



1



3

# Training Objective

## After the training, you should...

- Understand the types of data integrated from Genesys, gain understanding of what insights can be derived.
- Gain skills on how to access and explore Genesys cloud data from Splunk
- Learn how to apply analysis to Genesys data-set
- Learn how to create dashboards and alerts for Genesys cloud data.

## Prerequisites / Recommendations (Free Trainings) :

- Introduction to Splunk
  - URL : [https://www.splunk.com/en\\_us/training/courses/intro-to-splunk.html](https://www.splunk.com/en_us/training/courses/intro-to-splunk.html)

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4

# Agenda, Day 1

- Genesys Cloud App Overview (15 min)
  - Data Catalog
  - Data Exploration / Stats Definition
  - Queue and Agent operation
  - IVR operation
  - Deposit Dashboard
- Review major data types from Genesys cloud (15 min)
  - Conversation Aggregate
  - Queue Observations
  - Conversation Details
  - Conversation Details, Attribute analysis
  - Conversation Details : Flow & segments
- Access data from Splunk (15 min)
  - Data Exploration - Formatted data
- Analysis (20 min)
  - Queue and agent analysis
    - Connected – Total amount of call connected
    - Wait - Average wait times, Split by Queue / Agent
    - Abandon - Total abandon, Split by Queue / Agent
    - Handle time - Average handle time, Split by Queue / Agent
  - Queue Observations
    - Active agents on queue
  - Conversation level analytics
    - Call statistics by various fields
  - Custom Attributes reporting
    - Line of business – Deposit calls.

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5

## Agenda, Day 2

- SPL Basics for Genesys (20 min)
  - Fields exploration
  - Explore Genesys data using search
  - Analysis command
- Exploring data from Splunk (15 min)
  - Splunk Search - Raw data
  - → Conversation Aggregates, Details, Attributes, Queue observations
- Analysis (20 min)
  - Queue and agent analysis
    - Connected – Total amount of call connected
    - Wait - Average wait times, Split by Queue / Agent
    - Abandon - Total abandon, Split by Queue / Agent
    - Handle time - Average handle time, Split by Queue / Agent
  - Queue Observations
    - Active agents on queue
  - Conversation level analytics
    - Call statistics by various fields

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6

## Splunk Search Interface Intro

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7

3

Search **Data Exploration** Contact Center Operations Overview Queue Operations Automation / IVR Operations System Operations Genesys Cloud Data-set Others

Genesys Cloud Analytics App

Conversation Aggregate Metrics 1

Queue Observation Metrics

Conversation Details - Notification

Participant Attributes : Queue Only Sessions

Participant Attributes : IVR+Queue

✓ Pivot to stats

Selected Metric: n\*

Analytics

|                     |                    |                                      | direction | mediaType | metric    | originatingDirection | purpose | stats.count |
|---------------------|--------------------|--------------------------------------|-----------|-----------|-----------|----------------------|---------|-------------|
| 2022-03-07 20:25:34 | ###REDACTED_ANI### | 5162b61b-24fa-4e4e-9008-4455304dd841 | outbound  | voice     | nError    | outbound             | agent   | 1           |
| 2022-03-07 20:25:34 | ###REDACTED_ANI### | fe6308fd-805c-43b8-942b-2521013bd0f3 | outbound  | voice     | nError    | outbound             | agent   | 1           |
| 2022-03-07 20:25:34 | ###REDACTED_ANI### | fe6308fd-805c-43b8-942b-2521013bd0f3 | outbound  | voice     | nOutbound | outbound             | agent   | 1           |

Selected Metric: n\*, applying timechart sum(stats.count) by metric

Selected Metric: n\*, applying stats sum(stats.count) by metric

Visualization Type: Area

Split By: metric

Visualization Type: pie

Top N count: 15

N Count Statistics

Selected Metric: n\*, applying timechart sum(stats.count) by metric

Selected Metric: n\*, applying stats sum(stats.count) by metric

N Count Statistics

8

9

The screenshot shows the Splunk Enterprise search interface. At the top, there's a navigation bar with links like 'Search', 'Data Exploration', 'Alert Management', etc., and a 'Genesys Cloud Analytics App' icon. Below the navigation is a search bar with placeholder text 'enter search here...' and a time range selector 'Last 24 hours'. The main area is titled 'Search' and contains a 'How to Search' section with links to 'Documentation', 'Tutorial', and 'Data Summary'. A pink box highlights the 'Data Summary' link, which is circled with a red number '1'. To the right, there's a 'Table Views' section with a 'Create Table View' button. The bottom right corner features the Splunk logo with the tagline 'turn data into doing'.

10

This screenshot shows the 'Data Summary' modal window from the previous interface. The modal has a title 'Data Summary' and displays three categories: 'Hosts (21)', 'Sources (19,264)', and 'Sourcetypes (72)'. A pink box highlights the 'Sourcetypes (72)' link, which is circled with a red number '1'. Another pink box highlights the search input field containing 'genesys', which is circled with a red number '2'. Below the search field is a table with columns 'Sourcetype', 'Count', and 'Last Update'. The table lists various sourcetypes with their respective counts and last update times. The bottom right corner features the Splunk logo with the tagline 'turn data into doing'.

11

New Search

1 index=genesys\_cloud sourcetype="genesys:cloud:api:conversation\_aggregate"

2 Last 7 days

3 Events (496) Patterns Statistics Visualization

Format Timeline ▾ – Zoom Out + Zoom to Selection × Deselect 1 hour per column

Raw ▾ Format 20 Per Page ▾

4 < Hide Fields All Fields Event

5 SELECTED FIELDS  
`a evenntype 1`  
`a host 1`  
`a source 1`  
`a sourcetype 1`

INTERESTING FIELDS  
`a data[0].interval 100+`  
`a data[0].metrics[0].metric 27`  
`a data[0].metrics[0].qualifier 1`  
`# data[0].metrics[0].stats.count 5`  
`a data[0].metrics[0].stats.count_1`  
`a data[0].metrics[0].stats.count_100+`  
`a data[0].metrics[0].stats.count_1000+`  
`a data[0].metrics[0].stats.current 2`  
`a data[0].metrics[0].stats.denominator 2`  
`a data[0].metrics[0].stats.max 100+`

("group": {"ani": "tel:+18772472559", "conversationId": "aa94916e-5fd7-4f96-910d-2fec5b92543b", "direction": "inbound", "mediaType": "voice", "originatingDirection": "bound", "purpose": "acd", "queueId": "d3b4c336-68ce-4642-aec5-7feba0a40654", "requestedRoutingSkillId": "7219f300-810c-4210-b336-0ea842a3c48b"}, "data": [{"interval": "2-03-25T06:45:00Z/2022-03-25T06:46:00.000Z", "metrics": [{"metric": "tAbandon", "qualifier": null, "stats": {"max": 36068.0, "min": 36068.0, "count": 1, "count\_negative": null, "count\_positive": null, "sum": 36068.0}, "current": null, "ratio": null, "numerator": null, "denominator": null, "target": null}], {"metric": "tAcD", "qualifier": null, "stats": {"max": 36068.0, "min": 36068.0, "count": 1, "count\_negative": null, "count\_positive": null, "sum": 36068.0}, "current": null, "ratio": null, "numerator": null, "denominator": null, "target": null}], {"metric": "tWait", "qualifier": null, "stats": {"max": 36068.0, "min": 36068.0, "count": 1, "count\_negative": null, "count\_positive": null, "sum": 36068.0}, "current": null, "ratio": null, "numerator": null, "denominator": null, "target": null}], {"group": {"ani": "tel:+18772472559", "conversationId": "aa94916e-5fd7-4f96-910d-2fec5b92543b", "direction": "inbound", "mediaType": "voice", "originatingDirection": "bound", "purpose": "ivr"}, "data": [{"interval": "2022-03-25T06:44:00.000Z/2022-03-25T06:45:00.000Z", "metrics": [{"metric": "tIvr", "qualifier": null, "stats": {"max": 1259.0, "min": 1259.0, "count": 1, "count\_negative": null, "count\_positive": null, "sum": 1259.0}, "current": null, "ratio": null, "numerator": null, "denominator": null, "target": null}], {"views": null}]}]

12

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# Genesys Data in Detail

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13

# Genesys data in detail

## Conversation Aggregates

```
{
  interval: 2022-03-25T06:45:00.000Z/2022-03-25T06:46:00.000Z
  metrics: [
    {
      metric: tAbandon
      qualifier: null
      stats: {
        count: 1
        count_negative: null
        count_positive: null
        current: null
        denominator: null
        max: 36068
        min: 36068
        numerator: null
        ratio: null
      }
    }
  ]
}
```

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14

# Genesys data in detail

## Conversation Details

```
{
  address: tel:+12105363906
  divisions: [
    {
      division: {
        entities: [
          {
            ...
          }
        ]
      }
    }
  ]
}
endTime: 2022-03-16T01:55:02.542Z
id: b9cb02db-b8ac-4e03-9630-7beaf711d1dc
participants: [
  {
    address: tel:+12157026084
    ani: tel:+12157026084
  }
]
```

15

# Genesys data in detail

## Queue Observation

```

eventBody: { [-]
  data: [ [-]
    { [-]
      interval: 2022-03-24T20:14:34.326Z/2022-03-24T20:14:34.326Z
      metrics: [ [-]
        { [-]
          metric: oActiveUsers
          stats: { [-]
            count: 4
          }
        }
        { [-]
          metric: oMemberUsers
          stats: { [-]
            count: 4
          }
        }
      ]
    }
  ]
}

```

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16

# Genesys data in detail

## Edge node trunk metrics

```

{ [-]
  calls: { [-]
    inboundCallCount: 0
    outboundCallCount: 0
  }
  eventTime: 2022-03-25T07:18:46.869Z
  logicalInterface: { [-]
    id: eno1
    name: Port 1 (WAN)
    selfUri: /api/v2/telephony/providers/edges/362e4875-5853-4b0f-8320-8016c77a3432/logicalinterfaces/eno1
  }
  qos: { [-]
    mismatchCount: 0
  }
  trunk: { [-]
    id: f17be3fc-bfec-4ffa-9b34-6a9eebd30018
    selfUri: /api/v2/telephony/providers/edges/trunks/f17be3fc-bfec-4ffa-9b34-6a9eebd30018
  }
}

```

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17



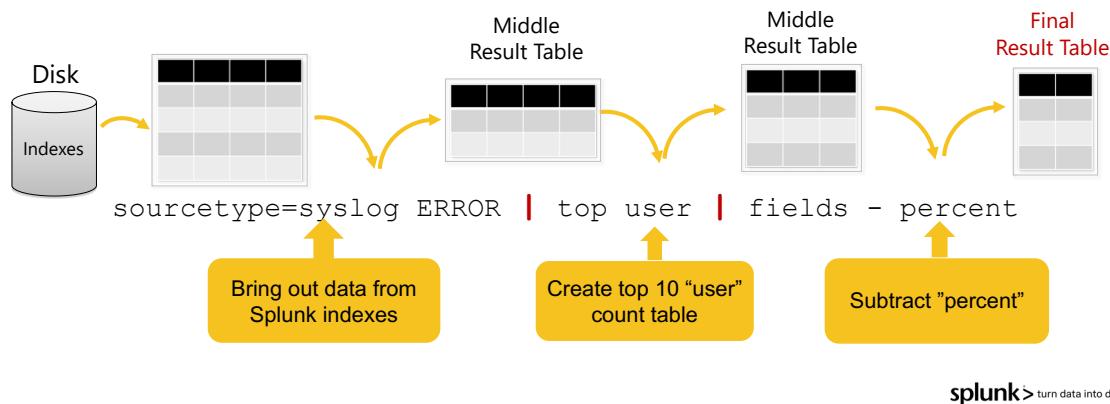
18

The slide title is "Search High Level Structure" in bold black font, with the subtitle "Splunk search language high level usage structure" in a smaller pink font below it. A horizontal bar at the top is divided into three sections: "SEARCH" (blue), "DATA PROCESS" (orange), and "ANALYSIS" (red). Below each section, a pink arrow points down to a corresponding part of a Splunk search interface. The "SEARCH" section points to the search bar containing the command "index=main dest\_asset\_system=prod\_line\_1 | strcat dest\_asset\_vendor " : " dest\_asset\_model combo | stats count by combo". The "DATA PROCESS" section points to the results table showing 392 events. The "ANALYSIS" section points to the visualization pane where "Visualization" is selected. The bottom of the interface shows tabs for "Events (392)", "Patterns", "Statistics (18)", and "Visualization". At the very bottom, there are buttons for "Pie Chart", "Format", and "Trellis". The bottom right corner of the interface has the tagline "turn data into doing".

19

# How SPL search pipeline works

- Search in the front bring out the data from Splunk indexes.
  - Searched data goes through “pipeline” then passed on.



20

100 + Splunk Processing Language (SPL)

Powerful language to process, analyze and apply logic

| Command     | Description |
|-------------|-------------|
| transaction |             |
| eval        |             |
| fields      |             |
| stats       |             |
| head        |             |
| sort        |             |
| range       |             |
| dedup       |             |
| multikv     |             |
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21

## SPL : Commonly used SPL commands

Field processing / evaluation / calculation

- multikv
- eval
- strcat

Data transformation

- rename
- replace

Filtering data

- dedup
- regex
- search

Analysis / Cubing

- stats
- chart
- timechart

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22

## Splunk Analysis Method Intro

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## Analysis Method Introduction

1. Distribution analysis : **stats**
  - Compare one to another (Example : Performance comparison between one machine to another, or one type vs another)
2. Matrix analysis : **chart**
  - Create analysis matrix using 2 different data entity (Example : Compare performance between machines broken down into dimension)
3. 3D Matrix analysis: **timechart**
  - Analyzing trend and also compare the trend of different entities in data. (Example : Seeing the trend of either on or more machine's pressure changes over time)

24

## Technique 1 Distribution Analysis

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## Analysis Technique 1 : Distribution

- Using **stats** Command
- 2D Distribution / comparison
- Goal : Compare between different **entities** with a single or multiple defined calculation **function**.

**Function**

**stats sum(unit\_count) by product\_name**

**Group by segmentation**

| product_name | sum(unit_count) |
|--------------|-----------------|
| display_lg   | ~55,000         |
| display_sm   | ~50,000         |
| ecu          | ~30,000         |

**by product\_name**

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## Analysis / Statistics Functions

| FUNCTION                 | DESCRIPTION  |
|--------------------------|--|
| <b>avg (X)</b>           | Returns the average of the values of field X.  |
| <b>count (X)</b>         | Returns the number of occurrences of the field X. To indicate a specific field value to match, format X as eval(field="value").                  |
| <b>dc (X)</b>            | Returns the count of distinct values of the field X.   |
| <b>first (X)</b>         | Returns the first seen value of the field X. In general, the first seen value of the field is the chronologically most recent instance of field. |
| <b>last (X)</b>          | Returns the last seen value of the field X.  |
| <b>list (X)</b>          | Returns the list of all values of the field X as a multi-value entry. The order of the values reflects the order of input events.                |
| <b>max (X)</b>           | Returns the maximum value of the field X. If the values of X are non-numeric, the max is found from lexicographic ordering.                      |
| <b>median (X)</b>        | Returns the middle-most value of the field X.  |
| <b>min (X)</b>           | Returns the minimum value of the field X. If the values of X are non-numeric, the min is found from lexicographic ordering.                      |
| <b>mode (X)</b>          | Returns the most frequent value of the field X.  |
| <b>perc&lt;X&gt; (Y)</b> | Returns the X-th percentile value of the field Y. For example, perc5(total) returns the 5th percentile value of a field "total".                 |
| <b>range (X)</b>         | Returns the difference between the max and min values of the field X.  |
| <b>stdev (X)</b>         | Returns the sample standard deviation of the field X.  |
| <b>stdevp (X)</b>        | Returns the population standard deviation of the field X.  |
| <b>sum (X)</b>           | Returns the sum of the values of the field X.  |
| <b>sumsq (X)</b>         | Returns the sum of the squares of the values of the field X.   |
| <b>values (X)</b>        | Returns the list of all distinct values of the field X as a multi-value entry. The order of the values is lexicographical.                       |
| <b>var (X)</b>           | Returns the sample variance of the field X.  |

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27

# Analysis Technique 1 : Distribution

Syntax :

```
stats func(field), func(field), .. by field_1, field_2 ..
```

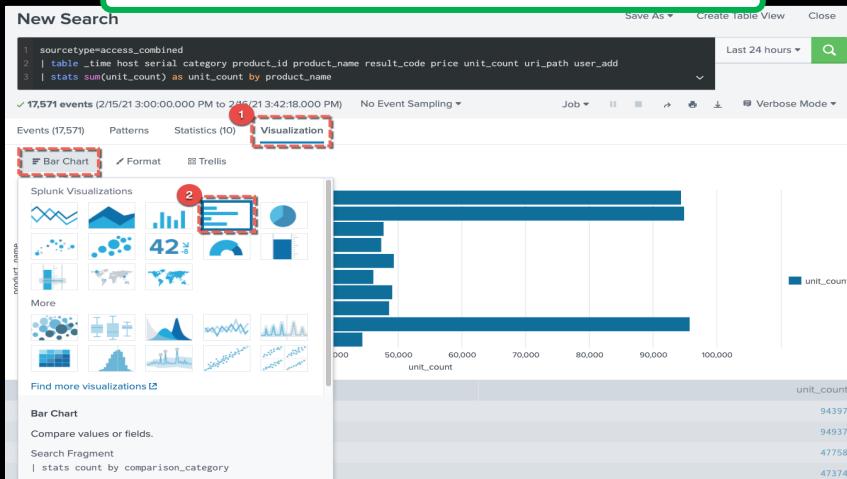
Examples :

```
* | stats count
* | stats count by result_code
* | stats sum(unit_count), sum(price) by product_name
* | stats sum(unit_count), sum(price) by product_name
    user_add
```

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28

## EXERCISE #1



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## Analysis

### Calculating SLA per queue – Conversation Aggregates

- SLA – Formula :  $(\text{total\_answer\_count} - \text{total\_over\_sla}) / (\text{total\_answer\_count} + \text{cnt\_abandon})$

```

genesys_cloud_index` sourcetype="genesys:cloud:api:conversation_aggregate" group.ani="***" group.conversationId="***"
| spath path="data().metrics{}" output=rec_metric
| spath path="group" output=rec_group
| spath input=rec_group
| mexpand rec_metric
| spath input=rec_metric
eval queueFlow.id=mvedup(queueFlow.id)
eval queueFlow.name=mvedup(queueFlow.name)
eval queueFlow.selfUri=mvedup(queueFlow.selfUri)
eval queueId=mvedup(queueId)
| fields +
table _time ani conversationId direction mediaType metric originatingDirection purpose stats.count queueId name
rename stats.count as stats_count
| stats sum(eval(if(metric == "Answered", stats_count,0))) as cnt_answer, sum(eval(if(metric == "nOverSla", stats_count,0))) as cnt_over_sla,
sum(eval(if(metric == "tAbandon", stats_count,0))) as cnt_abandon by queueId name
| eval SLA=((cnt_answer-cnt_over_sla)/(cnt_answer+cnt_abandon))*100

```

| queueId                              | name                   | cnt_answer | cnt_over_sla | cnt_abandon | SLA    |
|--------------------------------------|------------------------|------------|--------------|-------------|--------|
| 0610d5f0-feb7-4e6f-b27a-8a0246c03dfb | INV - General Service  | 2          | 0            | 5           | 28.57  |
| 9c50ad26-62a8-4f84-818f-4b0d8d402e88 | BNK - General          | 1          | 0            | 0           | 100.00 |
| cfc8106-c993-4e1b-8766-a80e20c42d82  | BNK - Trust            | 0          | 0            | 2           | 0.00   |
| d3b4c336-68ce-4642-ae25-7feb0a840654 | BNK - CMG              | 1          | 0            | 1           | 50.00  |
| e4011625-cb01-4122-9e6d-e79dbe25d9cd | BNK - IRA              | 0          | 0            | 5           | 0.00   |
| eca0f49f-186c-4e84-8221-ae3b92f9c0c5 | INV - Advanced Trading | 1          | 1            | 1           | 0.00   |
| f339e61e-fc59-4152-bab3-a205693e3417 | INV - Select Service   | 1          | 0            | 0           | 100.00 |

30

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### New Search

```

genesys_cloud_index` sourcetype="genesys:cloud:api:conversation_aggregate" group.ani="***" group.conversationId="***"
| spath path="data().metrics{}" output=rec_metric
| spath path="group" output=rec_group
| spath input=rec_group
| mexpand rec_metric
| spath input=rec_metric
eval queueFlow.id=mvedup(queueFlow.id)
eval queueFlow.name=mvedup(queueFlow.name)
eval queueFlow.selfUri=mvedup(queueFlow.selfUri)
eval queueId=mvedup(queueId)
| fields +
table _time ani conversationId direction mediaType metric originatingDirection purpose stats.count queueId name
rename stats.count as stats_count
| stats sum(eval(if(metric == "Answered", stats_count,0))) as cnt_answer, sum(eval(if(metric == "nOverSla", stats_count,0))) as cnt_over_sla,
sum(eval(if(metric == "tAbandon", stats_count,0))) as cnt_abandon
| eval SLA=((cnt_answer-cnt_over_sla)/(cnt_answer+cnt_abandon))*100

```

544 events (3/22/22 4:00:00.000 AM to 3/29/22 4:00:00.000 AM)

Events (544) Patterns Statistics (7)

100 Per Page ▾ Format Preview ▾

Panel Title: SLA Stats Per Queue

Visualization Type: Statistics Table

Save As ▾ Create Table View Close

Report Alert Existing Dashboard New Dashboard Event Type

1 Save As ▾ Create Table View Close

2 Save to Dashboard

| queueId                              | cnt_over_sla | cnt_abandon | SLA    |
|--------------------------------------|--------------|-------------|--------|
| 0610d5f0-feb7-4e6f-b27a-8a0246c03dfb | 0            | 5           | 28.57  |
| 9c50ad26-62a8-4f84-818f-4b0d8d402e88 | 0            | 0           | 100.00 |
| cfc8106-c993-4e1b-8766-a80e20c42d82  | 0            | 2           | 0.00   |
| d3b4c336-68ce-4642-ae25-7feb0a840654 | 0            | 1           | 50.00  |
| e4011625-cb01-4122-9e6d-e79dbe25d9cd | 0            | 5           | 0.00   |
| eca0f49f-186c-4e84-8221-ae3b92f9c0c5 | 1            | 1           | 0.00   |

31

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### Queue SLA Dashboard

Last 24 Hrs

| SLA Stats Per Queue                    |                        |            |              |             |        |
|--|------------------------|------------|--------------|-------------|--------|
| queueId                                | name                   | cnt_answer | cnt_over_sla | cnt_abandon | SLA    |
| 1 0610df0-feb7-4e6f-b27a-8a0246c03dfb  | INV - General Service  | 2          | 0            | 5           | 28.57  |
| 2 9c50ad26-62a8-4f84-818f-4b0d8d402e88 | BNK - General          | 1          | 0            | 0           | 100.00 |
| 3 c4fc8106-c993-4e1b-8766-a80e20c42d82 | BNK - Trust            | 0          | 0            | 2           | 0.00   |
| 4 d3b4c336-68ce-4642-ae25-7feb0a840654 | BNK - CMG              | 1          | 0            | 1           | 50.00  |
| 5 e4011625-cb01-4122-9e6d-e79dbe25d9cd | BNK - IRA              | 0          | 0            | 5           | 0.00   |
| 6 eca0f49f-186c-4e84-8221-ae3b92f9c0c5 | INV - Advanced Trading | 1          | 1            | 1           | 0.00   |
| 7 f339e61e-fc59-4152-bab3-a205693e3417 | INV - Select Service   | 1          | 0            | 0           | 100.00 |

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32

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# Analysis

### Calculating SLA per queue – Conversation Aggregates

- SLA – Formula :  $(\text{total\_answer\_count} - \text{total\_over\_sla}) / (\text{total\_answer\_count} + \text{cnt\_abandon})$

```
genesys_cloud_index` sourcetype="genesys:cloud:api:conversation_aggregate" group.ani="***" group.conversationId="***"
| spath path="data[]:metrics{}" output=rec_metric
| spath path="group" output=rec_group
| spath input=rec_group
| mexpand rec_metric
| spath input=rec_metric
| eval queueFlow.id=mvdedup(queueFlow.id)
| eval queueFlow.name=mvdedup(queueFlow.name)
| eval queueFlow.selfUri=mvdedup(queueFlow.selfUri)
| eval queueId=mvdedup(queueId)
| fields +
| table _time ani conversationId direction mediaType metric originatingDirection purpose stats.count queueId name
| rename stats.count as stats_count
| stats sum(eval(if(metric == "Answered", stats_count,0))) as cnt_answer, sum(eval(if(metric == "nOverSla", stats_count,0))) as cnt_over_sla,
sum(eval(if(metric == "tAbandon", stats_count,0))) as cnt_abandon by queueId name
| eval SLA=((cnt_answer-cnt_over_sla)/(cnt_answer+cnt_abandon))*100
| table name SLA
```

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33

The screenshot shows a Splunk search results page. The search bar at the top contains the following command:

```

1 `genesys.cloud_index` sourcetype="genesys:cloud:api:conversation_aggregate" group.ani="***" group.conversationId="***"
2 | spath path="data()", metrics() "output=rec_metric
3 | spath path="group" output=rec_group
4 | spath input=rec_group
5 | mexpand rec_metric
6 | spath input=rec_metric
7 | eval queueFlow.id=mvedup(queueFlow.id)
8 | eval queueFlow.name=mvedup(queueFlow.name)
9 | eval queueFlow.selfUrl=mvedup(queueFlow.selfUrl)
10 | eval queueId=mvedup(queueId)
11 | fields +
12 | table _time ani conversationId direction media
13 | rename stats.stats_count as stats_count
14 | stats sum(eval(if(metric == "Answered", stats_count, 0))) as cnt_answered
15 | eval SLA=((cnt_answered-cnt_over_sla)/(cnt_answered))
16 | table name SLA
17 | sort - SLA

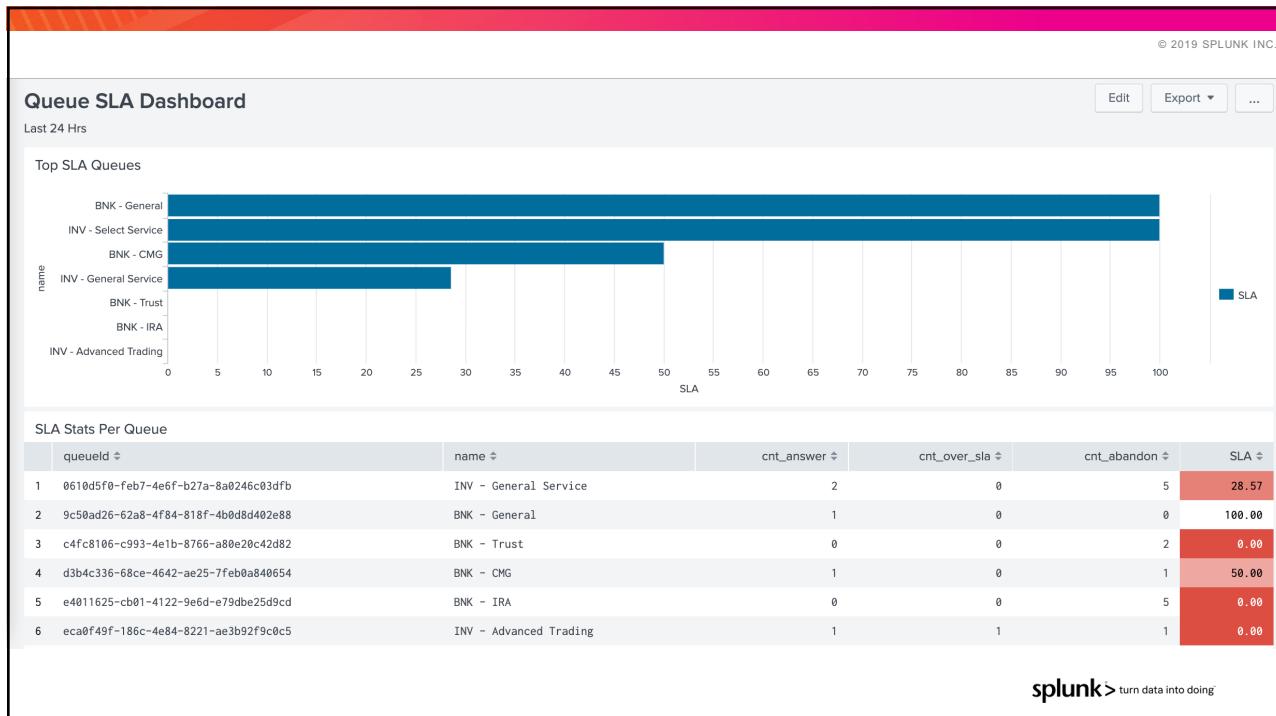
```

The search results show 544 events from 3/22/22 4:00:00.000 AM to 3/29/22 4:56:26.000 AM. A dropdown menu is open over the 'Visualization' tab, highlighting the 'Bar Chart' option. The menu also lists other visualization types like 'Format' and 'Trellis'. Below the menu, a 'Splunk Visualizations' section displays various chart icons, with the 'Bar Chart' icon highlighted.

34

The screenshot shows a 'New Search' window with the same search command as the previous screenshot. A 'Save Panel to Existing Dashboard' dialog box is open in the foreground. The dialog has a 'Panel Title' field set to 'Top SLA Queues' and a 'Visualization Type' field set to 'Bar Chart'. In the background, the main search results page shows a bar chart titled 'Top SLA Queues' with data for various service names. The chart has a legend indicating 'SLA'.

35



36



37

38

|    | queuelid                              | name                          | nBlindTransferred | nConnected | nConsult | nConsultTransferred | nError | nOffered | nOutbound | nOutboundAttempted | nOverSla | nTransferred | nAbandon | nAlert | nAnswered | nContacting | nDialing |
|----|---------------------------------------|-------------------------------|-------------------|------------|----------|---------------------|--------|----------|-----------|--------------------|----------|--------------|----------|--------|-----------|-------------|----------|
| 1  | 02e8d0af-2826-4fd5-asf6-cc47ffffd1f63 | Bryan De La Cruz              | 0                 | 0          | 0        | 0                   | 2      | 0        | 3         | 0                  | 0        | 0            | 0        | 0      | 0         | 3           | 2        |
| 2  | 0610d5f0-feb7-4e6f-b27a-8aa246c03dfb  | INV - General Service         | 1                 | 1          | 1        | 0                   | 3      | 10       | 1         | 0                  | 0        | 1            | 5        | 5      | 5         | 1           | 1        |
| 3  | 1ca15917-4afb-443d-a391-dda2adaf6f2f  | WA - Shephard                 | 0                 | 1          | 0        | 0                   | 0      | 0        | 1         | 0                  | 0        | 0            | 0        | 0      | 0         | 1           | 1        |
| 4  | 1cc04684-382b-4583-b07a-925aff1d79f3  | WA - Wealth Select            | 2                 | 0          | 0        | 0                   | 0      | 3        | 9         | 0                  | 0        | 1            | 2        | 6      | 3         | 3           | 0        |
| 5  | 24b54558-7955-41ef-a73c-6473cccd5748e | INV_BACK - Account Management | 0                 | 0          | 0        | 0                   | 0      | 0        | 0         | 0                  | 0        | 0            | 0        | 0      | 0         | 0           | 0        |
| 6  | 3859637c-a3d7-4c0e-aa4a-8522134ba231  | INV_BACK - New Accounts       | 3                 | 1          | 1        | 1                   | 1      | 9        | 1         | 0                  | 0        | 4            | 3        | 8      | 6         | 1           | 1        |
| 7  | 3b486f2e-8ae6-4fe9-88c7-c0eb3ff16008  | WA - Service Captain          | 1                 | 0          | 0        | 0                   | 0      | 0        | 4         | 0                  | 0        | 1            | 0        | 4      | 4         | 0           | 0        |
| 8  | 9c56ad26-62ab-4784-818f-4b0dd8d402e88 | BNK - General                 | 0                 | 1          | 1        | 1                   | 4      | 9        | 1         | 0                  | 0        | 1            | 0        | 12     | 9         | 1           | 1        |
| 9  | a2639a8e-d9fa-4caa-946e-3e4275bd61a96 | WA - Senior Advisor 1         | 0                 | 0          | 0        | 0                   | 1      | 2        | 0         | 0                  | 0        | 0            | 0        | 2      | 2         | 0           | 0        |
| 10 | bff086215-d523-41e2-a249              | INV_BACK - ACATS              | 0                 | 1          | 1        | 1                   | 0      | 0        | 1         | 0                  | 0        | 1            | 0        | 0      | 0         | 1           | 1        |

39



## Technique 2 Matrix / Pivot Analysis

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40

## Analysis Technique 2 : Matrix / Pivot

- Using `chart` command
- Matrix analysis, pivot analysis
- Goal : Compare using 2 different entity segmentation for a single calculation function.

Function

`chart sum(unit_count) by product_name, result_code`

Entity 1

Entity 2

2 Different group by segmentation

| product_name | result_code |           |        |
|--------------|-------------|-----------|--------|
|              | cancelled   | completed | failed |
| display_lg   | 7295        | 7193      | 7798   |
| display_sm   | 6695        | 5734      | 6255   |
| ecu          | 4092        | 2973      | 3457   |
| engine_hv    | 4512        | 3188      | 3661   |
| engine_sv    | 3024        | 4359      | 3604   |
| motor_hv     | 3434        | 3563      | 3779   |

sum(unit\_count)

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41

## Analysis Technique 2 : Matrix / Pivot

Syntax :

```
chart func(field_3) over field_1 by field_2
chart func(field_3) by field_1, field_2
```

Examples :

```
* | chart sum(unit_count) by product_name, result_code
```

The screenshot shows a Splunk search interface with the following search command:

```
* | chart sum(unit_count) by product_name, result_code
```

The results are presented as a matrix table:

| product_name | Field Name result_code |           |        |
|--------------|------------------------|-----------|--------|
|              | cancelled              | completed | failed |
| display_lg   | 7295                   | 7193      | 7798   |
| display_sm   | 6695                   | 5734      | 6255   |
| ecu          | 4092                   | 2973      | 3457   |
| engine_hv    | 4512                   | 3188      | 3661   |

A pink arrow labeled "Field Name product\_name" points to the first column of the matrix. A pink dashed box highlights the cell containing the value 6255, which is annotated with the text "sum(unit\_count)". The Splunk logo "splunk > turn data into doing" is visible in the bottom right corner.

42

## EXERCISE #2

The screenshot shows a Splunk search interface with the following search command:

```
1 sourcetype=access_combined product_name** result_code**
2 | table _time host serial category product_id product_name result_code price unit_count uri_path
3 | chart sum(unit_count) as unit_count by product_name result_code
```

The results are presented as a matrix table:

| product_name | result_code |           |        |          |       |
|--------------|-------------|-----------|--------|----------|-------|
|              | cancelled   | completed | failed | progress | rerun |
| display_lg   | 18852       | 19498     | 20537  | 19419    | 18932 |
| display_sm   | 19668       | 20159     | 19668  | 19330    | 18620 |
| ecu          | 9156        | 9822      | 8976   | 10705    | 9191  |
| engine_hv    | 9249        | 8077      | 10048  | 10066    | 10602 |
| engine_sv    | 10359       | 9910      | 9242   | 8975     | 9389  |
| motor_hv     | 9120        | 8724      | 8329   | 9421     | 8621  |
| motor_sv     | 10159       | 10268     | 10289  | 9161     | 9345  |
| suspension   | 9287        | 11442     | 10513  | 9699     | 12374 |
| transformer  | 18793       | 22916     | 19520  | 18932    | 18583 |
| transmission | 8703        | 9038      | 8344   | 9067     | 8872  |

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43

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# Analysis

## Pivot Chart Analysis – Conversation Details

- Total numbers session by queue, split by "Opt\_Out\_Reason\_Code"

```

genesys_cloud_index sourcetype="genesys:cloud:api:conversation_details" startTime
| dedup id
| rename id as conversation_id, address as caller_address
| spath path="participants{}" output=rec_participant
| spath path="divisions{}" output=rec_division
| spath input="rec_participant"
| rename id as participant_id,
| spath input="rec_division"
| table _time conversation_id participant_id id caller_address address startTime endTime selfUri recordingState entities{}.id rec_*
| mvexpand rec_participant
| spath input="rec_participant"
| lookup genesys_cloud_queue_info id AS participants{}.queueId
| fields - rec_* calls{*} startTime
| fields +
| chart count by queueName attributes.Opt_Out_Reason_Code
  
```

Events (429) Patterns Statistics (11) Visualization

100 Per Page ▾ Format Preview ▾

| queueName                         | 618 | NULL |
|-----------------------------------|-----|------|
| BNK - Alorica Supervisor Sarasota | 0   | 3    |
| BNK - IRA                         | 0   | 4    |
| BNK - Trust                       | 0   | 2    |
| INV - General Service             | 0   | 2    |
| INV_BACK - New Accounts           | 0   | 2    |
| Test                              | 0   | 5    |
| Test Queue                        | 0   | 68   |

Events (429) Patterns Statistics (11) Visualization

Bar Chart Format Trellis

| queueName                         | Count |
|-----------------------------------|-------|
| BNK - Alorica Supervisor Sarasota | 3     |
| BNK - IRA                         | 4     |
| BNK - Trust                       | 2     |
| INV - General Service             | 2     |
| INV_BACK - New Accounts           | 2     |
| Test                              | 5     |
| Test Queue                        | 68    |

44

Events (429) Patterns Statistics (11) © 2019 SPLUNK INC.

100 Per Page ▾ Format Preview ▾

| queueName                         | 618 | NULL |
|-----------------------------------|-----|------|
| BNK - Alorica Supervisor Sarasota | 0   | 3    |
| BNK - IRA                         | 0   | 4    |
| BNK - Trust                       | 0   | 2    |
| INV - General Service             | 0   | 2    |
| INV_BACK - New Accounts           | 0   | 2    |
| Test                              | 0   | 5    |
| Test Queue                        | 0   | 68   |
| WA - Concierge Backup             | 3   | 0    |
| WA - Senior Advisor 1             | 2   | 0    |
| WA - Service Captain              | 4   | 0    |

Events (429) Patterns Statistics (11) Visualization

Bar Chart Format Trellis

1

BNK - General

|                   |                                     |                                     |                               |
|-------------------|-------------------------------------|-------------------------------------|-------------------------------|
| Stack Mode        | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>      |
| Multi-series Mode | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>      |
| Show Data Values  | <input type="radio"/> Off           | <input checked="" type="radio"/> On | <input type="radio"/> Min/Max |

X-Axis

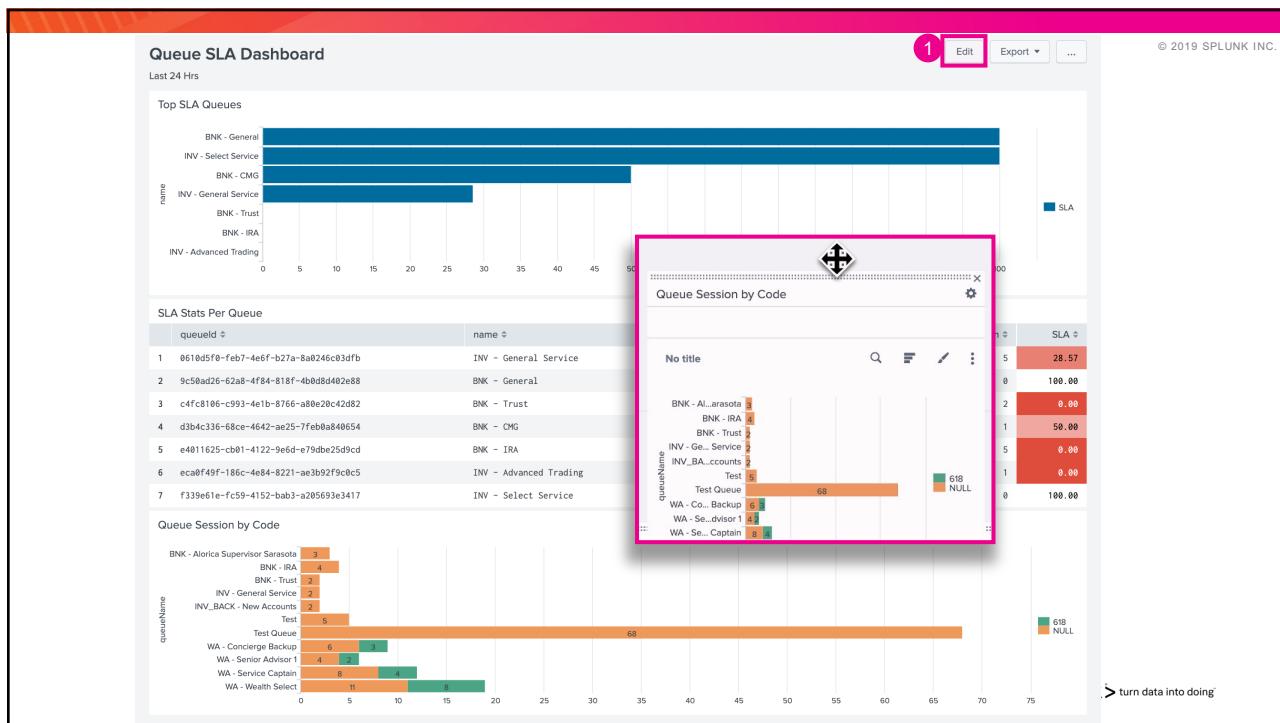
Y-Axis

Chart Overlay

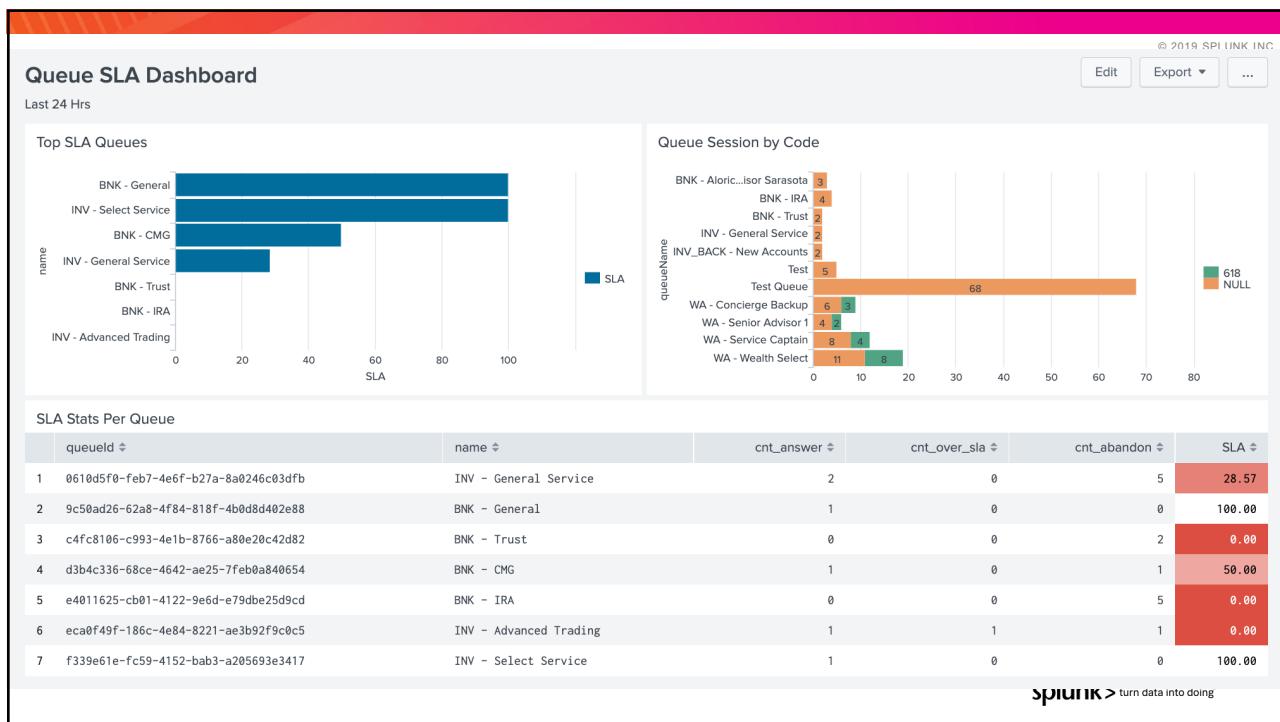
Legend

| queueName             | Count |
|-----------------------|-------|
| Test                  | 5     |
| Test Queue            | 68    |
| WA - Concierge Backup | 3     |
| WA - Senior Advisor 1 | 2     |
| WA - Service Captain  | 4     |
| WA - Wealth Select    | 10    |

45



46



47



# Trends

## Technique 3 3D Matrix / Trend Analysis

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### Analysis Technique 3 : 3D Matrix / Trend

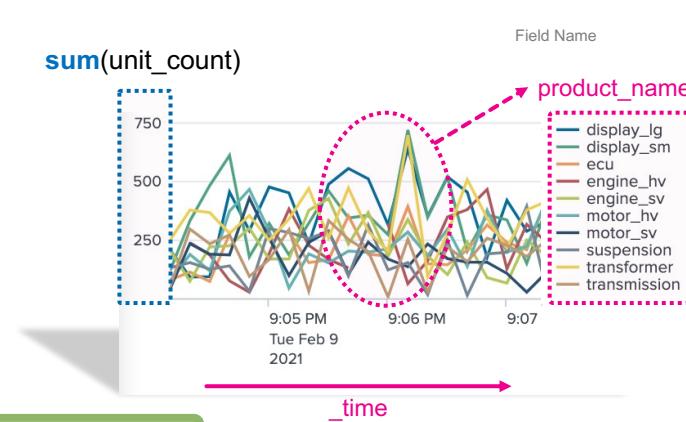
- Using `timechart` Command
- 3D Matrix / trend analysis
- Goal : Visualize a **single trend** or compare **multiple trends** group by a **single entity segmentation**.

**Function**

`timechart sum(unit_count) by product_name`

**Group by segmentation**

`sum(unit_count)`



Field Name

product\_name

display\_lg, display\_sm, ecu, engine\_hv, engine\_sv, motor\_hv, motor\_sv, suspension, transformer, transmission

\_time

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49

## Analysis Technique 3 : 3D Matrix, Trend

Syntax :

```
timechart func(field), func(field), ... by field
```

Examples :

```
* | timechart count by host
* | timechart sum(unit_count) by product_name
* | timechart sum(unit_count), sum(price) by product_name
```

```
* | timechart count(eval(result_code="completed")) as SUCCESS,
count(eval(result_code="failed")) as FAILS by product_name
```

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50

**EXERCISE #3**

51

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## Analysis

### All trends over time – Conversation Aggregates

- All major KPIs over time trend

```
genesys_cloud_index` sourcetype="genesys:cloud:api:conversation_aggregate" group.ani="***" group.conversationId="***"
| spath path="data{}._metrics{}" output=rec_metric
| spath path="group" output=rec_group
| spath input=rec_group
| mvexpand rec_metric
| spath input=rec_metric
| fields + *
| table _time ani conversationId direction mediaType metric originatingDirection purpose stats.count queueId ``queueFlow.id queueFlow.name
queueflow.selfuri ``
| rename stats.count as stats_count
| timechart sum(stats_count) as count by metric
```

Line Chart Format Trellis

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52

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## Analysis

### All trends over time – Conversation Aggregates

- All major KPIs over time trend

```
genesys_cloud_index` sourcetype="genesys:cloud:api:conversation_aggregate" group.ani="***" group.conversationId="***"
| spath path="data{}._metrics{}" output=rec_metric
| spath path="group" output=rec_group
| spath input=rec_group
| mvexpand rec_metric
| spath input=rec_metric
| fields + *
| search metric=Abandon
| table _time ani conversationId direction mediaType metric originatingDirection purpose stats.count queueId ``queueFlow.id queueFlow.name
queueflow.selfuri ``
| rename stats.count as stats_count
| timechart sum(stats_count) as count by queueId
```

Column Chart Format Trellis

53



# Defining Alerting

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54

**Alert Management** Show Filters

Todays number of incidents, compared to yesterday:

|               |       |         |       |          |
|---------------|-------|---------|-------|----------|
| Informational | Low   | Medium  | High  | Critical |
| 0 → 0         | 0 → 0 | 17 ↑ 17 | 0 → 0 | 0 → 0    |

Recent Incidents

| Owner: | Alert:  | Category: | Subcategory: | Tags:          | Status:  | Incident ID: |
|--------|---------|-----------|--------------|----------------|----------|--------------|
| All    | All     | All       | All          | All [Untagged] | All open |              |
| Title: | Impact: | Urgency:  | Priority:    | Group:         | Filter?  |              |
|        | All     | All       | All          | All            |          |              |

Select All | Edit Selected | Edit All 5 Matching Incidents | Reset Selection

| i | _time                   | owner      | status_description | title   | app               | category   | subcategory | tags | priority |
|---|-------------------------|------------|--------------------|---|-------------------|------------|-------------|------|----------|
| > | 2022-03-29 04:08:07,023 | unassigned | New                | Excessive Abandon Calls Detected : eca0f49f-186c-4e84-8221-ae3b92f9c0c5 : 1 | genesys_cloud_app | [Untagged] |             |      | medium   |
| > | 2022-03-29 04:08:06,095 | unassigned | New                | Excessive Abandon Calls Detected : d3b4c336-68ce-4642-ae25-7feba840654 : 1  | genesys_cloud_app | [Untagged] |             |      | medium   |
| > | 2022-03-29 04:08:05,243 | unassigned | New                | Excessive Abandon Calls Detected : c4fc8106-c993-4e1b-8766-a80e20c42d82 : 2 | genesys_cloud_app | [Untagged] |             |      | medium   |
| > | 2022-03-29 04:08:04,363 | unassigned | New                | Excessive Abandon Calls Detected : e4011625-cb01-4122-9e6d-e79dbe25d9cd : 5 | genesys_cloud_app | [Untagged] |             |      | medium   |
| > | 2022-03-29 04:08:03,511 | unassigned | New                | Excessive Abandon Calls Detected : 0610d5fb-feb7-4e6f-b27a-5ad246c03dfb : 5 | genesys_cloud_app | [Untagged] |             |      | medium   |

55

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# Alerting

## Excessive abandon calls – Conversation Aggregates

- When a queue has more than X number of abandon calls

```

genesys_cloud_index` sourcetype="genesys:cloud:api:conversation_aggregate" group.ani="***" group.conversationId="***"
| spath path="data().metrics{}" output=rec_metric
| spath path="group" output=rec_group
| spath input=rec_group
| mvexpand rec_metric
| spath input=rec_metric
| search metric="tAbandon"
| fields +
| stats sum(stats.count) AS value by queueId
| sort - value

```

Events (14) Patterns Statistics (5) Visualization

100 Per Page ▾ Format Preview ▾

| queueId                              | value |
|--------------------------------------|-------|
| 0610d5f0-feb7-4e6f-b27a-8a0246c03dfb | 5     |
| e4011625-cb01-4122-9e6d-e79dbe25d9cd | 5     |
| c4fc8106-c993-4e1b-8766-a80e20c42d82 | 2     |
| d3b4c336-68ce-4642-ae25-7feb0a840654 | 1     |
| eca0f49f-186c-4e84-8221-ae3b92f9c0c5 | 1     |

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56

Save 1 Save As ▾ View Create Table View Close

**Existing Dashboard** 

Report Alert Existing Dashboard New Dashboard Event Type

Last 7 days ▾ 

### Excessive Number of Abandon Calls Detected

```

1 `genesys_cloud_index` sourcetype="genesys:cloud:api:conversation_aggregate" group.ani="***" group.conversationId="***"
2 | spath path="data().metrics{}" output=rec_metric
3 | spath path="group" output=rec_group
4 | spath input=rec_group
5 | mvexpand rec_metric
6 | spath input=rec_metric
7 | search metric="tAbandon"
8 | eval queueFlow.id=mvedup(queueFlow.id)
9 | eval queueFlow.name=mvedup(queueFlow.name)
10 | eval queueFlow.selfUri=mvedup(queueFlow.selfUri)
11 | eval queueId=mvedup(queueId)
12 | fields +
13 | stats sum(stats.count) AS value by queueId
14 | sort - value

```

✓ 14 events (3/22/22 6:00:00.000 AM to 3/29/22 6:48:20.000 AM) No Event Sampling ▾ Job ▾ Verbose Mode ▾

Events (14) Patterns Statistics (5) Visualization

100 Per Page ▾ Format Preview ▾

| queueId                              | value |
|--------------------------------------|-------|
| 0610d5f0-feb7-4e6f-b27a-8a0246c03dfb | 5     |
| e4011625-cb01-4122-9e6d-e79dbe25d9cd | 5     |
| c4fc8106-c993-4e1b-8766-a80e20c42d82 | 2     |
| d3b4c336-68ce-4642-ae25-7feb0a840654 | 1     |
| eca0f49f-186c-4e84-8221-ae3b92f9c0c5 | 1     |

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57

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**Settings**

**Alert** Excessive Number of Abandon Calls Detected

**Description** Optional

**Search**

```
genesys_cloud_index` sourcetype="genesys:cloud:api:conversation_aggregate"
| group_by=**" group.conversationId=***"
| spath path="data[]".metrics{} output=rec_metric
| spath path="group" output=rec_group
| spath input=rec_group
| mvexpand rec_metric
| spath input=rec_metric
| search metric="tAbandon"
| eval queueFlow_id=mvedup(queueFlow.id)
| eval queueFlow_name=mvedup(queueFlow.name)
| eval queueFlow_selfUri=mvedup(queueFlow.selfUri)
| eval queueId=mvedup(queueId)
| fields + *
| stats sum(stats.count) AS value by queueId
| sort - value
```

**Alert type** Scheduled      Real-time

Run on Cron Schedule ▾

Time Range Last 7 days ▾

Cron Expression \*/2 \* \* \* \*

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

Expires 24 hour(s) ▾

**Trigger Conditions**

Trigger alert when Custom ▾

search value>2

e.g. search count > 10. Evaluated against the results of the base search.

**Trigger Actions**

+ Add Actions ▾

When triggered

(\*) Alert Manager

Title Excessive Abandon Calls Detected

Enter the title for incidents created by this alert. The title can include tokens that insert text based on the results of the search. Learn More

Impact Medium

Default impact for incidents of this alert.

Note: The impact can be overridden by a field from search results named 'impact'. Later, the alert manager calculates a priority based on the impact and urgency. Learn More

Urgency Medium

Default urgency for incidents of this alert.

Note: The urgency can be overridden by a field from search results named 'urgency'. Later, the alert manager calculates a priority based on the impact and urgency. Learn More

Owner unassigned

If specified, automatically assign new incidents from this alert to a certain user. Type in the username from the list.

**Cancel** **Save**

58

## Alerting

### Excessive abandon calls – Conversation Aggregates

- When a queue has more then X number of abandon calls

```
genesys_cloud_index` sourcetype="genesys:cloud:api:conversation_aggregate" group.ani="***" group.conversationId="***"
| spath path="data[]".metrics{} output=rec_metric
| spath path="group" output=rec_group
| spath input=rec_group
| mvexpand rec_metric
| spath input=rec_metric
| search metric="tAbandon"
| fields + *
| stats sum(stats.count) AS value by queueId
| sort - value
```

#### Other Alert Setting Details

- Excessive Number of Abandon Calls Detected
- Alert type : Run on Cron Schedule
- Time Range : Last 7 Days
- Cron Expression : \*/2 \* \* \* \*
- Trigger alert when : Custom, search value>2
- Trigger : For Each Results
- Throttle : Checked
- Suppress results containing field value : queueId
- Suppress triggering for : 60
- Trigger Actions : Alert Manager
- Title : Excessive Abandon Calls Detected : \$result.queueId\$ : \$result.value\$
- Impact : Medium
- Urgency : Medium
- Owner : Unassigned

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59

## Agenda, Day 2

- SPL Basics for Geney's (20 min)
  - Fields exploration
  - Explore Genesys data using search
  - Analysis command
- Exploring data from Splunk (15 min)
  - Splunk Search - Raw data
  - → Conversation Aggregates, Details, Attributes, Queue observations
- Analysis (20 min)
  - Queue and agent analysis
    - Connected - Total amount of call connected
    - Wait - Average wait times, Split by Queue / Agent
    - Abandon - Total abandon, Split by Queue / Agent
    - Handle time - Average handle time, Split by Queue / Agent
  - Queue Observations
    - Active agents on queue
  - Conversation level analytics
    - Call statistics by various fields

### • Dashboarding & Alerting (15 min)

- Queue and agent operation dashboard
  - Singles view
  - Trending
  - Stats
- Alerting based on analysis and threshold
  - Based on patterns
  - Based on total count
  - Based on calculation stats, like average

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