

Exercise #1

Last Updated: 25 Apr 2022



This exercise is intended to teach you how to use Snowstorm to:

- load a new instance with the SNOMED CT International Edition and another extension
- load a newer version of the SNOMED CT International Edition and the other extension on top of existing data

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Please visit the [Pre-requisites](#) page to see software that may be useful during the day. In summary, we recommend using:

- Chromium based browser
- A relevant SSH/terminal application
- JSON viewer for Chromium based browsers - <https://chrome.google.com/webstore/detail/json-viewer/gbmdgpbipfallnflgajpaliibnhdgobh>

1. Accessing the server

You will be given an ip-address and you can [download the training.pem private key](#) to access the AWS instance to access. Go to the directory where you have saved [the training.pem file](#) and run:

```
chmod 700 training.pem
ssh -i training.pem ubuntu@<ip-address>
```



This should work without any problems on Linux and OSX.

For Windows, because of the difference in using SSH, please follow the instructions on the [Windows set up](#) page.

On the server you will find:

- **/opt/releases** - containing the following:
 - SnomedCT_InternationalRF2_PRODUCTION_20210731T120000Z.zip (**July 2021 International Edition**)
 - SnomedCT_ManagedServiceDK_PRODUCTION_DK1000005_20210930T120000Z.zip (September 2021 Danish Extension)
 - SnomedCT_InternationalRF2_PRODUCTION_20220131T120000Z.zip (**January 2022 International Edition**)
 - SnomedCT_ManagedServiceDK_PRODUCTION_DK1000005_20220331T120000Z.zip (March 2022 Danish Extension)
- **/opt/snowstorm** - contains the most recent released Snowstorm jar file
- **/opt/Frontend-Interaction-Demonstration** - containing the following:
 - demo front end HTML for some exercises

Elasticsearch v7.9.2 has already been installed on the server. You can check that Elasticsearch is running with the following command:

```
curl localhost:9200
```

When normally installing Snowstorm, you will need to download the most recent release of Snowstorm from [the GitHub repository releases page](#). However, we have put the Snowstorm executable jar file on the server already.

2. Starting Snowstorm

To start snowstorm you will need to run the following commands.
(Documentation available [starting-snowstorm](#))

The simplest thing is to leave an SSH window open with this command running so you can easily access the log output.

```
tmux
cd /opt/snowstorm
sudo java -Xms4g -Xmx4g -jar snowstorm*.jar --elasticvc.save.batch-size=10000 | sudo tee -a snowstorm.log
```

We are using *tmux* so that if you have an internet connection issue and get disconnected Snowstorm will keep running. If this happens you can reconnect to the machine and type "tmux a" to continue where you left off.

We are using *tee* to see the output in the window and copy it to a snowstorm.log file in the same directory.

3. Loading the initial data

Next load the SNAPSHOT of the **July 2021 International Edition**.

(Documentation available [loading-snomed](#))

We will use the REST API to run the imports. Access the Snowstorm swagger interface using the AWS instance ip-address and port 8080, for example - `http://<ip-address>:8080/`

First we need to start the import process by creating a new import job. Look for the Import endpoints and then create a new import using the **start-local-file-import** endpoint with the following **importRequest** parameter

```
{
  "branchPath": "MAIN",
  "createCodeSystemVersion": true,
  "filePath": "/opt/releases/SnomedCT_InternationalRF2_PRODUCTION_20210731T120000Z.zip",
  "type": "SNAPSHOT"
}
```

... and click on 'Try it now'.

The *Response Headers* will contain the *location* of the newly created job. Copy this URL into a new tab to monitor the status of the job.

You can watch the Snowstorm log to see how this is progressing or fetch the job status from the import job URL - `http://<ip-address>:8080/imports/<import_id>` .

This should take around 30 minutes.



Make sure that you wait for the import to complete before going any further forward. You can see it is completed by looking at the status of the import using the URL from the location header. When you refresh the page it should say **COMPLETED** when done.

If you want to check that you have imported successfully, you can do this by seeing how many SNOMED CT concepts there are on the MAIN branch with the following URL - `http://<ip-address>:8080/MAIN/concepts?offset=0&limit=1` - which show that there are a total of 474,074 active and inactive concepts.

Code System Registry

The Snowstorm Code System Registry should now have a single code system listed here: `http://<ip-address>:8080/codesystems`

And a single SNOMEDCT version listed here: `http://<ip-address>:8080/codesystems/SNOMEDCT/versions`

Check the registry throughout this exercise to see your changes reflected.

4. Loading the local edition or extension

As this is the first time we will be importing the local edition or extension (Danish extension in this instance), we will need to create a CodeSystem on the server.

On the swagger interface in the 'Code Systems' section look for the 'Create a code system' endpoint.

Use the following in the request to create the CodeSystem. Note the **dependantVersionEffectiveTime** allows you to create a CodeSystem dependent on a specific International Edition version.

```
{
  "name": "Danish Extension",
  "shortName": "SNOMEDCT-DK",
  "countryCode": "dk",
  "branchPath": "MAIN/SNOMEDCT-DK",
  "dependantVersionEffectiveTime": 20210731,
  "defaultLanguageCode": "dk"
}
```

click 'Try it now'.

You now need to import the local extension or edition. Like last time, we need to start the import process by creating a new import job. Look for the Import endpoints and then create a new import using the **start-local-file-import** endpoint with the following **importRequest** parameter

```
{
  "branchPath": "MAIN/SNOMEDCT-DK",
  "createCodeSystemVersion": true,
  "filePath": "/opt/releases/SnomedCT_ManagedServiceDK_PRODUCTION_DK1000005_20210930T120000Z.zip",
  "type": "SNAPSHOT"
}
```

click 'Try it now'.

Copy the "location" from the Response Headers and open this in a new browser tab.

Refresh the import job in your browser to see the status change from *WAITING_FOR_FILE* to *RUNNING* and then *COMPLETED*. You can also see how this is progressing in the Snowstorm log.

This should take no more than a few minutes.



Make sure that you wait for the import status to change to *COMPLETED* before going any further forward.

5. Upgrading MAIN to a new International Edition

Every month now, there is a new International Edition and it is important to keep your terminology server up to date. For the purpose of this exercise, we will only import the relevant International Edition release that the Danish extension depends on.

Option A

The International Edition can be upgraded by importing a **SNAPSHOT** of the new changes onto the MAIN branch.

We now need to create an import job using this configuration:

```
{
  "branchPath": "MAIN",
  "createCodeSystemVersion": true,
  "filePath": "/opt/releases/SnomedCT_InternationalRF2_PRODUCTION_20220131T120000Z.zip",
  "type": "SNAPSHOT"
}
```

Option B

The International Edition can be upgraded by importing a generated **DELTA** of the new changes onto the MAIN branch.

We now need to create an import job using this configuration:

```
{
  "branchPath": "MAIN",
  "createCodeSystemVersion": true,
  "filePath": "/opt/releases/SnomedCT_InternationalRF2_PRODUCTION_20220131T120000Z_Delta.zip",
  "type": "DELTA"
}
```

click 'Try it now'. As before use the URL in the location Response Header to open a new browser tab. Refresh the page to monitor the import status.



Make sure that you wait for import status *COMPLETED* before going any further forward.

6.1 Upgrading the extension/edition branch to the new International Edition (merging the branch)

We now need to upgrade the local extension/edition branch to use the newly imported International Edition release content.

In our example, we will now rebase the *MAIN/SNOMEDCT-DK* branch using the CodeSystem upgrade endpoint giving the short name *SNOMED CT-DK*:

```
{
  "contentAutomations": false,
  "newDependantVersion": 20220131
}
```

You can check this has been successful by checking the status of the branch and seeing if it is *FORWARD*.

6.2 Upgrading to a new extension or edition

Using what you have already done, see if you can do this making note the **type** and the **branch** that you will import into.

Do this by creating an import job as before, using this configuration:

```
{
  "branchPath": "MAIN/SNOMEDCT-DK",
  "createCodeSystemVersion": true,
  "filePath": "/opt/releases/SnomedCT_ManagedServiceDK_PRODUCTION_DK1000005_20220331T120000Z.zip",
  "type": "SNAPSHOT"
}
```

click 'Try it now' and use the location Response Header to open a new browser tab. Refresh the page to monitor the import status.



Code System Registry Advice

When updating Snowstorm, entries only appear in the registry when each process is complete.

When accessing content a version branch from the registry should be used e.g. "MAIN/SNOMECT-DK/2021-09-30", not "MAIN /SNOMEDCT-DK". This will avoid your implementation being able to see inconsistent content during an upgrade.