VIAVI Solutions

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TVM5000

TeraVM Application Emulation and Security Validation Appliance

TeraVM5000 (TVM5000) is an Application Emulator and Security Validation appliance with support for 1 GbE, 10 GbE, 40 GbE and 100 GbE I/O. TVM5000 is ideal for lab and datacenter deployment where network performance needs to be measured with real-world traffic scenarios.

TVM5000 High Performance and Reliable Validation Solutions

TeraVM is pre-packaged on datacenter ready hardware, which is ideal for physical network appliance performance test use cases.

As the test platform is delivered on standard hardware, it can be easily plugged into any datacenter infrastructure or centralized resource pool, making it easy for carriers and vendors to deploy, manage and scale as part of an elastic test bed, which can be enabled to deliver terabits per second of application traffic.

TVM5000 delivers reliable and repeatable testing for both physical and virtual network functions, alongside performance validation of network services.

Per Flow Performance Validation

The TVM5000 is complemented by a comprehensive validation suite covering key network segments such as access, application services, mobile network back-haul and security. TeraVM provides validation for key application services such as video, voice and data. TeraVM's per flow emulation architecture delivers the necessary granularity required to pinpoint and isolate poor quality flows out of the millions of emulated flows.

Advantages

- Pre-packaged TeraVM appliance
- Reliable and repeatable performance validation
- Datacenter ready, ideal for NFV validation
- Elastic test bed support enabling up to 1 Tbps of application emulation

Features

- Support for 8 x 1 GbE, 4 x 10 GbE, 4 x 40 GbE or 4 x 100 GbE interfaces
- Rack & Stack
- Stateful traffic (L1–7) emulation
- Emulation and real-time measurement of millions of unique application on a per flow basis
- Comprehensive CyberSecurity Database
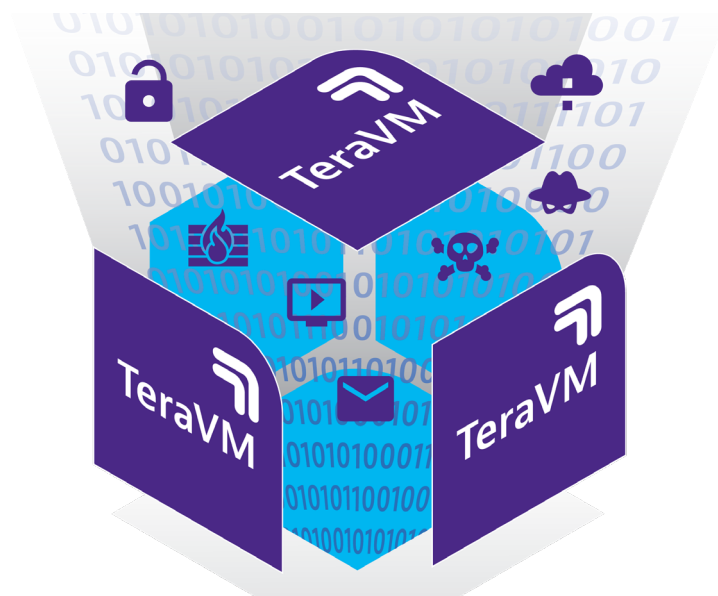- Easy pinpointing and isolation of problem flows

Figure 1: TVM5000 1u rack server

Security Performance Validation

TVM5000 is a high performing platform and software offering, ideal for validating a wide range of next generation firewalls and VPN access devices. TeraVM enables mixed application traffic emulation of legal or good flows with malicious flows; including a CyberSecurity Database.

Run Anywhere Performance Validation

TeraVM enables customers to analyze, develop and validate the performance and capability of a wide variety of network functions and services for both fixed and wireless networks. TeraVM is used for performance validation; in the lab, datacenter and/or cloud.

TVM5000: 1u Rack Server Specification

Feature	Description
Device	Dell R640 Power Edge Server
Processors	Intel® Xeon® Gold 6140 2.3G,18C/36T,10.4GT/s,25M Cache,Turbo,HT (140W) DDR4-2666
Memory	10 x 16 GB RDIMM, 2666MT/s, Dual Rank
Hard Drive	· 1TB 7.2K RPM SATA 6Gbps 512n 2.5in Hot-plug Hard Drive · 960GB SSD SATA Mixed Use 6Gbps 512e 2.5in Hot Plug S4610 Drive
I/O Management	· 1 x GbE (copper, RJ-45) interface for TVM-C management · 3 x GbE (copper, RJ-45) for potential future use
Test Network Interface Card (options)	· Broadcom 5719 QP 1 Gb Network Interface Card · Intel X710 Dual Port 10 Gb Network Interface Card · Intel Ethernet I350 QP 1 Gb Network Daughter Card · Dual Port 10GBASE-T Server Adapter, Low Profile (Intel Ethernet X540) · Mellanox ConnectX-4 40 GbE VPI Adapter Card (should be placed in NIC slots 3 and 1 only)
Interfaces	4 x SFP 10GbE interfaces (with optics included) or 4 x 10/100/1000 BaseT GbE (copper, RJ-45)
Optics	SR Optics – 10GBASE-SR (supports multimode fiber) or LR Optics – 10GBASE-LR (supports single mode fiber)
Rack Rails	Sliding ReadyRails™ II 1U, A7, DP/N 09D83F with 1U Cable Management Arm Kit DP/N 02JC1F
Power Supply	1 Dual, Hot-plug, Redundant Power Supply (1+1), 750W

TeraVM Capability Overview	
General	Real-time isolation of problem flows
	Elastic Test bed (up to 1 Tbps)
Network Interface Support	Support for 1/10/40/100 Gbps I/O
	Mellanox ConnectX-4 support for 56/100 Gbps
Data	TCP / UDP, Teraflow, Ookla speed test
	HTTP (v1/2, incls. stateful response parser)
	SMTP / POP3 (incl. file attachments)
	FTP (Passive/Active), P2P applications, DNS
Address Assignment	Configurable MAC
	DHCP, PPPoE (IPv4 & 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
Replay	Replay large PCAP files TCP, UDP and raw data playback
	Amplify and dynamically substitute data into PCAP files
Video	Multicast: IGMP v1/v2/v3 & MLD v1/v2
	Automatic Multicast Tunelling (AMT)
	Video on Demand (VoD)
	Adaptive Bit Rate Video (HLS, HDS, MPEG-DASH, Smooth)
	Video conferencing, Webex
Secure Access / VPN	Clientless VPN (SSL/TLS/DTLS), IPSec (IKEv1/v2), Generic remote access
	Cisco AnyConnect SSL VPN Client, Cisco AnyConnect IPsec VPN
	Cisco ScanSafe
	Juniper Pulse, Juniper Network Connect
	SAML (F5, Citrix SSO), Dell SSO
	802.1x EAP-MD5
Security Attack Mitigation	Spam / Viruses / DDoS
	Cybersecurity Database
Voice	VoIP: SIP & RTP (secure & unsecure), SMS
	Dual Hosted UACs, SIP Trunking
	Voice & Video quality metric (MOS)
LTE/4G	EPC and RAN (Rel.8, 10, 11)
	VoLTE (secure/unsecure), ViLTE
	Wifi Offload (EoGRE)
SLA	TWAMP, PING
Automation	CLI, Perl, TCL, XML, Java API
	Python, Jython
	Qualisystems (CloudShell)
	OpenStack

Order Codes

Classic TeraVM test is available with the following product codes:

Part Number	Description
TVM5000	TeraVM Classic 1U Appliance
TVM5100	TVM LICENSE S-BASE BUNDLE
TVM5104	TVM S/W LICENSE 1Gbps ADVANCED PROCESSING
TVM5107	TVM CONTROLLER LICENSE 1 SEAT
TVM5116	TVM CyberSecurity DATABASE - 1 SEAT
TVM5117	TVM Media MOS ANALYSIS SEAT
TVM5121	TeraVM Classic on Google Cloud Platform (GCP)
TVM5123	TVM Classic on AWS Cloud Platform
TVM5124	TVM Classic on Azure Cloud Platform
TVM5108	TVM GENERIC IPSec S/W LICENSE 1Gbps PROCESSING
TVM5109	TVM ANY CONNECT VPN LICENSE 1Gbps PROCESSING
TVM5110	TVM FORTINET VPN S/W LICENSE 1Gbps PROCESSING
TVM5111	TVM Pulse Secure VPN LICENSE 1Gbps PROCESSING
TVM5112	TVM F5 VPN S/W LICENSE 1Gbps PROCESSING
TVM5113	TVM ATT SSLT VPN S/W LICENSE 1Gbps PROCESSING
TVM5114	TVM ANY OFFICE VPN S/W LICENSE 1Gbps PROCESSING
TVM5115	TVM VoIP/VoLTE S/W 100K PPS