TeraVM

COBHAM

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TeraVM Release Notes

TeraVM Release 13.3

Help and Support

TeraVM User Documentation, Online Training Guides and Videos are available on the documentation portal:

http://ats.aeroflex.com/login-account

For support queries, please log a call on the Cobham Wireless Support Portal

https://support.aeroflex.com/

For help on using the support portal, download the Cobham Wireless Customer Support Portal User Guide.

(For accounts, please contact your local Cobham Account Representative).

Note

You can also contact support using the mail alias for your region:

TeraVMSupport.CN@aeroflex.com (China)

TeraVMSupport.EMEA@aeroflex.com (EMEA)

TeraVMSupport.USA@aeroflex.com (North America)

TeraVMSupport.JP@aeroflex.com (Japan)

TeraVMSupport.KO@aeroflex.com (Korea)

TeraVMSupport.SG@aeroflex.com (South East Asia)

TeraVMSupport.IND@aeroflex.com (India)

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Chapter 1. What's New in this Release

New features, changes, and updates made in this release are detailed in this section.

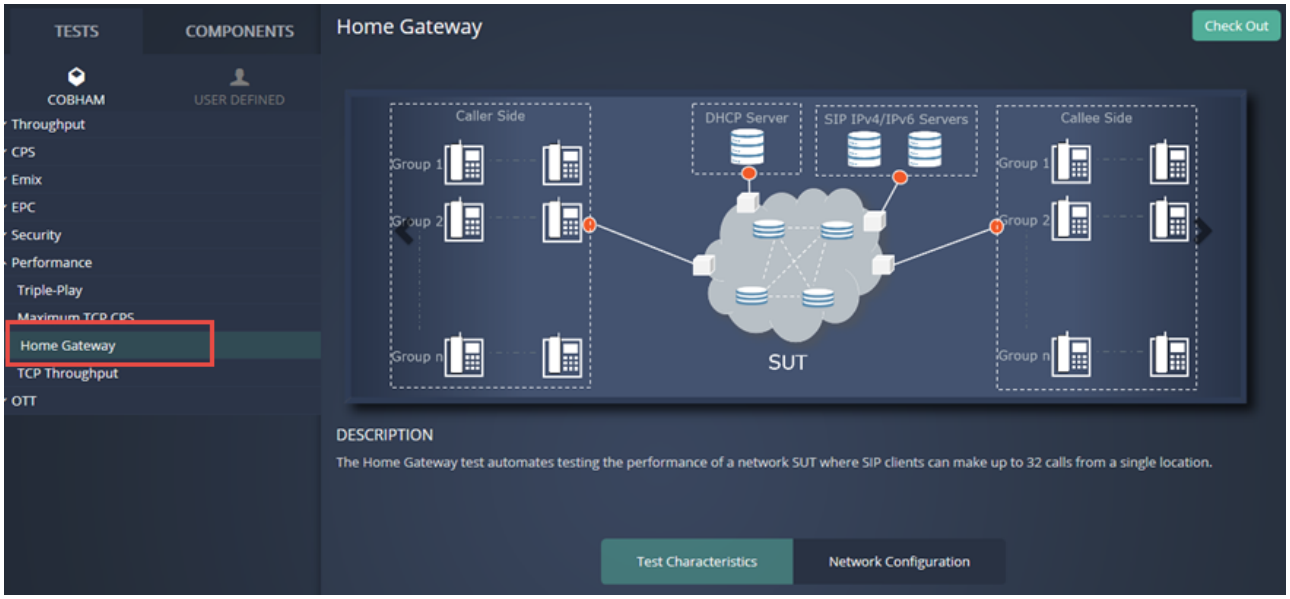
1.1. HTML5 User Interface

The HTML5 user interface has several tests added in this release along with various improvements to existing tests. For more information about the HTML5 interface, see the *TeraVM HTML5 User Guide*.

1.1.1. Home Gateway

The Home Gateway test allows the configuration of several home gateways, each making calls to each other. Each Pair of Groups has a caller and a callee side that are associated with a client and server network side. To run this test you must provide the: Caller ID, SIP Proxy IPv4 Address, SIP Proxy IPv6 Address. All other settings can be left as default.

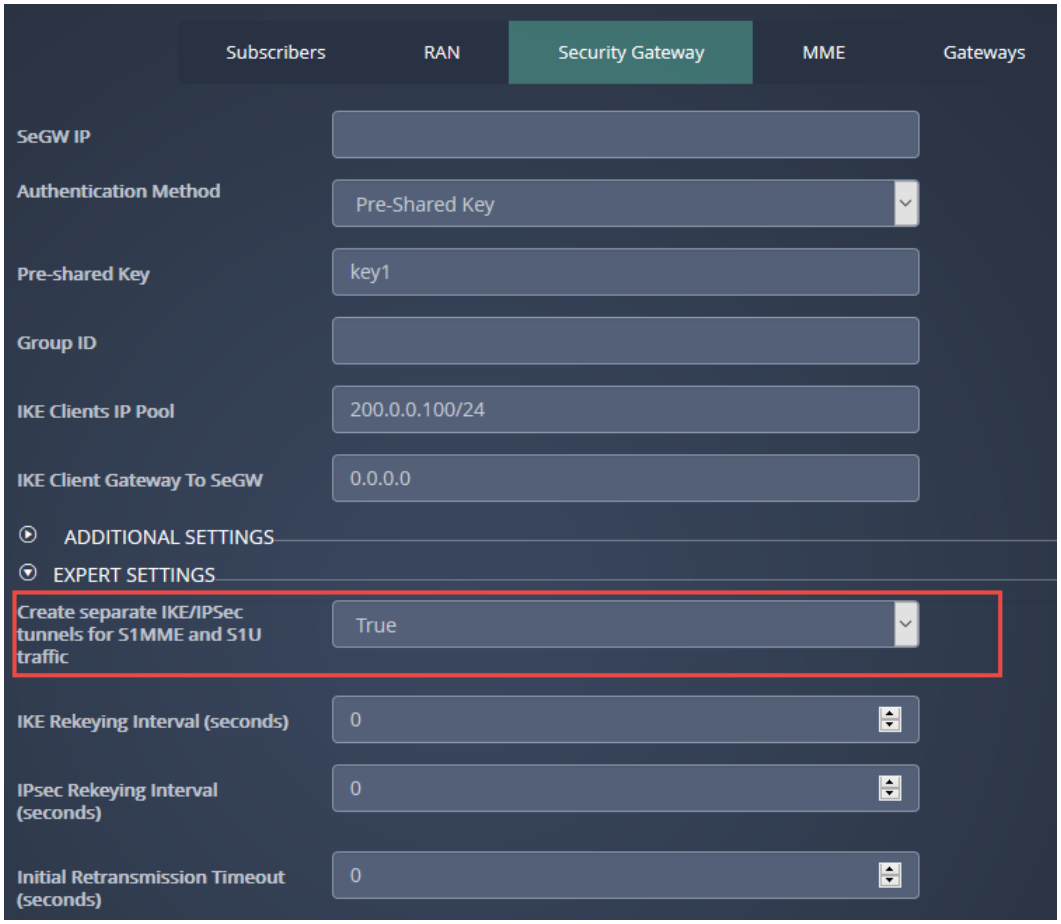
Figure 1-1. Home Gateway test



1.1.2. Secure S1 Script Update

This change adds support for creating separate IPsec tunnels for S1-MME and S1-U traffic using a single traffic selector. The new field can be found in the Secure Gateway Tab in the EPC Security Gateway Performance test, shown in the following figure, and is set to True by default.

Figure 1-2. Security Gateway tab



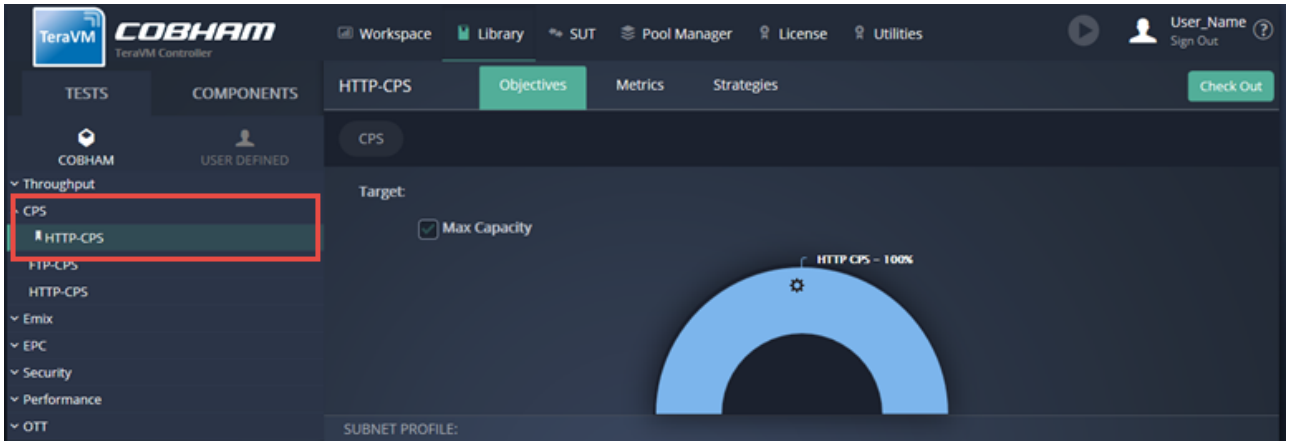
1.2. Adaptive Test

Adaptive tests are incorporated into the HTML5 user interface. They simplify the testing process with the use of visual representations of test data, and clearly defined logic for selecting testing strategies. Tests can be run with minimal configuration on default settings and can be saved for reuse. Subnet Profiles, once created, can be saved in the Workspace and reused across tests with a drag-and-drop feature. An objective for a test is entered by the tester, then when running the test, the test adaptively applies more test resources until either the objective is met or the resources are exhausted.

1.2.1. HTTP CPS (Adaptive Test)

This release includes the HTTP Connections Per Second adaptive test in the Central Test Library under the CPS Tests menu.

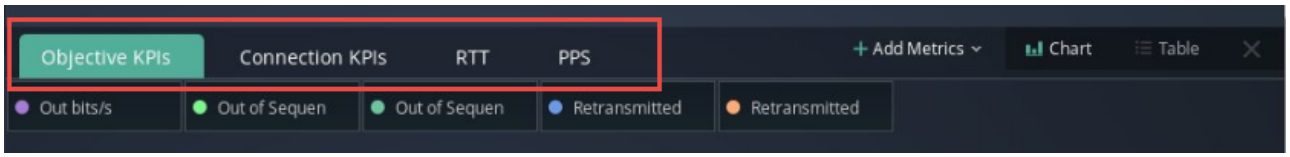
Figure 1-3. HTTP CPS test



1.2.2. Additional KPIs

New KPIs for evaluating test outcomes are added to this release. KPIs are grouped and displayed under tabs of functional categorization. The following image shows an example of how the metrics are organized in the user interface when running a test.

Figure 1-4. Grouped metrics



Available KPIs

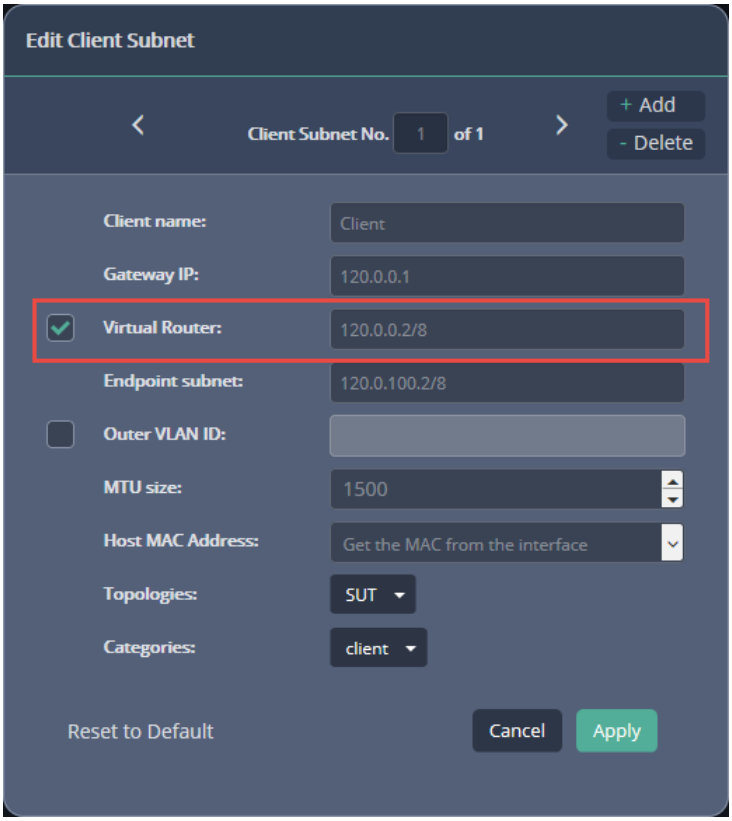
The following table shows the complete set of KPIs available for adaptive tests, where tests will consist of a subset of this set.

Objective KPIs	Connection KPIs	Round Trip Time (RRT)	Packets Per Second (PPS)
Out bits/s (Interface)	Attempted Connections/s (HTTP Client)	SYN/SYNACK Mean ms (HTTP Client)	In Packets/s (HTTP Client)
Out of Sequence Packets (HTTP Client)	Established Connections/s (HTTP Client)		In Packets/s (HTTP Server)
Out of Sequence Packets (HTTP Server)	Failed Connections/s (HTTP Client)		Out Packets/s (HTTP Client)
Retransmitted Packets (HTTP Client)	Failed Conn - SYN Retransmit Cu Exceeded (HTTP Client)		Out Packets/s (HTTP Client)
Retransmitted Packets (HTTP Server)	Failed Conn - Data Retransmit Cu Exceeded (HTTP Client)		

1.2.3. Virtual Router

The Virtual Router, see following image, can be enabled in the Adaptive Tests by selecting its check box in the **SUBNET PROFILE** in the **Edit Client Subnet** dialog.

Figure 1-5. Edit Client Subnet dialog



This feature brings the ability to test a network using indirect Virtual Hosts, which adds a layer of complexity to the network while being simple to configure. The routing for the Virtual Router is handled with RIPv2. When you enable the Virtual Router, enter the Server/Client IP address for your Virtual Server/Client Host, ensure the **Endpoint Subnet** address that you enter is different to those used by the **Gateway IP** and the **Virtual Router**. The Virtual Hosts will derive their default IP addresses from the Gateway IP entered.

1.3. Java Client

The Java Client has several improvements to existing tests in this release. The changes made in this release are in this section. For more information about the Java Client, see the TeraVM Java Client User Guide.

1.3.1. Netflow Updates

Improvements to TeraVM Netflow emulation are incorporated into this release. TeraVM Netflow emulation can be found under the menus **Applications > Netflow** with the sub-menus **Netflow Export Agent(s)** and **External Netflow Collector**. For more information on the Netflow feature and how to provision it, see the TeraVM Java Client User Guide. This section describes and lists the changes made.

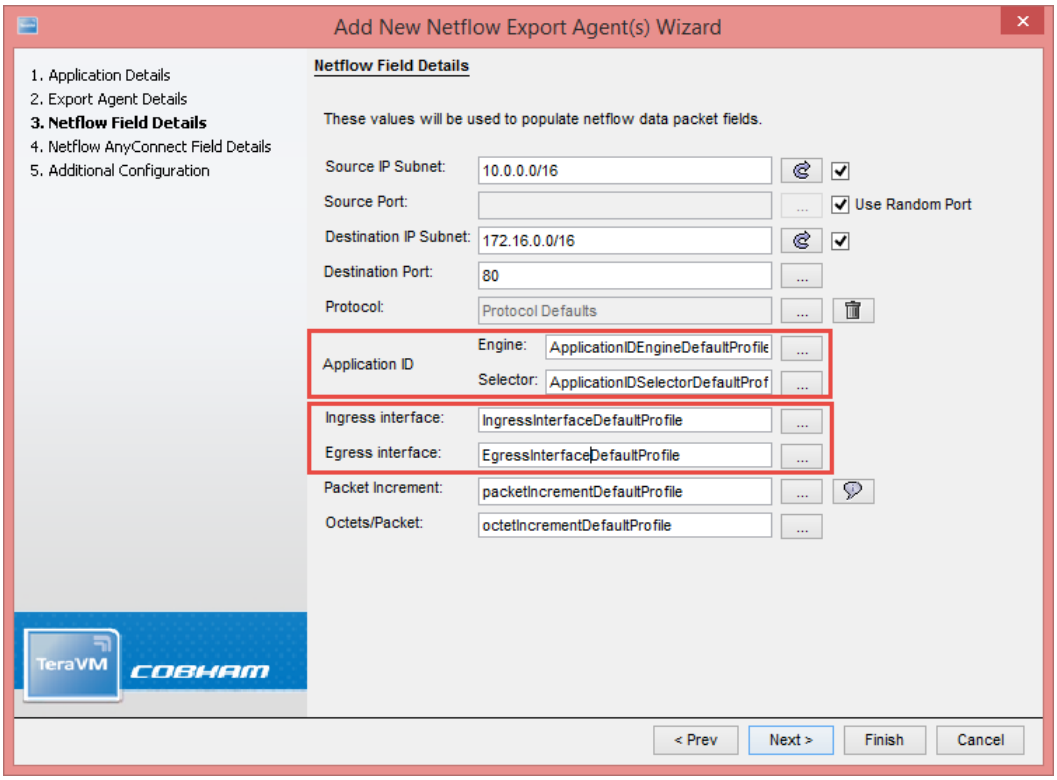
Overview of Changes

- **Netflow Field Timestamps**: Field 150 now reports the absolute timestamp of the first packet of the flow. Support has been added for the following timestamps:

Field Index	Field Name	Field Value
152	flowStartMilliseconds	The absolute timestamp of the first packet of this flow in milliseconds.
153	flowEndMilliseconds	The absolute timestamp of the last packet of this flow in milliseconds.
154	flowStartMicroseconds	The absolute timestamp of the first packet of this flow in microseconds.
155	flowEndMicroseconds	The absolute timestamp of the last packet of this flow in microseconds.
156	flowStartNanoseconds	The absolute timestamp of the last packet of this flow in nanoseconds.
157	flowEndNanoseconds	The absolute timestamp of the last packet of this flow in nanoseconds.

- **New Fields**: The new fields can be seen in the table and the image that follows:

Field Index	Field Name	Field Description
10	Ingress Interface	Index of the interface where incoming traffic is received
14	Egress Interface	Index of the interface where outgoing traffic is sent
95	Application ID	Single field used to identify the application made of Selector ID and Engine ID



- **TCP Flags**: the handling of TCP control bits has been improved to simulate real flows.
- **Reverse Flows**: in a real environment the traffic flows both ways. That is, from the client to the server, and from the server to the client. The ability to simulate this functionality is added in this release.
- **Application ID**: the generation method has changed and is now generated from the Engine ID and Selector ID.

Export Agent Details

The Export Agent Details dialog image that follows the table, shows two new fields. The **Create Reverse Flows** is only selectable when the **Export Agent Type** is **IPFIX - Generic**.

When **Create Reverse Flows** is enabled, the flow direction field (field 61) is set to 0x0 1 for the egress flow with the same protocol and application ID as the forward flow. IP addresses, ports and interfaces are reversed with independent values for the number of packets and bytes.

Table 1-1. Example of Forward Flow and Reverse Flow

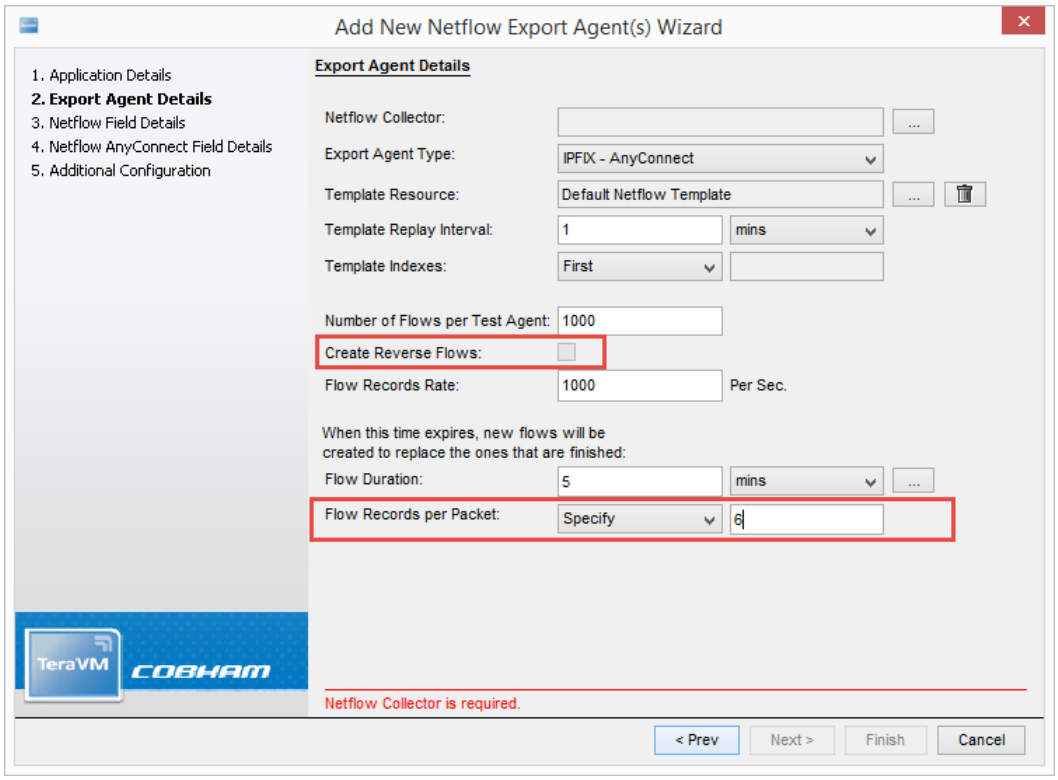
Field Name	Forward Flow	Reverse Flow
Source IP Address	10.10.10.10	20.20.20.20
Destination IP Address	20.20.20.20	10.10.10.10
Source Port	1024	80
Destination Port	80	1024

Field Name	Forward Flow	Reverse Flow
Flow Direction	0x00 (ingress)	0x01 (egress)
Ingress Interface	3	2
Egress Interface	2	3
Protocol	TCP	TCP
Application ID	3:1234	3:1234
Number of Packets	104	222
Number of bytes	12568	25324

The **Flow Records Rate** field was previously **Delay Between Flow Packets**. If a profile was set for the delay between flow packets, the **Flow Records Rate** will use the default value (1000).

Flow Records per Packet allows you to specify the number of flow records per packet or have as many flows as possible per packet.

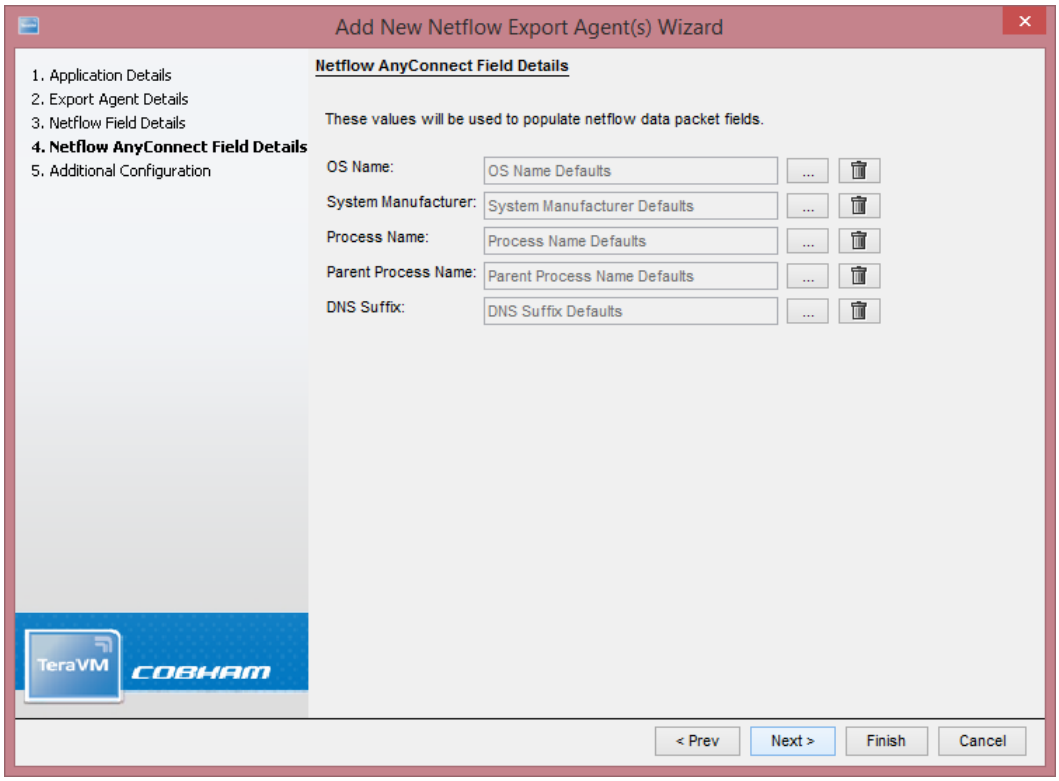
Figure 1-6. Export Agent Details dialog



Netflow AnyConnect Field Details

The AnyConnect fields have been moved to the newly created *Netflow AnyConnect Field Details* dialog and is only visible when the **Export Agent Type** is **IPFix - AnyConnect.**

Figure 1-7. Netflow AnyConnect Field Details dialog



These updates can be found along with the field descriptions in the TeraVM Java Client User Guide.

1.3.2. Java Client and CLI Support Active Directory

To improve the tracking of used licenses, the login functionality for the Java UI and CLI tool now requires a password. The login functionality is now integrated with AuthService so that it can be configured with Microsoft Active Directory (MSAD). The login scenarios

- **AuthService is reachable and is configured to use Active Directory**
  - if the Active Directory server is reachable then all users will be authenticated against the Active Directory server credentials.
  - if the Active Directory server is NOT reachable then login will not be possible and an error message will be displayed.
- **AuthService is reachable and is configured to not use Active Directory**
  - the password is ignored and any user name is allowed access.
- **AuthService is not reachable**

– All users are allowed to login, and the Password, even though required, will not be checked. The GUI will display a warning message and access is granted to the user.

An example of the Java Client Login Screen with the new field can be seen in the figure that follows.

Figure 1-8. Java client login screen

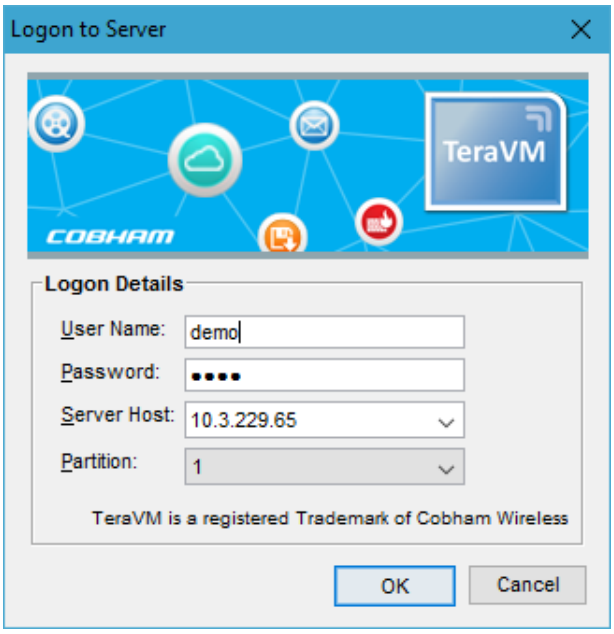


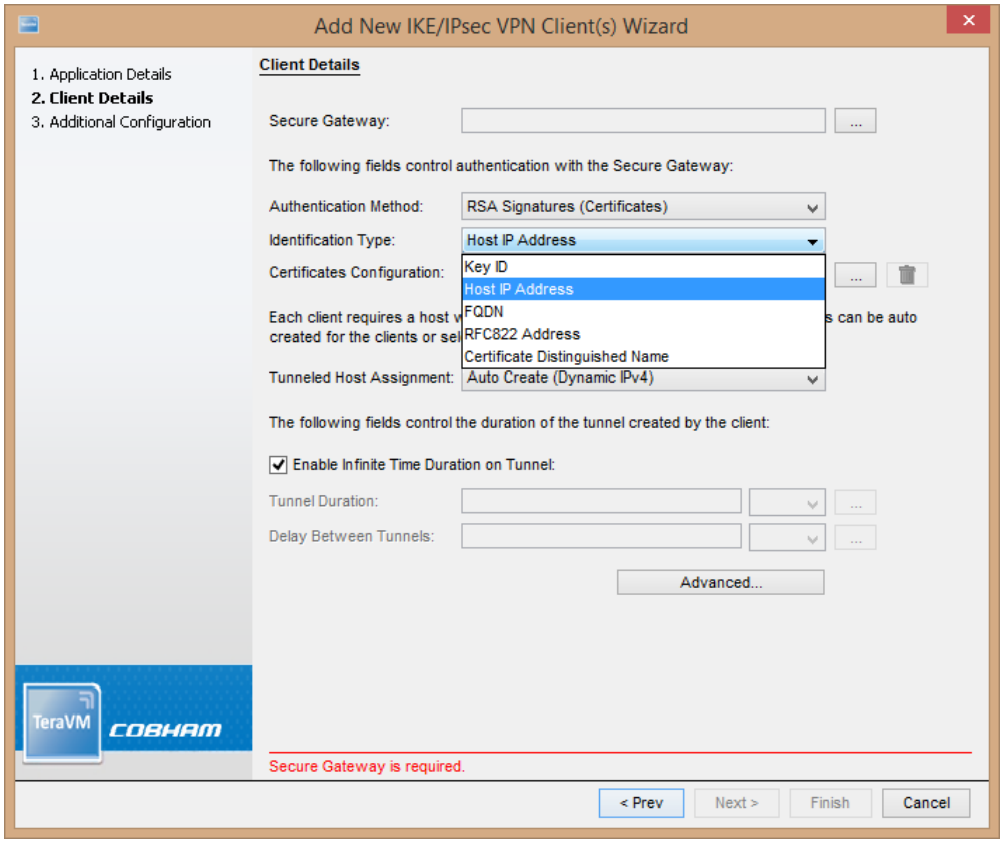
Table 1-2. New CLI Commands

Command	Description
openAutomationAuthorizationSession	Prompts the user for a password (not shown on screen) and forwards the specified credentials to the AuthService API to perform an Open automation authorization session request. The request is performed over the HTTPS protocol.
closeAutomationAuthorizationSession	Performs a Close automation authorization session request. The request will be performed over HTTPS protocol.

1.3.3. IKE/IPsec Local ID Type

A drop-down box to select the **Identification Type** has been added to the Client Details step of the IKE/IPsec VPN Clients Wizard. The **Identification Type** is a mandatory field that determines what input is required for TeraVM in the **Identification Data** field.

Figure 1-9. Identification type



The **Identification Data** is a string that is a scalable value (ASCii characters only). If the **Identification Type** is:

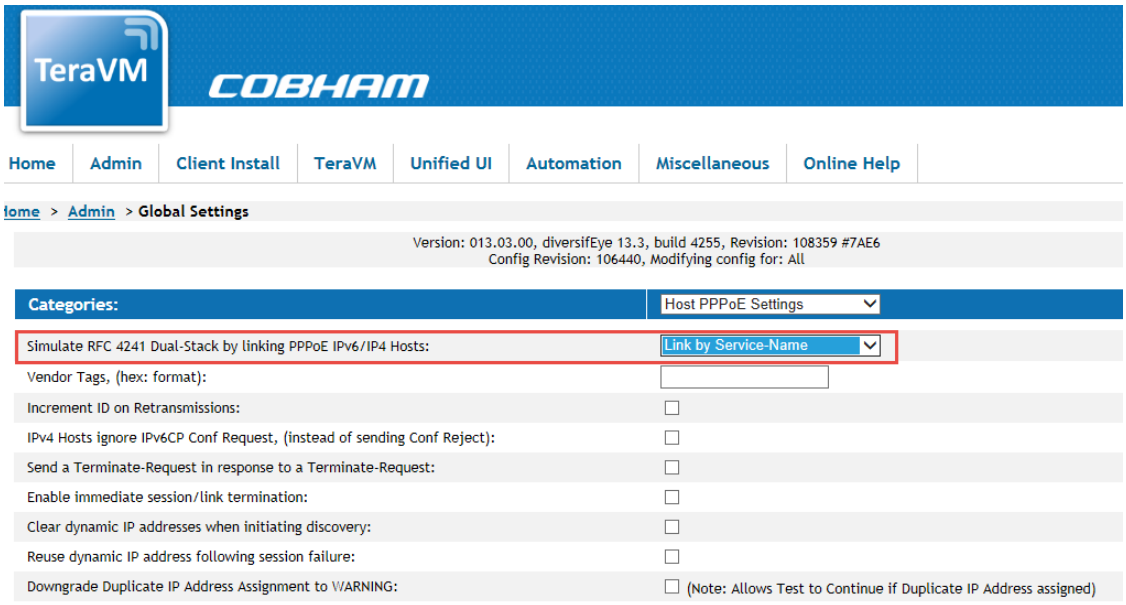
- **Host IP Address** or **Certificate Distinguished Name** (available only when **Authentication Method** is **RSA Signatures Certificates**), TeraVM will compute the value of the **Identification Data** internally.
- **FQDN**, **RFC822 Address**, **Key ID**, you must enter an input value manually for the **Identification Data**, this is a scalable value.

1.3.4. RFC 4241 PPPoE Dual-Stack Mode Support

TeraVM can emulate PPPoE dual-stack mode where a PPPoE client can use both IPv4 and IPv6 over a single PPP link. PPPoE dual-stack mode require both an IPv4 and IPv6 Host to be linked or paired together using either a matching MAC address or PPPoE service name. To enable dual-stack mode the global setting **Simulate RFC 4241 Dual-Stack by linking PPPoE IPv6/IP4 Hosts** must be set to one of the following options:

- **Link by MAC** - create a PPPoE IPv4 and IPv6 host pair using matching MAC address
- **Link By Service-Name** - create a PPPoE IPv4 and IPv6 host pair using matching PPPoE service names

The following image shows the optional settings in the **Global Settings**.

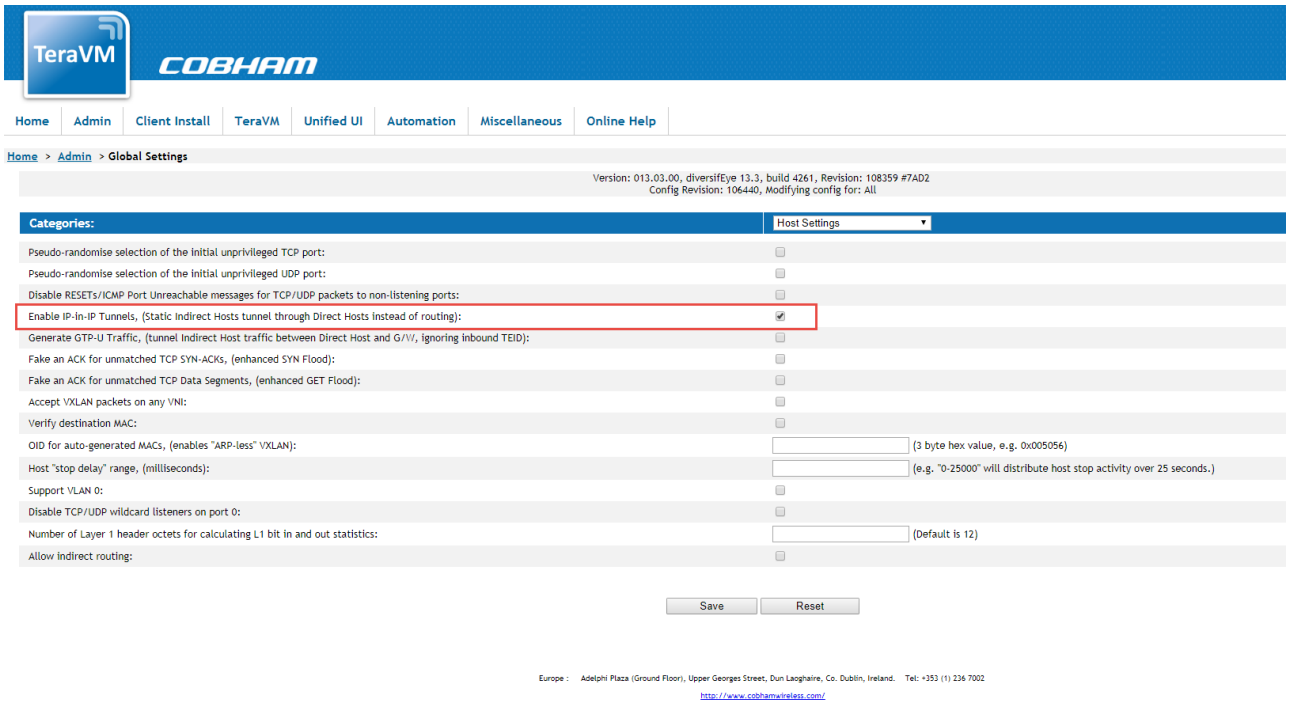


1.3.5. IPv6 Support for Generic IPsec

Generic IKE/IPsec clients now support IPv6 site-to-site VPNs. The following IPsec tunnel combinations are now supported:

- IPv4 over IPv4 IPsec tunnel
- IPv4 over IPv6 IPsec tunnel
- IPv6 over IPv6 IPsec tunnel
- IPv6 over IPv4 IPsec tunnel

To enable support, select the check box in the global settings for **Enable IP-in-IP Tunnels, (Static Indirect Hosts tunnel through Direct Hosts Instead of routing)**, as shown in the following figure:


TeraVM
COBHAM
Home
Admin
Client Install
TeraVM
Unified UI
Automation
Miscellaneous
Online Help
Home > Admin > Global Settings
Version: 013.03.00, diversifEye 13.3, build 4261, Revision: 108359 #7AD2
Config Revision: 106440, Modifying config for: All
Categories:
Host Settings
Pseudo-randomise selection of the initial unprivileged TCP port:
Pseudo-randomise selection of the initial unprivileged UDP port:
Disable RESETs/ICMP Port Unreachable messages for TCP/UDP packets to non-listening ports:
Enable IP-in-IP Tunnels, (Static Indirect Hosts tunnel through Direct Hosts instead of routing):
Generate GTP-U Traffic, (tunnel Indirect Host traffic between Direct Host and G/W, ignoring inbound TEID):
Fake an ACK for unmatched TCP SYN-ACKs, (enhanced SYN Flood):
Fake an ACK for unmatched TCP Data Segments, (enhanced GET Flood):
Accept VXLAN packets on any VNI:
Verify destination MAC:
OID for auto-generated MACs, (enables "ARP-less" VXLAN):
(3 byte hex value, e.g. 0x005056)
Host "stop delay" range, (milliseconds):
(e.g. "0-25000" will distribute host stop activity over 25 seconds.)
Support VLAN 0:
Disable TCP/UDP wildcard listeners on port 0:
Number of Layer 1 header octets for calculating L1 bit in and out statistics:
(Default is 12)
Allow indirect routing:
Save
Reset
Europe : Adelphi Plaza (Ground Floor), Upper Georges Street, Dun Laoghaire, Co. Dublin, Ireland. Tel: +353 (1) 236 7002
http://www.cobhamwireless.com/

1.4. Other Updates

This section details changes that have been made to this software release that are outside of the HTML5 user interface and the Java Client.

1.4.1. CLI Tool Updates

The CLI updates enhance the existing clitest.pl and teraflow.pl test scripts by allowing multiple packet sizes in a single test run. The details for using this feature can be found in the corresponding Perl documentation and Man pages.

1.4.2. RPM License Server Installation

An alternative method of installing the TeraVM License Server is provided for RPM based distros. The package installs the license server as a system service and configures the firewall to allow access to the server. To use this method of installation, the target system must be using both ***systemd*** and ***firewalld***. For more information on how to install the License Server, see the *TeraVM Licensing Guide*.

1.4.3. VPN Bandwidth Licenses

Updates have been made to the licensing allocation to include a VPN License that uses a different model to the existing “number of CPU cores”. The new, optional, VPN license calculates in units of *bands of bandwidth* in *Gbps* the amount of aggregate bandwidth needed for running VPN tests. TeraVM checks out the appropriate amount of licences to run the tests, and then on completion of the tests, checks the licenses back in again.

Chapter 2. Patches

The following patches were made available in this release.

Table 2-1. Patch Deliverables

File Name	Location	Description
bug_24370_patch-98151-upload.tgz	13.2 release folder.	Failed to import Certificates Resource. Could not transfer data file to server. Upgrade on the Controller.
bug_24233_patch-98152-upload.tgz	12.0.2. release folder.	DNS Server - non DNS env prevents httpd deamon from starting up. Upgrade on the Executive.

Installing a Patch

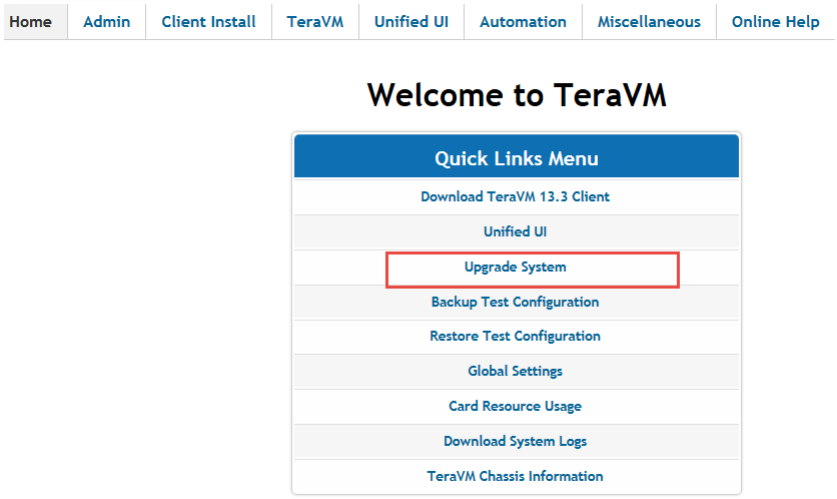
Use this procedure to install a patch using the HTML5 interface.

1. Download the patch from the relevant folder. Close any open TeraVM user interfaces and stop any tests.
2. In your browser, enter the IP address of the Executive/Controller.
3. Enter your *User Name* and *Password* and click **Sign In**.
4. Select **Utilities**.
5. From the *Welcome to TeraVM* page, select **Upgrade System** and login using:

   User Name: **diverAdmin**

   Password: **diversifEye**

   Figure 2-1. Welcome to TeraVM



6. Select the **Choose File** button.
7. Select the appropriate patch file and click **Open**.

8. Click **Upload**. The file uploads in several seconds.
9. Click **Upgrade** and wait for the patch to complete upgrading.

Chapter 3. Upgrading to this Release

As a general guideline, when upgrading to a new version of TeraVM, deploy the new TeraVM Management Assistant (TeraVM MA) and remove the previous version. The TeraVM MA is used for deploying new Test Modules, and when moving from TeraVM 11.4, it is used to deploy a TeraVM Executive.

The sequence of actions for the upgrade are:

Required Upgrades

- Patch fixes, see Chapter 2 Patches.
- TeraVM Executive (TeraVM) – see Section 3.3.1 Download and Install Upgrades. If your upgrading from 11.4, then you must deploy an Executive from the new TeraVM MA see the *TeraVM VMWare ESXi Setup Guide* for more information.
- TeraVM Controller (TeraVM and **d500/d1000**) – see Section 3.3.1 Download and Install Upgrades
- Delete the old Test Modules and then redeploy new Test Modules (TeraVM) – see the relevant platform set up guide.

Optional Upgrades

- Off Controller Repository (TeraVM) see Section 3.2 Upgrading Off Controller Repository
- Cybersecurity (TeraVM)

For more release specific guidelines, you must follow the conditions below and refer to the appropriate TeraVM Setup Guide for your platform.

> **Important**
>
> You must check to see if your upgrade process is impacted by any of the following conditions.

Installation Conditions

- **Upgrading from 13.1**

  If upgrading from 13.1 to 13.2 or 13.3, you must follow the upgrade procedure from Section 3.1, for both the Controller and the Executive. This is to ensure that you do not encounter a timeout while upgrading them.

- **Pre-12.0 Introduction of TeraVM Executive**

  TeraVM 12.0 was a major release, with many new features and architectural changes to the product. Therefore, if you are migrating from a pre 12.0 release, you **must** deploy the TeraVM Test Modules and the TeraVM Executive to use TeraVM successfully.

- **Pre-12.1 to Post 12.1: Authentication Service**

  If upgrading from a pre-12.1 to post 12.1 release, you will see the message **The Authentication Service From the Executive Machine Could Not Be Reached**. To get round this, in the browser, you must amend the TeraVM Controller IP with :8181. For example: http://TVM-C IP**:8181**.

- **12.1 Security Certificate Required**

When upgrading from pre-12.1 to post-12.1 and trying to reach the Executive or Controller via the browser, the browser displays a connection not secure dialog. This dialog will differ form browser to browser. You must add an exception to accept a security certificate before you can log into the Executive or Controller. You will also need to do this the first time that you open Pool Manager from the UI.

- **Upgrade to Off Controller Repository**

  13.1 release includes performance improvements to the Off Controller Client Repository. If you have a have an installed Off Controller Client Repository, then use the procedure in Section 3.2 to perform the upgrade.

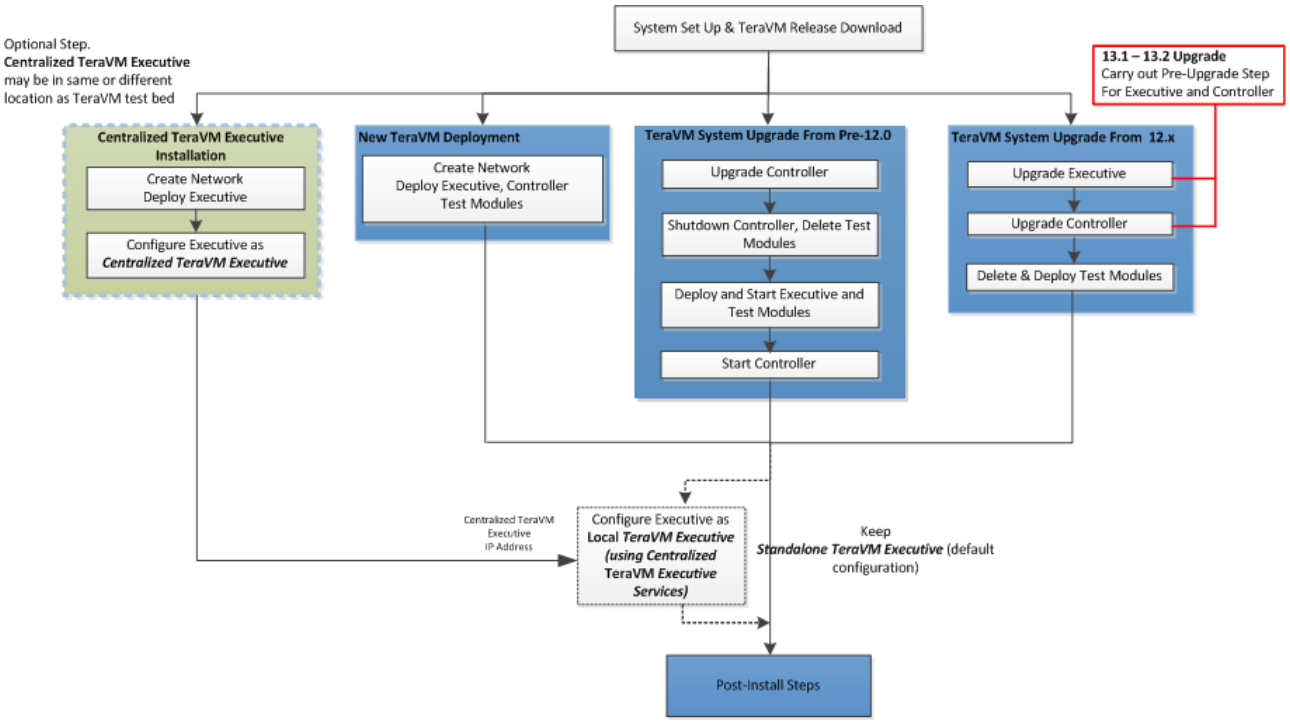
  TeraVM supplies a separate Client Repository which can be of unlimited size, external to the Controller (Off Controller). It comes as a separate virtual machine, and must be downloaded separately. The repository is sized at 32GB by default. You can increase this by adding disks in vSphere (you cannot remove or resize existing disks).

- **Cybersecurity Updates**

  When you perform this upgrade, all Cybersecurity Updates from the last Cybersecurity upgrade will be removed. Please download the latest Cybersecurity updates and reboot your controller before reinstalling. Contact support for details. This only applies if you have purchased the additional Cybersecurity Database license from Cobham.

An overview of the TeraVM install and upgrade process is shown below. For details on installing or upgrading to this release, please see the relevant hypervisor/cloud guide.

Figure 3-1. Installing or Upgrading to Release 13.3



3.1. Upgrade from 13.1 Pre Upgrade Step

This procedure must be done for both the TeraVM Executive and Controller before upgrading from TeraVM 13.1 to 13.2 or 13.3.

Prerequisite

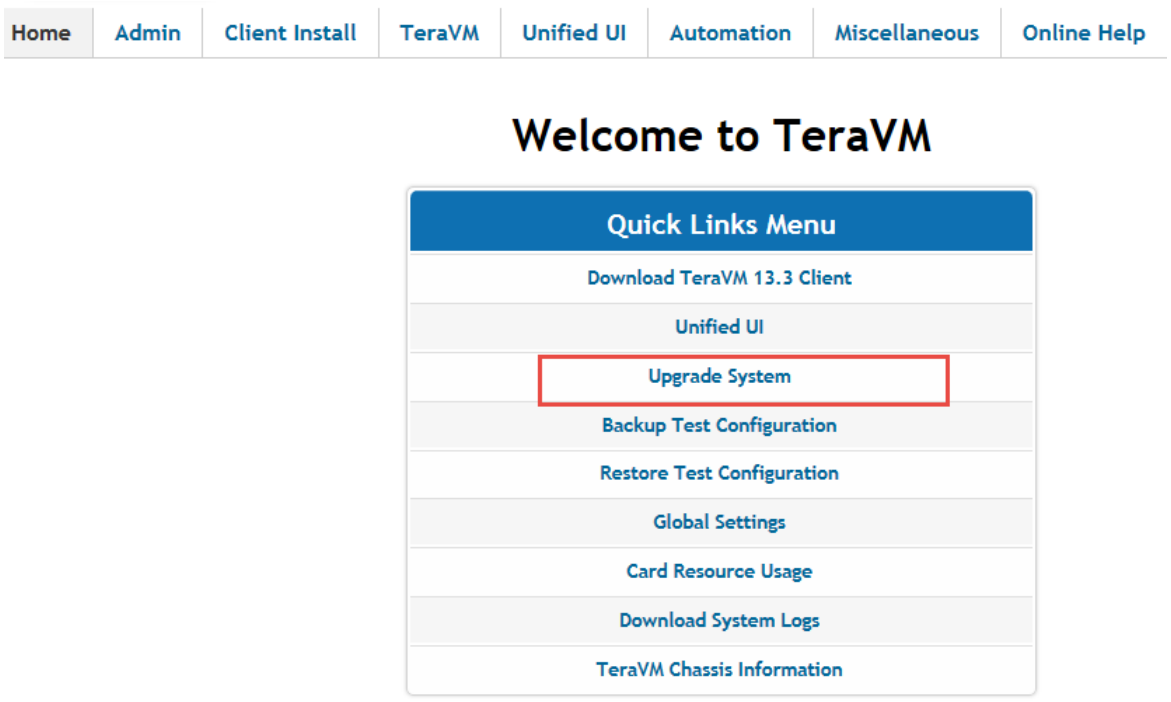
- Failure to follow this procedure during an upgrade will lead to a timeout or an error message. This will not negatively impact the upgrade, but you must follow this procedure and apply the pre-upgrade steps.

1. In your browser, enter the IP address of the Executive/Controller.
2. Enter your *User Name* and *Password* and click **Sign In**.
3. Select **Utilities**.
4. From the *Welcome to TeraVM* page, select **Upgrade System** and login using:

   Username: **diverAdmin**

   Password: **diversifEye**

   Figure 3-2. Welcome to TeraVM



5. Select the **Choose File** button.
6. Select the appropriate pre-upgrade file and click **Open**.

   TeraVM_Controller-13.2_preupgrade-98134-upload.tgz

   TeraVM_Executive_1.6_preupgrade-98132-upload.tgz

7. Click **Upload**. The file uploads in several seconds.
8. Click **Upgrade**.
9. After the pre-upgrades have been completed continue with the Executive and Controller upgrades as normal.

3.2. Upgrading Off Controller Repository

Use this procedure to upgrade the Off Controller Client Repository.

Prerequisites

- This procedure assumes you have a correctly installed Off Controller Client Repository.

1. Download the Client Repository Off Controller Upgrade file from the release folder > Upgrade folder: ClientRepositoryOffController_Upgrade-_upload.tgz.
2. In the vSphere Client ensure that the Client Repository Off Controller is powered on.
3. In the vSphere Client select the Client repository Off Controller and note its IP Address from the **Summary** tab in the **General** pane.
4. Enter the IP Address in your browser and make a note of the **Software Version** displayed under the **System Information.**

5. Select **Upgrade System**. *The Upgrade System page opens.*
6. Click **Browse** and select the Off Controller Client Repository Upgrade file that you previously downloaded.
7. Click **Upload**. *When completed, a file uploaded message is displayed.*
8. Click **Upgrade**.

   •An error is displayed in your browser. **Please note** that this is expected behavior.

   • Check the IP Address of the Client Repository Off Controller, it may have changed.
9. Enter the IP Address of the Client Repository in the browser and check the **Software Version** under the System Information panel. *The Software Version has incremented.*

3.3. Check Your Current Versions against Upgrade Installer

The Upgrade installer can be used in conjunction with the versions listed below. If the release you are currently using is not listed, please contact Cobham support.

Attention

If you are upgrading from a release prior to 11.0, please contact Cobham support as you may need to run an additional step.

Release versions use the following convention:

`"Major.Minor-BuildNumber" or "X.Y-Build"

where X represents the major version, Y the minor version.

Table 3-1. Controller Releases Supported by Installer

11.0-257	11.0.1-259	11.1-300
11.2-334	11.2.1-339	11.3-379
11.3.1-401	11.3.2-420	11.4-613
12.0-1454	12.0.1-1692	12.0.2-1961
12.0.2-1996	12.0.3-2053	12.0.2-2030
12.1-3090	12.1-3110	12.1.1-3121
12.1.2-3152	13.0-3297	13.1-3699
13.1-3703	13.2-3946	13.3-4261

Table 3-2. Executive Releases Supported by Installer

1.0	1.1	1.2
1.3	1.4	1.5
1.6	1.7	

3.3.1. Download and Install Upgrade

Use this procedure to install an upgrade using the HTML5 interface.

Installing an Upgrade

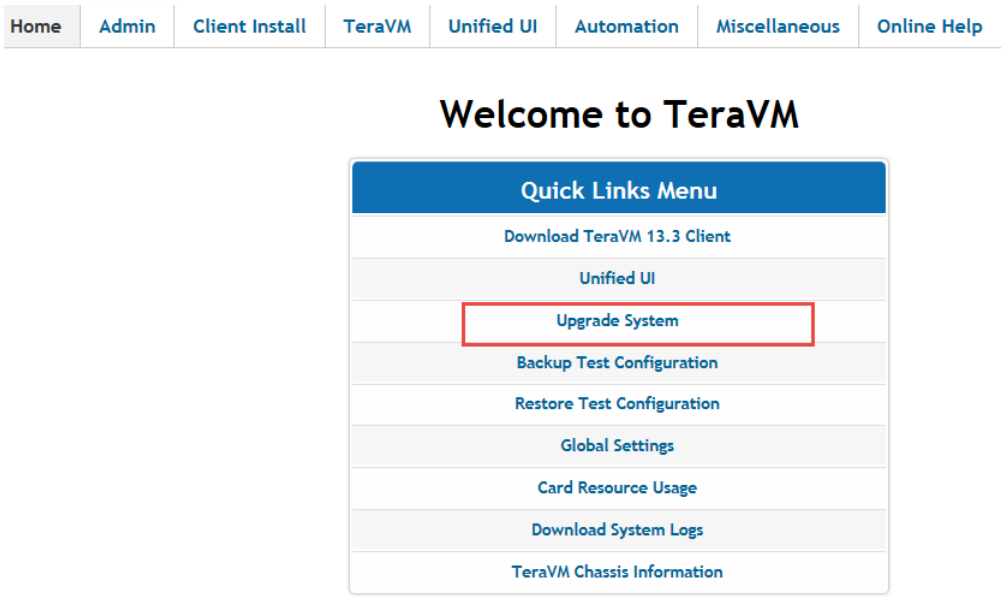
1. Download the upgrade from the location provided by Cobham support. Close any open TeraVM user interfaces and stop any tests.
2. In your browser, enter the IP address of the Executive/Controller.
3. Enter your *User Name* and *Password* and click **Sign In**.
4. Select **Utilities**.

5. From the *Welcome to TeraVM* page, select **Upgrade System** and login using:

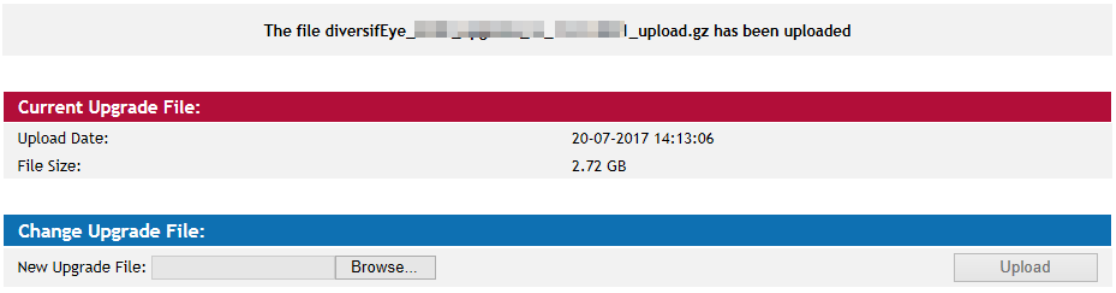
   User Name: **diverAdmin**

   Password: **diversifEye**

   Figure 3-3. Welcome to TeraVM



6. Select the **Choose File** button.
7. Select the appropriate patch file and click **Open**.
8. Click **Upload** and wait until the file has uploaded.



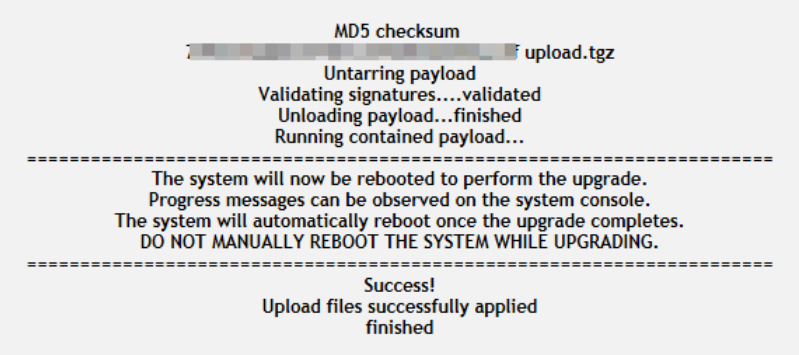
9. Click **Upgrade** and wait for the patch to complete upgrading.

   Note

   The controller reboots twice during the upgrade procedure.

   The upgrade progress can be followed using the Console on the VM or connecting to the Console on a physical system (d500/d1000).

If the system updates successfully, a message similar to the following appears:



10. Otherwise, a message will appear with instructions about how to ftp the upgrade file to the system. Follow these instructions to complete the upgrade step.

    Note

    Older hardware may require ftp. Contact Cobham support if you run into issues.

11. If you are a TeraVM Cybersecurity user, and have not already updated to the latest Cybersecurity Database, notethat this is an extra step in the upgrade process. For further details, contact Cobham Support.
12. Next, continue to the relevant platform set up guide, for example, VMWare EXSi, to deploy the TeraVM Test Modules and Executive

Chapter 4. Platforms

4.1. Hardware

Hardware Platforms

The matrix below shows which hardware TeraVM has been certified on.

Cisco UCS		**DELL**	
Model	***NIC***	***Model***	***NIC***
C240	Cisco VIC 1285 PCIe Ethernet NIC (40Gig)	R630	Intel 82599EB 10-Gigabit SFP
			Intel 10-Gigabit X540-AT2
C220	Cisco Systems Inc VIC 1225 PCIe Ethernet NIC (10Gig)		Broadcom (1G)
		R620	Intel 82599EB 10-Gigabit SFP
			Broadcom (1G)

4.2. Hypervisors

The 13.3 release has been tested with the following hypervisors and versions (AWS, XEN and Azure platforms are tested with major releases):

Table 4-1. Hypervisors

Hypervisor	**Hypervisor Version**	**TVM Version**	**TVM Types***	**vSwitch Type**	**Executive Version**	**Virtual NIC**
ESXi***	ESXi 5.5_U1 and U3		See ***	VMXNET3	1.7	VMware VMXNET3 virtual interface
KVM	Ubuntu 14.04.1/libvirt 1.2.2		TVM-5	OVS 2.0.2	1.7	virtio
	RedHat 7.1/libvirt 1.2.8-16**		TVM-5	Supplied with TeraVM	1.7	
AWS	AMI Virtual Private Cloud		TVM-2	Supplied by Amazon	1.7	N/A

**** For KVM on Red Hat, OVS 2.0.2 is supplied as part of TeraVM.

***Addtional ESXi Information

- ESXi supports TVM-2 to TVM-5, TVM-7, TVM-8 and TVM-16.
  - TVM-7 is supported for VPN applications only.
  - TVM-8 and TVM-16 are for use with Mellanox Cards. They require a mimimum version of ESXi of 5.5.0. Unlike other Test Module types which have only one core for interrupt processing, TVM-8 and TVM-16 use half of their cores for control.
- ESXi 5.5.x supports both Direct Path/DPIO and virtual switch configurations.
- You can now specify a solid state drive when deploying TeraVM.
- TeraVM is now also tested with ESXi version 6.0, but is not fully certified in performance tests.

Note

- vSphere/vCentre v6.0 supports Direct Path and vSwitch only. (SR-IOV is not supported).

4.3. Operating Systems

The following table shows the operating systems that TeraVM Java Client has been tested with.

Table 4-2. Operating Systems

Operating System	Version
Windows	7,8
Fedora (32-bit)	22

4.4. Web Browsers

TeraVM is developed to work with modern web browsers that support HTML5.

The following table shows the web browsers that TeraVM has been tested with. Cobham will make every reasonable effort to support older versions.

Table 4-3. Web Browsers

Browser	Version
Mozilla Firefox	42.0.49
Internet Explorer	11
Google Chrome	56

Chapter 5. Bugs Fixed and Known Issues

5.1. Bugs Fixed

The following defects were addressed in this release. For further details, please contact Cobham support.

Table 5-1. Bugs Fixed in This Release

Bug Number	Description
21519	Cannot run test on SR-IOV enabled NetXtreme II NICs when 1 TA is using more than 1 VF on the same PF
22808	TestGroup is being stopped with Exception if another user attempts to run a test on the same ports.
22858	NC ESP VPN: srrd>Agent ended unexpectedly with Error When Running Test
23021	Controller hangs at "request interfaces from Pool Manager". CLI JVM dies and automation fails
23382	Anyconnect SSL with Failover enabled sends increasing CSTP Frames each failover
23605	KVM: Java GUI crashes after a PDU capture (Due to an MTU mismatch between the Client PC and the Management port. Set these to the same value to prevent this networking issue from occurring.)
23625	Unable to login into TVM-C's webpage after upgrading the TeraVM Executive from 1.0-353 to 1.3-836
23683	Unfriendly exception when running EMIX ThroughPut or Soak test with External IPs
23678	If the JAVA UI is open while the CSDB test wtih 11k pcaps is running, it runs out of heap memory after 7k pcaps.
23771	Cannot run a test with the same VLAN on different Test Modules
23785	Cannot share a CSDB test
23788	Problems checking out a test from the CTL
23900	VoIP UA Internal error: Timer delay is zero or too large, (would cause wraparound)
24132	WARNING: Slow stats! Test Agent: 60/3 may be overloaded. Nominal Sample Time
24176	setServiceStateOfApplicationsInTestGroup with VoIP UA on TCP Characteristic Host fails with LazyInitializationException
24177	Upgrade to 1.4 (970) failed during upgrade to 13.0 on a 12.0.2 system
24233	* Executive VM - Services DNS Server - non DNS env prevents httpd daemon from starting up
24322	Dual Transport option leaves VoIP UA hanging after 100 Trying message
24370	Failed to import Certificates Resource. Could not transfer data file to server.

5.2. Known Issues

These are the known issues in this release. For further details, please contact Cobham support.

Table 5-2. Known Issues in this Release

Bug Number	Description
21453	IGMP JPS test stops on KVM
22759	On deploying a fresh RHEL 7.1 system the fourth TVM does not always start
23924	Teraflow connections rate limit no working
23925	Java error with NG40 Integration UUI scripts
24023	cli listInterfaces Match is not returning the correct count
24089	diversifEye client holding on to memory
24142	VoIP UA does not start after second Set In Service state change
24203	crash with tcp_slowtmr for large RTSP test using TCPO rate limiter when assets change
24228	TVM-E does not boot up
24238	LT reports with a new LS only show licences when they are check out, not in the subsequent days they are still checked out
24241	Font change on Java GUI
24330	VoIP UA SDP Attributes are added as oppose amended
24341	test agents drop when using GenericVPN App and ike-v1
24451	RabbitMQ Server not starting due to full /var/log and TVM-C cannot register with Executive

Appendix A. TeraVM Documentation Set

All TeraVM Guides are available for download at the TeraVM documentation portal:

http://ats.aeroflex.com/login-account

The complete TeraVM documentation set is listed below.

Table A-1. TeraVM User Guides

User Guides	**Description**
Release Notes	New features / Changes in the latest release. (Includes supported versions).
TeraVM HTML5 User Guide	TeraVM overview includes setting up and running tests in the HTML5 UI, Centralized Test Library.
TeraVM Java Client User Guide	How to create and run tests in the Java Client: Details of applications and hosts supported. There are also separate application notes for Citrix ICA, SIP trunking and EoGRE.
TeraVM CLI User Guide	Using the Automation Interface (CLI, Perl commands and RFC scripts) for testing. Also man pages are available for commands and scripts in the Documentation sub-directory *cli*.
TeraVM Appliance Set Up Guide	TeraVM Hardware Appliance Set Up (Appliance Customers only).
TeraVM vRAN User Guide	Combined NG4T / Cobham solution for RAN, Core and Peripheral IP Emulation for 4G.
TeraVM Licensing Guide	How to set up and configure licensing features, e.g. set up license servers and license reporting.
TeraVM Application Library Test Configuration Guide, Application Library Repository Users Guide	Traffic generation test solution for creating application flows. Includes repository setup information.

Table A-2. Hypervisor/Cloud Specific TeraVM Set Up Guides

Hypervisor/Cloud Environment	**Document Name**
ESXi	TeraVM on VMWare Set Up Guide
KVM	TeraVM on KVM Set Up Guide
OpenStack on KVM	TeraVM on OpenStack Set Up Guide
Citrix XenServer	TeraVM on Citrix Xen Set Up Guide
Hyper-V	TeraVM on Hyper-V Set Up Guide
Amazon AWS	TeraVM on Amazon AWS Set Up Guide
Microsoft Azure	TeraVM on Microsoft Azure Set Up Guide

Table A-3. TeraVM Reference Guides

Reference Guides	**Description**
TeraVM Metrics Guide	Statistics/Metrics available with TeraVM
CLI Reference Guides (under *Documentation/cli*).	Man pages are available for commands and scripts in the Documentation sub-directory

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