



Usecase subcommittee: Beijing release deliverables

Virtual F2F

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Manual Scale Out

Manual Scaling

- Scope
 - Manual Scale Out
 - Auto Scaling is to be covered in future releases
 - Manual Scale In will be supported partially and showcased for vVoLTE only
 - Includes VNFs controlled by APPC, SDNC, and VF-C
 - Includes both VID and UUI Portals to trigger scaling
- VNFs supported
 - vDNS, vVoLTE
- Supporting companies
 - AT&T, China Mobile, Huawei, Wind River, ZTE

Impacted Projects

APPC

- Support for ConfigScaleOut call

SDC

- Modifications to the onboarding package
- Internal checks
- Modifications to the TOSCA Service Model

SDNC

- Support homing and capacity requests from OOF
- Rainy day handling requirements
- DMaaP Support
- Ansible and Chef support
- Healthcheck
- ConfigScaleOut
- APPC Design tool

OOF

- Homing, licensing and capacity requests

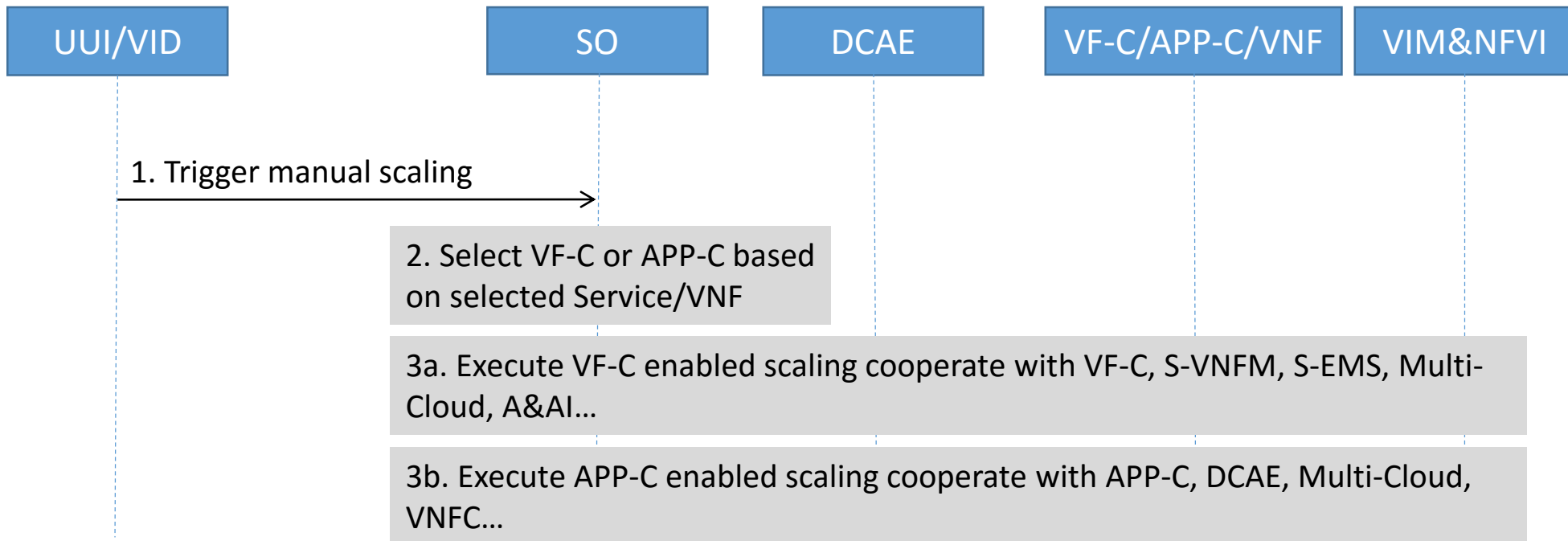
SO

- Scale Out Workflow
- Accept Scale Out Request from VID/UII
- Request Resources from SDNC
- Rainy day handling
- Call ConfigScaleOut to DMaaP
- Call to OOF for homing, licensing, capacity checks (stretch goal)

VID

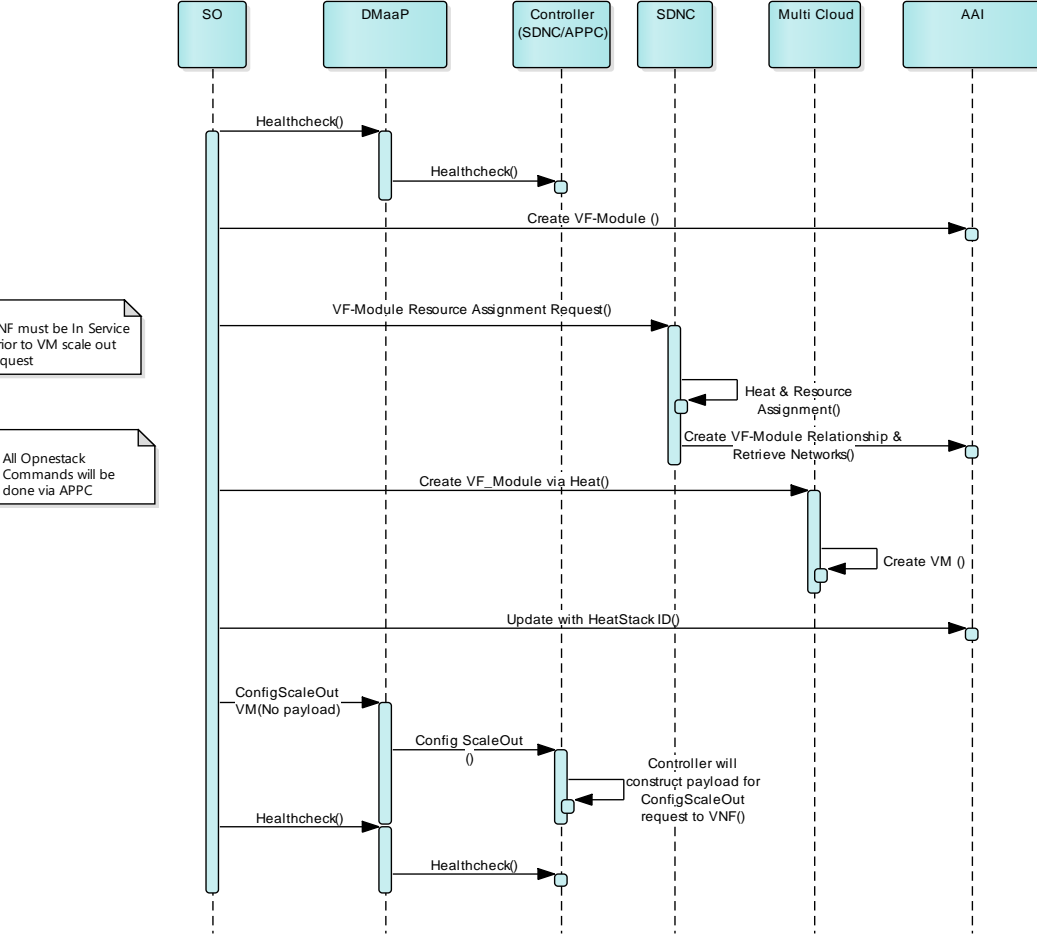
- Support new Scale Out Workflow
- Choose which VNF and VF_Module to be scaled
- AAI requests
- Request to SO to initiate scale out

Showcases and workflows

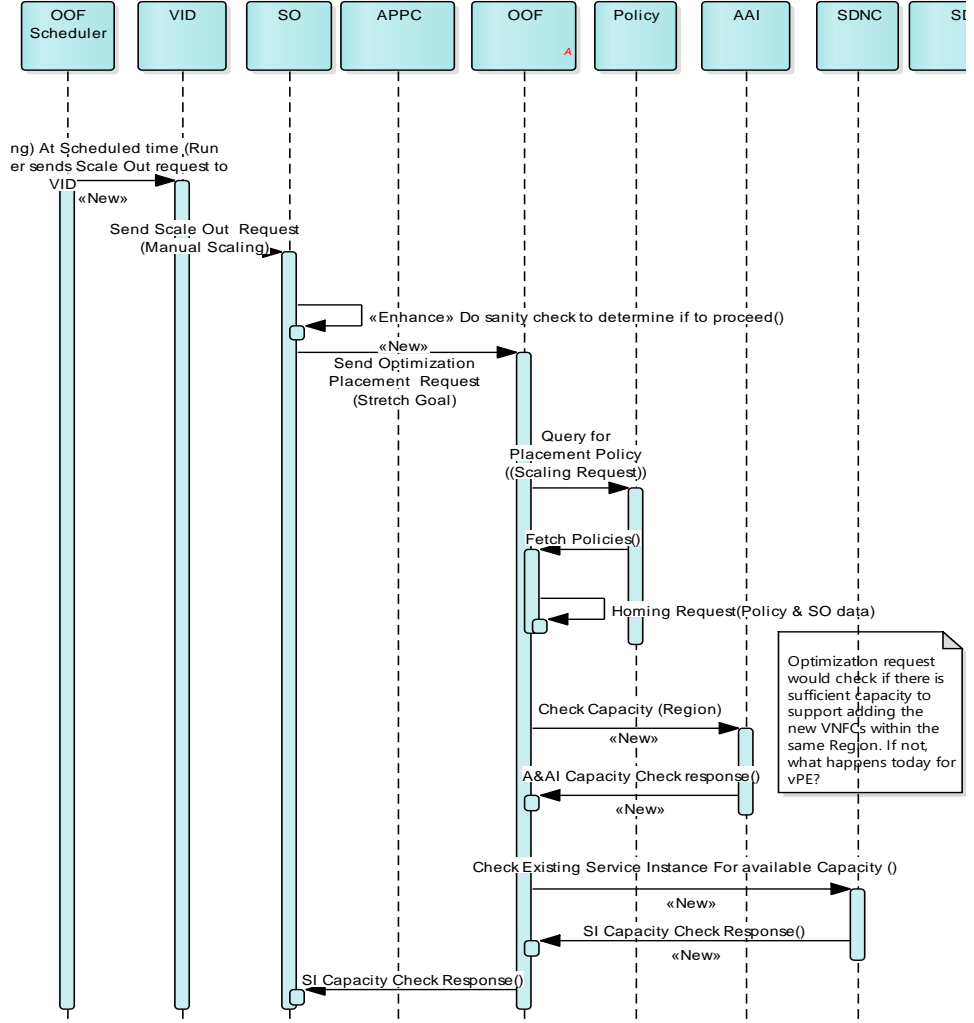


Manual Scaling Work Flows

Scale Out



Homing and Licensing





ONAP Change Management

Overview

- Goal
 - Extend ONAP platform to support NF change management (e.g., software upgrades, configuration changes) in a scalable and flexible manner
- Description
 - Initial use case: in-place software upgrade for vG (VCPE)
 - Implemented as custom workflow in SO
 - CM activity invoked by VID
 - Executed by SDNC using Ansible server (provided by CCSDK)
 - Vendor-supplied Ansible playbook carries out upgrade

Change Management

- Platform requirements / dependencies
 - SO – execution of CM workflows
 - A&AI –lock/unlock VNF instances
 - SDNC – execution of upgrade
 - CCSDK– Ansible server
 - vCPE / Demo – Playbooks for in place upgrade
 - VID – User interface for invoking upgrade workflow
- VNFs that will be used for the use case
 - vG (part of vCPE)
- Companies willing to contribute – AT&T, Intel, Orange, Ericsson



PNF Support

PNF Onboarding (Plug and Play) Stages

Design Time

A  **PNF Modeling**

Resources Definition/Services Definition
SDC: PNF (physical element) Modeling
Distribution of types



Run-Time (Instances)

B  **PNF Instance Declaration**


PNF Infrastructure Service Declaration
First part of PNF instantiation
DCAE & AAI Entry with PNF ID (e.g. MAC address)

C  **PNF Boot-strapping**

PNF Powers up and Boot-straps
PNF performs a “Plug and Play” procedure
Equipment vendor proprietary steps

D  **PNF Contacts ONAPs**

PNF connects to ONAP via a VES Event
PNF recognized by ONAP
Generic (not vendor proprietary)

E  **PNF Activation**

Connection points configured
Second part of PNF instantiation
Software is downloaded to PNF.
PNF configured and ready to provide service

PNF Onboarding Projects Impacts

ONAP Project	IMPACT
Modeling, SDC, VNF-SDK	<ul style="list-style-type: none"> • TOSCA Template for 5G DU and 4G DU • Service Definition for 5G DU and 4G DU • Resource Definition for DU HW • PNF Package for DU HW onboarding. Package would have configuration information of the PNF (common between VNF & PNF) • PNF artifacts (VES event for DCAE, Ansible API for SDN-R, username & password for vAAA) • VNF-SDK will need updates.
SO	<ul style="list-style-type: none"> • Service Instantiation for services on PNFs; implement PNF specific behavior • Subscribe to new PNF Ready DMaaP event
DCAE	<ul style="list-style-type: none"> • Subscribe to new PNF Discovery VES event and publish new PNF Discovery DMaaP event
A&AI	<ul style="list-style-type: none"> • Register PNF Service – may need new registration information in AA
SDN-C	<ul style="list-style-type: none"> • Network assignments for PNF and update AAI. • SOLVE: How SDN-C will manage the physical links to the PNFs and the virtual/physical links between the VNF and its PNFs. • IP address assignment (step 33)
PNF Infrastructure Manager	<ul style="list-style-type: none"> • New microservice to be implemented. New ONAP Project (out of scope for Beijing release). DCAE Plug-in. • Subscribe to new PNF Discovery VES event, update AAI, publish new PNF Ready DMaaP event (this is all we are asking of the PIM initially). OOM
ONAP Controller	<ul style="list-style-type: none"> • Provide CU IP@ to PNF as part of Service Instantiation • SOLVE: determine the ONAP Controller for this use case
VNF Requirements	<ul style="list-style-type: none"> • Expand VNF requirements to add PNF requirements needed for this use case.



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HPA

- Business requirements

- Support of commercial VNF implementations, that are used as part of vCPE, VoLTE and 5G use cases, and require hardware assisted acceleration.
 - This requirement is also needed by the ONAP Optimization Framework (OOF) project in order to optimize homing and placement of hardware assisted VNFs.

- Enabled Functionality

- Modeling of VNF hardware platform requirements and dependencies as part of the VNFD information model and data models.
- Specification of VNF hardware platform requirements and dependencies as part of the VNF template (TOSCA).
- Use of VNF hardware platform dependencies at on-boarding time to verify that infrastructure is capable of supporting VNF instantiation and operation.
- Use of VNF hardware platform dependencies as constraints for optimized homing and resource placement of VNF components during VNF instantiation.
- Use of hardware platform health information in determination of the VNF instance health.
- Use of VNF hardware platform dependencies as constraints for operation and remediation of running VNF instances.
- Discovery of hardware platform capabilities exposed by different VIMs.
- Modeling and persistence of discovered platform capabilities in the AA&I database.

Discussion Pages

- [Discovery of HPA related information in MultiCloud](#)
- [HPA Architecture & Design Considerations](#)
- [HPA Impact on the AAI Project](#)
- [HPA Impact on the SDC Project](#)
- [HPA impact on the SO project](#)
- [HPA Impact on the VNF SDK Project](#)
- [HPA Related Personas](#)
- [HPA Requirement & Capability Specification](#)
- [Persistence of HPA related information in AAI](#)
- [TOSCA Template Example...](#)

<https://wiki.onap.org/display/DW/Hardware+Platform+Enablement+In+ONAP>



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Summary

Beijing Functional Requirements: the summary

	Hardware Platform Awareness	Change Management	Manual scaling	PNF support
Description	Knowledge about underlying compute hardware platform capabilities is exposed to VNFs running on top of the platform in order to optimize, accelerate and/or otherwise augment their execution	The capability to design, schedule and manage configuration changes and software upgrades of network functions managed by ONAP	Needed in cases of e.g. immediate response to the huge growth of traffic. Provides the capability of VNF scale in/out triggered by operators based on predicted demand	PNF will be managed by ONAP, in addition to VNFs
Affected modules	AAI, Modelling, MultiVIM, OOF, Policy, SDC, SO, VNF SDK, VFC, VNF requirements	AAI, APPC, CCSDK, OOF, SDNC, SO, VID, VNF requirements	AAI, APPC, CCSDK, ONAP CLI, OOF, Usecase UI, SDNC, SDC, SO, VFC, VID, VNF requirements	AAI, SDNC, SDC, SO, VNF requirements
Will be showcased on	Residential vCPE	Residential vCPE	vDNS, vVoLTE	Residential vCPE



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THANKS