Lab 8. Elastic X-Pack

In this lab, we will cover the following topics:

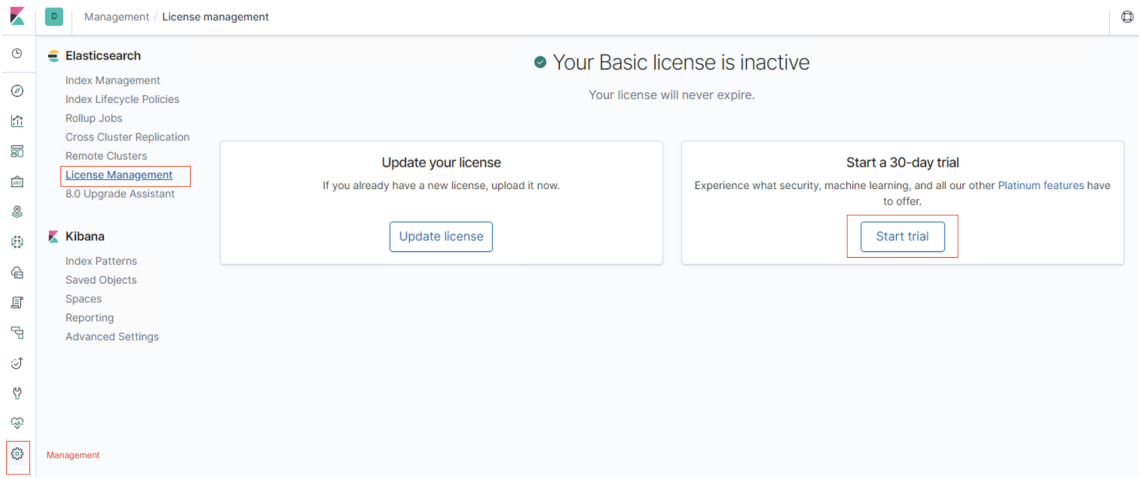
- Installing Elasticsearch and Kibana with X-Pack
- Configuring/activating X-Pack trial account
- Securing Elasticsearch and Kibana
- Monitoring Elasticsearch
- Alerting

Running Elasticsearch and Kibana with X-Pack

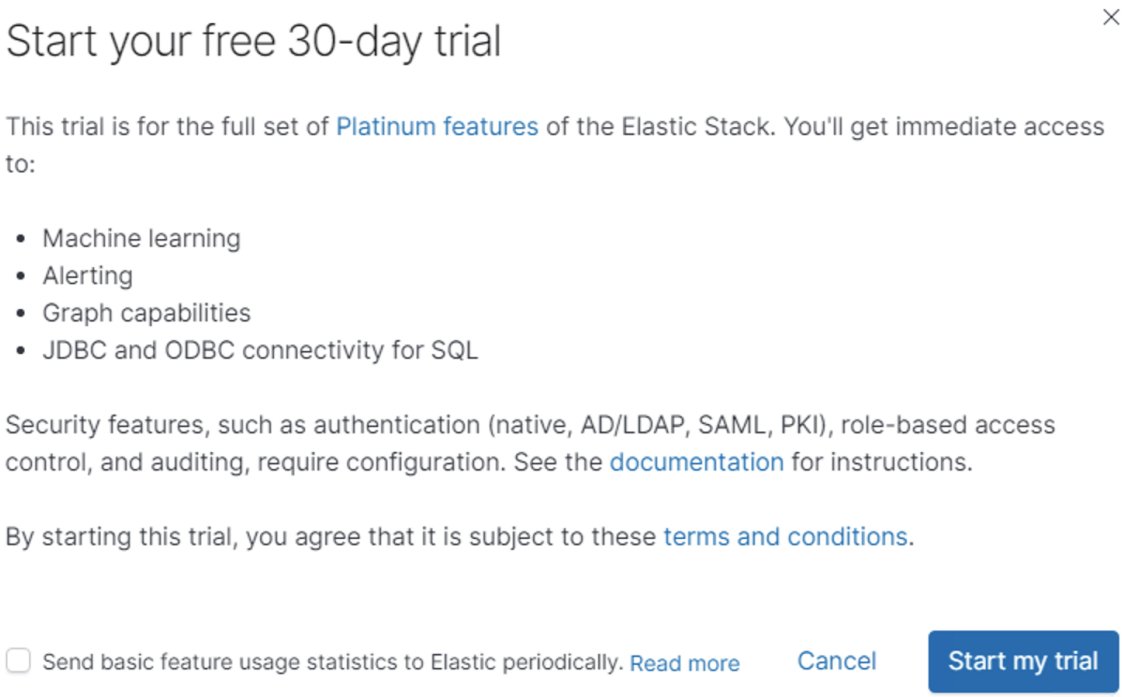
Activating X-Pack trial account

In order to activate all the X-Pack paid features, we need to enable the trial account, which is valid for 30 days. Let's go ahead and activate it.

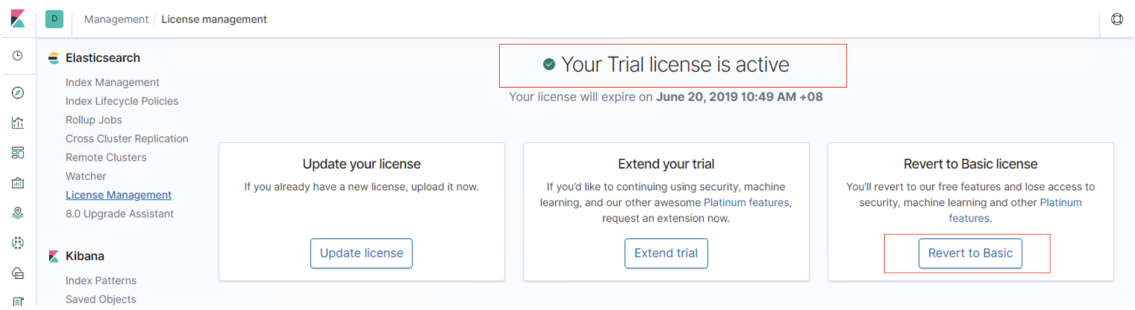
Enter `License` in search bar and click on `License Management`. Then, click on `Start Trial`, as follows:



Click on the `Start my Trial` button in the resultant popup, as follows:



On successful activation, you should see the status of the license as `Active`. At any point in time before the trial ends, you can go ahead and revert back to the basic license by clicking on the `Revert to Basic` button:

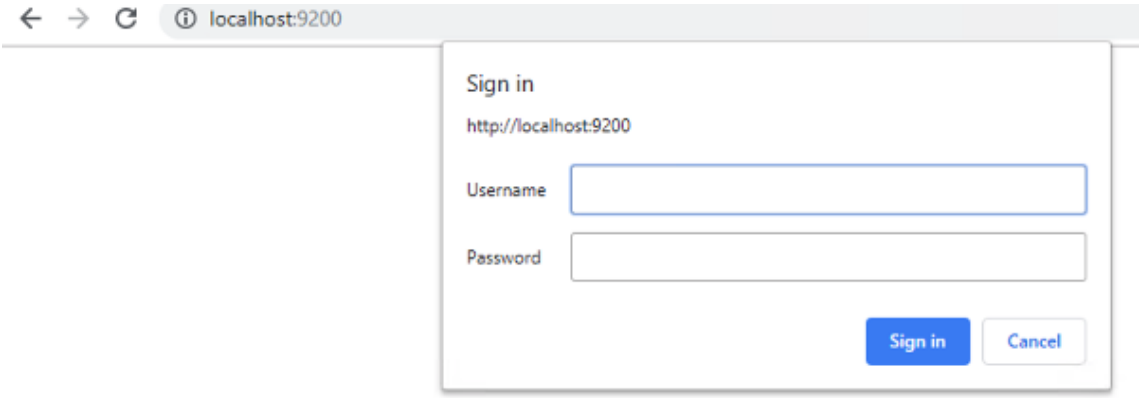


Open `elasticsearch.yml`, which can be found under the `/elasticstack/elasticsearch-7.12.1/config` folder, and add the following line at the end of the file to enable X-Pack and restart Elasticsearch and Kibana:

```
xpack.security.enabled: true
```

Note: Make sure to stop elasticsearch and start again.

Now, when you try to access Elasticsearch via `http://localhost:9200`, the user will be prompted for login credentials, as shown in the following screenshot:



Similarly, if you see the logs of Kibana in the Terminal, it would fail to connect to Elasticsearch due to authentication issues and won't come up until we set the right credentials in the `kibana.yml` file.

Go ahead and stop Kibana. Let Elasticsearch run. Now that X-Pack is enabled and security is in place, how do we know what credentials to use to log in? We will look at this in the next section.

Generating passwords for default users

Elastic Stack security comes with default users and a built-in credential helper to set up security with ease and have things up and running quickly. Open up another Terminal. Let's generate the passwords for the reserved/default users --- `elastic`, `kibana`, `apm_system`, `remote_monitoring_user`, `beats_system`, and `logstash_system` by executing the following command:

```
elasticsearch-setup-passwords interactive
```

You should get the following logs/prompts to enter the password for the reserved/default users:

```
Initiating the setup of passwords for reserved users
elastic,apm_system,kibana,logstash_system,beats_system,remote_monitoring_user.
You will be prompted to enter passwords as the process progresses.
Please confirm that you would like to continue [y/N]y

Enter password for [elastic]:elastic
Reenter password for [elastic]:elastic
Enter password for [apm_system]:apm_system
Reenter password for [apm_system]:apm_system
Enter password for [kibana]:kibana
Reenter password for [kibana]:kibana
Enter password for [logstash_system]:logstash_system
Reenter password for [logstash_system]:logstash_system
Enter password for [beats_system]:beats_system
Reenter password for [beats_system]:beats_system
Enter password for [remote_monitoring_user]:remote_monitoring_user
Reenter password for [remote_monitoring_user]:remote_monitoring_user
Changed password for user [apm_system]
Changed password for user [kibana]
Changed password for user [logstash_system]
Changed password for user [beats_system]
```

```
Changed password for user [remote_monitoring_user]
Changed password for user [elastic]
```

Note

Please make a note of the passwords that have been set for the reserved/default users. You can choose any password of your liking. We have chosen the passwords as `elastic`, `kibana`, `logstash_system`, `beats_system`, `apm_system`, and `remote_monitoring_user` for `elastic`, `kibana`, `logstash_system`, `beats_system`, `apm_system`, and `remote_monitoring_user` users, respectively, and we will be using them throughout this lab.

Note

All the security-related information for the built-in users will be stored in a special index called `.security` and will be managed by Elasticsearch.

To verify X-Pack's installation and enforcement of security, point your web browser to `http://localhost:9200/` to open Elasticsearch. You should be prompted to log in to Elasticsearch. To log in, you can use the built-in `elastic` user and `elastic` password. Upon logging in, you should see the following response:

```
{
  "name" : "MADSH01-APM01",
  "cluster_name" : "elasticsearch",
  "cluster_uuid" : "I2RVLSk2Rr6IRJb6zDf19g",
  "version" : {
    "number" : "7.0.0",
    "build_flavor" : "default",
    "build_type" : "zip",
    "build_hash" : "b7e28a7",
    "build_date" : "2019-04-05T22:55:32.697037Z",
    "build_snapshot" : false,
    "lucene_version" : "8.0.0",
    "minimum_wire_compatibility_version" : "6.7.0",
    "minimum_index_compatibility_version" : "6.0.0-beta1"
  },
  "tagline" : "You Know, for Search"
}
```

Before we can go ahead and start Kibana, we need to set the Elasticsearch credentials in `kibana.yml` so that when we boot up Kibana, it knows what credentials it needs to use for authenticating itself/communicating with Elasticsearch.

Add the following credentials in the `kibana.yml` file, which can be found under `$KIBANA_HOME/config`, and save it:

```
elasticsearch.username: "kibana"
elasticsearch.password: "kibana"
```

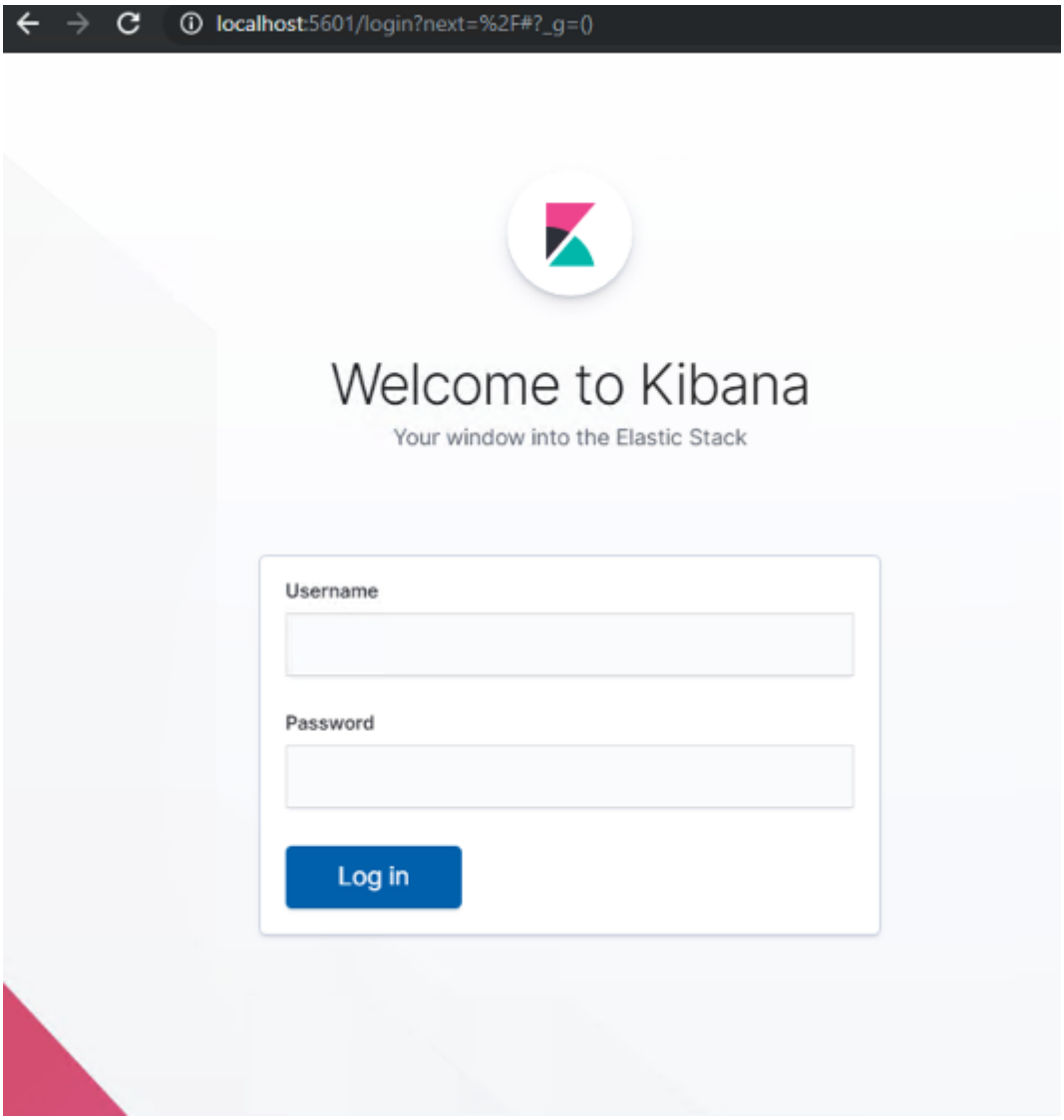
Note

If you have chosen a different password for the `kibana` user during password setup, use that value for the `elasticsearch.password` property.

Start Kibana:

```
kibana
```

To verify that the authentication is in place, go to `http://localhost:5601/` to open Kibana. You should be prompted to login to Kibana. To log in, you can use the built-in `elastic` user and the `elastic` password, as follows:



Securing Elasticsearch and Kibana

The X-Pack security module provides the following ways to secure Elastic Stack:

- User authentication and user authorization
- Node/Client authentication and channel encryption
- Auditing

Security in action

In this section, we will look into creating new users, creating new roles, and associating roles with users. Let's import some sample data and use it to understand how security works.

Save the following data to a file named `data.json`:

```
{"index" : {"_index":"employee"}}
{ "name":"user1", "email":"user1@fenago.com","salary":5000, "gender":"M",
"address1":"312 Main St", "address2":"Walthill", "state":"NE"}
{"index" : {"_index":"employee"}}
{ "name":"user2", "email":"user2@fenago.com","salary":10000, "gender":"F",
"address1":"5658 N Denver Ave", "address2":"Portland", "state":"OR"}
{"index" : {"_index":"employee"}}
{ "name":"user3", "email":"user3@fenago.com","salary":7000, "gender":"F",
"address1":"300 Quinterra Ln", "address2":"Danville", "state":"CA"}
{"index" : {"_index":"department","_type":"department"}}
{ "name":"IT", "employees":50 }
{"index" : {"_index":"department","_type":"department"}}
{ "name":"SALES", "employees":500 }
{"index" : {"_index":"department","_type":"department"}}
{ "name":"SUPPORT", "employees":100 }
```

Note

The `_bulk` API requires the last line of the file to end with the newline character, `\n`. While saving the file, make sure that you have a newline as the last line of the file.

Navigate to the directory where the file is stored and execute the following command to import the data into Elasticsearch: (run as root user)

```
cd /root/Desktop/elasticsearch/Lab08/
curl -s -H "Content-Type: application/json" -u elastic:elastic -XPOST
http://localhost:9200/_bulk --data-binary @data.json
```

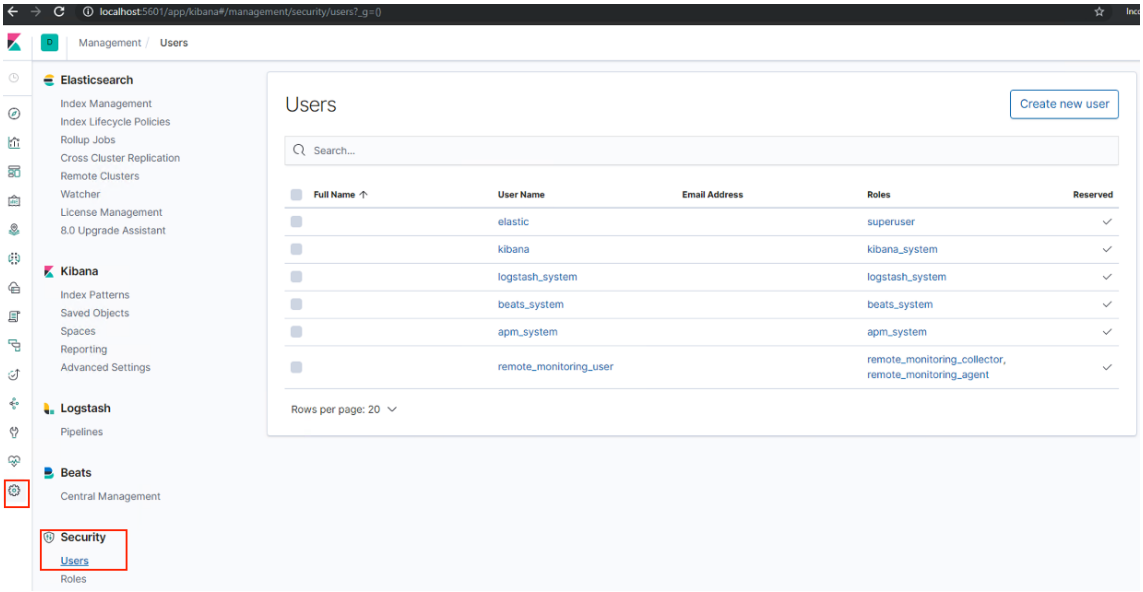
To check whether the import was successful, execute the following command and validate the count of documents:

```
curl -s -H "Content-Type: application/json" -u elastic:elastic -XGET
http://localhost:9200/employee,department/_count



{"count":6,"_shards":{"total":10,"successful":10,"skipped":0,"failed":0}}
```

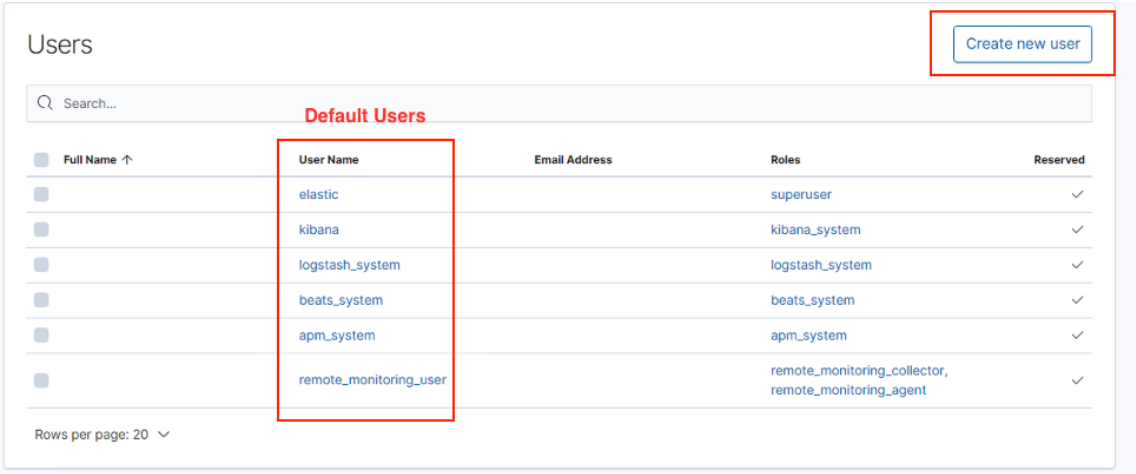
Creating a new user

Let's explore the creation of a new user in this section. Log in to Kibana (`http://locahost:5601`) as the `elastic` user:

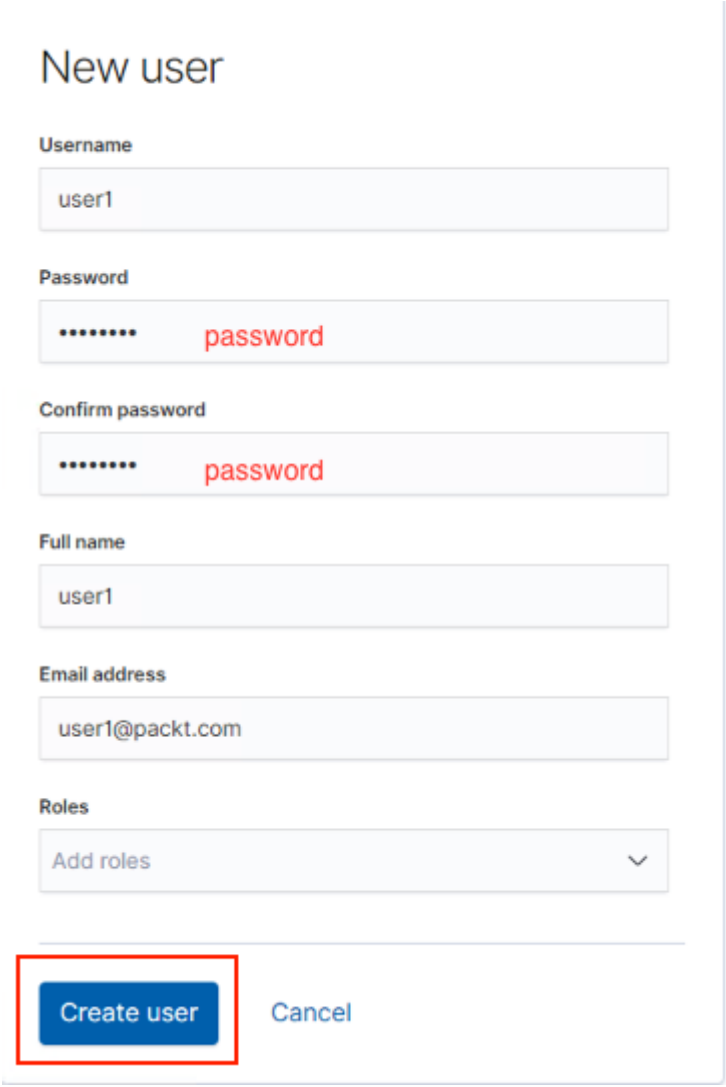
1. To create a new user, navigate to the `Management` UI and select `Users` in the `Security` section:



2. The `Users` screen displays the available users and their roles. By default, it displays the default/reserved users that are part of the native X-Pack security realm:



3. To create a new user, click on the `Create new user` button and enter the required details, as shown in the following screenshot. Then, click on `Create user` :



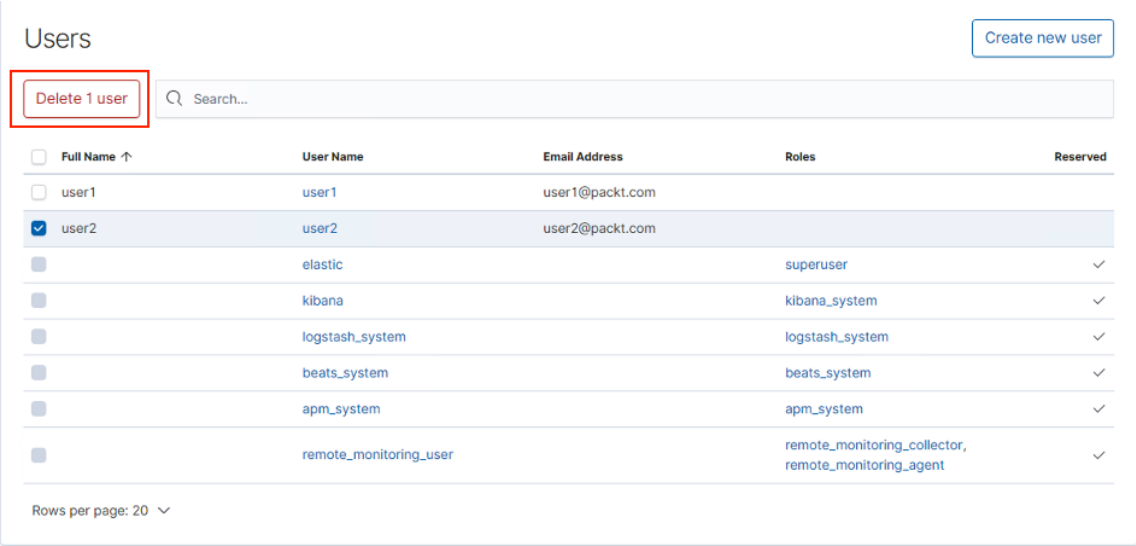
Now that the user has been created, let's try to access some Elasticsearch REST APIs with the new user credentials and see what happens. Execute the following command and check the response that's returned. Since the user doesn't have any role associated with them, the authentication is successful. The user gets HTTP status code `403`, stating that the user is not authorized to carry out the operation:

```
curl -s -H "Content-Type: application/json" -u user1:password -XGET
http://localhost:9200

Response:
{"error":{"root_cause":[{"type":"security_exception","reason":"action
[cluster:monitor/main] is unauthorized for user
[user1]"}],"type":"security_exception","reason":"action [cluster:monitor/main] is
unauthorized for user [user1]"},"status":403}
```

4. Similarly, go ahead and create one more user called `user2` with the password set as `password`.

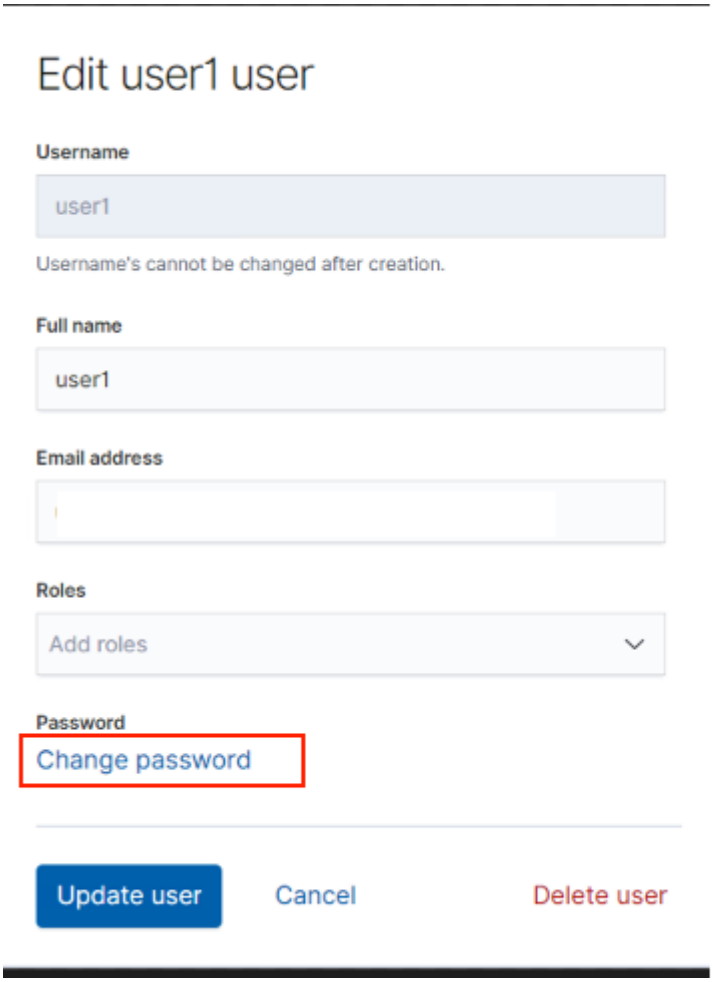
Deleting a user

To delete a role, navigate to `Users` UI, select the custom `user2` that you created, and click on the **Delete** button. You cannot delete built-in users:



Changing the password

Navigate to the `Users` UI and select the custom user for which the password needs to be changed. This will take you to the `User Details` page. You can edit the user's details, change their password, or delete the user from the user details screen. To change the user's password, click on the `Change password` link and enter the new password details. Then, click on the `Update user` button:

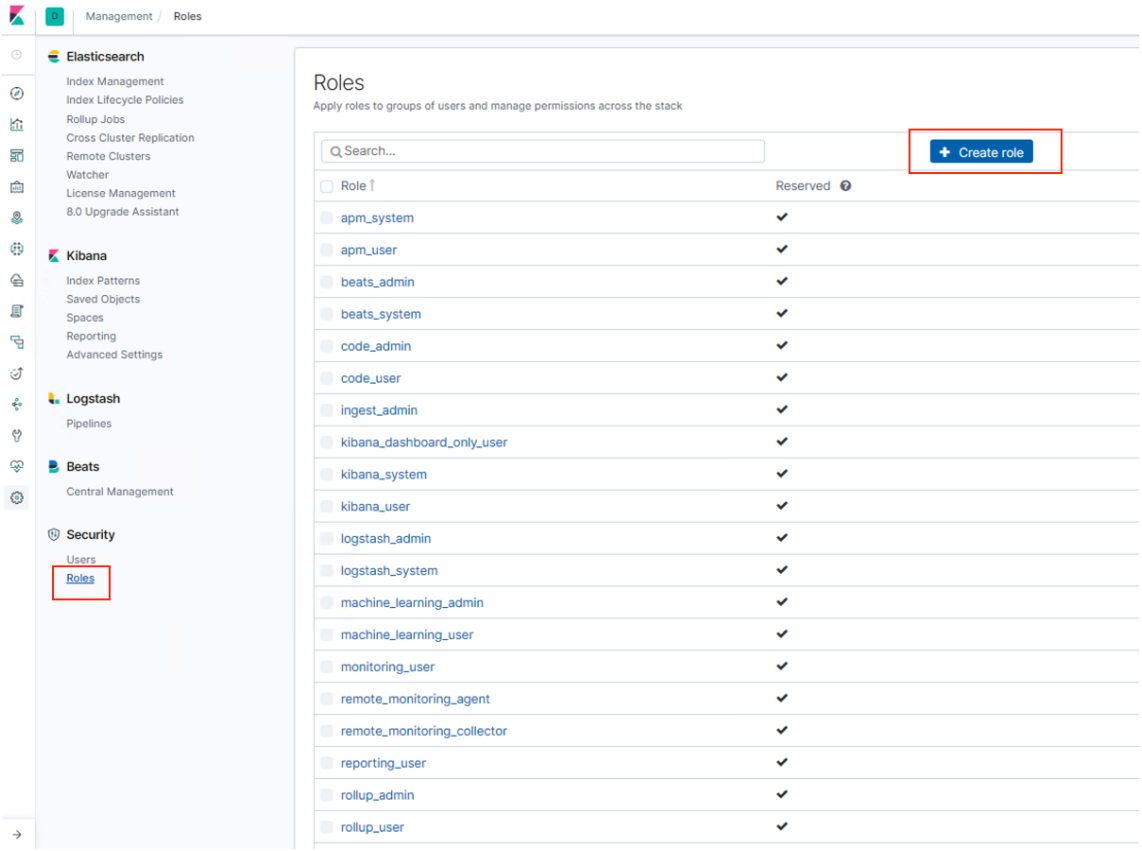


Note

The passwords must be a minimum of 6 characters long.

Creating a new role

To create a new user, navigate to the `Management` UI and select `Roles` in the `Security` section, or if you are currently on the `Users` screen, click on the `Roles` tab. The `Roles` screen displays all the roles that are defined/available. By default, it displays the built-in/reserved roles that are part of the X-Pack security native realm:



X-Pack security also provides a set of built-in roles that can be assigned to users. These roles are reserved and the privileges associated with these roles cannot be updated. Some of the built-in roles are as follows:

- `kibana_system` : This role grants the necessary access to read from and write to Kibana indexes, manage index templates, and check the availability of the Elasticsearch cluster. This role also grants read access for monitoring (`.monitoring-*`) and read-write access to reporting (`.reporting-*`) indexes. The default user, `kibana` , has these privileges.
- `superuser` : This role grants access for performing all operations on clusters, indexes, and data. This role also grants rights to create/modify users or roles. The default user, `elastic` , has superuser privileges.
- `ingest_admin` : This role grants permissions so that you can manage all pipeline configurations and all index templates.

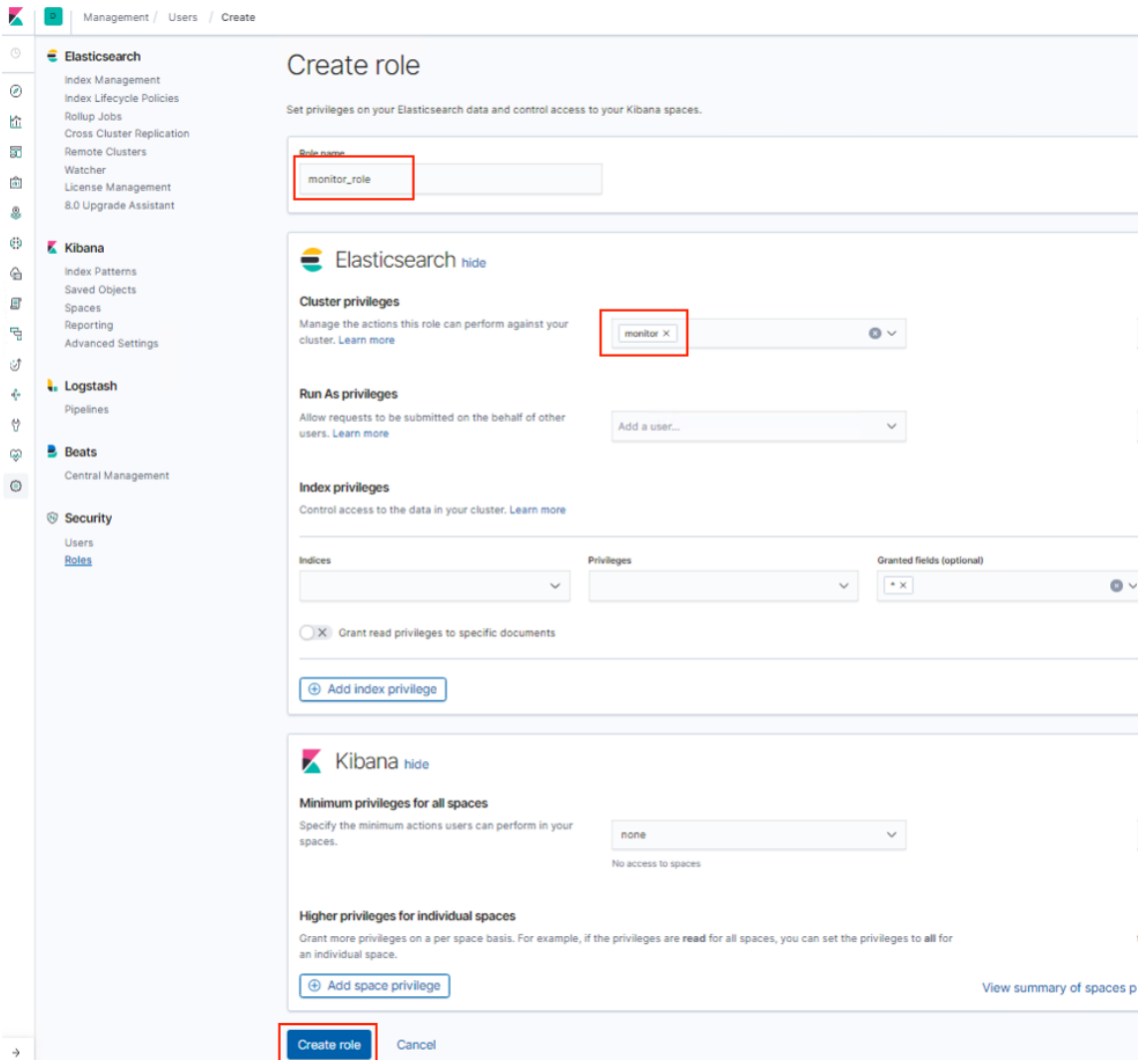
Note

To find the complete list of built-in roles and their descriptions, please refer to https://www.elastic.co/guide/en/x-pack/master/built-in-roles.html.

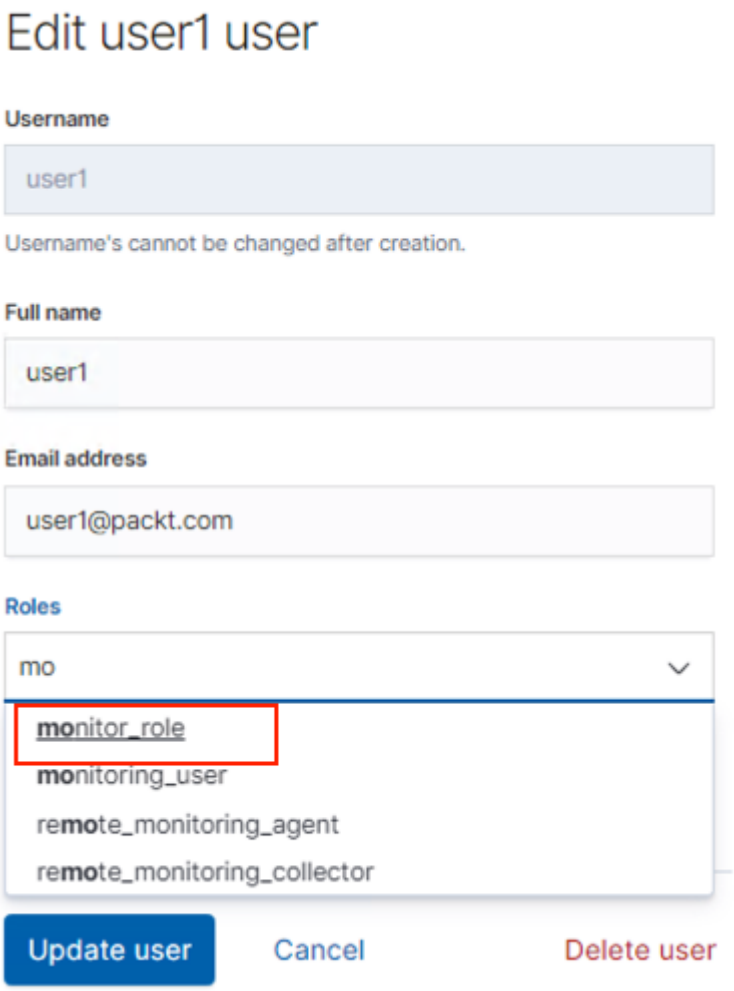
Users with the superuser role can create custom roles and assign them to the users using the Kibana UI.

Let's create a new role with a **Cluster privilege** called `monitor` and assign it to `user1` so that the user can cluster read-only operations such as cluster state, cluster health, nodes info, nodes stats, and more.

Click on the `Create role` button in the `Roles` page/tab and fill in the details that are shown in the following screenshot:



To assign the newly created role to `user1`, click on the `Users` tab and select `user1`. In the `User Details` page, from the roles dropdown, select the `monitor_role` role and click on the `Save` button, as shown in the following screenshot:



Note

A user can be assigned multiple roles.

Now, let's validate that `user1` can access some cluster/node details APIs:

```
curl -u user1:password "http://localhost:9200/_cluster/health?pretty"
{
  "cluster_name" : "elasticsearch",
  "status" : "yellow",
  "timed_out" : false,
  "number_of_nodes" : 1,
  "number_of_data_nodes" : 1,
  "active_primary_shards" : 5,
  "active_shards" : 5,
  "relocating_shards" : 0,
  "initializing_shards" : 0,
  "unassigned_shards" : 2,
  "delayed_unassigned_shards" : 0,
  "number_of_pending_tasks" : 0,
  "number_of_in_flight_fetch" : 0,
```

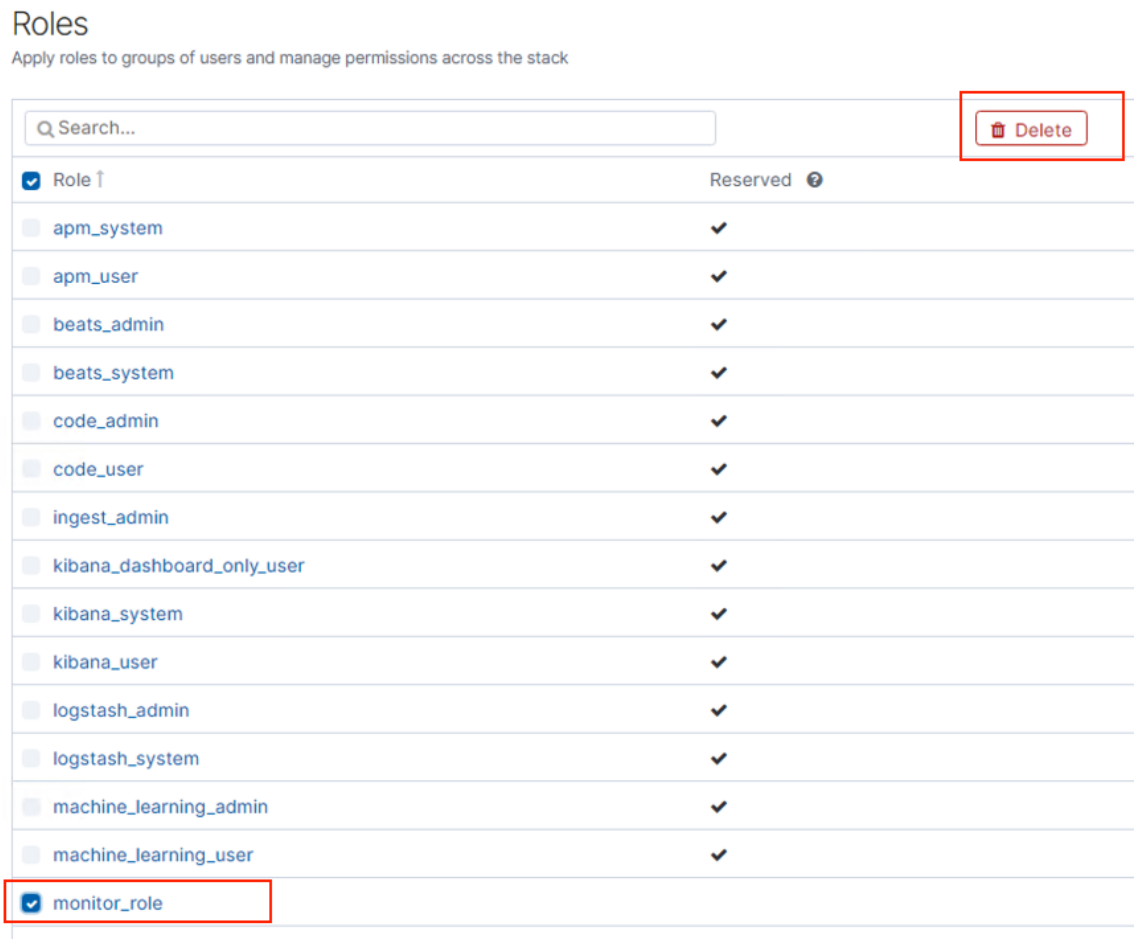
```
  "task_max_waiting_in_queue_millis" : 0,
  "active_shards_percent_as_number" : 71.42857142857143
}
```

Let's also execute the same command that we executed when we created `user2`, but without assigning any roles to it, and see the difference:

```
curl -u user2:password "http://localhost:9200/_cluster/health?pretty"
{
  "error" : {
    "root_cause" : [
      {
        "type" : "security_exception",
        "reason" : "action [cluster:monitor/main] is unauthorized for user [user2]"
      }
    ],
    "type" : "security_exception",
    "reason" : "action [cluster:monitor/main] is unauthorized for user [user2]"
  },
  "status" : 403
}
```

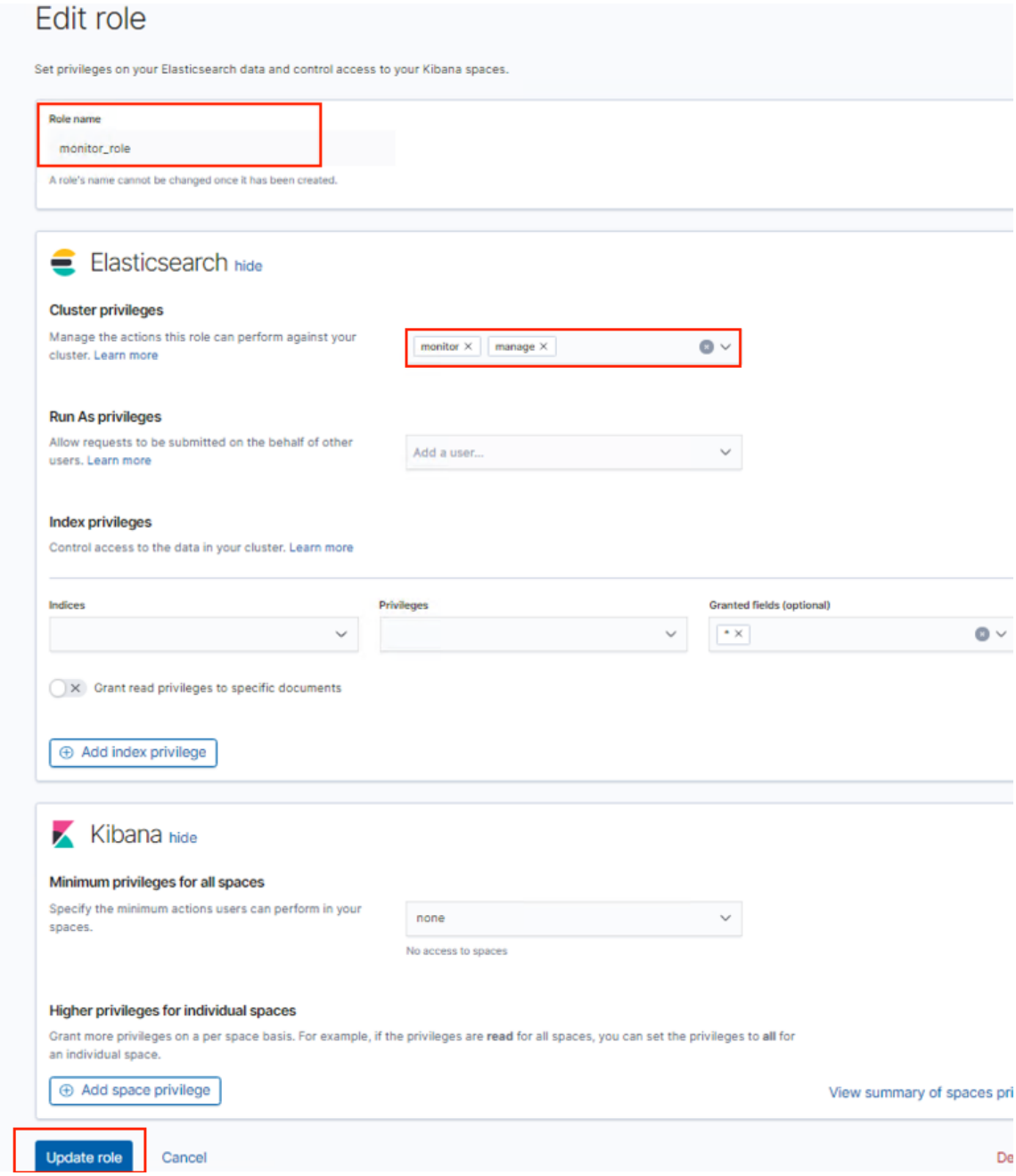
Deleting or editing a role

To delete a role, navigate to the `Roles` UI/tab, select the custom role that we created, and click on **Delete**. You cannot delete built-in roles:



To edit a role, navigate to the `Roles` UI/tab and click on the custom role that needs to be edited. The user is taken to the `Roles Details` page. Make the required changes in the `Privileges` section and click on the `Update role` button.

You can also delete the role from this page:



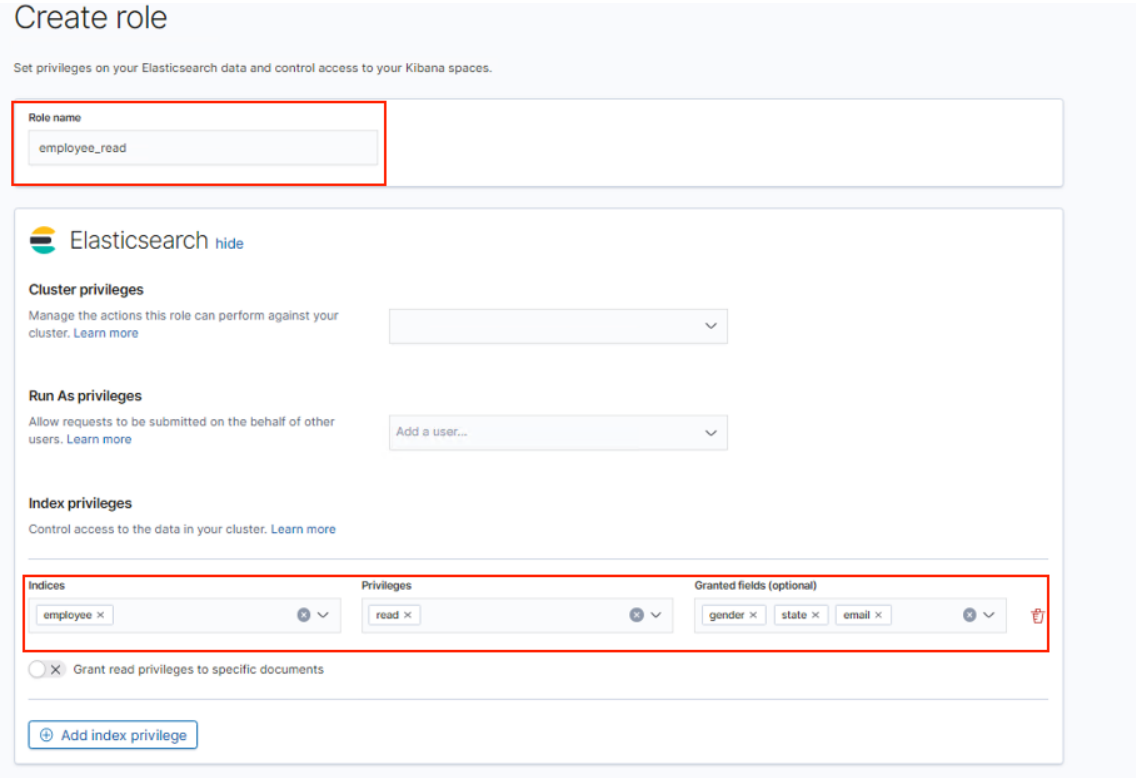
Document-level security or field-level security

Now that we know how to create a new user, create a new role, and assign roles to a user, let's explore how security can be imposed on documents and fields for a given index/document.

The sample data that we imported previously, at the beginning of this lab, contained two indexes: `employee` and `department`. Let's use these indexes and understand the document-level security with two use cases.

Use case 1: When a user searches for employee details, the user should not be able to find the salary/address details contained in the documents belonging to the `employee` index.

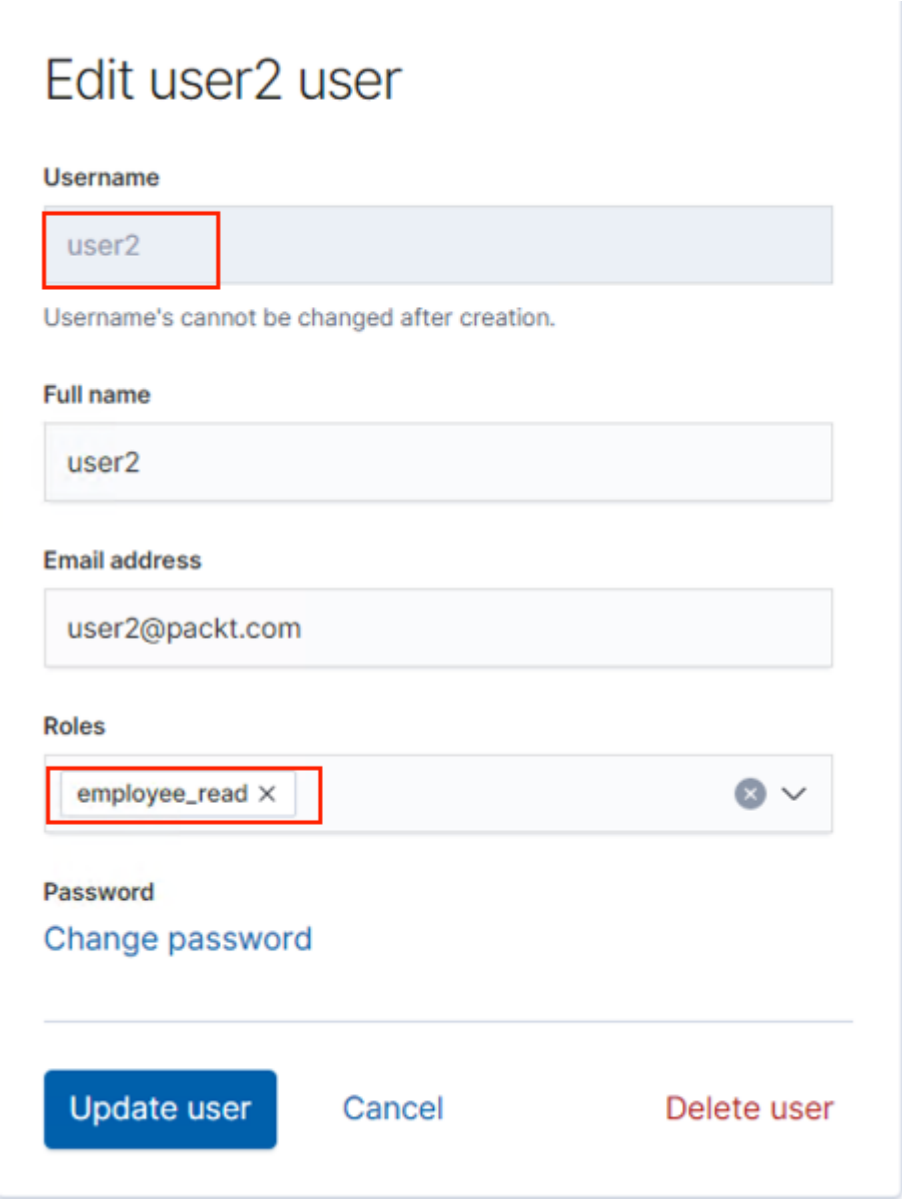
This is where field-level security helps. Let's create a new role (`employee_read`) with `read` index privileges on the `employee` index. To restrict the fields, type the actual field names that are allowed to be accessed by the user in the `Granted Fields` section, as shown in the following screenshot, and click the `Create role` button:



Note

When creating a role, you can specify the same set of privileges on multiple indexes by adding one or more index names to the `Indices` field, or you can specify different privileges for different indexes by clicking on the **Add index privilege** button that's found in the `Index privileges` section.

Assign the newly created role to `user2` :



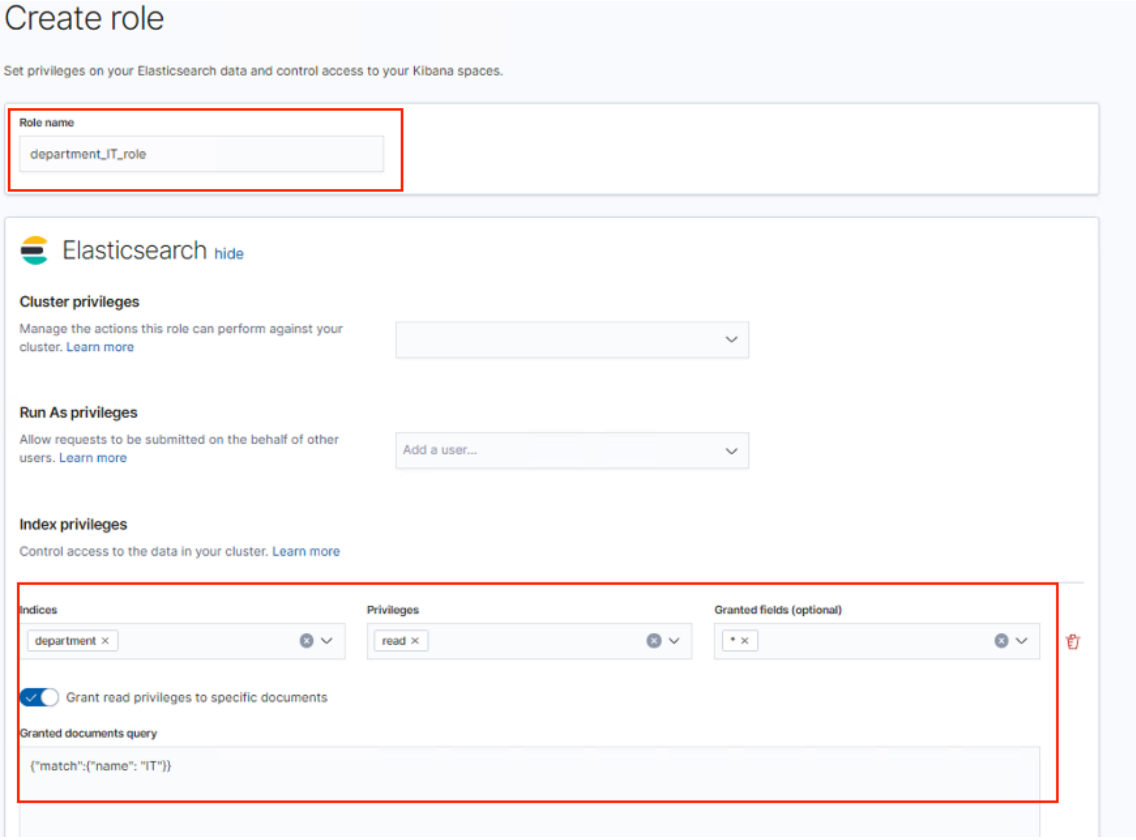
Now, let's search in the employee index and check what fields were returned in the response. As we can see in the following response, we have successfully restricted the user from accessing salary and address details:

```
curl -u user2:password "http://localhost:9200/employee/_search?pretty"
{
  "took" : 1,
  "timed_out" : false,
  "_shards" : {
    "total" : 1,
    "successful" : 1,
    "skipped" : 0,
    "failed" : 0
  },
```

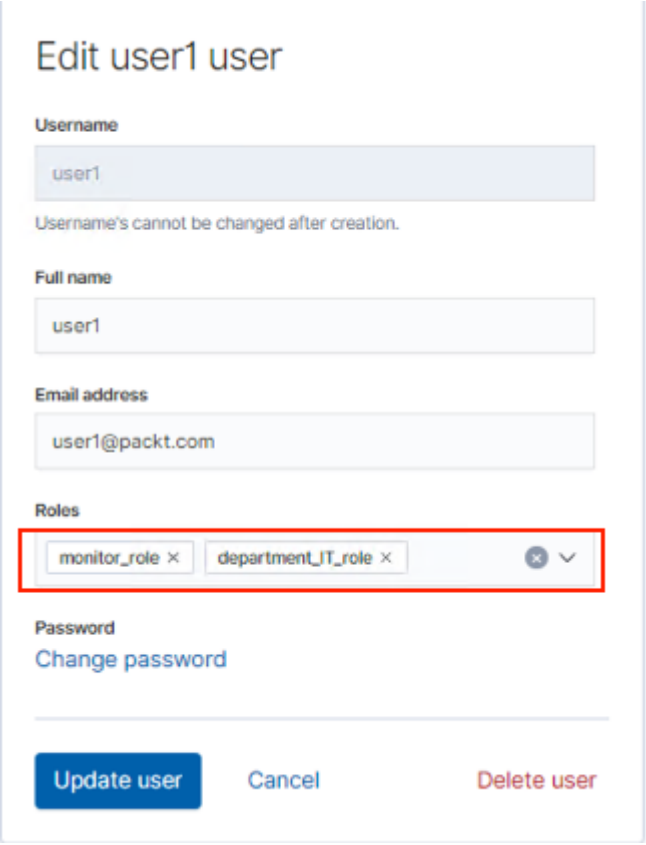
```
  "hits" : {
    "total" : {
      "value" : 3,
      "relation" : "eq"
    },
    "max_score" : 1.0,
    "hits" : [
      {
        "_index" : "employee",
        "_type" : "_doc",
        "_id" : "xsTc2GoBlyaBuhcfU42x",
        "_score" : 1.0,
        "_source" : {
"gender" : "M",
          "state" : "NE",
          "email" : "user1@fenago.com"
        }
      },
      {
        "_index" : "employee",
        "_type" : "_doc",
        "_id" : "x8Tc2GoBlyaBuhcfU42x",
        "_score" : 1.0,
        "_source" : {
 "gender" : "F",
          "state" : "OR",
          "email" : "user2@fenago.com"
        }
      },
      {
        "_index" : "employee",
        "_type" : "_doc",
        "_id" : "yMTc2GoBlyaBuhcfU42x",
        "_score" : 1.0,
        "_source" : {
 "gender" : "F",
          "state" : "CA",
          "email" : "user3@fenago.com"
        }
      }
    ]
  }
}
```


Use case 2: We want to have a multi-tenant index and restrict certain documents to certain users. For example, `user1` should be able to search in the department index and retrieve only documents belonging to the `IT` department.

Let's create a role, `department_IT_role`, and provide the `read` privilege for the `department` index. To restrict the documents, specify the query in the `Granted Documents Query` section. The query should be in the **Elasticsearch Query DSL** format:



Associate the newly created role with `user1`:



Let's verify that it is working as expected by executing a search against the `department` index using the `user1` credentials:

```
curl -u user1:password "http://localhost:9200/department/_search?pretty"
{
  "took" : 19,
  "timed_out" : false,
  "_shards" : {
    "total" : 1,
    "successful" : 1,
    "skipped" : 0,
    "failed" : 0
  },
  "hits" : {
    "total" : {
      "value" : 1,
      "relation" : "eq"
    },
    "max_score" : 1.0,
    "hits" : [
      {
        "_index" : "department",
        "_type" : "department",
        "_id" : "ycTc2GoBlyaBuhcfU42x",
        "_score" : 1.0,
```

```
        "_source" : {
"name" : "IT",
          "employees" : 50
        }
      }
    ]
  }
```

X-Pack security APIs

In the previous section, we learned how to manage users and roles using the Kibana UI. However, often, we would like to carry out these operations programmatically from our applications. This is where the X-Pack security APIs come in handy. X-Pack security APIs are REST APIs that can be used for user/role management, role mapping to users, performing authentication, and checking whether the authenticated user has specified a list of privileges. These APIs perform operations on the `native` realm. The Kibana UI internally makes use of these APIs for user/role management. In order to execute these APIs, the user should have `superuser` or the latest `manage_security` privileges. Let's explore some of these APIs in this section.

User Management APIs

This provides a set of APIs to create, update, or delete users from the `native` realm.

The following is a list of available APIs and how to use them:

```
GET /_xpack/security/user                              -- To list all the users
GET /_xpack/security/user/<username>                   -- To get the details of a
specific user
DELETE /_xpack/security/user/<username>                -- To Delete a user
POST /_xpack/security/user/<username>                  -- To Create a new user
PUT /_xpack/security/user/<username>                   -- To Update an existing user
PUT /_xpack/security/user/<username>/_disable          -- To disable an existing user
PUT /_xpack/security/user/<username>/_enable           -- To enable an existing
disabled user
PUT /_xpack/security/user/<username>/_password         -- to Change the password
```

The `username` in the path parameter specifies the user against which the operation is carried out. The body of the request accepts parameters such as `email`, `full_name`, and `password` as strings and `roles` as list.

Example 1: Create a new user, `user3`, with `monitor_role` assigned to it:

```
curl -u elastic:elastic -X POST http://localhost:9200/_xpack/security/user/user3 -H
'content-type: application/json' -d '
{
  "password" : "randompassword",
  "roles" : [ "monitor_role"],
  "full_name" : "user3",
  "email" : "user3@fenago.com"

}'

Response:
user":{"created":true}}
```

Example 2: Get the list of all users:

```
curl -u elastic:elastic -XGET http://localhost:9200/_xpack/security/user?pretty
```

Example 3: Delete `user3`:

```
curl -u elastic:elastic -XDELETE http://localhost:9200/_xpack/security/user/user3
Response:
{"found":true}
```

Example 4: Change the password:

```
curl -u elastic:elastic -XPUT
http://localhost:9200/_xpack/security/user/user2/_password -H "content-type:
application/json" -d "{ \"password\": \"newpassword\"}"
```

Note

When using `curl` commands on Windows machines, note that they don't work if they have single quotes (') in them. The preceding example showed the use of a `curl` command on a Windows machine. Also, make sure you escape double quotes within the body of the command, as shown in the preceding example.

Role Management APIs

This provides a set of APIs to create, update, remove, and retrieve roles from the `native` realm.

The list of available APIs under this section, as well as information on what they do, is as follows:

```
GET /_xpack/security/role                              -- To retrieve the list of all
roles
GET /_xpack/security/role/<rolename>                       -- To retrieve details of
a specific role
POST /_xpack/security/role/<rolename>/_clear_cache         -- To evict/clear roles
from the native role cache
POST /_xpack/security/role/<rolename>                      -- To create a role
PUT /_xpack/security/role/<rolename>                       -- To update an existing
role
```

The `rolename` in the path parameter specifies the role against which the operation is carried out. The body of the request accepts parameters such as `cluster`, which accepts a list of cluster privileges; `indices`, which accepts a list of objects that specify the indices privileges and `run_as`, which contains a list of users that the owners of this role can impersonate.

`indices` contains an object with parameters such as `names`, which accepts a list of index names; `field_security`, which accepts a list of fields to provide read access; `privileges`, which accepts a list of index privileges; and the `query` parameter, which accepts the query to filter the documents.

Let's take a look at a few examples of managing different roles using APIs:

- **Example 1**: Create a new role with field-level security imposed on the employee index:

```
curl -u elastic:elastic -X POST
http://localhost:9200/_xpack/security/role/employee_read_new -H 'content-type:
application/json' -d '{

  "indices": [
```

```
    {
      "names": [ "employee" ],
      "privileges": [ "read" ],
      "field_security" : {
        "grant" : [ "*" ],
        "except": [ "address*","salary" ]
      }

    }
  ]
}'

Response:
role":{"created":true}}
```

Note

Unlike the Kibana UI, which doesn't have any way to exclude fields from user access, using the Security API, you can easily exclude or include fields as part of field-level security. In the preceding example, we have restricted access to the `salary` field and any fields starting with the `address` text/string.

- **Example 2**: Get the details of a specific role:

```
curl -u elastic:elastic -XGET
http://localhost:9200/_xpack/security/role/employee_read_new?pretty
Response:
{
  "employee_read" : {
    "cluster" : [ ],
    "indices" : [
      {
        "names" : [
          "employee"
        ],
        "privileges" : [
          "read"
        ],
        "field_security" : {
          "grant" : [
            "*"
          ],
          "except" : [
            "address*",
            "salary"
          ]
        }
      }
    ],
    "run_as" : [ ],
    "metadata" : { },
    "transient_metadata" : {
      "enabled" : true
    }
```

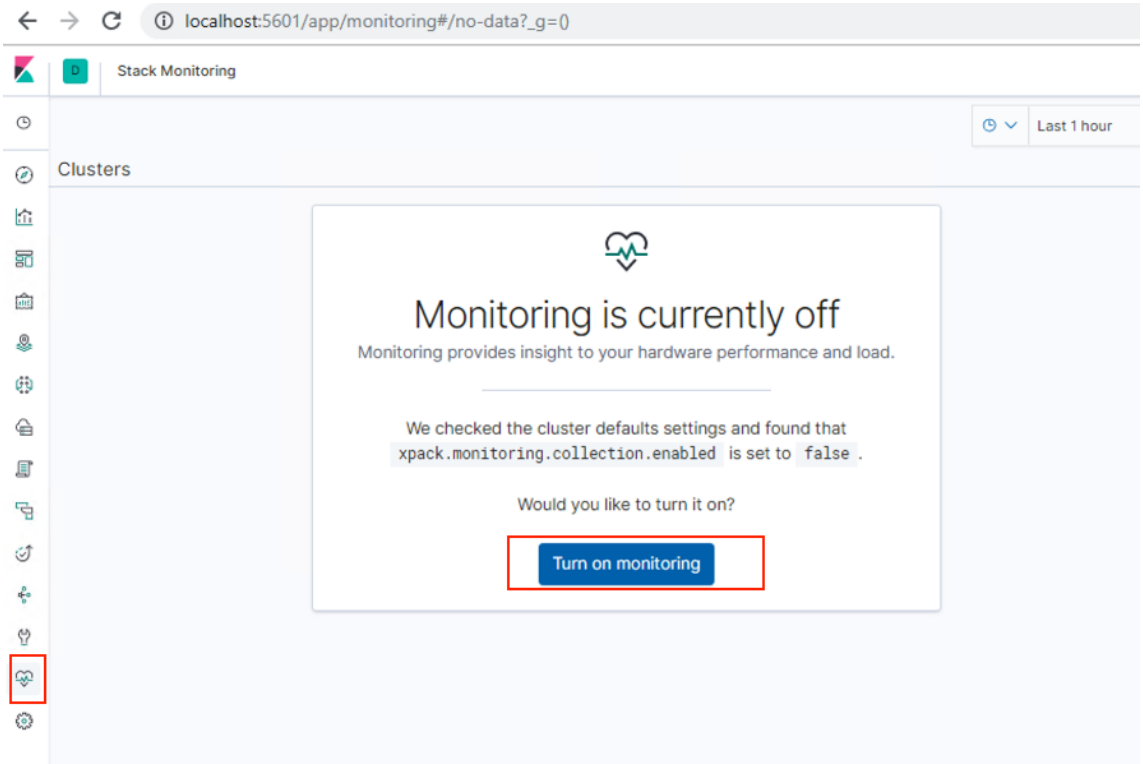
```
  }
}
```

- **Example 3**: Delete a role:

```
curl -u elastic:elastic -XDELETE
http://localhost:9200/_xpack/security/role/employee_read

Response:
{"found":true}
```

Monitoring UI

To access the Monitoring UI, log in to Kibana and click on Stack Monitoring from the side navigation. If the monitoring data collection is not enabled, you will be taken to the following screen, where you can enable monitoring by clicking on the `Turn on monitoring` button. By default, monitoring would be enabled but data collection would be disabled. These settings can be dynamic and can be updated using the **cluster update settings** API, which doesn't require a restart to occur. If the same settings were set in `elasticsearch.yml` or `kibana.yml`, a restart would be required:

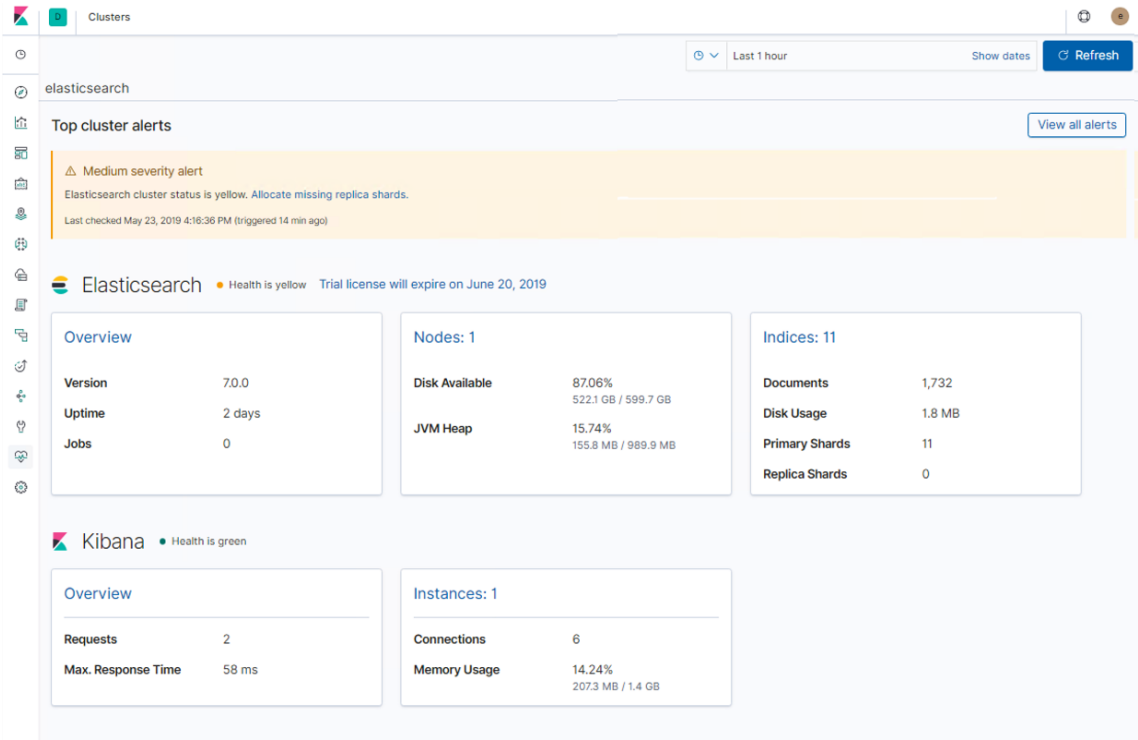


Once you click on `Turn on monitoring`, the cluster settings will update, which can be verified by using the following API:

```
curl -u elastic:elastic -XGET http://localhost:9200/_cluster/settings?pretty
{
  "persistent" : {
"xpack" : {
      "monitoring" : {
```

```
        "collection" : {
          "enabled" : "true"
        }
      }
    }
  },
  "transient" : { }
}
```

Once data collection has been enabled, click on the Stack Monitoring icon on the left-hand side menu. You will see the following screen:



This page provides a summary of the metrics that are available for Elasticsearch and Kibana. By clicking on links such as `Overview`, `Nodes`, `Indices`, or `Instances`, you can get additional/detailed information. The metrics that are displayed on the page are automatically refreshed every 10 seconds, and by default, you can view the data of the past 1 hour, which can be changed in the `Time Filter` that's found toward the top left of the screen. You can also see the cluster name, which in this case is `elasticsearch`.

Note

The monitoring agent that's installed on the instances being monitored sends metrics every 10 seconds by default. This can be changed in the configuration file (`elasticsearch.yml`) by setting the appropriate value to the `xpack.monitoring.collection.interval` property.

Anatomy of a watch

Let's look into a sample watch and understand the building blocks of a watch in detail. The following code snippet creates a watch:

```
curl -u elastic:elastic -X POST
http://localhost:9200/_xpack/watcher/watch/logstash_error_watch   -H 'content-type:
application/json'   -d '{
"trigger":{"schedule":{"interval":"30s"}},"input":{"search":{"request":{"indices":
["logstash*"],"body":{"query":{"match":{"message":"error"}}}}}},"condition":
{"compare":{"ctx.payload.hits.total":{"gt":0}}},"actions":{"log_error":{"logging":
{"text":"The number of errors in logs is  {{ctx.payload.hits.total}}"}}}}'
```

Alerting in action

Now that we know what a **Watch** is made up of, in this section, we will explore how to create, delete, and manage watches.

You can create/delete/manage watches using the following software:

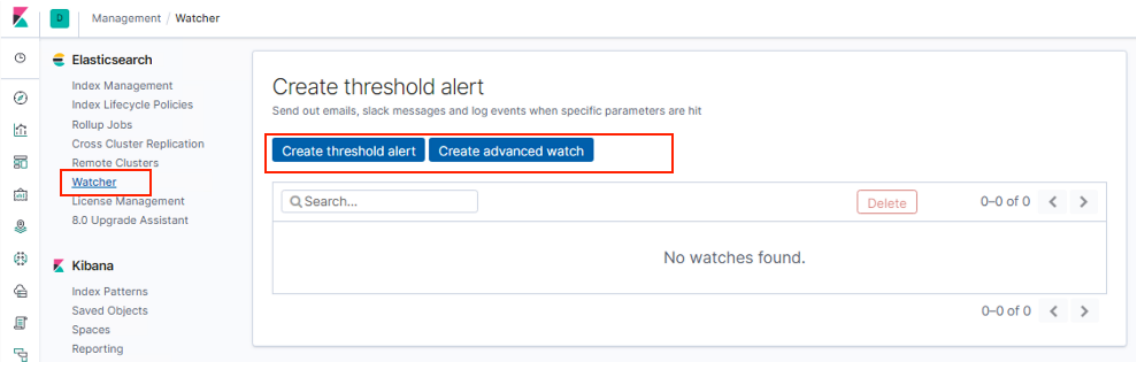
- Kibana Watcher UI
- X-Pack Watcher REST APIs

The **Watcher** UI internally makes use of Watcher REST APIs for the management of watches. In this section, we will explore the creation, deletion, and management of watches using the Kibana Watcher UI.

Creating a new alert

To create a watch, log in to Kibana (`http://localhost:5601`) as elastic/elastic and navigate to the `Management` UI; click on `Watcher` in the `Elasticsearch` section. Two options are available for creating alerts:

- `Create threshold alert`
- `Create advanced watch` :



By using the `Threshold alert` option, you can create a threshold-based alert to get notified when a metric goes above or below a given threshold. Using this UI, users can easily create threshold-based alerts without worrying about directly working with raw JSON requests. This UI provides options for creating alerts on time-based indices only (that is, the index has a timestamp).

Using the `Advanced watch` options, you can create watches by directly working with the raw `.json` required for the watches API.

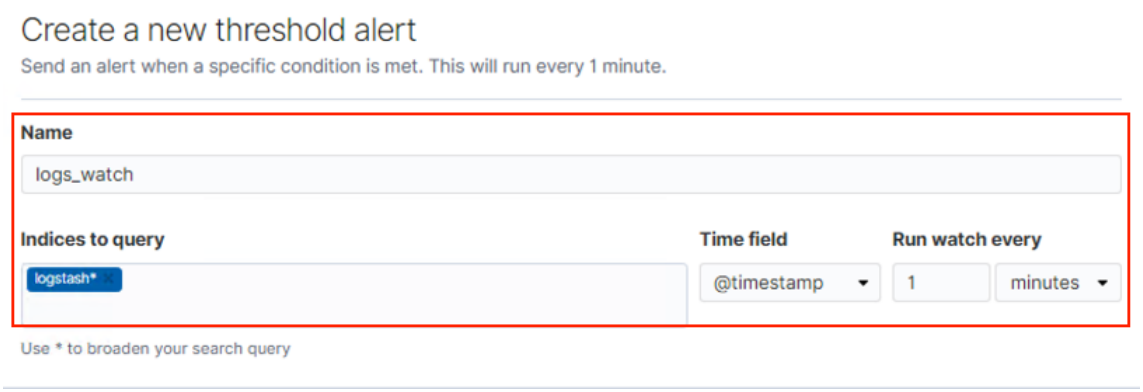
Note

The Watcher UI requires a user with `kibana_user` and `watcher_admin` privileges to create, edit, delete, and deactivate a watch.

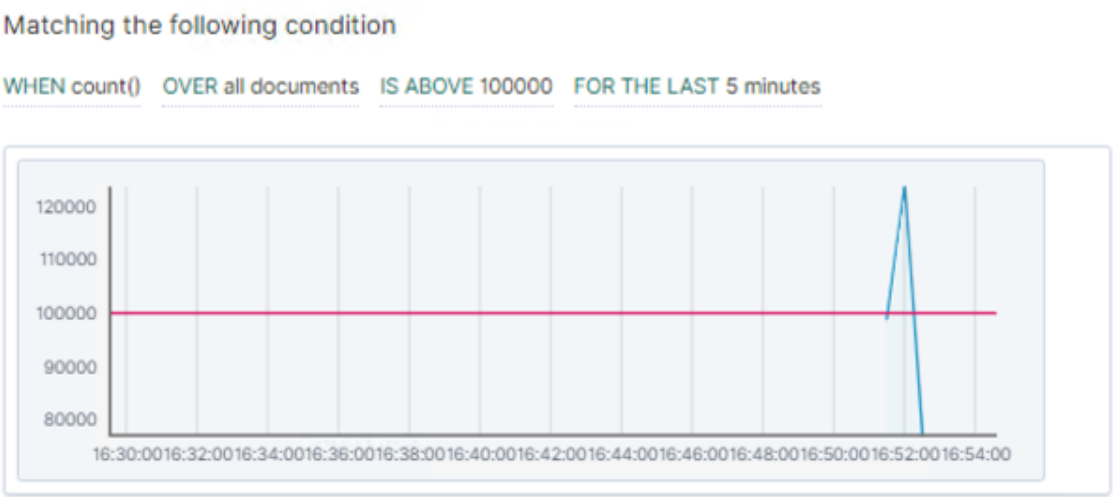
Threshold Alert

Click on `Create New Watch` and choose the `Threshold Alert` option. This brings up the `Threshold Alert` UI.

Specify the name of the alert; choose the index to be used to query against, the time field, and the trigger frequency in the `Threshold Alert` UI:



Then, specify the condition that will cause the alert to trigger. As the expressions/conditions are changed or modified, the visualization is updated automatically to show the threshold value and data as red and blue lines, respectively:



Finally, specify the action that needs to be triggered when the action is met by clicking on the `Add new action` button. It provides three types of actions, that is, email, slack, and logging actions. One or more actions can be configured:

Then, click on the `Save` button to create the watch.

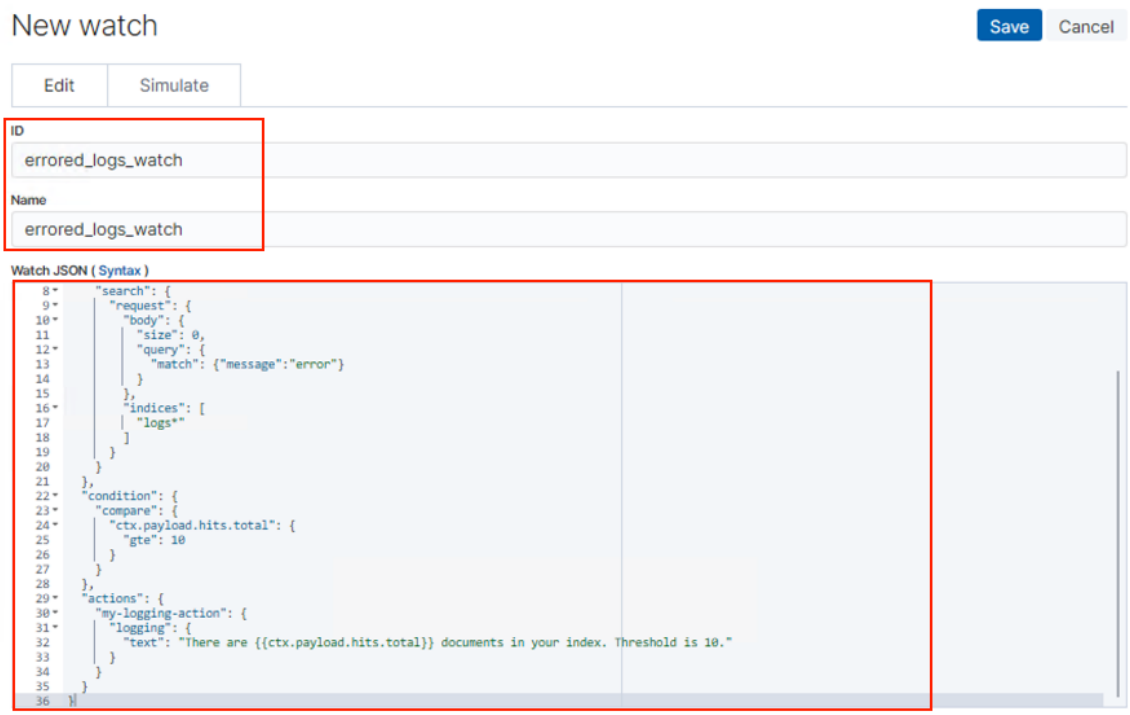
Clicking on `Save` will save the watch in the `watches` index and can be validated using the following query:

```
curl -u elastic:elastic -XGET http://localhost:9200/.watches/_search?
q=metadata.name:logs_watch
```

Advanced Watch

Click on the `Create New Watch` button and choose the `Advanced Watch` option. This brings up the `Advanced Watch` UI.

Specify the watch `ID` and watch `name`, and then paste the JSON to create a watch in the `Watch JSON` box; click on `Save` to create a watch. Watch ID refers to the identifier used by Elasticsearch when creating a Watch, whereas name is the more user-friendly way to identify the watch:



The `Simulate` tab provides a UI to override parts of the watch and then run a simulation of it.

Note

Watch Name will be stored in the metadata section of the watch body. You can use the metadata section when creating the watch to store custom metadata, tags, or information to represent/identify a watch.

Clicking on `Save` will save the watch in the `watches` index and can be validated using the following query:

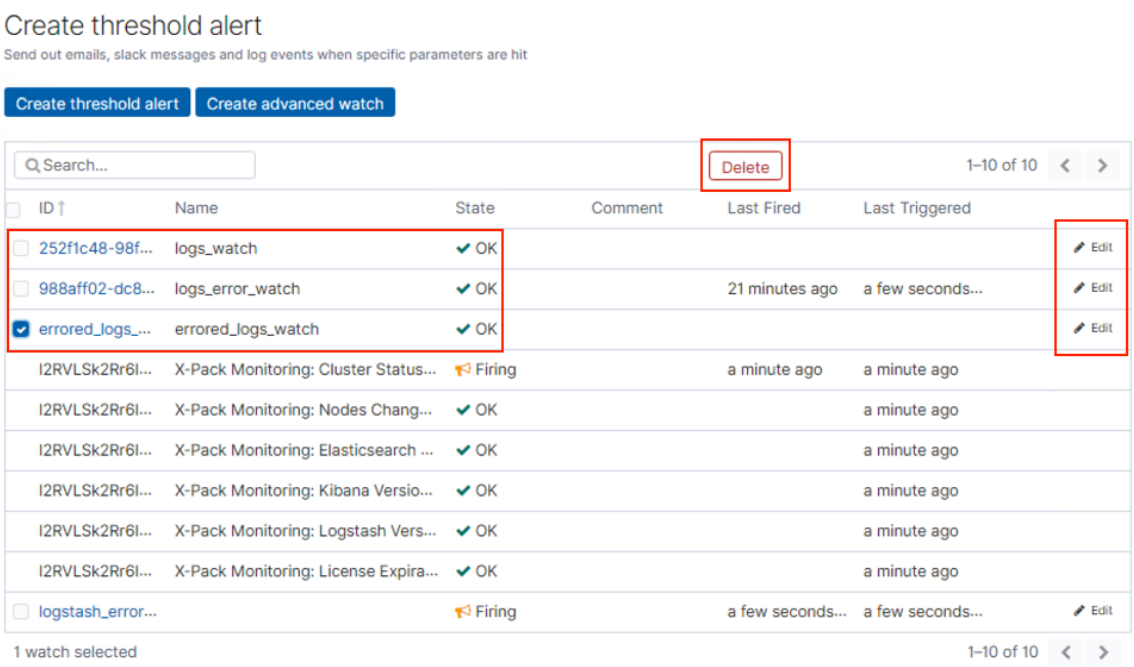
```
curl -u elastic:elastic -XGET http://localhost:9200/.watches/_search?
q=metadata.name:errored_logs_watch
```

Since we have configured logging as the action, when the alert is triggered, the same can be seen in `elasticsearch.log`:

```
[2019-05-23T17:43:07,809][INFO ][o.e.x.w.a.l.ExecutableLoggingAction] [MADSH01-APM01] The number of errors in logs is  39
[2019-05-23T17:43:37,379][INFO ][o.e.x.w.a.l.ExecutableLoggingAction] [MADSH01-APM01] The number of errors in logs is  39
[2019-05-23T17:44:07,343][INFO ][o.e.x.w.a.l.ExecutableLoggingAction] [MADSH01-APM01] The number of errors in logs is  39
[2019-05-23T17:44:37,380][INFO ][o.e.x.w.a.l.ExecutableLoggingAction] [MADSH01-APM01] The number of errors in logs is  39
[2019-05-23T17:45:07,373][INFO ][o.e.x.w.a.l.ExecutableLoggingAction] [MADSH01-APM01] The number of errors in logs is  39
[2019-05-23T17:45:37,393][INFO ][o.e.x.w.a.l.ExecutableLoggingAction] [MADSH01-APM01] The number of errors in logs is  39
[2019-05-23T17:46:04,394][INFO ][o.e.x.w.a.l.ExecutableLoggingAction] [MADSH01-APM01] There are 39 documents in your index. Threshold is 10.
[2019-05-23T17:46:07,383][INFO ][o.e.x.w.a.l.ExecutableLoggingAction] [MADSH01-APM01] The number of errors in logs is  39
[2019-05-23T17:46:37,428][INFO ][o.e.x.w.a.l.ExecutableLoggingAction] [MADSH01-APM01] The number of errors in logs is  39
```

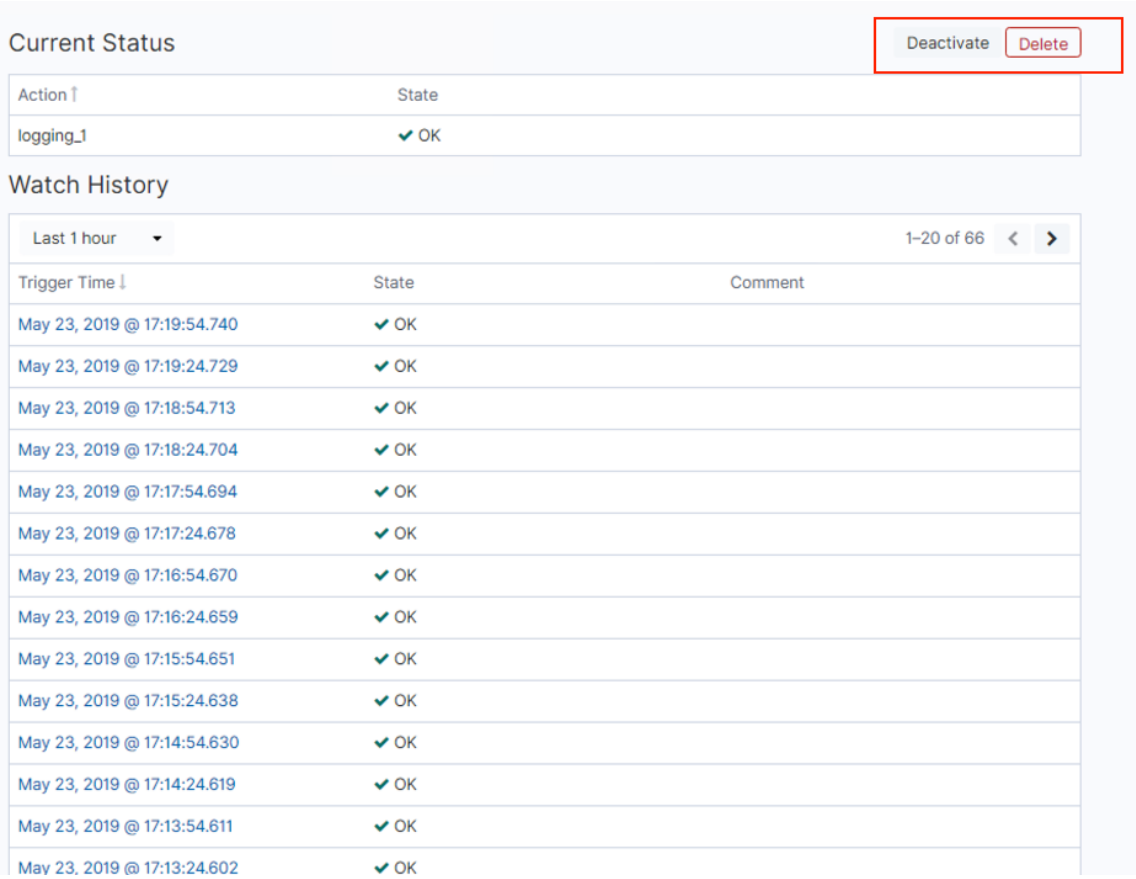
Deleting/deactivating/editing a watch

To delete a watch, navigate to the `Management` UI and click on `Watcher` in the `Elasticsearch` section. From the `Watches` list, select one or more watches that need to be deleted and click on the `Delete` button:



To edit a watch, click on the `Edit` link, modify the watch details, and click on the `Save` button to save your changes. To deactivate a watch (that is, to temporarily disable watch execution), navigate to the `Management` UI and click on `Watcher` in the `Elasticsearch` section. From the `Watches` list, click on the custom watch. The `Watch History` will be displayed. Click on the `Deactivate` button. You can also delete a watch from this screen.

Clicking on an execution time (link) in the `Watch History` displays the details of a particular `watch_record`:



Summary

In this lab, we explored how to install and configure the X-Pack components in Elastic Stack and how to secure the Elastic cluster by creating users and roles. We also learned how to monitor the Elasticsearch server and alerting in order to generate notifications when there are changes or anomalies in the data.