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BBS: Broadband Services Orchestration with ONAP

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Outline

- BBS use case. Motivation (David)
- BBS in ONAP Dublin release (Chaker)
- BBS: Using standards to help create an interoperable ecosystem (Tim)



Broadband Service (BBS) orchestration with ONAP







swisscom (Switzerland's leading telecoms company)



Best customer experience

We want to inspire our customers by providing them with the best service at all times, regardless of their location.

Operational excellence

We want to be better prepared for new business activities and optimise our infrastructure.



New growth

We want to develop our core business and open up new areas of business.

https://www.swisscom.ch/en/about/company/portrait/vision-values-strategy.html



Where to start?





Fixed networks **4.2 million**

homes and businesses connected with ultra-fast broadband

Ambitious expansion targets

Window of opportunity

Fibre-optic technologies in every district in Switzerland by end-2021

Digital pioneer in Europe

Compliance with the EU's digital agenda for 2020 – 99% of all households covered with at least 30 Mbps

2 million customers on All IP

Call filter, HD sound quality, fixed network to go, simplified business communication



ONAP & Fixed Broadband Services: BBS

- ONAP as global service orchestration and automation platform
 - Model-based, meta-data & policy-driven automation, service agnostic...
- New use case in ONAP Dublin release:
 - BBS (Broadband Service)
 - ONAP for the design, provisioning, life-cycle management and assurance of multi-gigabit internet access customer facing services
 - Open standards: BBF CloudCO, TMF OpenAPIs
 - Automation & orchestration challenge: Nomadic ONT
 - ✓ Best customer experience
 - ✓ Operational excellence









BBS overview









BBS in ONAP Dublin release

...this was our Goal







Domain Expertise - Service

- Some team members had :
 - In-depth Service expertise
 - A clear understanding of the new service capabilities to be added
 - Are involved in other standards org that could also benefit from our Usecase





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.. Domain Expertise - Service Provisioning

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- Other team members were knowledgeable in:
 - 3rd-party controller layer
 - Provisioning flows
 - Networking





Domain Expertise - ONAP Platform

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- The rest of the team brought on:
 - ONAP knowledge and expertise
 - Good understanding of many ONAP components
 - Good understanding of new features being introduced in the next ONAP release





BBS Usecase Development timeline



- The work began in the November, 2018 timeframe (M0)
 - Started out as 3 Different Teams
- A weekly meetings were set up starting on November 18, 2018 (T0)
- Some pairwise technical discussions had taken place prior to the November start date between Swisscom and Nokia.
- The core Usecase team was formed with resources from Swisscom, Nokia and Huawei
- Project timeline created, weekly meetings started
- Many follow-up meetings were needed/required where the team would meet every day until open issues were closed
- Initial focus was on understanding the business problem that we were attempting to solve
- Requirements discussions started in earnest early December (M1 t0+8w)
 - Created a usecase project wiki
 - Prepared materials for usecase discussions and sub-committee/TCS approval
 - Modeling discussion
 - Nomadic ONT Service provisioning flow Discussion

Dublin Release Milestones:		
0	M0:	11/15/2018
	•	11/30/2018 Project
	Submitted	
		12/13/2018 Project
	Proposals Approved	
0	M1:	01/17/2019 Project
	Plannir	ng
0	M2:	02/24/2019
	Functionality Freeze	
0	M3:	03/14/2019 API
	Freeze	
0	M4:	04/11/2019 Code
	Freeze	
0	RCO:	05/02/2019
0	RC1:	05/16/2019



BBS Usecase Development timeline

- Developed Modeling proposal for BBS Usecase team review
- Began the Requirements discussion and the ONAP Dependencies. (i. e. 5G PnP PNF support)
- Identified functionality gaps
- Planned Test lab build-out
- Presented the usecase at DDF, Paris
- Finalized the BBS Data Model
- Monitored the status of the 5G PnP usecase (dependency)
- Setup daily calls to resolve showstoppers/Critical requirement issues
- Passed M2 Milestone
- Additional A&AI/Modeling discussions, DCAE uS, APIs, Topology discussion
- Decided on doing a demo at ONS2019
- Passed M3 (Mar 14 t0+12w) API Freeze





BBS Usecase Timeline – ONS-2019 Demo



18 Weeks into this effort, we have enhanced or added new functionalities to the following ONAP components:

- ExtAPI
- DCAE: BBS uS / PRH
- Policy
- SO
- SDN-C
- AAI
- SDC / Model
- Test Lab
- We're able to support a BBS Demo with the code we've already developed
- Still more development to be done





Key Takeaways and observations



- You always start out as many different teams
- Try to become one Large Cohesive team asap
- Gain a common understanding of the use case as early as possible
- Document gaps and develop workarounds as you go
- Create a list of additional functional requirements and try to develop it as part of the use case effort
- Share status and share often
- Track your dependencies
- Have fun doing it and make new friends, we did



Contribute back to the ONAP Community

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- Document gaps and develop workarounds
 - Minimize or eliminate throwaway code altogether
 - To the extent possible, Code a new workaround as a new uService so it can be reused
- Develop a list of functional requirements
 - When possible:
 - Code the new requirement as a uService and contribute it back to the proper ONAP component
 - As an example: SO Service Instance update function or
 - · Provide the additional resource to fully implement and test the new capabilities
- Now that you've gained more experience in the ONAP platform, try to contribute back to the community





BBS: Using standards to help create an interoperable ecosystem

The "Open" path toward Cloud native solutions



Enabling the transformation to a digital service provider

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Using Open Source and Standardization in BBS





Open source standardizes implementations, standards define interfaces and ensure compatibility between implementations



BBS: Standardization Objectives



- Use the Broadband Forum's TR-384 CloudCO Framework based on Application Note: <u>CloudCO-APPN-446 : ONAP Integration for Residential Broadband HSIA Service</u>
 - Use the design pattern of the Application Note as basis (i.e., use of Domain Specific Management and Control elements)
 - Vary the use case based on an operator's actual deployment scenarios that highlight advantages of an automation platform like ONAP (Zero touch service activation, ONT Relocation)
 - Feedback the APIs for the relevant interfaces for standardization
- Use TMForum's APIs for External APIs:
 - Focus initially for service creation, activation and monitoring between ONAP and BSS
 - Feedback through ONAP external APIs gaps (e.g., service operation status) and feature requests
- Use 5G Use Case work based on 3GPP specifications:
 - Focus on PNF PnP and Relocation





- Use ONAP's Service Design and Creation environment using the ETSI NFV artifacts:
 - Creation of Broadband services using ONAP's SDC and expressed through ETSI NFV TOSCA resource and service definitions.
 - Resources: TOSCA model based on ETSI SOL001
 - Services: NFV TOSCA Model
 - Feedback through ONAP modelling gaps (e.g., service substitution) and feature requests (e.g., attribution of virtual links)





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Thank you!

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