



Hewlett Packard
Enterprise

HPE Security ArcSight ESM: VPN Monitoring

Software Version: 1.1

Security Use Case Guide

April 3, 2017

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Chapter 1: Overview

A Virtual Private Network (VPN) is the standard for extending your internal network to properly authorized users outside the normal network perimeter. There are potential security risks associated with any VPN implementation.

The VPN Monitoring use case helps you monitor your VPN devices using statistical information about access to critical network assets. You can use this use case for sophisticated data analysis and correlation to detect and analyze security threats, such as network infiltration and data leakage.

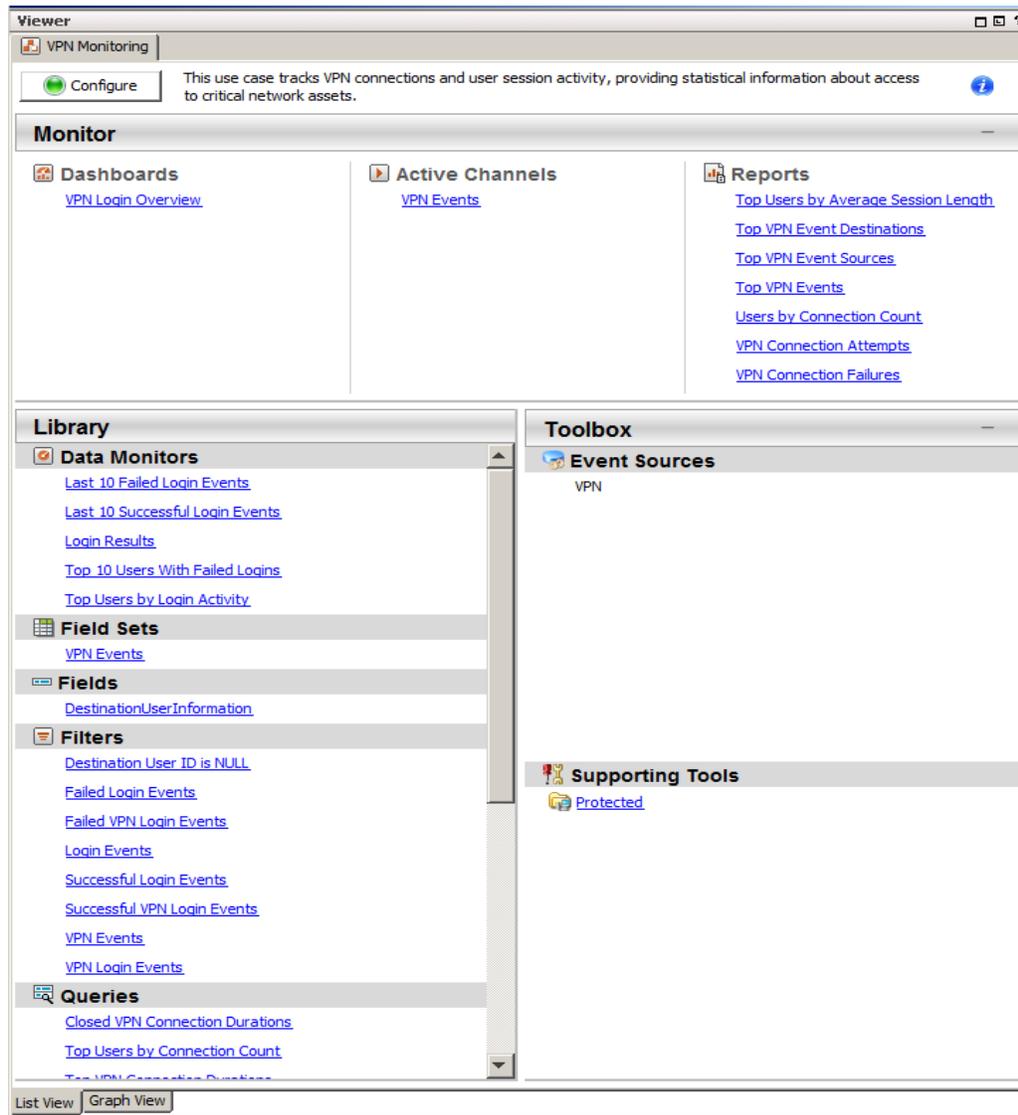
Use the resources in this use case for incident investigation as well as routine monitoring to detect suspicious, abnormal or malicious activity:

- A **dashboard** is provided to show an overview of VPN login activity in real time. You can view the top ten users with the most login activity and the most failed logins, as well as all login results (attempted, successful, and failed) and the last ten failed and the last ten successful login events.
- An **active channel** is provided so that you can investigate all VPN events received within the last ten minutes.
- Several **reports** provide charts and tables showing historical information about the top VPN events, event sources, event destinations, and the top users by average session length. Other reports show the number of VPN connections for each user, and VPN connection attempts and failures.

You can access the VPN Monitoring use case from the **Use Cases** tab of the ArcSight Console Navigator panel. The Monitor section of the use case lists the dashboard, active channel, and reports used to monitor traffic and investigate events. The Library section of the use case lists all supporting resources that help compile information in the dashboard, active channel, and reports.

The use case also provides a configuration wizard that guides you through required configuration.

The VPN Monitoring use case is shown below.



This document describes how to install, configure, and use the VPN Monitoring use case and is designed for security professionals who have a basic understanding of ArcSight ESM and are familiar with the ArcSight Console. For detailed information about using ArcSight ESM, see the ArcSight ESM help system from the ArcSight Console **Help** menu. Find PDFs of all ArcSight documentation on [Protect 724](#).

Chapter 2: Installation

To install the VPN Monitoring use case, perform the following tasks in the following sequence:

1. Download the VPN Monitoring use case zip file into the ArcSight Console system where you plan to install the use case, then extract the zip file.
2. Log into the ArcSight Console as administrator.

Note: During the package installation process, do not use the same administrator account to start another Console or Command Center session simultaneously. This login is locked until the package installation is completed.

3. Verify if you have a previous version of the use case package you want to install. If so, uninstall and delete this previous version:
 - a. On the **Packages** tab of the Navigator panel, right-click the package and select **Uninstall Package**. The package icon is gray when it is uninstalled.
 - b. Right-click the package and select **Delete Package**.

4. On the Packages tab, verify if **Downloads Groups** is already installed. If you see packages in /A11 Packages/Downloads/Downloads Groups, then ignore this step.

If the Downloads Groups package is not present, import and install the *Downloads_Groups_1.0.arb* package. See "[Importing and Installing a Package](#)" on the next page for details.

5. Import and install the VPN Monitoring use case package. See "[Importing and Installing a Package](#)" on the next page for details.
6. Assign user permissions to the VPN Monitoring resources. See "[Assigning User Permissions](#)" on page 8 for details.

Importing and Installing a Package

Follow the steps below to import and install the package(s). This assumes you have downloaded the zip file and extracted the contents into the ArcSight Console system.

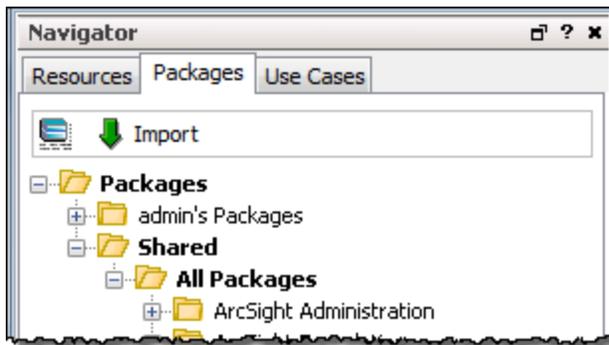
- If the ArcSight Console does not have the Downloads Groups package in /All Packages/Downloads/Downloads Groups, import and install the package first. Then repeat the steps to import and install the **VPN Monitoring** use case package.

Note: The Downloads Groups package contains the groups used by the resources in the security use case; you must import and install this package first.

- If the Downloads Groups package is already installed, follow the steps to import and install the **VPN Monitoring** use case package only.

To import and install a package:

1. Log into the ArcSight Console as administrator. In the Navigator panel, click the **Packages** tab.



2. Click **Import**.
3. In the Open dialog, browse and select the package file (*.arb) you want to import, then click **Open**. The Importing Packages dialog shows how the package import is being verified for any resource conflicts.
4. In the Packages for Installation dialog, make sure that the check box is selected next to the name of the package you want to install and click **Next**. The Progress tab shows how the installation is progressing. When the installation is complete, the Results tab displays the summary report.
5. In the Installing Packages dialog, click **OK**. In the Importing Packages dialog, click **OK**.
6. On the **Packages** tab of the Navigator panel, expand the package group in /All Packages/Downloads/ to verify that the package group is populated and that installation is successful.

Assigning User Permissions

By default, users in the Administrators and Default User Groups/Analyzer Administrators user groups can view and edit the resources. Users in the Default User Groups (and any custom user group under this group) can only view VPN Monitoring resources. Depending on how you set up user access controls within your organization, you might need to adjust those controls to make sure the resources are accessible to the right users.

Note: By default, the Default User Groups/Analyzer Administrators user group does not have edit permissions for archived reports in the Downloads group.

The following procedure assumes that you have logged into the ArcSight Console as administrator, and that you have set up the required user groups with the right users.

To assign user permissions:

1. In the Navigator panel, open the **Resources** tab.
2. For each of the resource types provided in the use case, navigate to Downloads/VPN Monitoring.
3. Right-click the VPN Monitoring group and select **Edit Access Control** to open the ACL editor in the Inspect/Edit panel.
4. Select the user groups for which you want to grant permissions and click **OK**.

Chapter 3: Configuration

Before configuring the use case, make sure that you have populated your ESM network model. A network model keeps track of the network nodes participating in the event traffic. For information about populating the network model, refer to the *ArcSight Console User's Guide*.

The VPN Monitoring use case requires the following configuration for your environment:

- Install the appropriate ArcSight SmartConnectors to receive relevant events. For example, to receive relevant events from Cisco VPN devices, install the SmartConnector for Cisco VPN Syslog.
- Manually categorize all internal assets (assets inside the company network), or the zones to which the assets belong, with the **Protected** asset category (located in /All Asset Categories/Site Asset Categories/Address Spaces/Protected). Assets that are not categorized as internal to the network are considered to be external. Make sure that you also categorize assets that have public addresses but are controlled by the organization (such as Web servers) as **Protected**.

A configuration wizard is provided to guide you through some of the required configuration. Follow the procedure below.

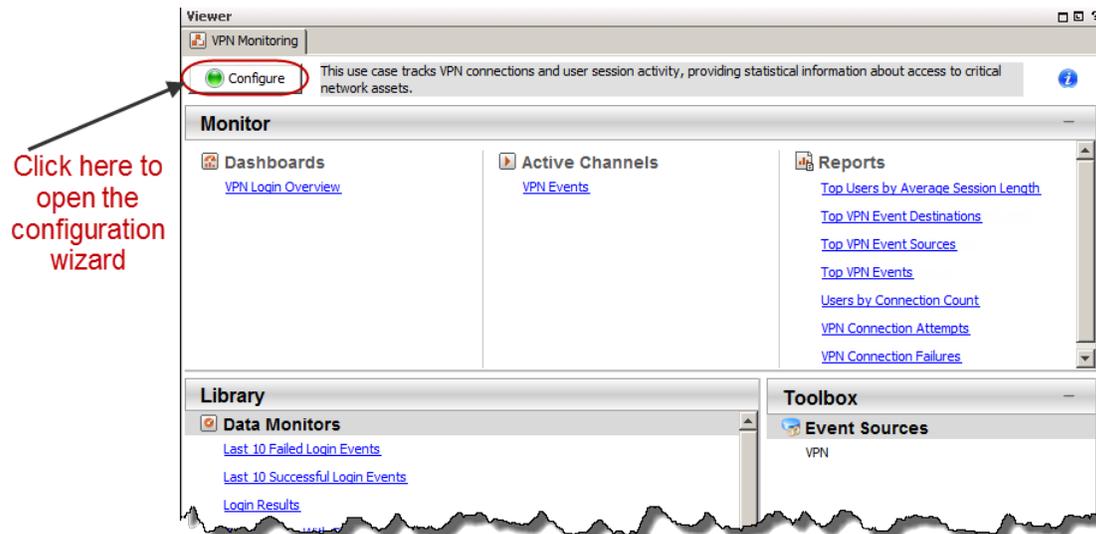
Note: You must categorize assets internal to the network manually; the procedure is not part of the configuration wizard. For information about categorizing assets, see the *ArcSight Console User's Guide*.

To configure the VPN Monitoring use case:

1. In the Navigator panel, click the **Use Cases** tab.
2. Browse for the **VPN Monitoring** use case located in /All Use Cases/Downloads/VPN Monitoring.
3. Open the VPN Monitoring use case : either double-click the use case or right-click the use case and select **Open Use Case**.

The VPN Monitoring use case lists all the resources used for monitoring VPN activity.

4. Click the **Configure** button to open the configuration wizard.



5. Click **Next** to follow the configuration steps.

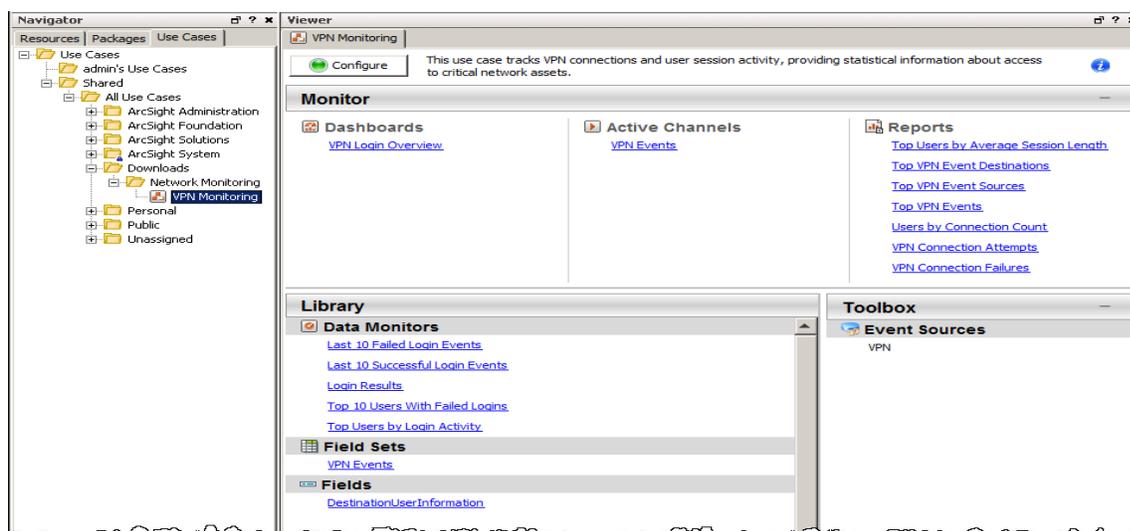
After you configure the VPN Monitoring use case, you are ready to monitor your VPN devices. See ["Using the VPN Monitoring Use Case"](#) on page 11.

Chapter 4: Using the VPN Monitoring Use Case

Case

The VPN Monitoring use case is located on the **Use Cases** tab in the Navigator panel under /All Use Cases/Downloads/VPN Monitoring.

To open the VPN Monitoring use case in the Viewer panel, either double-click the use case or right-click the use case and select **Open Use Case**.



The Monitor section of the VPN Monitoring use case provides resources to help you monitor and investigate VPN-related activity:

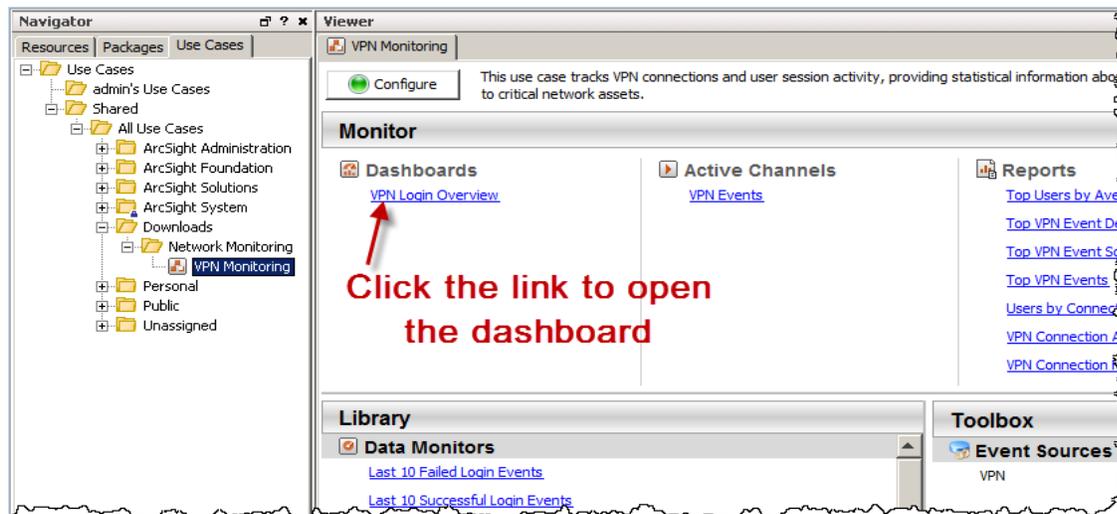
- Use the dashboard to monitor all VPN login activity in real time. See "[Monitoring VPN Login Activity in a Dashboard](#)" on the next page.
- Use the active channel to investigate all VPN events. See "[Investigating VPN Events in an Active Channel](#)" on page 13.
- Run reports that show the top VPN events, event sources, event destinations, and users by average session length. The reports also show the number of VPN connections for each user, and VPN connection attempts and failures. See "[Running Reports](#)" on page 15.

The Library section of the VPN Monitoring use case lists all supporting resources that help compile information in the dashboard, active channel, and reports and includes rules that generate correlated events when triggered. The rules are described in "[VPN Monitoring Rules](#)" on page 18.

Monitoring VPN Login Activity in a Dashboard

The VPN Monitoring use case provides a dashboard to help you monitor VPN login activity in real time. Use the information in the dashboard to look for patterns of use or misuse, or any unusual activity that might indicate potential security concerns.

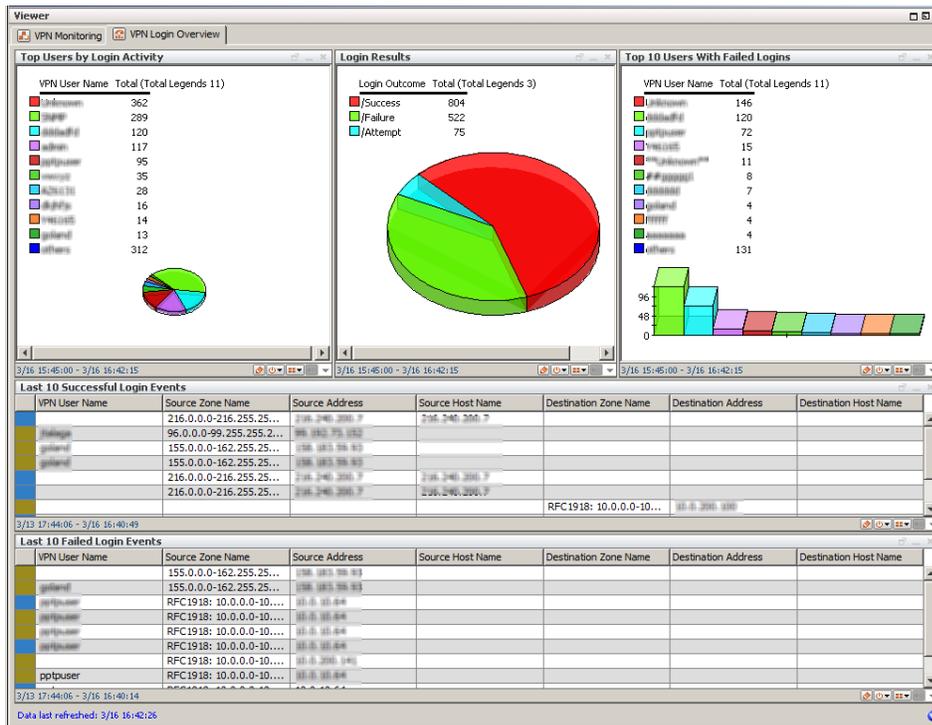
To open the dashboard, click the link for the **VPN Login Overview** dashboard in the VPN Monitoring use case.



The dashboard opens in the Viewer panel of the ArcSight Console and displays these data monitors:

- **Top Users by Login Activity** displays a pie chart showing the top ten users with the most VPN login activity within the last 60 minutes. Investigate any unusual or excessive login activity by a user as this might indicate a potential security concern. For example, an excessive number of logins by a particular user might indicate that a brute force attack is in progress.
- **Login Results** displays a pie chart showing the number of VPN login attempts, successes, and failures within the last 60 minutes. Examine this data monitor for unusual patterns that might indicate that an attack is being attempted.
- **Top 10 Users With Failed Logins** shows the ten users with the highest number of failed VPN logins within the last 60 minutes. This information is very useful to determine if somebody is trying to compromise your network through your VPN device. Investigate repeated or abnormal failed connections as they might indicate potential attacks.
- **Last 10 Successful Login Events** shows information about the last ten successful logins to a VPN device. You can see the VPN user name, source, destination, and zone information. Watch this activity for any unusual behavior.
- **Last 10 Failed Login Events** shows details about the last ten VPN logins that failed. You can see the VPN user name, the source, destination, and zone information. Investigate multiple failed VPN logins from the same user as this might indicate malicious activity.

An example **VPN Login Overview** dashboard is shown below.



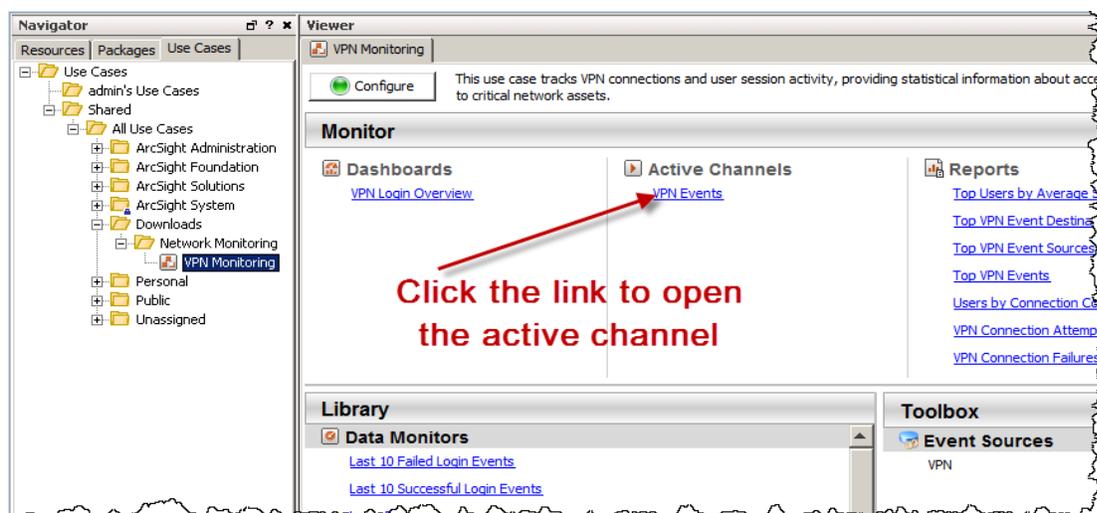
Right-click on an item in a data monitor and select **Investigate > Create Channel** to open an active channel and investigate events further. For example, right-click on a user name in the **Top Users by Login Activity** data monitor and select **Investigate > Create Channel** to open an active channel and investigate the user to obtain details, such as the source IP address and the destination IP address. In the active channel, you can also:

- Create an inline filter to focus on events of interest; for example, you can filter on a specific user name or source address. For detailed information about using inline filters, see the *ArcSight Console User's Guide*.
- Double-click on an event in the active channel to open the event inspector and see details about the event.

Investigating VPN Events in an Active Channel

The VPN Monitoring active channel shows all VPN events received within the last ten minutes. Observing and understanding VPN events is essential to the security of your environment and can help you prevent malicious activity and mitigate significant security risks.

To open the active channel, click the **VPN Events** link in the VPN Monitoring use case.



The **VPN Events** active channel opens in the Viewer panel. An example **VPN Events** active channel is shown below.

End Time	Name	Source Address	Source Host Name	Source Zone Name	Destination User Name	Destination Address	Destination Zone Name	Priority
15 Apr 2015 11:03:35 PDT	CC Users	127.0.0.1	testPeer13467	RFC1700: 127.0.0.0-...				
15 Apr 2015 11:03:34 PDT	CC Users	127.0.0.1	testPeer13467	RFC1700: 127.0.0.0-...				
15 Apr 2015 11:03:33 PDT	CC Users	127.0.0.1	testPeer5912	RFC1700: 127.0.0.0-...				
15 Apr 2015 11:03:22 PDT	CC Users	127.0.0.1	testPeer5912	RFC1700: 127.0.0.0-...				
15 Apr 2015 11:03:18 PDT	Overriding Initiators IPsec rekeying du...							
15 Apr 2015 11:03:11 PDT	Overriding Initiators IPsec rekeying du...							
15 Apr 2015 11:03:07 PDT	Session End	26.1.1.10		cn_zone				
15 Apr 2015 11:03:06 PDT	Establish Request	158.237.246.46		155.0.0.0-162.255.2...	4.11.66.46			Level 3 Communicatio...
15 Apr 2015 11:03:00 PDT	Overriding Initiators IPsec rekeying du...							
15 Apr 2015 11:02:59 PDT	Intest start vpn session3	172.0.0.0	intest_guaratin_172...	172.0.0.0-172.15.25...	test_defuramae268...	164.0.0.0-169.253.2...		
15 Apr 2015 11:02:54 PDT	Connect Success	110.0.0.0	MFI11111129101.1pp...	110.0.0.0-126.255.2...		110.0.0.0-126.255.2...		
15 Apr 2015 11:02:51 PDT	RES_REQ_OK	192.168.0.3		RFC1918: 192.168.0...	admin	192.168.0.3	RFC1918: 192.168.0...	
15 Apr 2015 11:02:48 PDT	Connect Success	110.0.0.0	MFI11111129101.1pp...	110.0.0.0-126.255.2...		110.0.0.0-126.255.2...		
15 Apr 2015 11:02:47 PDT	Rule allowed							
15 Apr 2015 11:02:43 PDT	Intest start vpn session3	172.0.0.0	intest_guaratin_172...	172.0.0.0-172.15.25...	test_defuramae268...	164.0.0.0-169.253.2...		
15 Apr 2015 11:02:43 PDT	CC Users	127.0.0.1	testPeer5912	RFC1700: 127.0.0.0-...				
15 Apr 2015 11:02:40 PDT	CC Users	127.0.0.1	testPeer5912	RFC1700: 127.0.0.0-...				
15 Apr 2015 11:02:36 PDT	DeSa	1.1.1.1		1.0.0.0-1.255.255.2...				
15 Apr 2015 11:02:35 PDT	Logout							
15 Apr 2015 11:02:33 PDT	CC Users	127.0.0.1	testPeer5912	RFC1700: 127.0.0.0-...				
15 Apr 2015 11:02:29 PDT	CC Users	127.0.0.1	testPeer13467	RFC1700: 127.0.0.0-...				
15 Apr 2015 11:02:17 PDT	CC Users	127.0.0.1	testPeer5912	RFC1700: 127.0.0.0-...				
15 Apr 2015 11:02:14 PDT	Management user disconnected				admin			
15 Apr 2015 11:02:11 PDT	CC Users	127.0.0.1	testPeer13467	RFC1700: 127.0.0.0-...				
15 Apr 2015 11:02:10 PDT	CC Users	127.0.0.1	testPeer13467	RFC1700: 127.0.0.0-...				
15 Apr 2015 11:02:05 PDT	CC Users	127.0.0.1	testPeer5912	RFC1700: 127.0.0.0-...				
15 Apr 2015 11:02:00 PDT	Context is closing due to	26.1.260.100		RFC1918: 10.0.0.0-1...				
15 Apr 2015 11:02:00 PDT	CC Users	127.0.0.1	testPeer5912	RFC1700: 127.0.0.0-...				
15 Apr 2015 11:01:59 PDT	CC Users	127.0.0.1	testPeer13467	RFC1700: 127.0.0.0-...				

Examine these events to spot any unusual patterns involving VPN user logins, and start and terminate VPN sessions. Be sure to investigate events with an ESM priority higher than 7 as this might represent a potential risk to your network. The priority of an event is listed in the Priority column on the far right of the active channel display. You might have to scroll to see the Priority column.

Right-click an item (such as IP address) and select **Show Event Details** to see detailed information about the event. You can also create an inline filter to display events from a specific item. See the *ArcSight Console User's Guide's* topic on using active channels for information about menu options and inline filters.

Note: The events displayed in an active channel do not refresh automatically at ten-minute

intervals. To refresh the view, click the **Stop** and **Replay** channel controls in the toolbar.



Depending on your environment, ESM load, and specific investigation needs, you can configure an active channel to use continuous, automatic channel refresh: Right-click the link for the active channel in the use case and select **Edit Active Channel**. From the Time Parameters drop-down on the Attributes tab of the Inspect/Edit panel, select **Continuously evaluate**.

Note: In a high EPS environment, you might see performance issues if you scroll down to try and view all the events in the active channel.

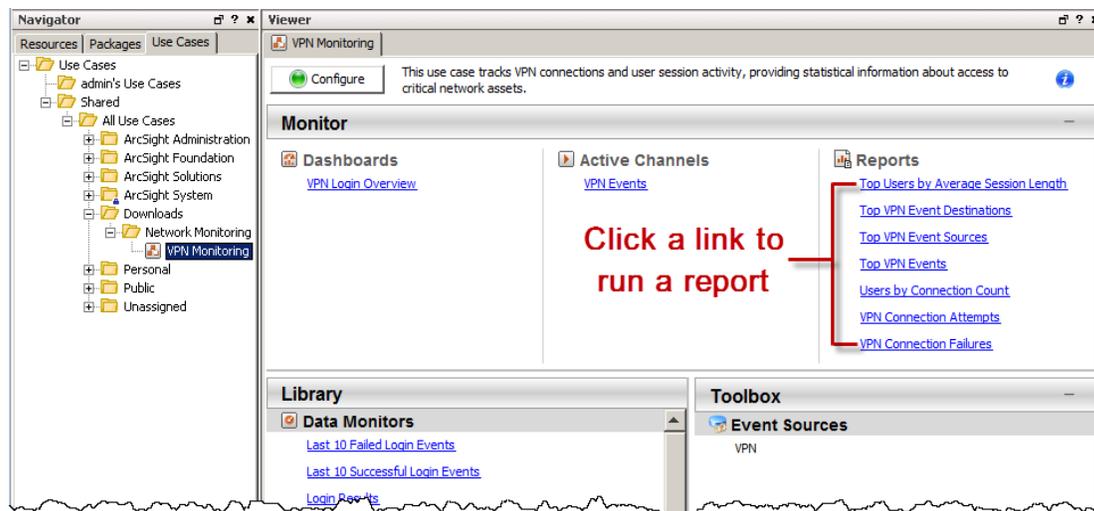
Running Reports

The VPN Monitoring use case provides several reports that you can run to obtain a historical view of your VPN activity graphically in a table or a chart. You can provide these reports to the stakeholders in your company. The reports use VPN device activity information provided by the VPN Connections trend, which runs every day using the VPN Connections - Trend Base query.

By default, the reports use data from the previous day. You can change the start and end time of the report for longer- or shorter-term analysis when you run the report.

To run a report:

1. Click the link for the report in the VPN Monitoring use case.



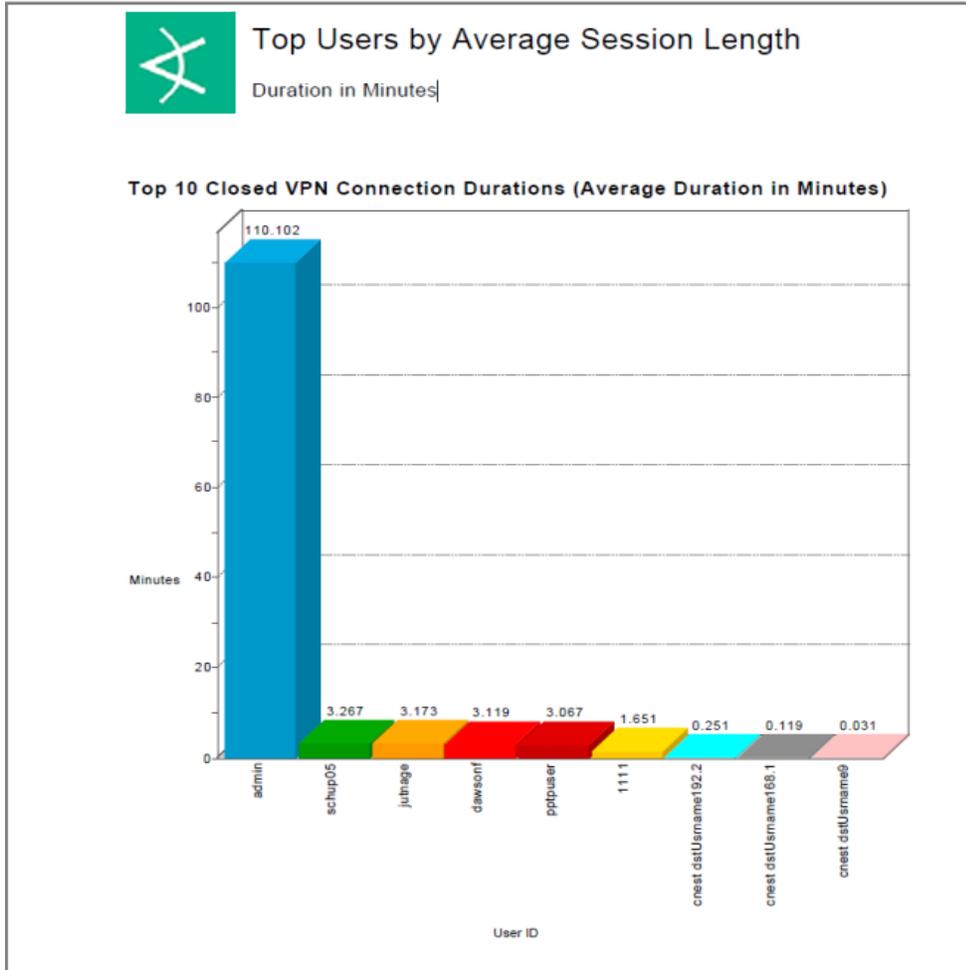
2. In the Report Parameters dialog, set the parameters, then click **OK**. For example, you can change the report format from HTML (the default) to pdf, csv, xls, or rtf, change the page size, and update the report start and end time.

3. For formats other than HTML, either open the report or save the report to your computer when prompted.

The VPN Monitoring use case provides the following reports:

- **Users by Connection Count** shows information about the number of VPN connections for each user. A summary of the users with the most connections is provided. Details of the connections for each user are also provided, including the number of connections and the systems accessed.
- **Top Users by Average Session Length** shows duration information about VPN sessions for each user. A summary of the top VPN connection duration by user is provided. Details of the connection duration for each user are also provided, including minimum, average, maximum, and total connection minutes. Also provided are details about sessions that are currently active at the time the report is run.
- **Top VPN Event Destinations** provides a table showing the IP address, hostname and zone for the top destinations in VPN events, sorted by the number of connections per destination.
- **VPN Connection Attempts** provides a table showing event information where VPN access did not result in failure.
- **Top VPN Event Sources** provides a table showing the IP address, hostname, and zone for the top sources in VPN events, sorted by the number of connections per source.
- **Top VPN Events** provides a table showing the top VPN events (modification events are not included). The table provides the event name, and the source and destination IP address and zone.
- **VPN Connection Failures** provides a table showing information about failed VPN connections. The information includes the VPN user name, source and destination IP address and zone, the VPN device IP address and zone, and the number of failed connections.

An example chart from the Top Users by Average Session Length report is shown below.



VPN Monitoring Rules

The VPN Monitoring use case provides two rules, described below. The rules are deployed in the Real-time Rules group on the Resources tab of the Navigator panel (/All Rules/Real-time Rules/Downloads/Network Monitoring/VPN Monitoring) and enabled by default. The rules trigger when events match one or more set of conditions, at which point a correlation event is generated. A correlation event is displayed in an active channel with the flash icon . Correlation events are fed back into the event life cycle at the ArcSight Manager and are evaluated by both the ArcSight Manager and by the correlation processes. For more information about rule triggering and correlation events, see the *ArcSight Console User's Guide*.

- **User VPN Session Started**

This rule triggers when a VPN user session start event is detected. The rule then creates a new VPN session in the User VPN Sessions and VPN Session by Source IP session lists. This rule supports Cisco VPN products, the Nokia's Security Platform product, and Nortel's VPN product.

- **User VPN Session Stopped**

This rule triggers when a VPN user session terminate event is detected. The rule then terminates the VPN session in the User VPN Sessions and VPN Session by Source IP session lists. This rule supports Cisco VPN products, the Nokia's Security Platform product, and Nortel's VPN product.

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