Lab 6. Building Data Pipelines with Logstash

In this lab, we will be covering Parsing and enriching logs using Logstash.

Parsing and enriching logs using Logstash

Log data is typically made up of two parts, as follows:

```
logdata = timestamp + data
```

`timestamp` is the time when the event occurred and `data` is the information about the event. `data` may contain just a single piece of information or it may contain many pieces of information.

CSV filter

Let's take some sample data and use a CSV filter to parse data out of it. Store the following data in a file named `users.csv`:

Note: csv file exists at following path: /home/elasticsearch/Lab06/users.csv

```
FName,LName,Age,Salary,EmailId,Gender
John,Thomas,25,50000,John.Thomas,m
Raj, Kumar,30,5000,Raj.Kumar,f
```

The following code block shows the usage of the CSV filter plugin. You can either specify the list of column names using the `columns` parameter, which accepts an array of column names, or by using the `autodetect_column_names` parameter, set to true. In doing so, you can let the plugin know that it needs to detect column names automatically, as follows:

```
#csv_file.conf
input {
   file{
      path => "/home/elasticsearch/Lab06/users.csv"
      start_position => "beginning"
      }
}

filter {
    csv{
    autodetect_column_names => true
}
}

output {
  stdout {
    codec => rubydebug
         }
}
```

Let's run Logstash using this new configuration that's stored in the `csv_file.conf` file, as follows:

```
cd $LOGSTASH_HOME
```

```
logstash -f ./conf/csv_file.conf
```

Mutate filter

You can perform general mutations on fields using this filter. The fields in the event can be renamed, converted, stripped, and modified.

Let's enhance the `csv_file.conf` file we created in the previous section with the `mutate` filter and understand its usage. The following code block shows the use of the `mutate` filter:

```
#csv_file_mutuate.conf
input {
   file{
      path => "/home/elasticsearch/Lab06/users.csv"
      start_position => "beginning"
      sincedb_path => "NULL"
   }

}

filter {
  csv{
    autodetect_column_names => true
  }

mutate {
    convert => {
        "Age" => "integer"
        "Salary" => "float"
      }
    rename => { "FName" => "Firstname"
                "LName" => "Lastname" }
    gsub => [
       "EmailId", "\.", "_"
      ]
    strip => ["Firstname", "Lastname"]
    uppercase => [ "Gender" ]
  }
}

output {
  stdout {
    codec => rubydebug
    }
}
```

As we can see, the `convert` setting within the `filter` helps to change the datatype of a field. The valid conversion targets are `integer`, `string`, `float`, and `boolean`.

```
cd $LOGSTASH_HOME

logstash -f ./conf/csv_file_mutuate.conf
```

Grok filter

Let's look at some examples to understand `grok` filter:

```
#grok1.conf

input {
   file{
      path => "/home/elasticsearch/Lab06/msg.log"
      start_position => "beginning"
      sincedb_path => "NULL"
   }

}

filter {
  grok{
  match => {"message" => "%{USERNAME:userid}" }
  }
}

output {
  stdout {
    codec => rubydebug
    }

}
```

Note: msg.log file exists at following path: /home/elasticsearch/Lab06/

If the input line is of the `fenagouser randomData` format, then the output would be as follows:

```
{
      "path" => "/home/elasticsearch/Lab06/msg.log",
      "@timestamp" => 2021-11-24T12:30:54.039Z,
      "@version" => "1",
      "host" => "SHMN-IN",
      "messageId" => 1,
      "message" => "fenagouser randomData\r",
      "userid" => "fenagouser"
}
```

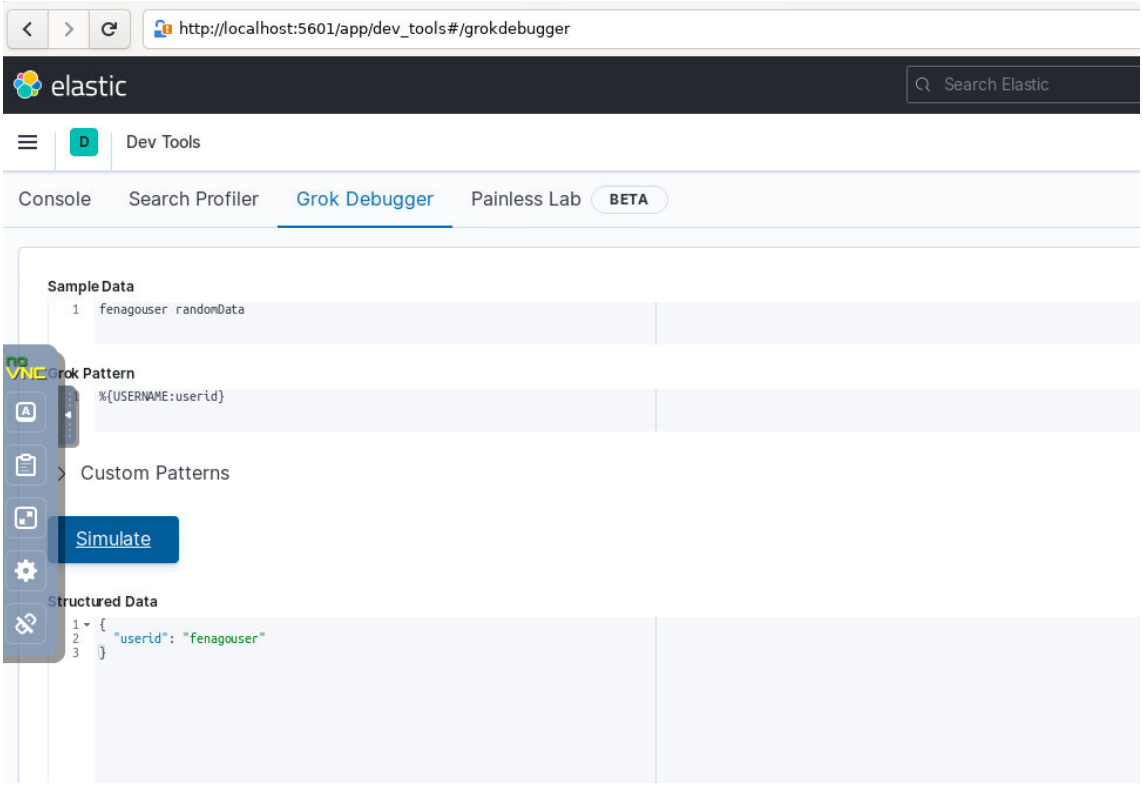
```
cd $LOGSTASH_HOME

logstash -f ./conf/grok1.conf
```

Note

If the pattern doesn't match the text, it will add a `_grokparsefailure` tag to the `tags` field.

Grok Debugger utility is automatically enabled in Kibana. It is located under the `DevTools` tab in Kibana.



Summary

In this lab, we covered the powerful filter section of Logstash, which can be used for parsing and enriching log events. We have also covered some commonly used filter plugins.

In the next lab, we will be covering the various features of X-Pack, a commercial offering by Elastic.co which contains features such as securing the Elastic Stack, as well as monitoring, alerting, graphs, and reporting.