Machine Learning Workshop I LABS

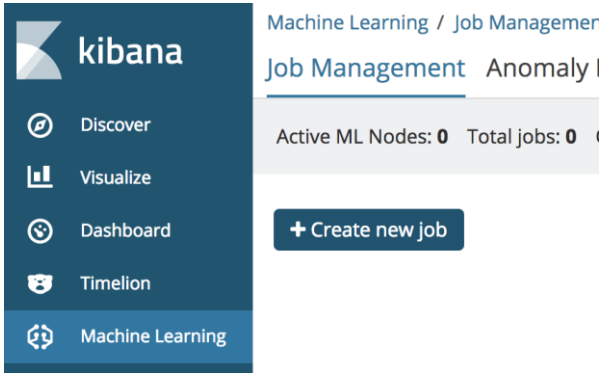
Elastic Stack | ML | Labs

Shawn Hooton | Solution Architect

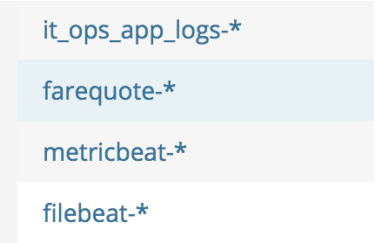
Lab 1: The Simplest job

Steps to Complete

1) In Machine Learning,
Create new job



2) Choose the “farequote-*”
Index pattern



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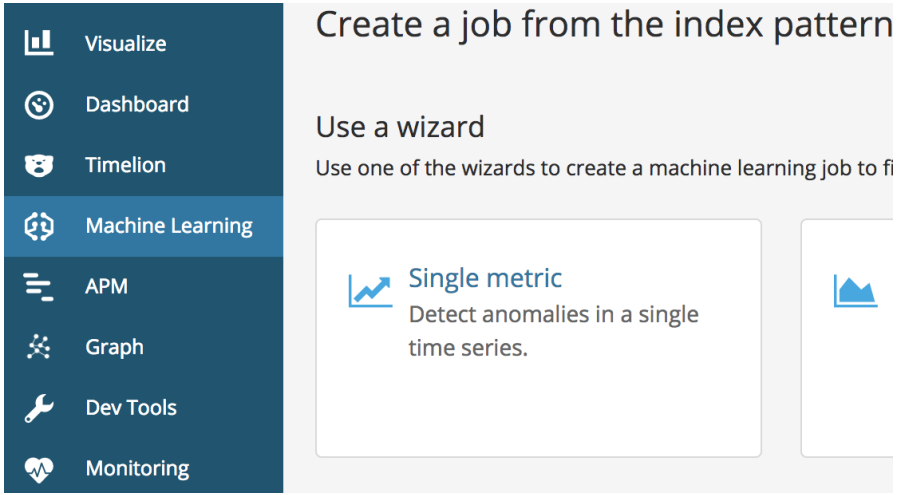
Steps to Complete

3) pick the *Single Metric* wizard



elastic

Steps to Complete

4) Aggregation: count

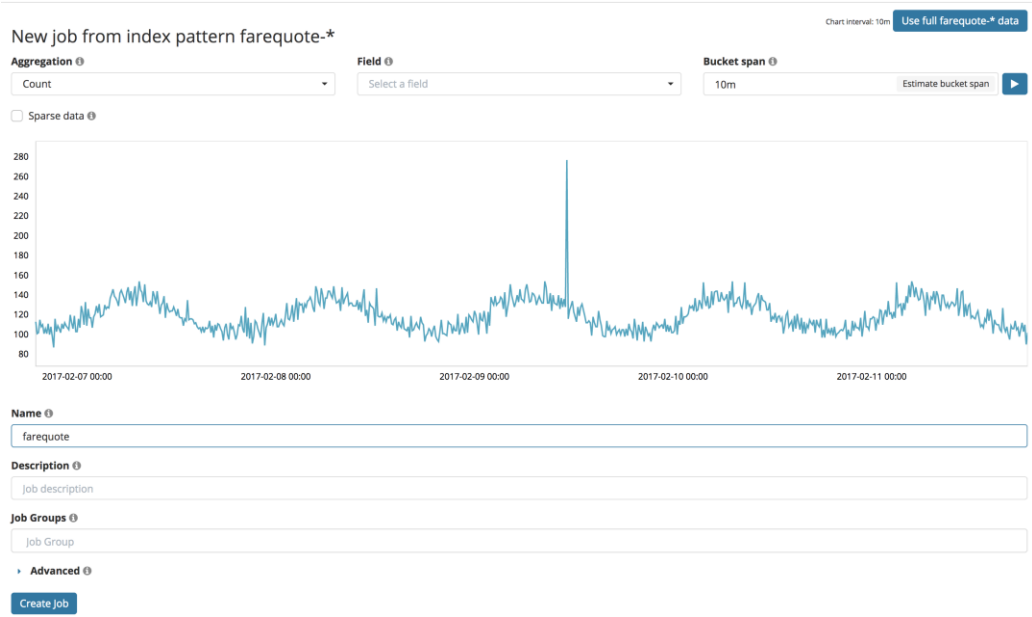
5) Field: *<leave blank>*

6) Bucket span: 10m

7) Click the *“use full farequote data”*

8) Name: *“farequote”*

9) click “Create Job”

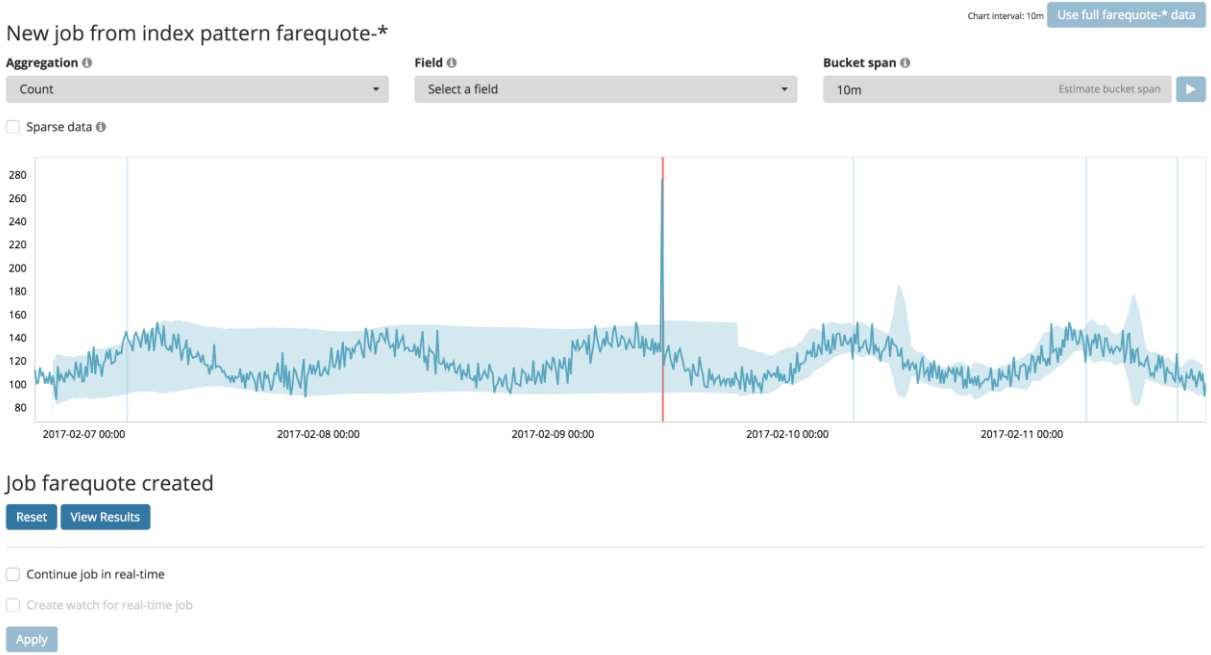


elastic

Steps to Complete

10) See animated learning

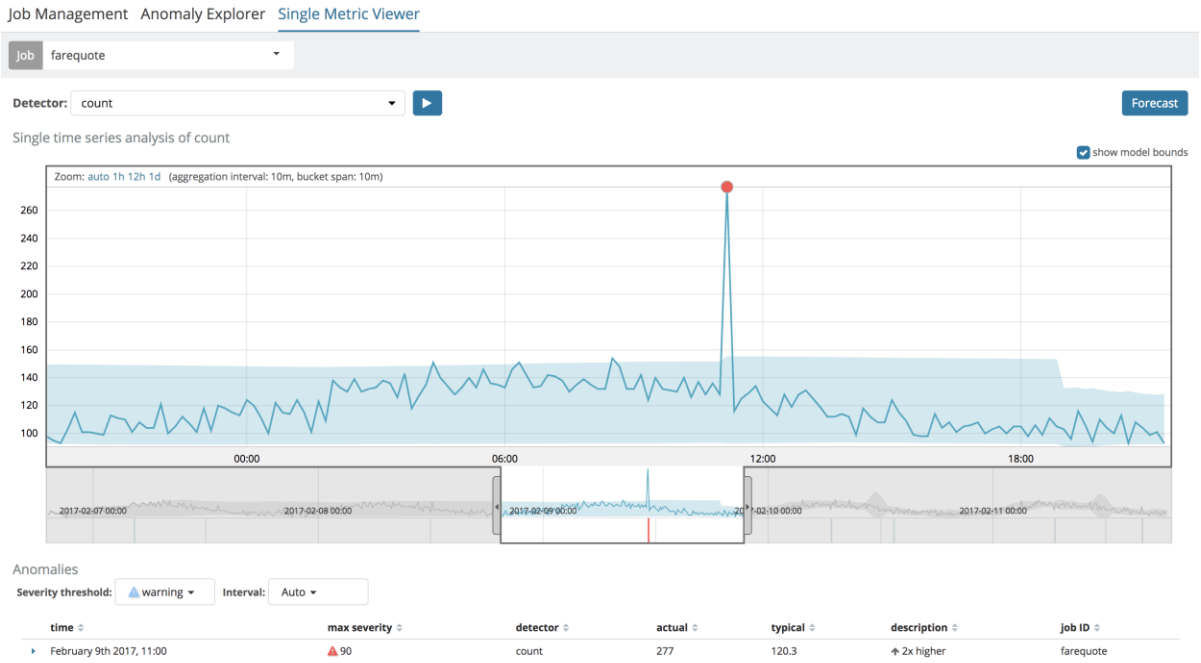
11) click *“View Results”*



elastic

Steps to Complete

12) Zoom in on anomaly



elastic

Lab 2: Advanced Jobs

Steps to Complete

- Index: “farequote”
- ML job type: *“advanced”*
  - job name: “farequote_response”
  - bucket_span: *10m*
  - Detector:
    - function: *max*
    - field_name: *responsetime*
    - partition_field_name: *airline*
  - influencer: *airline*
- Run the job over the entire data set (data is not real-time)

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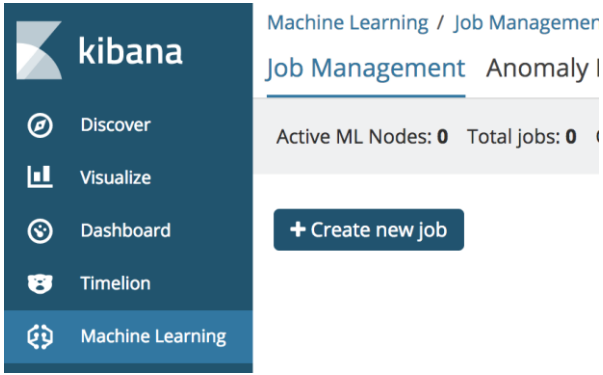
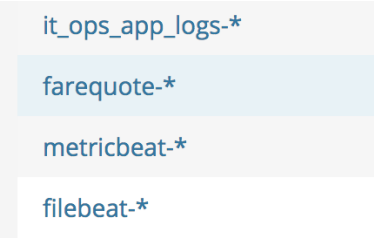
Steps to Complete

1) In Machine Learning,
Create new job



2) Choose the “farequote-*”
Index pattern



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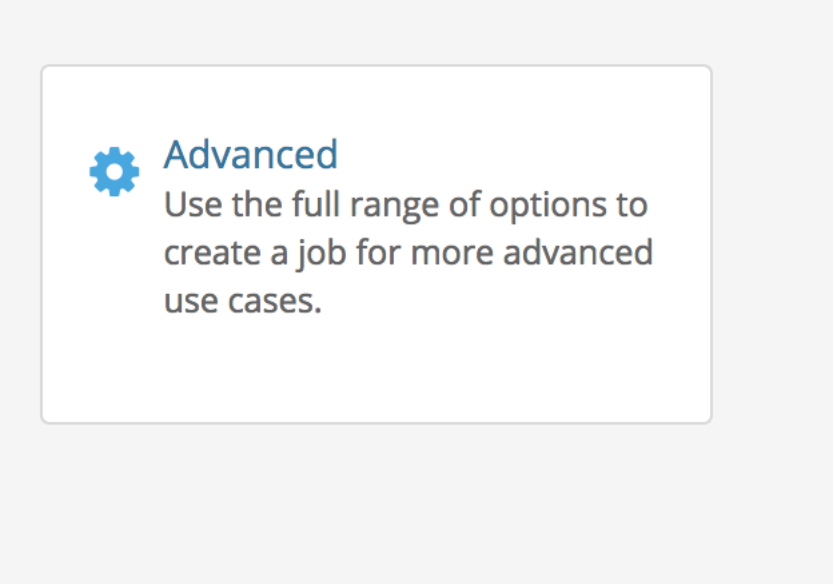
Steps to Complete

3) Choose Advanced Job Wizard



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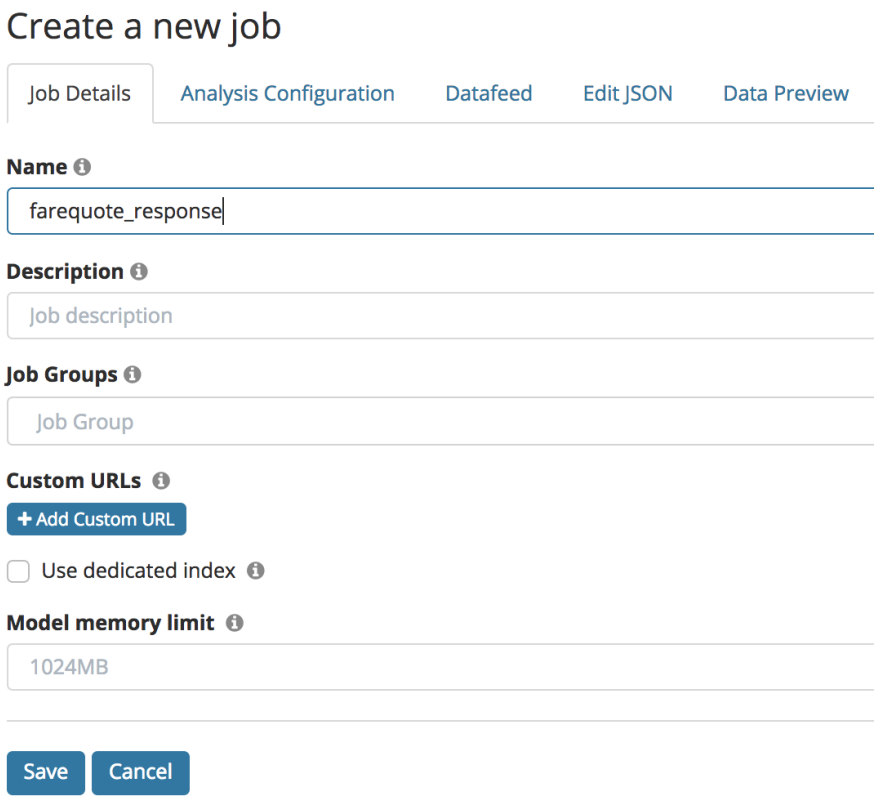
Steps to Complete

5) Name job

"farequote_response"



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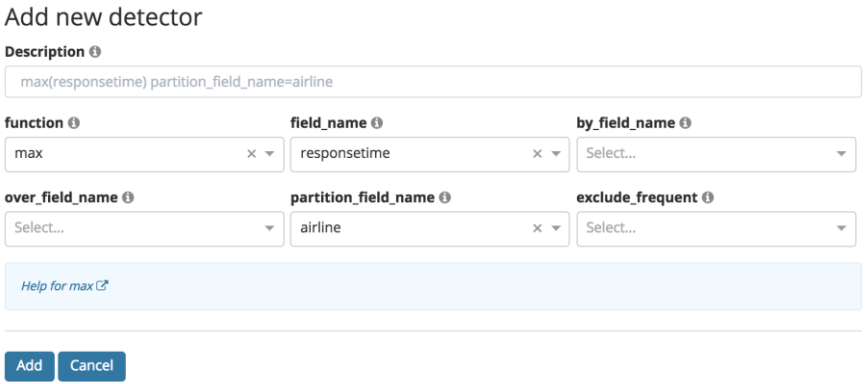
Steps to Complete

6) Set bucket_span= *10m*

7) Add a Detector:

function: *max*
field_name: *responsetime*
partition_field_name: *airline*



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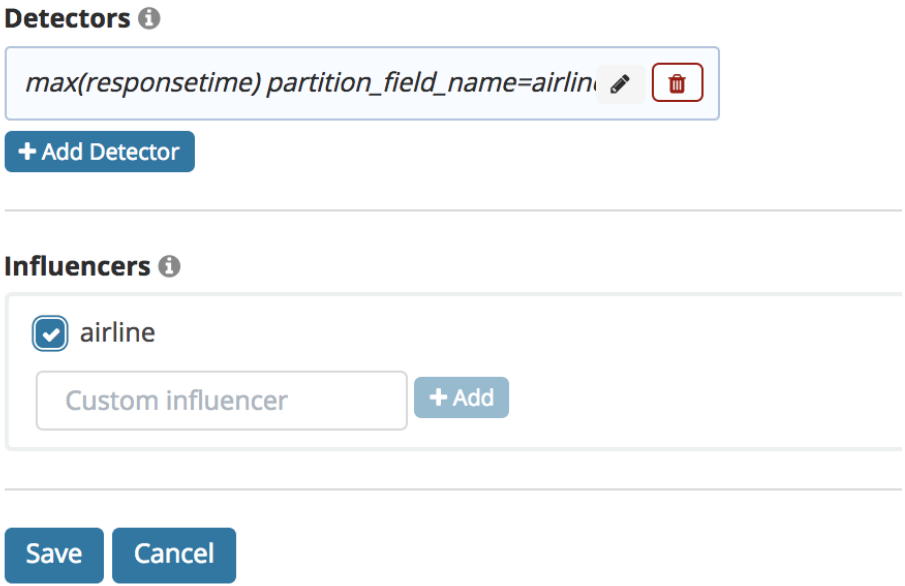
Steps to Complete

7) Select *"airline"* as Influencer

8) Save job

9) Start datafeed



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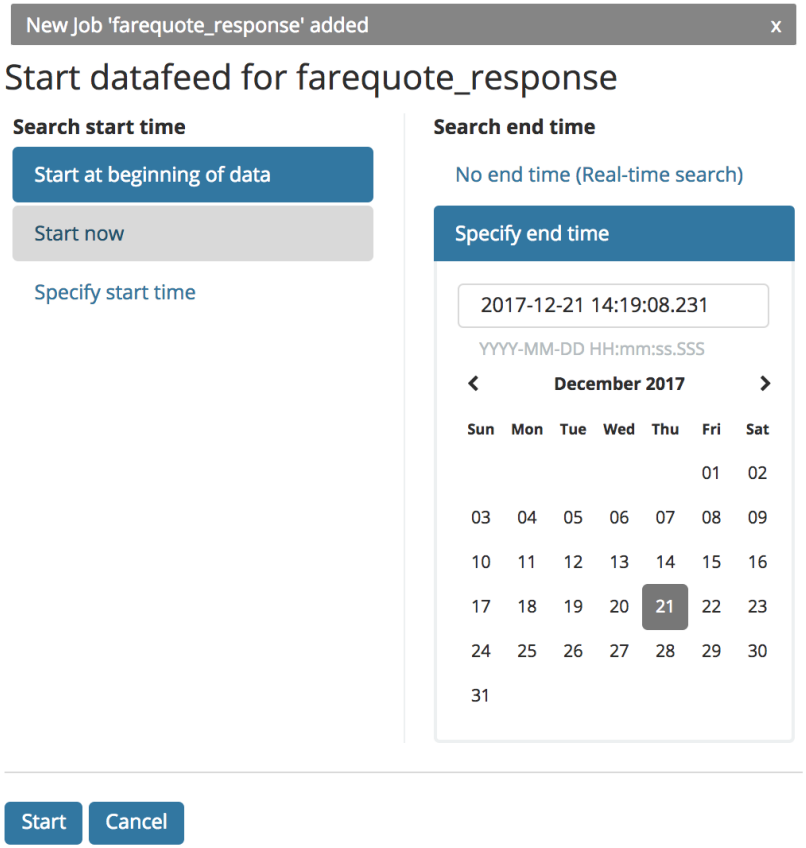
Steps to Complete

8) Start at beginning of data
leave “now” as end time



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Steps to Complete

9) wait until all 86274 events are processed

Job Management Anomaly Explorer Single Metric Viewer

Active ML Nodes: **1** Total jobs: **2** Open jobs: **0** Closed jobs: **1** Active datafeeds: **0**

New Job 'farequote_response' added

+ Create new job

Job filter

Job ID	Description	Processed records	Memory status	Job state	Datafeed state	Latest timestamp	Actions
farequote		719	ok	closed	stopped	2017-02-11 18:49:56	
farequote_response		86,274	ok	closing	stopped	2017-02-11 18:59:54	

Page Size 10

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Elastic Stack Overview

Anomaly Detection Concepts

Concepts & Configuration

Interactive Logs Analysis

Exploring Results with Explorer View

Comparison of Job Type

Other kind of Analysis

Advanced Topics

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Explorer View of a Job

Job Management | Anomaly Explorer | Single Metric Viewer

Active ML Nodes: **1** Total jobs: **2** Open jobs: **0** Closed jobs: **1** Active datafeeds: **0**

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farequote		719	ok	closed	stopped	2017-02-11 18:49:56	
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Page Size 10

Or here

click here

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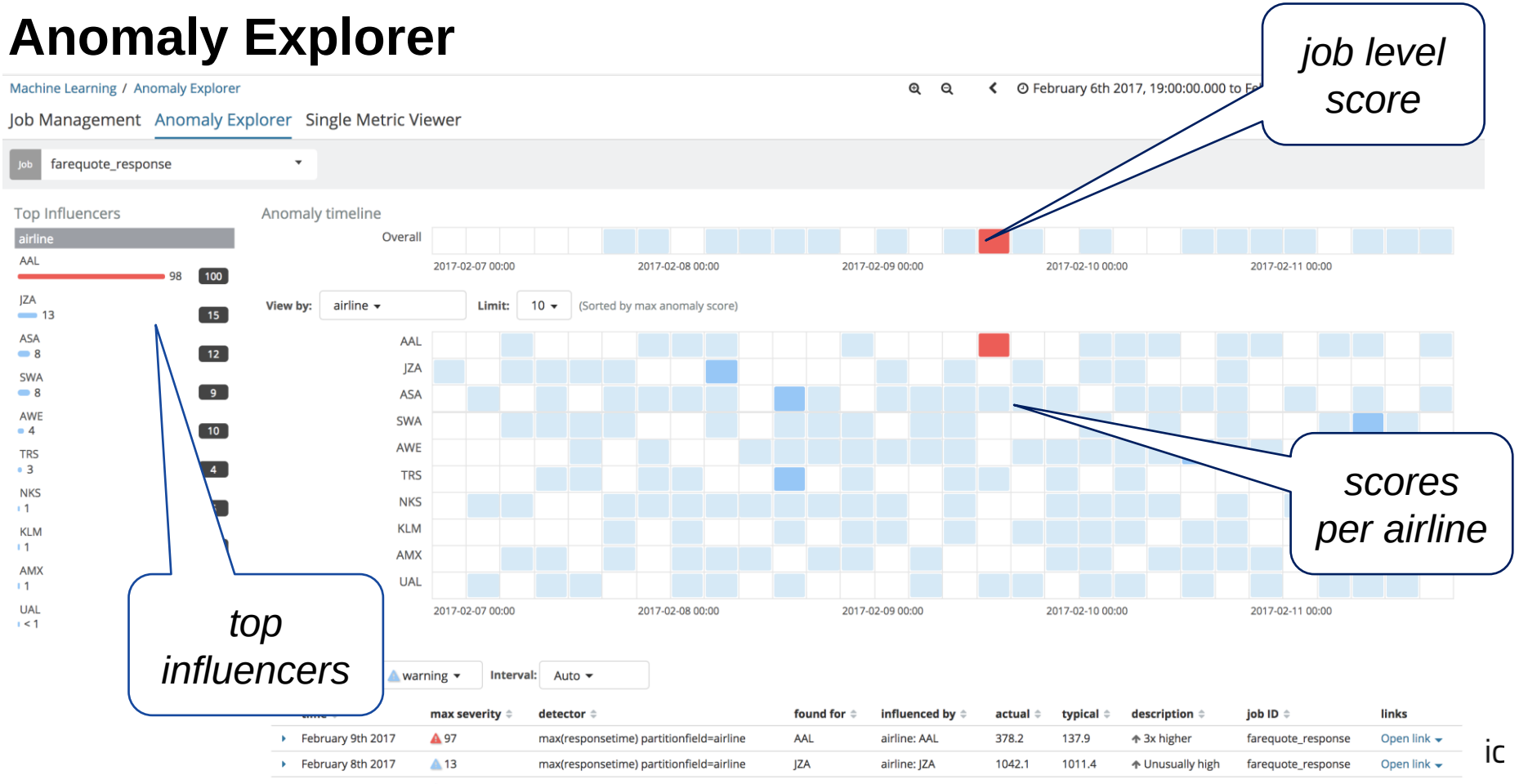
Anomaly Explorer



Concept: What is an Influencer?

- An Influencer is a field, selected at configuration time, that would be a logical **entity ”to blame”** if an anomaly were to exist
- Doesn’t have to be a field in the actual detector, but **fields used to split the data are often good candidates**
- Will get its own score based upon how influential that entity is on the anomaly

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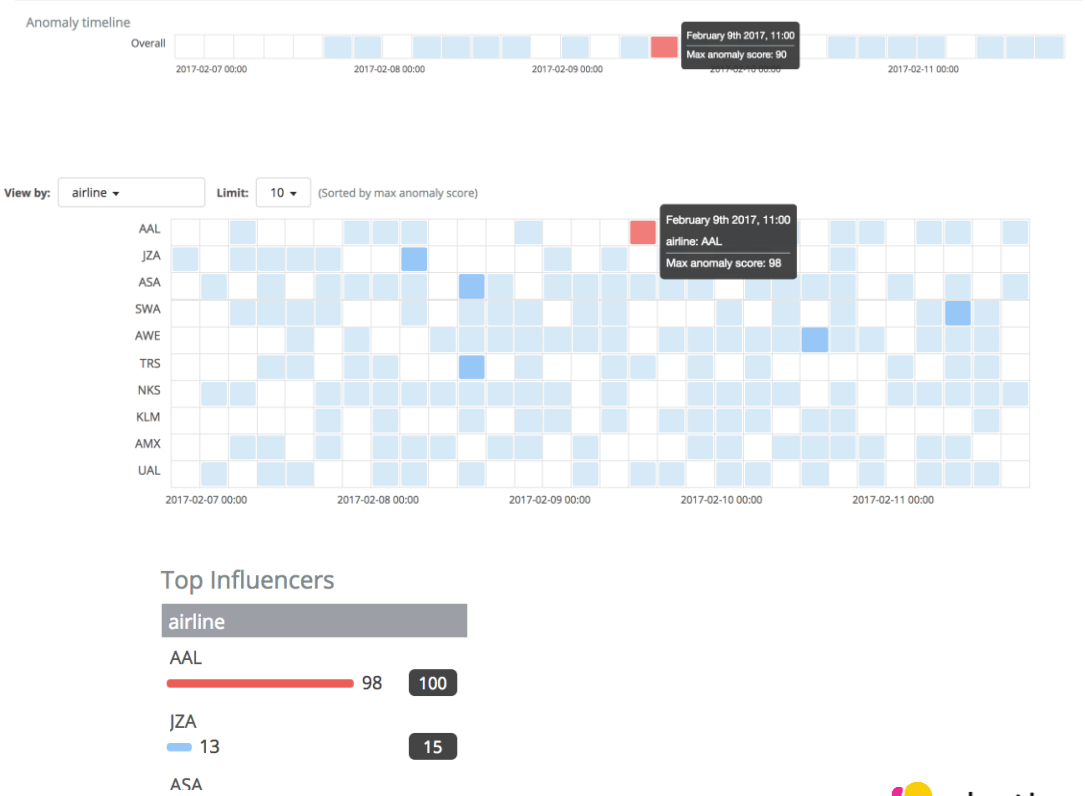
Scoring

- Overall Job score is 90
  - How unusual is that bucket, given all airlines?
- Detector score is 98
  - How unusual is the response time of airline=AAL?
- airline=AAL is the top influencer in this time range
  - 98 is the max anomaly score
  - 100 is the sum of anomaly scores in this time range



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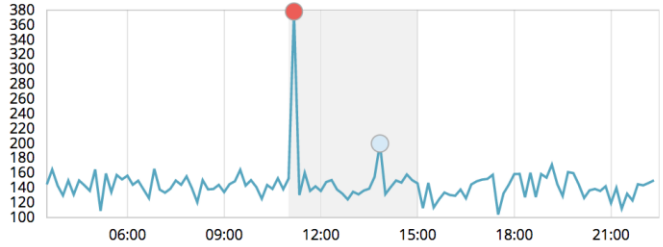
Anomaly Details

view of response time for AAL

Anomalies

Severity threshold: warning **Interval:** Auto **Show Charts**

max(responsetime) partitionfield=airline - airline AAL View



time	max severity	detector	found for	influence	actual	typical	description	job ID	links
February 9th 2017, 11:00	97	max(responsetime) partitionfield=airline	AAL	AAL	378.2	137.9	3x higher	farequote_res	

Description:
critical anomaly in max(responsetime) partitionfield=airline found for airline AAL

Details on highest severity anomaly:

airline:	AAL
time:	February 9th 2017, 11:10:00 to February 9th 2017, 11:20:00
function:	max
fieldName:	responsetime
actual:	378.2
typical:	137.9
job ID:	farequote_response
probability:	3.95474803120103e-22

Influenced by:

airline	AAL

actual vs. "typical"

raw probability

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Lab 3: Multi-Metric Jobs

Steps to Complete

- Again, use index: *“farequote”:*
- Job type: *“multi-metric”*
  - Re-create the *“max(responsetime) per airline”* job
- Also add *“count per airline”* in the same job

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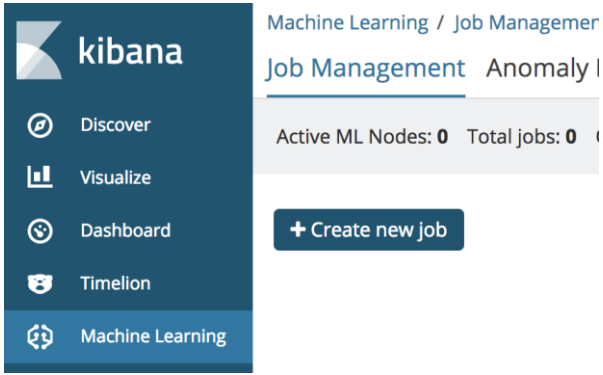
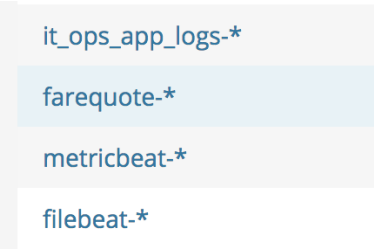
Steps to Complete

1) In Machine Learning,
Create new job



2) Choose the “farequote-*”
Index pattern



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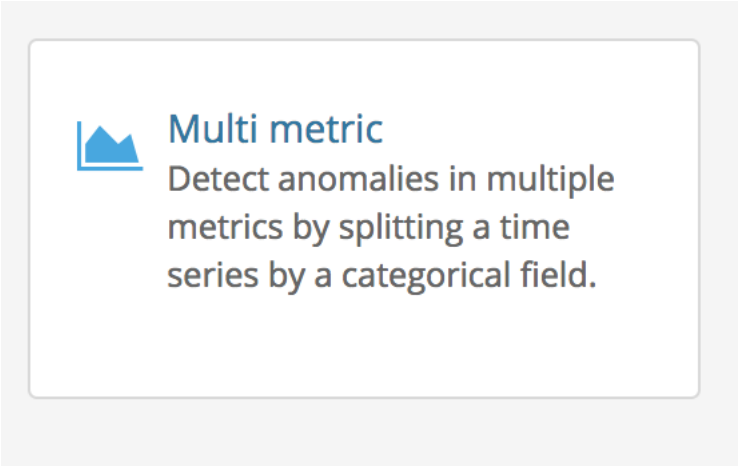
Steps to Complete

3) pick Multi-Metric
Job Wizard



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Steps to Complete

4) Choose
   - *event rate, count*
   - *responsetime, max*

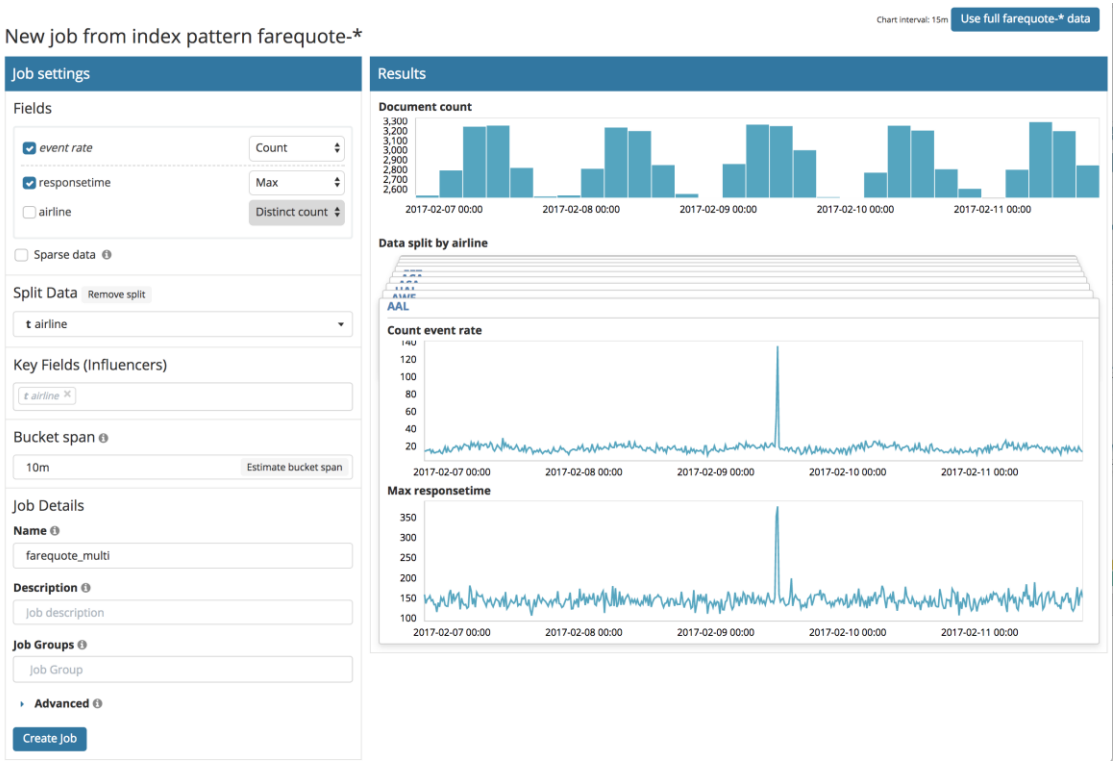
5) Bucket span: *10m*

6) Split Data: *airline*

7) Click *"use full farequote data"*

8) Name: *"farequote_multi"*

9) Click *"Create Job"*



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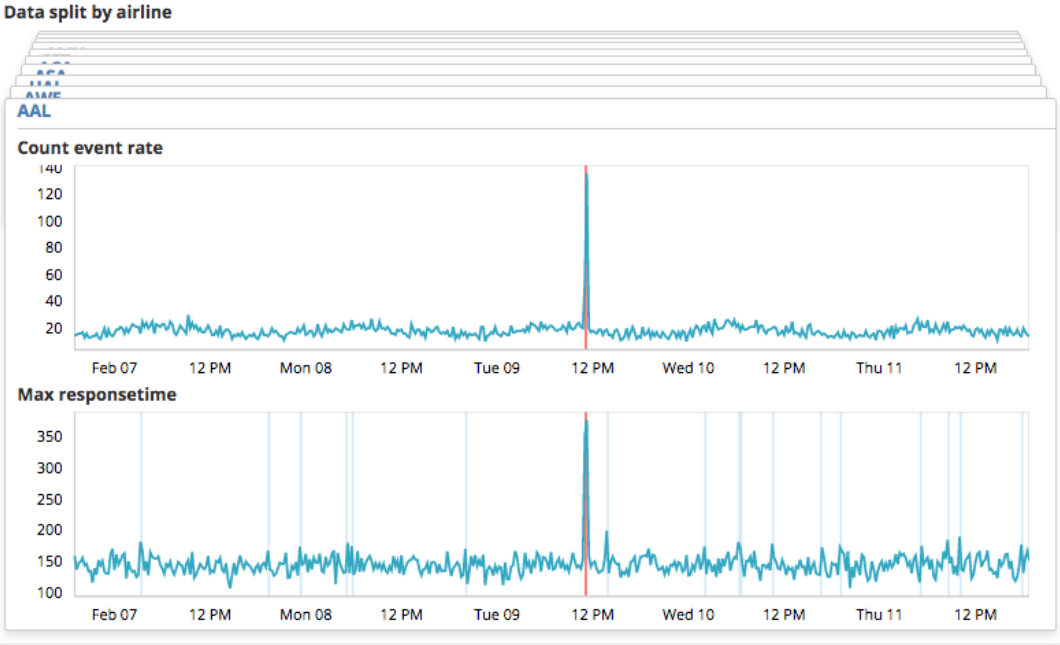
Steps to Complete

10) See animated learning

11) Click “View Results”



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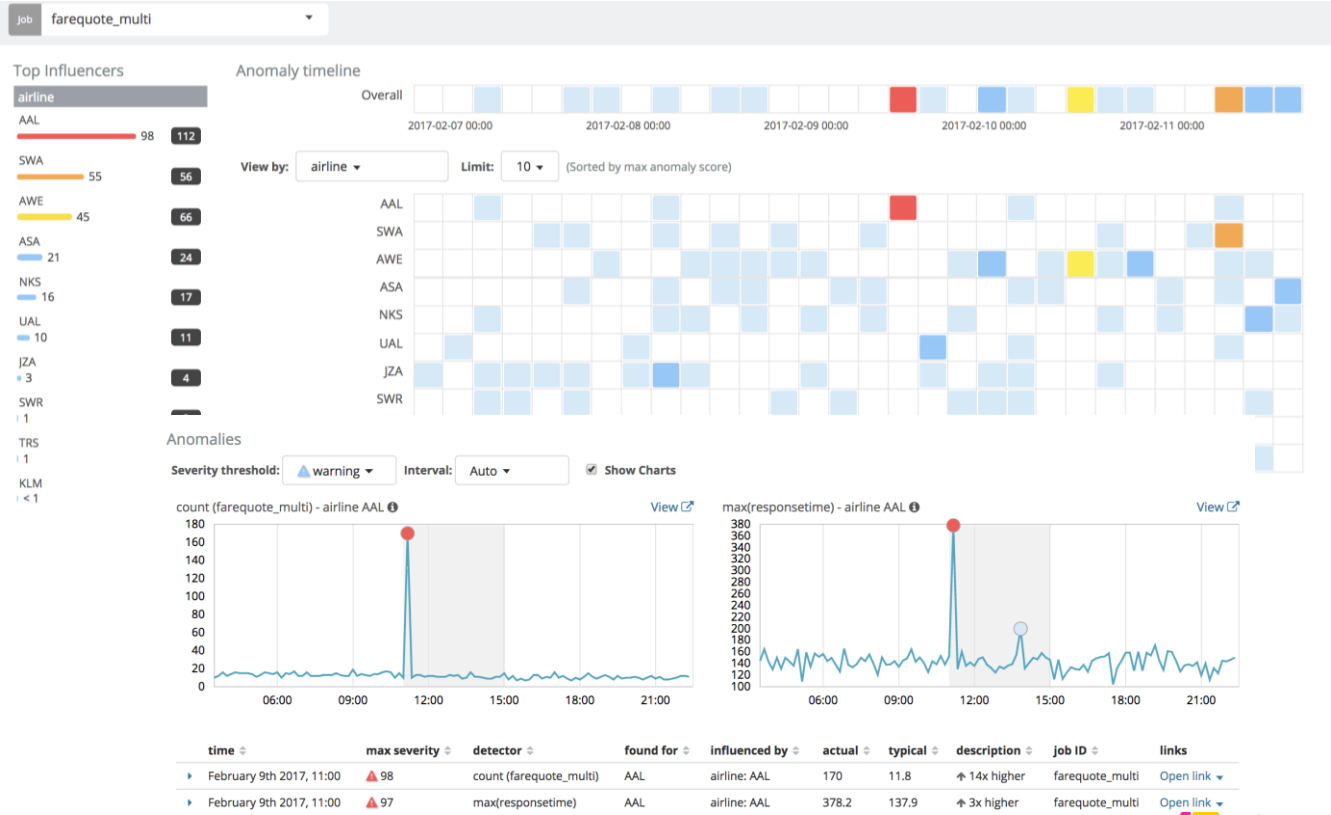
Steps to Complete

12) Result:

anomalies for AAL in both count and response time



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Lab 4: Multi-Job Analysis

Steps to Complete

- Create and Advanced job for:
  - “it_ops_app_logs-*”
  - Create a “count by mlcategory” job for the log events
    - use “message” as the categorization_field_name
- Create Multi-Metric jobs for the following indices:
  - it_ops_sql-*
  - it_ops_network-*
- Create Single-Metric job for the following :
  - it_ops_kpi-*
- Group all jobs into the same Job Group name
- View all jobs overlaid in the Explorer View

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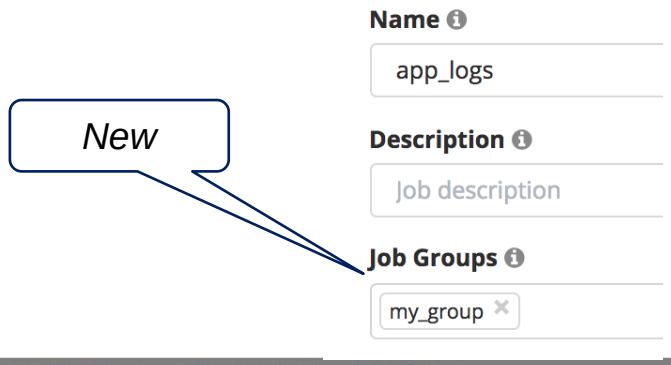
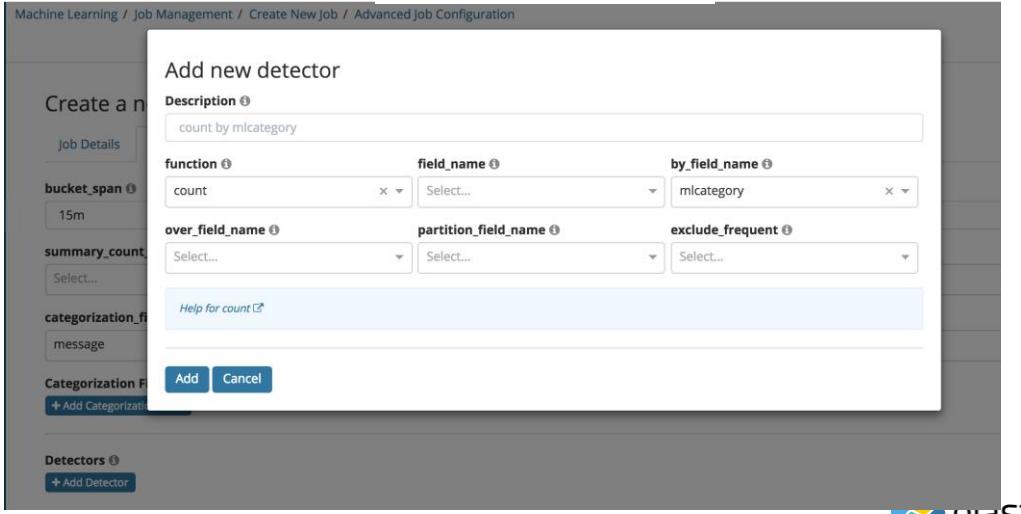
Steps to Complete

- For index:it_ops_app_logs
  - create an advanced job
  - put job in a group

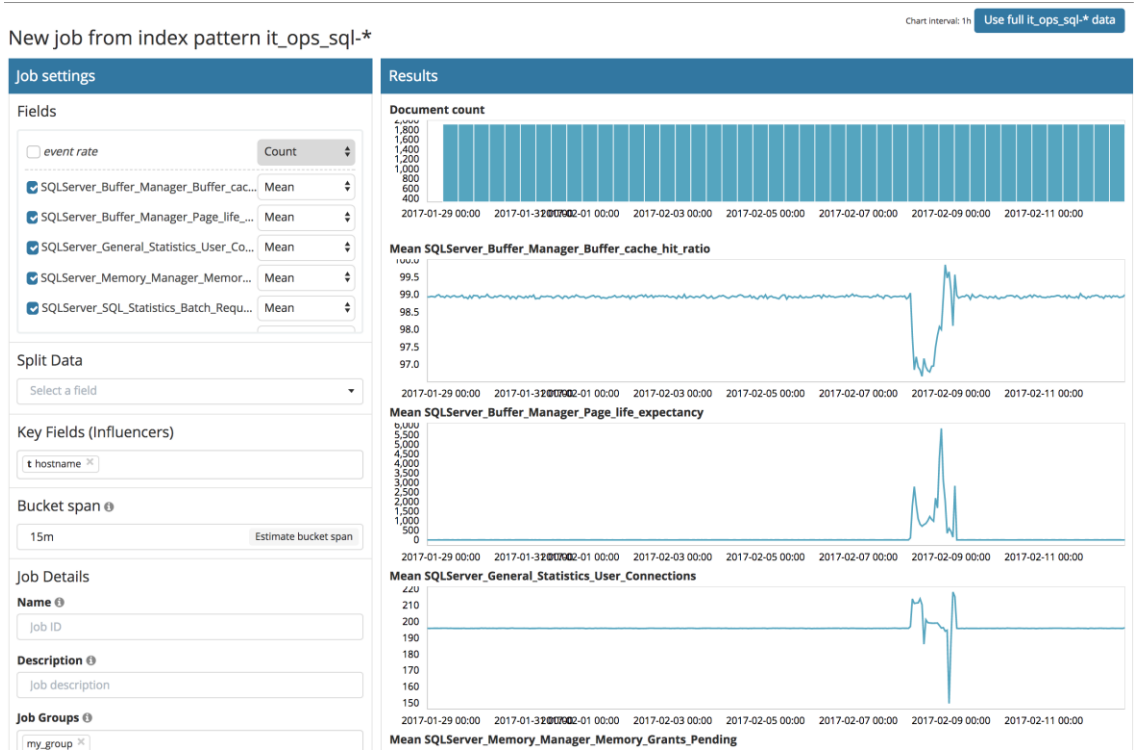




  - make sure you choose “message” for categorization_field_name
  - detector is: count with by_field_name of “mlcategory”

Steps to Complete

- For index:it_ops_sql-*
  - create multi-metric job
  - “mean” for all SQL metrics
- Also put job in same Job Group as the app logs job



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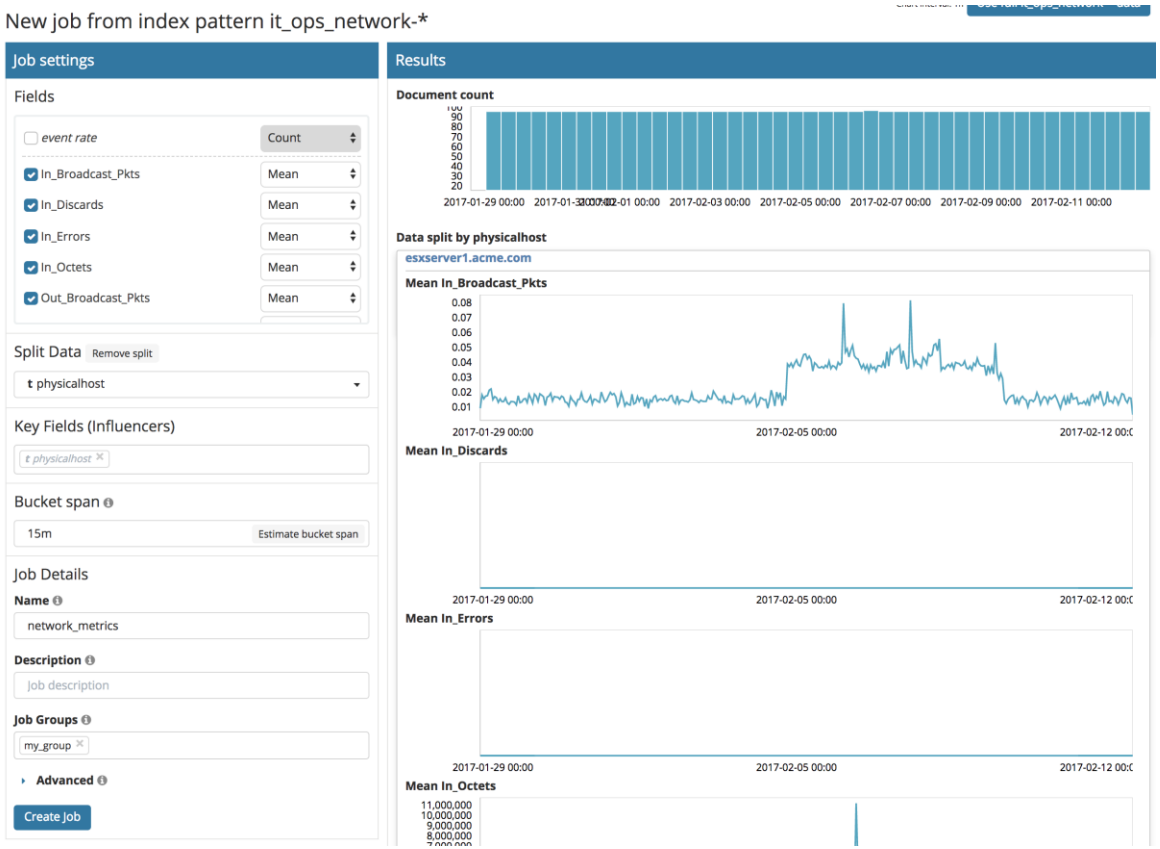
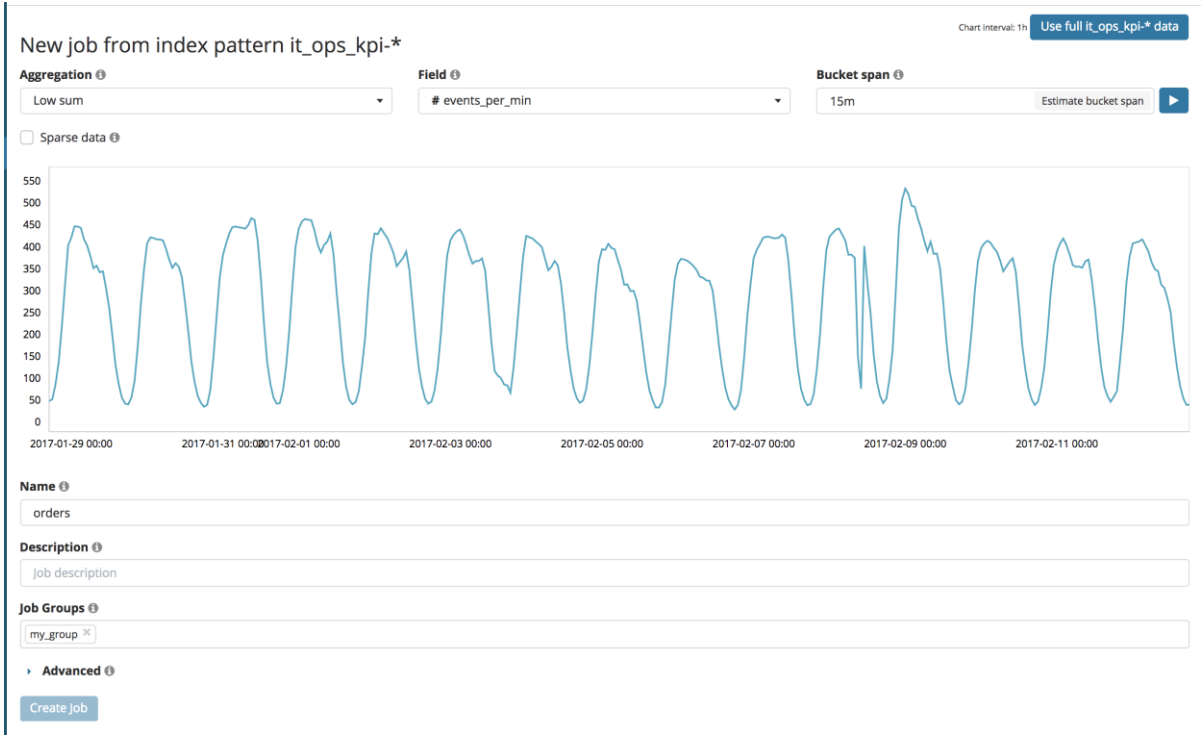
Steps to Complete

- For index:it_ops_network-*
  - create multi-metric job
  - “mean” for all metrics
- Also put job in same Job Group as the app logs job



Steps to Complete

- For index:it_ops_kpi-*
  - create single-metric job
  - “low_sum” for field “events_per_min”
- Also put job in same Job Group as the app logs job



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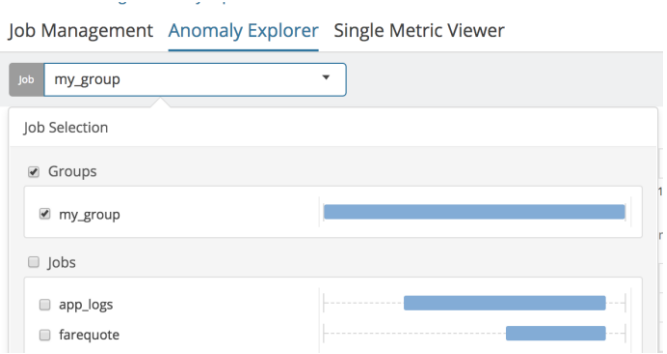
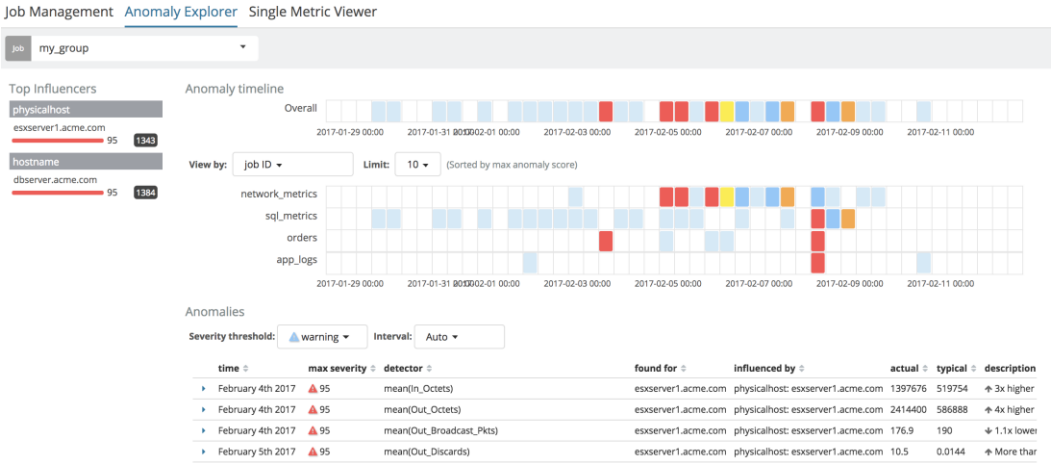
Steps to Complete

- View all jobs in Group



- See correlated anomalies



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THANK YOU