

Product Overview

Netrounds actively verifies that each provisioned service works when delivered and continues to work throughout its lifetime.

THE NETROUNDS DIFFERENTIATORS



Integrated, dynamic solution for full multi-layer, multi-domain service lifecycle management

Combined service activation testing, quality monitoring and troubleshooting for fully orchestrated assurance.



Automation through well-documented complete API

Simple integration of fulfillment and assurance workflows. Eliminates manual work and reduces cost of complex integration.



Virtualized and cloud ready

Flexible deployment and elastic scaling on all major modern virtualization platforms. Allows customers to start small and scale.



Instant and easy to get started

Software-only and hosted components allow for smooth introduction. Enables immediate use and brings instant value.

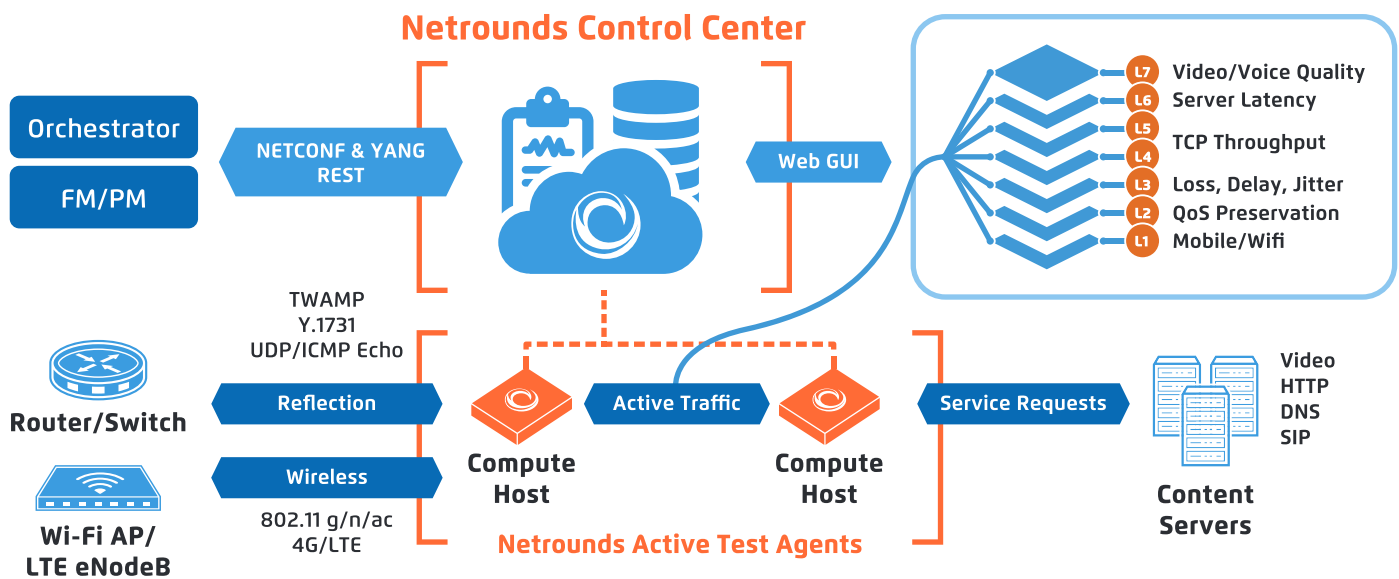
NETROUNDS CONTROL CENTER AND ACTIVE TEST AGENTS

The core component of Netrounds is a unifying multi-tenant Control Center, which provides a user-friendly Web Portal GUI where operations staff can run on-demand tests and view real-time and aggregated results, as well as KPIs and SLA monitoring metrics. The Control Center also has a feature-rich cloud API allowing external OSS and NFV orchestrators to easily automate distributed activation tests or monitoring scenarios.

The Control Center remotely controls Netrounds' software-based, traffic-generating active Test Agents, which provide distributed measurement metrics for service activation testing, quality monitoring, and troubleshooting. It also displays detailed, real-time results and statistics actively measured by the Test Agents and reflector streams across multiple applications, services and

interfaces. Test Agent capabilities include service activation (Y.1564, MEF 48), network performance (UDP, TCP, Y.1731, TWAMP, Path trace), Internet performance (HTTP, DNS), IPTV and OTT video, VoIP telephony and SIP, mobile radio and Wi-Fi, and remote packet inspection.

Test Agents may be placed in strategic locations across your network for continuous quality monitoring, and they may also be installed on demand for more temporary purposes, such as activation testing of newly deployed services. Test Agents are available in several formats: as software to be run as a virtual machine on a hypervisor, as software for installation on x86 hardware, or preinstalled on bare metal.



Key Features of Netrounds Control Center



Feature-rich cloud API for distributed on-demand tests and live monitoring of end user KPIs

Enables closed-loop, full automation workflow by providing KPIs of actual end user experience to service orchestrators/OSS.



Centralized storage and aggregation of test results and SLA monitoring metrics

Effortless handling of hundreds or even thousands of concurrent measurements across your network.



Web portal for creation and initiation of test scenarios and automation templates

Supports design-time and runtime dynamic test processes, as well as remote troubleshooting.



Real-time KPIs, dashboards and drill-down charts

Provides real-time actionable insights into how your network and services perform from a customer perspective.



Centralized and dynamic inventory of distributed, traffic-generating Test Agents

Consolidated user interface towards all Test Agents – no need to manage Test Agents individually.



Remote updates of Test Agent software

Remote and automated updates reduce maintenance costs and keep your Test Agents up to date.

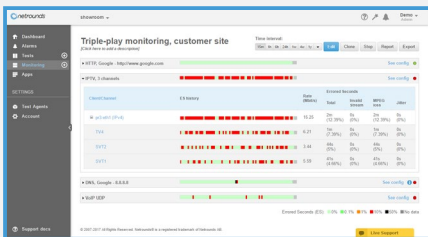
Netrounds Control Center Operation

There are two options for operating Netrounds Control Center:

1 HOSTED: The Control Center is hosted in the Amazon AWS public cloud infrastructure and managed by Netrounds. This solution scales transparently and elastically with the number of Test Agents deployed – there is no need for any involvement from you as a Netrounds customer. The server software and the repository of Test Agent software are always kept up to date.

2 ON-PREMISE: The Control Center is deployed on-premise in your own data center environment - either on bare-metal servers or on existing private cloud infrastructure – and is managed either by your organization or by Netrounds as a managed service.

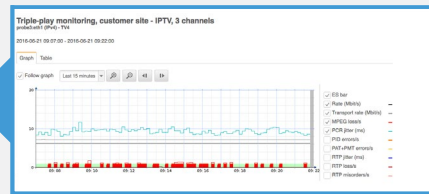
Overview of Netrounds Control Center Functions



Real-time aggregated views of monitoring and tests

Errored Seconds (ES) and SLA compliance indicators are calculated and visualized. Aggregated result views show large numbers of distributed active measurements.

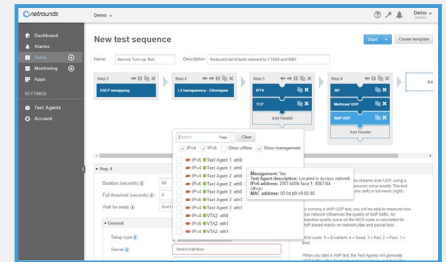
Measured data can be presented down to 1 second resolution, with a historical timespan adjustable from the last 15 minutes to years backward in time.



Dynamic Test Agent inventory

Test Agents automatically discover and register towards Netrounds Control Center login servers. Test Agents appear as resources in the inventory once launched by the NFVO or OSS, or connected physically to the network.

Test Agents can be tagged for simple grouping and structuring. Test Agent interfaces can be configured remotely from the Netrounds Control Center.



Builder GUI for scenarios and templates

The Netrounds Web GUI has an intuitive test sequence builder which can be used in the service design process. SLA compliance thresholds can be set for each monitoring scenario.

Building blocks in tests can be saved as reusable templates, where parameters can be left to be defined at runtime. Tests and monitoring sessions can be triggered by the OSS through Netrounds' Cloud API.

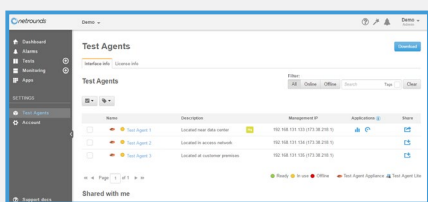
Sharing and collaboration

Test and monitoring scenarios and templates, active Test Agents, and all test results and reports obtained can be freely shared amongst users in the same multi-tenant Netrounds Control Center.

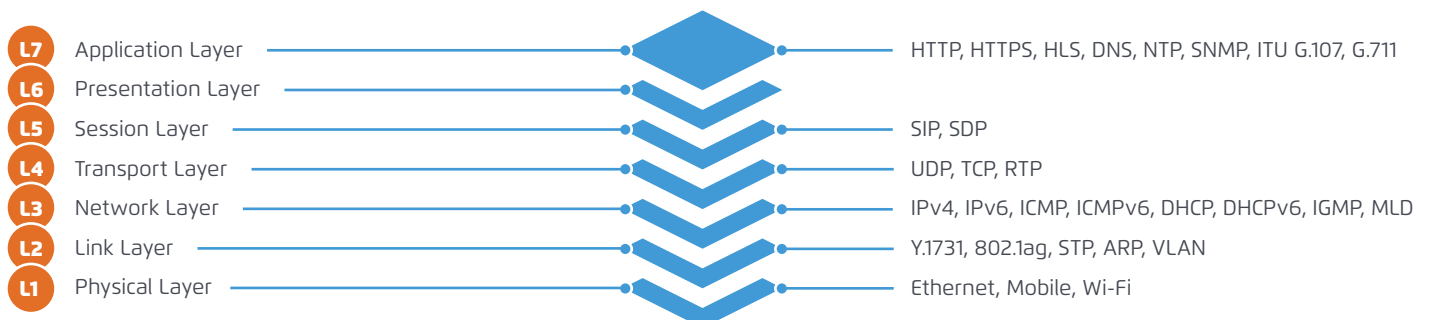
Periodic reports and alarm generation

Compliance with Service Level Agreements (SLAs) is presented for each quality monitoring scenario and periodic test in comprehensive and configurable reports.

Reports can be scheduled and emailed to stakeholders at custom intervals, or they can be retrieved programmatically through Netrounds' Cloud API. Alarms with multiple severity levels (Critical, Major, Minor, Warning) can be sent as SNMP traps.



SUPPORTED PROTOCOLS BY OSI LAYER



NETROUNDS TEST AGENTS

Netrounds' Test Agents can be deployed in a variety of formats to suit your needs: as a virtual Test Agent (vTA) VNF in virtual environments, bare-metal on standard x86 hardware, or booted from a USB device. Test Agents may also be embedded in a network device or installed on a standard PC.

Virtual Test Agents are run as a virtual machine on a hypervisor: KVM (e.g. Amazon AWS), ESXi (VMware), or Azure Hypervisor (Microsoft Azure).

Preinstalled Test Agents are installed by Netrounds on certified x86 hardware of various form factors and capacities.

All Netrounds Test Agent types have traffic-generating capabilities and can measure detailed, real-time results and statistics across multiple applications, services and interfaces. The Test Agents also have the ability to send active measurement traffic that is reflected back from eNodeBs, Smart SFPs, routers, switches and other network devices, using standardized OAM methods.

Key Features of Netrounds Test Agents



Genuinely software-based

Suitable for both virtualized and traditional networks.



Traffic generating capabilities

Activation tests, quality monitoring, and remote troubleshooting from the end user perspective.



Programmable through Cloud API

Leverage abstractions for efficient OSS automation.



Instant remote Test Agent deployment

No need for field efforts using expensive hardware tools.



Versatile features and tools

Complete system for assessing end user experience.



Centrally managed

Consistent interface and back-end for users and orchestrators.

SELECTED TESTING CAPABILITIES OF NETROUNDS TEST AGENTS

Network performance measurement

- UDP unicast, multicast
- Stateful TCP
- QoS policy profiling
- Multisession TCP
- VoIP-like UDP
- TCP throughput test (RFC 6349)
- Y.1564
- MEF 48

Reflector-based testing

- G.8013/Y.1731 (ITU-T)
- TWAMP (RFC 5357)
- UDP loopback
- Path trace

Internet performance measurement

- HTTP
- DNS
- ICMP Ping
- Speedtest

IPTV and HTTP streaming video

- IPTV MPEG
- IPTV MPEG inline
- IGMP channel zapping
- HTTP live streaming (HLS)

L2 transparency

- Layer 2 Control Protocol handling
- IPv4/IPv6
- VLAN

VoIP and SIP telephony

- SIP signaling
- RTP media stream quality

Security

- Routing protocols
- STP
- Management protocol scanning

Wireless

- Mobile (GPRS/EDGE/UMTS/LTE)
- Wi-Fi (802.11g/n/ac)

Note: This is a sample of the Netrounds Test Agent testing capabilities. For a more comprehensive list of all testing capabilities, see the Test Agents datasheet.

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