Download and index facebook's posts using nifi and solr

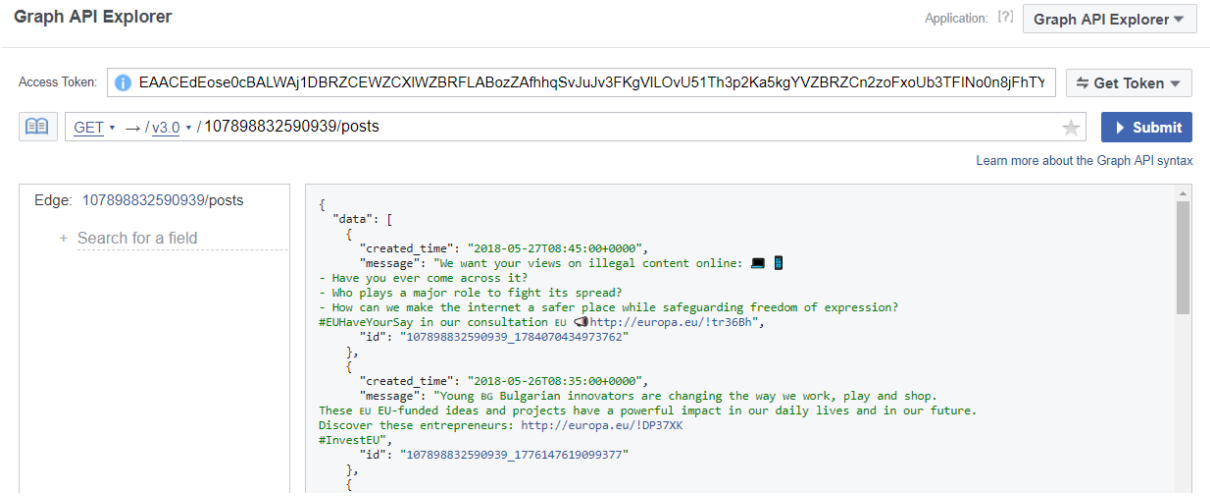
We are going to download posts from the API https://graph.facebook.com/ using the nifi work flow process and put them to hdfs, run MapreduceIndexerTool over all files and finally display results as dashboards using banana

Download Posts

First let's open https://developers.facebook.com/tools/explorer/ to get our token

If we try to download all posts from "European Commission" public page we just put "107898832590939/posts" in the field and press submit.

The result should look something like this



The schema of the result:

```
{
  "data": [
    {  "created_time": ,
       "message": ,
       "id":
    }

 ],
  "paging": {
    "cursors": {
       "before":,
       "after": },
    "next":
  }
}
```

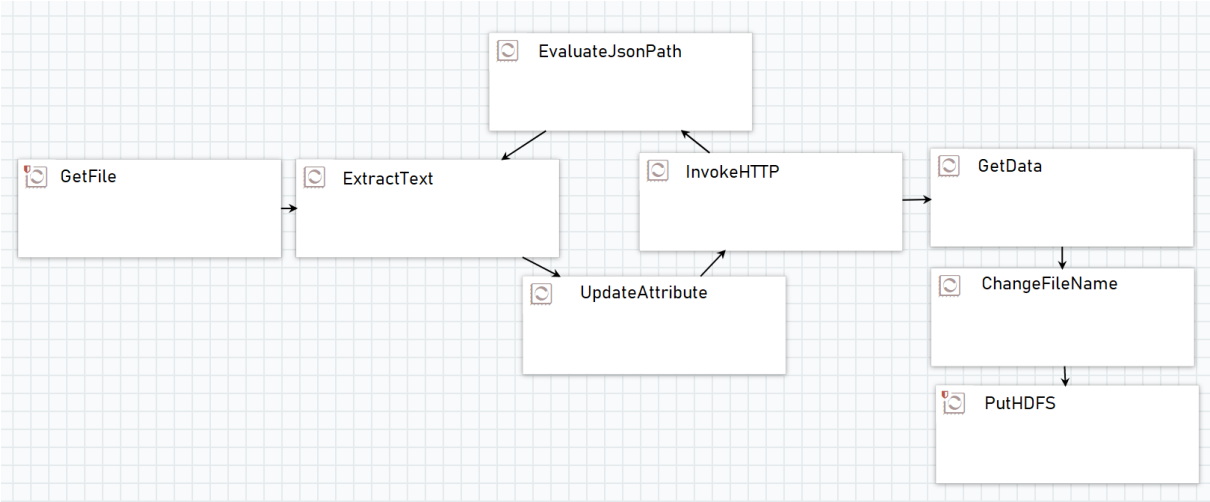
We have three fields for each post `created_time, message` and `id` we will improve the query to get more information (likes count, share count , comments …)

We noticed there are a limitation of the number of posts per response, we have to follow the link in the next field to get the next portion of the response

Now we have an idea about how it's work and about our data structure, it will be easy to understand the way how nifi manage the paging between responses.

NIFI

The nifi flow



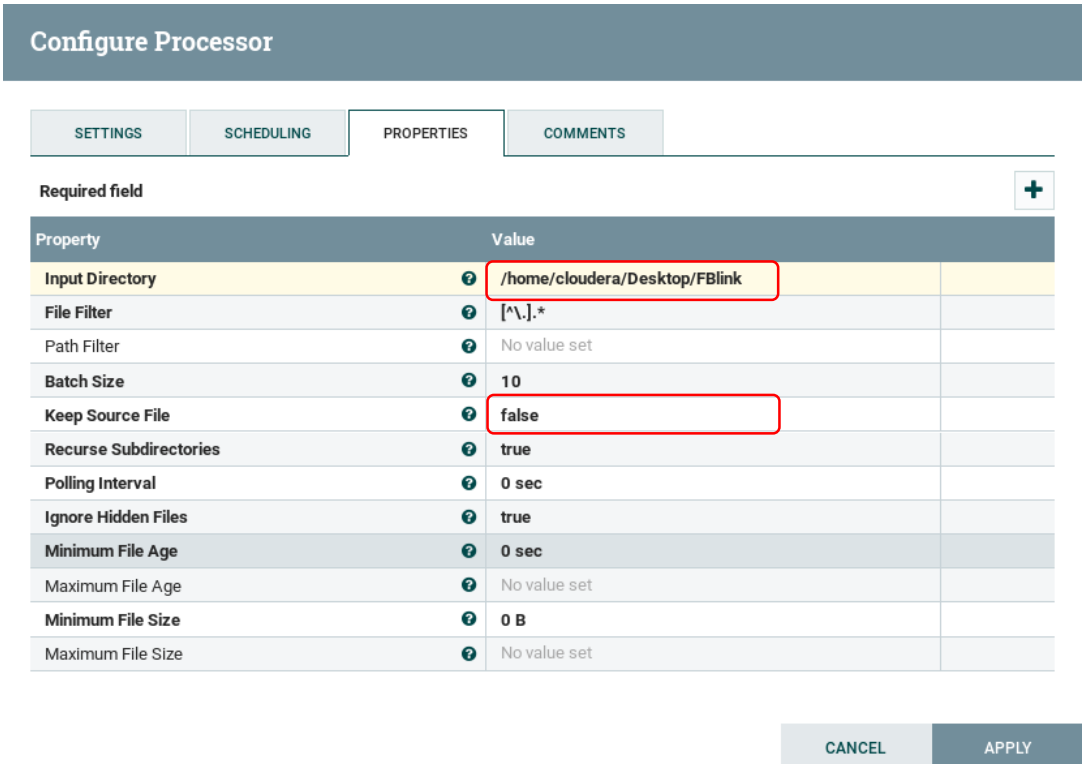
We will run through ever processor to see the configurations of each. Before that let's see how the data pass across every processor

GetFile -> [ExtractText -> UpdateAttribute -> InvokeHttp -> EvaluateJsonPath] -> GetData - > ChangeFileName -> PutHDFS

Step 1

GetFile: the processor get a file from a specified directory and deleted, in this file we put the first URL

Type : Getfile

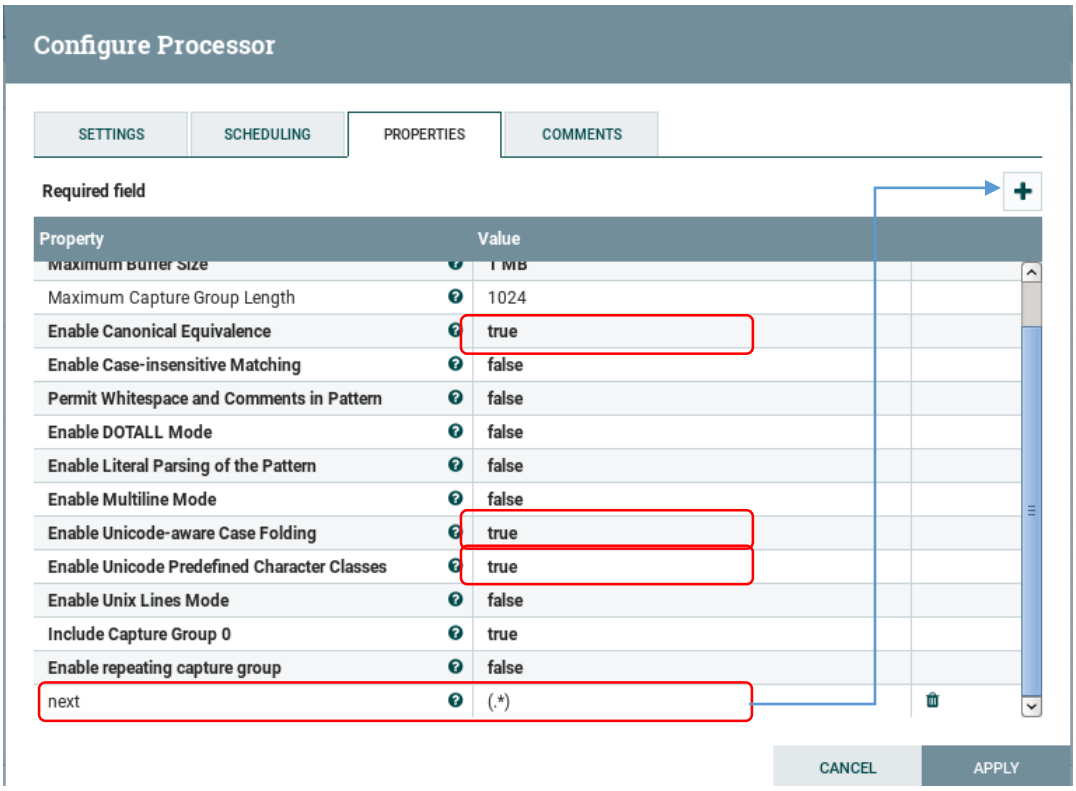


Step 2

ExtractText: extract text from the file flow

In the first run it get the URL from the get file processor, after it will get the next URL from the EvaluateJsonPath

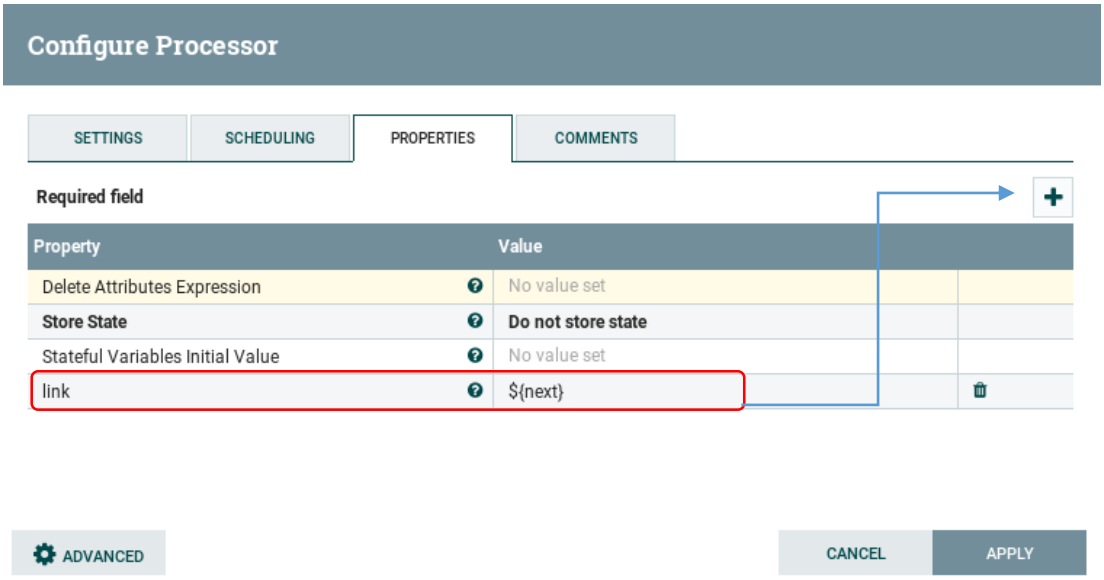
Type : ExtractText



Step 3

UpdateAttribute : assign the URL in the attribute “link”

Type : UpdateAttribute

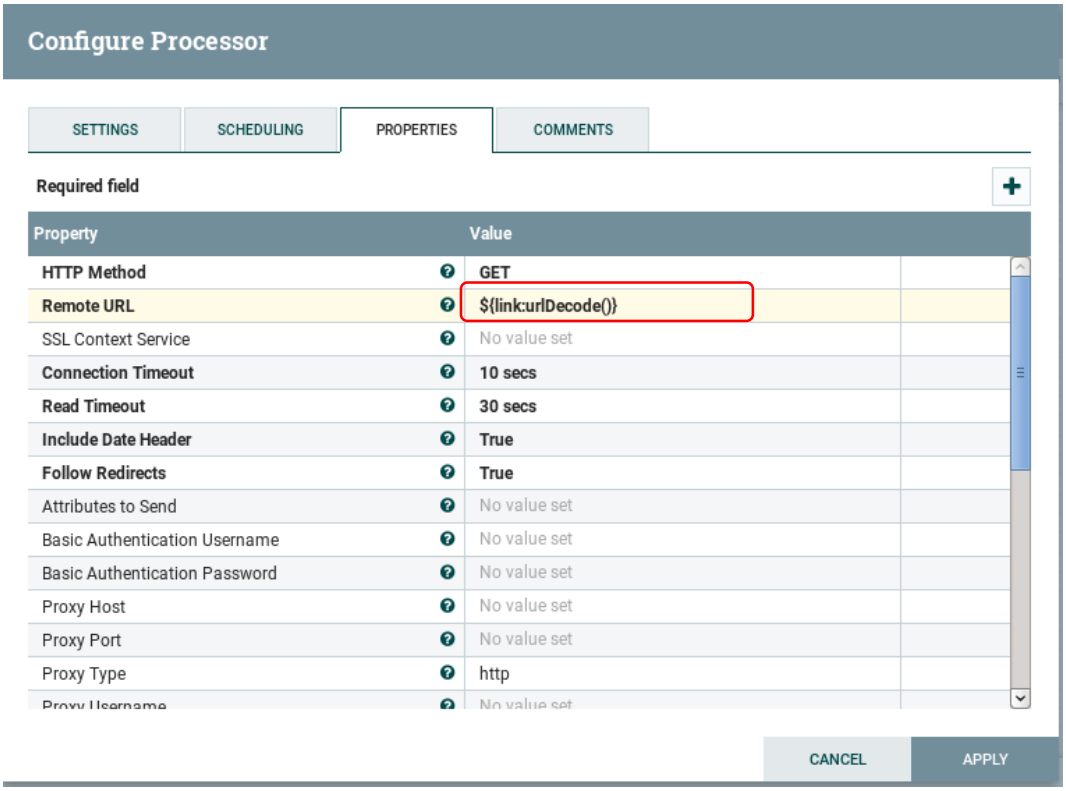


Step 4

InvokeHttp: invoke the attribute “link”

We use urlDecode() to avoid encoding problem (ex : type%2Cmessage => type,message)

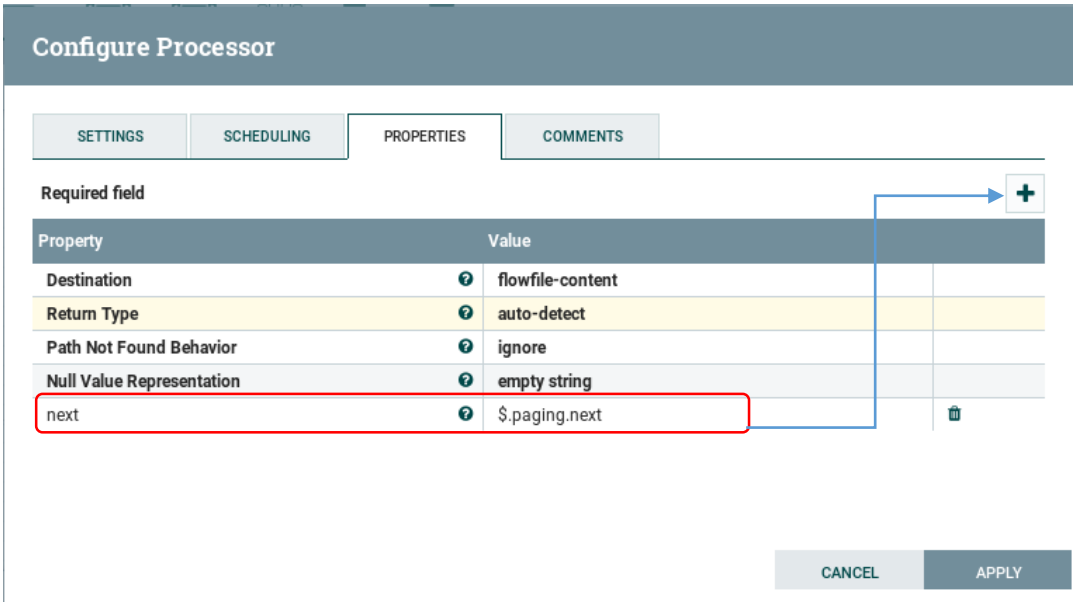
Type : InvokeHttp



Step 5

EvaluateJsonPath : get only the attribute next from response

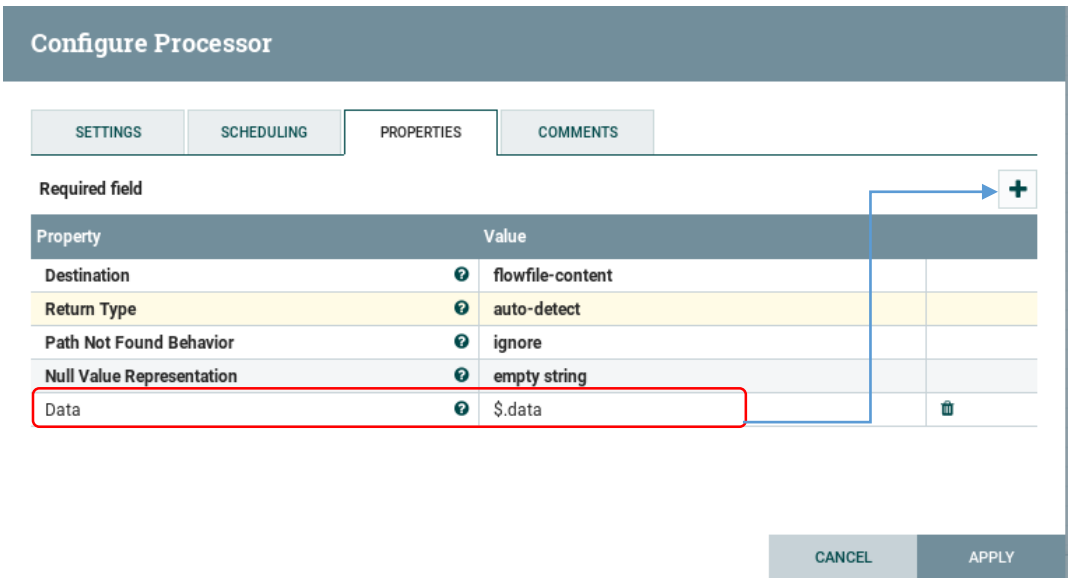
Type : EvaluateJsonPath



Step 6

GetData: get only the data from response

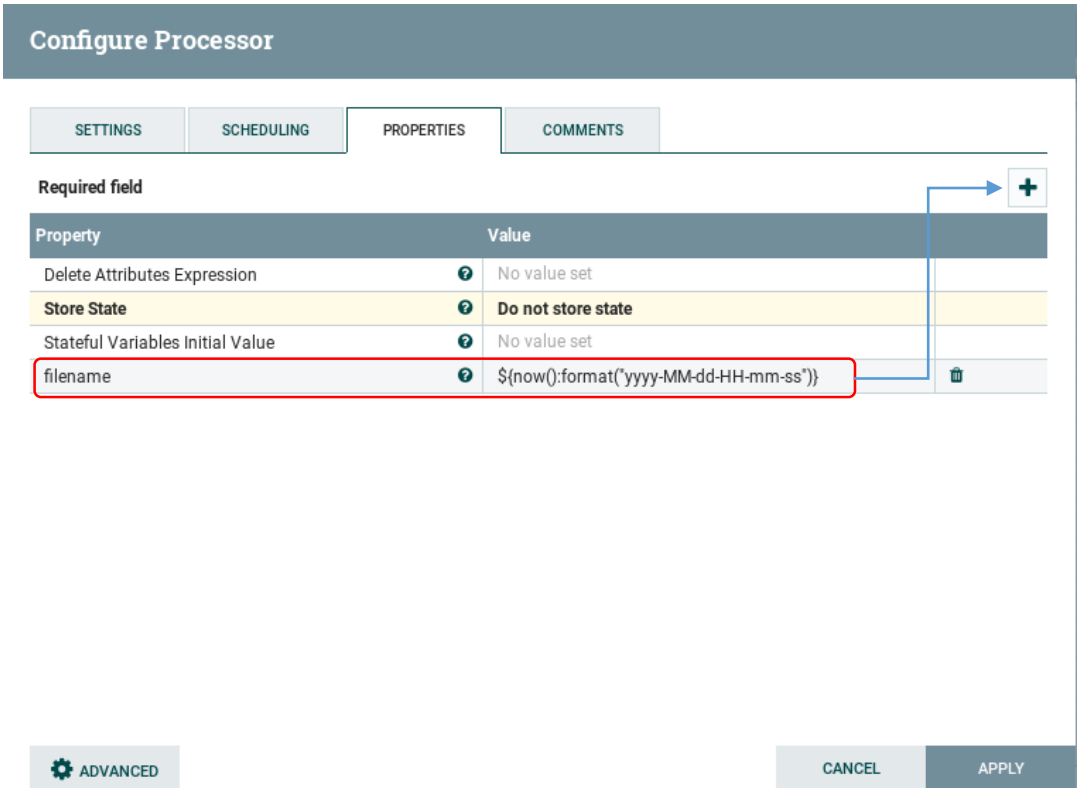
Type : EvaluateJsonPath



Step 7

ChangeFileName: change the name of the file before saving it, here we set the name to a date time

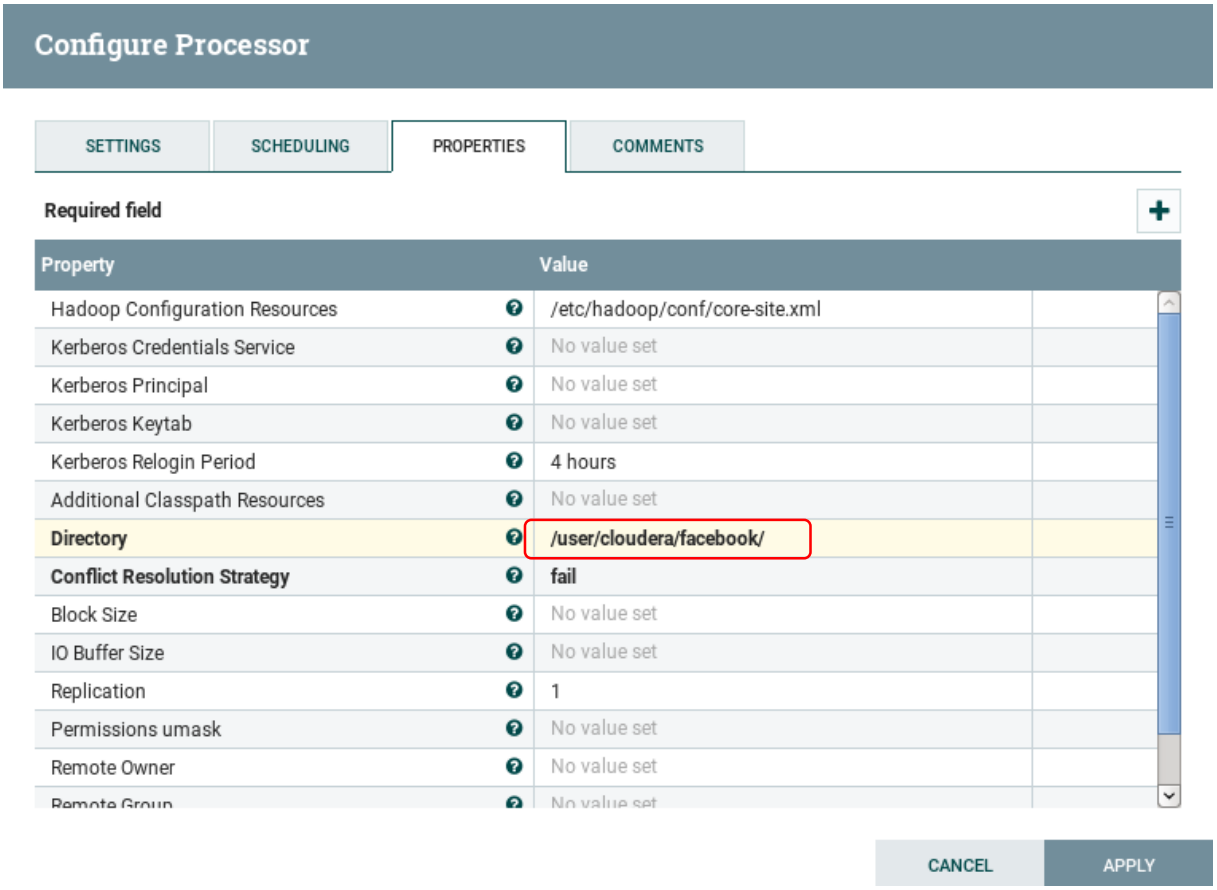
Type : UpdateAttribute



Step 8

PutHDFS: Save files to hdfs

Type : PutHDFS



Well, after all this configuration let's have a look of the first URL and how it's build.

In this example:

https://graph.facebook.com/v3.0/107898832590939/posts?access_token="YourToken"&fields=created_time,link,type,message,likes.limit(1).summary(true),description,from,name,shares,comments&limit=25

We get the following schema

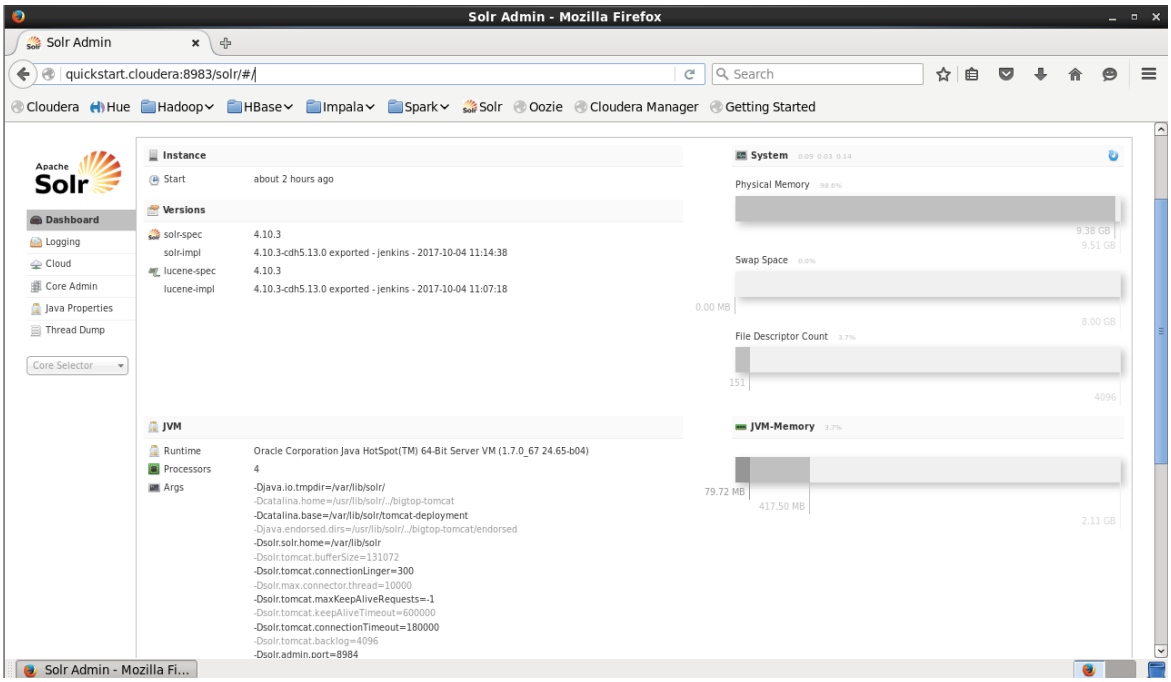
```
{
        "created_time": ,
        "link": ,
        "type": ,
        "message": ,
        "likes": {
                "data": [
                ],
                "paging": {
                        "cursors": {
                                "before": ,
                                "after":
                        },
                        "next":
                },
                "summary": {
                        "total_count": ,
                        "can_like": ,
                        "has_liked":
                }
        },
        "from": {
                "name": ,
                "id":
        },
        "shares": {
                "count":
        },
        "comments": {
                "data": [{
                                "created_time": ,
                                "message": ,
                                "id":
                        }

                ],
                "paging": {
                        "cursors": {
                                "before": ,
                                "after":
                        }
                }
}
```

Solr

Now we have to configure a new solr collection and upload it to hdfs. Make sure that solr is running

go to http://quickstart.cloudera:8983/solr/#/



Well let's start

Open a new terminal window and go to solr directory

cd /usr/lib/solr/bin/

sudo su

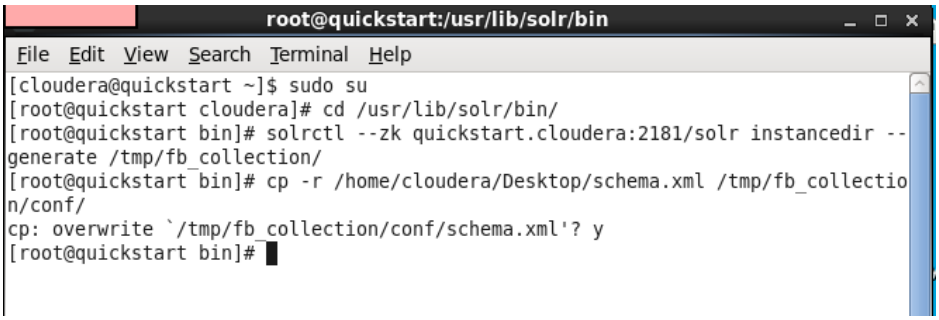
Generate a new *instancedir* with *solrctl*

solrctl --zk quickstart.cloudera:2181/solr instancedir --generate /tmp/fb_collection/

Copy the schema.xml into /tmp/ fb_collection /conf/

cp -r /home/cloudera/Desktop/schema.xml /tmp/fb_collection/conf/

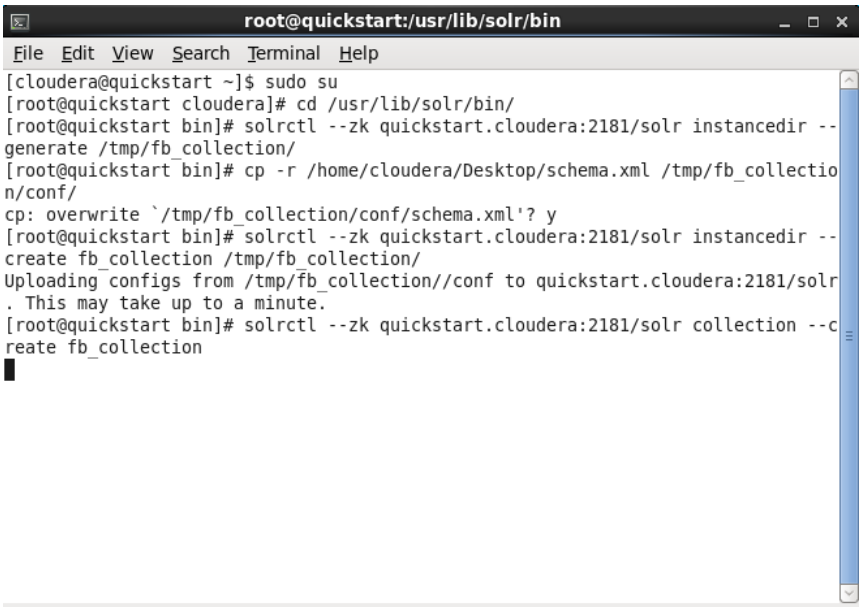
type yes for overwrite



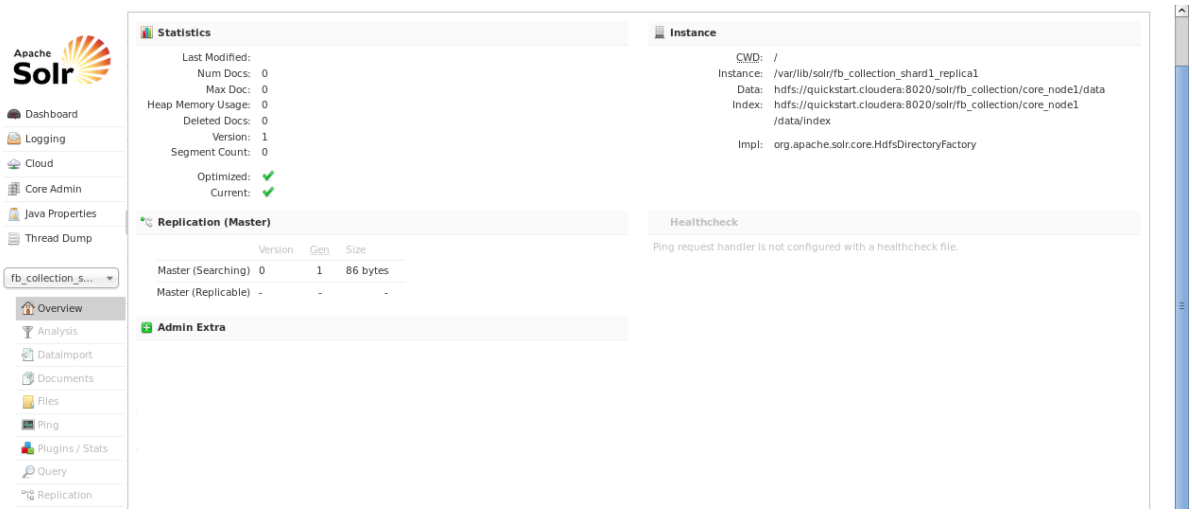
Create an instancedir from this configuration
solrctl --zk quickstart.cloudera:2181/solr instancedir --create fb_collection /tmp/fb_collection/

Create the collection with the same name of the instancedir

solrctl --zk quickstart.cloudera:2181/solr collection --create fb_collection



Go to core admin [http://quickstart.cloudera:8983/solr/#/~cores/ fb_collection_shard1_replica1](http://quickstart.cloudera:8983/solr/#/~cores/fb_collection_shard1_replica1) to see the new core running



Solr mapreduceindexertool

install mapreduceindexertool using the commands

sudo yum install solr-mapreduce

Just before, you have to change the hadoop ACLs for direct inject the result into solr,

To enable ACLs set the dfs.namenode.acls.enabled property to true in the NameNode's hdfs-site.xml.

https://www.cloudera.com/documentation/enterprise/5-8-x/topics/cdh_sg_hdfs_ext_acls.html#xd_583c10bfdbd326ba--6eed2fb8-14349d04bee--76a9

```
<property>

<name>dfs.namenode.acls.enabled</name>

<value>true</value>

</property>
```

Well Done.

Cloudera Morphlines

Cloudera Morphlines is a new open source framework that reduces the time and effort necessary to integrate, build, and change Hadoop processing applications that extract, transform, and load data into Apache Solr, Apache HBase, HDFS, enterprise data warehouses, or analytic online dashboards.

You can read more about Morphlines on the cloudrea website

https://blog.cloudera.com/blog/2013/07/morphlines-the-easy-way-to-build-and-integrate-etl-apps-for-apache-hadoop/

FBmorphline.conf

```
# Specify server locations in a SOLR_LOCATOR variable; used later in variable substitutions:
SOLR_LOCATOR : {
  # Natschemae of solr collection
  collection : fb_collection

  # ZooKeeper ensemble
  zkHost : "127.0.0.1:2181/solr"

  # The maximum number of documents to send to Solr per network batch (throughput knob)
  # batchSize : 100
}

# Specify an array of one or more morphlines, each of which defines an ETL
# transformation chain. A morphline consists of one or more (potentially
# nested) commands. A morphline is a way to consume records (e.g. Flume events,
# HDFS files or blocks), turn them into a stream of records, and pipe the stream
# of records through a set of easily configurable transformations on it's way to
# Solr.
morphlines : [
  {
    # Name used to identify a morphline. E.g. used if there are multiple morphlines in a
    # morphline config file
    id : morphline1
    # Import all morphline commands in these java packages and their subpackages.
    # Other commands that may be present on the classpath are not visible to this morphline.
    importCommands : ["org.kitesdk.**", "org.apache.solr.**" , "com.cloudera.**"]

    commands : [
         { readJson: {}
           }

           { extractJsonPaths {
           flatten : true # to transform arrays in real arrays (not a String representation)
           paths : {
           created_time : /created_time
           link :/link
           type :/type
           message :/message
           likes_count :/likes/summary/total_count
           from_name :/from/name
           post_name :/name
           shares_count :/shares/count
           comments :"/comments/data[]/message"
           id :/id
```

```
          }
        }
      }
          # Consume the output record of the previous command and pipe another
          # record downstream.
          #
          # convert timestamp field to native Solr timestamp format
           {
       convertTimestamp {
          field : created_time
          inputFormats :["yyyy-MM-dd'T'HH:mm:ss'+'SSSS"]
          inputTimezone : America/Los_Angeles
          outputFormat : "yyyy-MM-dd'T'HH:mm:ss.SSS'Z'"

            outputTimezone : UTC
                      }
           }
          {
       sanitizeUnknownSolrFields {

          # Location from which to fetch Solr schema


          solrLocator : ${SOLR_LOCATOR}
           renameToPrefix : "ignored "
        }
      }
      # log the record at DEBUG level to SLF4J
      { logDebug { format : "output record: {}", args : ["@{}"] } }
      # load the record into a Solr server or MapReduce Reducer.
      {
        loadSolr {
          solrLocator : ${SOLR_LOCATOR}
        }
      }
    ]
  }
]
```

Put the FBmorphline.conf to /tmp/morphlines/

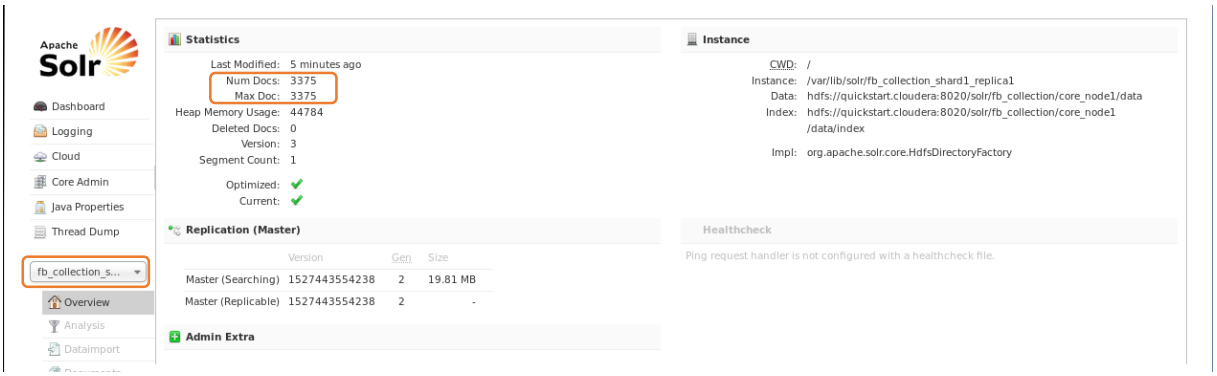
Run our indexer

Invoke the --help to get more details and examples
sudo -u hdfs hadoop jar /usr/lib/solr/contrib/mr/search-mr--job.jar org.apache.solr.hadoop.MapReduceIndexerTool –help*

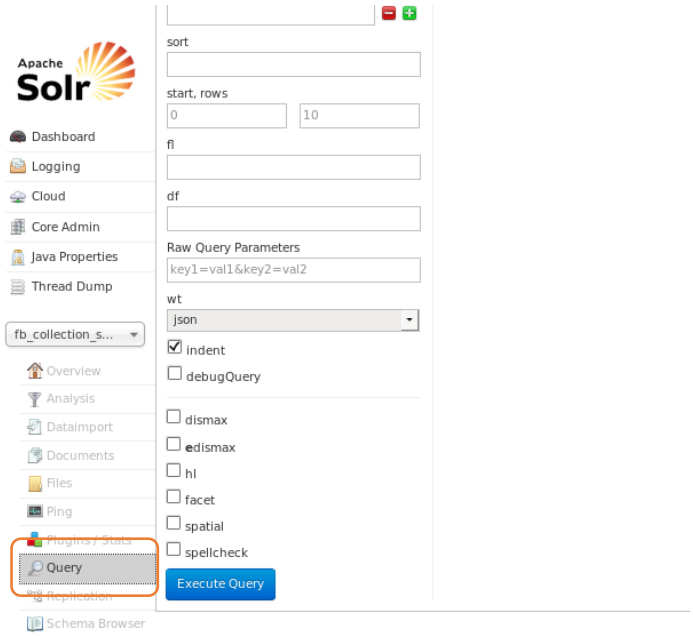
Run the job

sudo -u hdfs hadoop jar /usr/lib/solr/contrib/mr/search-mr--job.jar org.apache.solr.hadoop.MapReduceIndexerTool -D 'mapred.child.java.opts=-Xmx512m' --morphline-file /tmp/morphlines/*FBmorphline.conf *--output-dir hdfs://quickstart.cloudera:8020/tmp/output/ --verbose --go-live --zk-host quickstart.cloudera:2181/solr --collection fb_collection \hdfs://quickstart.cloudera:8020/user/cloudera/facebook/*

If the indexation was performed correctly you can select the collection and you can see the number of docs



We can try to see some data let's run an empty query in the query tab



The result will be like following


```
"response": {
  "numFound": 3375,
  "start": 0,
  "docs": [
    {
      "link": "https://www.facebook.com/EuropeanCommission/videos/1001306153250198/",
      "type": "video",
      "id": "107898832590939_1001306153250198",
      "from_name": "European Commission",
      "post_name": "Energy Union: Towards a smart, efficient and sustainable heati...",
      "likes_count": 85,
      "shares_count": 31,
      "message": [
        "Heating and cooling accounts for 50% of all the #energy we consume in the EU each year. Did you know that the heat being wast
      ],
      "created_time": "2016-02-18T22:47:57Z",
      "comments": [
        "Testimony of an honest lender Greeting has all Testimony of an honest lender on this Mister who returned to me happy. I am Fr
        "What does the individual have to do",
        "PV ( photo voltaic ) barely does more than just recuperate the energy of manufacture, distribution, and installation: where S
        "HEY, EU!!! YOU PRETEND YOU DON'T SEE THE VISIT OF HUNGARIAN PREMIER TO RUSSIA? NOTHING TO SAY? PLEASE, GIVE US AN ANSWER AS S
        "We don't need fossil fuels , solar is cheap and very simple to install:\n\n EU should order millions of those small systems
        "I see a worrying focus on reducing energy consumption at the expense of in house climate. At this rate we are replacing one e
        "SUSCO Organization in Kurdistan-Iraq please support us\nwww.susco-kurdistan.org",
        "\\\\\\ □□□□  ... □□□□",
        "mah cosa ACCADE in europa ? ANCHE questo progetto di energia pulita   cadrà sulle spese dei  milioni di poveri  a salario e p
      ],
      "_version_": "1601640593035886592"
    },
```


Install Banana from Github https://github.com/lucidworks/banana

Decompress the folder in the desktop and rename it to just "banana"

Copy it in to the Solr directory

Sudo su

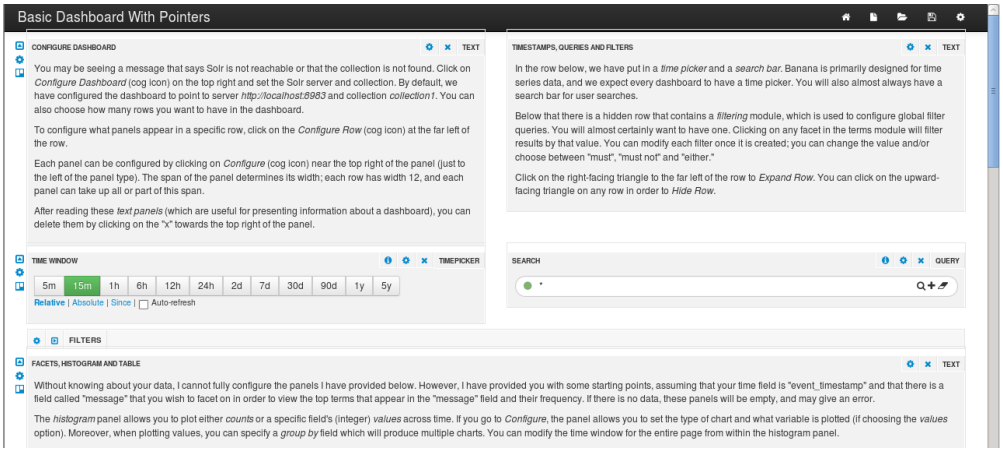
cp /home/cloudera/Desktop/banana/ /usr/lib/solr/webapps/

To deploy the new web app into the Solr server run the *tomcat-deployment.sh*

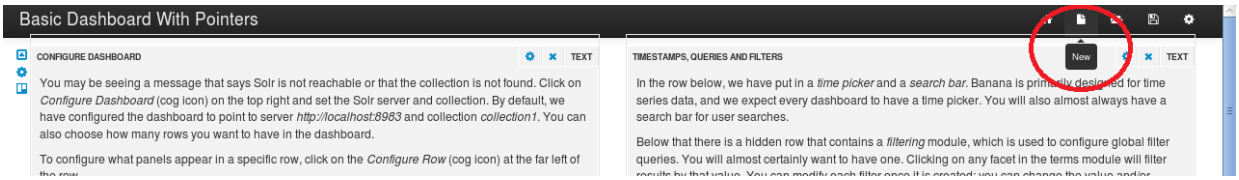
/usr/lib/solr/tomcat-deployment.sh

Go to the link to build your dashboard

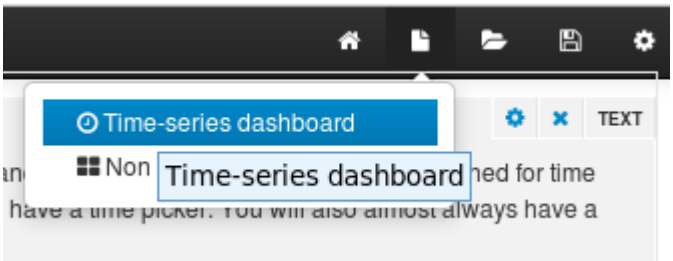
http://quickstart.cloudera:8983/banana/src/index.html#/dashboard



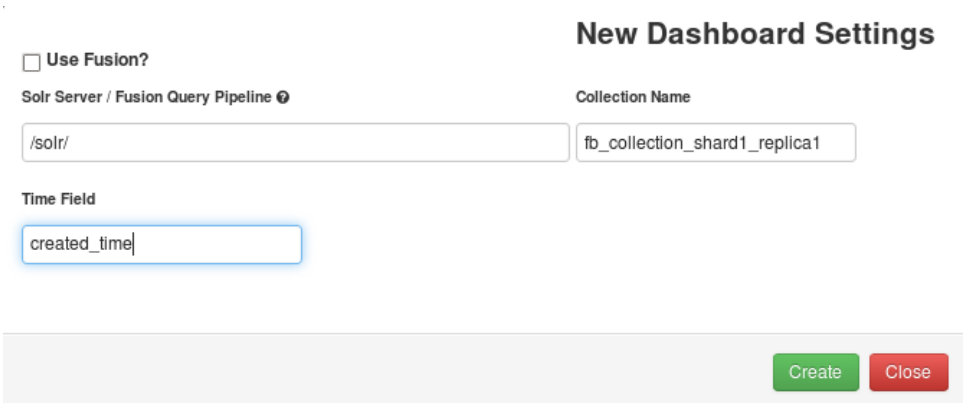
Click the button “New”



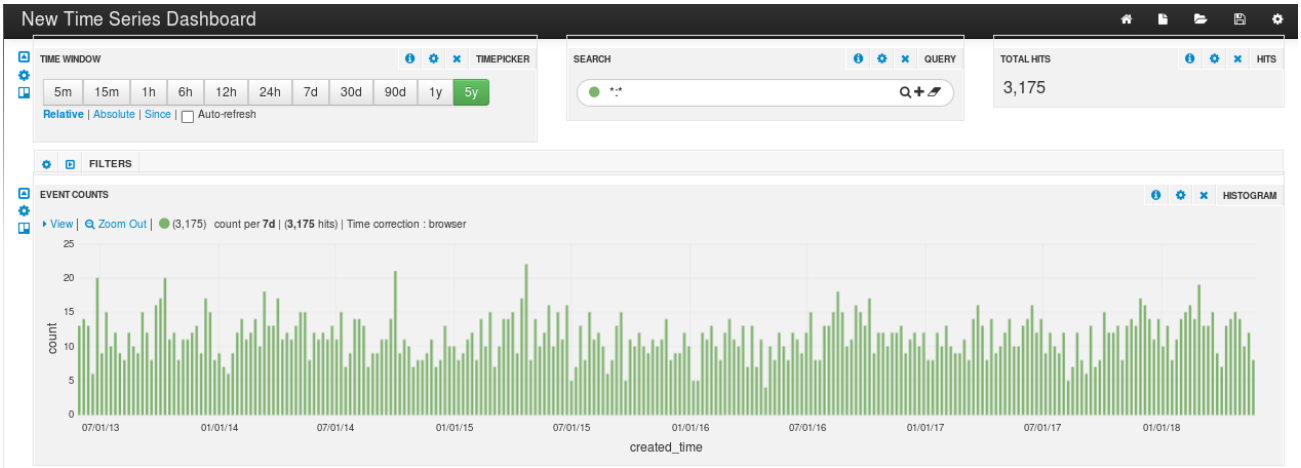
Choose time-series dashboard



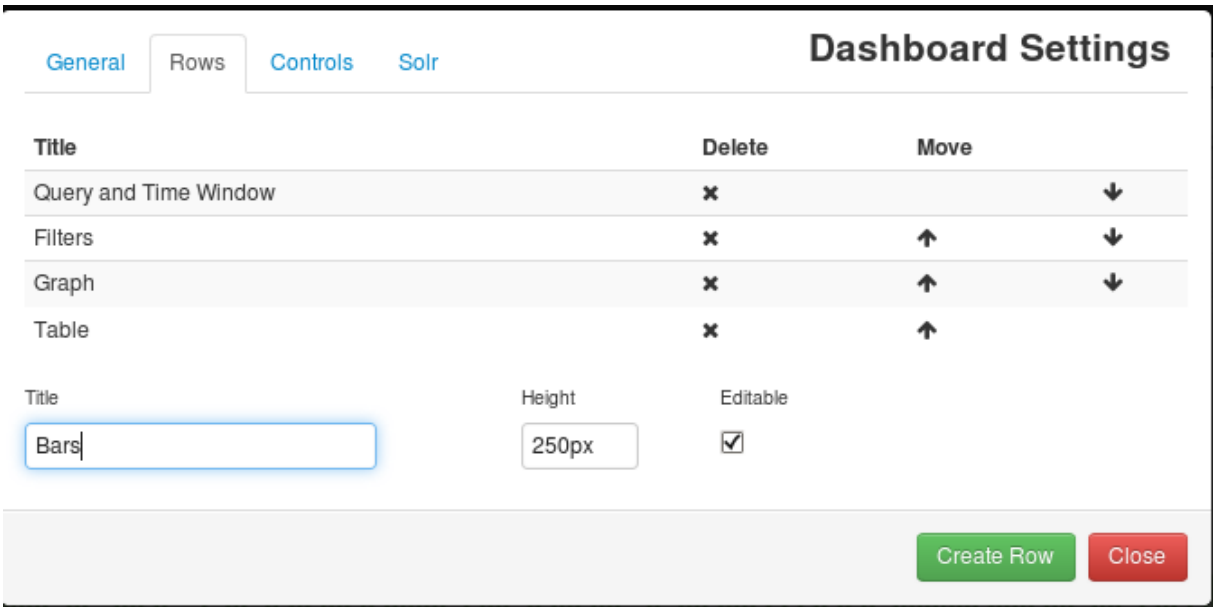
In the configuration put the collection name and the time field



Now start customizing your dashboard, change the time picker



At the bottom, add a new row, name it, and set the Height to 250px

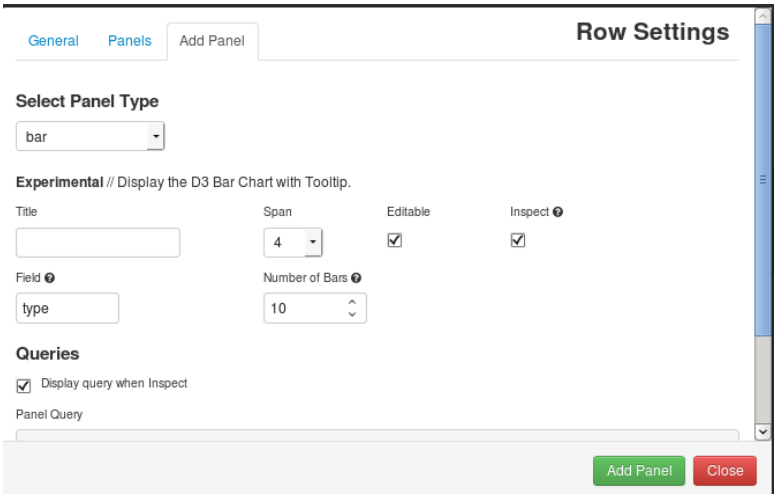


Add a new panel

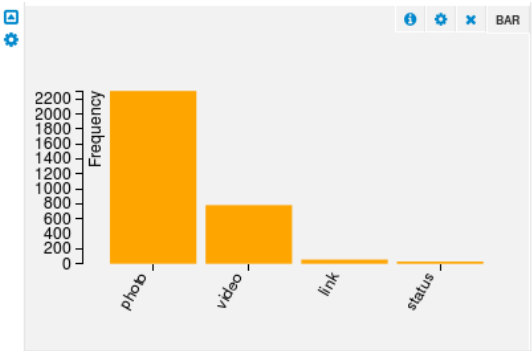
Go to add panel and select bar in the Select Panel Type

Set the field to type (Facebook Post type)

Press Add panel when you finish


General
Panels
Add Panel
Row Settings
Select Panel Type
bar
Experimental // Display the D3 Bar Chart with Tooltip.
Title
Span
4
Editable
Inspect
Field
type
Number of Bars
10
Queries
Display query when Inspect
Panel Query
Add Panel
Close

Here you are


BAR
Frequency
2200
2000
1800
1600
1400
1200
1000
800
600
400
200
0
photo
video
link
status