DATASHEET

Spirent CloudSure

Assuring Cloud and NFV Deployments

Spirent CloudSure is an industry leading NFV and cloud solution for optimizing network cloud performance, reliability and efficiency. It supports Kubernetes, VMware, and OpenStack to accelerate NFV-based service rollouts such as 5G and SD-WAN. CloudSure helps isolate and replicate complex issues in multivendor NFV solutions in operational deployments as well as identify issues during the design process.

CloudSure validates all four ETSI NFV domains: NFVi, VIM, MANO, and VNFs, and supports Kubernetes (containerized) deployments with Containerized Network Functions (CNF). Within the NFVi domain, CloudSure tests compute, memory, storage, and networking dimensions, to fully assess cloud performance in a variety of typical and worst-case scenarios.

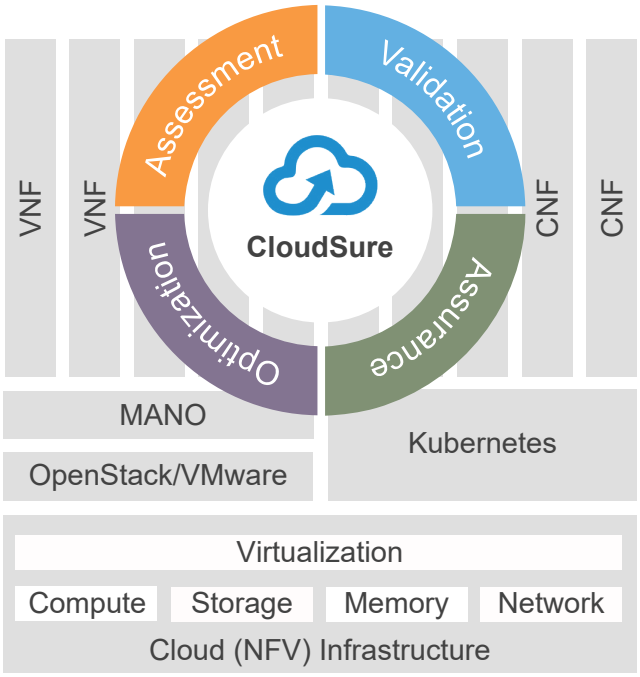

Figure 1. Spirent CloudSure provides full Cloud / NFV test coverage.

Enabling NFV Infrastructure Assessment

Perform meaningful cost / benefit analysis using actionable results data to determine the impact of a hardware upgrade on overall cloud performance and efficiency. For instance, users can compare the performance of a network interface card (NIC) under consideration to a reference NIC, to establish if an upgrade would bring any incremental benefits.

The same process can be applied to CPU, memory, and storage devices and architectures. Once single dimension performance levels are established, users can run multidimensional load assessments to determine the limiting dimension and provide an additional cost / benefit analysis designed to optimize the overall cloud performance of the entire system.

Features

- Powerful framework which plugs into NFV environments using modular architecture
- Supports OpenStack, VMWare vSphere and Kubernetes
- Uses Spirent TestCenter or Landslide virtual or physical ports to generate realistic network traffic to test any VNF or CNF
- Web-based graphical interface runs on any popular browser on common operating system
- Test case driven approach
- Software Development Kit for test case development by users and Spirent Professional Services
- API provided for automation purposes, ideally suited to CI/CD
- Multi-user environment

Benefits

- Gain confidence that your NFV deployment will deliver the expected performance
- Quickly isolate performance issues to specific areas and vendors in your cloud stack
- Understand how to best invest money to improve your cloud's efficiency
- Validate NFV-based services with high load, realistic traffic, and peer device emulation for SD-WAN, 5G, or nearly any IP service

Validating Cloud Stacks

VMware, OpenStack and Kubernetes dominate the Cloud/NFV hypervisor market, but no one solution has emerged as the dominant stack. Furthermore, most service providers maintain 3-5 different cloud stacks within their operational environment because new cloud deployment most often supplement rather than replace existing clouds.

CloudSure help bring order to this chaos by enabling engineers and operators to certify the performance and reliability provided by each of their deployments. Armed with this data, they can make informed decisions regarding which platforms to choose for new service rollouts, which technology to choose for a new cloud buildout, and which clouds to target for decommissioning.

Cloud Performance Optimization

Tune components within their hypervisor and system software to achieve the best performance, while ensuring that there are no unintended consequences from the change, both in pre-production and in operation during change management events.

Leveraging data and analytics from CloudSure, user can perform a multitude of tasks such as determining the positive and negative impact of upgrading hypervisors, changing out major operating system components (e.g. storage subsystem), and enabling or disabling features in the hypervisor.

Assuring Virtual and Container Network Functions

Validate interoperability, performance, and stability to help address the lack of adherence to standards by Management and Network Orchestrators (MANO) or a wide variety of containerized / virtualized network function (NF) providers. Ensure individual NFs and entire network service (NS) chains can be created, terminated, scaled, and healed. Users can also validate complex networking NF and NS for 5G, SD-WAN, firewalls, routing, and virtually any other networking function.

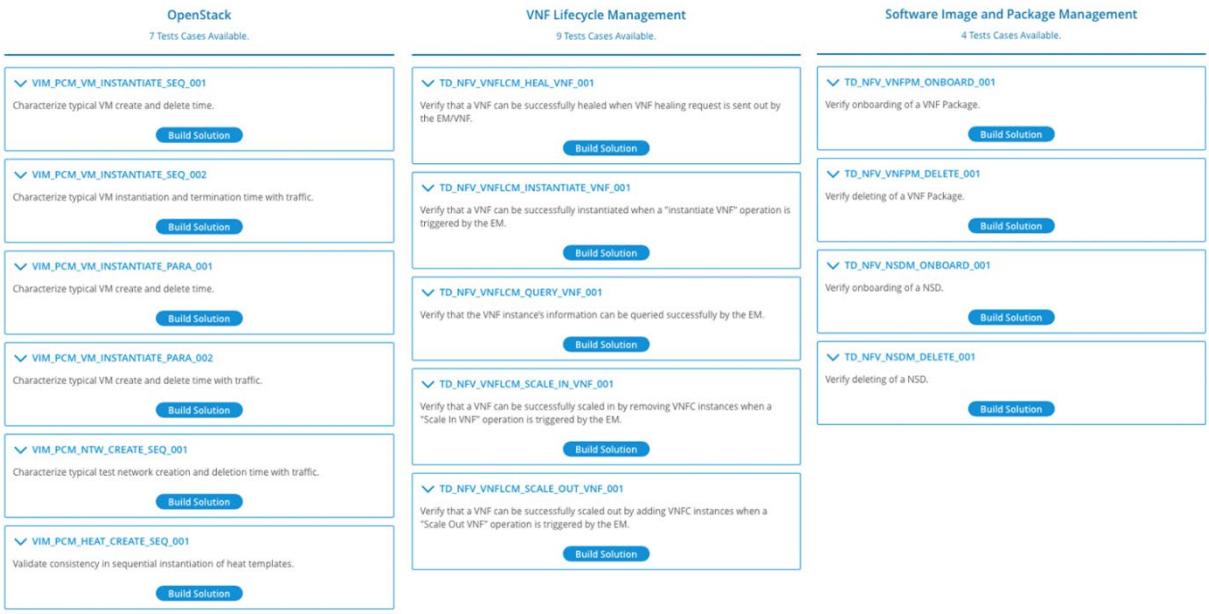

Figure 2. Test coverage is maximized through a large library of test templates (some examples shown above).

Extensive/Expandable Test Methodology Framework

In a traditional network, Cloud Service Providers (CSPs) would test the individual devices making up a new customer offering. In next-generation architectures, CSPs must also validate cloud capabilities separately from hosted network functions to detect problems in the underlying cloud before they manifest as problems in NFs and ultimately impact users.

CloudSure offers comprehensive evaluation of NFV infrastructures, workloads, and services, covering thousands of test cases, using nearly a hundred different proprietary test templates. It incorporates open source test tools such as Tempest and Rally for user convenience, while proprietary test cases focus on delivering high stress to the cloud systems and workloads, to accurately characterize overall performance and identify failure conditions that only show up under high workloads.

Pre and Post Deployment Validation

Cloud infrastructures are far from homogenous, when equipment upgrades occur, operations engineers must make ad hoc adjustments to configurations in order to address escalations. Such events can easily introduce new problems alongside their intended fixes. Using CloudSure to validate infrastructure using high pressure loads during the network maintenance window helps identify marginal issues prior to placing the systems back in service.

One Suite, Multiple Cloud Platforms

CSPs, and their system integrators (SIs), often find themselves trying to determine the best cloud platform for their intended workload. CloudSure covers a wide range of platforms including Kubernetes, OpenStack, VMware vSphere, VMware Integrated OpenStack, as well as public cloud options. It enables CSPs to determine the effectiveness of workloads running in each of these platforms, to compare and optimize deployments and make data-driven decisions prior to major purchasing decisions or deployments.

CloudSure provides complete traceability from lab to service provisioning and through the maintenance cycle to ensure the most robust infrastructure for your NF workloads.

Graphical User Interface and RESTful API

CloudSure provides an intuitive, easy-to-use user interface that allows engineers to quickly build and run customized test cases. It provides the ability to combine test cases into projects and to aggregate and organize multiple test cases. Results are presented in clear and concise way for optimal user experience.

In addition, all user interface functionality is also accessible and can be controlled via REST APIs. They deliver flexibility for deployments and enable extensive test automation including Continuous Integration and Continuous Delivery (CI/CD).

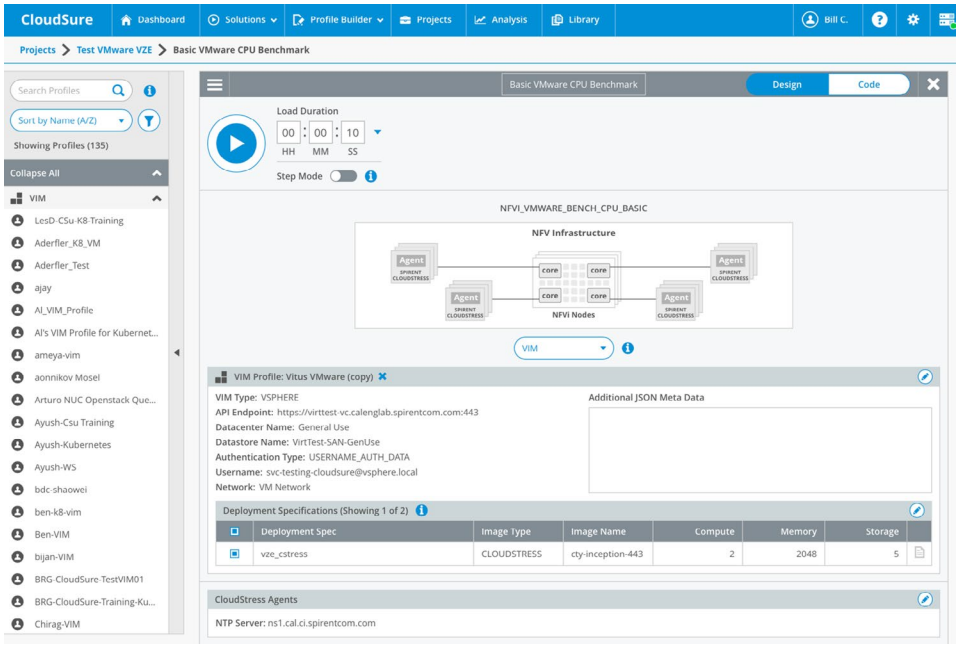

Figure 3. Test templates can be easily configured via CloudSure interface and integrated into a CI/CD chain.

About Spirent

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

Built for Continuous Integration and Continuous Delivery (CI/CD)

CI/CD enables full automation and continuous monitoring throughout the lifecycle of cloud applications. This is critical to accelerating the deployment of new services and applications with limited human resources and helps reduce operational costs in a major way. It provides a foundation for DevOps rapid deployment of new services.

Using a rich set of REST APIs, CloudSure can seamlessly integrate into any CI/CD "pipeline" (e.g. Jenkins) to provide automated, repeatable testing at any deployment phase of new services. By enabling CI/CD, it delivers considerable deployment scalability and flexibility over traditional user interface-only testing solutions.

Technical Specifications

Parameters	Description
Footprint	• CPU: 4 CPU • Memory: 4 GB • Disk: 10 GB
Packaging	Software is available in OVA, QCOW2, RAW, VHD formats
Supported Clouds	• VMWare 6.0, 6.5, 6.7 • QEMU/KVM 2.2
Standards	• OpenStack (Ocata, Pike, Queens, Rocky, Stein, Train, Ussuri) • VMWare vCenter (6.x) • Kubernetes (1.16, 1.17), OpenShift (4.3, 4.4)
One-way delay measurement	• ETSI-NFV-TST-007 • ETSI-NFV-TST-001 (chapter 6) • NFV Release 3

Ordering Information

Product Number	Description
TMV-CSU-BASE-S	CloudSure application platform for testing NFV with clouds of up to 4 servers for one user. One or more additional CloudSure domain test packs are required to conduct testing.
TMV-CSU-BASE-M	CloudSure application platform for testing NFV with clouds of up to 16 servers for one user. One or more additional CloudSure domain test packs are required to conduct testing.
TMV-CSU-BASE-L	CloudSure application platform for testing NFV with clouds of up to 64 servers for one user. One or more additional CloudSure domain test packs are required to conduct testing.
TMV-NFV-NFVI-TPK	CloudSure NFVI benchmarking testing for CPU, memory, storage, and networking. Requires a CloudSure base package (TMV-CSU-BASE prefix) to execute.
TMV-NFV-VIM-TPK	CloudSure VIM testing for turn up validation and validating VM and pod turn up performance and reliability. Requires a CloudSure base package (TMV-CSU-BASE prefix) to execute.
TMV-NFV-LCM-TPK	CloudSure LCM testing to validate Network Services management per ETSI TST-007 for performance and reliability. Requires a CloudSure base package (TMV-CSU-BASE prefix) to execute.
TMV-NFV-NS-TPK	CloudSure VNF, CNF, and NS validation verifies the networking performance of workloads using STC or Landslide products. Requires a CloudSure base package (TMV-CSU-BASE prefix) to execute. Users must purchase Landslide or STC configuration separately.

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