BAROMETER BEYOND SERVICE ASSURANCE

Monitoring as a Service in OPNFV and Beyond

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Agenda

- Barometer for Service Assurance
- Barometer beyond Service Assurance
- Demo(s)
- Other use cases
- What next?
- Question time!

BAROMETER

Why do we need Service Assurance?

"Datacentres are powering our everyday lives. Organisations lose an average of $400,000+ for one hour of down time." [1]

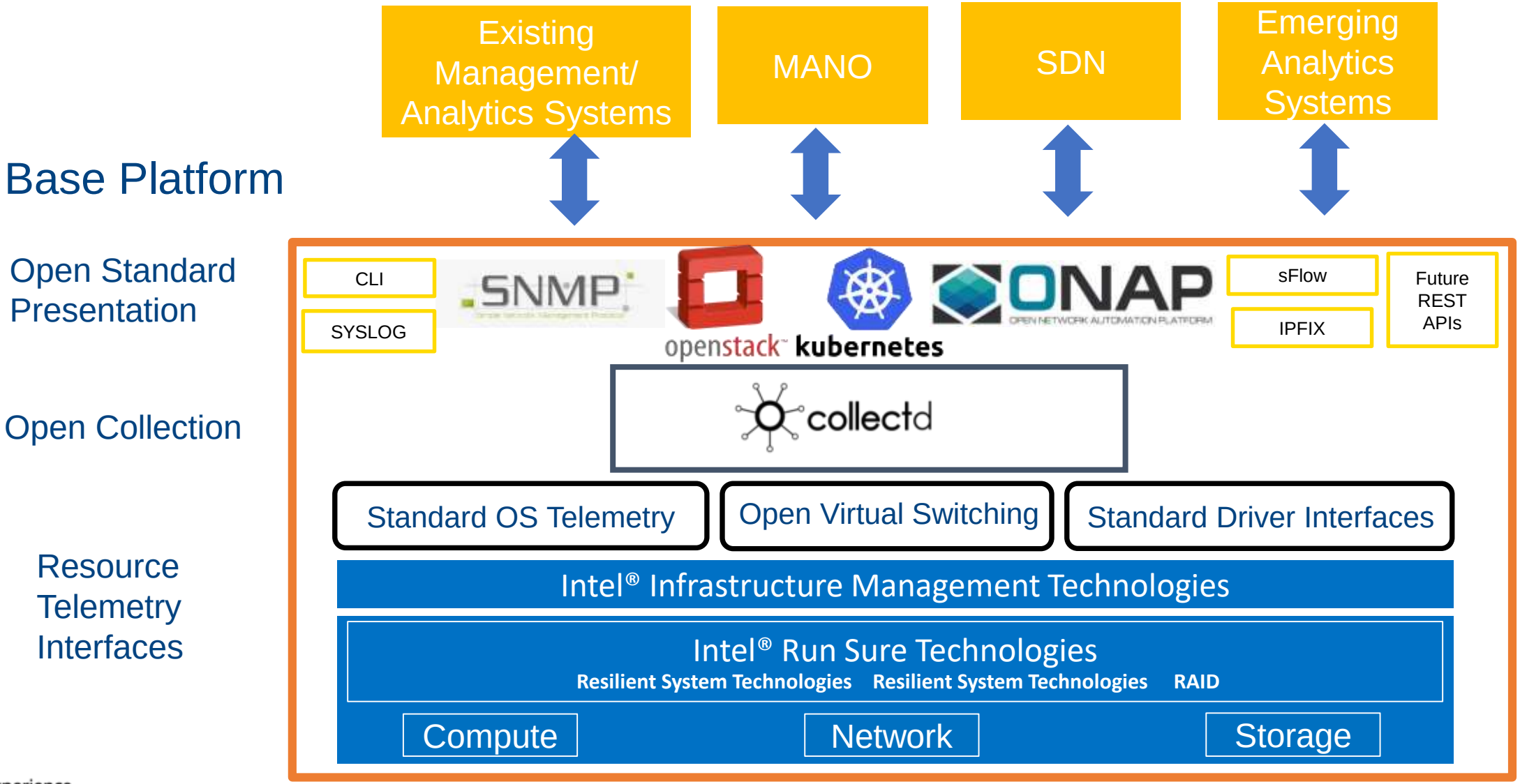
Telco and Enterprise alike are asking how they get and provide Service Assurance, QoS and provide SLA's on the platform and services when deploying NFV.

It is vital to monitor systems for malfunctions or misbehaviours that could lead to service disruption and promptly react to these faults/events to minimize service disruption/downtime.

[1] https://planetaklimata.com.ua/instr/Liebert_Hiross/Cost_of_Data_Center_Outages_2016_Eng.pdf

What is Barometer?

PLATFORM SERVICE ASSURANCE SYSTEM



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Read Plugins I

Plugin	Description	Collectd Version
DPDK Stats Plugin	Retrieve stats from the DPDK extended NIC stats API.	5.7.2
RAS Memory Plugin	Uses mcelog to check for memory Machine Check Exceptions and sends the stats for reported exceptions	5.7.2
Intel® Resource Director Technology Cache Monitoring	Provides the last level cache utilization and memory bandwidth utilization	5.7.2
Huge Pages	Retrieves the number of available and free hugepages on a platform as well as what is available in terms of hugepages per socket.	5.7.2
vSwitch Stats	Retrieves interface stats from OVS.	5.8.0
vSwitch Events	Retrieves events (like link status changes) from OVS.	5.8.0

Read plugins II

Plugin	Description	Collectd Version
DPDK Events Plugin	Retrieves DPDK link status and DPDK forwarding cores liveliness status (DPDK Keep Alive).	5.8.0
Libvirt	Uses virtualization API libvirt to gather statistics about virtualized guests on a system directly from the hypervisor, without a need to install collectd instance on the guest.	5.8.0
PMU Plugin	Collects performance monitoring events supported by Intel Performance Monitoring Units (PMUs), which measures instruction cycles, cache hits, cache misses, branch misses and many others. Performance monitoring events provide facilities to characterize the interaction between programmed sequences of instructions and microarchitectural sub-systems.	5.8.0
Legacy/IPMI Feature	A read plugin that reports platform thermals, voltages, fan speed, current, flow, power etc. Also, the plugin monitors Intelligent Platform Management Interface (IPMI) System Event Log (SEL) and sends appropriate notifications based on monitored SEL events.	TBD
PCIe AER	Monitors PCIe standard and advanced errors and sends notifications about those errors	TBD

Write plugins

Plugin	Description	Collectd Version
SNMP Write Plugin	Acts as an AgentX subagent that receives and handles queries from SNMP master agent and returns the data collected by read plugins. The SNMP Agent plugin handles requests only for OIDs specified in configuration file. To handle SNMP queries the plugin gets data from collectd and translates requested values from collectd's internal format to SNMP format. Supports SNMP: get, getnext and walk requests.	5.8.0
Gnocchi	Pushes the retrieved stats to Gnocchi. It's capable of pushing any stats read through collectd to Gnocchi.	N/A
Aodh	Pushes events to Aodh, and creates/updates alarms appropriately.	N/A
VES application	Not a collectd plugin, consumes collectd metrics via Kafka.	N/A

Where next for Barometer?

- More plugins!
- Collectd cloudification
- Prometheus support
- Collaborations
- Other use cases

Enable more services to consume data and telemetry (orchestration, management, governance and audit, test and benchmarking, analytics, etc)


BEYOND SERVICE ASSURANCE


YARDSTICK

What is Yardstick?

OPNFV

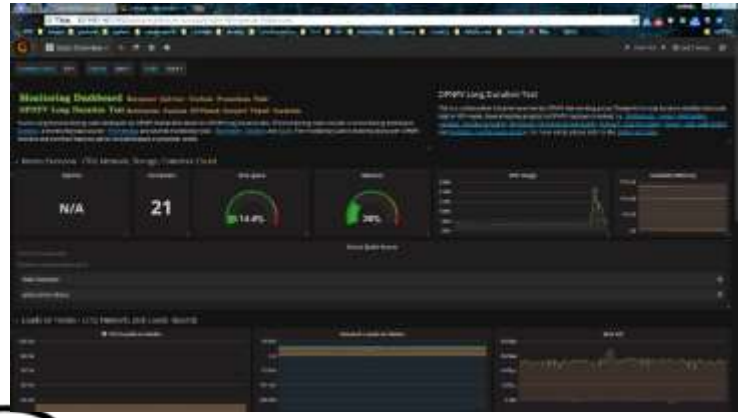
BOTTLENECKS/QA

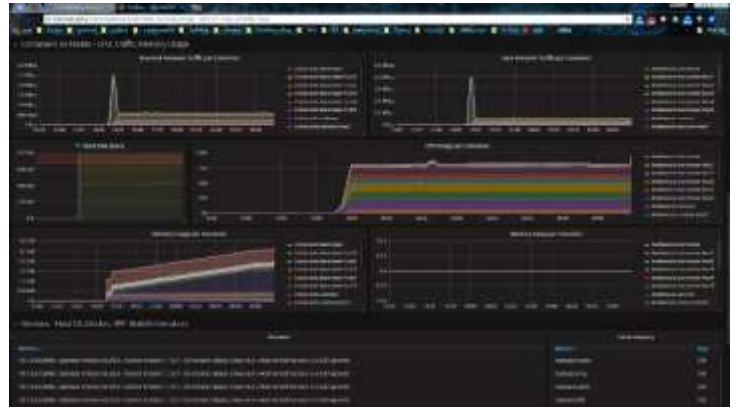
Adoption in OPNFV Bottlenecks Project

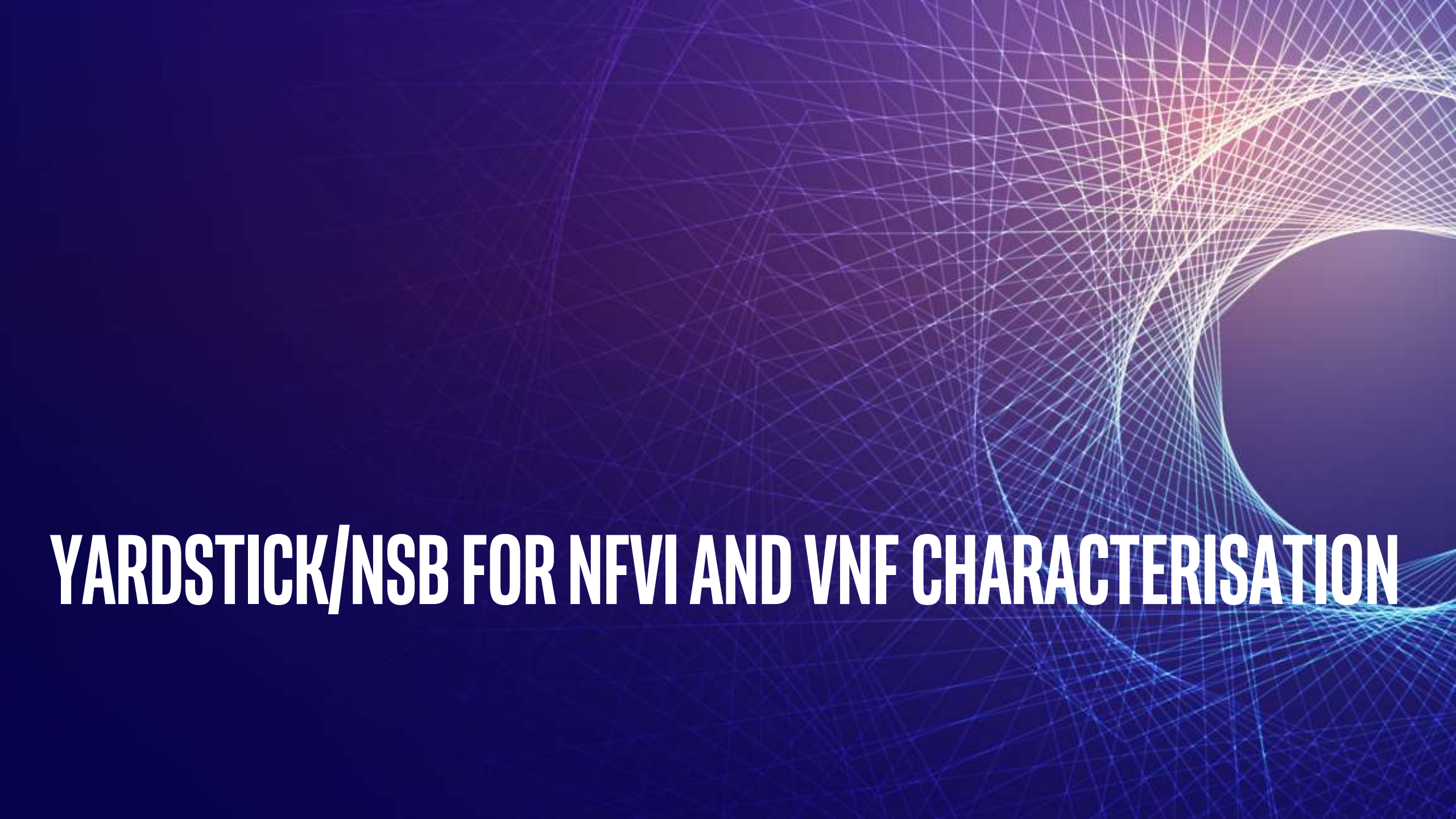
- What metrics are particularly useful?
  - DPDK Stats, DPDK Events, OVS Stats, OVS Events, Libvirt and Gnocchi
- What features are particularly useful?
  - Easy to install distributedly and isolatedly, e.g., Docker
  - All in one solution without additional configuration
  - Low system resource consumption
- What was the motivation for adopting Barometer?
  - It will be easy to understand system behaviours with monitor enabled
  - Provide insights into root cause analysis

Adoption in OPNFV Bottlenecks Project

- Another practical need of Barometer is OPNFV long duration test which is the initiative launched by OPNFV test working group aiming at measuring the stability of a SUT under long term production usage.
- LDT monitoring and analysis of test results
  - Prometheus + Barometer + Cadvisor + Grafana
  - Bottlenecks, performance analysis and visualizations





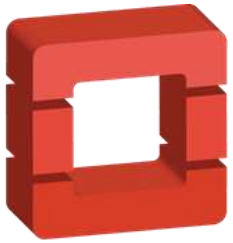

YARDSTICK/NSB FOR NFVI AND VNF CHARACTERISATION

What is Network Services Benchmarking?

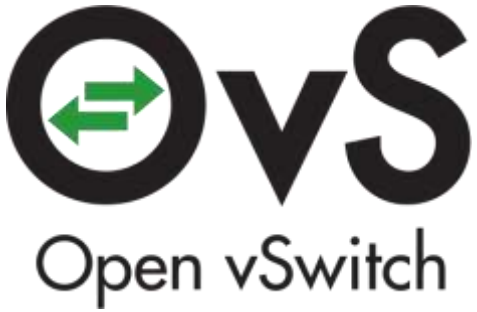
- NSB is a benchmarking and characterisation tool that automates NFVi and VNF characterisation
- Automates testing by using test cases and KPI collection
- Provides deterministic and repeatable benchmark on NFVi and VNF
- Presents the metrics in a unified fashion for the user to examine and analyse

What makes NSB tick?

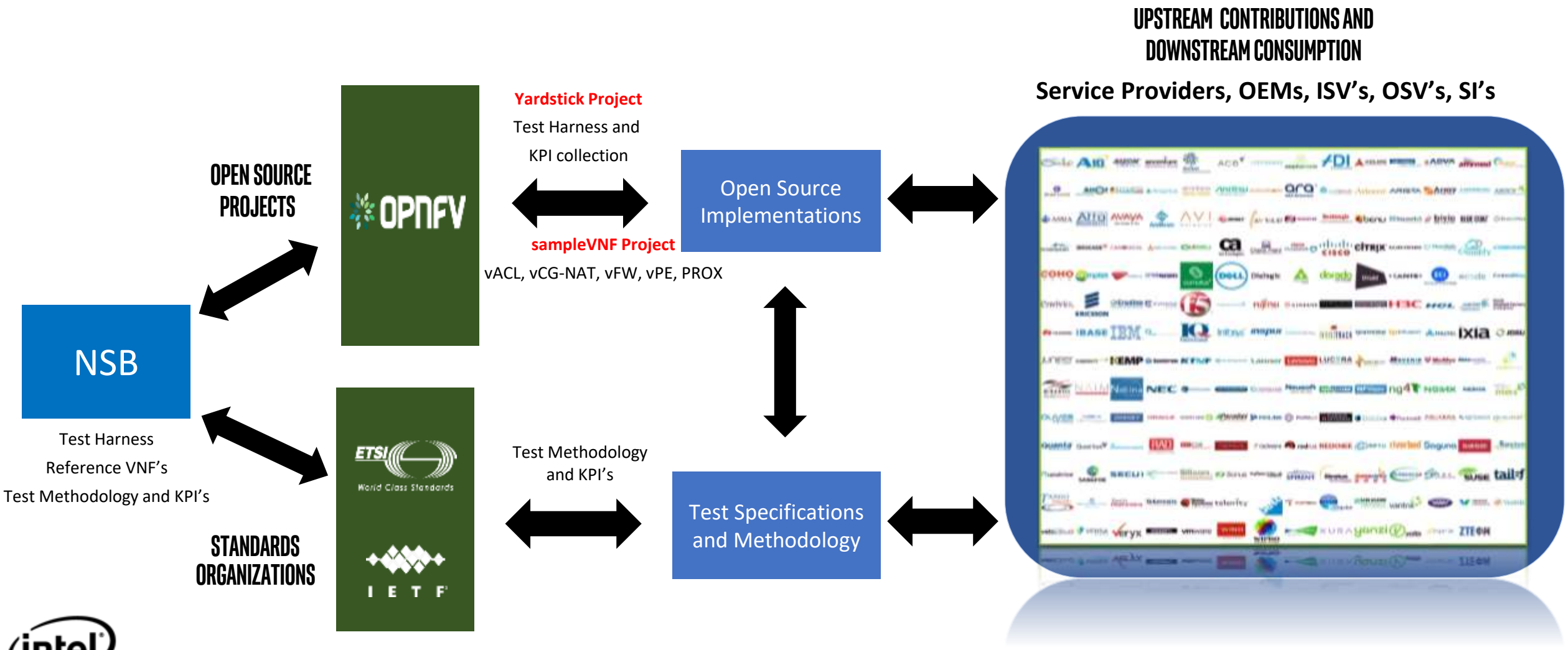
- OPNFV Yardstick – test framework
- OPNFV SampleVNFs – reference VNFs
- OPNFV Barometer – NFVi KPI collection
- Other components…



openstack™



NSB Open Source and Standards



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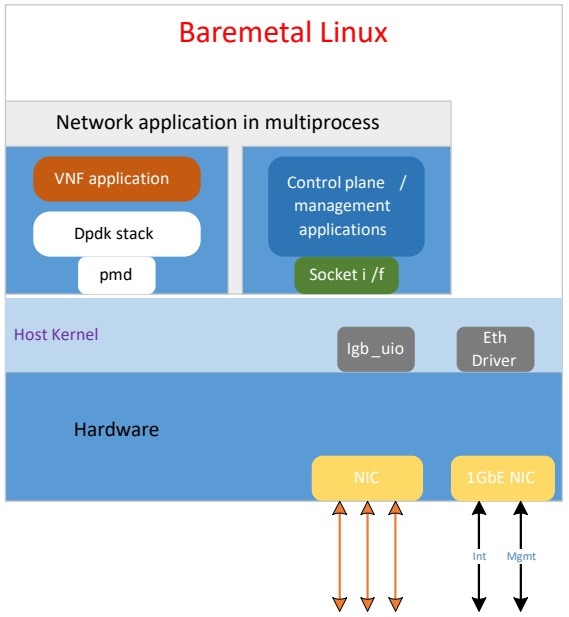
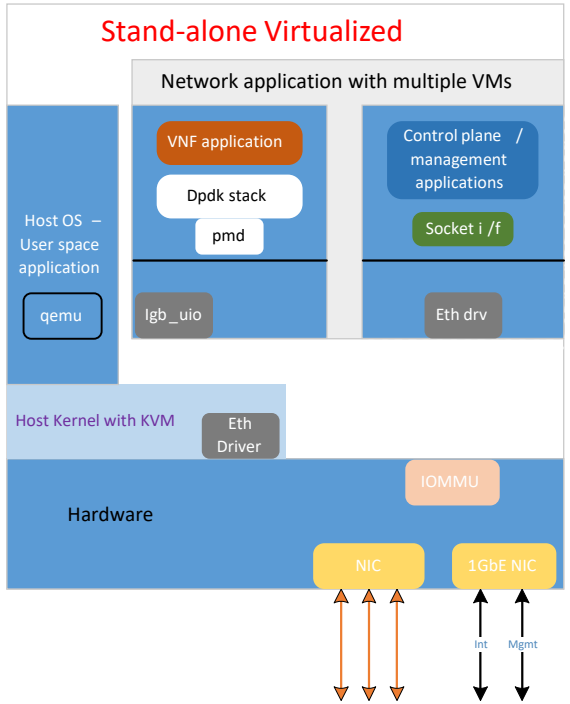
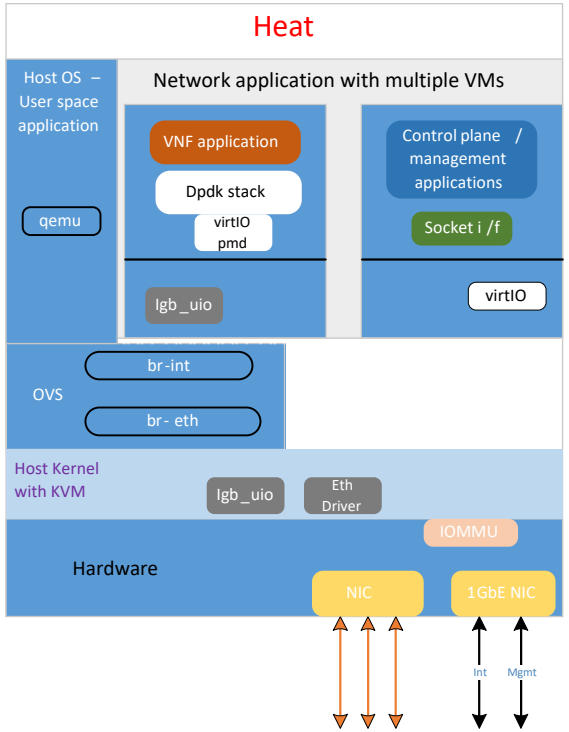
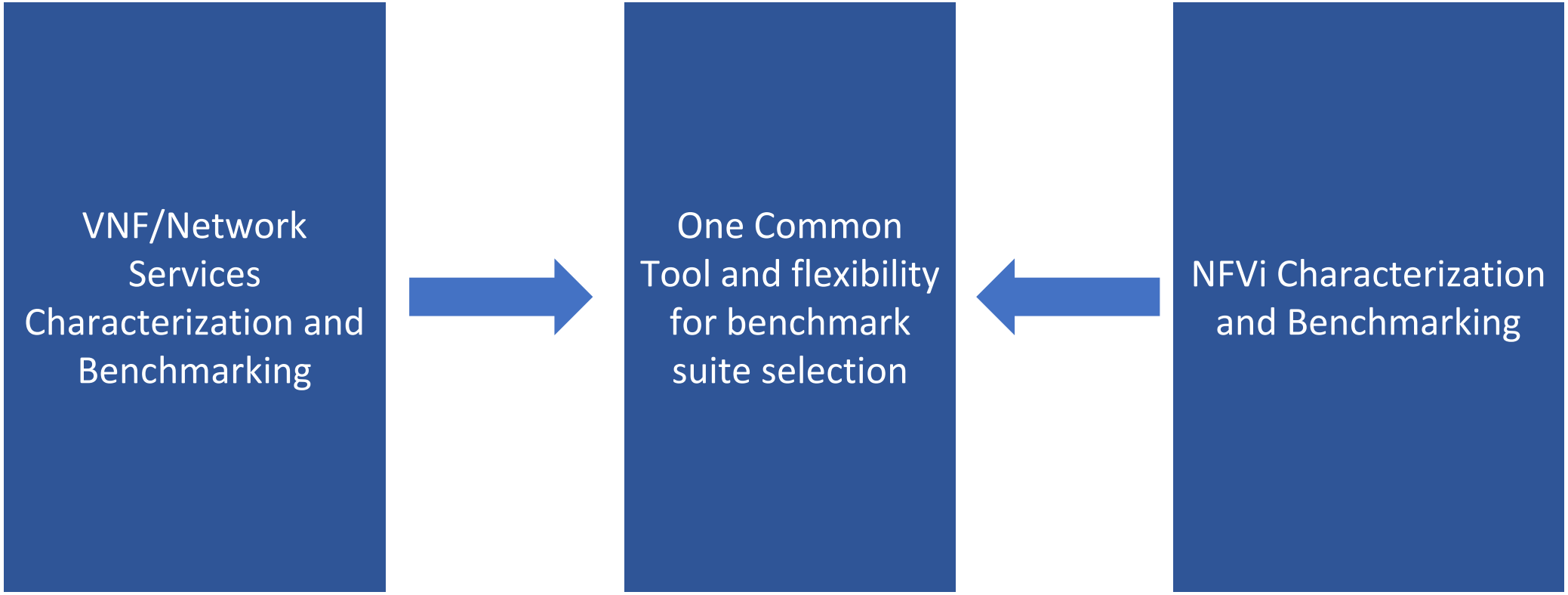
Benchmarking Environments







NSB Scope



NSB KPIs

- Network KPIs
  - From traffic generators
- NFVI KPIs
  - From platform/compute hosts
- VNF KPIs
  - Application-specific KPIs
  - Generic system KPIs (CPU, memory, etc)

NSB KPIs

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NSB and Barometer

- Why use Barometer?
- How does it integrate barometer?
- How will it improve the integration?


DEMO(S)

Installing Barometer

NSB demo

- Time permitting

- Check out the NSB demo at the Intel Booth 11.30 – 14.00!


QUESTIONS?

More questions?

- Barometer wiki
  https://wiki.opnfv.org/display/fastpath/Barometer+Home

- Mailing list
  mailto:opnfv-tech-discuss@lists.opnfv.org?subject=[barometer]
  mailto:opnfv-tech-discuss@lists.opnfv.org?subject=[yardstick]
  mailto:opnfv-tech-discuss@lists.opnfv.org?subject=[bottlenecks]


THANK YOU

Additional Information

- Intel - Network Transformation
- OPNFV Barometer home
- Software fastpath service quality metrics demo
- SFQM OPNFV Summit 2016 demo
- Intel Network Builders - Service Assurance
- Metrics and events reported by Plugins
- Barometer user guide

BACKUP

Other Demos

Demo Name	Description	Collaboration	When
vLamp Ansible Demo	Monitoring the webserver instances running on compute nodes. Details https://wiki.opnfv.org/display/ves/vHello_VES+Demo		OpenStack Summit Barcelona Oct 23 ’16
OVS events plugin + Doctor	showcase a typical telco NFV use case for an active standby VNF running on 2 compute nodes. Simulate Link status failure – switchover to standby VNF when failure is detected.	Doctor project OPNFV NOKIA	OpenStack Summit Barcelona, Oct 2016 LinuxCon Europe, Oct 2016
Vitrage Demo	showcase how Intel Resource Director technology can be used in conjunction with Vitrage (the Root Cause Analysis service in OpenStack) to detect and correct a noisy neighbour		OpenStack Summit Boston, May 2017
Watcher Demo	Automating Noisy Neighbour Detection with OpenStack Watcher	OpenStack Watcher ERICSSON CISCO	OpenStack Summit Boston, May 2017
OPNFV Community Demo Beijing 2017	The demonstration showed this network service working live on stage provisioning connectivity and vCPE, with real-time telemetry and analytics, fault management and service assurance. A video of the demo will be available on the OPNFV You Tube channel following the event.	redhat. f5 AT&T	June 2017
VES ONAP Demo	https://wiki.opnfv.org/display/ves/vHello+ONAP+Demo		June 2017