# Table of Contents

**Introduction**..........................................................................................................1
  Using timelines........................................................................................................1
  Timeline installation............................................................................................1

**Build**......................................................................................................................3
  Create a timeline query.......................................................................................3

**Interpret**................................................................................................................5
  Visualization components...................................................................................5

**Configure**.................................................................................................................7
  Customize a timeline............................................................................................7
  Add a timeline visualization to a dashboard.........................................................8
  Simple XML for timelines..................................................................................8

**Release notes**.......................................................................................................11
  Release notes.........................................................................................................11
Introduction

Using timelines

![Timeline visualization]

Learn how to visualize data with a timeline.

What timelines visualize

A timeline visualization shows activity time intervals and discrete events for a resource set. Activity for each resource appears in a separate timeline lane.

If an activity start time and duration are available for a particular resource, the timeline shows a duration interval as a horizontal bar in the lane. If only the start time is available, the timeline shows a circle at that time.

Use case examples

- Network activity
- Environmental activity, such as weather or earthquakes
- Call center activity

Data for timelines

Use data that lets you infer activity start and end times or start times and durations.

Timeline installation

You can find the Timeline custom visualization app on Splunkbase.
After an admin installs a custom visualization app, users can select the visualization using the **Visualization Picker** in the **Search and Reporting** app.

### Custom visualization app permissions

By default, all custom visualizations have the following discovery and installation options for users and admins.

<table>
<thead>
<tr>
<th>Option</th>
<th>User permission</th>
<th>Admin permission</th>
</tr>
</thead>
<tbody>
<tr>
<td>Browse Splunkbase for custom visualization apps.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use the <strong>Visualization Picker</strong> to find custom visualizations.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Steps**

1. In the **Search and Reporting** app, run a query and select the **Visualizations** tab.
2. Open the **Visualization Picker**.
3. Select **Find more visualizations** to browse Splunkbase for custom visualization apps.

<table>
<thead>
<tr>
<th>Install a custom visualization app from Splunkbase.</th>
<th>No</th>
</tr>
</thead>
</table>
Build

Create a timeline query

To generate a timeline, use a query that returns results in the correct data format.

Query syntax

To generate a timeline visualization, use this query syntax.

... | table _time  <resource_field> [<color_field>] [<duration_field>]

Query components

A timeline query includes the following components.

_time

- Required
- Indicates event start time.

resource_field

- Required
- Indicates the resource or category to plot on the timeline.

color_field

- Required for visualizations using sequential or categorical colors.
- Determines colors for events and activity intervals.
- If you are not using colors in the visualization, leave this field out of the query.

duration_field
Optional
• Use durations measured in milliseconds.
• Indicates the activity duration.
• Can be generated by the transaction command.

Note: The transaction command returns a duration in seconds. Use the following eval command to convert the value to milliseconds. ... | eval duration = (duration * 1000)

Search result data formatting

A timeline query returns results formatted as a table with multiple columns.

Check the Statistics tab after running a query to make sure that the results table includes the required columns in the following order.

Results table columns

<table>
<thead>
<tr>
<th>First</th>
<th>Second</th>
<th>Third</th>
<th>Fourth</th>
</tr>
</thead>
<tbody>
<tr>
<td>_time</td>
<td>Resource</td>
<td>Color (required for categorical or sequential colors)</td>
<td>Duration (optional)</td>
</tr>
</tbody>
</table>

Example query

Here is part of a query tracking weather events in different regions.

... | stats count by _time, duration, "NERC Region", "Event Description" | table _time "NERC Region" duration

The query generates the following results table.
Interpret

Visualization components

Learn how to interpret timeline components.

Visual elements

Timelines show events and intervals for each resource.

Lanes

Each lane in a timeline represents one resource in the set you are monitoring.

Intervals

Horizontal bars or squares in a lane represent activity intervals. Events and intervals might overlap each other in a lane.

Events

Circles in a lane represent discrete events. Events and intervals might overlap each other in a lane.
Interactive elements

Drilldown

Click on an event or interval in the visualization to open a separate search. The new search looks for events matching the time or interval that the clicked element represents.

Tooltips

Hover over an event or interval to show a tooltip with details about it.
Configure

Customize a timeline

Use the Format menu to customize a Timeline. The menu has panels for the following settings.

General

The General panel includes color settings.

Color options

You can choose whether to use colors in a timeline. If you choose not to use colors, all intervals and events appear in the same color. If you opt to use colors in the diagram, select one of the following color modes.

Categorical

Use a different color for each event and interval. Colors are determined using resource_field values from the query.

Sequential

Use color_field values from the query to show links in different shades between the minimum and maximum color.

Specify minimum and maximum colors and the number of bins for search results.

Time format

Select time formats for axis labels and tooltips.
Add a timeline visualization to a dashboard

After you create a query and configure a custom visualization, you can add the visualization to a dashboard. Custom visualizations have the same dashboard panel editing options as standard Splunk platform visualizations.

Prerequisites

- See Create a timeline query.
- See Customize a timeline.
- See Add panels to dashboards in Dashboards and Visualizations.

Steps

1. After running a search and configuring the visualization, select Save as > Dashboard panel to add the visualization to a new or existing dashboard.
2. (Optional) Edit the dashboard panel as needed.

Simple XML for timelines

Custom visualizations use a namespaced syntax for Simple XML. Specific visualization properties are appended to the app and visualization context.

Add a timeline to a dashboard panel

You can add a timeline to a dashboard panel using Simple XML. Use this syntax to specify the app and visualization context.

```xml
<viz type="timeline_app.timeline">
</viz>
```
## Configure timeline properties

To configure a timeline property, add any of the following property names and a value to this syntax.

\[
\text{<option name="timeline_app.timeline.[property_name]">[property_value]}
\]

<table>
<thead>
<tr>
<th>Option name</th>
<th>Accepted values</th>
<th>Default</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>useColors</td>
<td>[ true</td>
<td>false]</td>
<td>true</td>
</tr>
<tr>
<td>colorMode</td>
<td>[ categorical</td>
<td>sequential]</td>
<td>categorical</td>
</tr>
<tr>
<td>minColor</td>
<td>Any valid CSS color string.</td>
<td>#FFE8E8</td>
<td>&lt;option name=&quot;timeline_app.timeline.minColor=&quot;#6db7c6&quot;/&gt;</td>
</tr>
<tr>
<td>maxColor</td>
<td>Any valid CSS color string.</td>
<td>#DA5C5C</td>
<td>&lt;option name=&quot;timeline_app.timeline.maxColor=&quot;#d93f3c&quot;/&gt;</td>
</tr>
<tr>
<td>numBins</td>
<td>Any number from 3-9.</td>
<td>6</td>
<td>&lt;option name=&quot;timeline_app.timeline.numOfBins=3&quot;/&gt;</td>
</tr>
<tr>
<td>axisTimeFormat</td>
<td>[ DAYS</td>
<td>MINUTES</td>
<td>SECONDS</td>
</tr>
<tr>
<td>tooltipTimeFormat</td>
<td>[ DAYS</td>
<td>MINUTES</td>
<td>SECONDS</td>
</tr>
</tbody>
</table>

### Example Simple XML source

Here is an example dashboard panel.
<dashboard>
  <label>Timeline Dashboard example</label>
  <row>
    <panel>
      <title>My timeline example</title>
      <viz type="timeline_app.timeline">
        <search>
          <query>| inputlookup outages.csv | where Year = 2006 | head 20 | rename "Date Event Began" AS start_date | rename "Date of Restoration" AS end_date | rename "Time Event Began" AS start_time | rename "Time of Restoration" AS end_time | eval _time = strptime(start_date."."start_time, "%m/%d/%Y %H:%M %p") | eval end_time = strptime(end_date."."end_time, "%m/%d/%Y %H:%M %p") | eval duration = (end_time - _time) * 1000 * (random()%5) | eval duration = IF(duration < 86400000, 0, duration) | stats count by _time, duration, "NERC Region", "Event Description" | table _time "NERC Region" duration</query>
          <earliest>0</earliest>
          <latest></latest>
        </search>
        <option name="timeline_app.timeline.useColors">true</option>
        <option name="timeline_app.timeline.colorMode">categorical</option>
        <option name="timeline_app.timeline.numOfBins">6</option>
        <option name="timeline_app.timeline.maxColor">#DA5C5C</option>
        <option name="timeline_app.timeline.minColor">#FFE8E8</option>
        <option name="timeline_app.timeline.axisTimeFormat">DAYS</option>
        <option name="timeline_app.timeline.tooltipTimeFormat">DAYS</option>
      </viz>
    </panel>
  </row>
</dashboard>
Release notes

Known issues

The following are known issues in the current software version.

<table>
<thead>
<tr>
<th>Issue number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CV-329</td>
<td>Overlapping axis labels</td>
</tr>
<tr>
<td>CV-397</td>
<td>Tooltip text truncation</td>
</tr>
<tr>
<td>CV-399</td>
<td>Label text truncation</td>
</tr>
</tbody>
</table>

Fixed issues

Software version 1.0.1

- Minor bug fix for Visualization Picker content

Software credits

Some of the components included in this visualization app are licensed under free or open source licenses. We wish to thank the contributors to those projects.

**d3**

Version 3.5.16
https://github.com/mbostock/d3

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d3-timeline plugin

Version 0.0.5
https://github.com/jiahuang/d3-timeline

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jQuery

Version 2.2.1
https://github.com/jquery/jquery

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underscore

Version 1.8.3
http://underscorejs.org/

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