FEATURE BRIEF

Service Assurance for Virtualized Networks featuring
Intel® Infrastructure Management Technologies

Open vSwitch* Interface Monitoring
Intel® Platform Service Assurance

This feature brief describes Open vSwitch-related key indicators and events for collection and integration with higher-level management applications.

Abstract

In NFV environments, a virtual switch is typically used to forward data packets between different virtual machines (VMs) on the same physical host, and between VMs and the physical network. Open vSwitch (OVS) is an open source virtual switch that can be used in such environments (see Ref. 1). For improved performance, OVS can be integrated with the Data Plane Development Kit (DPDK) for fast-path processing applications in a virtualized environment (see Ref. 2).

To support platform service assurance, statistics and events related to the health of the ports associated with a virtual switch must be monitored and reported.

Feature Description

The OVS interface monitoring feature gathers information about OVS interfaces, ports, and bridges using various plug-ins:

- The **OVS events** plug-in uses an events-based mechanism to retrieve link status and receive interface status change events from the OVS database. When the connection to the OVS database is lost, the plug-in generates the appropriate notification.
- The **OVS stats** plug-in collects statistics related to OVS-connected interfaces, ports, and bridges and uses the OVS database to get those statistics.

Packet processing cores that are unresponsive to keep alive messages are detected and reported as part of the support for event detection.

The plug-ins also integrate into telemetry collection frameworks.

Feature Data Sets

The OVS interface statistics monitored include:

- Number of packets/bytes transmitted and received
- Number of frame alignment errors
- Number of packets dropped by RX/TX
- Number of packets with RX overrun
- Total number of transmit/receive errors
- Number of CRC errors
- Number of collisions

The OVS interface link events monitored include:

- Interface link status change

In terms of MIB support, flow telemetry is available through the sFlow interface. Flow telemetry through IP flow information export (IPFIX) is planned. SNMP support using IF MIB is also planned.

Configuration

The statistics provided by the OSV monitoring feature are configured in the osv_events and osv_stats plug-in sections of the telemetry plug-in configuration file (see Ref. 3 and Ref. 4 for details).

Telemetry Collection Framework Support

The OVS interface monitoring events and stats plug-ins gather pertinent OVS interface information and provide that information to higher-level telemetry collection and publishing frameworks, such as collectd, a daemon that retrieves system statistics and makes them available in various ways (see Ref. 5 for details).

External Interface Support

External interface support for the OVS interface monitoring feature includes:

- Standard OVS external interfaces, including NetFlow, sFlow, IPFIX, Switched Port Analyzer (SPAN), Remote Switched Port Analyzer (RSPAN), and port mirrors tunneled using Generic Routing Encapsulation (GRE)
- OVS with DPDK integration supports flow traffic monitoring in the Open vSwitch using sFlow
- SNMP – metrics supported by the IF MIB are available

Feature Dependencies

The OVS interface monitoring feature depends on having the following features running on the platform:

- Open vSwitch (see Ref. 1 for details)
- DPDK, if a DPDK-accelerated Open vSwitch is required
- Collectd must be configured on the platform (see Ref. 5 for details)
- YAJL Library for parsing and generating JSON used by the JSON routine in the OVDBS protocol (see Ref. 6 for details)
- Collectd Ceilometer, Gnocchi, Aodh, Vitrage, and so on[1]. These are plug-ins for delivery of metrics to OpenStack* (see Ref. 7 for details)

Where to Get More Information

For more information, visit https://networkbuilders.intel.com/network-technologies/serviceassurance

REFERENCES

TITLE	LINK
Ref. 1: Open vSwitch Home Page	http://openvswitch.org/
Ref. 2: Open vSwitch* with DPDK Overview	https://software.intel.com/en-us/articles/open-vswitch-with-dpdk-overview
Ref. 3: OPNFV Barometer User Guide	http://artifacts.opnfv.org/barometer/docs/index.html#document-release/userguide/index
Ref. 4: Open vSwitch Plug-ins	http://artifacts.opnfv.org/barometer/docs/index.html#open-vswitch-plugins
Ref. 5: collectd	https://collectd.org/documentation.shtml
Ref. 6: YAJL Library	https://lloyd.github.io/yajl/
Ref. 7: OpenStack Ceilometer, Gnocchi, and Aodh	https://wiki.openstack.org/wiki/Telemetry

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[1] The Ceilometer interface is being deprecated. Platform telemetry will be delivered directly to OpenStack Gnocchi, and events will be delivered to OpenStack Aodh. See Ref. 7 for details.