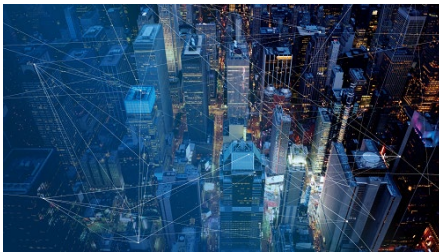


# Integration with VNF Event Stream\*

## Intel® Platform Service Assurance

The collectd integrated Virtual Network Function (VNF) Event Stream plugin offers a common model to gather platform telemetry data.



The VNF Event Stream (VES)\* protocol focuses on promoting adoption of the unified data model for streaming telemetry from physical or virtual infrastructure and applications. Enabled and integrated into platforms and applications, the unified data model and the agent libraries are designed to reduce the cost of integrating new VNFs with service assurance system in Network Function Virtualization Infrastructure (NFVI) environments.

VES can be integrated with the Open Networking Automation Platform (ONAP)\* environment for a standardized event framework. A design goal of VES is to enable all the relevant data, in any form, to be delivered from the hosts/VNFs using an easily-integrated set of agent and collector code artifacts. VES provides a solution for the problems resulting from the existence of multiple protocols and methods of gathering analytics and fault information. VES integration requires collectd, Apache Kafka\*, VES containers from the Barometer\* project, and VES Collector. The components are described below:

VES supports a number of diverse agents and protocols including:

Common Object Request Broker Architecture (CORBA)\*

Multi-Technology Operations Systems Interface (MTOSI)\* via

Java Message service (JMS)\*

Representational State Transfer (REST)\*

- The daemon collectd is a mature system statistics collection mechanism widely used across the industry. It consists of the core daemon and a set of read/write plugins to collect/push telemetry respectively. Its pluggable architecture enables the collection of chosen metrics with read plugins. Write plugins push data into northbound layers such as Management and Orchestration (MANO) systems and analytics solutions.
- Apache Kafka is a distributed streaming platform that functions much like a publishing and subscription messaging system, but with better throughput, built-in partitioning, replication, and fault tolerance. These features provide a solution for a scalable, persistent, and fault-tolerant buffer. Apache Kafka is increasingly popular for log collection and stream processing.
- The Barometer VES Plugin, **ves\_app.py**, consumes the collectd data from the Kafka topic. The plugin translates data to VES format and forwards data to the VES Collector.
- The VES Collector receives events and publishes them on the ONAP message bus. It also saves them in a local time-series database.

### Feature Description

Monitoring the health of a platform is a critical part of service assurance. Ongoing network transformation toward NFVI requires monitoring from a wide-ranging perspective, including the physical infrastructure, hypervisors, and VNF.

The collectd daemon, with read plugins, such as CPU, Virt, or DPDK, gathers information from multiple components of a monitored system. Those data are then pushed to Kafka topics using the write plugin (write\_kafka). Next, those data are read by a Kafka consumer (ves\_app.py), translated, and pushed to the VES collector using appropriate schema.

## Feature Data Sets

Collected data includes:

- Resource Usage Arrays - CPU, memory, storage, network interface.
- Additional Measurements - Other read platform telemetry metadata with undefined VES mapping.
- Events - Hypervisor management (e.g., vm up/down).

VES supports several views of data provided to VES Collector. The majority of the telemetry harvested by collectd read plugins can be presented in these modes or views:

- Host View - Presents telemetry from physical machine.
- Guest View - Appears similar to host. It is used if collectd is run inside VMs.
- Hypervisor - Shows VMs statistics from a hypervisor point of view.

## Open Management Interface Support

VES is the main interface used to supply metrics to ONAP. It is a standardized event framework that can be used by the ONAP project subsystem for Data Collection, Analytics, and Events (DCAE).

## Configuration

Configuration of the VES support includes:

- The activation of desired plugins in collectd.
- The designation, with Kafka, of a node where collectd can push metrics.
- The setup of ves\_app with information about Kafka instance, Kafka topic to monitor, and a reporting view as host, guest, hypervisor, or custom.

## Open Telemetry Collection Framework Support

An example of a containerized implementation is provided by the Barometer project in Kafka+VES examples.

## Feature Dependencies

The VES support depends on the following components and requirements:

- Virt plugin - supports hypervisor reporting view.
- write\_kafka plugin - enables Kafka reporting capability in collectd.
- Kafka/Zookeeper Instance - acts as target buffer for telemetry data.
- Docker\* - aids in running ves\_app/collectd as containers (e.g., as in Barometer).
- VES Collector - consumes on northbound collected data provided by ves\_app.

## REFERENCES

TITLE	LINK
Ref. 1: VES Home	<a href="https://wiki.opnfv.org/display/ves/VES+Home">https://wiki.opnfv.org/display/ves/VES+Home</a>
Ref. 2: VESPlugin Updates	<a href="https://wiki.opnfv.org/display/fastpath/VES+plugin+updates">https://wiki.opnfv.org/display/fastpath/VES+plugin+updates</a>
Ref. 3: ONAP VES Event Listener 5.4.1	<a href="https://docs.onap.org/en/casablanca/submodules/vnfsdk/model.git/docs/files/VESEventListener.html">https://docs.onap.org/en/casablanca/submodules/vnfsdk/model.git/docs/files/VESEventListener.html</a>
Ref. 4: ONAP VES Event Listener 7.0.1	<a href="https://docs.onap.org/en/casablanca/submodules/vnfsdk/model.git/docs/files/VESEventListener_7_0_1.html">https://docs.onap.org/en/casablanca/submodules/vnfsdk/model.git/docs/files/VESEventListener_7_0_1.html</a>
Ref. 5: VES Application User Guide	<a href="https://opnfv-barometer.readthedocs.io/en/stable-gambia/release/userguide/collectd.ves.userguide.html">https://opnfv-barometer.readthedocs.io/en/stable-gambia/release/userguide/collectd.ves.userguide.html</a>
Ref. 6: OPNFV Barometer Docker User Guide	<a href="https://opnfv-barometer.readthedocs.io/en/stable-gambia/release/userguide/docker.userguide.html">https://opnfv-barometer.readthedocs.io/en/stable-gambia/release/userguide/docker.userguide.html</a>



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