

Data Sheet

# VIAVI TeraVM

## Oracle Cloud Platform Support for TeraVM™

TeraVM is a software based L2–7 test tool running on Cisco UCS and in the Cloud (Oracle, Amazon, Google, Azure, etc.), delivering a fully virtualized application emulation and security validation solution to test and secure devices, networks and their services.

### What is Oracle Cloud?

Oracle Cloud is a cloud computing service offered by Oracle providing servers, storage and network applications capable of running apps, hosting sites and storing data.

- TeraVM now supported on Oracle Cloud Infrastructure
- TeraVM Classic can now be deployed on Oracle cloud infrastructure



### What Oracle Cloud Support means:

- **Flexibility:** Perform testing in the cloud as opposed to being tied to the lab. Access from anywhere with just an internet connection
- **Match the SUT environment:** With many customers now deploying their products in a cloud environment you can match their testing requirements by deploying in the same environment
- **Reduce dependency on HW:** Cloud-based testing reduces the dependency on test hardware thereby reducing costs of space, maintenance and HW
- **Access anytime:** Test resources can be accessed any time any day with cloud platform support freeing up test schedules
- **Lower Operation costs:** Cloud platform testing very often uses a pay-as-you-use option making testing cycles more economical by only paying for the test HW resources when testing is ongoing
- **Elastically scale compute power:** Easily scale up the HW processing power as and when needed for higher capacity testing
- **Supports Agile development:** With cloud-based test tools the latest updates are stored in one place allowing disparate test teams confidence in the knowledge that they are accessing the latest version of SW

## Application Support

### General

- System utilization reports (Location, User, Testbed, Licenses in use, Usage stats)
- License check-in default timer

### Adaptive Engine

- Dynamically and Automatically find the maximum capacity of Devices Under Test
- Same test profile can be used for multiple platforms
- Faster setup, faster testing, faster results

### Network Interface Support

- Support for 1/10/40 Gbps I/O

### Data

- Jumbo Frame support with max MTU/Segment configurable
- TeraFlowUDP Out-of-Sequence Statistics
- TCP/UDP, Teraflow, Ookla speed test
- HTTP/HTTPS
- HTTP 2.0
- SMTP/POP3 (incl. file attachments)
- FTP (Passive/Active), P2P applications, DNS
- FTP client session count limit
- DNS client (w/HTTP/S applications incl. IP address resolution)
- DNS Server

### Address Assignment

- Configurable MAC
- DHCP, PPPoE (IPv4 and IPv6)
- Dual Stack (6RD, DS Lite)

### Ethernet Switch

- VLAN Tagging (up to 8 concurrent tags)
- ACL, 802.1p, DSCP

### Data Center

- VxLAN, GRE, SR-IOV

### Automation

- REST, CLI, Perl, TCL, XML, Java API
- Python, Jython
- Cisco LaasNG, Qualisystems (CloudShell), Luxoft Software Defined Lab (SDL), Openstack, Cisco pyATS

### Replay Application Repository

- Intelligent UDP and stateful TCP Replay: Ability to dynamically change content
- Replay large PCAP files: TCP, UDP and raw data playback
- IP Replay: multiple TCP/UDP streams
- Amplify and dynamically substitute data into PCAP files

### Video

- CMTS, CDN, Multicast: IGMP v1/v2/v3 and MLD v1/v2
- Automatic Multicast Tunneling (AMT)
- Video on Demand (VoD)
- Adaptive Bit Rate (HLS, HDS, MPEG-DASH, Smooth)
- Video conferencing, WebEx, Telepresence
- HTTP based video

### Voice

- Secure VoIP and WebEx calls in HTML5 UI
- Dual-Stack VoIP Gateway emulation
- Cisco CUCM, CUBE
- VoIP: SIP and RTP (secure and unsecure), SMS

- VoIP client scaling with auto generated unique AKA authentication request per client
- VoLTE Emergency calls support
- Dual Hosted UACs, SIP Trunking
- Voice and Video quality metric (MOS simultaneously supported)
- EVS codec support, various bit rates, silence suppression
- G.711 Support for SID – RFC3889
- SIP Updates for IMS incl. PANI information
- MCPTT group calls (incl. KPI support)

### Secure Access/VPN

- SSLv2/3, TLSv1.0/1/2/3 and DTLSv1.0/2
- TLS Client-side Cipher Suite Selection
- Dynamic IPv6 Assignment for AnyConnect VPN Client
- Clientless VPN (SSL/TLS/DTLS), IPsec (IKEv1/ v2 (DH groups 31 and 32)), Generic remote access, CSFR support
- VPN Clients: Cisco AnyConnect, Fortinet,
- Juniper, Pulse Secure, F5, Huawei, AT&T SSLT
- Cisco Umbrella
- SAML, SSO, Active Directory based login
- 802.1x EAP-MD5, EAP and PEAP with MS CHAPv2 Authentication
- 802.1X Accounting Start and Stop Records
- Site to Site VPN – IPV6/V4
- Additional security to limit access to public IP address assigned to TeraVM in public cloud environments
- Cisco AnyConnect ECDSA, EdDSA Cert authentication
- PPTP VPN Client and Server supported

## Security

- 40,000+ Malware attacks and Cybersecurity threats, updated monthly
- Spam/Viruses/DDoS/Malware
- Malware Application Profiles
- DDoS attack applications:
  - Flood: SYN, Reflective SYN, Reset, UDP, Ping, ARP
  - Attacks: Teardrop; UDP Fragmentation; Configurable Rates, Start and Stop
  - Spoof Mac addressing
- Cybersecurity Database w/proven exploits
- Good and Bad mixed traffic flows
- Statefully scale Cisco specific threats
- Ability to use 3rd party threat libraries
- Ability to turn on/off Extended Master Secret (RFC 7627) support flag to test Cisco FTD, ASA and other security solutions
- Support for TLS 1.3, TLS 1.2 simultaneously on Client and Server
- Configurable TLS record size
- TCP delayed ack (timer based)

- HTTP Strict Transport Security (HSTS) header support
- TLS SNI support incl. unique certificate per FQDN

## SLA Monitoring

- TWAMP-RFC 5357, PING-RFC 792
- Cisco Netflow Records/Exporter emulation at scale

## Mobility - 5G, 4G, 3G, 2G

- Core and RAN: 3GPP Rel.8, 10, 11, 13, 15
- vRAN emulation:
  - 5G-NR, 4G-EUTRAN, 3G-UTRAN, 2G-GERAN at 1,000s of RANs
- Core Emulation:
  - 5G (NSA and SA), 4G-LTE, 3G, 2G with Mobility at millions of UEs and Bearers
- 5G, 4G, 3G, 2G Core interface testing
- Error Injection over 5G-N2 (AMF), 4G-S1 (MME)
- Encrypted RAN load for SecGW
- GTP tunnel support; GTPv2 (4G) S11/S5; GTPv1 (3G) Gn (4G) S1-U
- VoLTE (secure/unsecure), ViLTE
- ePDG Wifi Offload (EoGRE)
- VoWiFi (functional testing)

## Internet of Things (IoT)

- Client emulation
- CoAP-RFC 7252
- NIDD over SCEF, S11-U, S1-U
- SCEF Emulation Including Protocol Relay

## Platform Support

- Google Cloud Support
- Oracle OCI
- Containerized TeraVM (docker)

## Hypervisors

- VMware ESXi
- KVM Ubuntu
- Amazon AWS
- Microsoft Azure
- KVM Redhat
- Openstack

## NetSecOPEN Tests **NetSecOPEN**

- NetSecOPEN Test Suite

## Specific Test Coverage

TeraVM includes Cisco specific endpoint emulation and real time measurements

- Dynamic IPv6 Assignment for AnyConnect VPN Client
- Cisco AnyConnect SSL VPN Client
- Cisco AnyConnect IPSec IKEv1/IKEv2 VPN Client
- Cisco NetFlow Records, NetFlow Exporter Emulation
- Cisco Identity Services Engine (ISE) with 802.aX client
- Cisco Umbrella
- Captive Portal testing
- Cisco TelePresence
- Captive Portal testing
- Cisco TelePresence
- Cisco WebEx
- Cisco Phones
- Cisco Video Clients
- Cisco DNA Center
- Mobile phones for Security Gateway
- IoT Device



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