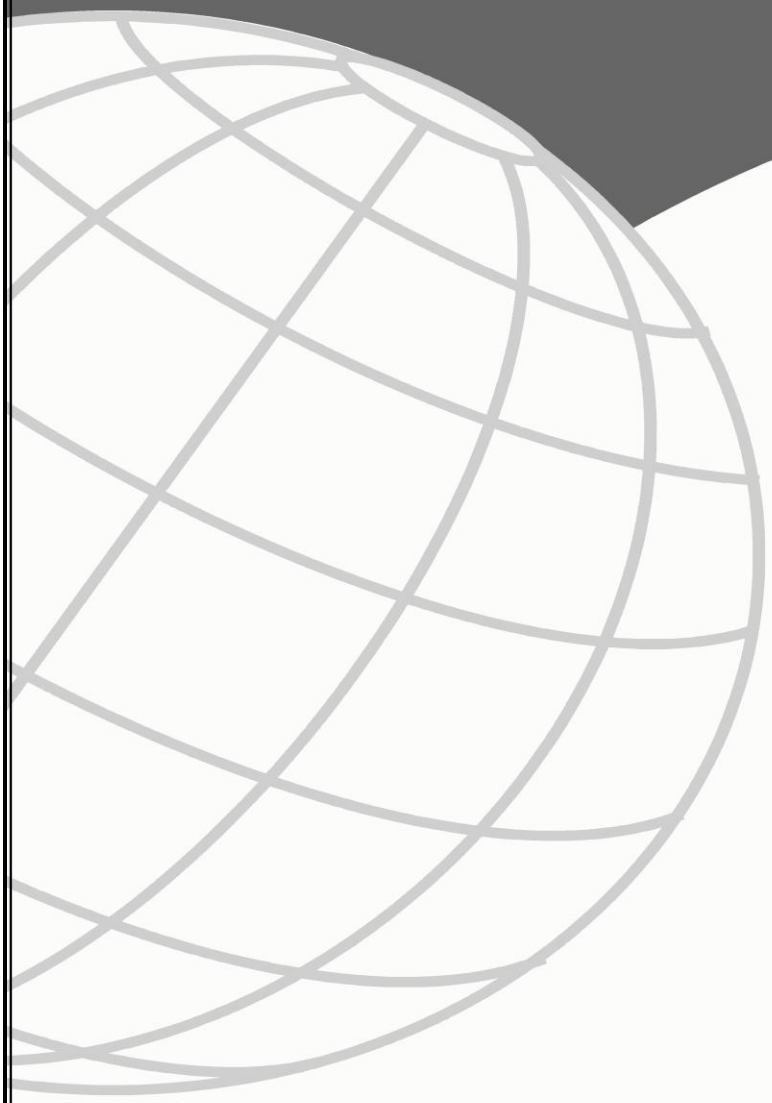

Monitoring Open VPN Access Server

eG Enterprise v6

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Table of Contents

Table of Figures

1 Monitoring the OpenVPN Access Server

OpenVPN Access Server is a full featured SSL VPN software solution that integrates OpenVPN server capabilities, enterprise management capabilities, simplified OpenVPN Connect UI, and OpenVPN Client software packages that accommodate Windows, MAC, Linux, Android, and iOS environments. OpenVPN Access Server supports a wide range of configurations, including secure and granular remote access to internal network and/ or private cloud network resources and applications with fine-grained access control.

An OpenVPN Access Server deployment consists of one server, many clients and many users, as depicted in Figure 1. Each client machine in this topology uses the public IP network (the Internet) to communicate with the OpenVPN Access Server and thereby gains VPN-protected access to the private IP Network connected (if present).

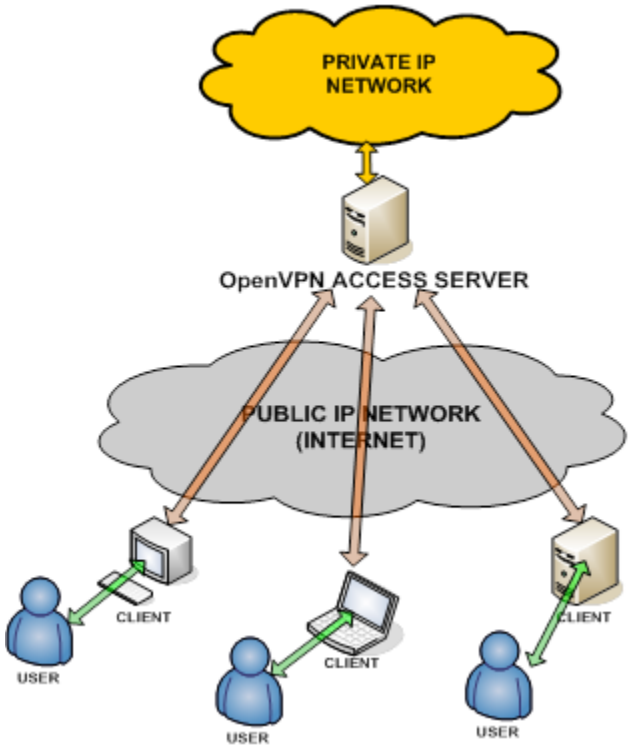

Figure 1: The OpenVPN Access server topology

If adequate licenses are not available in the OpenVPN Access server, then the users will not be able to connect to the Private IP Network. Also sometimes, a particular user may hog the bandwidth of the network by transmitting/ receiving large chunks of data through the server. It is therefore imperative that the OpenVPN Access server is monitored periodically for assessing the license utilization and the user details.

1.1 Prerequisites for monitoring the Open VPN Access server

To monitor the Open VPN Access server, you should provide certain user privileges that are required to execute the commands for monitoring the Open VPN Access server. To provide the user with the necessary privileges, do the following:

1. Login to the Open VPN Access server host through **putty.exe**.

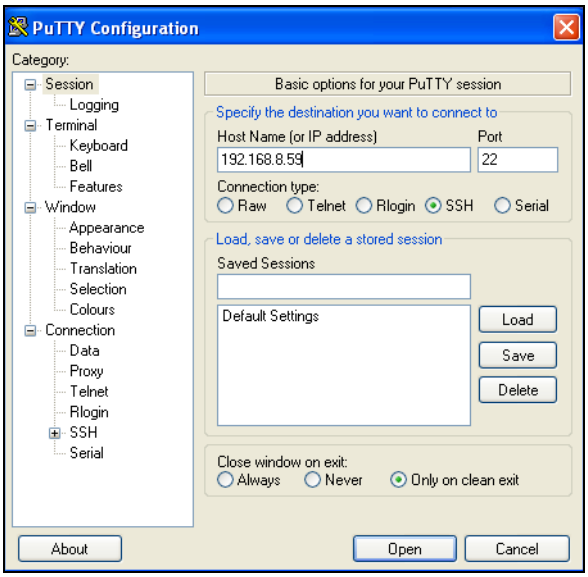

Figure 2: Login to Putty

2. Upon logging in, navigate to the **/etc/sudoers** file of the Open VPN Access server. By default, certain user privileges are required to execute the commands for monitoring the Open VPN Access server. The default user privileges to the server will be "ALL" (see Figure 3).

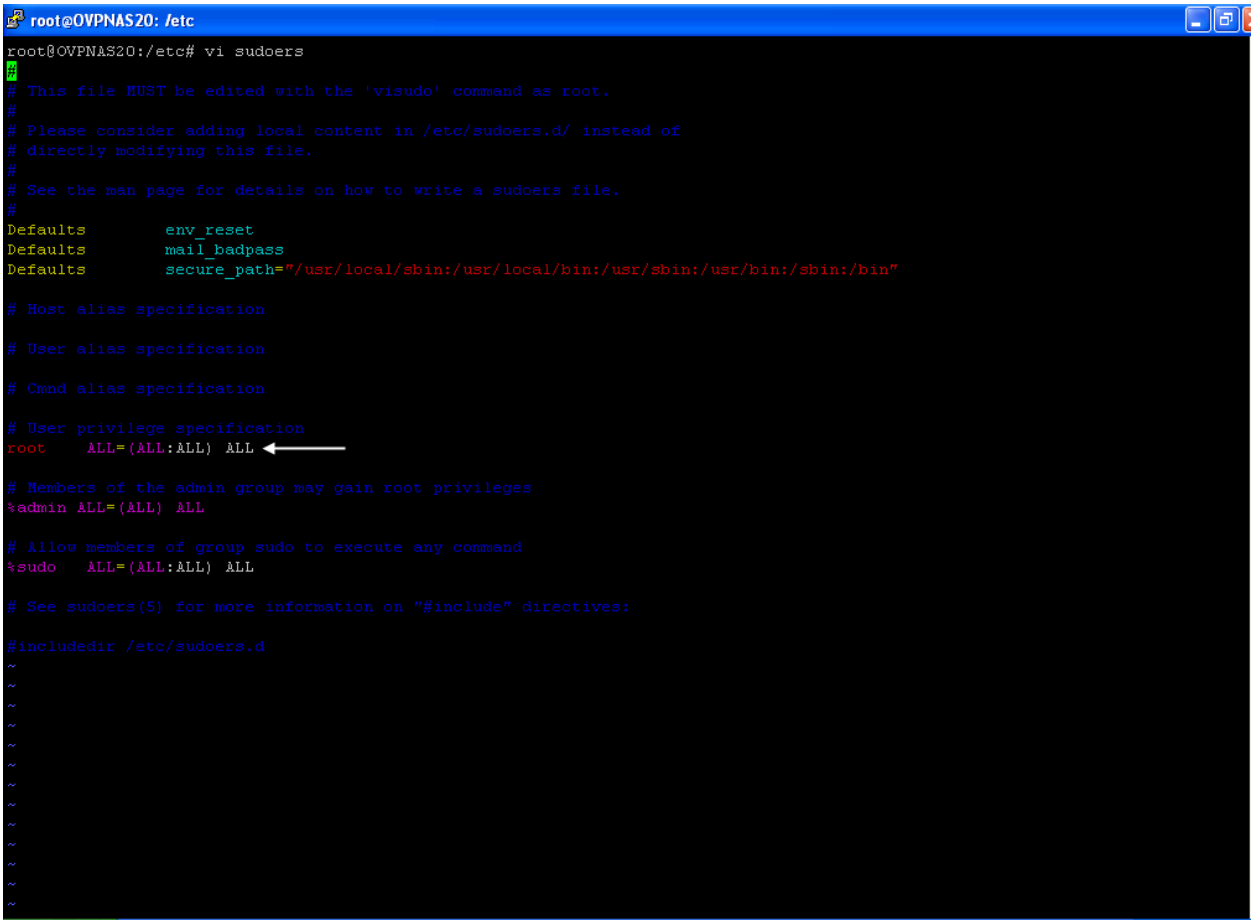

Figure 3: The default user privileges

3. If the target environment does not allow the eG Enterprise suite to use the default user for monitoring, then you need to create a new user with the default user privileges. You can do so by including the new user below the default user available under the **User privilege specification** section (see Figure 3). If you wish to create a new user for e.g., **eguser** with the default user privileges, then do so as shown in Figure 4.

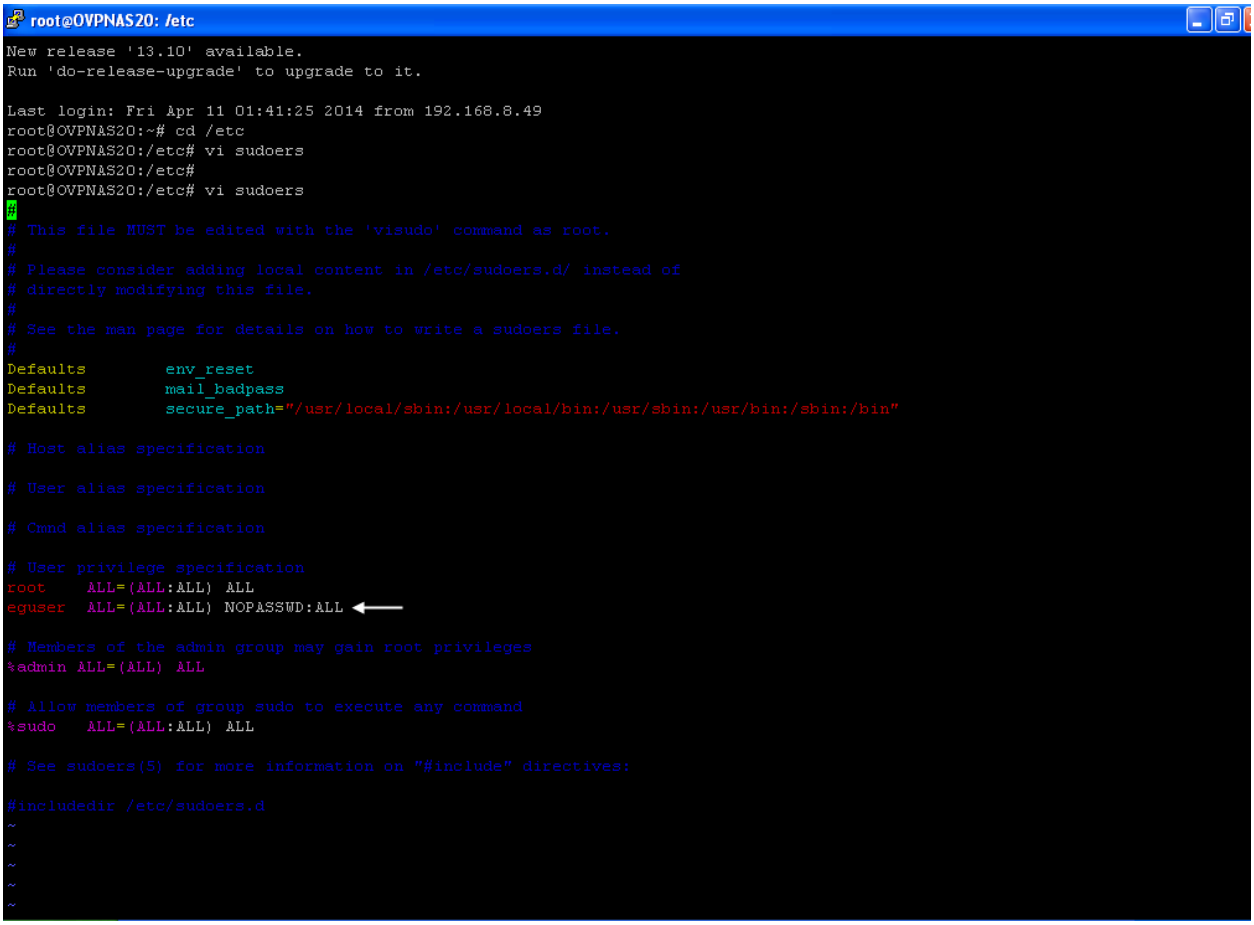

Figure 4: Creating a new user with the default user privileges

By providing the default user privileges, **eguser** acquires the entire monitoring rights of the Open VPN Access server.

4. If the administrator of the target environment does not wish to provide the default user privileges to the **eguser** , then you can limit the user privileges to monitor only the tests that need to be executed by the eG Enterprise suite. To do so, specify the following command (see Figure 5).

```
eguser          ALL=(ALL:ALL)          NOPASSWD:/usr/local/openvpn_as/scripts/sacli
VPNSummary,/usr/local/openvpn_as/scripts/sacli VPNStatus
```

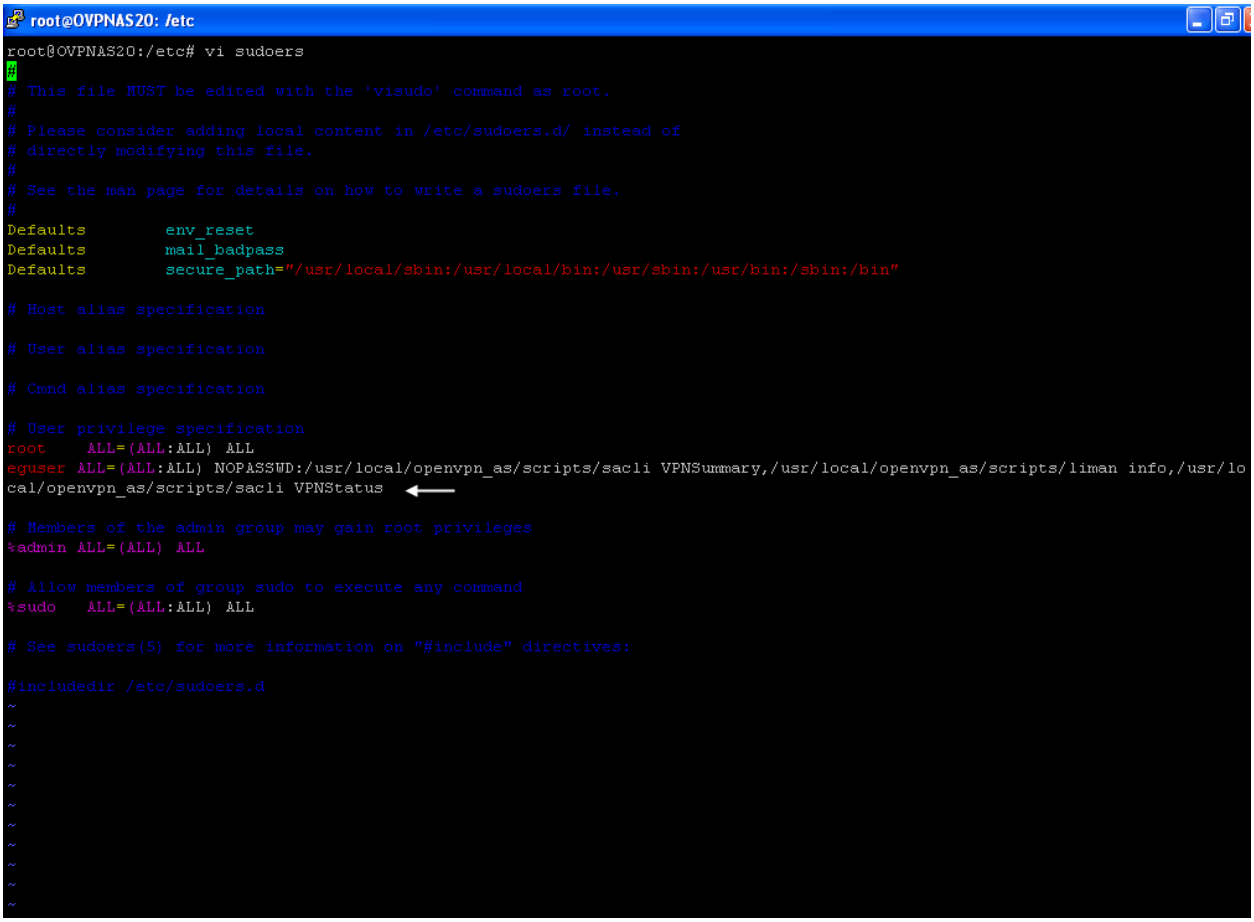

Figure 5: Creating a new user with limited user privileges required for monitoring the server

5. Once the necessary user privileges are provided, the target Open VPN Access server is ready for monitoring by the eG Enterprise suite.

eG Enterprise has designed a specialized *OpenVPN Access server* monitoring model (see Figure 6), which periodically monitors the server and reports the administrators with effective pointers to the utilization of the licenses, and the users who are currently connected to the server and their data transmission. The following queries too can be easily clarified by monitoring the server:

- How many users are actually connected to the OpenVPN Access server?
- Are there adequate licenses available for users? If so, How many are available totally and how many are left for users in future?
- How long has a user been active over the network through the OpenVPN Access server? Which user is hogging the bandwidth of the network when data is transmitted/received?

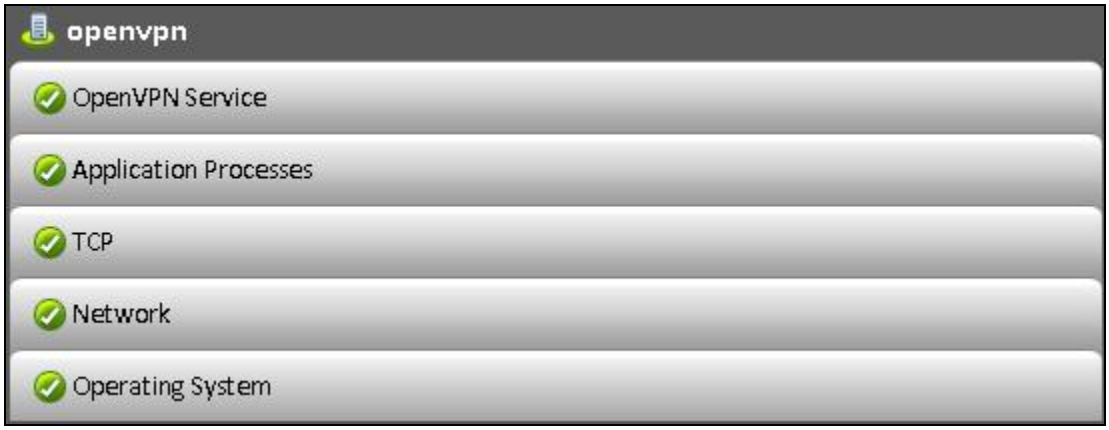

Figure 6: The layer model of the OpenVPN Access server

Since the tests pertaining to the **Operating System**, **Network**, **TCP** and **Application Processes** layer of the *OpenVPN Access Server* model have been dealt with in the *Monitoring Unix and Windows Servers* document, Section 1.2 focuses on the **OpenVPN Service** layer.

1.2 The OpenVPN Service Layer

This layer tracks the number of users who are concurrently connected to the server, the license utilization of the server, the time duration for which a user was active and the amount of data that is transmitted/received by the user. Figure 7 lists the tests that are currently mapped to the OpenVPN Service layer.

Figure 7: The tests mapped to the OpenVPN Service layer

1.2.1 OpenVPN Users Test

Administrators may constantly wish to be alerted on the number of users who are currently connected to the OpenVPN Access server so that they can monitor the user login patterns at any given time. The **OpenVPN Users** test exactly does the same! This test continuosly tracks the number of users who are currently connected to the server so that the administrator can rapidly detect a sudden surge in the number of users connecting to the server.

Purpose	Continuously tracks the number of users who are currently connected to the server
Target of the test	An OpenVPN Access Server
Agent deploying the test	An internal/remote agent

Configurable parameters for the test	1. **TEST PERIOD** - How often should the test be executed 2. **HOST** – The host for which the test is to be configured. 3. **PORT** – The port at which the specified host listens. By default, this is *NULL*.		
Outputs of the test	One set of results for the OpenVPN Access server that is to be monitored		
Measurements made by the test	**Measurement**	**Measurement Unit**	**Interpretation**
	Active users: Indicates the number of users who are currently connected to the server.	Number	An abnormally high value for this measure indicates a malicious attack on the server which is a cause of concern.

1.2.2 OpenVPN User License Test

A license is always required for the OpenVPN Access server installation. It can either be a free license or a purchased license. Once the server is installed, each license carries a maximum number of concurrent users who will be able to connect to the server. Depending on the number of users connecting to the OpenVPN Access servers, multiple licenses can be obtained. In case of purchased licenses, the maximum number of concurrent user count is additive and in the case of free licenses, the user count is not additive. If multiple free licenses are activated, then the user count will be the maximum of the individual user counts for each free license. Administrators may constantly need to track the utilization and availability of the licenses so that end user experience in connecting to the OpenVPN Access server would not be affected at all! This is where the **OpenVPN User License** test helps! This test monitors how well the licenses are managed by the OpenVPN Access server. This way, the administrators can figure out from a single glance the total number of licenses, the licenses that are already exhausted and the licenses that are available for future use.

Purpose	Monitors how well the licenses are managed by the OpenVPN Access server.		
Target of the test	An OpenVPN Access server		
Agent deploying the test	An internal/remote agent		
Configurable parameters for the test	1. **TEST PERIOD** - How often should the test be executed 2. **HOST** – The host for which the test is to be configured. 3. **PORT** – The port at which the specified **HOST** listens. By default, this is *NULL*.		
Outputs of the test	One set of results for the OpenVPN Access server that is to be monitored		
Measurements made by the	**Measurement**	**Measurement Unit**	**Interpretation**

test	**Total licenses:** Indicates the total number of licenses that are available for this server.	Number	The value of this measure is the sum of the *Licenses used* and the *Available licenses* measure.
	Licenses used: Indicates the number of licenses that are currently in use.	Number	If the *Licenses used* measure is equal to the *Total licenses* measure, then the *Available licenses* measure would be *0* which clearly indicates that all the licenses are already exhausted. This would terribly affect the user experience with the OpenVPN Access server. Therefore, administrators may want to be alerted when the *Licenses used* measure reaches close to the *Total licenses*, so that they may marginally increase the number of licenses.
	Available licenses: Indicates the number of licenses that are currently available for use.	Number	

1.2.3 OpenVPN User Details Test

In secure environments where users connect to the target IP network through the OpenVPN Access server, administrators may want to figure out the duration of the time a user has spent over the network accessing the network resources. Similarly, administrators may also want to monitor the data transmission for each user through the server so that they can figure out the user who has hogged the bandwidth limit of the network while transmitting/receiving the maximum amount of data. This is where the **OpenVPN User Details** test helps! For each user accessing the OpenVPN Access server, this test monitors the data transmitted and received by the user while accessing the resources of the network through the OpenVPN Access server and the time duration for which the user was active on the network. This way, administrators can figure out the user who has been very active over a period of time!

Purpose	For each user accessing the OpenVPN Access server, this test monitors the data transmitted and received by the user while accessing the resources of the network through the OpenVPN Access server and the time duration for which the user was active on the network		
Target of the test	An OpenVPN Access server		
Agent deploying the test	An internal/remote agent		
Configurable parameters for the test	1. **TEST PERIOD** - How often should the test be executed 2. **HOST** – The host for which the test is to be configured. 3. **PORT** – The port at which the specified **HOST** listens. By default, this is *NULL*.		
Outputs of the test	One set of results for each user of the OpenVPN Access server that is to be monitored		
Measurements made by the test	**Measurement**	**Measurement Unit**	**Interpretation**
	Data transmitted: Indicates the amount of data transmitted by this user.	KB	Comparing the value of these measures across the users helps you in identifying the VPN user who is hogging the bandwidth of the network by transmitting/receiving the maximum amount of data.
	Data received: Indicates the amount of data received by this user.	KB	
	Active session duration: Indicates the time duration for which this user was active.	Mins	Comparing the value of this measure across the users reveals the most active user on the server.

2

Conclusion

This document has described in detail the monitoring paradigm used and the measurement capabilities of the eG Enterprise suite of products with respect to the **OpenVPN Access server**. For details of how to administer and use the eG Enterprise suite of products, refer to the user manuals.

We will be adding new measurement capabilities into the future versions of the eG Enterprise suite. If you can identify new capabilities that you would like us to incorporate in the eG Enterprise suite of products, please contact support@eginnovations.com. We look forward to your support and cooperation. Any feedback regarding this manual or any other aspects of the eG Enterprise suite can be forwarded to feedback@eginnovations.com.