

# IBM Resilient SOAR Platform Add-On for Splunk User Guide V1.2.2

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## **Resilient SOAR Platform Add-On for Splunk User Guide**

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1.2.2	March 2021	Setup UI patch. Bug fix related to artifacts.
1.2.1	February 2021	Splunk Cloud compliance.
1.2.0	December 2020	Support for Resilient API keys. Ability to update an existing incident from Splunk ES. Permission for ess_analyst role to use the Add-On.
1.1.0	August 2020	Added support for Python 3.
1.0.2	April 2018	Updated Splunk version number.
1.0.1	January 2018	Initial publication.

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# Overview

The Resilient Add-On supports Splunk and Splunk ES. The Add-On provides the capability of escalating a Splunk alert or Splunk ES notable event to a Resilient incident.

The Resilient Add-On features include:

- **Easy Incident Mapping:** Enables mapping of static values or search result tokens into Resilient incident fields. You can map fields parsed from the event in the alert or notable event directly into any incident field. You also have custom incident mapping rules for each saved alert or notable event.
- **Create Artifacts:** Maps result tokens into artifacts at the same time the incident mapping is defined.
- **Custom Field Discovery:** Retrieves the incident definition from the Resilient platform so that all defined fields and field values are catalogued inside Splunk or Splunk ES. This allows you to add custom fields to the Resilient platform, which are then available for mapping in Splunk or Splunk ES.
- **Automatic and manual escalation:** Escalates notable events from a correlation search or alerts from a saved search to Resilient incidents (automatic escalation). For Splunk ES only, you can escalate notable events as an ad hoc action (manual escalation).

# Installation

## Requirements

The following lists the system requirements:

- Splunk version 8.0 or later.
- Splunk ES 6.1.0 or later (only if working with Notable Events).
- Splunk CIM Framework.

**Note:** The Add-On depends on Splunk CIM. Please install CIM before installing the Add-On.

- Resilient platform version 35 or later.
- Ability to connect directly from Splunk to your Resilient platform with HTTPS on port 443.
- A dedicated Resilient Administrator or equivalent account on the Resilient platform. This can be any account that has the permission to create incidents and simulations, and view and modify administrator and customization settings. You need to know the account username and password.

**or**

A dedicated API key/secret pairing with equivalent permissions. This can be any API key that has the permission to create incidents and simulations, and view and modify administrator and customization settings. You need to know both the API key and secret.

**Note:** Should you later change the dedicated Resilient account or API key, the new credentials must also have the permission to edit incidents, in addition to the permission to create incidents and simulations and view and modify administrator and customization settings. The edit permission is necessary so that the integration can continue to modify or synchronize the incidents escalated by the original user account.

You can refer to the [Playbook Designer Guide](#) for more information about simulations.

- Splunk admin role for the user who installs and sets up Resilient Add-On. Both the admin and ess\_analyst roles may use the Add-On as an Alert Action or an Adaptive Response Action for a correlation search.

## Installation and Setup

**If upgrading SA-Resilient, clear your browser cache after installing the upgrade.**

For Splunk Cloud and Splunk ES Cloud users, contact Splunk Support to create a ticket for installing the Resilient Add-On.

If you have installed Splunk or Splunk ES on-premises, you can download and install the add-on from [Splunkbase](#). Alternatively, you can request an installer from IBM Resilient.

After installing the add-on and restarting Splunk, navigate back to the App Manager screen. Click **Set up** in the Resilient row. Fill out the required attributes for your Resilient platform and click **Submit**. When you save, the Set Up program performs the following:

- Retrieves the incident definition from the Resilient platform, so that all fields, including custom fields, are catalogued.

**NOTE:** If a Resilient administrator adds custom fields after you run Set Up, you need to run Set Up again to capture the new fields.

- Tests the configuration to verify that the connection is successful. If the configuration saves successfully, you are up and running.

Refer to the Troubleshooting section if you encounter a problem.

## Configuration

**Resilient Domain or IP:** Hostname or IP for your Resilient platform. Do not include the https:// prefix.

**Connect Securely:** Do not check if using self-signed certificates on your Resilient platform.

**Allow Duplicate Incidents:** If left **unchecked**, the Add-On will search for an existing open incident in the Resilient Platform and update that incident if one is found. If there is no match, a new incident will be created. If this box is **checked**, a new incident will be created every time the action is triggered

**\*\*\*Note:** Updating existing incidents in the Resilient Platform requires use of Splunk ES and the splunk\_notable\_event\_id custom field. See [Mapping event id for Notable Events](#)

**Use API Keys:** **Check** to authenticate with Resilient using an API key and secret. **Uncheck** to authenticate with Resilient using an email and password.

**Org:** The name of the Resilient organization.

**Email or API key:** Email address or API key ID you use when authenticating with Resilient.

**Password:** Password for the Resilient account or API key secret for the Resilient API key. This field must always be manually filled in before hitting “Submit.”

**Max Artifacts per alert:** Maximum number of artifacts you may need to map into a single Resilient incident from any given Splunk alert or Splunk ES notable event. This field takes an integer.

**\*\*\*Note:** Please wait a few moments after selecting “Submit” in order for the setup process to complete. Your browser will display an alert with the results of the setup process once it has completed. Once you have successfully configured the app, the setup page will display the last successful configuration in the form, with the exception of “Password,” which you must always enter.

The screenshot shows the 'IBM Resilient Setup Page' within the Splunk Enterprise web interface. The page has a dark theme. At the top, there's a navigation bar with 'splunk enterprise' logo and various menu items like 'Apps', 'Administrator', 'Messages', 'Settings', 'Activity', 'Help', and 'Find'. The main content area is titled 'IBM Resilient Setup Page'. It contains several input fields and checkboxes: 'Resilient Domain or IP' (text input), 'Connect Securely' (checkbox), 'Allow Duplicate Incidents' (checkbox), 'Use API Keys' (checkbox), 'Email or API Key' (text input), 'Password' (text input), 'Org' (text input), and 'Max Artifacts Per Alert' (text input with a value of 0). A 'Submit' button is located at the bottom left of the form area.

# Escalating Splunk Alerts

## Adding a Splunk Alert Action

To add a Resilient escalation to an alert, go to the **Alerts** tab in the Search & Reporting app and find the alert for which you want to create a Resilient incident. Click **Edit** and select **Edit Actions**. Click **+ Add Actions** and select **Resilient**. Update the incident fields to indicate how you want them mapped. You can use static values or tokens from the alert data. In addition to the fields parsed in your particular alert search, the [Splunk documentation](#) has a list of the default tokens available in any search.

Be sure to map a valid value for the Date Discovered field, which is always required.

A sample alert, `sa_failed_splunk_login`, is included. If you enable this alert, a Resilient incident is created each time there is a failed login attempt to Splunk. If you have added custom required fields to your Resilient platform, you need to edit the mapping on the alert action screen to include them before triggering the example.

Search

```
index=_internal sourcetype=splunkd ERROR UiAuth
```

### Edit Alert

×

Time Range

Last 5 minutes ▶

Cron Expression

\*/\* \* \* \*

e.g. 00 18 \* \* \* (every day at 6PM). [Learn More](#)

Expires

24

hour(s) ▼

#### Trigger Conditions

Trigger alert when

Number of Results ▼

is greater than ▼

0

Trigger

Once

For each result

Throttle ?

☐

#### Trigger Actions

+ Add Actions ▼

When triggered

▼

Create Resilient Incident (SA-Resilient)

[Remove](#)

Enter a value to map for each incident field. This text can include tokens that will resolve to text based on search results. [Learn More](#)

\* required

Date Discovered

\$result\_time\$ \*

Name

\$name\$ (from Splunk) \*



## Mapping Date and Datetime Fields

If mapping values from Splunk to Date Picker or Date Time Picker fields in the Resilient platform, the formatting of those values in the mapping must meet certain requirements. If you are parsing the date/datetime value from the Splunk search using a token, the value is already properly formatted and there is no additional action required. However, if you are providing a static value for the mapping, dates must be formatted as `YYYY/MM/DD`. Similarly, datetime values must be provided as `YYYY/MM/DD HH:MM:SS ±xxxx`. The `±xxxx` following the time is the UTC offset value. For example, the value for Cambridge, Massachusetts, United States is `-0500`. Be sure to include a leading zero if your offset value is a single-digit number of hours.

In Python3, you may include a colon between the hour and minute values (in the Cambridge example this is `-05:00`). However, in Python2 the UTC offset must be only the directional sign and exactly four digits. This value is optional when providing a static datetime. If you do not provide a UTC offset value, the datetime object is assumed to be in Greenwich Mean Time (GMT).

## Mapping Multiselect Fields

If mapping values from Splunk to Multiselect field in the Resilient platform, these values must be supplied as comma separated values (CSV) with no spaces. For example, two valid value formats to map are:

- `1,2,3`
- `$result.value1$, $result.value2$, $result.value3$`

The following introduction of spaces **generates errors** when creating the incident in the Resilient platform.

- `1, 2, 3`
- `$result.value1$, $result.value2$, $result.value3$`

These examples assume that values 1, 2, 3 and the values returned from Splunk after evaluating `$result.value1$`, `$result.value2$`, and `$result.value3$` are valid selections for the multiselect field you desire to fill or update in the Resilient platform. You need to define these accepted values manually.

### Create Incident Field

What type of field is this? ?

Multiselect

What is the label for this field? \* ?  

Splunk Multiselect Example

API Access Name \* ?  

splunk\_multiselect\_example

Placeholder ?  

A placeholder value

Requirement ?  

Optional

Tooltip ?  

A description of this field.

Enter one value per line ✓ ✕

example\_value\_1  
example\_value\_2  
example\_value\_3  
example\_value\_4  
example\_value\_5

Select one or more options as default when creating new incidents.

Cancel

Create

## Mapping Multiple Artifacts of the Same Type

Similar to adding artifacts manually through the Resilient UI, you can add multiple artifacts of the same type at once as long as the artifact type allows multiple values. This setting can be found under Customization Settings > Artifacts in the Resilient platform. URL's need to be separated by a space and IP addresses must be comma-separated. Artifacts can also be mapped individually.

Artifact 11	<div>IP Address</div> <div>7.7.7.7</div> <div>description</div>
Artifact 12	<div>IP Address</div> <div>8.8.8.8,9.9.9.9</div> <div>description</div>

## Updating the Default Incident Mapping

You can change the default mapping when you configure the action. If the incident mapping for most of your alerts will be very similar, you may want to override the default mapping where all the alerts start. Create an `alert_actions.conf` in `$SPLUNK_HOME/etc/apps/SA-resilient/local` and override the default mappings.

# Escalating Splunk ES Notable Events

## Adding an Adaptive Response Action

To add a Resilient escalation to a correlation search, go to the **Configure** tab in the Enterprise Security App, and select **Content Management**. Click the correlation search for which you want to create a Resilient incident and scroll down to the **Adaptive Response Actions** section. Click **+ Add New Response Action** and select **Create Resilient Incident (SA-Resilient)**. Update the incident fields to indicate how you want them mapped.

To create a new correlation search, go to the **Configure** tab in the Enterprise Security App and select **Content Management**. Click **Create New Content** and select **Correlation Search**. Create a new correlation. A sample correlation search `failed_splunk_login_cs`, is included, which you can find in **Content Management**.

### Correlation Search

Search Name	<input type="text" value="failed_splunk_login_cs"/>	
App	<input type="text" value="Resilient Incident Creation from Splunk ES"/>	
UI Dispatch Context	<input type="text" value="None"/> <small>Set an app to use for links such as the drill-down search in a notable event or links in an email adaptive response action. If None, uses the Application Context.</small>	
Description	<input type="text" value="Create an incident when login to splunk server failed."/>	
Mode	<input type="radio" value="Guided"/>	<input type="radio" value="Manual"/>
Search	<input type="text" value="index=_internal sourcetype=splunkd ERROR UiAuth   `get_event_id`"/>	

### Time Range

Earliest Time	<input type="text" value="-5m"/>
---------------	----------------------------------

Set a time range of events to search. Type an earliest time using relative time modifiers.

Scroll down to the Adaptive Response Actions section and view that the Resilient Add-On has been added as a response in this sample correlation search. You can change the default configuration.

Trigger Conditions

Trigger alert when

Number of Results

▼

is greater than

▼

0

Throttling

Window duration

0

second(s) ▼

How much time to ignore other events that match the field values specified in Fields to group by.

Fields to group by

Type a field and press enter

Type the fields to consider for matching events for throttling. [Learn more](#)

Adaptive Response Actions

[+ Add New Response Action](#) ▼

>

Create Resilient Incident (SA-Resilient)

x

# Ad Hoc Invocation

You can dispatch Resilient Add-On as an ad hoc invocation. To escalate a notable event, go to the Incident Review tab of Enterprise Security. Locate the notable event that you wish to escalate and select **Run Adaptive Response Actions** in the Actions column.

urgency

CRITICAL0

HIGH0

MEDIUM0

LOW8

INFO0

status

Select...

owner

Select...

security domain

Select...

tag

Type...

Correlation Search

Sequenced Event

Select...

Search

Time

Associations

Last 24 hours

Submit

8 events (8/12/20 8:00:00.000 AM to 8/13/20 8:18:13.000 AM)

Job

Smart Mode

Format Timeline

Zoom Out

Zoom to Selection

Deselect

1 hour per column

5

12:00 PM

Wed Aug 12

2020

6:00 PM

12:00 AM

Thu Aug 13

6:00 AM

5

Edit Selected

Edit All 8 Matching Events

Add Selected to Investigation

i	Time	Security Domain	Title	Urgency	Status	Owner	Actions
>	8/13/20 8:18:06.000 AM	Threat	Manual Notable Event - Rule	Low	New	unassigned	
>	8/13/20 8:16:45.000 AM	Threat	Manual Notable Event - Rule	Low	New		Add Event to Investigation
>	8/13/20 8:15:28.000 AM	Threat	Manual Notable Event - Rule	Low	New		Build Event Type
>	8/13/20 8:14:32.000 AM	Threat	Manual Notable Event - Rule	Low	New		Extract Fields
>	8/13/20 8:13:39.000 AM	Threat	Manual Notable Event - Rule	Low	New		Run Adaptive Response Actions
>	8/13/20 7:48:38.000 AM	Threat	Manual Notable Event - Rule	Low	New		Share Notable Event
>	8/13/20 7:47:43.000 AM	Threat	Manual Notable Event - Rule	Low	New		Suppress Notable Events
>	8/13/20 7:46:23.000 AM	Threat	Manual Notable Event - Rule	Low	New		Show Source
						unassigned	

Click **+ Add New Response Action** and select **Create Resilient Incident (SA-Resilient)**. Update the incident fields to indicate how you want them mapped.

Adaptive Response Actions

Select actions to run.

+ Add New Response Action

Create Resilient Incident (SA-Resilient)

Enter a value to map for each incident field. This text can include tokens that will resolve to text based on search results.  
[Learn More](#)

\* required

Date Discovered

\$result.orig\_time\$

Name

\$name\$ (from Splunk)

Workspace

Description

<div>\$name\$</div><div>\$result.rule\_descripti

Simulation

0

Reporting Individual

Splunk \$result.splunk\_server\$

Address

City

Incident Disposition

Country/Region

Criminal Activity

Employee Involved

Run

Click **Run** to escalate. Once completed, refresh the page to see the updated notable event. The comment contains the Incident ID for the incident created. The **Adaptive Responses** field, shown below, displays a success status for **Create Resilient Incident**.

Adaptive Responses:

Response	Mode	Time	User	Status
Create Resilient Incident (SA-Resilient)	saved	2020-08-28T10:15:08-0700	nobody	✓ success
Notable	saved	2020-08-28T10:15:07-0700	nobody	✓ success

[View Adaptive Response Invocations](#)

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# Show Escalated Notable Events

Each time a notable event is escalated successfully, the corresponding Resilient ID is added to the comment field of the notable event. This allows Splunk ES users to easily search for all the notable events escalated successfully. To perform a search, enter the search parameter, such as ``notable` | where (comment LIKE "Resilient Incident ID: %")`, in the **Search** tab of **Enterprise Security**. For example:

The screenshot shows the Splunk Enterprise Security interface. The top navigation bar includes links for Security Posture, Incident Review, Investigations, Glass Tables, Security Intelligence, Security Domains, Audit, Search, and Configure. The 'Search' tab is active. Below the navigation bar, the 'New Search' section displays the search query: ``notable` | where (comment LIKE "Resilient Incident ID: %")`. The search results show 1 event from 8/12/20 10:00:00.000 AM to 8/13/20 10:49:53.000 AM. The event details are as follows:

Time	Event
8/13/20 8:18:06.000 AM	1597331883, search_name="Manual Notable Event - Rule", orig_time="1597331883", app="SplunkEnterpriseSecuritySuite", creator="admin", info_max_time="infinity", info_min_time="0.000", info_search_time="1597331883.012956000", owners="unassigned", rule_description="Demo", rule_title="Manual Notable Event - Rule", security_domain="threat", status="1", urgency="low"
	host = spny1fyre.ibm.com   source = Manual Notable Event - Rule   sourcetype = stash

## Mapping Additional Fields

You can customize Splunk ES notable events by adding additional fields, as described in the [Splunk documentation](#). The additional fields can be used in mapping as the following token:

```
$result.additional_field_label$
```

The **additional\_field\_label** is the label used for the additional field.

## Mapping Date and Datetime Fields

If mapping values from Splunk to Date Picker or Date Time Picker fields in the Resilient platform, the formatting of those values in the mapping must meet certain requirements. If you are parsing the date/datetime value from the Splunk search using a token, the value is already properly formatted and there is no additional action required. However, if you are providing a static value for the mapping, dates must be formatted as `YYYY/MM/DD`. Similarly, datetime values must be provided as `YYYY/MM/DD HH:MM:SS ±xxxx`. The `±xxxx` following the time is the UTC offset value. For example, the value for Cambridge, Massachusetts, United States is `-0500`. Be sure to include a leading zero if your offset value is a single-digit number of hours.

In Python3, you may include a colon between the hour and minute values (in the Cambridge example this is `-05:00`). However, in Python2 the UTC offset must be only the directional sign and exactly four digits. This value is optional when providing a static datetime. If you do not provide a UTC offset value, the datetime object is assumed to be in Greenwich Mean Time (GMT).

# Mapping Multiselect Fields

If mapping values from Splunk to Multiselect field in the Resilient platform, these values must be supplied as comma separated values (CSV) with no spaces. For example, two valid value formats to map are:

- 1,2,3
- \$result.value1\$, \$result.value2\$, \$result.value3\$

The following introduction of spaces generates errors when creating the incident in the Resilient platform.

- 1, 2,3
- \$result.value1\$, \$result.value2\$, \$result.value3\$

These examples assume that values 1, 2, 3 and the values returned from Splunk after evaluating \$result.value1\$, \$result.value2\$, and \$result.value3\$ are valid selections for the multiselect field you desire to fill or update in the Resilient platform. You need to define these accepted values manually.

## Create Incident Field

What type of field is this? ? Multiselect

What is the label for this field? \* ?  
Splunk Multiselect Example

API Access Name \* ?  
splunk\_multiselect\_example

Placeholder ?  
A placeholder value

Requirement ?  
Optional

Tooltip ?  
A description of this field.

Enter one value per line ✓ ✕  
example\_value\_1  
example\_value\_2  
example\_value\_3  
example\_value\_4  
example\_value\_5  
*Select one or more options as default when creating new incidents.*

Cancel

Create

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## Mapping Multiple Artifacts of the Same Type

Similar to adding artifacts manually through the Resilient UI, you can add multiple artifacts of the same type at once as long as the artifact type allows multiple values. This setting can be found under Customization Settings > Artifacts in the Resilient platform. URL's need to be separated by a space and IP addresses must be comma-separated. Artifacts can also be mapped individually.

Artifact 11	<div>IP Address</div> <div>7.7.7.7</div> <div>description</div>
Artifact 12	<div>IP Address</div> <div>8.8.8.8,9.9.9.9</div> <div>description</div>

## Mapping event\_id for Notable Events

In the Resilient platform, it is recommended that you create a customized field for the Resilient incident for notable event\_id. In the following example, the event\_id of a notable event is mapped to the customized field. Refer to the *Resilient SOAR Platform Playbook Designer Guide* for details.

**NOTE:** To use the update incident capability and avoid creating duplicate incidents, this field must have an API name of exactly `splunk_notable_event_id` as shown below.

### Editing Field

What type of field is this? Text

What is the label for this field? \* Splunk Notable Event ID

API Access Name \* splunk\_notable\_event\_id

Placeholder A placeholder value

Requirement Optional

Tooltip A description of this field

Cancel

Save

# Updating the Default Incident Mapping

Default mapping is provided in:

```
$SPLUNK_HOME/etc/apps/SA-Resilient/default/alert_actions.conf
```

This default mapping includes the following tokens. The mapping also includes a hyperlink to the notable event from Splunk ES.

Field	Token
Title of the notable	\$result.rule_title\$
Urgency	\$result.urgency\$
Owner	\$result.owner\$
Notable description	\$result.rule_description\$
Status	\$result.status\$

The following is an example of an incident created in the Resilient platform from the mapping.

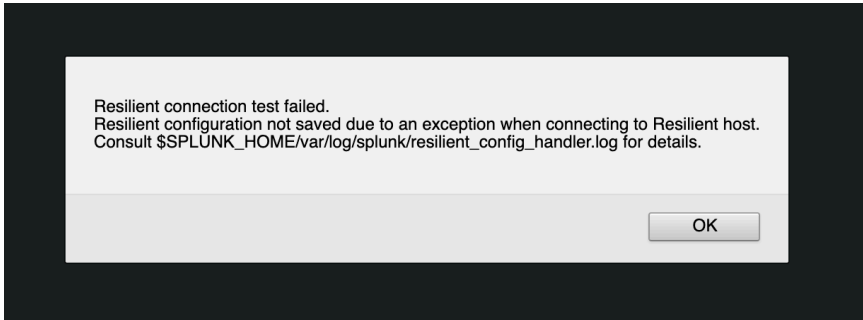
The screenshot shows the Resilient platform interface. At the top, there's a navigation bar with 'Dashboards', 'Inbox', 'Incidents', and a 'Create' button. Below this, the incident is titled '(from Splunk)'. The 'Description' section contains the text: 'Create an incident when login to splunk server failed.', 'Urgency: medium', 'Owner: unassigned', 'Status:1', and a link 'Link to Splunk ES notable event'. Below the description is a horizontal tab bar with 'Tasks', 'Details' (selected), 'Breach', 'Notes', 'Members', 'News Feed', 'Attachments', 'Stats', 'Timeline', 'Artifacts', and 'Email'. An 'Edit' button is visible on the right. The 'Basic Details' section shows the incident's name as '(from Splunk)', description as 'Create an incident when login to splunk server failed.', urgency as 'medium', owner as 'unassigned', status as '1', and a link to the Splunk ES notable event. At the bottom, the 'splunk notable event ID' is displayed as '0DE6791A-6F7D-42DC-BAF0-26D58032AE40@@@notable@@@f027a2328270508293275246ec653264'.

You can change the default mapping when you configure the action.

# Troubleshooting

## Setup Screen

When you click **Submit** on the Resilient Setup screen in Splunk, the app attempts to make a connection to your Resilient platform to verify that everything is configured correctly and to update the stored incident definition. If this connection fails, you will see an alert error that looks similar to this:



After a few seconds, the Splunk messages tab updates with detailed information about the cause of the failure.

Further information is logged to the following locations in Splunk:

- `$SPLUNK_HOME/var/log/splunk/resilient_config_handler.log`
- `$SPLUNK_HOME/var/log/splunk/splunkd.log`
- `$SPLUNK_HOME/var/log/splunk/python.log`

Some common causes of these issues include:

- Forgot to uncheck the “Connect securely?” box for self-signed certificate.
- Port 443 is blocked.

## Incident Not Created

If an alert or automatic escalation for correlation search fails to create an incident, a message should be logged into the Splunk messages tab informing you of the issue. Further information is logged to the following location in Splunk:

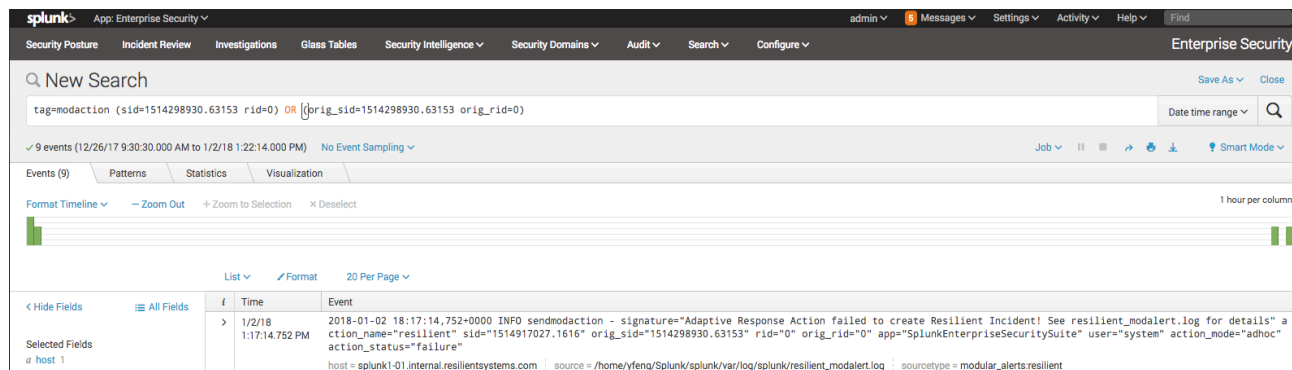
- `$SPLUNK_HOME/var/log/splunk/resilient_modalert.log`

Some common causes of these issues include:

- Insufficient permissions to create an incident or simulation.
- Missing mappings for required fields.
- Fields mapped with invalid values.
- Connection unavailable.

# Ad Hoc Invocation Failure

You can view the status of an ad hoc invocation when you refresh the Adaptive Response page. If it fails, click **View Adaptive Response Invocations**. In the search result, you should see a message, “See resilient\_modalert.log for details.”



You can then open `$SPLUNK_HOME/var/log/resilient_modalert.log` to look for details about the failure.

If the Splunk UI dispatches an error in the UI during an adhoc invocation that reads:

*“SA-Resilient could not be dispatched: ModularActionException: Invalid parameter for adhoc modular action”*

it is likely that a .conf file has been edited by a person or app other than SA-Resilient. To resolve this issue, try running the setup process for SA-Resilient again. If the manual action still fails to complete after re-running the setup process, you may need to manually delete all entries in `$SPLUNK_HOME/etc/apps/SA-Resilient/local/alert_actions.conf` and run the setup process one more time to bring in the Resilient field definitions from scratch.

# Support

For additional support, go to <https://ibm.com/mysupport>.

Including relevant information will help us resolve your issue:

- version of Splunk / Splunk Cloud
- version of Enterprise Security Add-On
- version of Resilient Add-On
- if using Splunk 8 - which Python interpreter your server is using
- steps/screenshots that will help us reproduce your issue

Including log files located in `$SPLUNK_HOME/var/log/splunk`:

- `splunkd.log`
- `python.log`
- `resilient_config_handler.log`
- `resilient_modalert.log`