NFV ISG PoC Report

Title: PoC #36: Orchestrated Assurance enabled by NFV (NFVTST(16)000008)

From Source: Netrounds

Contact: Mats Nordlund

Submission Date: January 28, 2016

PoC Project Completion Status

- *Overall PoC Project Completion Status:*
  Completed.

B.1.2 NFV PoC Project Participants

Specify PoC Team; indicate any changes from the NFV ISG PoC Proposal:

- PoC Project Name: PoC#36 - Orchestrated Assurance enabled by NFV
- Network Operator/Service Provider:: Orange_ Contact: Christos Kolias
- Manufacturer A: Netrounds_____ Contact: Mats Nordlund
- Manufacturer B: Cisco_____ Contact: Stefan Wallin
- Manufacturer C: Intel_____ Contact: Camelia Bucioveanu
- Additional Members: Telco Systems_____ Contact: Gal Ofel

B.1.3 Confirmation of PoC Event Occurrence

Provide details on venue and content of PoC demonstration event. Provide pictures and supporting literature where available. Please identify who was present at the demonstration event (optional).

- PoC Demonstration Event Details:
  - SDN & OpenFlow World Congress, Dusseldorf, October 2015. See pictures below. Present was: Mats Nordlund, Kari Korkala and Marcus Friman from Netrounds, Gal Ofel from Telco Systems, Camelia Bucioveanu from Intel and Stefan Wallin from Cisco.
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Figure 1 Mats from Netrounds (middle of the picture) and Stefan (Cisco) rightmost describes the ETSI PoC.

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Figure 1 Mats (Netrounds) and Stefan (Cisco) describing the PoC and the benefits (you see their backs)

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    - OPNFV Summit, Burlingame, November 2015 (short video interview with Marcus Friman, Netrounds, can be found here: https://www.youtube.com/watch?v=kimL4LYAgy4). Present was Marcus Friman from Netrounds, Jason Yen from Cisco, and Christos Kolias from Orange.

- YouTube presentation: https://www.youtube.com/watch?v=qS1v4JCVeYQ

B.1.4 PoC Goals Status Report

Specify PoC Goals from NFV ISG PoC Proposal (clause A.1.2). Identify any changes from the original NFV ISG PoC Proposal with an explanation as to why the changes were made. Indicate the extent that each goal was met. Provide sufficient information for those not familiar with the PoC goals to understand what has been achieved and/or learned.

- PoC overall Project Goal: Show value and benefits of using integrated fulfilment and assurance components as part of the orchestration, using YANG as overall data modelling language.
  - Goal Status: Demonstrated and met.
- PoC Project Goal #1:Define YANG models for the KPIs to be monitored and assured, as well as for on-demand actions (e.g. servicee activation/troubleshooting tests) to be taken.
  - Goal Status: Met. The models have been designed, and used by the orchestrator, in order to automate activation tests, and KPI monitoring.
- PoC Project Goal #2: Demonstrate orchestrated/automated quality assurance of an L3VPN used for video streaming, including deployment of virtual Test Agents, activation testing of both the network as well as making sure the service works end-to-end from a user perspective, and after that in-service continuous monitoring of service e KPIs.
  - Goal Status: Demonstrated and met.
- PoC Project Goal #3: Explore and suggest monitoring and assurance parameters to expose over the OS-MA-nfvo interface.
  - Goal Status: Met. Activation test results and KPI monitoring parameters were fetched by the Orchestrated in real-time.
- PoC Project Goal #4: Demonstrate how distributed NFV PoPs are leveraged to host test and monitoring VNFs close to end-user locations.
  - Goal Status: Demonstrated and met. The Telco Systems Cloud Metro carrier-grade CPE with built-in hypervisor was used as one of the hosts for the virtual test agents, as well as a central Datacenter.
- PoC Project Goal #5: A complete demo is shown at the SDN and OpenFLow World Congress, Dusseldorf.
  - Goal Status: Demonstrated and met.
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B.1.5 PoC Feedback Received from Third Parties (Optional)

- The PoC has drawn high interest from both service providers, and vendors, and the YouTube videos has had around 2000 views in total.

B.2 NFV PoC Technical Report (Optional)

PoC Teams are encouraged to provide technical details on the results of their PoC using the PoC Scenario Report template below.

B.2.1 PoC Scenario Report

Use the table structure below and refer back to the Scenarios in the NFV ISG PoC Proposal (clause A.2.2) and provide information for each of them. Feel free to include additional Scenarios developed during the implementation of the PoC. Do not eliminate Scenarios that were not performed, instead provide a brief status for each with a reason why the scenario was not performed. Do not hesitate to fill multiple instances of the table if several objectives have been demonstrated for each scenario.

Objective Id:	UC[UC#]/SCE[SCE#]/[OBJ#] *i.e. "UC4/SCE1/1"*	
Description:	Description of the PoC Demo Objective: i.e. Show value and benefits of using integrated fulfilment and assurance components as part of the orchestration, using YANG as overall data modelling language.	
Pre-conditions	In the PoC a VPN was configured to connect a base station site to a datacentre with a video content distribution. To create an advanced scenario it was assumed that the backhaul part of the network was provided by another operator (an off-net connection). This part was already configured, when the practical demo part of the PoC was started.	
Procedure:	1	A virtual router was started
	2	A VPN was configured to connect the datacentre to the ENNI of the off-net operator.
	3	Three virtual test agents were deployed, one in the data center, one at the ENNI between the Service Provider and the operator, and one at the CPE at the base station.
	4	The VTAs automatically connected to the Test Controller once they were started.
	5	The Orchestrator initiated an activation test by using the northbound API to the Test Controller. The Test agents verified both the network, as well as requesting real video to make sure the actual service worked from an end-user perspective.
	6	The orchestrator fetched the activation test results from the Test Result collector in the Test Controller, and verified that the service had been turned-up in the correct way.
	7	The Orchestrator initiated monitoring of network and video service KPIs, and continuously monitored the different metrics, to make sure that the SLAs of the service were met.
Results Details:	Objective met and demonstrated.	
Lessons Learnt & Recommendations	*What was learnt with this demo? What are the recommendations for the NFV ISG work or the industry as a whole.* We found that the work item REF004 (Active monitoring) described a process for deploying and scheduling tests, that was not inline with the way we handled it in the PoC. We have therefore provided input to that work item,that resulted in an alternative description of the process, with both pros and cons. See REL004 for more detailed information.	

B.2.2 PoC Contribution to NFV ISG

Use the table below to list any contributions to the NFV ISG resulting from this PoC Project.

Contribution	WG/EG	Work Item (WI)	Comments
NFVREL(15)000293 - Change request: Message Sequence Flow REL004	PER	ETSI NFV-REL 004	Suggested a change in the process of deploying virtual test agents, and how scheduling of tests should be made.
NFVREL(15)000302r1 - Add Alternate Active Monitoring Architecture Consideration Chapter		ETSI NFV-REL 004	Added text to the draft according to the proposal in 293. The text was approved by the WG meeting.

B.2.3 Gaps identified in NFV standardization

Use the table below to indicate Gaps in standardization identified by this PoC Team including which forum(s) would be most relevant to work on closing the gap(s).Where applicable, outline any action(s) the NFV ISG should take.

Gap Identified	Forum (NFV ISG, Other)	Affected WG/EG	WI/Document Ref	Gap details and Status
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B.2.4 PoC Suggested Action Items

- No additional suggestions.

B.2.5 Any Additional messages the PoC Team wishes to convey to the NFV ISG as a whole?

- As a PoC we would like to thank you for the opportunity to run an ETSI PoC. We believe that the concept of “Orchestrated Assurance” that was published as a result of the PoC, will be a critical component for future networks/services that are Orchestrated, Agile, and Assured.

B.2.6 Any Additional messages the PoC Team wishes to convey to Network Operators and Service Providers?

- Orchestrated assurance will provide cost savings, service agility, improved network quality and improved customer experience. It will be a key component to address the operational challenges of NFV, and it is as relevant for non-NFV networks. The solution is available already today. Please check out the PoC video, and do not hesitate to contact any of the PoC team members for more information. https://www.youtube.com/watch?v=qS1v4JCVeYQ
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