# UK HAPI FHIR Server Instructions

Version 1.01

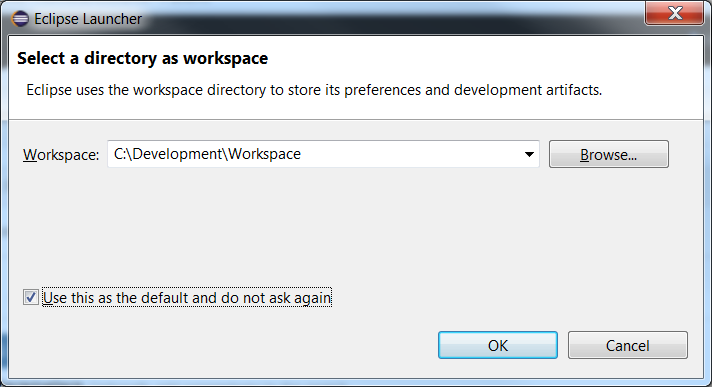
## HAPI Server Build

### Eclipse IDE

Download Eclipse IDE for Java Developers from <https://www.eclipse.org/downloads/packages/eclipse-ide-java-developers/neonr>

(This includes git and maven which is required for development) Extract the zip and run eclipse.exe to start the IDE.

Enter in a workspace location.



### GIT

Install a git client e.g. <https://git-scm.com/>

### HAPI GitHub

Open up a GIT command shell (**Git CMD**). Create a directory to store the copy of the source code e.g.

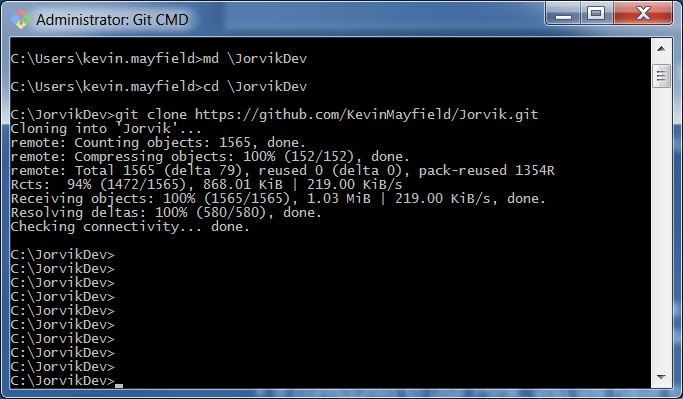
**md \JorvikDev**

Change to that directory and

cd \**JorvikDev**

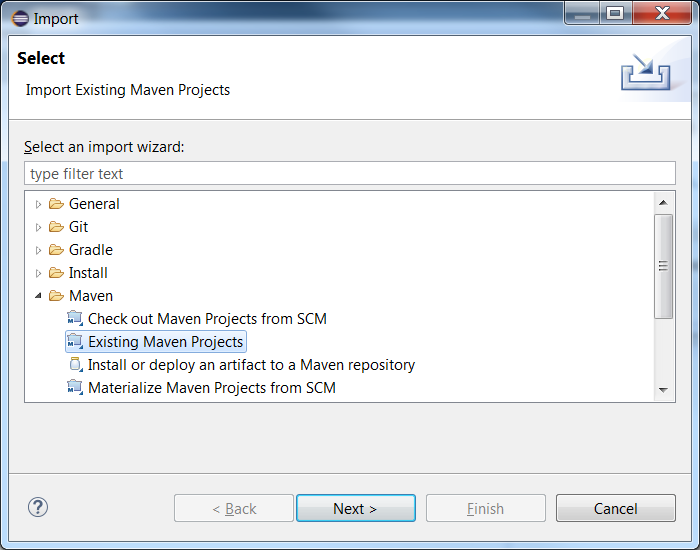
Issue the git clone command

**git clone** [**https://github.com/KevinMayfield/Jorvik.git**](https://github.com/KevinMayfield/Jorvik.git)

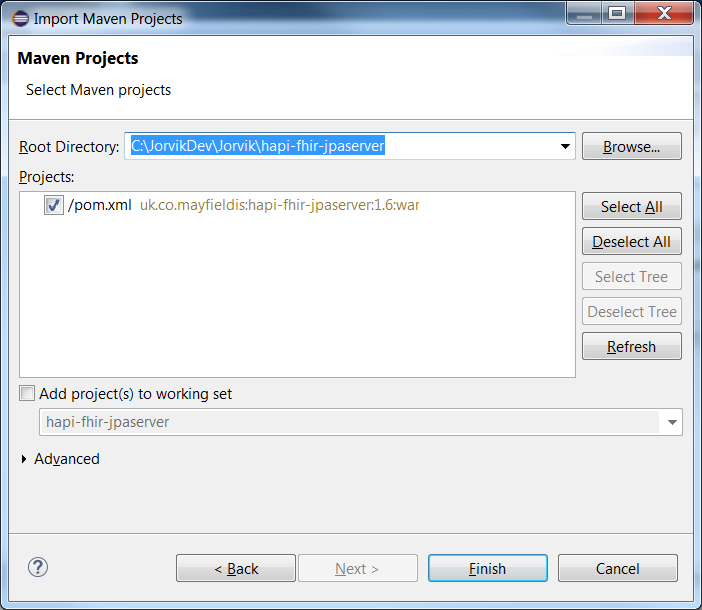


### Import Project into Eclipse

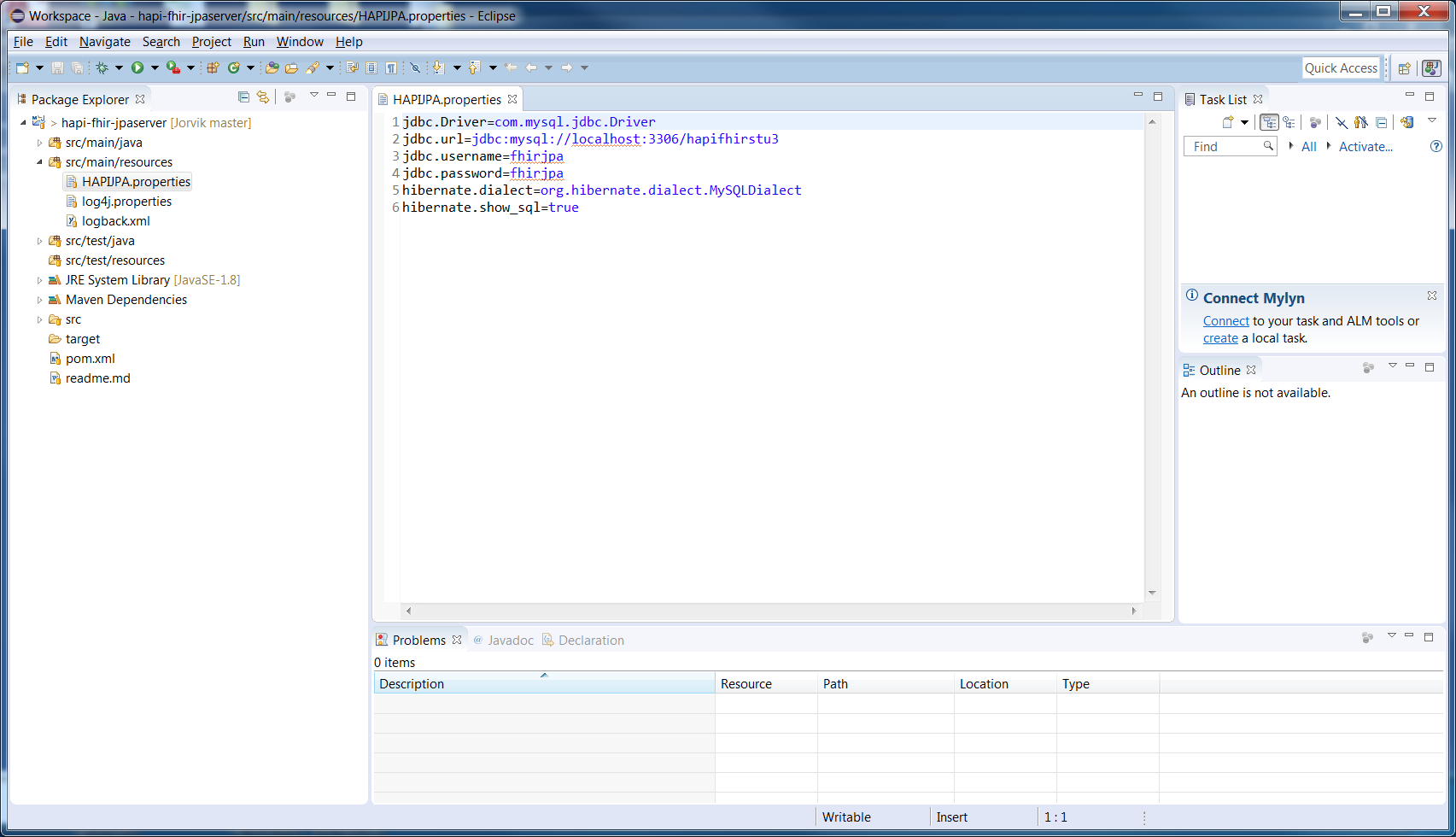
From the File menu of eclipse select import. Then locate ‘Existing Maven Projects’ wizard



Browse to the hapi-fhir-jpaserver project, if you followed the instruction above this would be in C:\JorvikDev\Jorvik\hapi-fhir-jpaserver



After a short while the project should have been imported into the IDE and it should look like:



I’ve opened up the HAPIJPA.properties file this is where the database configuration is stored. This configuration expects MYSql to be installed on your local machine running on port **3306**. The MYSql server also has a database called **hapifhirstu3** with a user called **fhirjpa**

HAPI uses hibernate to communicate with database. List of supported databases can be found here <https://developer.jboss.org/wiki/SupportedDatabases2>

### Java Development Kit 1.8 (JDK 1.8)

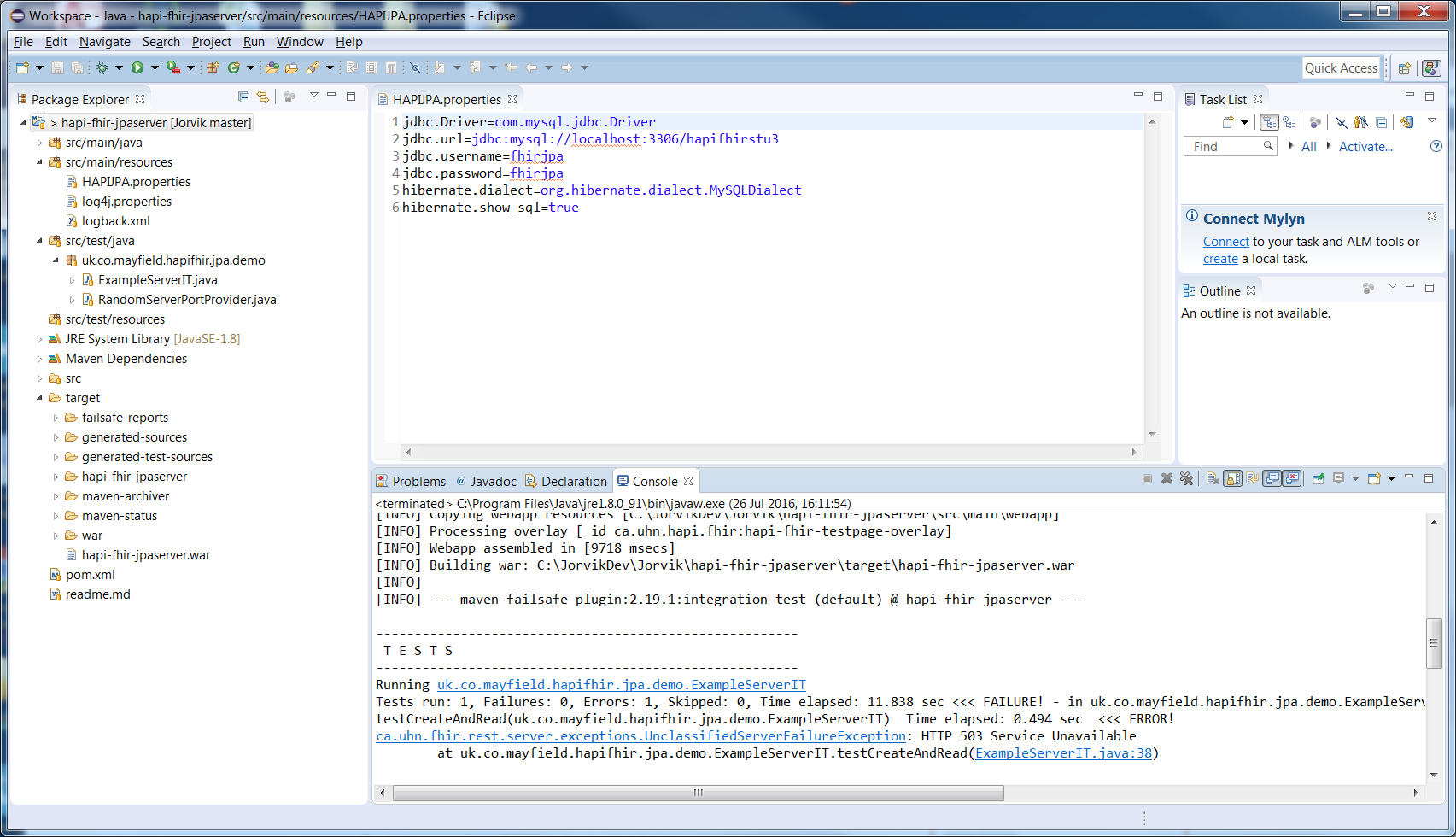
Before we can build the HAPI war we need to install a 1.8 JDK. This can be downloaded from <http://www.oracle.com/technetwork/java/javase/downloads/jdk8-downloads-2133151.html>

Eclipse setup can be found here <http://stackoverflow.com/questions/13635563/setting-jdk-in-eclipse>

### Build HAPI War

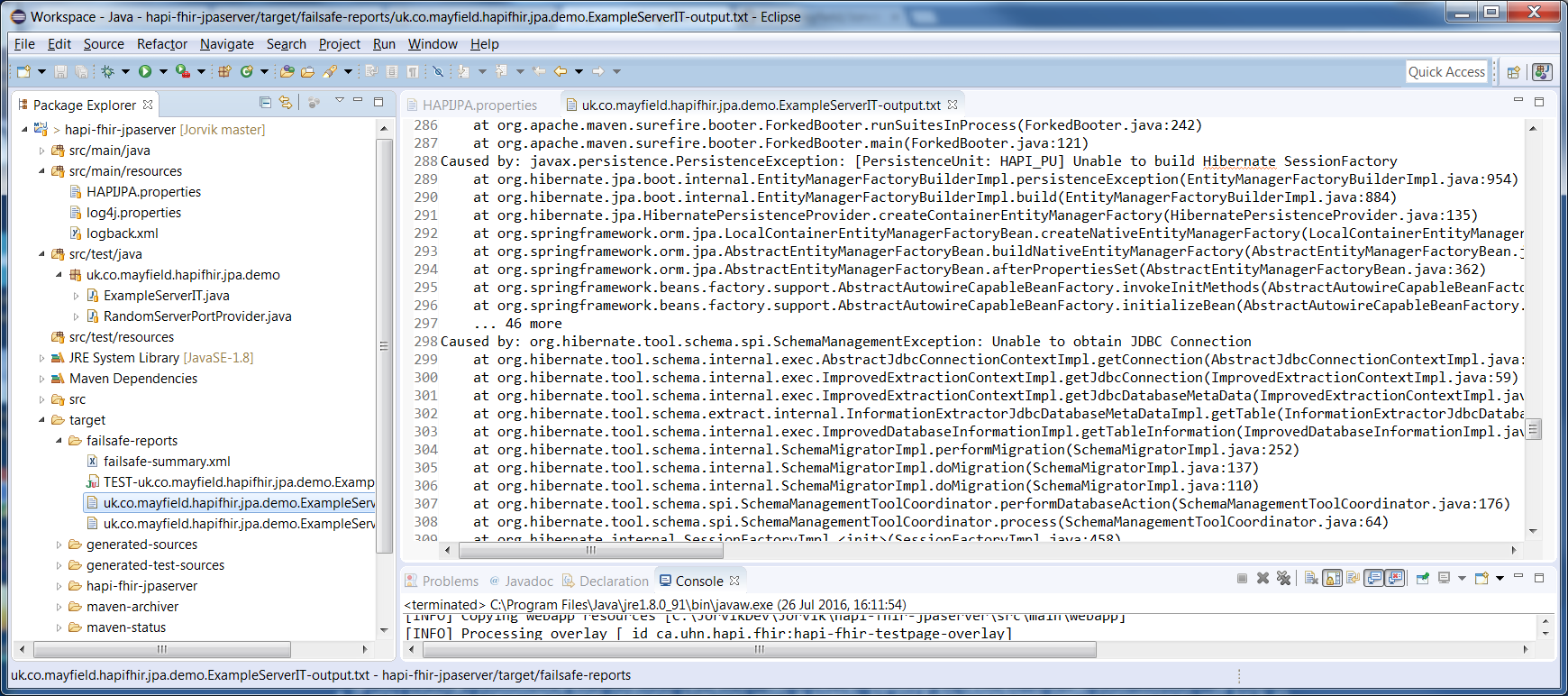
Right click on the project (hapi-fhir-jpaserver). Select **Run As->Maven Install**

This will compile the project and run tests against the build.



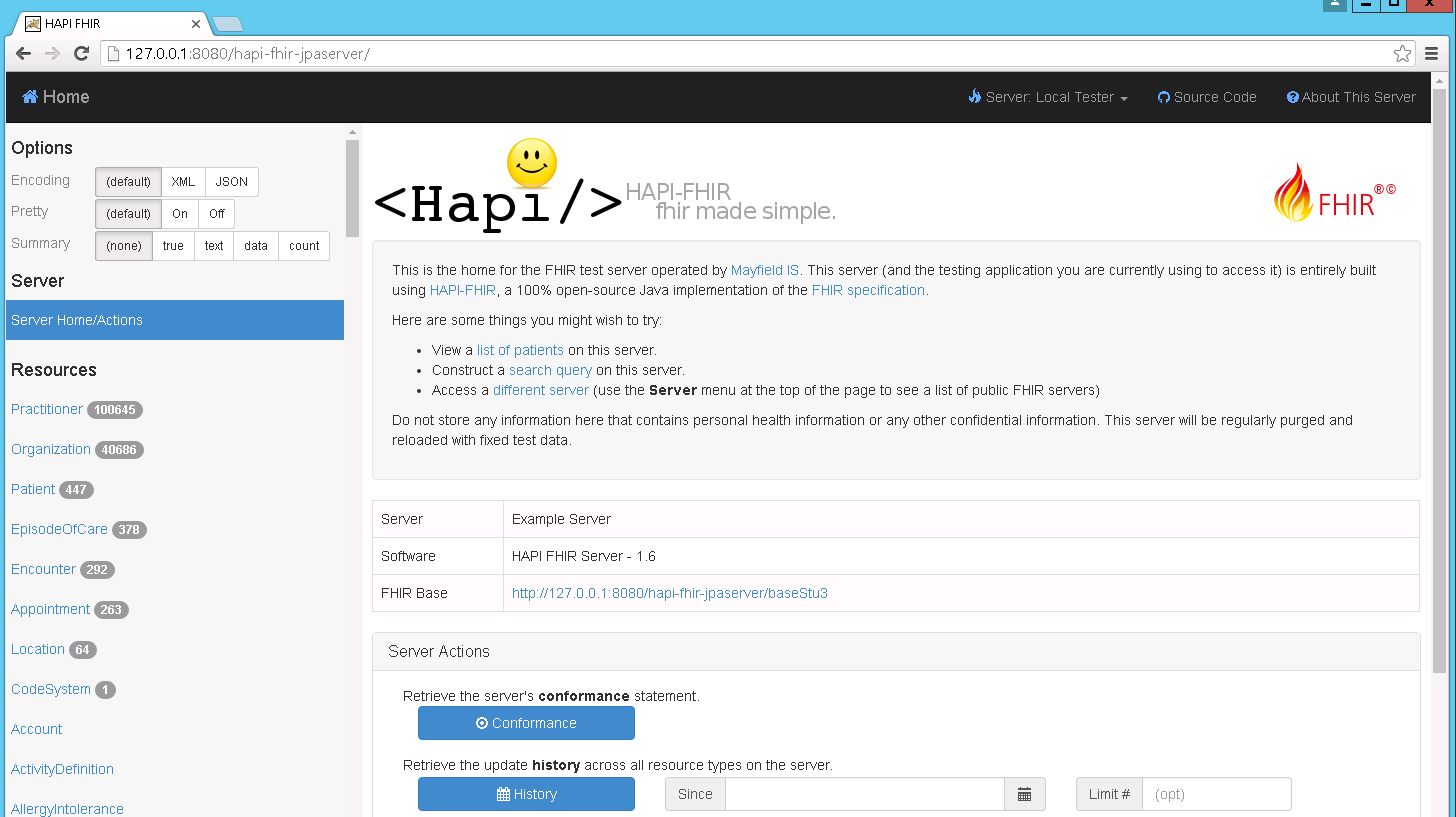
The tests didn’t work in the example above (note the 503 error) but it did produce the war file (look under target folder on the left).

To view the error reports look under the target->failsafe-reports folder. The output can be a little daunting but hunting through shows the tests failed to get a database connection (Unable to obtain JDBC connection), this was because the database server wasn’t started.



(Assuming the database server has been started)

The war file can now be deployed to a tomcat server (see tomcat tutorial) and the HAPI server will be operational.



## Other Apps

### Apache ActiveMQ

To load other apps is similar but as we’ve done the complex work, a lot easier.

From the eclipse File menu, select Import again but this time choose the ActiveMQ-Jorvik folder (C:\JorvikDev\Jorvik\ActiveMQ-Jorvik)

Right click on the project and select **Run As->Maven Install**

This installs an embedded version of Apache ActiveMQ, which is used by the other projects. Deploy the compiled war to Apache Tomcat app.

### NHS SDS UPLOAD

Next compile SDS-HAPI webapp. When deployed to the tomcat server it will automatically load the latest gp and practice amendments into the hapi server (this runs every 24hours).

To process other files, browse to <http://systems.hscic.gov.uk/data/ods/datadownloads/index> , download and extract

|  |  |
| --- | --- |
| NHS Trusts | Etr.csv |
| Clinical Commission Groups | Eccg.csv |
| NHS Trust Sites | Ets.csv |
| GP Practices | Egppraccur.csv |
| English Hospital Consultants | Econcur.csv |
| GP Practitioners | Egcur.csv |

The extracted CSV files need to be placed into the **C:\NHSSDS\extract** folder on your tomcat machine. Load in the files in pairs starting with

* NHS Trusts and CCG’s
* Practices and NHS Trust Sites
* Consultants and Practitioners

The reason for the load order is each pair of files refers to the previous set. *This may take a while to complete.*

### HL7v2 ITK

If you have an existing HL7 v2 feed from your TIE (or PAS) you can use this to feed your HAPI server. This is a easy to use HAPI to provide a FHIR server for your organisation. The feed must be in NHS ITK HL7 format (pipe and hat not xml) <https://isd.hscic.gov.uk/trud3/user/guest/group/41/pack/34/subpack/200/releases>

The app can be found in the HL7v2-HAPI folder, compile as previously described. The webapp expects a TCP feed on port 8888 – it also uses the original version of HAPI which is used to process the HL7v2 messages.

## TERMINOLOGY SERVER

### SNOMED CT

To import SNOMED CT (RF2) HAPI needs to be configured as a terminology server. This is done by adding a Terminology Provider to your JPAServer configuration e.g.

registerProvider(myAppCtx.getBean(TerminologyUploaderProviderDstu3.class));

(See line 146 in <https://github.com/KevinMayfield/Jorvik/blob/master/hapi-fhir-jpaserver/src/main/java/uk/co/mayfieldis/hapifhir/jpa/demo/JpaServerDemo.java>)

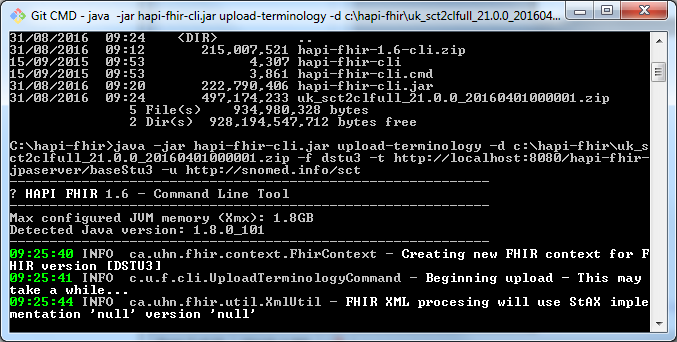
The upload is run by the hapi command line tools. Instructions for downloading can be found here <http://hapifhir.io/doc_cli.html>

In the UK(/England) the UK SNOMED CT Clinical Edition (RF2) can be found on TRUD

<https://isd.hscic.gov.uk/trud3/user/guest/group/0/pack/1/subpack/102/releases>

You may need to both register and subscribe to TRUD to get access to the download. Place the downloaded zip file in a suitable location. (The import was tested against SNOMEDCT2\_21.0.0\_20160401000001 dated 1st April 2016).

|  |
| --- |
| To run the import execute the following command at a command prompt  ***java -jar hapi-fhir-cli.jar upload-terminology -d c:\hapi-fhir\uk\_sct2clfull\_21.0.0\_20160401000001.zip -f dstu3 -t http://localhost:8080/hapi-fhir-jpaserver/baseStu3 -u*** [***http://snomed.info/sct***](http://snomed.info/sct)  -t parameter is the base url of your HAPI server  -d is the full path of your SNOMED CT RF2 zipfile |



The import will take a while and will continue processing after the cli tool has finished. [The CLI tool finishes after it has loaded the data to the HAPI Server, the server then adds the data to the database]. On SQL Server the database load can be checked by running this query:

*Select count(\*) from dbo.TRM\_CONCEPT*

Syntax on other SQL systems should be similar.

Test the load has worked by executing the following query

<http://127.0.0.1:8080/hapi-fhir-jpaserver/baseStu3/CodeSystem/$lookup?system=http://snomed.info/sct&code=209629006>

This should return

{

"resourceType":"Parameters",

"parameter":[

{

"name":"name",

"valueString":"Unknown"

},

{

"name":"display",

"valueString":"Complete tear, knee, anterior cruciate ligament (disorder)"

},

{

"name":"abstract",

"valueBoolean":false

}

]

}

### Upload FHIR Conformance Resources (StructureDefinitions and ValuesSets)

|  |
| --- |
| ***java -jar hapi-fhir-cli.jar upload-definitions -t*** [***http://localhost:8080/hapi-fhir-jpaserver/baseStu3***](http://localhost:8080/hapi-fhir-jpaserver/baseStu3) |

### UK / NHS ITK ValueSets Upload

To upload these valuesets firstly subscribe and download the ‘**Interoperability Specifications Reference Pack**’ pack from TRUD <https://isd.hscic.gov.uk/trud3/user/authenticated/group/0/pack/1/subpack/241/releases>

The vocabulary files are located in

|  |
| --- |
| .\Interoperability Specifications Reference Pack\Vocabulary\HL7v3\XML  .\Interoperability Specifications Reference Pack\Vocabulary\HL7v2\XML  .\Interoperability Specifications Reference Pack\Vocabulary\SNOMED\XML |

These XML files need to be placed into your upload folder (default is **C:\NHSSDS\vocab\In**)

Files that can be processed ok will be loaded into the HAPI FHIR Terminology Server, non UK files will go into **C:\NHSSDS\vocab\Out\NotUK** and superseded (old versions) **C:\NHSSDS\vocab\Out\Superseded**

The upload calculates the ValueSet name and id based on the name and id of the vocabulary. If the id (actually an OID) is a UK HL7v2 OID it will precede the name with **nhsitk-v2**, other UK OID’s will be preceded by **nhsitk-v3** and if a number is detected it is presumed to be a SNOMED code and the name will be preceded by **nhsitk-sct.**

**To retrieve a full ValueSet / CodeSystems you would use**

<http://127.0.0.1:8080/hapi-fhir-jpaserver/baseStu3/ValueSet/nhsitk-sct-document-type>

<http://127.0.0.1:8080/hapi-fhir-jpaserver/baseStu3/CodeSystem/nhsitk-v2-hospitalservice>

<http://127.0.0.1:8080/hapi-fhir-jpaserver/baseStu3/ValueSet/nhsitk-v3-documentconsentsnct>

**To query a CodeSystem**

Retrieve the description of code J ethnic group: <http://127.0.0.1:8080/hapi-fhir-jpaserver/baseStu3/CodeSystem/$lookup?system=http://west.riding.nhs.uk/fhir/nhsitk-v3-ethnicity&code=J>

Retrieve the description of code 1037 religious group in HL7v3: <http://127.0.0.1:8080/hapi-fhir-jpaserver/baseStu3/CodeSystem/$lookup?system=http://west.riding.nhs.uk/fhir/nhsitk-v3-ReligiousAffiliation&code=1037>

Retrieve the description of code H2 religious group in HL7v2: <http://127.0.0.1:8080/hapi-fhir-jpaserver/baseStu3/CodeSystem/$lookup?system=http://west.riding.nhs.uk/fhir/nhsitk-v2-Religion&code=H2>