

Installing and Running the Public Version of MetaMap

Willie Rogers

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Contents

1	Introduction	2
2	Prerequisites	2
2.1	MetaMap Terms and Conditions and UMLS License	2
2.2	Platform Prerequisites	2
2.3	Space Requirements	2
3	Getting the distribution	2
4	Extracting the distribution	2
5	Install	3
5.1	Step 1	3
5.2	Step 2	3
6	Starting MetaMap	5
6.1	Starting the MetaMap Servers	5
6.2	Stopping the servers	5
6.3	Determining whether the servers are running	5
6.4	Invoking MetaMap	6
7	Datafile Builder	6
8	Questions	6
9	Using MetaMap	6

1 Introduction

MetaMap is a highly configurable program that maps biomedical text to concepts in the UMLS Metathesaurus¹. This guide is designed to help install MetaMap on the Linux operating system.

2 Prerequisites

2.1 MetaMap Terms and Conditions and UMLS License

Important: Users are responsible for compliance with the MetaMap Terms and Conditions <http://metamap.nlm.nih.gov/MMTnCs.shtml>.

To use this application, you must have signed the UMLS agreement <http://wwwcf.nlm.nih.gov/umlslicense/snomed/license.cfm>. The UMLS agreement requires those who use the UMLS <http://www.nlm.nih.gov/research/umls/> to file a brief report once a year to summarize their use of the UMLS. It also requires the acknowledgment that the UMLS contains copyrighted material and that those copyright restrictions be respected. The UMLS agreement requires users to agree to obtain agreements for EACH copyrighted source prior to its use within a commercial or production application.

To download MetaMap, you must have access to an UTS account. For information on how to acquire an UTS account, please see the UMLS Terminology Services Page <http://uts.nlm.nih.gov/>.

2.2 Platform Prerequisites

Sun Java Runtime Environment (JRE) Oracle/Sun's Java 1.6 or later is required for use of the SKR-MedPost Part-of-Speech (POS) Tagger Server which is required to use MetaMap and the Word Sense Disambiguation (WSD) Server which is necessary to use the WSD option when running MetaMap. The JRE is available from <http://java.com/>.

2.3 Space Requirements

MetaMap requires a minimum of 8GB of space to run.

3 Getting the distribution

The public distribution can be downloaded at:

<http://metamap.nlm.nih.gov/>

4 Extracting the distribution

Use the following `tar` command extract the distribution:

```
% tar xvfj public_mm_{os}_{year}.tar.bz2
```

Tar will create the distribution directory `public_mm`.

¹MetaMap: Mapping Text to the UMLS Metathesaurus, July 2006, <http://skr.nlm.nih.gov/papers/references/metamap06.pdf>

5 Install

5.1 Step 1

To begin the initial install, go to the directory created when you extracted the distribution (`public_mm`). You can speed up the process by telling the install program where your java installation is by setting the environment variable `JAVA_HOME` to the Java installation directory. If you don't set the variable the program will prompt you for the information.

To find out where your java installation is located type of the command line:

```
% which java
```

To set the environment variable `JAVA_HOME`:

If the command: `which java` returns `/usr/local/jre1.4.2/bin/java`, then `JAVA_HOME` should be set to `/usr/local/jre1.4.2/`.

For example:

```
# in C Shell (csh or tcsh)
setenv JAVA_HOME /usr/local/jre1.4.2
```

```
# in Bourne Again Shell (bash)
export JAVA_HOME=/usr/local/jre1.4.2
```

```
# Bourne Shell (sh)
JAVA_HOME=/usr/local/jre1.4.2
export JAVA_HOME
```

You also need to add the `public_mm/bin` directory to your program path:

```
# in C Shell (csh or tcsh)
set path = ( $path <public_mm's parent dir>/public_mm/bin )
```

```
# in Bourne Again Shell (bash)
export PATH=$PATH:<public_mm's parent dir>/public_mm/bin
```

```
# Bourne Shell (sh)
PATH=$PATH:<public_mm's parent dir>/public_mm/bin
export PATH
```

5.2 Step 2

Run the installation script as follows:

```
% cd public_mm
% ./bin/install.sh
```

An example of a successful installation looks as follows:

```
$ cd /nfsvol/nlsaux15/public_mm
$ bin/install.sh
1
1
Enter basedir of installation [/nfsvol/nlsaux15/public_mm]
```

Basedir is set to /nfsvol/nlsaux15/public_mm.

The WSD Server requires Sun's Java Runtime Environment (JRE);
Sun's Java Developer Kit (JDK) will work as well. if the
command: "which" java returns /usr/local/jre1.4.2/bin/java, then the
JRE resides in /usr/local/jre1.4.2/.

Where does your distribution of Sun's JRE reside?
Enter home path of JRE (JDK) [/usr/local/jdk1.6.0_11]:

Using /usr/local/jdk1.6.0_11 for JAVA_HOME.

```
/nfsvol/nlsaux15/public_mm/WSD_Server/config/disambServer.cfg generated
/nfsvol/nlsaux15/public_mm/WSD_Server/config/log4j.properties generated
Setting up bin directory scripts:
/nfsvol/nlsaux15/public_mm/bin/BuildDataFiles generated.
/nfsvol/nlsaux15/public_mm/bin/builddatafiles.sh generated.
/nfsvol/nlsaux15/public_mm/bin/dfbuilder.profile generated.
/nfsvol/nlsaux15/public_mm/bin/filter_mrconso generated.
/nfsvol/nlsaux15/public_mm/bin/form_opt generated.
/nfsvol/nlsaux15/public_mm/bin/linkSICStus generated.
/nfsvol/nlsaux15/public_mm/bin/LoadDataFiles generated.
/nfsvol/nlsaux15/public_mm/bin/loaddatafiles.sh generated.
/nfsvol/nlsaux15/public_mm/bin/make_all generated.
/nfsvol/nlsaux15/public_mm/bin/metamap{version} generated.
/nfsvol/nlsaux15/public_mm/bin/metamap20{version}.TEMPLATE generated.
/nfsvol/nlsaux15/public_mm/bin/mmserver{version} generated.
/nfsvol/nlsaux15/public_mm/bin/rundatafiles.sh generated.
/nfsvol/nlsaux15/public_mm/bin/SKRenv.{version} generated.
/nfsvol/nlsaux15/public_mm/bin/skrmedpostctl generated.
/nfsvol/nlsaux15/public_mm/bin/SKRrun.{version} generated.
/nfsvol/nlsaux15/public_mm/bin/testapi.sh generated.
/nfsvol/nlsaux15/public_mm/bin/wsdserverctl generated.
Setting up test suite:
/nfsvol/nlsaux15/public_mm/TestSuite/runTest_2011.sh generated.
Checking for required datafiles
Checking for optional datafiles (WSD)
Public MetaMap Install complete.
Public MetaMap Install Settings:
```

```
Public MetaMap basedir: /nfsvol/nlsaux15/public_mm
Public MetaMap Program Dir: /nfsvol/nlsaux15/public_mm/bin
```

```
Java Home dir: /usr/local/jdk1.6.0_11
```

```
$
```

6 Starting MetaMap

MetaMap requires the starting of two servers, The Part-of-Speech Tagger and Word Sense Disambiguation (WSD) Servers. They can be started and stopped as follows:

6.1 Starting the MetaMap Servers

Before running MetaMap you need to start the Tagger and WSD servers. Both servers will automatically run in the background when started.

1. The SKR/Medpost Part-of-Speech Tagger Server

```
% ./bin/skrmedpostctl start
```

2. Word Sense Disambiguation (WSD) Server (optional)

```
% ./bin/wsdserverctl start
```

6.2 Stopping the servers

You can stop the each server by invoking the corresponding script with the **stop** parameter:

1. The SKR/Medpost Part-of-Speech Tagger Server

```
% ./bin/skrmedpostctl stop
```

2. Word Sense Disambiguation (WSD) Server (optional)

```
% ./bin/wsdserverctl stop
```

6.3 Determining whether the servers are running

You can determine if the server are running by the command:

```
% ps ax | grep java
```

The output should look something like this:

```
16105 pts/0    S1      0:00 /usr/local/jdk1.6.0_01/bin/java -Xmx2g -Dserver.config...
16158 pts/0    R+      0:00 grep java
21914 pts/0    S1      0:02 /usr/bin/gij -Djava.version=1.4.2 -Djava.home=/usr/lib/...
%
```

6.4 Invoking MetaMap

If there are no errors starting the WSD and Tagger servers then MetaMap can be run as follows:

```
% ./bin/metamap{version}
```

```
#- If you're using the pre-release version of MetaMap use the following command:
```

```
#- ^<< #- % ./bin/metamap{version} -L 11 -Z 10 #- ^>>
```

MetaMap has a plethora of options that are explained elsewhere.²

7 Datafile Builder

For users who wish to use their own datasets with MetaMap, a datafile builder suite is now available. Go to the MetaMap Web Site (<http://metamap.nlm.nih.gov/>) for more information.

8 Questions

If you have problems then send email to metamap@nlm.nih.gov.

9 Using MetaMap

For more information on running MetaMap and its many options, please see these references:

1. MetaMap Readme for Linux, http://metamap.nlm.nih.gov/MM09_Readme.shtml
2. MetaMap 2009 Usage, http://metamap.nlm.nih.gov/MM09_Usage.shtml
3. Effective Mapping of Biomedical Text to the UMLS Metathesaurus: The MetaMap Program, 2001, http://skr.nlm.nih.gov/papers/references/metamap_01AMIA.pdf
4. MetaMap: Mapping Text to the UMLS Metathesaurus, July 2006, <http://skr.nlm.nih.gov/papers/references/metamap06.pdf>
5. MetaMap Options and Examples, September 2006, http://skr.nlm.nih.gov/papers/references/MetaMap_Examples_06.pdf

²MetaMap 2009 Usage, http://metamap.nlm.nih.gov/MM09_Usage.shtml