

BBS Broadband Service Use Case (Dublin)

Sponsors



Overview

This use case proposes using ONAP for the design, provisioning, life-cycle management and assurance of broadband services. In a first step, multi-Gigabit Internet Connectivity services based on PON (Passive Optical Network) access technology will be considered. The use case covers new scenarios, such as nomadic ONT (Optical Network Terminal) and service subscription plan changes.

BBS use case shows the extensibility of the ONAP platform in supporting the orchestration of services across different locations (e.g., Central Office, Core) and technology domains (e.g., Access, Edge) within the locations.

In a joint collaboration with [BBF](#) (Broadband Forum) members, BBS implements/tests some of the specifications defined in the architectural framework of CloudCO (Cloud Central Office), Technical Report [TR-384](#), among others. CloudCO aims at re-architecting the broadband network using SDN and NFV technologies and a cloud-like infrastructure deployed at Central Offices.

The definition of External API capabilities supporting this use case will be performed in collaboration with TM Forum and MEF LSO.

Dublin Goals

- 1. Establishment of a subscriber's HSIA (High Speed Internet Access) service** from an ONT to the Internet drain
 - a. The HSIA service is designed and deployed using ONAP's design and deployment capabilities
 - b. The HSIA service activation is initiated via ONAP's External APIs and orchestrated and controlled using ONAP orchestration and control capabilities. The control capabilities leverage a 3rd party controller to implement the requested action within the technology domain/location represented by the domain specific SDN management and control function.
- 2. Change of location for ONT devices (Nomadic ONT devices)**
 - a. PNF (Re-)Registration for an ONT
 - i. Subscriber association to an ONT via ONAP's External APIs
 - ii. ONT association with a expected Access UNI (PON port) when a HSIA service is created/deployed for a subscriber
 - iii. PNF (Re-)Registration using ONAP's PNF registration capabilities
 - b. Service location modification that is detected by ONAP's analytic and initiated via the closed loop capabilities
 - i. The closed loop capabilities invoke a HSIA location change service that is orchestrated and controlled using ONAP capabilities and 3rd party controllers
- 3. HSIA service subscription plan changes (R5)**
 - a. The HSIA service modification (e.g. upgrade bandwidth plan) is initiated via ONAP's External APIs and orchestrated using ONAP.
- 4. HSIA service assurance (R5)**



BBS in Frankfurt release

[BBS Broadband Service Use Case \(Frankfurt\)](#)



BBS Documentation

Documentation on how to set up the use case:

- [BBS Documentation \(Dublin\) \(wiki\)](#)
- [BBS Documentation. Dublin release \(docs.onap.org\)](#)

Demo videos: [BBS Documentation \(Dublin\)](#)
[#BBSServiceConfiguration](#)

BBS Use Case Presentations

Date	Event	Presentation Material
2019.09.25	Open Networking Summit Europe (ONS Europe) 2019	20190925_ONS_ONAP_BBS_Broadband_Service_final_.pdf
2019.06.13	2019 June LFN DDF & Plugfest	20190613_ONAP_DDF_BBS_Broadband_Services.pptx 20190613_ONAP_DDF_BBS_UseCase_Demo.mp4
2019.04.04	Open Networking Summit North America (ONS NA) 2019	BBS Demo Slides Broadband Services Orchestration with ONAP
2019.04.02	2019 ONAP Joint Subcommittees Silicon Valley	BBS proposal for ONAP Ei Alto/Frankfurt release
2019.02.22	BBF Q1 Feedback	BBS Status Report
2018.11.12	Use Case Subcommittee Meeting	20181112_BBS Usecase.pptx
2018.10.29	Dublin Architecture Planning Meeting	BroadBand_Service_BBS_Usecase.pptx

BBS Use Case Team Meetings

Weekly Meeting

Day: Thursday

Time: UTC 1200 / China 2000 / Eastern 0800 / Pacific 0500

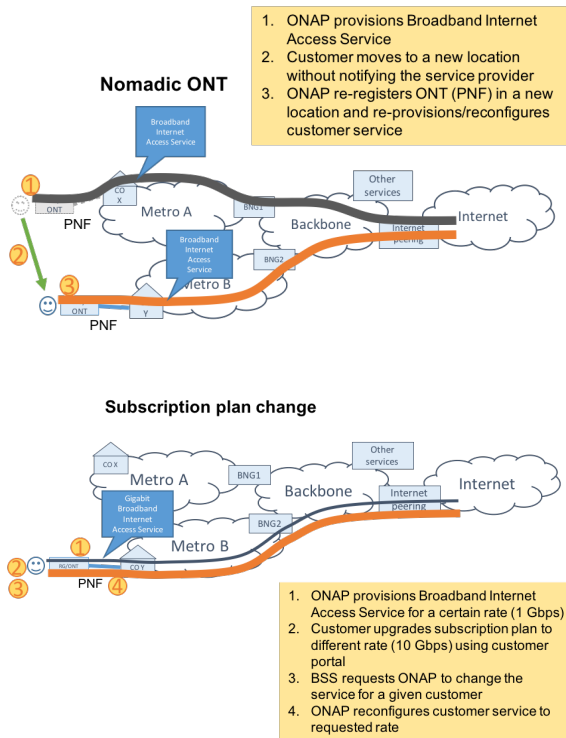
Duration: 1.5 hours

URL: <https://zoom.us/j/735324492>

[Meeting Minutes](#)

Impacts

- a. The HSIA service health is monitored via ONAP's data collection, analytic and closed-loop capabilities



Business Requirements

- Service providers need a flexible platform that integrates Broadband services using standardized APIs towards domain specific management and control systems, e.g. Access domain controller/orchestrator.
- Equipment vendors and systems integrators benefit from well defined, standardized APIs to which they can develop products and services.
- By closely collaborating with Industry consortiums, such as BBF, the BBS use case outcomes will serve as a basis for the definition of new standard interfaces and the evaluation and refinement of existing specifications.

The BBS Use Case for Dublin will have impacts on the following projects: AAI, DCAE, External API, SDNC, SO

See [Impacts page](#)

Project Commitments

Project	PTL	Commitment	Notes
AAI	James Forsyth	COMMITTED	<p>AAI-1990 - BBS: Support BBS use case in AAI CLOSED</p>
			<p>AAI-2454 - Add EdgeRules to cp/generic-vnf /pnf to support BBS use case CLOSED</p>
CLAMP	Gervais-Martial Nguoko	TEST	<p>CLAMP-270 - BBS: Control Loop associated support CLOSED</p> <p>Setup of Control Loop for Location change:</p> <ul style="list-style-type: none"> • configure DCAE μS that detects location change • configure policy that trigger re-config
DCAE	Vijay Venkatesh Kumar	COMMITTED	<p>DCAE-GEN2-1057 - BBS : DCAE support in Dublin CLOSED</p> <p>Must have:</p> <ul style="list-style-type: none"> • Restconf2VES mapper (TechM commitment) • Restconf collector microservice (Huawei commitment) • RG activation microservice (Nokia commitment) <p>• PRH microservice needs to trigger policy (Nokia commitment)</p>
External API	Matthieu Geerebaert	COMMITTED	<p>Nice to Have: Support for TMF 638 ServiceStateChangeNotification or ServiceAttributeValueChangeNotifications</p> <p>Note -</p> <p>EXTAPI-98 - Service Inventory - notification webhook - [BBS] CLOSED</p> <p>This EPIC was previously raised to support Service Inventory Notifications with relevant support from A&A.</p>
Policy	Pamela Dragosh	TEST	<ol style="list-style-type: none"> 1. APEX modification to support CLAMP at control loop design time; 2. Support BBS/ONT Nomadic ONT policy modeling at design time 3. Apex policy distribution, deployment execution.

SDNC	Dan Timoney	COMMITTED	SDNC-614 - Support for BBS use case CLOSED Updates to SDNC DG repository to onboard new DGs developed by BBS team
SO	Seshu Kumar Mudiganti	COMMITTED	Dependency: 5G Use Case to develop PNF discovery SO to use SDN-C GR-API for resource creation/deletion SO-4392 - Support the BroadBand Service Use case CLOSED

Scope

The work leverages the CloudCO reference architectural framework (TR-384) by implementing the organization's work for integration of CloudCO to ONAP as defined in [Cloud-CO-APPN-015](#): [Cloud-CO-APPN-446](#): [ONAP Integration for HSIA Service \(Access\) Integration for HSIA Service \(Access\)](#). The scope of this use case for the Dublin release includes the implementation of this application note and will demonstrate modification of a subscribers subscription plan. As the Broadband Forum develops additional Broadband Service application notes that are applicable for integration with ONAP, this use case will be extended over time to incorporate the new application notes.

Priorities

Dublin will focus on Broadband Service CFS (Customer Facing Service) design, creation and activation, with support for nomadic ONT. If possible we will also implement the subscription plan change scenario (CFS "modify" action). Enabling CFS service assurance is a stretch goal for Dublin.

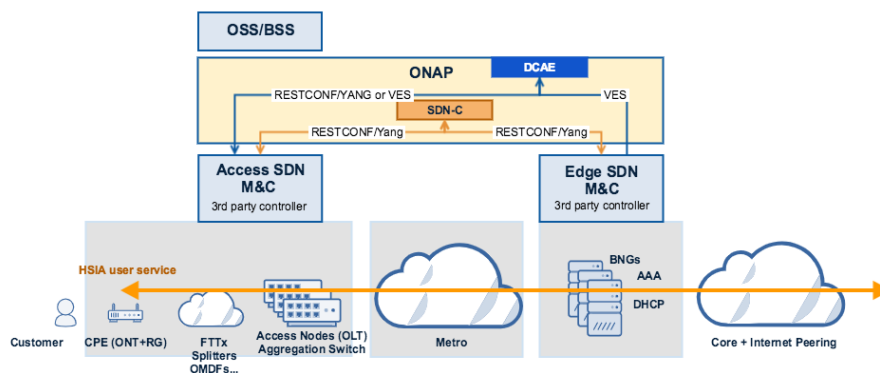
Action Phases

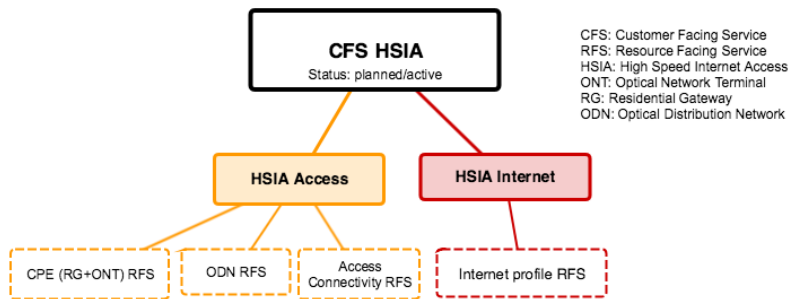
- Phase 1: CFS creation and activation **[priority for Dublin]**
- Phase 2: Nomadic ONT (PNF re-registration) **[priority for Dublin]**
- Phase 3: CFS change / reconfiguration (subscription plan change) **[stretch goal for Dublin]**
- Phase 4: CFS assurance **[stretch goal for Dublin]**

Sub-Use Cases

- 3rd party controller registration, RFS catalog discovery / abstract topology discovery (Phase 1)
- CFS design and RFS onboarding (Phase 1)
- CFS reconfiguration after PNF relocation (Phase 2)
- CFS reconfiguration after service change order from BSS (Phase 3) **[stretch goal for Dublin]**
- CFS termination **[stretch goal for Dublin]**
- CFS assurance (fault detection and self-healing) **[stretch goal for Dublin]**

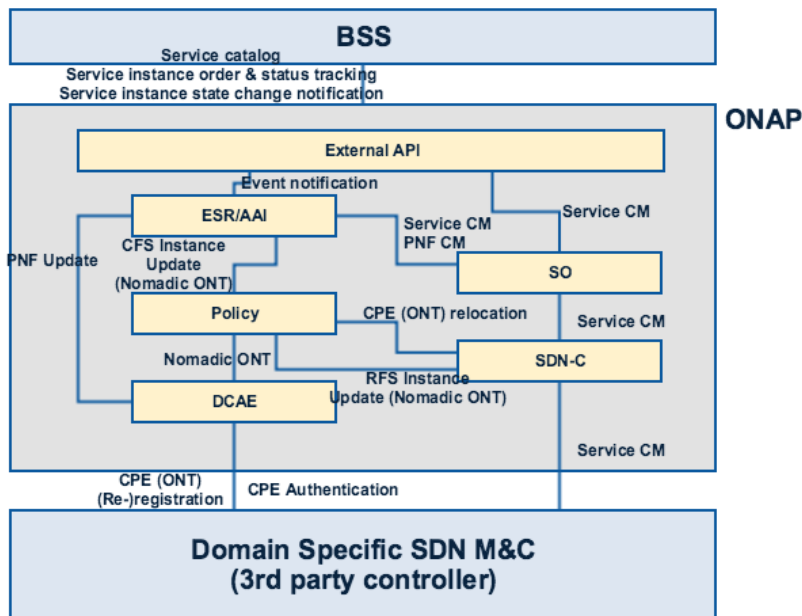
System topology





See [BBS Modeling](#)

Full System Context



Interface	Description
BSS External API	Advertise service catalog to external systems, e.g. BSS, service instance ordering and order status tracking, and service instance state change notifications to external systems.
External API AAI	This interface provides for notification of service instance state changes
External API SDC/SO	This interface provides invocation for the service catalog, LCM operations on the CFS HSIA instances, event notification on service instance order status
Policy DCAE	This interface provides closed loop policies for activation of the CFS HSIA and relocation of ONT
Policy SDN-C	This interface supports RFS re-configuration triggered by ONT relocation as well as device PnP
Policy AAI	This interface supports CFS re-configuration triggered by ONT relocation as well as device PnP
SO SDN-C	This interface provides orchestration of the CFS HSIA into requisite network services for Access and Edge. The interface also provides a relocation of ONT network service.
DCAE Domain Specific SDN M&C	This interface provides event collection for Service and ONT health as well as notification of an ONT registration to a new Access attachment interface.
SDN-C Domain Specific SDN M&C	This interface provides the resource facing HSIA services for Access and Edge elements. In addition ONT application layer configuration is provided.

Work Commitment

Work Item	ONAP Member Committed to work on BBS
Modeling	Nokia (Stavros Kanarakis, Tim Carey - epics), Huawei (Victor Gao - epics), Swisscom
SDC	Nokia, Huawei
SO	Nokia (Tamas Lendvay - epics), Huawei (Victor Gao - epics)
SDN-C	Nokia (Stavros Kanarakis - epics), Huawei (Victor Gao - epics)
UUI	
DCAE	Nokia (Tamas Lendvay - epics), Huawei (Xin Miao - epics), Swisscom
Policy	Nokia (Tamas Lendvay - epics), Huawei (Xin Miao - epics)
VF-C/APP-C	
A&AI	Huawei, Nokia (Stavros Kanarakis - epics)
External API	Huawei (Adrian O'Sullivan - epics)