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## An O-RAN SMO Use Case with Netconf Notifications

*Presented by*

**Sriram Rupanagunta, Aarna Networks**

**Bhanuchandra K, Aarna Networks**

**Brandon Wick, Aarna Networks**

# Agenda

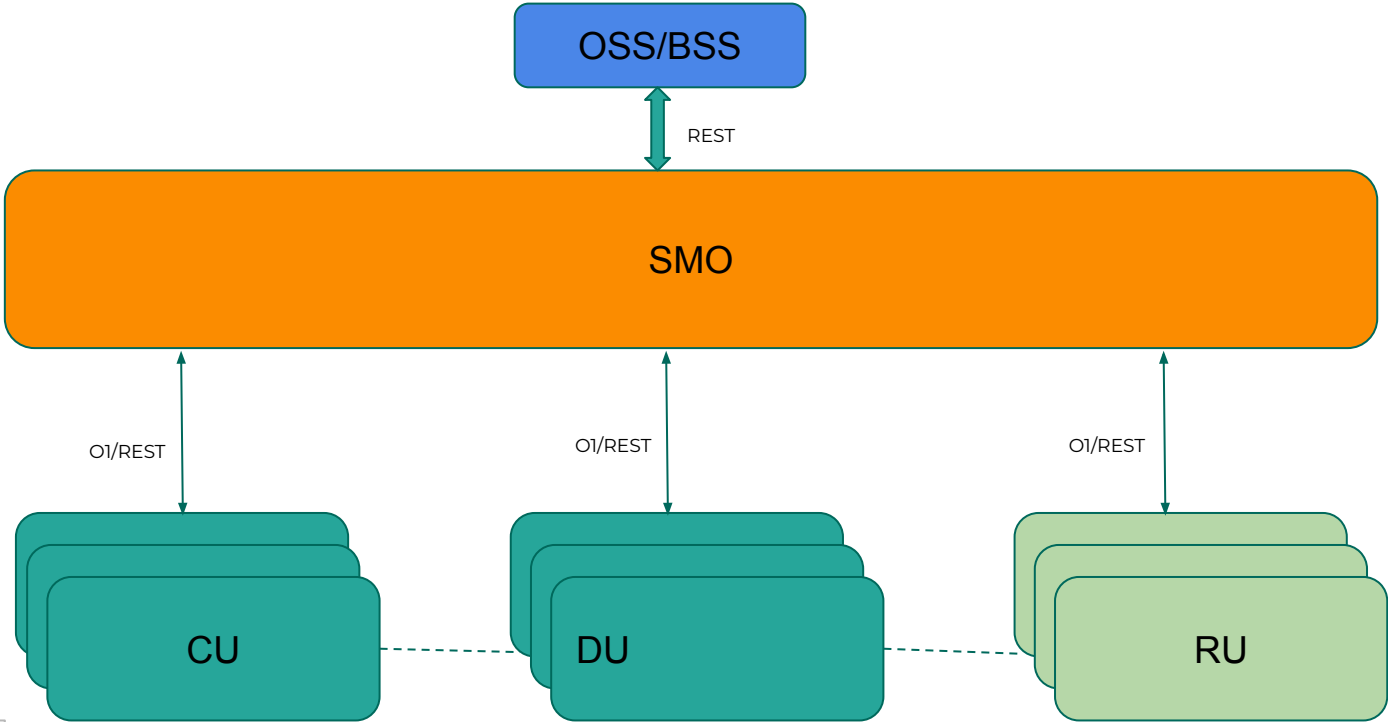
This session divided into two parts

- Demonstration of O-RAN SMO use case built with ONAP components
- Extending Netconf notification support for ONAP SDN-C/SDN-R

# O-RAN SMO Use Case

- ONAP is de facto open source choice of O-RAN SMO
- Aarna Networks productizes the O-RAN SMO using the some of the open source projects from ONAP
- Aarna Networks' AMCOP uses ONAP SDN-C/SDN-R, DMAAP, VES collector, DataFileCollectors... etc as part of O-RAN SMO solution
- Aarna's O-RAN SMO solution currently supports O1/REST interface and follows the O-RAN specifications for the various features
- CapGemini offers O-RAN compliant CU/DU that follows the O-RAN specifications for the functionality and supports various features like Provisioning Management, Fault Management, File management and more as per the standards
- Aarna and CapGemini are working together for a private 5G O-RAN deployment and currently doing interoperability testing between SMO and CU/DU

# Deployment Model



CU/DU	Capgemini
SMO	Aarna
RU	RU vendor
OSS/BSS	3rd party

## Prerequisites

- AMCOP ORAN- SMO in k8s cluster
  - Simulator
1. Connect simulator to SMO
    - a. Manual (ssh and TLS)
    - b. Plug and play
  2. Configuration Management
  3. Fault Management



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Extending Netconf Notifications for SDNR

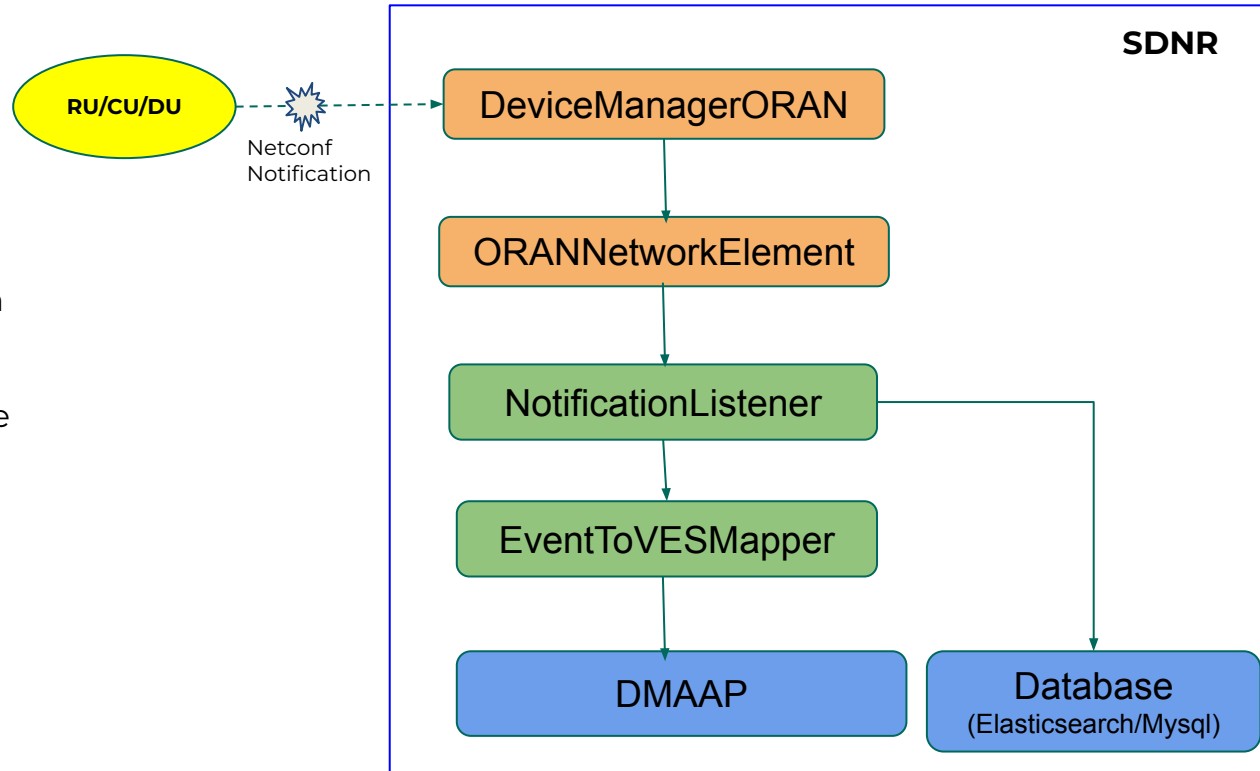
# Extending Netconf notifications

- SDNC/SDNR supports netconf notifications but currently it is limited to fault notifications
- As per the ORAN specs, SMO has to handle various netconf notifications on SMO such as file-ready, software-activate, inprogress.. etc.
- There is a need to extend the netconf notification support to fulfil these requirements
- This session talks about how to extend and also elaborates on some important classes in ccsdk-features repository



# Netconf notification handling in SDNR

1. Receive the netconf notification in SDNR
2. Delegate it to respective Notification Listener
3. Parse the netconf notification in specific NotificationListener
4. Create a VES event based on the need
5. Publish the VES event to dmaap
6. Write to event log



# Extending Netconf notifications

- Place the yang file and dependencies in <https://github.com/onap/ccsdk-features/tree/master/sdnr/wt/devicemanager-o-ran-sc/o-ran/ruffh/provider/src/main/yang> and do a maven build.
- Build process generates required java classes from the yang.
- Extend the classes of interest and create a notification listener with business logic.
- Need to register the new Listener to the ORANNetworkElement.
- Listener receives the notification in java object format with all the values.
- It is up to the implementation of listener on how to process the received notification.
- Either it can convert the notification to VES and publish it to DMAAP and/or Listener can submit it to event log DB.

# Demo - 2

- AMCOP & Netconf Simulator
- Required Code changes
  - New Listener
  - Registering new listener
  - Yang files
- Generate netconf notification
- Received and handled by SMO
- Conversion of xml to ves notification
- Display the event on GUI

# Resources & Future Plan

1. CCSDK-Features Repo:  
<https://gerrit.onap.org/r/gitweb?p=ccsdk/features.git;a=summary>
2. Currently work in progress and we plan to open source these changes and also planning to contribute on new notifications

A background image of a golden wheat field under a bright, hazy sky. The wheat stalks are in sharp focus in the foreground, creating a sense of depth and texture. The overall color palette is warm, dominated by yellows and oranges.

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