

VII WPIETF

Experiences in IETF-BMWG: Towards a methodology for VNF benchmarking automation

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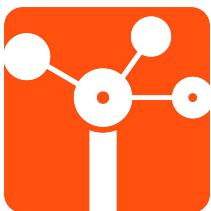
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Agenda

1. Motivation
2. Problem Scope
3. Proposal
4. Draft Outline
5. Reference Implementation
6. Our Perspectives

A Quick Overview about VNFs

- × Network Functions Virtualization (NFV) has envisioned carrier grade comparison performance for Virtual Network Function (VNF) embodiments
- × Different approaches have been established towards high performance network functions in a diversity of enabling technologies for VNFs
- × Hitherto, a myriad of execution environment capabilities have been developed and advanced the state of the art regarding new techniques of specialized packet processing methodologies



What if I want to benchmark a VNF?

- Internal configuration
- Hardware and software execution environment
- Network workload specificities

How to tackle the diversity of settings imposed by the above enlisted factors when testing a VNF, in particular benchmarking?



Proposal

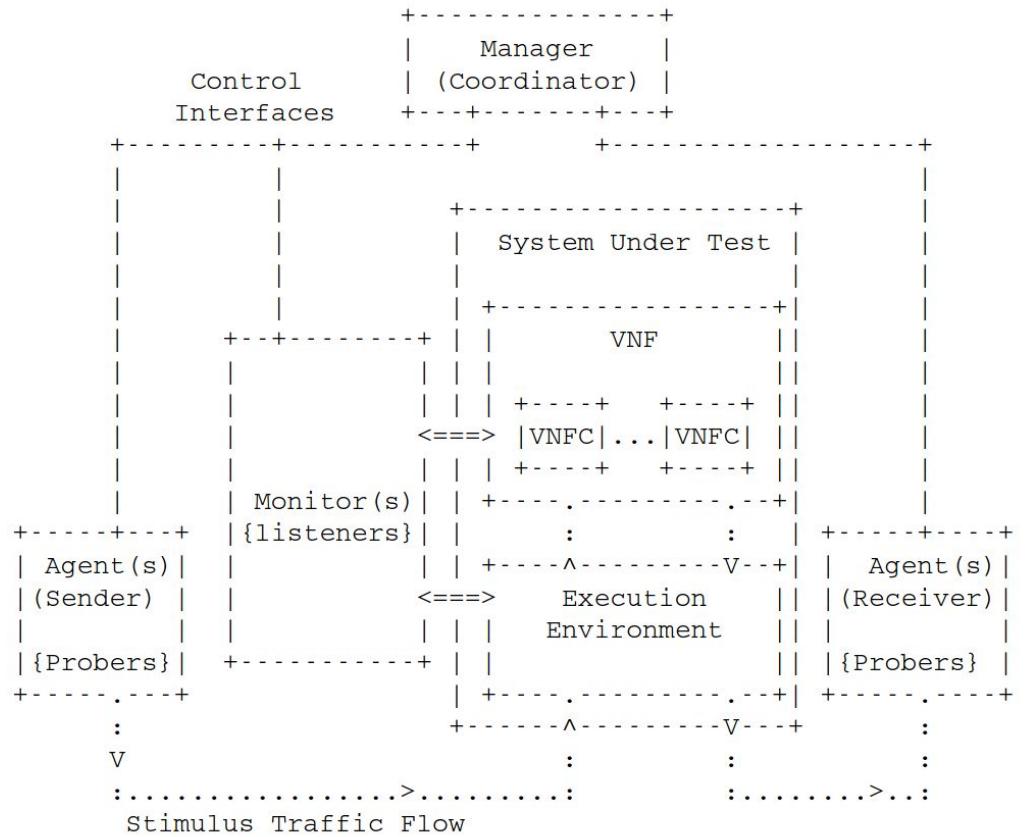
- [draft-rosa-bmwg-vnfbench-06 - Methodology for VNF Benchmarking Automation](#)
- After we published a paper at IEEE Communications Magazine (Network Testing and Analytics Series), demonstrating the Gym tool, which performs the automated methods to benchmark a VNF
- Together with Manuel Pesteur and Holger Karl from the Paderborn University
- The draft evolved continuously side-by-side with running code from two reference implementations



The Draft

- ❑ Motivation
 - ❑ Considerations
 - ❑ Architectural Framework
 - ❑ Phases of a Benchmarking Test
-
- ×
 - Methodology
 - × YANG modules
 - ×
 - Reference Implementations

Architectural Framework

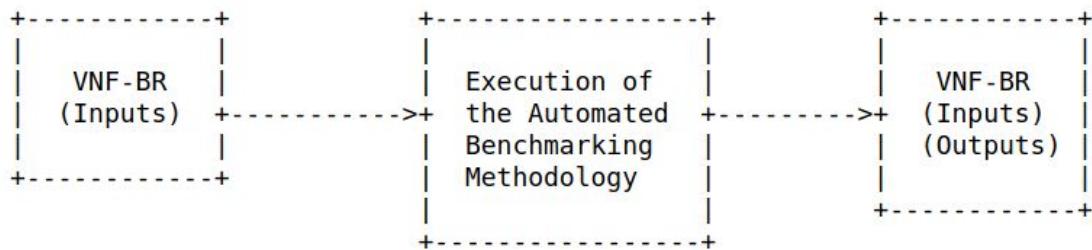


YANG Modules

- I. **VNF-BD:** Benchmarking Descriptor
- II. **VNF-PP:** Performance Profile
- III. **VNF-BR:** Benchmarking Report

Methodology

1. Plan
2. Realization
3. Summary



Reference Implementation - Gym

- ❑ Written in Python 3.8
- ❑ Side-by-side with draft concepts and methodology
- ❑ Faithful to the Architectural Framework
- ❑ gRPC interfaces and protobuf messages for each component
- ❑ Utilizes YANG modules
- ❑ For modularity, decouples Manager roles: Player (tests) and Manager (trials)
- ❑ Each component is a micro-service
- ❑ Mechanisms to plug and play probers/listeners



Perspectives

- × The perks of creating an automated benchmarking methodology for VNFs
- × Running code and test cases in building a reference implementation
- × A view on YANG modules
- × Overall IETF/BMWG impressions
- × Implications of the draft in academy and industry



The background of the slide features abstract brushstrokes in shades of green, teal, and blue. Overlaid on these strokes are several clusters of white halftone dots, creating a textured, graphic effect.

Takeaways

Conclusion

- ❑ A long path towards a RFC
- ❑ IETF/IRTF groups have their own mantra
- ❑ Even if a good problem/solution, running code helps, but rough consensus is key
- ❑ Read drafts and review them on mailing-lists
- ❑ Stay tuned for the group charter
- ❑ Be patient



Acknowledgments



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TECHNOLOGIES RESEARCH &
INNOVATION GROUP

Ericsson Research

Thanks! Questions...?

[draft-rosa-bmwg-vnfbench-06 -](#)
Methodology for VNF Benchmarking Automation

<https://github.com/raphaelvrosa/gym>

<https://intrig.dca.fee.unicamp.br/>