

IBM Resilient SOAR Platform Add-On for Splunk User Guide V1.3.2

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Resilient SOAR Platform Add-On for Splunk User Guide

Version	Publication	Notes
1.3.2	June 2022	Bug fix related to \$ character in result tokens.
1.3.1	May 2022	Bug fix: Escape special characters in search result tokens.
1.3.0	November 2021	Support for creating multiple add-on instances via shell script. Use single quotes around multiselect fields containing commas. Use html format for incident description field. Max Artifacts Per Alert limit set to 99 on the Set up page. User Guide updates for Cloud Pak for Security and SaaS.
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).

A Conversion Script package converts an instance of the Add-on into a different instance with a user specified name. You can import the new instance into an on-premises Splunk installation and configure it to run with a different SOAR organization or platform. The package can be downloaded from the [IBM App Exchange](#).

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 in a stand alone or a search head cluster environment and restarting Splunk, navigate back to the Apps 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.

Note: If running in a search head cluster environment, Set Up only needs to be executed on one search head member. Set Up information is replicated to each of the other search head members after hitting Submit with successful completion.

- 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

Configure the IBM Resilient Splunk Add-on to access your IBM Resilient platform on the Setup Page pictured below. Navigate to this page from the Apps Manager screen.

Guidelines for configuring the Setup Page parameters:

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

Note: If configuring for Cloud Pak for Security, prefix the hostname with **cases-rest**.

For example: cases-rest.cp4s-domain.com

If configuring for Cloud Pak for Security SaaS, contact CP4S SaaS Support for the cases rest and stomp endpoints.

For DNS Mapping, the user should save the IP and domain name in the file **/etc/hosts** on the Splunk server.

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

- **Allow Duplicate Incidents:** If **unchecked**, the Add-On searches for an existing open incident in the Resilient platform and, if found, updates that incident. If there is no match, a new incident is created. If this box is **checked**, a new incident is 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 the Resilient platform using an API key and secret. **Uncheck** to authenticate with the Resilient platform using an email and password.

Note: If configuring for Cloud Pak for Security, API key must be used.

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

Note: If configuring for Cloud Pak for Security, the Org name must be in UUID format.

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

Note: If configuring for Cloud Pak for Security, API key must be used.

- **Password:** Password for the Resilient account or API key secret for the Resilient API key. This is a mandatory field and the value must be entered before clicking **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 clicking **Submit** to allow the setup process to complete. Your browser displays a pop-up dialog with the results of the setup process when completed. Once you have successfully configured the app, the setup page displays the last successful configuration in the form, except for **Password**, which you must enter.

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

* / 5 * * * *

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

Note: Use single quotes around any multiselect value that contains comma or special characters.

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"/> Guided <input checked="" type="radio" value="Manual"/> Manual
Search	<input type="text" value="index=_internal sourcetype=splunkd ERROR UiAuth `get_event_id`"/>

Time Range

Earliest Time	<input type="text" value="-5m"/> <small>Set a time range of events to search. Type an earliest time using relative time modifiers.</small>
---------------	---

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) ×
-

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
>	<input type="checkbox"/>	8/13/20 8:18:06.000 AM	Threat	Manual Notable Event - Rule	Low	New	unassigned	
>	<input type="checkbox"/>	8/13/20 8:16:45.000 AM	Threat	Manual Notable Event - Rule	Low	New		Add Event to Investigation
>	<input type="checkbox"/>	8/13/20 8:15:28.000 AM	Threat	Manual Notable Event - Rule	Low	New		Build Event Type
>	<input type="checkbox"/>	8/13/20 8:14:32.000 AM	Threat	Manual Notable Event - Rule	Low	New		Extract Fields
>	<input type="checkbox"/>	8/13/20 8:13:39.000 AM	Threat	Manual Notable Event - Rule	Low	New		Run Adaptive Response Actions
>	<input type="checkbox"/>	8/13/20 7:48:38.000 AM	Threat	Manual Notable Event - Rule	Low	New		Share Notable Event
>	<input type="checkbox"/>	8/13/20 7:47:43.000 AM	Threat	Manual Notable Event - Rule	Low	New		Suppress Notable Events
>	<input type="checkbox"/>	8/13/20 7:46:23.000 AM	Threat	Manual Notable Event - Rule	Low	New		Show Source
							unassigned	

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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

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

Address

City

Incident Disposition

Country/Region

Criminal Activity


Description

<div>\$name\$</div><div>\$result.rule_descripti


Department

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**. Gabe da

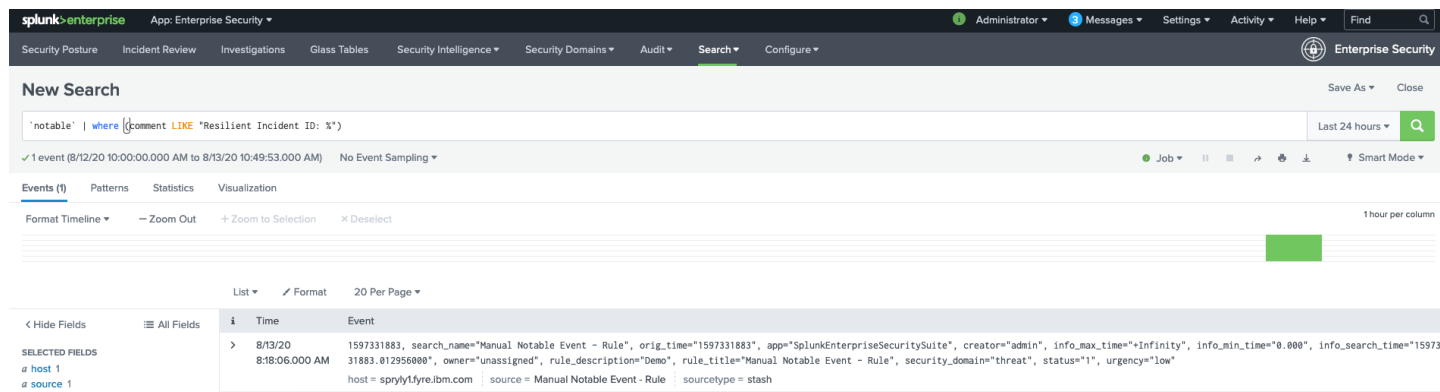
Adaptive Responses: 

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](#) 

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:



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

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.

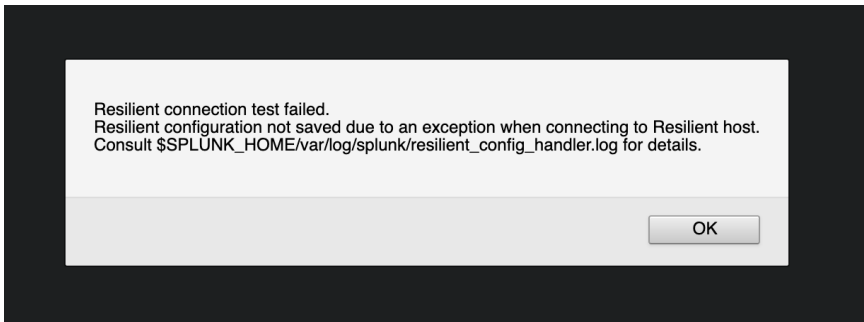
The screenshot shows the Resilient platform interface. At the top, there's a navigation bar with 'Dashboards', 'Inbox', 'Incidents', and a 'Create' button. Below this, the incident title is '(from Splunk)'. The 'Description' section contains the text: 'Create an incident when login to splunk server failed.', '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 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:

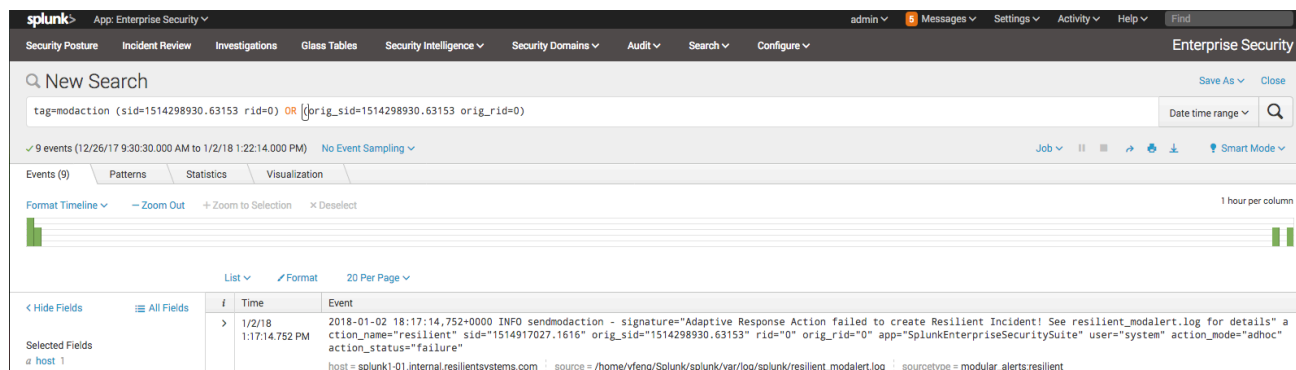
- \$SPLUNK_HOME/var/log/splunk/resilient_modalert.log

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`