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NFV Data Plane Benchmarking Solution

for Spirent MethodologyCenter

Features

- Comprehensive set of automated benchmarking methodologies for L2-L7 VNFs and virtual switch

- Characterization of network performance metrics for VNFs in terms of NFVi resource utilization statistics

- Performance bottleneck analysis with NFVi resource utilization stats

- Workload event correlation with NFVi resource utilization stats

- DPDK performance statistics

- Save test result reports in XLS, PDF or DOCX formats

- Browser-based UI works on any popular operating system

Benefits

- Data plane performance benchmarking of VNF, virtual switch and VNF service chains

- Performance Fault Isolation in a multi-vendor multi-tenant NFV environment

- Optimized VNF provisioning and efficient workload placement

- User workload characterization for capacity planning

- Support for Spirent TestCenter hardware or Spirent TestCenter Virtual

Performance Benchmarking of NFV data plane is a critical aspect of helping Service Providers in making the transition to NFV based network. Shared infrastructure and multi-tenant environment introduces complexity in test scenarios making the traditional benchmarking procedures of relying entirely on test traffic metrics insufficient for data plane benchmarking in an NFV environment.

Spirent provides a comprehensive set of test methodologies to benchmark NFV data plane that provide insights into NFVi resource utilization in addition to network performance metrics. NFVi resource utilization metrics and test traffic performance metrics together enable Service Providers to characterize user workloads and VNF performance in terms of NFVi resource utilization. This in turn helps the Service Providers with capacity planning, resource provisioning and identifying performance bottlenecks in an NFV environment.

VNF and Service Performance Characterization

In a shared environment network performance of a VNF is not just a function of the VNF implementation, but it also depends on the performance of the NFVi and performance isolation provided by the virtualization layer.

Performance characterization of VNFs and service workloads in terms of NFVi resource utilization is paramount. This characterization not only helps the Service Providers in comparing the performance of different VNF vendors but it also provides insight into how efficiently the VNFs utilize the allocated NFVi resources. Network performance per NFVi resource unit is an important performance metric in such scenarios.

Additionally, VNF and service performance characterization enables the optimization of VNF implementations by providing detailed NFVi resource utilization statistics and correlation to user workload statistics.

Fault Isolation

NFVI Stats Correlation

Performance Bottleneck Analysis

Compute Node
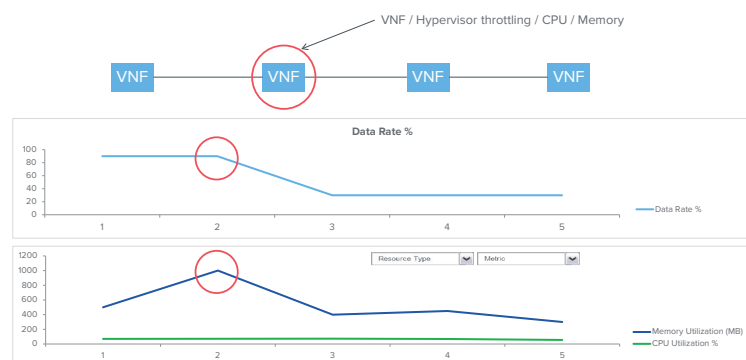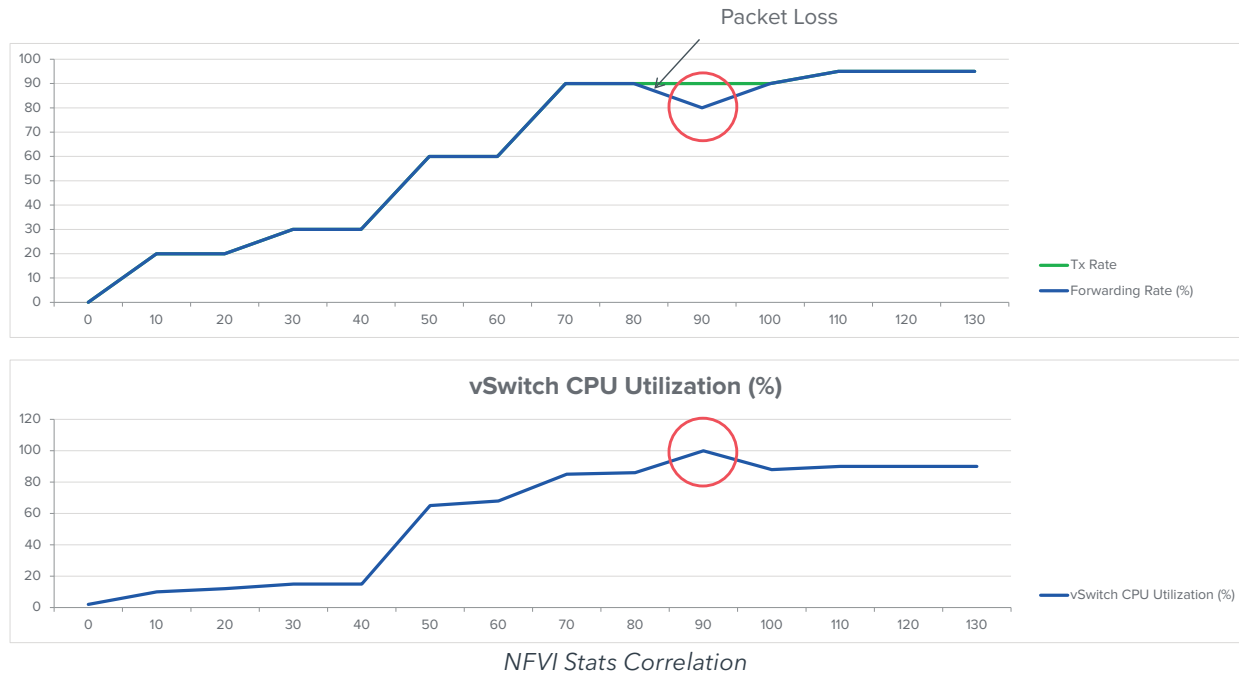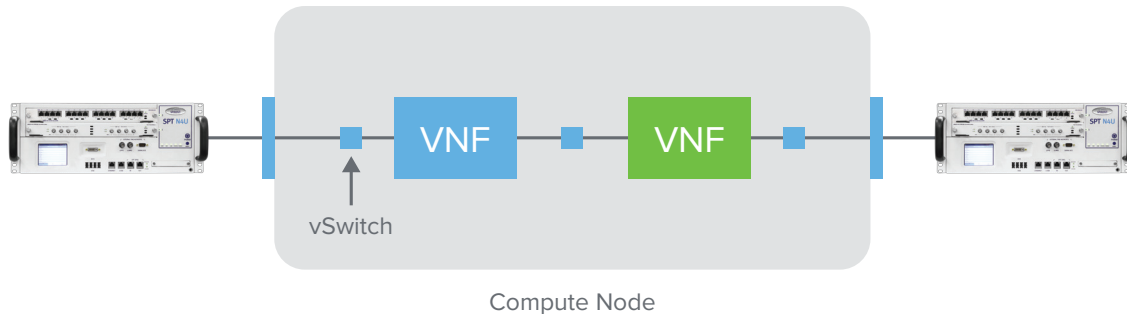
Multiple entities can contribute to performance degradation in a shared inrastructure environment such as NFV (see figure above). The following factors may be contribute to limiting E2E performance:

- Buffer overflow or inefficient queue utilization at the NIC
- Virtual switch performance
- VNF performance
- VNFs ability to efficiently use packet forwarding acceleration techniques such as DPDK

Spirent's NFV solution helps identify the performance bottlenecks in a multi-vendor shared infrastructure environment by providing insight into the virtual resource utilization.

NFVi Resource Utilization Stats

- Detailed NFVi resource utilization statistics for NFV nodes and co-relation of VNF and virtual switch network performance to NFVi resource Utilization.

- Comprehensive set of NFVi utilization metrics including DPDK metrics

- User workload co-relation

- Openstack support

NFVi Resource Utilization Stats

This NFV Methodologies feature provides NFVi resource utilization metrics for virtual entities in the NFV test bed. In combination with user workload emulation, it provides statistics that help co-relate the traffic (user workload) pattern changes to the NFVi resource utilization and help identify performance bottlenecks in the NFV test bed.

The following NFVi utilization metrics are supported:

- VNF NFVi Metrics
  - CPU Utilization, Memory Utilization, Network I/O for virtual interfaces, Cache hits, disk read request rate, disk write request rate, disk read requests, disk read writes, disk read request bytes, disk write request bytes, memory major and minor page fault rate

- vSwitch NFVi Metrics
  - CPU Utilization, Network I/O for virtual interfaces
  - CPU cycles for packet processing, CPU cycles used for polling in case of DPDK

- Host Metrics
  - CPU Utilization, Memory Utilization

- Extended DPDK Metrics
  - DPDK interface network I/O statistics

- CPU Cache Statistics
  - L2, L3 Cache hits & misses
  - TLB hits & misses

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About Spirent Communications

Spirent Communications (LSE: SPT) is a global leader with deep expertise and decades of experience in testing, assurance, analytics and security, serving developers, service providers, and enterprise networks.

We help bring clarity to increasingly complex technological and business challenges.

Spirent's customers have made a promise to their customers to deliver superior performance. Spirent assures that those promises are fulfilled.

For more information, visit: www.spirent.com
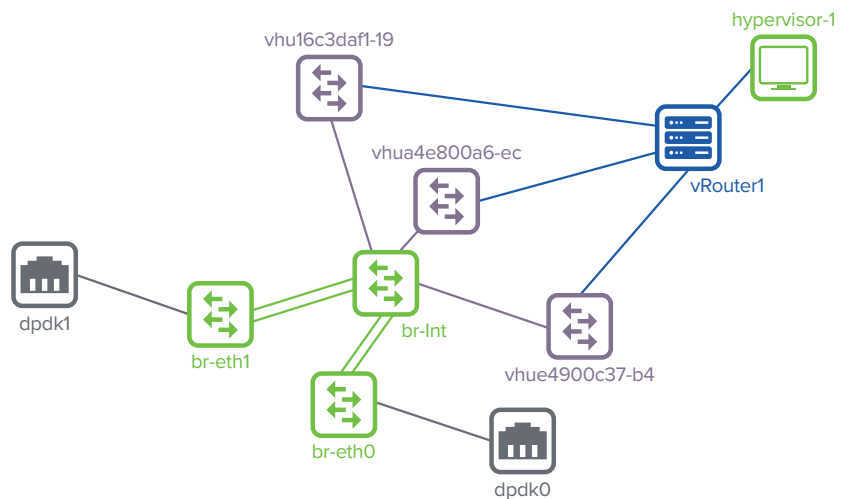
System Under Test (SUT) Virtual Topology

Contact Us

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