

Steps and Implementation

In this paper we present a SAAS model for twitter sentiment analysis on AWS which will extract tweets specific to given hashtag and analysis the sentiments of each to provide insights and inferences of the public opinion over a topic.

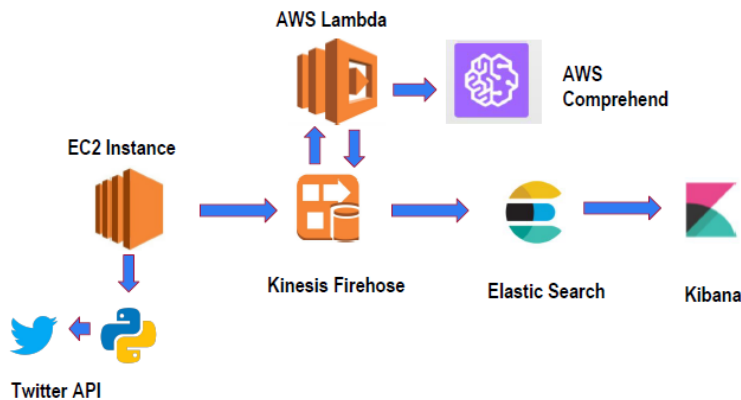


Fig: System Architecture for Twitter sentiment analysis on AWS

The various modules of a system are configured as mentioned below.

System Configuration

- Elastic Compute Cloud (EC2): Amazon Linux AMI 2018.03.0 (HVM) 64 bit
- Instance type: t2.micro (Variable ECUs, 1 vCPUs, 2.5 GHz, Intel Xeon Family, 1 GiB memory, EBS only)
- Kinesis Firehose delivery stream: Source as Direct PUT, transform source records with AWS Lambda enabled, Amazon Elasticsearch Service as destination, Retry duration to ES is 300 seconds
- AWS Lambda: Runtime python 3.6, trigger added to the function are Amazon Cloud Watch logs, Amazon Comprehend, Amazon S3, Identity and Access Management
- Elastic Search: Version 6.5, instance type t2.small.elasticsearch, one instance, EBS Storage of 10 GB.

Step 1: Running python script on Amazon EC2 instance.

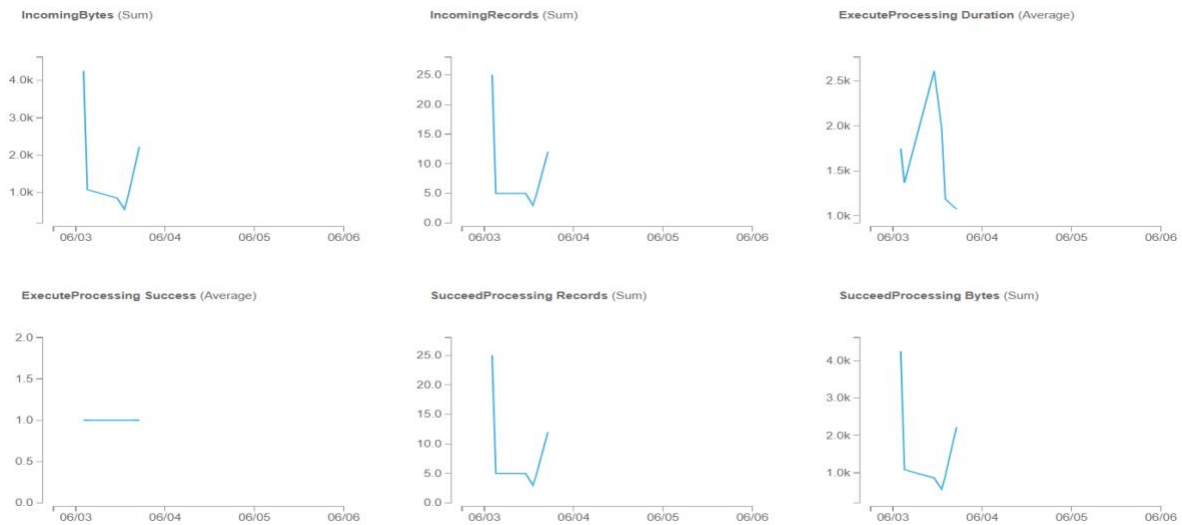
Script accepts 2 parameters. Keyword to search and number of tweets to be fetched.

```
[ec2-user@ip-172-31-88-114 ~]$ python TwitterStreaming.py
Please enter keyword to search tweets: Narendra Modi
Please enter number of tweets to be searched: 5
1And you idiots preach freedom of speech. congress party sucks. guys admit you hv no credible leader.
2 Kerala Pradesh Congress Committee expels party leader A. P. Abdullakutty for praising PM Narendra Modi. (File pic)
3 PM Narendra Modi to invite top taxpayers to tea.

great initiative. NDA is only govt to respect tax payers, but need to
4 PM Narendra Modi to invite top taxpayers to tea.

great initiative. NDA is only govt to respect tax payers, but need to
5 Unlike the USA, India suffers from these spineless superstars! via
[ec2-user@ip-172-31-88-114 ~]$
```

Step 2: Data ingestion in Kinesis Firehose



Step 3: Invocation of lambda function and snapshot of logs

Filter events	all 2019-06-03 (01:02:27) ▾
Time (UTC +00:00)	Message
2019-06-04	
▼ 01:02:27	{'created_at': '06/04/2019', 'text': 'True!!! A brave and loyal Indian... You and your family are a role model for many Hindu like me... Modi and its RSS caste politics is not Inc
	{'created_at': '06/04/2019', 'text': 'True!!! A brave and loyal Indian... You and your family are a role model for many Hindu like me... Modi and its RSS caste politics is not indianess that I live by!', 'location': 'Unknown'}
▶ 01:02:27	POSITIVE
▶ 01:02:27	0.4483088217675686
▶ 01:02:27	{'message': 'True!!! A brave and loyal Indian... You and your family are a role model for many Hindu like me... Modi and its RSS caste politics is not indianess that I live by'
▼ 01:02:27	{'recordId': '49596141715238707718256981958618255986190617702769360898000000', 'result': 'OK', 'data': 'eyJXZXNzYWdljogJlRydWVhIjE5EgQSBjcmFZZSBhbmQgbGQ=
	{'recordId': '49596141715238707718256981958618255986190617702769360898000000', 'result': 'OK', 'data': 'eyJXZXNzYWdljogJlRydWVhIjE5EgQSBjcmFZZSBhbmQgbGQ=

Step 4: Data storage on elastic and snapshot of a data record

message: True!!! A brave and loyal Indian... You and your family are a role model for many Hindu like me... Modi and its RSS caste politics is not indianes s that I live by! created_at: 06/04/2019 location: Unknown sentiment: POSITIVE total: 0.448 _id: 49596141715238707718256981958618255986190617702769360 898.0 _type: comment _index: comment _score: 1

Table JSON [View single document](#)

```
1 {
2   "index": "comment",
3   "_type": "comment",
4   "_id": "49596141715238707718256981958618255986190617702769360898.0",
5   "version": 1,
6   "score": 1,
7   "source": {
8     "message": "True!!! A brave and loyal Indian... You and your family are a role model for many Hindu like me... Modi and its RSS caste politics is
9       not indianes that I live by!",
10    "created_at": "06/04/2019",
11    "location": "Unknown",
12    "sentiment": "POSITIVE",
13    "total": 0.4483088217675686
14  }
```

Step 5: Data Visualization on Kibana

