



# PROPOSED PERFORMANCE TEST USE CASE FOR OPNFV: vSBC

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# NATURE OF SESSION BORDER CONTROLLER

- Operates in both control plane and user plane
- Control plane: SIP back-to-back user agent
  - DoS attack protection
  - Call admission control / throttling
  - Topology hiding
  - SIP signaling interop
- User plane: RTP media relay
  - NAT traversal
  - Media stream policing
  - SRTP-RTP interworking
  - Transcoding

# vSBC RELEVANCE TO OPNFV

- ETSI GS NFV 001 (NFV Use Cases)
- Use Case #5: Virtualisation of Mobile Core Network and IMS
- This use case mandates virtualisation of all IMS functions, e.g. P/S/I-CSCF, MGCF, AS etc
- SBC embodies the following IMS functions
  - Access: P-CSCF / ATCF / ATGW
  - Interconnect: I-BCF / TrGW
- These IMS functions involve the relay of RTP media streams
  - Most other IMS functions operate in control plane only

# WHAT DOES vSBC TEST CASE ADD?

- Other proposed test cases (vEPC, vBRAS) exercise user plane with broadband data flows
  - Traffic comprises ~50:50 mix of large and small packets
- SBC exercises user plane exclusively with RTP media
  - All traffic comprises small packets
- For every 1 Gbps of user plane throughput
  - Typical broadband data flow: 150k packets per second
  - Typical RTP media flow: 1.25M packets per second
- vSBC performance is very sensitive to per-packet overhead
  - Naive deployment on Open vSwitch can reduce media relay capacity by ~90% compared with bare metal
- QoE with RTP media is sensitive to delay and jitter
  - Opportunity to characterize OPNFV platform w.r.t. these attributes

# VNF AVAILABILITY FOR vIMS TESTING

- Metaswitch has two VNF products that can be combined for end-to-end vIMS testing
  - Production quality, running in live production environments
- Perimeta SBC
  - Deployed in > 300 networks (running on x86 ATCA)
  - Leverages DPDK to maximize user plane performance
  - SBC user plane performance characterized on bare metal, SR-IOV, Open vSwitch and (proprietary) accelerated vSwitch
  - Licensed software (requires hard or soft tokens for license validation)
- Clearwater Core
  - Open source IMS core (I/S-CSCF, BGCF) plus AS
  - Scale-out architecture, stateless processing elements, designed for cloud

# PROPOSAL FOR vIMS TESTING IN OPNFV – PHASE 1

- vSBC as a use case to stress vSwitch
  - "Characterize vSwitch Performance for Telco NFV Use Cases"
- Deploy Perimeta SBC on KVM with vSwitch under test
  - No need for OpenStack for the purposes of this test
- Generate SIP and RTP traffic load towards SBC
  - Either: third-party traffic generator, e.g. Ixia
  - Or: Metaswitch software traffic generator based on SIPp (open source) and Nero (home-grown) – requires a dedicated bare metal server
- Ramp number of concurrent sessions until packet loss > 0%
  - Comparison of vSwitch performance based on maximum number of concurrent sessions achieved without packet loss

# TENTATIVE PROPOSAL FOR vIMS TESTING PHASE 2

- Perimeta SBC + Clearwater Core deployed on OPNFV
  - With OpenStack
  - Potential to automate deployment, e.g. using Chef or Heat
- End-to-end vIMS testing
  - Exercising both control plane and user plane
  - Traffic generator options as per Phase 1 proposal
- Potential to test at significant scale
  - 1M → 50M subscribers, depending on hardware availability
- Potential to test elastic scaling, fault tolerance, geo-redundancy etc