NetWitness® Platform

Version 12.5

UEBA Configuration Guide

NETWITNESS

Platform

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September, 2024

Contents

Introduction

NetWitness® UEBA configuration is designed for analysts to perform analytics for leveraged data collected from netwitness logs and networks to perform UEBA analytics.

Note: Mixed mode is not supported for UEBA in NetWitness Platform. The NetWitness server, and UEBA must all be installed and configured on the same NetWitness Platform version.

UEBA Supported Sources by Schema

Note: Please deploy the latest parsers from NetWitness Live to enable support for all the models and VPN devices.

Authentication Schema

- Windows Logon and Authentication Activity - Supported Event IDs: 4624, 4625, 4769, 4648 (device.type=winevent_snare|winevent_nic)
- RSASecurID Token - device.type = 'rsaacesrv' ec.activity = 'Logon'
- RedHat Linux - device.type = 'rhlinux'
- Windows Remote Management - Supported Event IDs: 4624,4625,4769,4648 (device.type=windows)
- VPN Logs - event.type = 'vpn' ec.activity = 'logon'

Note: NetWitness has tested and verified the functionality of Juniper, Citrix NetScaler, Palo Alto Networks, Cisco Adaptive Security Appliance (ASA) and Fortinet VPNs under the Authentication schema of UEBA. For any VPN to be considered under the Authentication module, the following metadata must be present in the respective VPN vendor's logs:
(event.type = 'vpn' && country.src exists && user.dst exists && ec.activity = 'logon')

- Azure AD Logs - device.type = 'microsoft_azure_signin_events'

Note: Make sure you have configured the Azure Monitor plugin in your deployment. This enables UEBA to run a query for Azure AD log events for monitoring purposes in the correct format. For more information on how to configure the Azure Monitor plugin, see the *Azure Monitor Event Source Configuration Guide*.

File Schema

- Windows File Servers - Supported Event IDs: 4663,4660,4670,5145 (device.type=winevent_snare|winevent_nic)
- device.type=windows

Active Directory Schema

- Windows Active Directory - Supported Event IDs: 4741,4742,4733,4734,4740,4794,5376,5377,5136,4764,4743,4739,4727,4728,4754,4756,4757,4758,4720,4722,4723,4724,4725,4726,4738,4767,4717,4729,4730,4731,4732 (device.type=winevent_snare|winevent_nic)
- device.type=windows

Endpoint Process Schema

- Endpoint Process - Category = 'Process Event'

Endpoint Registry Schema

- Endpoint Registry - Category = 'Registry Event'

Packet Schema

- TLS - Service 443 (direction='outbound')

Note: The TLS Packet requires adding the hunting package and enabling the JA3 features as described in Add required features for UEBA Packets Schema.

Configure Custom Feeds and Application Rules for VPN Vendors

Note: The approaches described below can be used temporarily until official support for this VPN vendor is added to NetWitness UEBA. To request official support for the required VPN vendor, please contact your NetWitness Customer Support team.

There are two methods to add support for VPN Vendors:

- Configure Custom Feeds for Supporting VPN Vendors
- Configure Application Rules for Supporting VPN Vendors

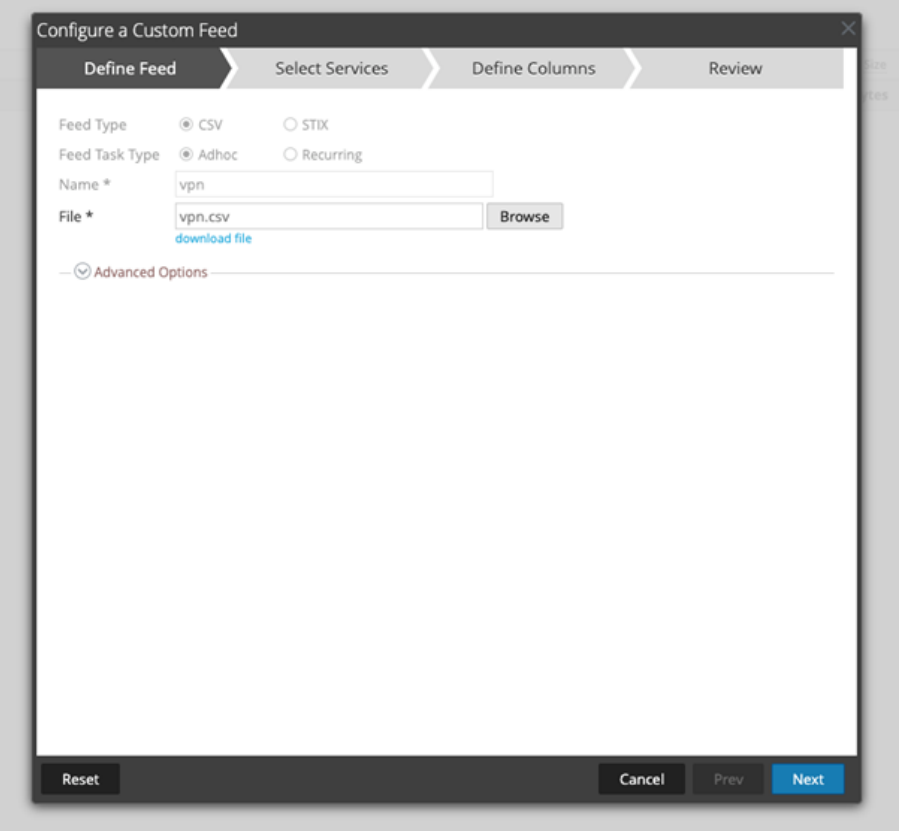
Configure Custom Feeds for Supporting VPN Vendors

To include VPN vendors that UEBA does not support out-of-the-box, you can create custom feeds and include those VPN vendors as part of UEBA processing. Before writing the custom feed, the user must first distinguish between success and failure events related to their VPN vendor. The following is a list of meta keys that UEBA considers when analyzing a VPN event. To receive support for any VPN vendor on UEBA, it is mandatory for these meta keys to be present:

1. event.time
2. user.dst
3. device.type
4. country.src
5. city.src
6. event.type = vpn
7. ec.outcome = success or failure
8. ec.activity = logon

The following is an example of deploying a custom feed for Palo Alto Networks logs.

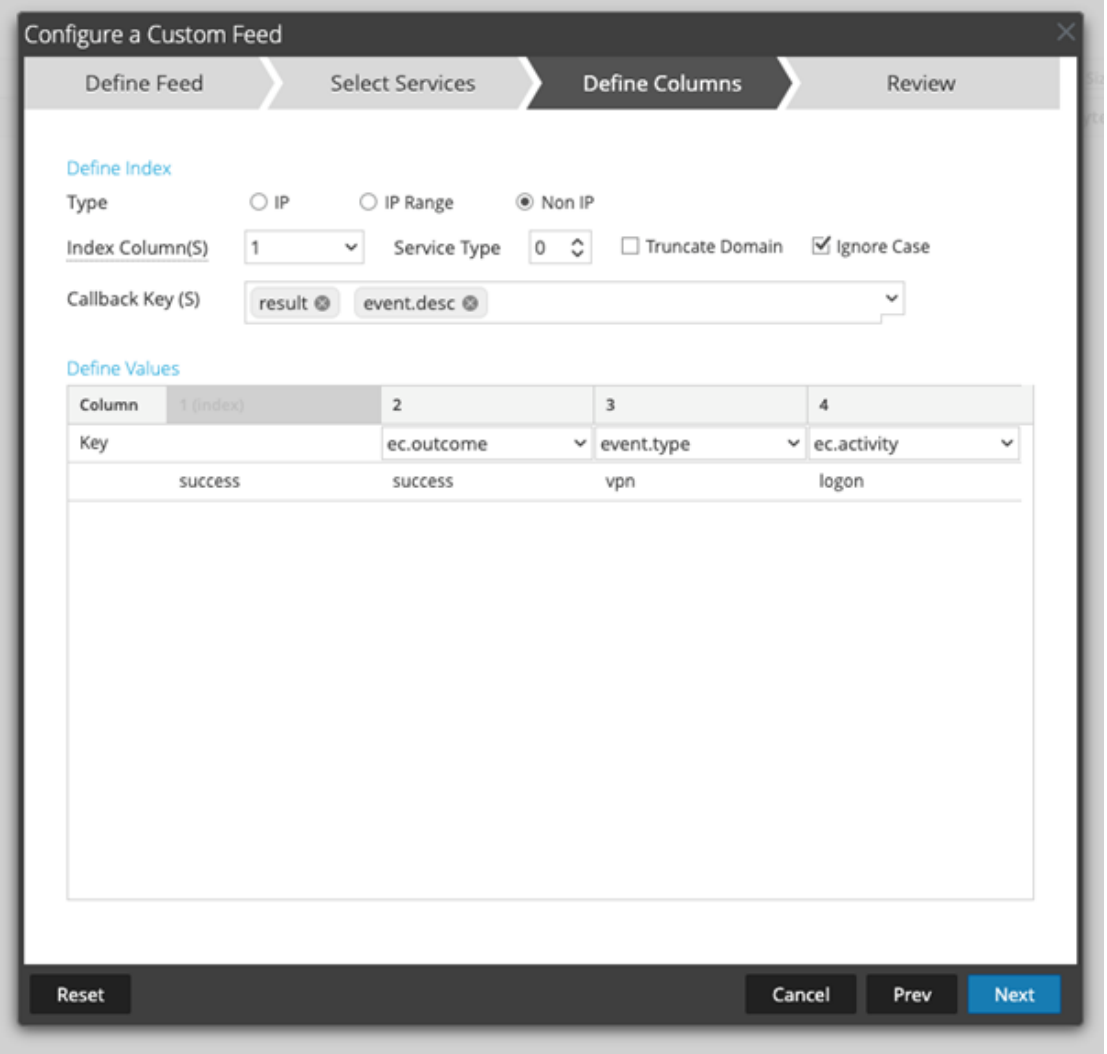
1. Go to (Configure) > **Custom Feeds** and select **Custom Feed** and upload a .csv file containing logs and click **Next**.



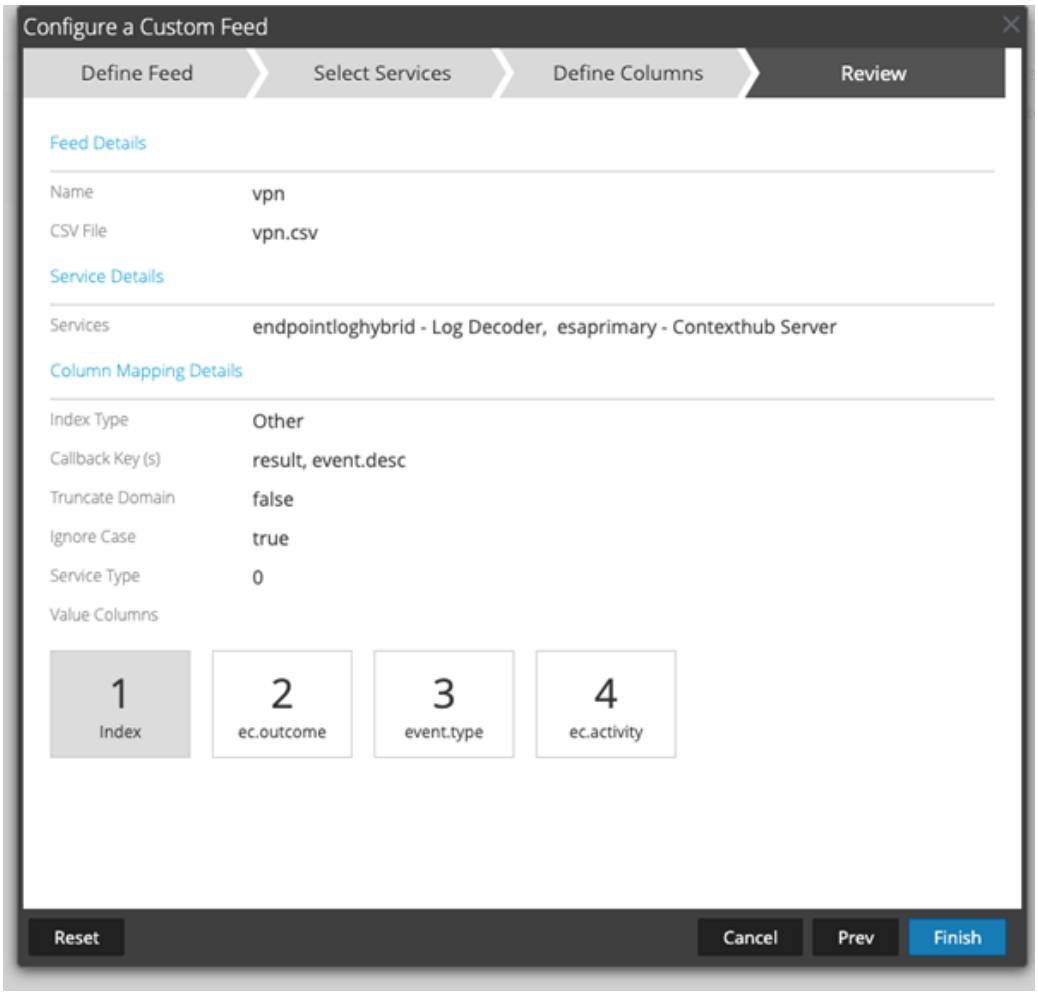
   For example, Palo Alto Networks has a meta result = success for success events, and an event.desc = globalprotect, which can be used as callbacks to append additional meta keys such as `event.type`, `ec.outcome`, and `ec.activity` to logs.

2. Select the Decoders and Log Decoders and click **Next**.

3. Select the callback keys to `result` and `event.desc` from the drop-down and add the additional meta keys such as `event.type`, `ec.outcome`, and `ec.activity` to logs and click **Next**.



4. Review the details and click **Finish**.



Similarly, you need to deploy one more custom feed for failure event. For detailed procedure on creating the custom feed, see the topic Creating a Custom Feed in the *Live Services Management Guide*.

Note: Two custom feeds must be created and deployed, one for successful and another for failed events.

- Ensure the `ec.outcome` value is set to **success** for all successful logon events.
- Ensure the `ec.outcome` value is set to **failure** for all failure logon events.

IMPORTANT: To ensure that UEBA always consider logon events for analytics, all of these events must contain the 8 meta keys listed above.

The following is an example of how it is demonstrated for events of Palo Alto Networks. Before using custom feeds, these are the list of meta keys available on the **Investigate** > **Events** page.

The following is the list of meta keys seen on the **Investigate** > **Events** page after deploying a custom feed.

Note: It is recommended that users parse the raw logs of VPN vendors from NetWitness.

IMPORTANT: The custom feed must be deployed on all Decoders that contain VPN Data.

Note: NetWitness recommends you to use multiple metas for callback keys and the right callback meta keys based on the available meta keys for success and failure events when deploying feeds.

Configure Application Rules for Supporting VPN Vendors

Before deploying the application rules, the user must first distinguish between success and failure events related to their VPN vendor. The following is a list of meta keys that UEBA considers when analyzing a VPN event. To receive support for any VPN vendor on UEBA, it is mandatory for these meta keys to be present:

1. event.time
2. user.dst
3. device.type
4. country.src
5. city.src
6. event.type = vpn
7. ec.outcome = success or failure
8. ec.activity = logon

This example describes how to use application rules to support VPN vendors.

In this case, Palo Alto Networks logs are considered where `event.type`, `ec.outcome` and `ec.activity` meta keys are missing. You need to create an application rule to enable these meta keys to be produced in logs. To create an application rule, see the topic Configure Application Rules in the *Decoder Configuration Guide*.

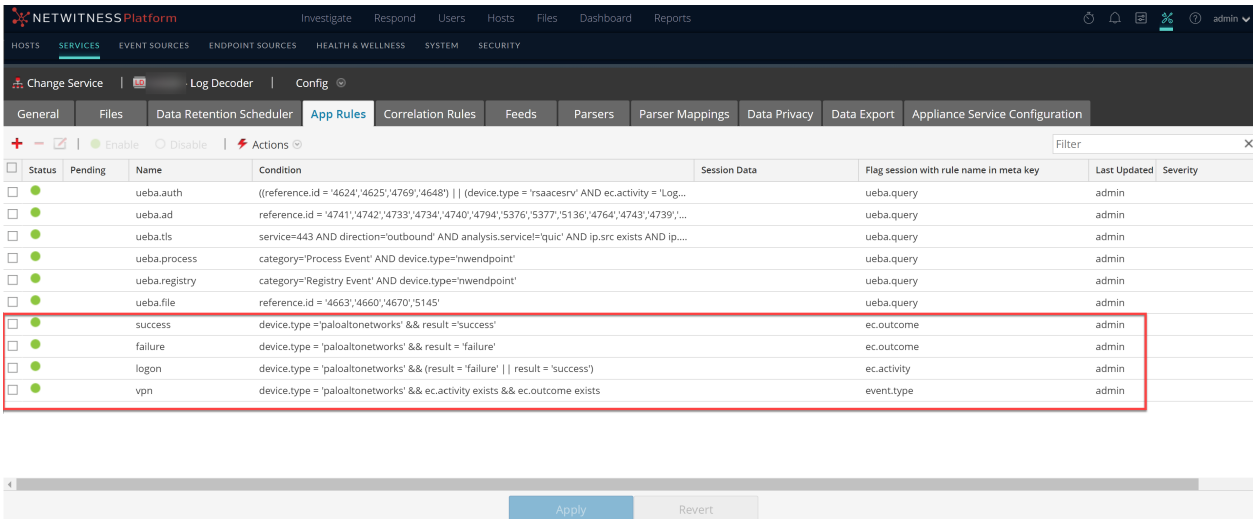
Note: Four application rules must be created and deployed for successful events, failed events, logon events, and VPN.

IMPORTANT: To ensure that UEBA always consider logon events for analytics, all of these events must contain the 8 meta keys listed above.

Ensure that you add the following VPN logs to the application rules:

1. Add success events of VPN logs to `ec.outcome = success`
2. Add failure events of VPN logs to `ec.outcome = failure`
3. Add all the authentication logon logs to `ec.activity=logon`
4. Add all the logon activity logs as `event.type=vpn`

The following figure shows four deployed application rules.



Next steps, after completing the configuration, you can verify if UEBA is consuming the custom VPN types. For more information, see How to verify if UEBA is consuming the Custom VPN types.

How to verify if UEBA is consuming the Custom VPN types

There are two ways to verify if UEBA is consuming custom VPN types.

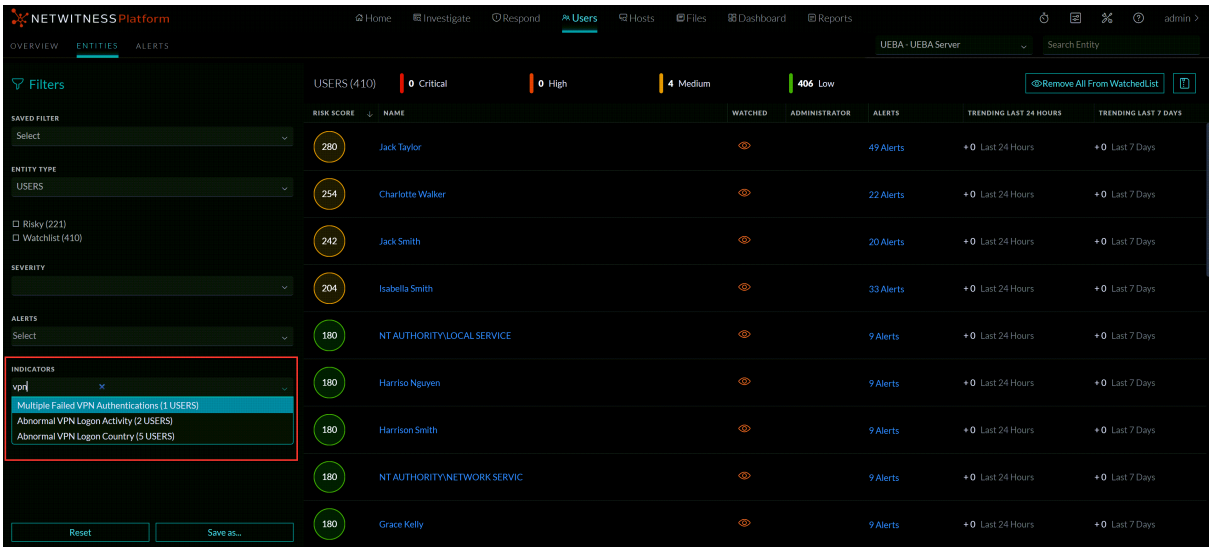
- Using NetWitness UI
- Using the Mongo DB server

Using NetWitness UI

The UEBA alert can be used to confirm that the events of a custom device type are being consumed.

Note: This method is dependent on having relevant alerts that will be triggered by NetWitness UEBA.

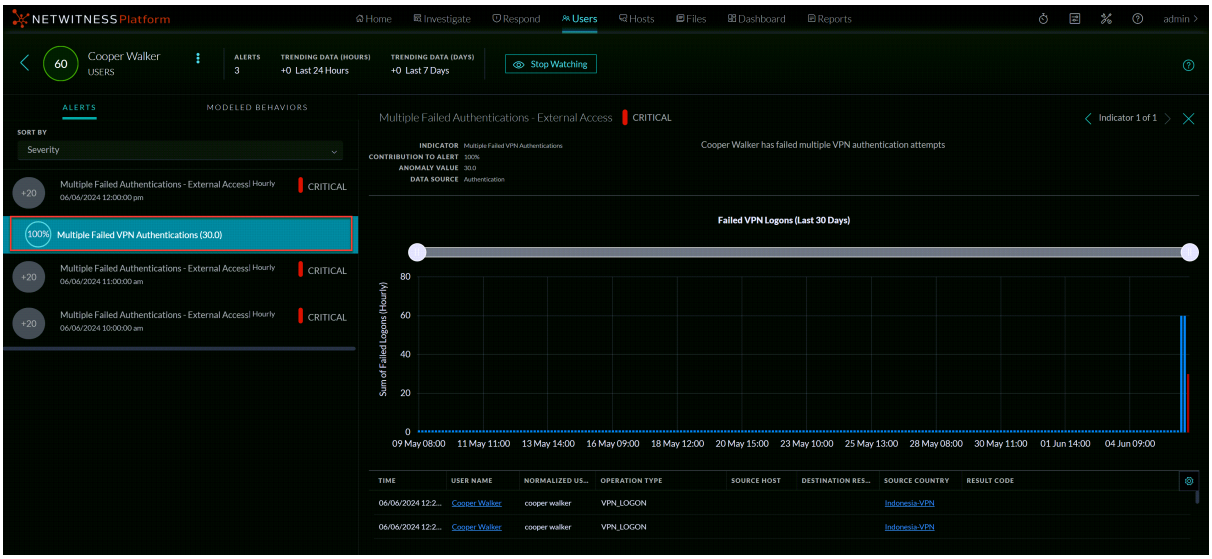
1. Log in to the NetWitness Platform.
2. Go to **Users** > **Entities**.
3. In the **Filters** panel, under **Indicators**, search for a VPN indicator. For example, **Multiple Failed VPN Authentications**.



4. Click an entity name.

   Indicators are displayed under the alert.

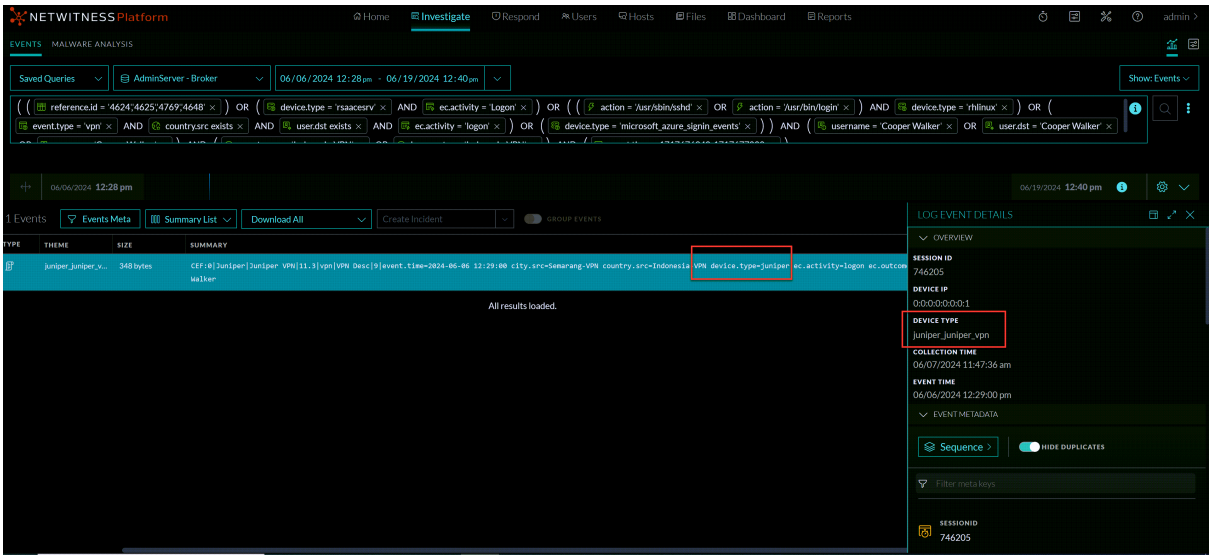
5. Select an indicator of interest.



   Values that can be used to pivot are highlighted in light blue at the bottom of the panel.

6. In the Events table, click the link highlighted in blue and pivot to the alert in the Events view.

   The **Investigate** > **Events** view is displayed.



Using the Mongo DB server

1. SSH to the UEBA server.
2. Connect to Mongo DB by running the following command:

   `mongo admin -u <user_name> -p <password>`

   Replace with your username and password for `<user_name>, <password>`
3. Run the following presidio command:

   `use presidio`
4. Run the following command to get the list of devices:

   `db.output_authentication_enriched_events.distinct("datasource")`

   The events that UEBA is currently processing can be found in the list provided.

```
[
"/usr/bin/login",
"/usr/sbin/sshd",
"4624",
"4625",
"4648" ,
"azure",
"azuremonitor",
"juniper_juniper_vpn"
]
```

Note: The list includes a Juniper VPN. The list of VPNs will vary based on the environment's configuration.

UEBA Configuration

This topic provides the high-level tasks required to configure UEBA.

IMPORTANT: Changing the UEBA start-date or the UEBA processed schemas requires a re-run of the UEBA system as well as cleanup of the UEBA databases. In order to avoid deleting the information in the UI, you can use the reset_presidio.py script as described in reset-presidio script, it will keep the data in the UI (e.g. Alerts, Indicators, Entities and Scores).

Note: To configure a single UEBA server, see "Task 3. Install and Configure NetWitness UEBA" under Installation Tasks topic in the *UEBA Standalone Installation Guide*.

Configure Multiple UEBA Servers

NetWitness Platform now supports installing multiple servers of UEBA in your environment.

Before using this feature, ensure that you meet the following requirements:

The multiple UEBA deployments are independent, with one supporting Logs & Endpoint models and the other dedicated exclusively to Network (TLS) models. Customers with a different use case will need to contact the NetWitness Customer Support team.

Multi-UEBA can use used for the following scenario:

- Multi-UEBA can only be used if there is no need for correlation between the data consumed by both UEBA servers, such as one server for Logs and Endpoint and one server for Network.

IMPORTANT: NetWitness recommends that you configure Authentication, File, Active Directory, Process, and Registry schemas on one UEBA server and TLS schema on another UEBA server for better data processing.

Prerequisites

Ensure that the NetWitness Platform and Hosts (UEBA) are in version 12.3 or later.

Procedure

1. Follow the install instructions for installing multiple UEBA servers. For example, UEBA-Server-1 and UEBA-Server-2. For more information, see "Task 3. Install and Configure NetWitness UEBA" under Installation Tasks topic in the *UEBA Standalone Installation Guide*.

   Note: You can configure multiple UEBA servers in your environment. NetWitness has installed and verified up to three UEBA servers.

2. Follow the ueba-server-config script to set up data schemas on the installed UEBA server 1 and UEBA server 2. For more information, see ueba-server-config script.

Best Practices to Add and Remove Schemas for Multiple UEBA Servers

If you are planning to install multiple UEBA servers in your environment. Consider that you have all six schemas configured in the 12.2 or an earlier version of the UEBA server.

NetWitness recommends that the TLS schema (Network data) must be configured on the new UEBA Server first, and then the existing UEBA server containing all schemas must be reset and re-configured with the five schemas Authentication, File, Active Directory, Process, and Registry (Logs and Endpoint data). For more information on configuration, see ueba-server-config script. You need to reset the start date as well and ensure you set the start date one month back from the current date. For more information, see reset-presidio script.

ueba-server-config script

The `ueba-server-config` script is usually used to configure and run the UEBA component after the deployment. Also, it can be used to update the UEBA configuration during run time.

IMPORTANT: If you change the start-time or the processing schemas, you must re-run UEBA. All script arguments (except the boolean arguments) are mandatory and must be filled.

For more information on the script parameters, see the *NetWitness Standalone Installation Guide for Version 12.5*.

To run the script use the following command `/opt/rsa/saTools/bin/ueba-server-config --help`

Argument	Variable	Description
`-u`	`<user>`	User name of the credentials for the Broker or Concentrator instance that you are using as a data source.
`-p`	`<password>`	Password of the credentials for the Broker or Concentrator instance that you are using as a data source. The following special characters are supported in a password. `!"#$%&()*+,-:;<=>?@[\]^_`\{\|}` If you want to include a special character or special characters, you must delimit the password with an apostrophe sign, for example: `sh /opt/rsa/saTools/bin/ueba-server-config -u brokeruser -p '!"UHfz?@ExMn#$' -h 10.64.153.104 -t 2018-08-01T00:00:00Z -s 'AUTHENTICATION FILE ACTIVE_DIRECTORY TLS PROCESS REGISTRY' -o broker -v`
`-h`	`<host>`	IP address of the Broker or Concentrator used as the data source. Currently, only one data source is supported.
`-o`	`<type>`	Data source host type (`broker` or `concentrator`).

Argument	Variable	Description
-t	<startTime>	Historical start time as of which you start collecting data from the data source in YYYY-MM-DDTHH-MM-SSZ format (for example, 2018-08-15T00:00:00Z). **Note:** The script interprets the time you enter as UTC (Coordinated Universal Time) and it does not adjust the time to your local time zone.
-s	<schemas>	Array of data schemas. If you want to specify multiple schemas, use a space to separate each schema (for example, AUTHENTICATION FILE ACTIVE_DIRECTORY PROCESS REGISTRY TLS).
-v		verbose mode.
-e	<argument>	Boolean Argument. This enables the UEBA indicator forwarder to Respond. **Note:** If your NetWitness deployment includes an active Respond server, you can transfer NetWitness UEBA indicators to the Respond server and create incidents by enabling the indicator forwarder, from this data. For more information on how to enable the NetWitness UEBA incidents aggregation, see Enable User Entity Behavior Analytics Incident Rule.

Note: The TLS packet requires adding the hunting package and enabling the JA4 features. For more information, see Add Features for UEBA Packet Schema.

reset-presidio script

IMPORTANT: The reset_presidio.py script deletes the UEBA back-end databases and can also delete the front-end database that is present in the UI.

The reset_presidio.py script is used to re-run the UEBA system as well as to update the UEBA start-date and the processing schemas easily without having to provide all the other parameters required by the ueba-server-config script. This script re-runs the UEBA while it deletes the backed data (models, aggregations, etc.). To delete the front-end data (UI entities and alerts, etc.) use the clean option. If you don't specify a date, the script will set the default start date, a 28 days earlier than the current date. NetWitness recommends that the UEBA start date is set to 28 days earlier than the current date. For UEBA systems that intend to process TLS data, you must verify that the start date is set to no later than 14 days earlier than the current date.

Note: UEBA requires to process 28 days of data before the alerts can be created.
- If you choose a start date that is less than 28 days before the current date, for example 10 days earlier from the current date, you will have to wait for another 18 days from the current date to see alerts in your UEBA system (if created).
- If you choose a start date that is greater than 27 days, it's recommended to delete the front-end database as well (use the -c) to avoid duplicate alerts.

To run the script, load the Airflow virtual environment variables as follows:

1. `source /etc/sysconfig/airflow`
2. `source $AIRFLOW_VENV/bin/activate`
3. `python /var/netwitness/presidio/airflow/venv39/lib/python3.9/site-packages/presidio_workflows-1.0-py3.9.egg/presidio/utils/airflow/reset_presidio.py --help`
4. `deactivate`

Argument	Variable	Description
-h, --help		Script Help
-c, --clean	<argument>	Clean any existing data in Elasticsearch DB (as Alerts, Indicators, Entities, etc), all data will be deleted form the UEBA UI
-s	<schema>	Reconfigure the UEBA engine array of schemas (e.g. [AUTHENTICATION FILE ACTIVE_DIRECTORY PROCESS REGISTRY TLS])
-d	<date>	Reconfigure the UEBA engine to start from midnight UTC of this date. If not set, by default reset the start date to 27 days before the current system day, at midnight UTC, to avoid duplicate alerts in the UEBA UI, in case you didn't cleaned the elasticsearch data (-c) (e.g. 2010-12-31)

Please refer to the above table for the required arguments to pass along with the reset command. For more information, refer to the example command below.

```
python /var/netwitness/presidio/airflow/venv39/lib/python3.9/site-packages/presidio_workflows-1.0-py3.9.egg/presidio/utils/airflow/reset_presidio.py -c -d 2023-11-16 -s AUTHENTICATION ACTIVE_DIRECTORY FILE PROCESS REGISTRY TLS
```

Add a Schema without Rerunning the UEBA

Note: Adding a schema without rerunning the UEBA system is supported on NetWitness Platform.

To add a new UEBA schema without rerunning the UEBA system, run the following command on the UEBA host.

```
curl -X PATCH http://localhost:8881/configuration -H 'content-type: application/json' -d '{"operations": [{"op":"add","path":"/dataPipeline/schemas/-","value":"<SCHEMA>"}]}'
```

Where `<SCHEMA>` string can be replaced with any one of the following schemas:

- AUTHENTICATION
- FILE
- ACTIVE_DIRECTORY
- PROCESS

- REGISTRY
- TLS

UEBA Indicator Forwarder

Note: If your NetWitness environment includes an active respond server, you can transfer the UEBA indicators to the respond server and to the correlation server in order to create Incidents. For more information, see Enable User Entity Behavior Analytics Incident Rule.

Run the following command to activate the UEBA Indicator Forwarder:

```
curl -X PATCH http://localhost:8881/configuration -H 'content-type:
application/json' -d '{"operations":
[{"op":"replace","path":"/outputForwarding/enableForwarding","value":true}]}'
```

To deactivate the UEBA indicator forwarder, change the “value":true at the request body to be “value":false.

Update Data Source Details

In order to update the details of the data source you must use the `ueba-server-config` script. For more information, see ueba-server-config script.

Note: From 12.3 version or later, if you change the data source using the ueba-server-config script, UEBA will use the previously configured start date by default. To change the UEBA start date, use the reset-presidio script.

The data sources details are:

- Data Source type (Broker / Concentrator).
- Data Source username.
- Data Source password.
- Data Source host.

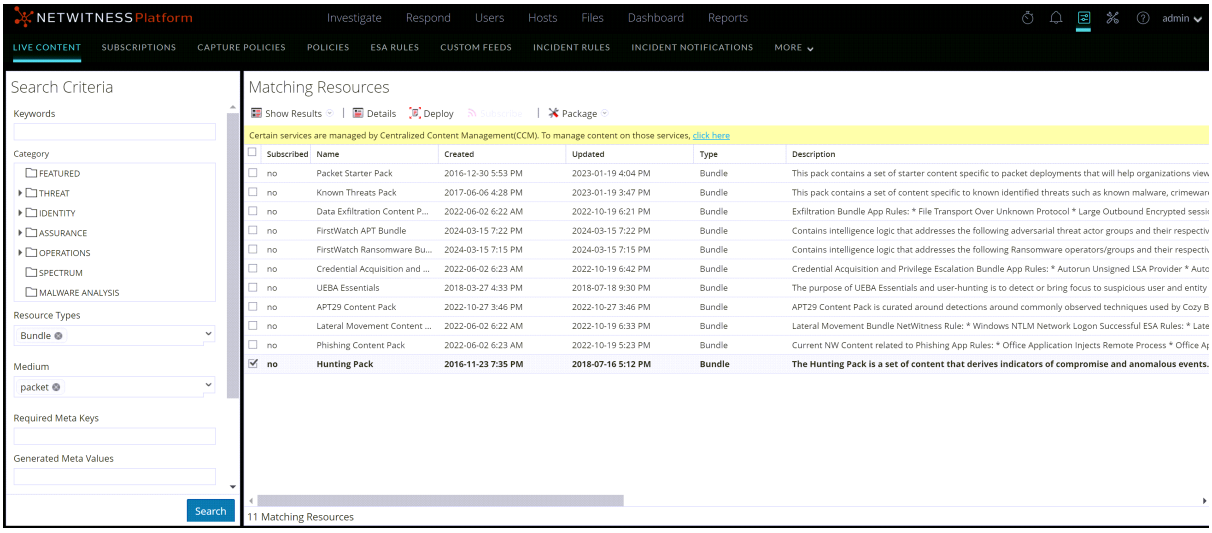
Add Features for UEBA Packet Schema

Add the Hunting Pack:

In NetWitness Platform, add the hunting pack or verify it it’s available:

1. Log in to the NetWitness Platform.
2. Navigate to  **(Admin)** and select **Admin Server**.

3. Click  and select **Configure** > **Live Content**.



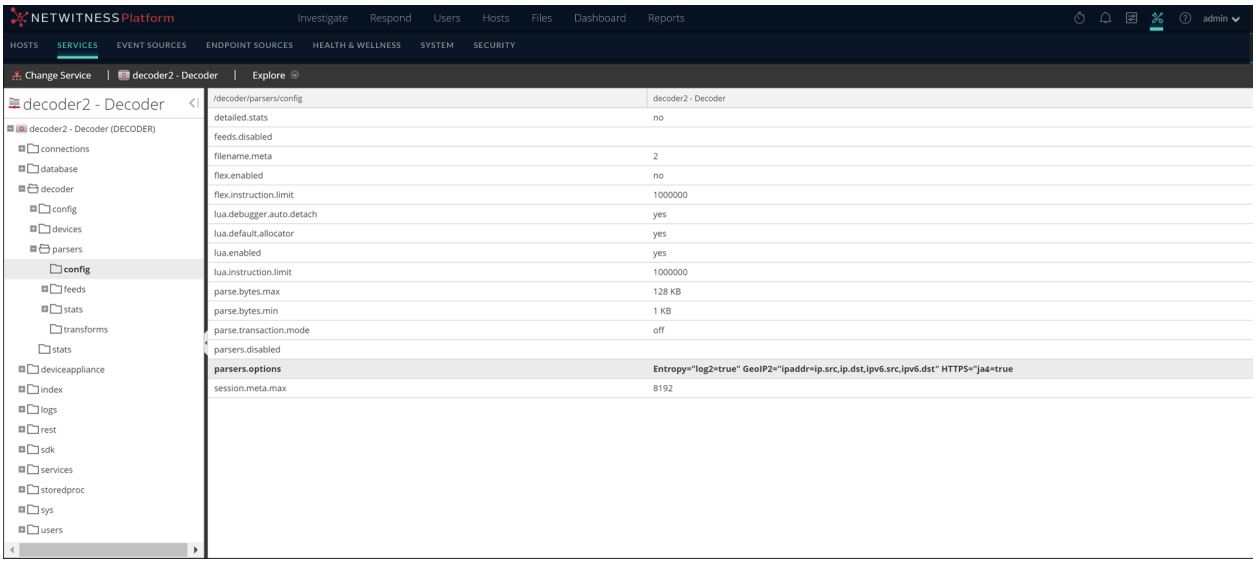
4. On the left menu, select the following:
   a. Bundle under Resources Type.
   b. Packet under Medium
5. Click **Search**.
   A list of matching resources is displayed.
6. Select **Hunting Pack** from the list and click **Deploy**.
   The hunting pack is added.

Add JA4

The JA4 fields are supported by the Packet Decoder in 12.5 and later. Verify that your Packet Decoder is upgraded to one of these versions.

To add JA4

1. Log in to the NetWitness Platform.
2. Go to  (Admin) > **Services** and select Decoder.
3. Navigate to `/decoder/parsers/config/parsers.options`.
4. Add `HTTPS="ja4=true`.

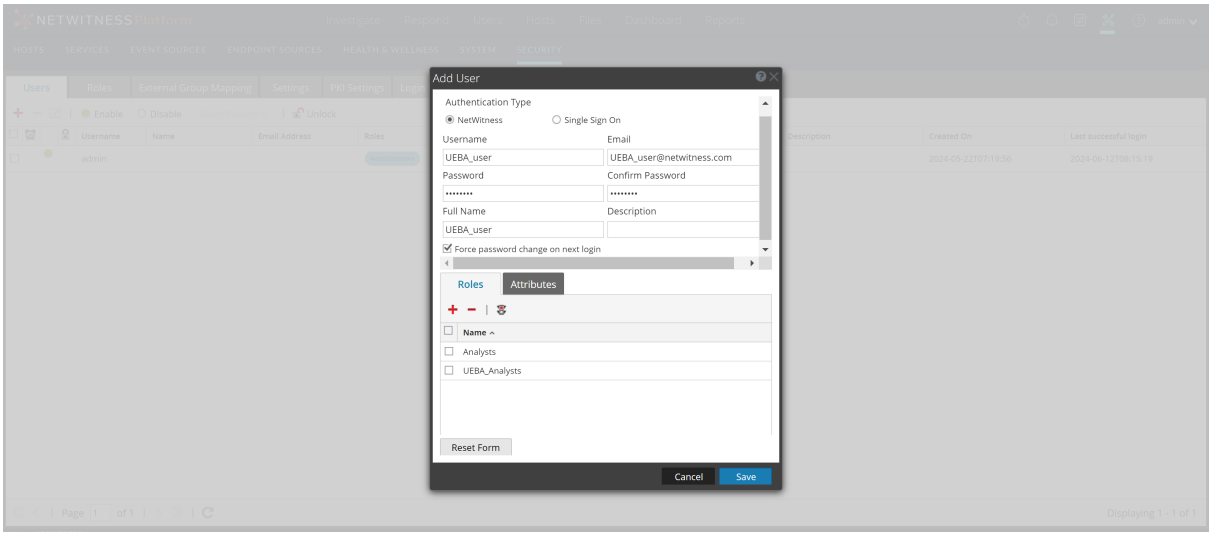


The JA4 fields are configured.

Assign User Access to UEBA

To create a user with privileges to access the UEBA pages (Users tab) on the Netwitness UI do the following:

1. Navigate to (Admin) > **Security**.
2. Under **Authentication Type**, select **NetWitness**.
3. Create a new UEBA_Analysts and Analysts user roles.

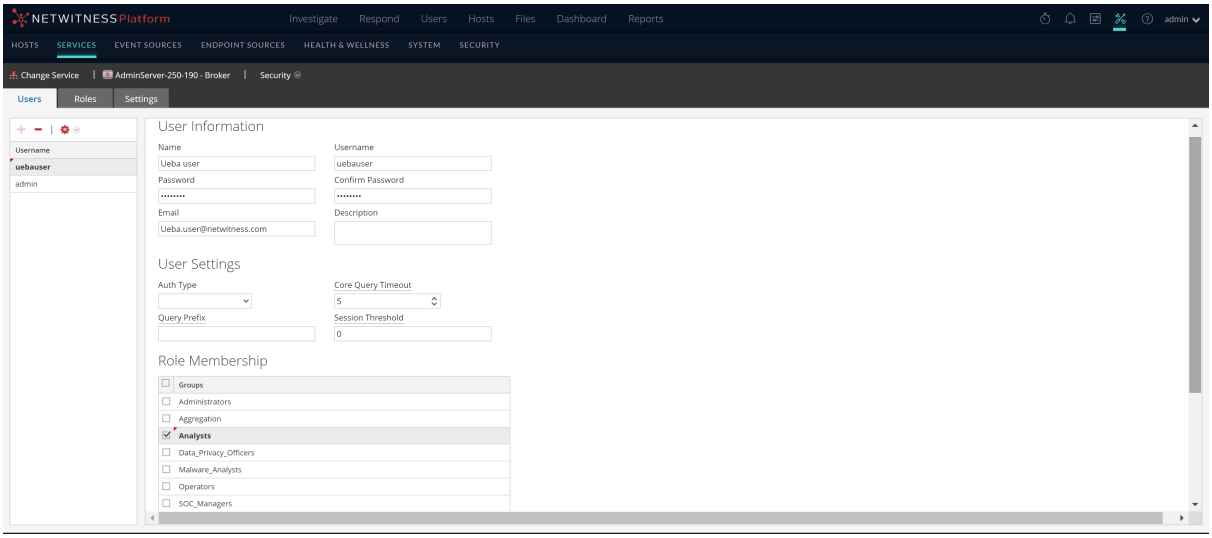


For more information, see the "Manage Users with Roles and Permissions" topic in the *System Security and User Management Guide*.

Create an Analysts Role

In order to fetch data from the data source (Broker / Concentrator), you need to create a user using the Analysts role in the data source service.

1. Navigate to the security tab at the data source service page.
2. Go to the (Admin) > **Services** > **Security**.
3. Create an analyst user and assign it to the any of supported special characters.



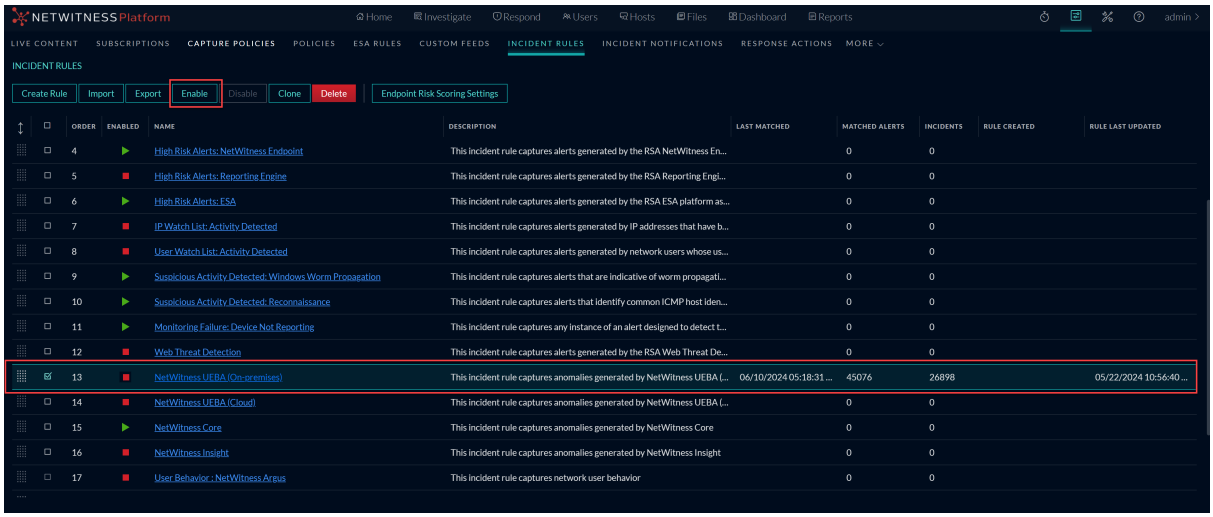
Enable User Entity Behavior Analytics Incident Rule

In order to aggregate the UEBA indicators under Incident rule, follow the instructions below:

Enable the UEBA Forwarding process as described in Enable UEBA Indicator Forwarder.

Note: By default, the NetWitness UEBA (On-premises) rules are disabled in your environment. You can enable them to generate the incident IDs for the alerts and customize the NetWitness UEBA (On-premises) rules settings.

1. Go to (Configure) > **Incident Rules**.
2. Select the **NetWitness UEBA (On-premises)** rule and click **Enable**.



   A confirmation pop-up is displayed.

3. Click **OK**.

Enable or Disable Modeled Behaviors for Users

The UEBA Modeled Behaviors functionality is enabled by default.

To disable perform the following:

1. SSH to the UEBA server.

   Edit and add the parameter `entity.profile.enabled=false` in the file`/etc/netwitness/presidio/configserver/configurations/presidio-uiconf.properties` .

2. Run the command to restart the presidio-ui.

   ```
   systemctl restart presidio-ui
   ```

   Note: To enable, remove the parameter `entity.profile.enabled=false` from the file and restart the presidio-ui using the step 2.

   Once you have enabled or disabled the Modeled Behaviors, you can verify from NetWitness Platform UI.

   ### To verify, perform the following:

   a. Log in to the NetWitness Platform and click **Users**.

   b. In the **Overview** tab, under **Top Risky Users** panel, click on a username.

c. Click the **Modeled Behaviors** tab.
For more information, see "View Modeled Behaviors" topic in the *UEBA User Guide for NetWitness Platform 12.5*.

Update UEBA Queries using nw-shell Utility

This topic describes the steps required to update the queries for UEBA schemas using nw-shell Utility.

Prior to version 12.5, queries for schemas were stored and accessed from the `schemas.json` file. Starting with version 12.5, these queries have been migrated to the UEBA server database instead of the `schemas.json` file. If the queries for schemas were modified in the `schemas.json` file before version 12.5, they will be transferred to the UEBA server database as part of the post-upgrade process.

Users can update queries for schema in UEBA server database using nw-shell utility.

Note:
- If users have added new meta fields using custom parsers, those meta fields will not be included in the default queries defined for the schema. Users must update the query using the nw-shell utility.
- Only administrators can update schema queries using specific commands within the nw-shell utility.

To Update UEBA Queries using nw-shell Utility

1. SSH into the Admin server.
2. Enter the following command: `nw-shell`

   The console window is displayed.
3. Connect to ueba-server using the following command:

   ```
   connect --service ueba-server
   ```
4. Enter the login command: `login`
5. Enter the admin username and password.
6. Navigate to ueba/mapping using the following command: `cd ueba/mapping`
7. Run the following command to list available options/commands: `ls`

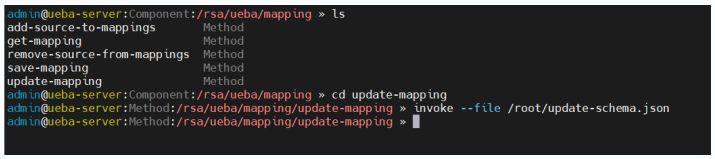
```
[root@AdminServer-250-182 ~]# nw-shell
RSA Netwitness Shell. Version: 14.4.0

offline » connect --service ueba-server
INFO: Connected to ueba-server (c4d079a9-6ec8-485f-b4d8-7a12fabe5e3f)
ueba-server:Folder:/rsa » login
user: admin
password: **************
admin@ueba-server:Folder:/rsa » cd ueba/mapping
admin@ueba-server:Component:/rsa/ueba/mapping » ls
add-source-to-mappings       Method
get-mapping                  Method
remove-source-from-mappings  Method
save-mapping                 Method
update-mapping               Method
admin@ueba-server:Component:/rsa/ueba/mapping »
```

8. Navigate to the following available commands and invoke them. `cd <command>`

   Refer to the following table for the command and its usage.

Command	Description	Example
get-mapping	Get details/mappings of all schemas	`cd get-mapping invoke` 

Command	Description	Example

update-mapping	Updating details/queries/mapping of schema	`cd update-mapping invoke --file <json-input-file-path>`
		Example of the Json file:
		{
		"id":"662a21d8dfcc3b23d78b25d7",
		"selectClause":"select ueba.schema,sessionid,event.source.id,agent.id,event.time,device.type,user.src,action,alias.host,owner,directory.src,filename.src,ec.subject,registry.key,cert.common,dir.path.src,nwe.callback_id,file.cat.src ",
		"query":"where category='Registry Event' AND device.type='nwendpoint'",
		"metaMapping":{
		"time":"event.time"
		},
		"multiValue":"action,alias.host,dir.path.src,file.cat.src"
		}
		Note: You can modify only the values of the following fields: **selectClause**, **query**, **metaMapping**, and **multiValue**.
		 
		 

Removal of Packetbeat Service

From the 12.3 version or later, the Packbeat service has been removed from UEBA to improve memory usage and performance. This allows other services in UEBA to utilize the resources more efficiently, reducing the load on the system.

Learning Period Per Scale

Learning Period Per Scale for 12.5

Physical Machine (SERIES 6 ESA (DELL R640) SPECIFICATIONS)

Supported Scale	Existing NetWitness customer (historical data available)	Learning Period Alerts will be generated when the learning period is complete
150,000 users with 50 million Log and Endpoint events + 70 million Network events with 150,000 JA4 entities per day	Yes	**Fresh Installation of 12.5** Up to 8 days with 28 days of historical data
150,000 users with 50 million Log and Endpoint events + 70 million Network events with 150,000 JA4 entities per day	Yes	**Upgrade from 12.2.x, 12.3, 12.3.1, 12.4, 12.4.1, and 12.4.2 to 12.5** UEBA reset is not required. • If learning period is already completed, data will be processed for alert generation immediately. • If learning period is completed only for N days, then it will take 28-N days to complete the learning period before generating alerts.

Supported Scale	Existing NetWitness customer (historical data available)	Learning Period Alerts will be generated when the learning period is complete
150,000 users with 50 million Log and Endpoint events + 70 million Network events with 150,000 JA4 entities per day	Yes	**Upgrade from 12.2.x, 12.3, 12.3.1, 12.4, 12.4.1, and 12.4.2 to 12.5 with schemas updated (Addition or removal of schemas configured on UEBA)** UEBA reset is required. **Historical data is available for N days**: • N > 28 days : Up to 8 days with 28 days of historical data. • N < 28 days: It will take 28-N days to complete the learning period before generating alerts. **Historical data is not available** 28 days to complete the learning period before generating alerts.
150,000 users with 50 million Log and Endpoint events + 70 million Network events with 150,000 JA4 entities per day	No	**Fresh installation of 12.5** 28 days to complete the learning period before generating alerts.

Virtual Machine

The recommended vCPU specification for UEBA is Intel Xeon CPU @2.59 Ghz.

CPU	Memory	Reserved Memory Allocation	Disk Requirements for /var/netwitness Partition	Read IOPS	Write IOPS
32 cores	256GB	192GB	• Storage: 1.5 TB • Provisioning: Thick	500	500

To determine the scale limits for Virtual Machine deployments, refer to the **Scaling Limitation Issue** section in the Troubleshooting UEBA Configurations.

IMPORTANT:
- You must reserve all the resources allocated to UEBA on the VM server. For example, if a user has a 2.1GHz CPU, then 32CPUs * 2.1GHz = 67.2GHz or 67200MHz must be reserved.
- The **/var/netwitness** partition must be mounted on a **1.5 TB** Thick-provisoned disk for storage usage.

Note: NetWitness recommends you to deploy UEBA on a virtual host, only if your log collection volume is low. If you have a moderate to high log collection volume, NetWitness recommends you to deploy UEBA on the physical host as described in the "NetWitness UEBA Host Hardware Specifications" topic of the *Physical Host Installation Guide*. Contact NetWitness Customer Support (https://community.netwitness.com/t5/support-information/how-to-contact-netwitness-support/ta-p/563897) for advice on choosing which host, virtual or physical, to use for UEBA.

Supported Scale	Existing NetWitness customer (historical data available)	Learning Period Alerts will be generated when the learning period is complete
150,000 users with 50 million Log and Endpoint events + 25 million Network events with 150,000 JA4 entities per day	Yes	**Fresh Installation of 12.5** Up to 8 days with 28 days of historical data
150,000 users with 50 million Log and Endpoint events + 25 million Network events with 150,000 JA4 entities per day	Yes	**Upgrade from 12.2.x, 12.3, 12.3.1, 12.4, 12.4.1, and 12.4.2 to 12.5** UEBA reset is not required. • If learning period is already completed, data will be processed for alert generation immediately. • If learning period is completed only for N days, then it will take 28-N days to complete the learning period before generating alerts.

Supported Scale	Existing NetWitness customer (historical data available)	Learning Period Alerts will be generated when the learning period is complete
150,000 users with 50 million Log and Endpoint events + 25 million Network events with 150,000 JA4 entities per day	Yes	**Upgrade from 12.2.x, 12.3, 12.3.1, 12.4, 12.4.1, and 12.4.2 to 12.5 with schemas updated (Addition or removal of schemas configured on UEBA)** UEBA reset is required. **Historical data is available for N days**: • N > 28 days: Up to 8 days with 28 days of historical data. • N < 28 days: It will take 28-N days to complete the learning period before generating alerts. **Historical data is not available** 28 days to complete the learning period before generating alerts.
150,000 users with 50 million Log and Endpoint events + 25 million Network events with 150,000 JA4 entities per day	No	**Fresh installation of 12.5** 28 days to complete the learning period before generating alerts.

Note: Network events per day refers to number of events consumed by UEBA per day.

Learning Period Per Scale for 12.5 Multiple UEBA Servers

Physical Machine (SERIES 6 ESA (DELL R640) SPECIFICATIONS)

Note: There are two UEBA servers, one is configured with Log and Endpoint data, while the other is configured with Network (TLS) data.

Supported Scale	Existing NetWitness customer (historical data available)	Learning Period Alerts will be generated when the learning period is complete
UEBA Server 1: 200,000 users with 150 million Log and Endpoint events per day **UEBA Server 2**: 110 million Network events with 150,000 JA4 entities per day	Yes	**Fresh Installation of 12.5** Up to 12 days with 28 days of historical data
UEBA Server 1: 200,000 users with 150 million Log and Endpoint events per day **UEBA Server 2**: 110 million Network events with 150,000 JA4 entities per day	Yes	**Upgrade from 12.2.x, 12.3, 12.3.1, 12.4, 12.4.1, and 12.4.2 to 12.5** UEBA reset is not required. • If learning period is already completed, data will be processed for alert generation immediately. • If learning period is completed only for N days, then it will take 28-N days to complete the learning period before generating alerts.

Supported Scale	Existing NetWitness customer (historical data available)	Learning Period Alerts will be generated when the learning period is complete
UEBA Server 1: 200,000 users with 150 million Log and Endpoint events per day **UEBA Server 2**: 110 million Network events with 150,000 JA4 entities per day	Yes	**Note:** An additional UEBA server must be installed to configure TLS schema on a separate UEBA server. For example, if you are planning to upgrade from 12.4: **Before upgrade**: **UEBA Server 1** is configured with Log, Endpoint, and TLS data. **After upgrade**: • Add another **UEBA Server 2** and configure it with TLS schema. • Reconfigure **UEBA Server 1** with only Log and Endpoint data followed by UEBA reset. For more information, see Best Practices to Add and Remove Schemas for Multiple UEBA Servers. **Upgrade from 12.2.x, 12.3, 12.3.1, 12.4, 12.4.1, and 12.4.2 to 12.5 with schemas updated (Addition or removal of schemas configured on UEBA)** UEBA reset is required. **Historical data is available for N days**: • N > 28 days: Up to 12 days with 28 days of historical data. • N < 28 days: It will take 28-N days to complete the learning period before generating alerts. **Historical data is not available** 28 days to complete the learning period before generating alerts.

Supported Scale	Existing NetWitness customer (historical data available)	Learning Period Alerts will be generated when the learning period is complete
UEBA Server 1: 200,000 users with 150 million Log and Endpoint events per day **UEBA Server 2**: 110 million Network events with 150,000 JA4 entities per day	No	**Fresh installation of 12.5** 28 days to complete the learning period before generating alerts.

Learning Period Per Scale for 12.4

Physical Machine (SERIES 6 ESA (DELL R640) SPECIFICATIONS)

Supported Scale	Existing NetWitness customer (historical data available)	Learning Period Alerts will be generated when the learning period is complete
• **Scale 1**: 125,000 users with 40 million Log and Endpoint events + 60 million Network events with 100,000 JA3 entities per day • **Scale 2**: 150,000 users with 50 million Log and Endpoint events + 70 million Network events with 150,000 JA3 entities per day	Yes	**Fresh Installation of 12.4** • **Scale 1**: Up to 6.5 days with 28 days of historical data • **Scale 2**: Up to 9 days with 28 days of historical data
• **Scale 1**: 125,000 users with 40 million Log and Endpoint events + 60 million Network events with 100,000 JA3 entities per day • **Scale 2**: 150,000 users with 50 million Log and Endpoint events + 70 million Network events with 150,000 JA3 entities per day	Yes	**Upgrade from 12.2.x, 12.3, 12.3.1 to 12.4** UEBA reset is not required. • If learning period is already completed, data will be processed for alert generation immediately. • If learning period is completed only for N days, then it will take 28-N days to complete the learning period before generating alerts.

Supported Scale	Existing NetWitness customer (historical data available)	Learning Period Alerts will be generated when the learning period is complete
• **Scale 1**: 125,000 users with 40 million Log and Endpoint events + 60 million Network events with 100,000 JA3 entities per day • **Scale 2**: 150,000 users with 50 million Log and Endpoint events + 70 million Network events with 150,000 JA3 entities per day	Yes	**Upgrade from 12.2.x, 12.3, 12.3.1 to 12.4 with schemas updated (Addition or removal of schemas configured on UEBA)** UEBA reset is required. **Historical data is available for N days**: • **Scale 1** with N > 28 days : Up to 6.5 days with 28 days of historical data. • **Scale 2** with N > 28 days: Up to 9 days with 28 days of historical data • **Scale 1 and Scale 2** with N < 28 days: It will take 28-N days to complete the learning period before generating alerts. **Historical data is not available** 28 days to complete the learning period before generating alerts.
• **Scale 1**: 125,000 users with 40 million Log and Endpoint events + 60 million Network events with 100,000 JA3 entities per day • **Scale 2**: 150,000 users with 50 million Log and Endpoint events + 70 million Network events with 150,000 JA3 entities per day	No	**Fresh installation of 12.4** 28 days to complete the learning period before generating alerts.

Virtual Machine

The recommended vCPU specification for UEBA is Intel Xeon CPU @2.59 Ghz.

CPU	Memory	Reserved Memory Allocation	Disk Requirements for /var/netwitness Partition	Read IOPS	Write IOPS
32 cores	256GB	192GB	• Storage: 1.5 TB • Provisioning: Thick	500	500

To determine the scale limits for Virtual Machine deployments, refer to the **Scaling Limitation Issue** section in the Troubleshooting UEBA Configurations.

IMPORTANT:
- You must reserve all the resources allocated to UEBA on the VM server. For example, if a user has a 2.1GHz CPU, then 32CPUs * 2.1GHz = 67.2GHz or 67200MHz must be reserved.
- The **/var/netwitness** partition must be mounted on a **1.5 TB** Thick-provisoned disk for storage usage.

Note: NetWitness recommends you to deploy UEBA on a virtual host, only if your log collection volume is low. If you have a moderate to high log collection volume, NetWitness recommends you to deploy UEBA on the physical host as described in the "NetWitness UEBA Host Hardware Specifications" topic of the *Physical Host Installation Guide*. Contact NetWitness Customer Support (https://community.netwitness.com/t5/support-information/how-to-contact-netwitness-support/ta-p/563897) for advice on choosing which host, virtual or physical, to use for UEBA.

Supported Scale	Existing NetWitness customer (historical data available)	Learning Period Alerts will be generated when the learning period is complete
• **Scale 1**: 125,000 users with 40 million Log and Endpoint events + 20 million Network events with 100,000 JA3 entities per day • **Scale 2**: 150,000 users with 50 million Log and Endpoint events + 25 million Network events with 150,000 JA3 entities per day	Yes	**Fresh Installation of 12.4** • **Scale 1**: Up to 6.5 days with 28 days of historical data • **Scale 2**: Up to 7.5 days with 28 days of historical data

Supported Scale	Existing NetWitness customer (historical data available)	Learning Period Alerts will be generated when the learning period is complete
• **Scale 1**: 125,000 users with 40 million Log and Endpoint events + 20 million Network events with 100,000 JA3 entities per day • **Scale 2**: 150,000 users with 50 million Log and Endpoint events + 25 million Network events with 150,000 JA3 entities per day	Yes	**Upgrade from 12.2.x, 12.3, 12.3.1 to 12.4** UEBA reset is not required. • If learning period is already completed, data will be processed for alert generation immediately. • If learning period is completed only for N days, then it will take 28-N days to complete the learning period before generating alerts .

Supported Scale	Existing NetWitness customer (historical data available)	Learning Period Alerts will be generated when the learning period is complete
• **Scale 1**: 125,000 users with 40 million Log and Endpoint events + 20 million Network events with 100,000 JA3 entities per day • **Scale 2**: 150,000 users with 50 million Log and Endpoint events + 25 million Network events with 150,000 JA3 entities per day	Yes	**Upgrade from 12.2.x, 12.3, 12.3.1 to 12.4 with schemas updated (Addition or removal of schemas configured on UEBA)** UEBA reset is required. **Historical data is available for N days**: • **Scale 1** with N > 28 days: Up to 6.5 days with 28 days of historical data. • **Scale 2** with N > 28 days: Up to 7.5 days with 28 days of historical data. • **Scale 1 and Scale 2** with N < 28 days: It will take 28-N days to complete the learning period before generating alerts. **Historical data is not available** 28 days to complete the learning period before generating alerts.
• **Scale 1**: 125,000 users with 40 million Log and Endpoint events + 20 million Network events with 100,000 JA3 entities per day • **Scale 2**: 150,000 users with 50 million Log and Endpoint events + 25 million Network events with 150,000 JA3 entities per day	No	**Fresh installation of 12.4** 28 days to complete the learning period before generating alerts.

Note: Network events per day refers to number of events consumed by UEBA per day.

Learning Period Per Scale for 12.4 Multiple UEBA Servers

Physical Machine (SERIES 6 ESA (DELL R640) SPECIFICATIONS)

Note: There are two UEBA servers, one is configured with Log and Endpoint data, while the other is configured with Network (TLS) data.

Supported Scale	Existing NetWitness customer (historical data available)	Learning Period Alerts will be generated when the learning period is complete
Scale 1 for Multi-UEBA: • **UEBA Server 1**: 125,000 users with 120 million Log and Endpoint events per day • **UEBA Server 2**: 100 million Network events with 100,000 JA3 entities per day **Scale 2 for Multi-UEBA:** • **UEBA Server 1**: 200,000 users with 150 million Log and Endpoint events per day • **UEBA Server 2**: 110 million Network events with 150,000 JA3 entities per day	Yes	**Fresh Installation of 12.4** • **Scale 1**: Up to 8.5 days with 28 days of historical data • **Scale 2**: Up to 12 days with 28 days of historical data

Supported Scale	Existing NetWitness customer (historical data available)	Learning Period Alerts will be generated when the learning period is complete
Scale 1 for Multi-UEBA: • **UEBA Server 1**: 125,000 users with 120 million Log and Endpoint events per day • **UEBA Server 2**: 100 million Network events with 100,000 JA3 entities per day **Scale 2 for Multi-UEBA:** • **UEBA Server 1**: 200,000 users with 150 million Log and Endpoint events per day • **UEBA Server 2**: 110 million Network events with 150,000 JA3 entities per day	Yes	**Upgrade from 12.2.x, 12.3, 12.3.1 to 12.4** UEBA reset is not required. • If learning period is already completed, data will be processed for alert generation immediately. • If learning period is completed only for N days, then it will take 28-N days to complete the learning period before generating alerts.

Supported Scale	Existing NetWitness customer (historical data available)	Learning Period Alerts will be generated when the learning period is complete
Scale 1 for Multi-UEBA: • **UEBA Server 1**: 125,000 users with 120 million Log and Endpoint events per day • **UEBA Server 2**: 100 million Network events with 100,000 JA3 entities per day **Scale 2 for Multi-UEBA:** • **UEBA Server 1**: 200,000 users with 150 million Log and Endpoint events per day • **UEBA Server 2**: 110 million Network events with 150,000 JA3 entities per day	Yes	**Note:** An additional UEBA server must be installed to configure TLS schema on a separate UEBA server. For example, if you are planning to upgrade from 12.2: **Before upgrade**: **UEBA Server 1** is configured with Log, Endpoint, and TLS data. **After upgrade**: • Add another **UEBA Server 2** and configure it with TLS schema. • Reconfigure **UEBA Server 1** with only Log and Endpoint data followed by UEBA reset. For more information, see Best Practices to Add and Remove Schemas for Multiple UEBA Servers. **Upgrade from 12.2.x, 12.3, 12.3.1 to 12.4 with schemas updated (Addition or removal of schemas configured on UEBA)** UEBA reset is required. **Historical data is available for N days**: • **Scale 1** with N > 28 days: Up to 8.5 days with 28 days of historical data. • **Scale 2** with N > 28 days: Up to 12 days with 28 days of historical data. • **Scale 1 and Scale 2** with N < 28 days: It will take 28-N days to complete the learning period before generating alerts. **Historical data is not available** 28 days to complete the learning period before generating alerts.

Supported Scale	Existing NetWitness customer (historical data available)	Learning Period Alerts will be generated when the learning period is complete
Scale 1 for Multi-UEBA: • **UEBA Server 1**: 125,000 users with 120 million Log and Endpoint events per day • **UEBA Server 2**: 100 million Network events with 100,000 JA3 entities per day **Scale 2 for Multi-UEBA:** • **UEBA Server 1**: 200,000 users with 150 million Log and Endpoint events per day • **UEBA Server 2**: 110 million Network events with 150,000 JA3 entities per day	No	**Fresh installation of 12.4** 28 days to complete the learning period before generating alerts.

Learning Period Per Scale for 12.3.1

Physical Machine (SERIES 6 ESA (DELL R640) SPECIFICATIONS)

Supported Scale	Existing NetWitness customer (historical data available)	Learning Period Alerts will be generated when the learning period is complete
125,000 users with 40 million Log and Endpoint events + 60 million Network events with 100,000 JA3 entities per day	Yes	**Fresh Installation of 12.3.1** Up to 12 days with 28 days of historical data

Supported Scale	Existing NetWitness customer (historical data available)	Learning Period Alerts will be generated when the learning period is complete
125,000 users with 40 million Log and Endpoint events + 60 million Network events with 100,000 JA3 entities per day	Yes	**Upgrade from 11.7.x, 12.1.x, 12.2.x, 12.3 to 12.3.1** UEBA reset is not required. • If learning period is already completed, data will be processed for alert generation immediately. • If learning period is completed only for N days, then it will take 28-N days to complete the learning period before generating alerts.

Supported Scale	Existing NetWitness customer (historical data available)	Learning Period Alerts will be generated when the learning period is complete
125,000 users with 40 million Log and Endpoint events + 60 million Network events with 100,000 JA3 entities per day	Yes	**Upgrade from 11.7.x, 12.1.x, 12.2.x, 12.3 to 12.3.1 with schemas updated (Addition or removal of schemas configured on UEBA)** UEBA reset is required. **Historical data is available for N days**: • N > 28 days: Up to 12 days with 28 days of historical data. • N < 28 days: It will take 28-N days to complete the learning period before generating alerts. **Historical data is not available** 28 days to complete the learning period before generating alerts.

Supported Scale	Existing NetWitness customer (historical data available)	Learning Period Alerts will be generated when the learning period is complete
125,000 users with 40 million Log and Endpoint events + 60 million Network events with 100,000 JA3 entities per day	No	**Fresh installation of 12.3.1** 28 days to complete the learning period before generating alerts.

Virtual Machine

The recommended vCPU specification for UEBA is Intel Xeon CPU @2.59 Ghz.

CPU	Memory	Reserved Memory Allocation	Disk Requirements for /var/netwitness Partition	Read IOPS	Write IOPS
32 cores	256GB	192GB	• Storage: 1.5 TB • Provisioning: Thick	500	500

To determine the scale limits for Virtual Machine deployments, refer to the **Scaling Limitation Issue** section in the Troubleshooting UEBA Configurations.

IMPORTANT:
- You must reserve all the resources allocated to UEBA on the VM server. For example, if a user has a 2.1GHz CPU, then 32CPUs * 2.1GHz = 67.2GHz or 67200MHz must be reserved.
- The **/var/netwitness** partition must be mounted on a **1.5 TB** Thick-provisoned disk for storage usage.

Note: NetWitness recommends you to deploy UEBA on a virtual host, only if your log collection volume is low. If you have a moderate to high log collection volume, NetWitness recommends you to deploy UEBA on the physical host as described in the "NetWitness UEBA Host Hardware Specifications" topic of the *Physical Host Installation Guide*. Contact NetWitness Customer Support (https://community.netwitness.com/t5/support-information/how-to-contact-netwitness-support/ta-p/563897) for advice on choosing which host, virtual or physical, to use for UEBA.

Supported Scale	Existing NetWitness customer (historical data available)	Learning Period Alerts will be generated when the learning period is complete
125,000 users with 40 million Log and Endpoint events + 20 million Network events with 100,000 JA3 entities per day	Yes	**Fresh Installation of 12.3.1** Up to 10 days with 28 days of historical data
125,000 users with 40 million Log and Endpoint events + 20 million Network events with 100,000 JA3 entities per day	Yes	**Upgrade from 11.7.x, 12.1.x, 12.2.x, 12.3 to 12.3.1** UEBA reset is not required. • If learning period is already completed, data will be processed for alert generation immediately. • If learning period is completed only for N days, then it will take 28-N days to complete the learning period before generating alerts .

Supported Scale	Existing NetWitness customer (historical data available)	Learning Period Alerts will be generated when the learning period is complete
125,000 users with 40 million Log and Endpoint events + 20 million Network events with 100,000 JA3 entities per day	Yes	**Upgrade from 11.7.x, 12.1.x, 12.2.x, 12.3 to 12.3.1 with schemas updated (Addition or removal of schemas configured on UEBA)** UEBA reset is required. **Historical data is available for N days**: • N > 28 days: Up to 10 days with 28 days of historical data. • N < 28 days: It will take 28-N days to complete the learning period before generating alerts. **Historical data is not available** 28 days to complete the learning period before generating alerts.
125,000 users with 40 million Log and Endpoint events + 20 million Network events with 100,000 JA3 entities per day	No	**Fresh installation of 12.3.1** 28 days to complete the learning period before generating alerts.

Note: Network events per day refers to number of events consumed by UEBA per day.

Learning Period Per Scale for 12.3.1 Multiple UEBA Servers

Physical Machine (SERIES 6 ESA (DELL R640) SPECIFICATIONS)

Note: There are two UEBA servers, one is configured with Log and Endpoint data, while the other is configured with Network (TLS) data.

Supported Scale	Existing NetWitness customer (historical data available)	Learning Period Alerts will be generated when the learning period is complete
UEBA Server 1: 125,000 users with 120 million Log and Endpoint events per day **UEBA Server 2**: 100 million Network events with 100,000 JA3 entities per day	Yes	**Fresh Installation of 12.3.1** Up to 12 days with 28 days of historical data
UEBA Server 1: 125,000 users with 120 million Log and Endpoint events per day **UEBA Server 2**: 100 million Network events with 100,000 JA3 entities per day	Yes	**Upgrade from 11.7.x, 12.1.x, 12.2.x, 12.3 to 12.3.1** UEBA reset is not required. • If learning period is already completed, data will be processed for alert generation immediately. • If learning period is completed only for N days, then it will take 28-N days to complete the learning period before generating alerts.

Supported Scale	Existing NetWitness customer (historical data available)	Learning Period Alerts will be generated when the learning period is complete
UEBA Server 1: 125,000 users with 120 million Log and Endpoint events per day **UEBA Server 2**: 100 million Network events with 100,000 JA3 entities per day	Yes	**Note:** An additional UEBA server must be installed to configure TLS schema on a separate UEBA server. For example, if you are planning to upgrade from 11.7.1: **Before upgrade**: **UEBA Server 1** is configured with Log, Endpoint, and TLS data. **After upgrade**: • Add another **UEBA Server 2** and configure it with TLS schema. • Reconfigure **UEBA Server 1** with only Log and Endpoint data followed by UEBA reset. For more information, see Best Practices to Add and Remove Schemas for Multiple UEBA Servers. **Upgrade from 11.7.x, 12.1.x, 12.2.x, 12.3 to 12.3.1 with schemas updated (Addition or removal of schemas configured on UEBA)** UEBA reset is required. **Historical data is available for N days**: • N > 28 days: Up to 12 days with 28 days of historical data. • N < 28 days: It will take 28-N days to complete the learning period before generating alerts. **Historical data is not available** 28 days to complete the learning period before generating alerts.

Supported Scale	Existing NetWitness customer (historical data available)	Learning Period Alerts will be generated when the learning period is complete
UEBA Server 1: 125,000 users with 120 million Log and Endpoint events per day **UEBA Server 2**: 100 million Network events with 100,000 JA3 entities per day	No	**Fresh installation of 12.3.1** 28 days to complete the learning period before generating alerts.

Learning Period Per Scale for 12.3

Note: The displayed numbers are with the following enhancement enabled. Ensure that you enable the configuration in the `application.properties` file to improve the processing time. For more information, see **The TLS model is taking too long to complete tasks** section in the Troubleshooting UEBA Configurations.

Physical Machine (SERIES 6 ESA (DELL R640) SPECIFICATIONS)

Supported Scale	Existing NetWitness customer (historical data available)	Learning Period Alerts will be generated when the learning period is complete
100,000 users with 30 million Log and Endpoint events + 60 million Network events per day	Yes	**Fresh Installation of 12.3** Up to 10 days with 28 days of historical data
100,000 users with 30 million Log and Endpoint events + 60 million Network events per day	Yes	**Upgrade from 11.7.x, 12.1.x, 12.2.x to 12.3** UEBA reset is not required. • If learning period is already completed, data will be processed for alert generation immediately. • If learning period is completed only for N days, then it will take 28-N days to complete the learning period before generating alerts.

Supported Scale	Existing NetWitness customer (historical data available)	Learning Period Alerts will be generated when the learning period is complete
100,000 users with 30 million Log and Endpoint events + 60 million Network events per day	Yes	**Upgrade from 11.7.x, 12.1.x, 12.2.x to 12.3 with schemas updated (Addition or removal of schemas configured on UEBA)** UEBA reset is required. **Historical data is available for N days**: • N > 28 days: Up to 10 days with 28 days of historical data. • N < 28 days: It will take 28-N days to complete the learning period before generating alerts. **Historical data is not available** 28 days to complete the learning period before generating alerts.
100,000 users with 30 million Log and Endpoint events + 60 million Network events per day	No	**Fresh installation of 12.3** 28 days to complete the learning period before generating alerts.

Virtual Machine

The recommended vCPU specification for UEBA is Intel Xeon CPU @2.59 Ghz.

CPU	Memory	Reserved Memory Allocation	Disk Requirements for /var/netwitness Partition	Read IOPS	Write IOPS
32 cores	128GB	64GB	• Storage: 1.5 TB • Provisioning: Thick	500	500

IMPORTANT: The **/var/netwitness** partition must be mounted on a **1.5 TB** Thick-provisoned disk for storage usage.

To determine the scale limits for Virtual Machine deployments, refer to the **Scaling Limitation Issue** section in the Troubleshooting UEBA Configurations.

Note: NetWitness recommends you to deploy UEBA on a virtual host, only if your log collection volume is low. If you have a moderate to high log collection volume, NetWitness recommends you to deploy UEBA on the physical host as described in the "NetWitness UEBA Host Hardware Specifications" topic of the *Physical Host Installation Guide*. Contact NetWitness Customer Support (https://community.netwitness.com/t5/support-information/how-to-contact-netwitness-support/ta-p/563897) for advice on choosing which host, virtual or physical, to use for UEBA.

Supported Scale	Existing NetWitness customer (historical data available)	Learning Period Alerts will be generated when the learning period is complete
100,000 users with 30 million Log and Endpoint events + 20 million Network events per day	Yes	**Fresh Installation of 12.3** Up to 8 days with 28 days of historical data
100,000 users with 30 million Log and Endpoint events + 20 million Network events per day	Yes	**Upgrade from 11.7.x, 12.1.x, 12.2.x to 12.3** UEBA reset is not required. • If learning period is already completed, data will be processed for alert generation immediately. • If learning period is completed only for N days, then it will take 28-N days to complete the learning period before generating alerts.
100,000 users with 30 million Log and Endpoint events + 20 million Network events per day	Yes	**Upgrade from 11.7.x, 12.1.x, 12.2.x to 12.3 with schemas updated (Addition or removal of schemas configured on UEBA)** UEBA reset is required. **Historical data is available for N days**: • N > 28 days: Up to 8 days with 28 days of historical data. • N < 28 days: It will take 28-N days to complete the learning period before generating alerts. **Historical data is not available** 28 days to complete the learning period before generating alerts.

Supported Scale	Existing NetWitness customer (historical data available)	Learning Period Alerts will be generated when the learning period is complete
100,000 users with 30 million Log and Endpoint events + 20 million Network events per day	No	**Fresh installation of 12.3** 28 days to complete the learning period before generating alerts.

Note: Network events per day refers to number of events consumed by UEBA per day.

Learning Period Per Scale for 12.3 Multiple UEBA Servers

Physical Machine (SERIES 6 ESA (DELL R640) SPECIFICATIONS)

Note: There are two UEBA servers, one is configured with Log and Endpoint data, while the other is configured with Network (TLS) data.

Supported Scale	Existing NetWitness customer (historical data available)	Learning Period Alerts will be generated when the learning period is complete
UEBA Server 1: 100,000 users with 100 million Log and Endpoint events per day **UEBA Server 2**: 100 million Network events per day	Yes	**Fresh Installation of 12.3** Up to 10 days with 28 days of historical data

Supported Scale	Existing NetWitness customer (historical data available)	Learning Period Alerts will be generated when the learning period is complete
UEBA Server 1: 100,000 users with 100 million Log and Endpoint events per day **UEBA Server 2**: 100 million Network events per day	Yes	**Upgrade from 11.7.x, 12.1.x, 12.2.x to 12.3** UEBA reset is not required. • If learning period is already completed, data will be processed for alert generation immediately. • If learning period is completed only for N days, then it will take 28-N days to complete the learning period before generating alerts.
UEBA Server 1: 100,000 users with 100 million Log and Endpoint events per day **UEBA Server 2**: 100 million Network events per day	Yes	**Note:** An additional UEBA server must be installed to configure TLS schema on a separate UEBA server. For example, if you are planning to upgrade from 11.7.1: **Before upgrade**: **UEBA Server 1** is configured with Log, Endpoint, and TLS data. **After upgrade**: • Add another **UEBA Server 2** and configure it with TLS schema. • Reconfigure **UEBA Server 1** with only Log and Endpoint data followed by UEBA reset. For more information, see Best Practices to Add and Remove Schemas for Multiple UEBA Servers. **Upgrade from 11.7.x, 12.1.x, 12.2.x to 12.3 with schemas updated (Addition or removal of schemas configured on UEBA)** UEBA reset is required.

Supported Scale	Existing NetWitness customer (historical data available)	Learning Period Alerts will be generated when the learning period is complete
UEBA Server 1: 100,000 users with 100 million Log and Endpoint events per day **UEBA Server 2**: 100 million Network events per day	Yes	**Historical data is available for N days**: • N > 28 days: Up to 10 days with 28 days of historical data. • N < 28 days: It will take 28-N days to complete the learning period before generating alerts. **Historical data is not available** 28 days to complete the learning period before generating alerts.
UEBA Server 1: 100,000 users with 100 million Log and Endpoint events per day **UEBA Server 2**: 50 million Network events per day	No	**Fresh installation of 12.3** 28 days to complete the learning period before generating alerts.

Troubleshooting UEBA Configurations

This section provides information about possible issues when using NetWitness UEBA.

Task Failure Issues in Airflow

Problem	The `userId_output_entities` task fails when the username contains a backslash.
Cause	When events with usernames containing a backslash character is passed through UEBA, then the `userId_output_entities` task fails.
Solution	To resolve this issue contact the customer success to obtain the relevant files and execute the following steps: • Stop airflow-scheduler service. • Remove all MongoDB documents in the "aggr", "accm" and "input" collections that contains `context.userId` with hashtag. These documents can be located using the FindCollecionsContainsBackslash.js script. • Replace the `/var/netwitness/presidio/asl/adapter-config/transformers/adapter/authentication.json` file with the updated authentication .json. • Restart the airflow-scheduler service. • Validate that the next run of the `userId_output_entities` task is completed successfully.

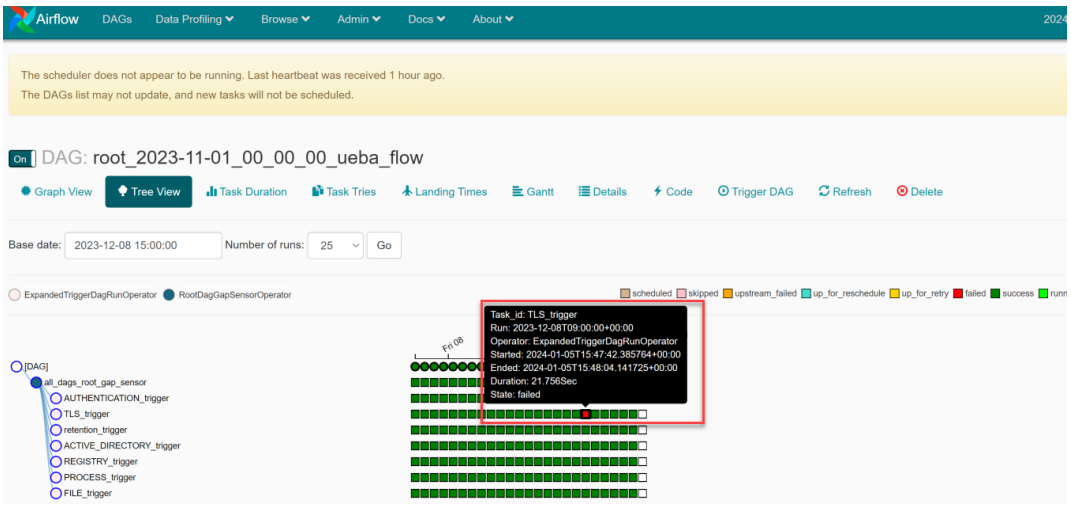
Problem	The `AUTHENTICATION_userId_build_feature_historical_data` task fails when the username contains a hashtag.
Cause	When events with usernames containing a hashtag character is passed through UEBA, then the `AUTHENTICATION_userId_build_feature_historical_data` task fails.
Solution	To resolve these issue contact the customer success to obtain the relevant files and execute the following steps: • Stop airflow-scheduler service. • Remove all MongoDB documents in the "aggr", "accm" and "input" collections that contains `context.userId` with hashtag. These documents can be located using the FindCollecionsContainsHashtagContextUserId.js script.

	• Replace the `/var/netwitness/presidio/asl/adapter-config/transformers/adapter/authentication.json` file with the updated authentication .json. • Restart the airflow-scheduler service. • Validate that the next run of `AUTHENTICATION_userId_build_feature_historical_data` task is completed successfully.

Problem	The task `output_forwarding_task` fails in Airflow UI for `userId_hourly_ueba_flow` DAG due to Elasticsearch 'too many clauses' exception.
Cause	The `output_forwarding_task` task in the `userId_hourly_ueba_flow` DAG fails in the Airflow UI. The failure is caused by an Elasticsearch exception with the following message: `"caused_by":{"type":"too_many_clauses","reason":"maxClauseCount is set to 1024"}`. The too_many_clauses error occurs when the number of clauses in an Elasticsearch query exceeds the maximum limit set by the system. In this case, the maximum number of clauses was set to 1024. The `output_forwarding_task` exceeded this limit, which caused the failure.

Solution	To increase the max clause count value, execute the following steps:
	1. SSH to UEBA server.
	2. Open the `/etc/elasticsearch/elasticsearch.yml` file.
	3. Update the `max clause count` parameter value:
	`indices.query.bool.max_clause_count: 1500`
	4. Restart the elasticsearch service using the following command:
	`systemctl restart elasticsearch`
	Note: After restarting, the task may fail and will be automatically retried.

Problem	Task failure in root DAG due to Airflow issue.
Cause	In the root DAG, one of the tasks failed unexpectedly due to an existing issue with the airflow system.

	
Solution	Whenever this issue occurs, you must examine the logs related to the specific failed task and verify whether the following log entry is present: `dagrun.py:465} INFO - (psycopg2.errors.UniqueViolation) duplicate key value violates unique constraint "task_instance_pkey"`. In such situations, you can safely ignore this issue as it does not require further action. **Note:** This issue does not impact the functionality of UEBA.

MongoDB I/O Operations Slowness Issue

Problem	Increased execution time for DAGs with Mongo I/O Operations.
Cause	Some of the DAGs in the system experienced increased execution time due to slow MongoDB Input/Output (I/O) operations.

Solution	To increase the MongoDB cache size in the MongoDB config file, execute the following steps:
	1. SSH to UEBA server.
	2. Open the `/etc/mongod.conf` file.
	3. Update the `internalQueryMaxBlockingSortMemoryUsageBytes` value to 1GB (1053554432 bytes).
	`internalQueryMaxBlockingSortMemoryUsageBytes: 1053554432`
	4. Restart the Mongod service using the following command:
	`systemctl restart mongod`
	
	Note: After restarting, the task may fail and will be automatically retried.

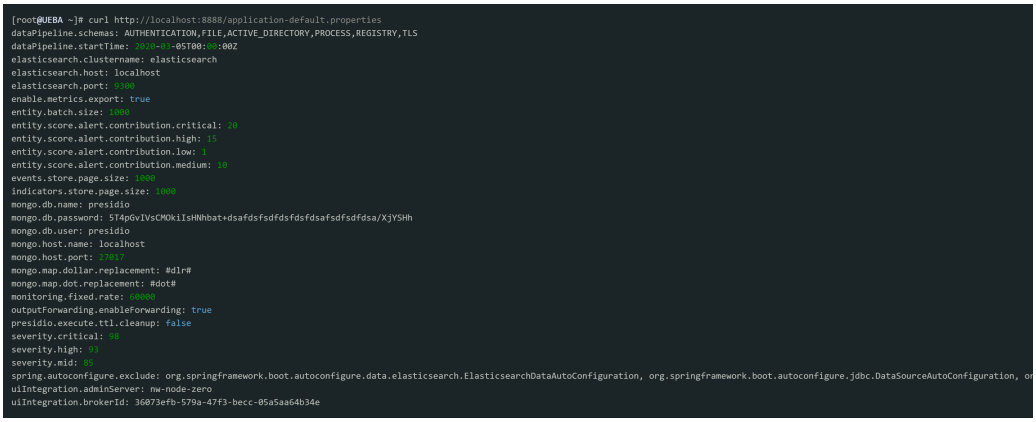
User Interface Inaccessible

Problem	The User Interface is not accessible.
Cause	You have more than one NetWitness UEBA service existing in your NetWitness deployment and you can only have NetWitness UEBA service in your deployment.

Solution	Complete the following steps to remove the extra NetWitness UEBA service.
	1. SSH to NW Server and run the following commands to query the list of installed NetWitness UEBA services.
	`# orchestration-cli-client --list-services|grep presidio-airflow`
	`... Service: ID=7e682892-b913-4dee-ac84-ca2438e522bf, NAME=presidio-airflow, HOST=xxx.xxx.xxx.xxx:null, TLS=true`
	`... Service: ID=3ba35fbe-7220-4e26-a2ad-9e14ab5e9e15, NAME=presidio-airflow, HOST=xxx.xxx.xxx.xxx:null, TLS=true`
	2. From the list of services, determine which instance of the `presidio-airflow` service should be removed (by looking at the host addresses).
	3. Run the following command to remove the extra service from Orchestration (use the matching service ID from the list of services):
	`# orchestration-cli-client --remove-service --id <ID-for-presidio-airflow-form-previous-output>`
	Note: Run the following command to update NW Server to restore NGINX:
	`# orchestration-cli-client --update-admin-node`
	4. Log in to NetWitness, go to **(Admin)** > **Hosts**, and remove the extra NetWitness UEBA host.

Get UEBA Configuration Parameters

Issue	How to get UEBA configuration parameters?
Explanation	To get the UEBA configuration main parameters, run the `curl http://localhost:8888/application-default.properties` command from the UEBA host.

	 The main parameters which will be returned are the following: • **uiIntegration.brokerId**: The Service ID of the NW data source (Broker / Concentrator) • **dataPipeline.schemas**: List of schemas processed by the UEBA • **dataPipeline.startTime**: The date the UEBA started consuming data from the NW data source • **outputForwarding.enableForwarding**: The UEBA Forwarder status
Resolution	See the resolution for these statistics in the Troubleshooting UEBA Configurations section.

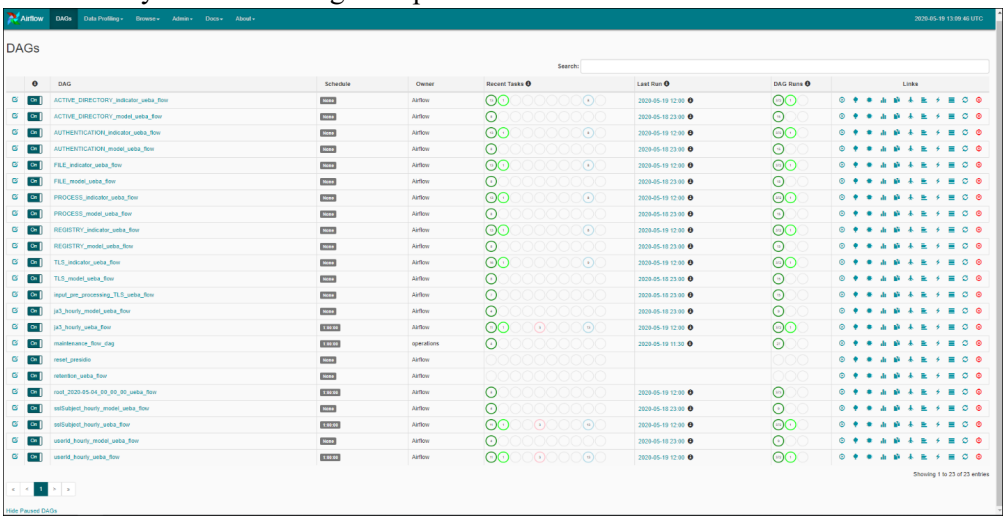
Check UEBA Progress Status using Airflow

Issue	How to check UEBA progress status using Airflow?

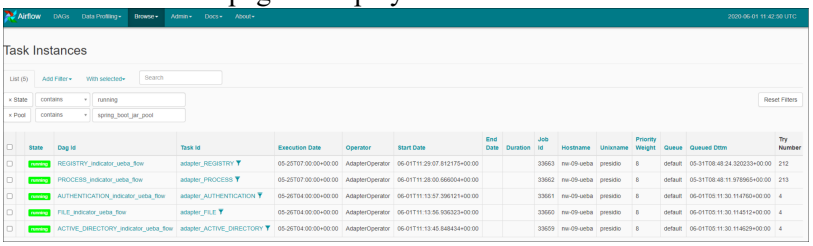
Resolution

Note: To access the Airflow UI, you must use the **deploy_admin** credentials.

1. Navigate to https://<UEBA-host-name>/admin. Enter the admin username and the deploy-admin password. The following image is of the Airflow home page that shows the system is working as expected.

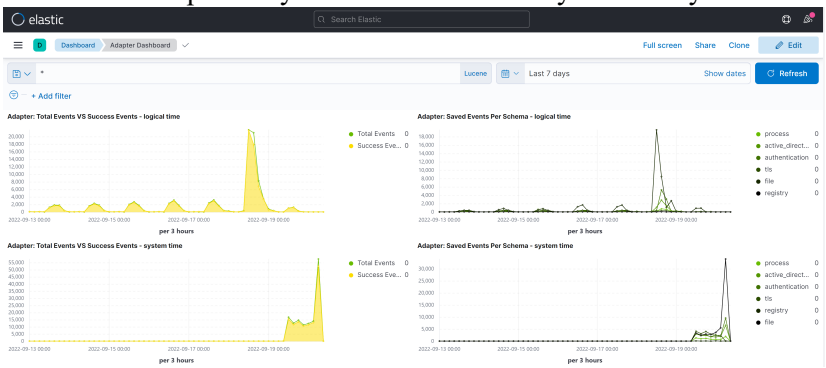


2. Make sure that no red or yellow circles appear in the main page:
   - red circle indicates that a task has failed.
   - yellow circle indicates that a task has failed and is “awaiting” for a retry.
     If a “failed” or “up-for-retry” task appears, investigate what is the root cause of the problem.
3. Make sure the system continues to run.
4. Tap the **Browse** button and select **Task Instance**.
5. Add the following filters: **State** = `running` and **Pool** = `spring_boot_jar_pool`. The Task Instance page is displayed.



The **Execution Date** column shows the current time window for each running task. Make sure the execution date is greater than the UEBA start-date and that new tasks have an updated date are added to the table.

Check if data is received on the UEBA by Kibana

Issue	How to check if data is received on the UEBA by Kibana
Explanation	**Note:** To access the Kibana UI, you must use the **deploy_admin** credentials. Navigate to https://<UEBA-host-name>/kibana. Enter the admin username and the deploy-admin password: To check that the data is flowing to the UEBA go to the Adapter Dashboard: Tap the Dashboard tab in the left menu Tap Adapter Dashboard at the right menu Select the relevant time range at the top bar The charts on this dashboard will present you the data that already fetched by the UEBA. 

Scaling Limitation Issue

When installed on a Virtual Machine, you can determine the number of network events to be processed by referring to the latest version of the **Learning Period Per Scale** topic.

Note: If the scaling limits are exceeded, NetWitness recommends provisioning the UEBA on a physical appliance.

Issue	How to determine the scale of network events currently available, to know if it exceeds the UEBA limitation.
Solution	To know the network data limit, perform the following : • Run the query on the Broker or Concentrator that connects to UEBA using NetWitness UI: `service=443 && direction='outbound' && analysis.service!='quic' && ip.src exists && ip.dst exists && tcp.srcport!=443` Calculate the total number of events for the selected days (including weekdays with standard workload). To determine the number of network events to be processed on a virtual machine for your environment, always refer to the latest version of the **Learning Period for Scale** topic.

Issue	Can UEBA for Packets be used if UEBA's supported scale is exceeded?
Solution	You must create or choose a Broker that is connected to a subset of Concentrators that does not exceed the supported limit. To know the network data limit, perform the following : • Run the query on the Concentrator that connects to UEBA using NetWitness UI: `service=443 && direction='outbound' && analysis.service!='quic' && ip.src exists && ip.dst exists && tcp.srcport!=443` Calculate the total number of events for the selected days (including weekdays with standard workload). If the average is above 20 million per day then it indicates that UEBA's supported scale is exceeded.

Note: The Broker must query all the available and needed data needed such as logs, endpoint and network (packets). UEBA packets models are based on the whole environment. Hence, make sure that the data parsed from the subset of Concentrators is consistent.

UEBA Policy Issue

Issue	After you create a rule under UEBA policy, duplicate values are displayed in the Statistics drop-down.

Solution	To remove the duplicate values, perform the following:
	1. Log in to MongoDB using following command:`mongo admin -u deploy_admin -p {Enter the password}`
	2. Run the following command on MongoDB:
	`use sms;`
	`db.getCollection('sms_statdefinition').find({componentId :"presidioairflow"})`
	`db.getCollection('sms_statdefinition').deleteMany ({componentId :"presidioairflow"})`

Troubleshoot Using Kibana

Issue	After you deploy NetWitness UEBA, the connection between the NetWitness and NetWitness UEBA is successful but there are very few or no events in the **Users** > **OVERVIEW** tab. 1. Log in to **Kibana**. 2. Go to **Table of Content** > **Dashboards** > **Adapter Dashboard**. 3. Adjust the **Time Range** on the top-right corner of the page and review the following:

	• If the new events are flowing. • In the **Saved Events Per Schema** graph, see the number of successful events per schema per hour. • In the **Total Events vs. Success Events** graph, see the total number of events and number of successful events. The number of successful events should be more every hour. For example, in an environment with 1000 users or more, there should be thousands of authentication and file access events and more than 10 Active Directory events. If there are very few events, there is likely an issue with Windows auditing.
Solution	You must identify the missing events and reconfigure the Windows auditing. 1. Go to **Investigate** > **Navigate**. 2. Filter by **devide.type= device.type "winevent_snare"** or **"winevent_nic"**. 3. Review the events using **reference.id** meta key to identify the missing events. 4. Reconfigure the Windows auditing. For more information, see **NetWitness UEBA Windows Audit Policy** topic.

Issue	The historical load is complete and the events are coming from Adapter dashboard but no alerts are displayed in the **Users** > **Overview** tab.
Solution	1. Go to **Kibana** > **Table of content** > **Scoring and model cache**. 2. Adjust the **Time Range** from the top-right corner of the page, and see if the events are scored.

Issue	The historical load is complete but no alerts are displayed in the **Users** tab.
Solution	1. Go to **Kibana** > **Dashboard** > **Overview**. 2. Adjust the **Time Range** from the top-right corner of the page, and see how many users are analyzed and if any anomalies are found.

Troubleshoot Using Airflow

Issue	After you start running the UEBA it is not possible to remove a data source during the run process else the process stops.
Solution	You must either continue the process till it completes or remove the required data source from UEBA and rerun the process.

Issue	After you deploy UEBA and if there are no events displayed in the **Kibana** > **Table of content** > **Adapter** dashboard and Airflow has already processed the hours but there are no events. This is due to some communication issue.
Solution	You must check the logs and resolve the issue. 1. Log in to **Airflow**. 2. Go to **Admin** > **REST API Plugin**. 3. In the **Failed Tasks Logs**, click **execute**. A zip file is downloaded. 4. Unzip the file and open the log file to view and resolve the error. 5. In the **DAGs** > **reset_presidio**, click **Trigger Dag**. This deletes all the data and compute all the alert from the beginning. **Note:** During initial installation, if the hours are processed successfully but there are no events, you must click reset_presidio after fixing the data in the Broker. Do not reset if there are alerts.