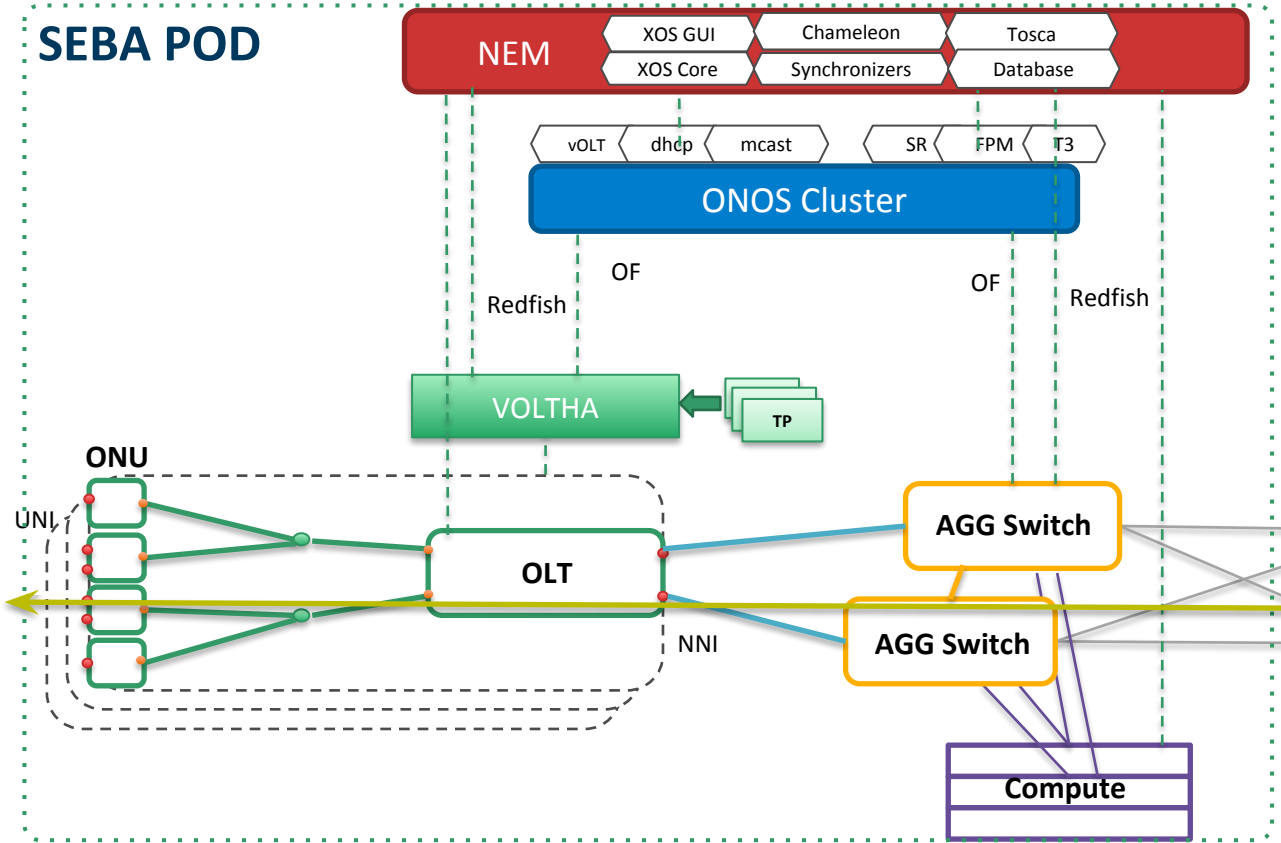


NEM Orchestration & SEBA Workflows

Different operators
==
Different workflows

Authentication is a workflow option
- 802.1x based
- PPPOE based
- DHCP based

Subscriber services are workflow options
- HSIA
- Voice
- IPTV
- Business services
- Technology profiles
- Speed profiles



BNG is a workflow option
- External physical BNG
- vBNG in compute
- BNG in Agg switches
- BNG in OLT boxes

Why do we need a WorkflowDriver?

Most services are common to many use-cases.

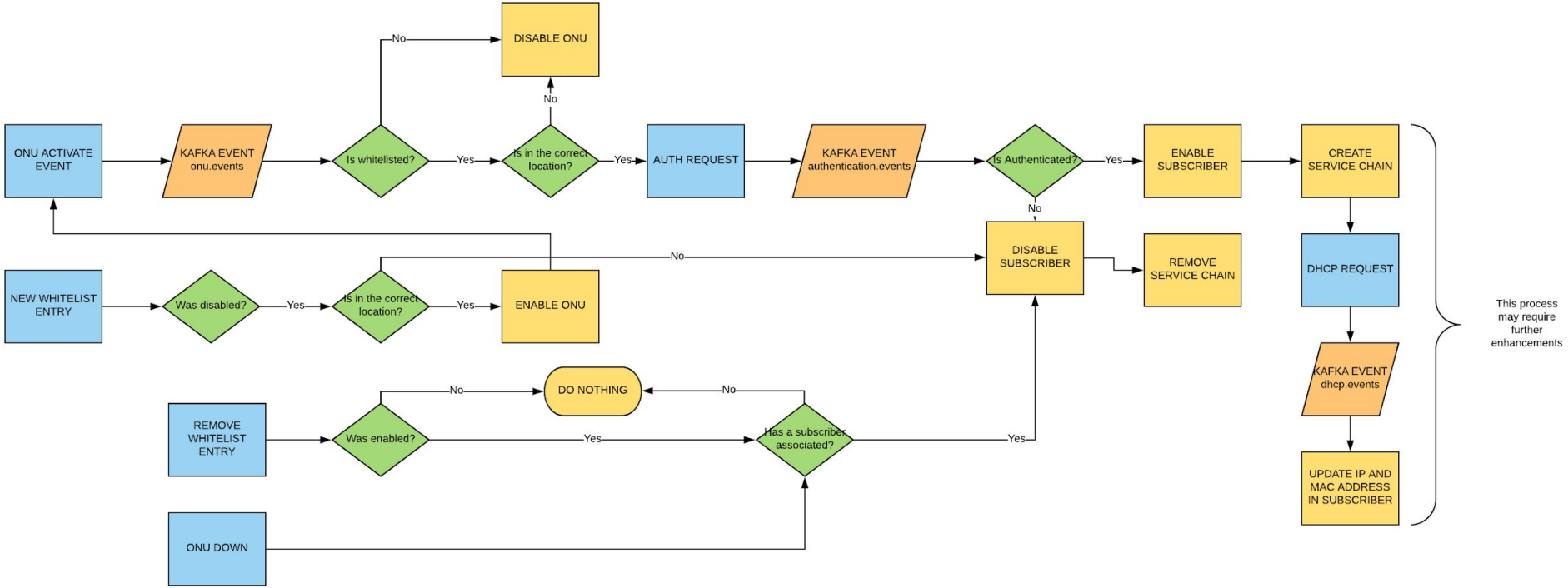
The business logic is different operator by operator.

The workflow driver lets us re-use the same components to achieve different solutions

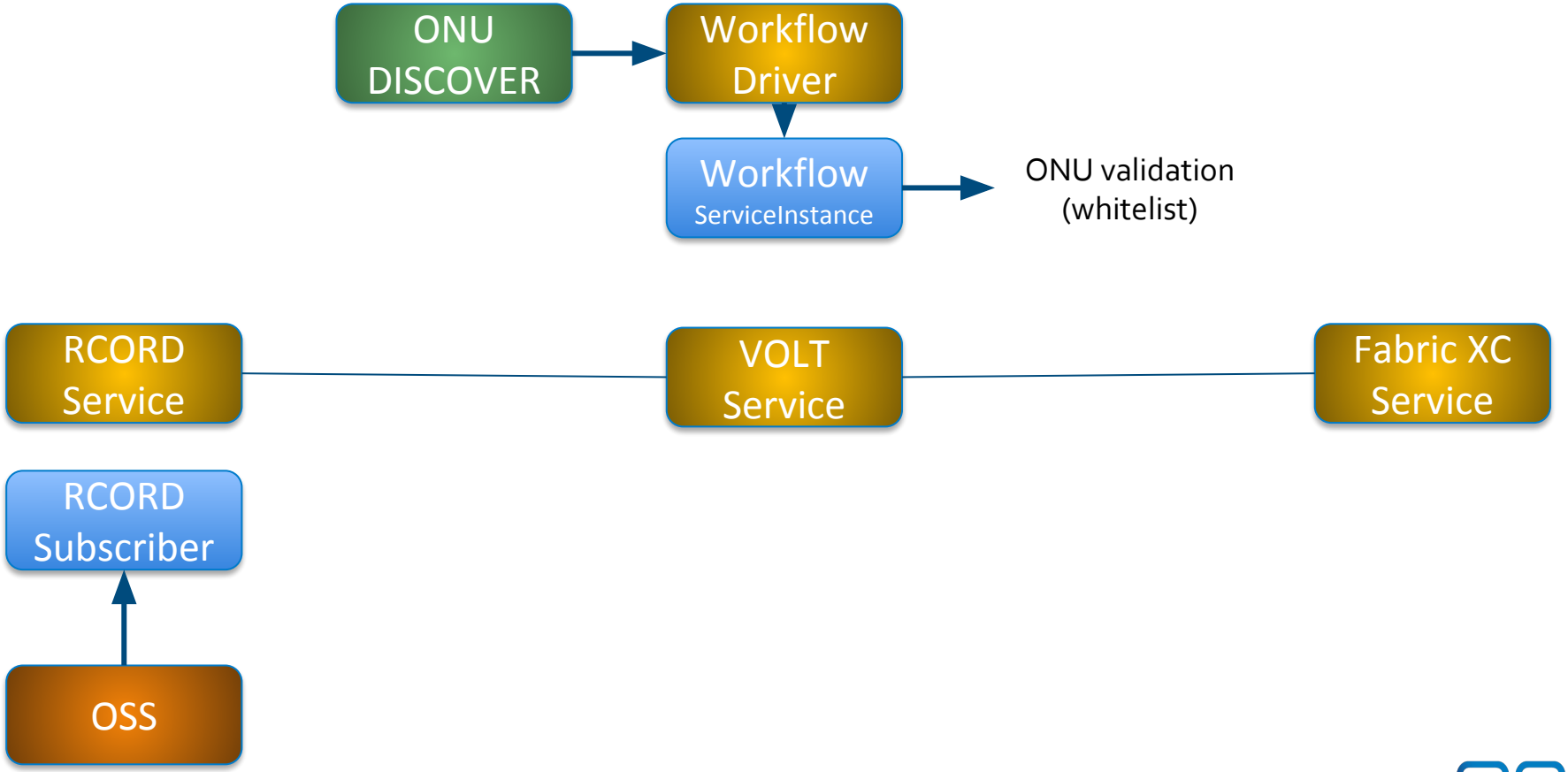
ATTWorkflowDriver Modeling

- White List
  - Specifies which ONUs are allowed, and on which PONs
- *WorkflowDriverServiceInstance
  - Identifies ONU
  - Identifies Subscriber
  - Contains dynamic state, typically learned from events
    - administrative
    - authentication
    - dhcp

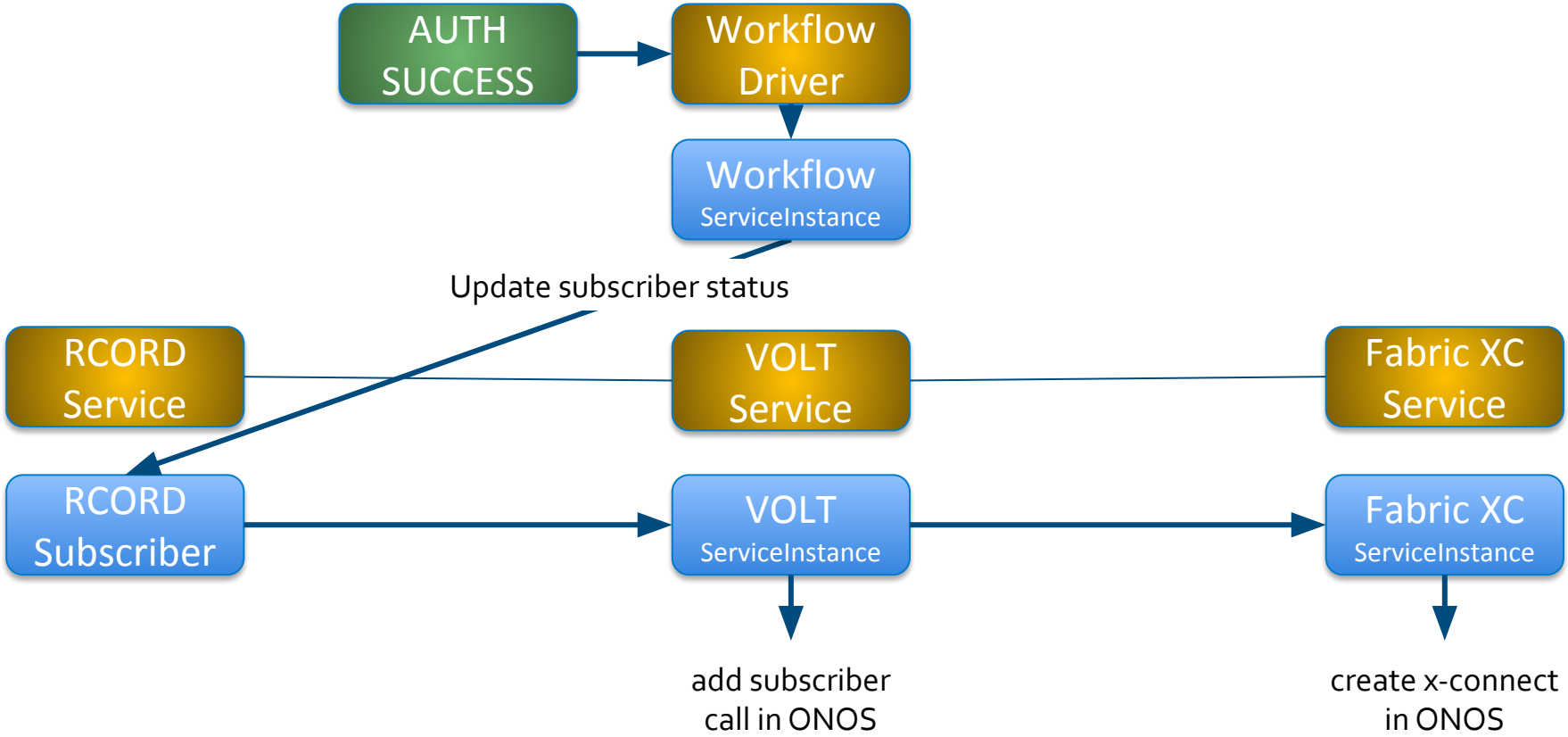
ATTWorkflowDriver: State Machine



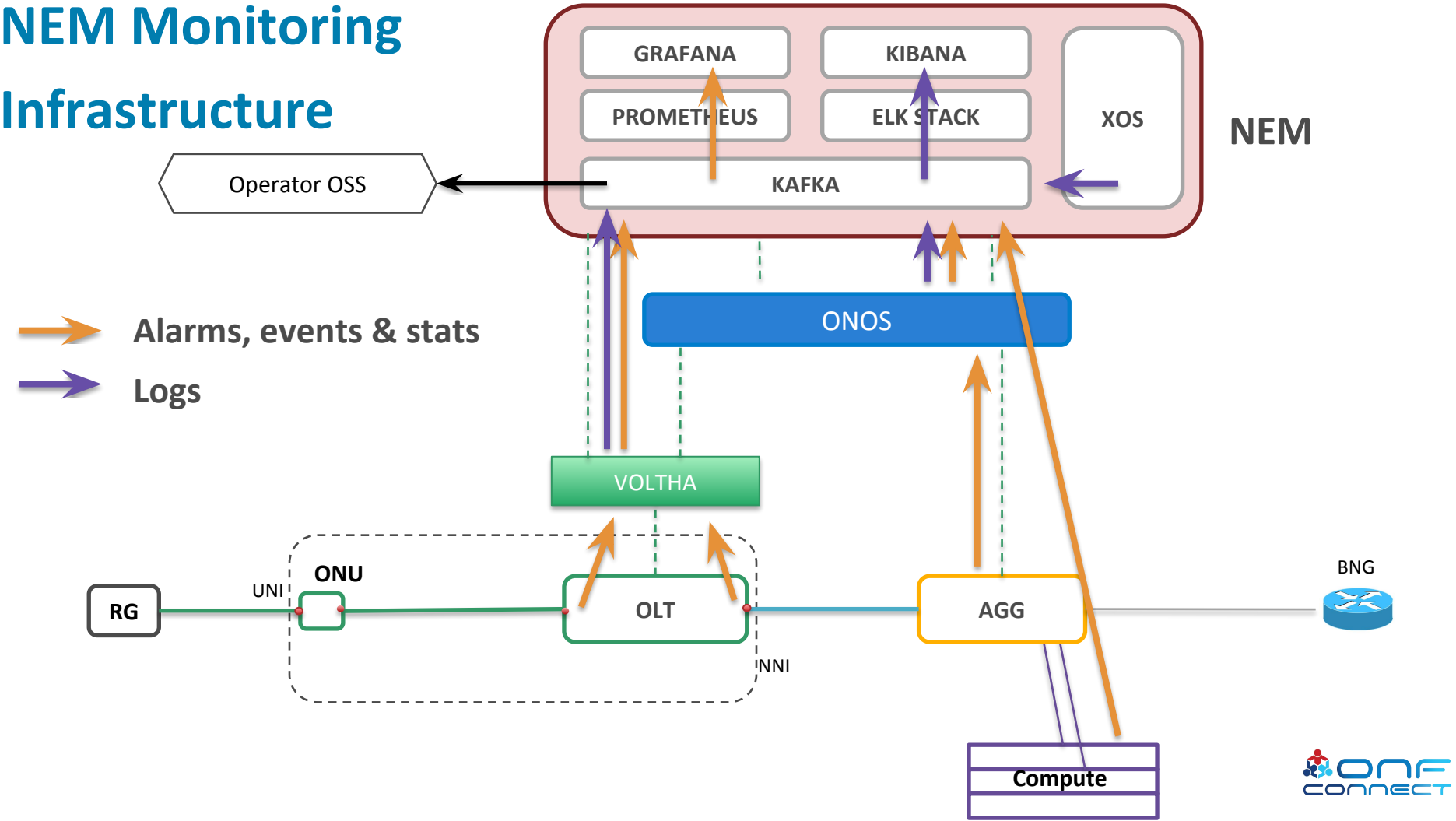
Workflow kickoff



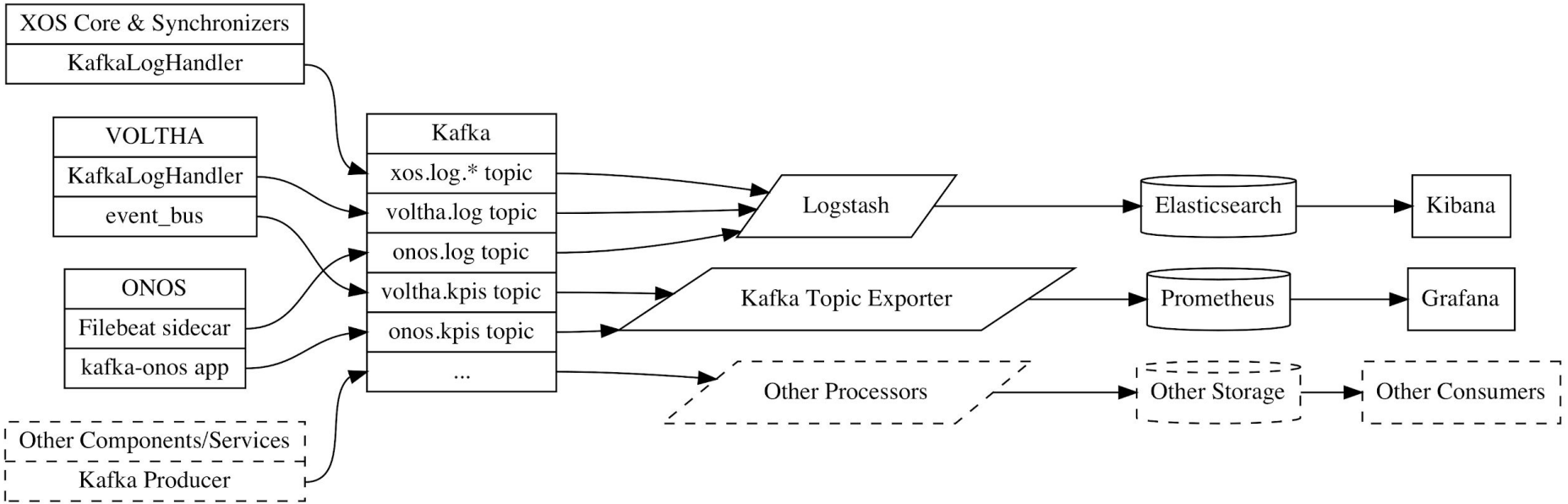
Sample effects on the Service Chain



NEM Monitoring Infrastructure



Data flow for Monitoring and Logging



Kafka Topics within SEBA

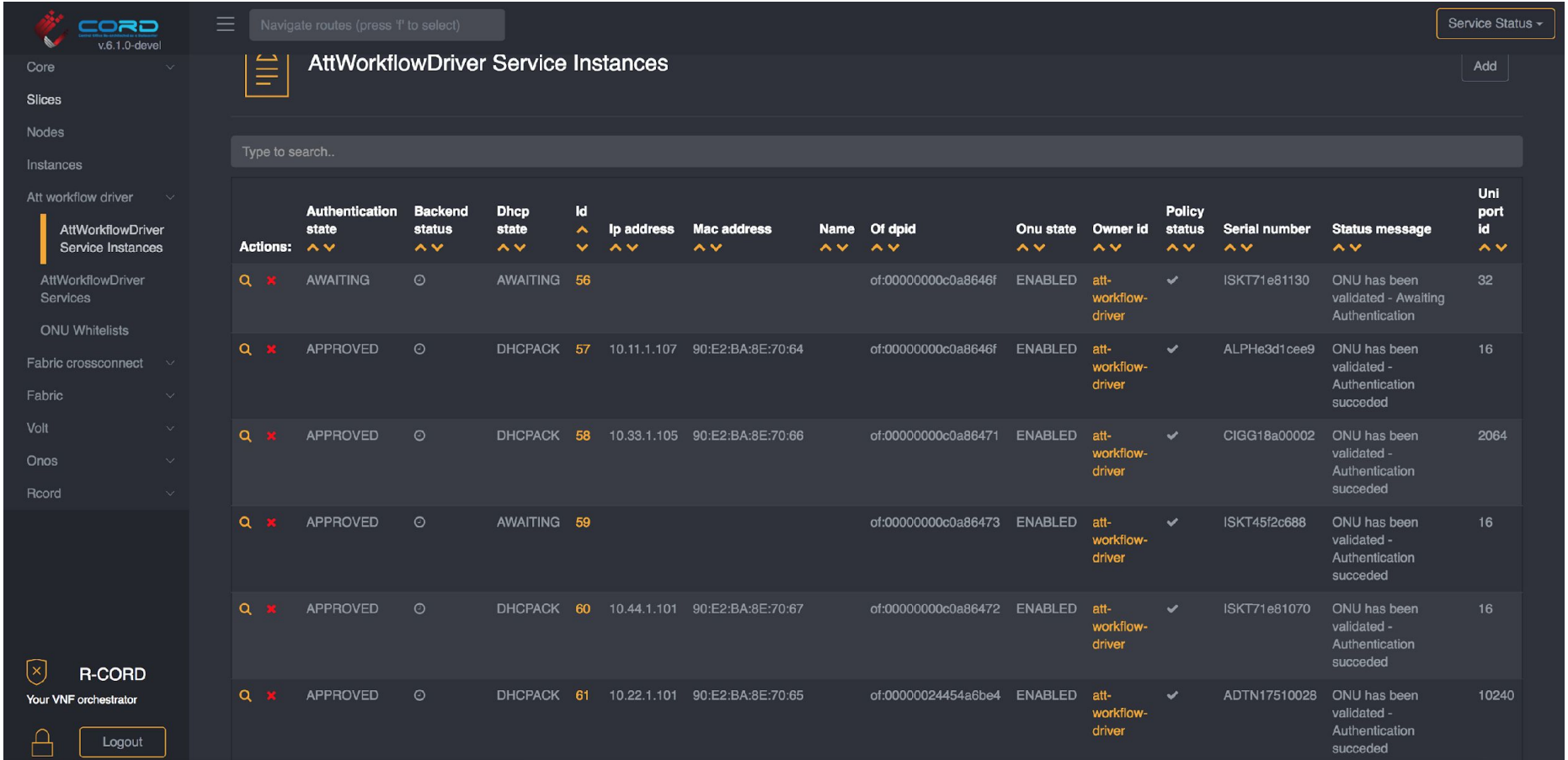
Kafka allows many components to publish and subscribe to messages, and has topics for:

- `*.log*` - log messages
- `*.kpis` - key performance indicators
- `*.events` - events created by ONOS or VOLTHA

Current convention is to encode messages as JSON, in the future Protobuf may be used.

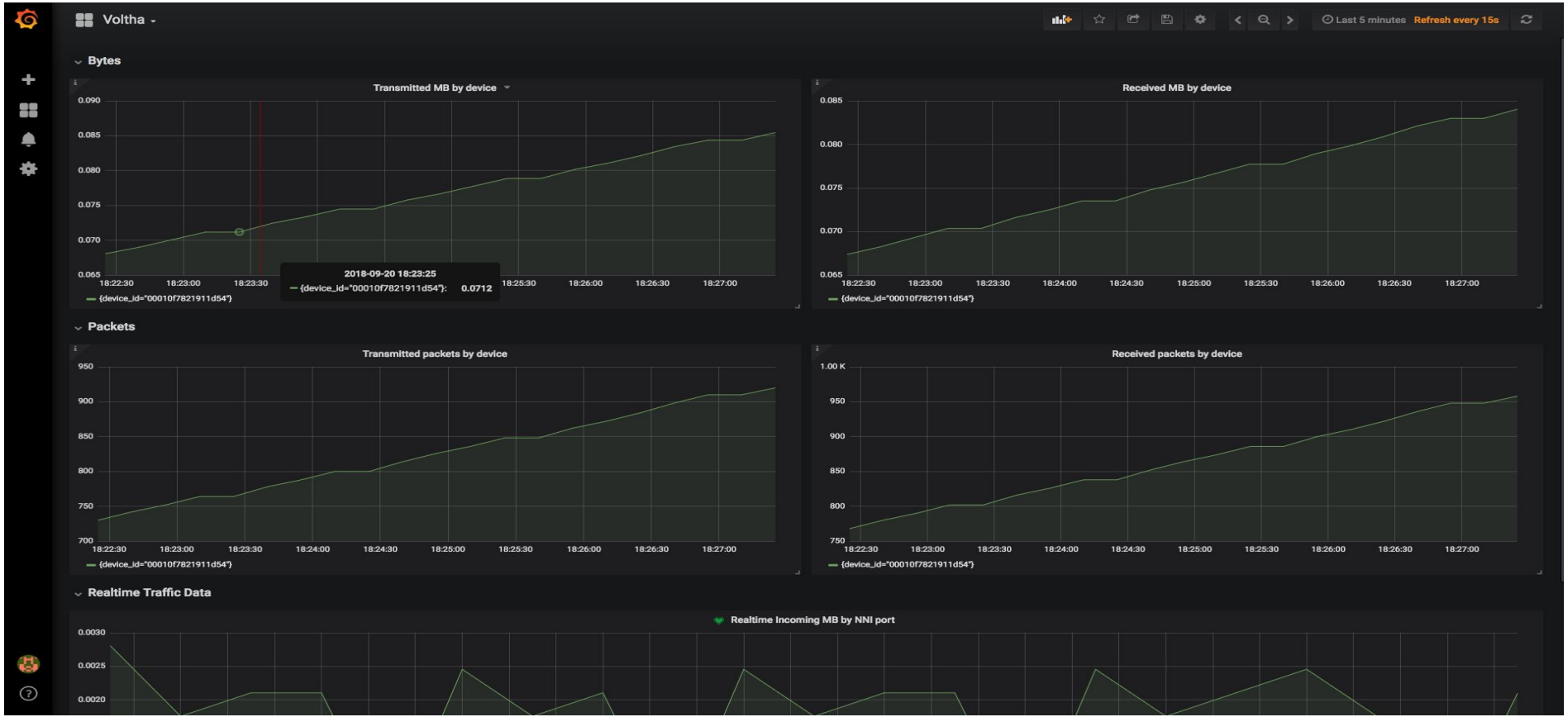
NEM Dashboards: XOS GUI

Runtime service instantiation, Inventory, Workflow status



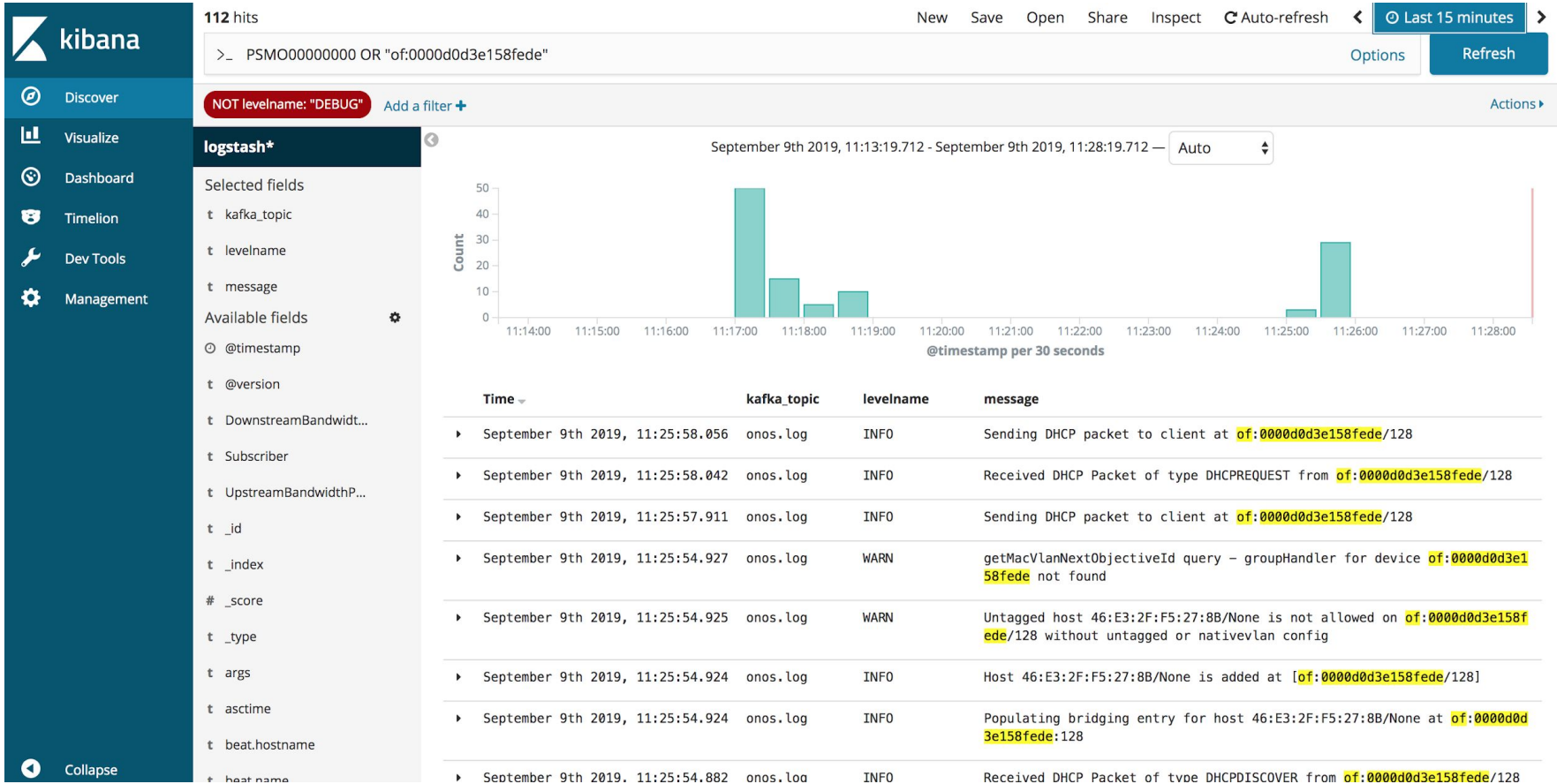
NEM Dashboards: Grafana

Statistics (FCAPS)



NEM Dashboards: Kibana

Logs (FCAPS)



Backup

The NEM database (Postgres) can be backed up and restored using the `cordctl` CLI tool, or via gRPC API.

Logging/monitoring services can be configured to use persistent storage within the pod, and have API's for export/storage.

SEBA Lifecycle and Upgrades

In-service software upgrade (ISSU) is supported within NEM

- XOS
- 3rd party components (monitoring/logging/storage)

Other components (ONOS, VOLTHA) don't have persistent state and are configured by XOS, so can be upgraded or restarted with minimal service interruption.

Troubleshooting a SEBA deployment

- Check the cabling
- Check that traffic is flowing
  - Packet counters are aggregated in Prometheus and Grafana
  - tcpdump and similar
- Check for errors in the logs
  - Logs are aggregated across components in ELK Stack
- Follow the troubleshooting guide
  - https://guide.opencord.org/profiles/seba/

Most common issues

- Configuration differs from physical setup
  - How to spot: port state (up/down) in ONOS and XOS
  - Errors in the ONOS log
- Serial Numbers mismatch
  - How to spot: AttWorkflowDriver, `sadis` command in ONOS

Most common issues

- OLT Agent incompatible version
  - How to spot: Device is not active in VOLTHA, or no ONUs are discovered
- BNG or Radius configuration
  - How to spot: EAPOL, DHCP or Ping not working, ONOS/AttWorkflowDriver logs

Q & A?