



A NoSQL search engine

to search...



David Pilato
Developer | Evangelist
@dadoonet

DEVOXXTM
MOROCCO



A NoSQL search engine

to search find...



David Pilato

Developer | Evangelist
@dadoonet

DEVOXXTM
MOROCCO

Feb 7, 2010 – Oct 2, 2017

Contributions: [Commits](#) ▾

Contributions to master, excluding merge commits



 **kimchy**
4,737 commits / 1,401,534 ++ / 1,064,899 --



 **s1monw**
2,539 commits / 1,286,773 ++ / 1,279,132 --



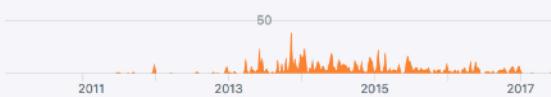
 **javanna**
1,385 commits / 163,038 ++ / 133,596 --



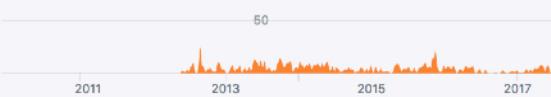
 **jasontedor**
1,373 commits / 103,792 ++ / 68,758 --



 **dadoonet**
1,256 commits / 134,033 ++ / 100,410 --



 **martijnvg**
1,214 commits / 236,799 ++ / 163,496 --

**clintongormley**

#7

rjernst

#8

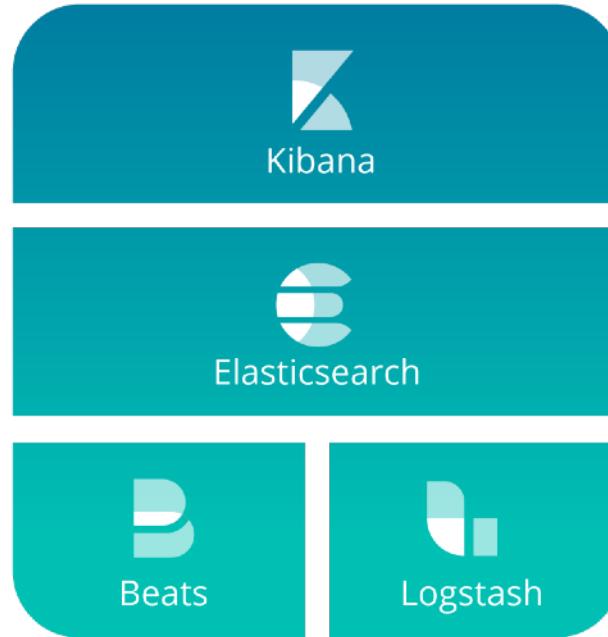
nik9000

#9



Elastic Stack

100% open source
No enterprise edition







Elasticsearch

Heart of the Elastic Stack



Distributed, Scalable

High-availability

Multi-tenancy

Developer Friendly

Real-time, Full-text Search

Aggregations



Kibana

Window into the Elastic Stack



Visualize and analyze

Geospatial

Customize and Share Reports

Graph Exploration

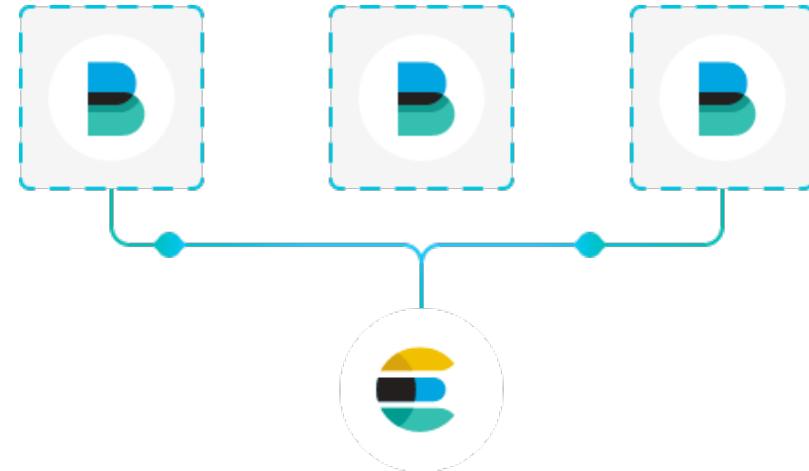
UX to secure and manage the Elastic Stack

Build Custom Apps



Beats

Lightweight data shippers



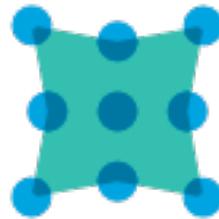
Ship data from the source	Ship and centralize in Elasticsearch	Ship to Logstash for transformation and parsing
Ship to Elastic Cloud	Libbeat: API framework to build custom beats	30+ community Beats



FILEBEAT
Log Files



METRICBEAT
Metrics



PACKETBEAT
Network Data



WINGLOGBEAT
Window Events

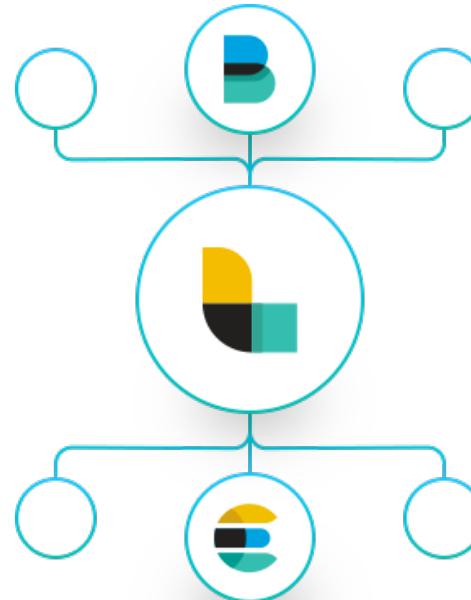
More than 30 community Beats
and growing ...

Apachebeat, dockbeat, httpbeat,
mysqlbeat, nginxbeat, redis beats,
twitterbeat, and more



Logstash

Data processing pipeline



Ingest data of all shapes,
sizes, and sources

Parse and dynamically
transform data

Transport data to any
output

Secure and encrypt data
inputs

Build your own pipeline

More than 200+ plugins



X-Pack

Single install
Extensions for the Elastic Stack
Subscription pricing



Security



Alerting



Monitoring



Reporting



Graph

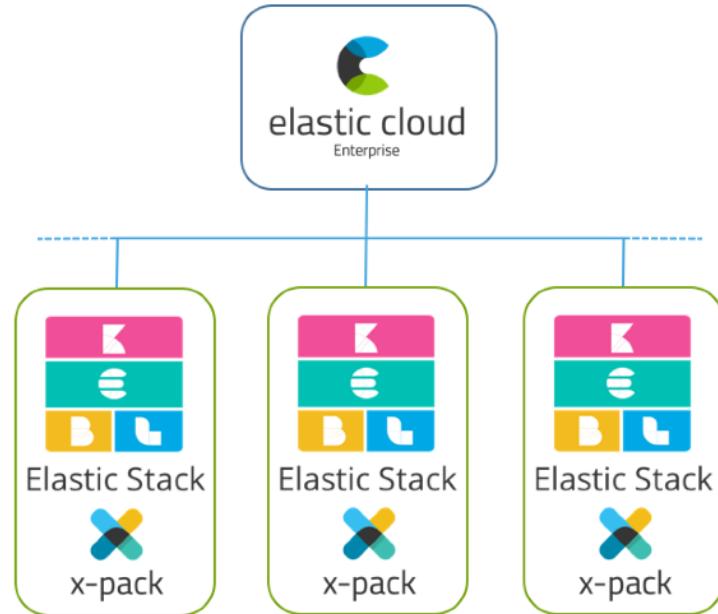


Machine Learning



cloud Enterprise

Provision and manage multiple Elastic Stack environments and provide **search-aaaS, logging-aaaS, BI-aaaS, data-aaaS** to your entire organization





cloud

Hosted Elasticsearch & Kibana
Includes X-Pack features
Starts at \$45/mo

The screenshot shows the Elasticsearch Cloud Platform interface. On the left, the 'Summary' section displays the following details:

Platform	Amazon Web Services
Region	US East (N. Virginia)
Memory	1 GB
Storage	24 GB
SSD	Yes
High availability	No
Hourly rate	\$0.0612
Monthly rate	\$45

Below the summary is a 'Create' button. To the right, the 'Cluster Size' section allows users to choose a cluster size from 1 to 256 nodes, with 4 nodes selected. A note says 'Choose a cluster size. Cluster size can be changed later without downtime.' and 'SSD - Selected for improved storage performance.' A link 'Need a larger cluster? Contact us.' is also present. The 'Cloud Platform' section shows options for 'Amazon web services' and 'Google Cloud Platform'. At the bottom, a 'Choose a region near you:' section lists regions: 'US East (N. Virginia)' (selected), 'US West (N. California)', 'US West (Oregon)', 'EU (Ireland)', 'Asia Pacific (Singapore)', 'Asia Pacific (Tokyo)', 'South America East', and 'Asia Pacific (Sydney)'.

Available in
Amazon Web Service
Google Cloud Platform

	Open Source	Basic	Gold	Platinum
<u>Elastic Stack</u>	Elasticsearch, Kibana, Beats, Logstash	Elasticsearch, Kibana, Beats, Logstash	Elasticsearch, Kibana, Beats, Logstash	Elasticsearch, Kibana, Beats, Logstash
<u>X-Pack</u>				
Monitoring		✓	✓ + Multicloud + configurable data retention	✓ + Multicloud + configurable data retention
Security			✓	✓ + field/doc level security + custom realms
Alerting			✓	✓
Graph				✓
Reporting			✓	✓
Machine Learning				✓
Dev Tools		✓ + Search Profiler	✓ + Search Profiler	✓ + Search Profiler
<u>Tile Service</u>	Zoom Level 10	Zoom Level 18	Zoom Level 18	Zoom Level 18
<u>Support</u>			Business Hour 6 Support Contacts 4 Hour Critical Response	24/7/365 8 Support Contacts 1 Hour Critical Response Emergency Patches



Some data

```
CREATE TABLE user
(
    name VARCHAR(100),
    comments VARCHAR(1000)
);
INSERT INTO user VALUES ('David Pilato', 'Developer at elastic');
INSERT INTO user VALUES ('Malloum Laya', 'Worked with David at
french customs service');
INSERT INTO user VALUES ('David Gageot', 'Engineer at Google');
INSERT INTO user VALUES ('David David', 'Who is that guy?');
```

Search on term

```
INSERT INTO user VALUES ('David Pilato', 'Developer at elastic');  
INSERT INTO user VALUES ('Malloum Laya', 'Worked with David at  
french customs service');  
INSERT INTO user VALUES ('David Gageot', 'Engineer at Google');  
INSERT INTO user VALUES ('David David', 'Who is that guy?');
```

```
SELECT * FROM user WHERE name="David";  
Empty set (0,00 sec)
```

Search like

```
INSERT INTO user VALUES ('David Pilato', 'Developer at elastic');  
INSERT INTO user VALUES ('Malloum Laya', 'Worked with David at  
french customs service');  
INSERT INTO user VALUES ('David Gageot', 'Engineer at Google');  
INSERT INTO user VALUES ('David David', 'Who is that guy?');
```

```
SELECT * FROM user WHERE name LIKE "%David%";
```

name	comments
David Pilato	Developer at elastic
David Gageot	Engineer at Google
David David	Who is that guy?

Search in two fields

```
INSERT INTO user VALUES ('David Pilato', 'Developer at elastic');  
INSERT INTO user VALUES ('Malloum Laya', 'Worked with David at  
french customs service');  
INSERT INTO user VALUES ('David Gageot', 'Engineer at Google');  
INSERT INTO user VALUES ('David David', 'Who is that guy?');
```

```
SELECT * FROM user WHERE name LIKE "%David%" OR  
comments LIKE "%David%";
```

name	comments
David Pilato	Developer at elastic
Malloum Laya	Worked with David at french customs service
David Gageot	Engineer at Google
David David	Who is that guy?



Search in two fields

```
INSERT INTO user VALUES ('David Pilato', 'Developer at elastic');  
INSERT INTO user VALUES ('Malloum Laya', 'Worked with David at  
french customs service');  
INSERT INTO user VALUES ('David Gageot', 'Engineer at Google');  
INSERT INTO user VALUES ('David David', 'Who is that guy?');
```

```
SELECT * FROM user WHERE name LIKE "%David%" OR  
comments LIKE "%David%";
```

name	comments
David Pilato	Developer at elastic
Malloum Laya	Worked with David at french customs service
David Gageot	Engineer at Google
David David	Who is that guy?

Allways chek for
speling erors

Search with typos

```
INSERT INTO user VALUES ('David Pilato', 'Developer at elastic');  
INSERT INTO user VALUES ('Malloum Laya', 'Worked with David at  
french customs service');  
INSERT INTO user VALUES ('David Gageot', 'Engineer at Google');  
INSERT INTO user VALUES ('David David', 'Who is that guy?');
```

```
SELECT * FROM user WHERE name LIKE "%Dadid%";
```

```
Empty set (0,00 sec)
```

Search with typos

```
INSERT INTO user VALUES ('David Pilato', 'Developer at elastic');  
INSERT INTO user VALUES ('Malloum Laya', 'Worked with David at  
french customs service');  
INSERT INTO user VALUES ('David Gageot', 'Engineer at Google');  
INSERT INTO user VALUES ('David David', 'Who is that guy?');
```

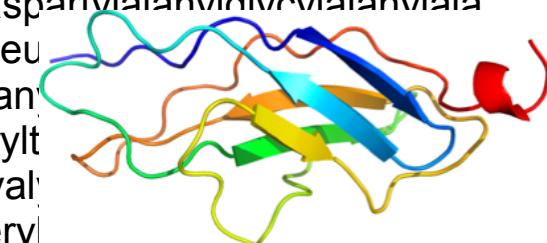
```
SELECT * FROM user WHERE name LIKE "%_adid%" OR  
name LIKE "%D_did%" OR  
name LIKE "%Da_id%" OR  
name LIKE "%Dad_d%" OR  
name LIKE "%Dadi_%";
```

David Pilato	Developer at elastic
David Gageot	Engineer at Google
David David	Who is that guy?



Pneumonoultramicroscopicsilicovolcanokoniosis
(45 Letters)

Methionylthreonylthreonylglutaminylarginyltyrosylglutamylserylleucylphenylalanylalanylglutaminylleucylsylglutamylarginyllysylglutamylglycylalanylphenylalanylvalylprolylphenylalanylvalylthreonylleucylglycylaspartylpolyglycylsoleucylglutamylglutamylserylleucyllysylsoleucylaspartylpolythreonylleucylisoleucylglutamylalanylglycylalanylasparylalanylleucylglutamylleucylglycylsoleucylprolylphenylalanylserylasparylprolylleucylalanylasparylglycylprolylthreonylisoleucylglutamylasparaginylalanylthreonylleucylarginylalanylphenylalanylalanylalanylglycylvalylthreonylpolyalanylglutamylcysteinylphenylalanylglutamylmethionylleucylalanylleucylisoleucylarginylglutamyllysylhistidylprolylthreonylisoleucylprolylisoleucylglycylleucylmethionyltyrosylalanylasparginylleucylvalylphenylalanylasparginyllysylglycylsoleucylaspartylpolyalanylphenylalanyltyrosylalanylglutamylcysteinylglutamyllysylvalylglycylvalylasparylserylvalylleucylvalylalanylasparylvalylprolylvalylglutamylglutamyllysylserylalanylprolylphenylalanylarginylglutamylalanylalanylalanylleucylarginylhistidylasparaginylvalylalanylprolylisoleucylphenylalanylsoleucylcysteinylprolylprolylaspartylpolyalanylasparylasparylvalylleucylargylglutamylglutamylisoleucylalanylseryltyrosylglycylarginylglycyltyrosylthreonyltyrosylleucylleucylserylarginylalanylglycylvalylthreonylglucylalanylglutamylasparaginylalanylalanylleucylprolylleucylparaginylhistidylleucylvalylalanyllysylleucyllysylglutamyltyrosylasparaginylalanylalanylprolylprolylleucylglutamylglutamylglycylphenylalanylglycylsoleucylserylalanylprolylaspartylpolyalanylglutamylvalyllysylalanylalanylsoleucylaspartylpolyalanylglutamylvalyllysylsoleucylisoleucylidylasparaginylsoleucylglutamylprolylglutamylvalyllysylmethionylleucylalanylalanylvalylglutamylprolylmethionyllysylalanylalanylthreonylarginylacetylseryllysylserylprolylserylpolyglutamylphenylalanylvalylphenylalanylleucylserylserylvalylprolylisoleucylglutamylleucylleucylasparaginylvalylcysteinylthreonylserylseryltyraminylphenylalanylglutamylthreonylglutamylglutamylalanylarginylthreonylthreonylglutamylvalylglutamylglutamylphenylalanylserylglutamylvalyltryptophylllysylprolylphenylalanylprolylglutamylserylpolyalanylphenylalanylprolylglucylaspartylpolyalanyltyrosyllysylvalyltyrosylvalyltyrosylarginyltyrosylaspar





Search for terms

```
INSERT INTO user VALUES ('David Pilato', 'Developer at elastic');  
INSERT INTO user VALUES ('Malloum Laya', 'Worked with David at  
french customs service');  
INSERT INTO user VALUES ('David Gageot', 'Engineer at Google');  
INSERT INTO user VALUES ('David David', 'Who is that guy?');
```

```
SELECT * FROM user WHERE name LIKE "%David Pilato%";
```

name	comments
David Pilato	Developer at elastic

Search with inverted terms

```
INSERT INTO user VALUES ('David Pilato', 'Developer at elastic');  
INSERT INTO user VALUES ('Malloum Laya', 'Worked with David at  
french customs service');  
INSERT INTO user VALUES ('David Gageot', 'Engineer at Google');  
INSERT INTO user VALUES ('David David', 'Who is that guy?');
```

```
SELECT * FROM user WHERE name LIKE "%Pilato David%";
```

Empty set (0,00 sec)

```
SELECT * FROM user WHERE name LIKE "%Pilato%David%";
```

Empty set (0,00 sec)

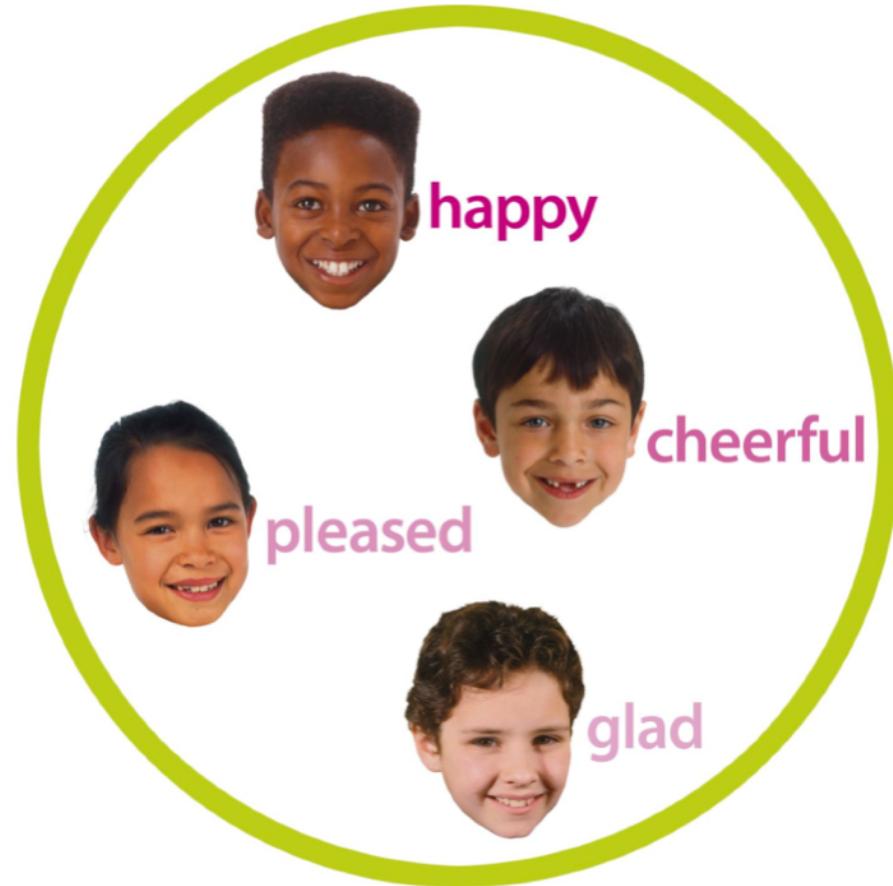
Search for terms

```
INSERT INTO user VALUES ('David Pilato', 'Developer at elastic');  
INSERT INTO user VALUES ('Malloum Laya', 'Worked with David at  
french customs service');  
INSERT INTO user VALUES ('David Gageot', 'Engineer at Google');  
INSERT INTO user VALUES ('David David', 'Who is that guy?');
```

```
SELECT * FROM user WHERE name LIKE "%David%" AND  
name LIKE "%Pilato%";
```

name	comments
David Pilato	Developer at elastic

Synonyms



Synonyms

```
INSERT INTO user VALUES ('David Pilato', 'Developer at elastic');  
INSERT INTO user VALUES ('Malloum Laya', 'Worked with David at  
french customs service');  
INSERT INTO user VALUES ('David Gageot', 'Engineer at Google');  
INSERT INTO user VALUES ('David David', 'Who is that guy?');
```

```
SELECT * FROM user WHERE comments LIKE "%Engineer%";
```

name	comments
David Gageot	Engineer at Google

Synonyms

```
INSERT INTO user VALUES ('David Pilato', 'Developer at elastic');  
INSERT INTO user VALUES ('Malloum Laya', 'Worked with David at  
french customs service');  
INSERT INTO user VALUES ('David Gageot', 'Engineer at Docker');  
INSERT INTO user VALUES ('David David', 'Who is that guy?');
```

```
SELECT * FROM user WHERE comments LIKE "%Developer%" OR  
comments LIKE "%Engineer%";
```

name	comments
David Pilato	Developer at elastic
David Gageot	Engineer at Google

Search like within 1 000 000 000 records...

```
SELECT * FROM user WHERE name LIKE "%David%";
```





“

We need a search engine.
Not a database with some
search capabilities.

David Pilato, Devoxx MA, 15/11/2017

1: Winter is coming.

2: Ours is the fury.

3: The choice is yours.



<u>term</u>	<u>freq</u>	<u>documents</u>
choice	1	3
coming	1	1
fury	1	2
is	3	1, 2, 3
ours	1	2
the	2	2, 3
winter	1	1
yours	1	3

Dictionary Postings





A NoSQL search engine

to search find...



David Pilato
Developer | Evangelist
@dadoonet

DEVOXXTM
MOROCCO