

# 5 - Installing LexEVS 6.x Distributed

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## Introduction

The remote method invocation service of LexEVS (Distributed LexEVS) is being sunsetted. NIH/NCI no longer hosts this externally. If you choose to install this for your own service be aware that it will be deprecated in the near future. This section provides requirements, instructions, and troubleshooting information for installing the LexEVS Distributed environment.

## Preliminary Considerations

- The [Supported Platforms](#) are the same for this environment as they are for the Local Runtime.
- Before installing the LexEVS Distributed environment you must have a [LexEVS Local Runtime](#) installed and working.
- It is not required that you load a terminology into the Local Runtime in order to complete the installation of the Distributed environment. However, using the APIs in the Distributed environment requires that a terminology be loaded into the Local Runtime.
- The Distributed environment has additional [Prerequisite software](#) beyond the Local Runtime. The additional web application server does not have install steps given in this guide. The web application server can be on the same server or a different server from the Local Runtime.
- Complete the [#Downloading and Installing LexEVS Distributed](#) steps below.

Once you have completed the additional prerequisite software install, the Distributed environment install steps, and the verification test as described in this guide then you should be ready to start using the Distributed features to meet the needs of your application. Not counting prerequisite software products the installation and verification should not take more than 30 minutes.

## Downloading and Installing LexEVS Distributed

Step	Action
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1. Download the latest version of the LexEVS Distributed WAR file from the right. You have a choice between WAR files tailored for JBoss or Apache Tomcat installations. The location you have chosen to save this on your computer will be referred to as the `SAVE_DIRECTORY`. Our command examples will use `scratch` as this directory.

#### **LexEVS Distributed**

Includes the Java runtime and dependencies, the Java distributed API, and the caCORE SDK-generated services. This can be deployed to an Apache Tomcat or JBoss container.

[lexevsapi60.tomcat.war](#),  
[lexevsapi60.jboss.war](#)



#### **Note**

Access to the downloads does not require an account. If you are having trouble downloading files then you may need to disable pop-up blockers or check any firewall settings at your site.

2. Shut down your application or servlet container. This presumes that you have already installed a web server as outlined in the [LexEVS 6.x Prerequisite Software Supported to Include](#). The command to do the shut down will be web server specific. See the documentation for your web server for information on how to do this. There may be many alternatives. JBoss example:

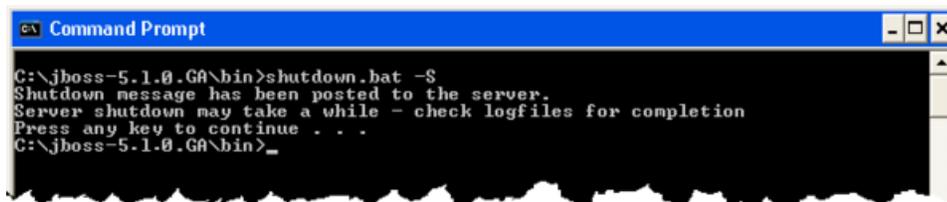
- Windows:

```
shutdown.  
bat -S
```

- Unix:

```
./shutdown.  
sh -S
```

If you experience Java errors then the server may already be down.



```
Command Prompt  
C:\jboss-5.1.0.GA\bin>shutdown.bat -S  
Shutdown message has been posted to the server.  
Server shutdown may take a while - check logfiles for completion  
Press any key to continue . . .  
C:\jboss-5.1.0.GA\bin>
```

3. Rename the WAR file. These files are distributed with an application server designation in their name for clarity while downloading them. Change to the `SAVE_DIRECTORY` and rename the file, like this:

```
rename  
{SAVE_DIRECTORY}/lexevsapi6.  
5.  
{WEB_SERVER}.  
war  
{SAVE_DIRECTORY}  
/lexevsapi65.  
war
```

JBoss example:



```
Command Prompt  
C:\scratch>rename c:\scratch\lexevsapi60.jboss.war lexevsapi60.war  
C:\scratch>
```

- Windows:

```
rename c:\scratch\lexevsapi65.jboss.war  
lexevsapi65.war
```

- Unix:

```
move /scratch/lexevsapi65.jboss.war  
lexevsapi65.war
```



**Note**

Consider other names as well. Many application servers use the deployed name as part of the URL, so if you would rather it be a different name then you should rename the WAR file to that.

4. Copy the WAR file to the appropriate web application server directory, like this:

```
copy
{SAVE_DIRECTORY}
\lexevsapi65.
war
{WEB_SERVER_HOME}\
{DEPLOYMENT_HOME}
```

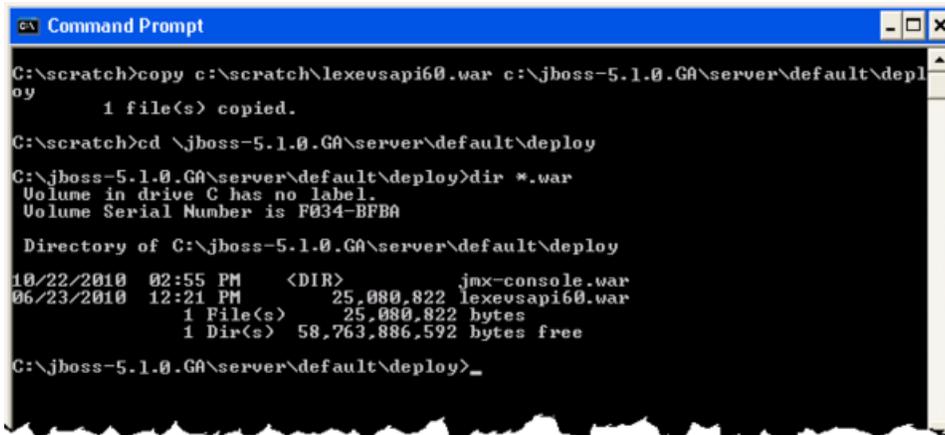
...where SAVE\_DIRECTORY is the location of the downloaded file. WEB\_SERVER is the brand of the web server. WEB\_SERVER\_HOME is your application server home directory. DEPLOYMENT\_HOME is the Web Archive deployment directory for your application server. JBoss example:

- Windows:

```
copy c:\scratch\lexevsapi65.war c:\jboss-5.1.0.GA\server\default\deploy
```

Unix:

```
copy /scratch/lexevsapi65.war /jboss-4.0.5.GA/server/default/deploy
```



```
Command Prompt
C:\scratch>copy c:\scratch\lexevsapi65.war c:\jboss-5.1.0.GA\server\default\deploy
1 file(s) copied.
C:\scratch>cd \jboss-5.1.0.GA\server\default\deploy
C:\jboss-5.1.0.GA\server\default\deploy>dir *.war
Volume in drive C has no label.
Volume Serial Number is F034-BFBA

Directory of C:\jboss-5.1.0.GA\server\default\deploy

10/22/2010  02:55 PM    <DIR>                jmx-console.war
06/23/2010  12:21 PM             25,080,822 lexevsapi65.war
               1 File(s)           25,080,822 bytes
               1 Dir(s)   58,763,886,592 bytes free
C:\jboss-5.1.0.GA\server\default\deploy>_
```

5. Create a text file named `lexevs.properties` in the `WEB_SERVER_CLASSPATH` to set the location of the LexEVS configuration. The `WEB_SERVER_CLASSPATH` is a location along the class path for your web application server. This whole path including the file name will be called `LEXEVS_PROPERTIES_HOME` for the rest of these instructions.

- JBoss example:
  - Windows:

```
c:\jboss-5.1.0.GA\server\default\conf\lexevs.properties
```

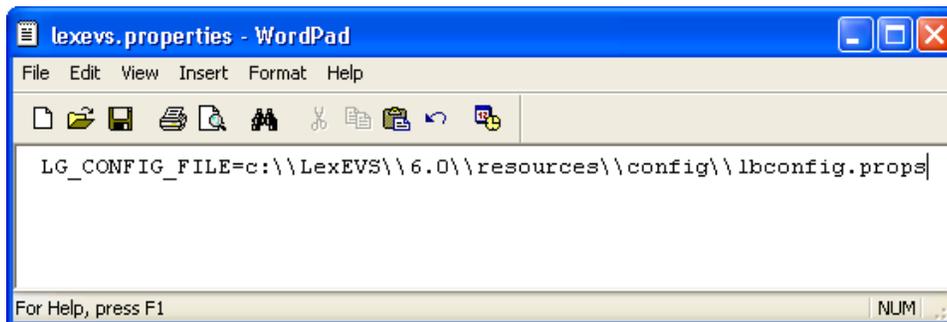
- Unix:

```
/jboss-5.1.0.GA/server/default/conf/lexevs.properties
```

- Set `LG_CONFIG_FILE` to the path of the `lbconfig.props` file of your LexEVS installation like this:

```
LG_CONFIG_FILE={LEXEVS_HOME}\resources\config\lbconfig.props
```

...where `LexEVS_HOME` is the install directory of LexVES.



- Copy/paste the examples below as a starting point for this file:
  - Windows:

```
LG_CONF
IG_FILE
=c:
\\LexEV
S\\6.
5\\reso
urces\\
config\\
\\lbconf
ig.
props
```



**Note**

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o Unix:

```
LG_CONF
IG_FILE
=
/LexEVS
/6.5
/resour
ces
/config
/lbconf
ig.
props
```

6. (OPTIONAL) The `lexevs.properties` file is also used to add security for any coding scheme. This is not a highly used function, but may be required if your service is publicly hosting a proprietary terminology. For each coding scheme a security implementation class name can be set to enable security like this:

```
{CODING_SCHEME
_NAME }=
{SECURITY_IMPL
EMENTATION }
```

...where `CODING_SCHEME_NAME` is the name or URI of the terminology. `SECURITY_IMPLEMENTATION` is a class that implements the interface `gov.nih.nci.system.dao.security.DAOSecurity`. For all ways of accessing the coding scheme, security must be set up. The example at the right shows access by **Name, URI, and Formal Name**, but others are possible too. Note: Coding schemes can be added or changed later after a coding scheme or terminology is loaded into LexEVS.

```
MedDRA=gov.nih.nci.system.dao.security.MedDRASecurity
urn\oid\:2\.16\.840\.1\.113883\.6\.163=gov.nih.nci.system.dao.security.MedDRASecurity
Medical\ Dictionary\ for\ Regulatory\ Activities\ Terminology\ \ (MedDRA\)=gov.nih.nci.system.
dao.security.MedDRASecurity
```

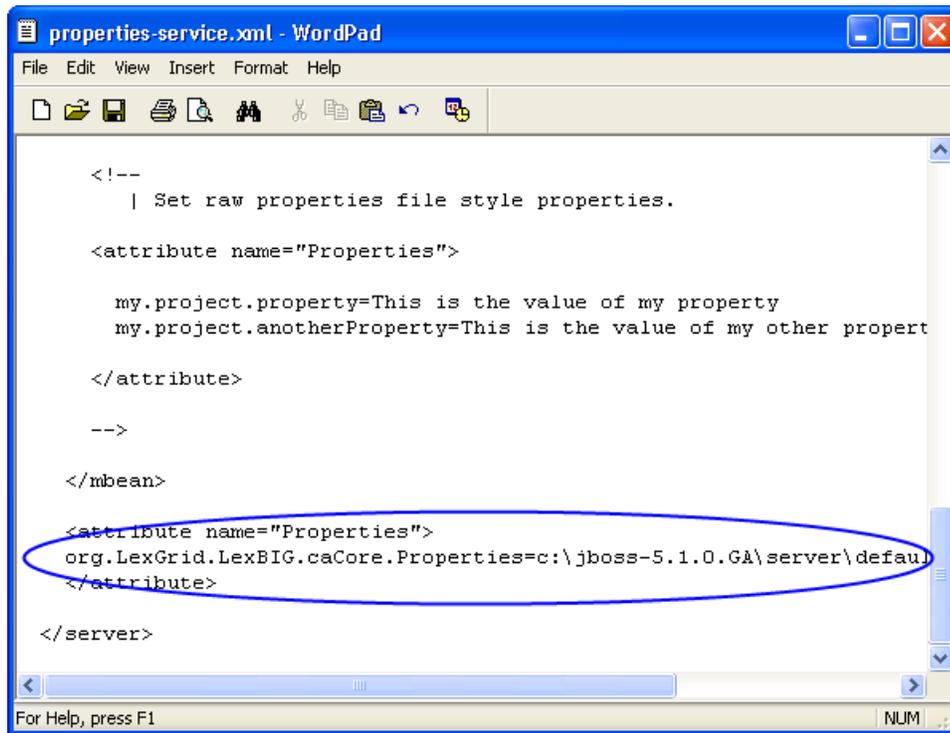
7. Adjust the properties-service.xml file. This file is likely to be found in the WEB\_SERVER\_HOME DEPLOYMENT\_HOME directory but may be different for some servers.

- JBoss example:
  - Windows:

```
c:\jboss-5.1.0.GA\server\default\deployment\properties-service.xml
```

- Unix:

```
/jboss-5.1.0.GA/server/default/deployment/properties-service.xml
```



- Add a line to the file in the "System Properties Service" section where other properties are set like this:

```
<attribute
name="
Properties
">org.
LexGrid.
LexBIG.
caCore.
Properties
=
{LEXEVS_PR
OPERTIES_H
OME}<
/attribute
>
```

...where LEXEVS\_PROPERTIES\_HOME is the location and file name of lexevs.properties established in a previous step.

- In Tomcat place the file in the /webapps/lexevsapi65/WEB-INF/classes directory. Edit the catalina.sh file in <tomcat root>/bin/adding to the JAVA\_OPTS -Xmx1052m -XX:MaxPermSize=256m" ...so that this line in catalina.sh::

```
JAVA_OPTS=
"$JAVA_OPTS
-Djava.
util.
logging.
manager=org.
apache.
juli.
ClassLoader
LogManager"
```

Should look like this:

```
JAVA_OPTS=
"$JAVA_OPTS
-Djava.
util.
logging.
manager=org.
apache.
juli.
ClassLoader
LogManager \-
Xmx1052m
\ -XX:
MaxPermSize=256m"
```

- JBoss example:

```
<attribute
name="
Properties
">
org.
LexGrid.
LexBIG.
caCore.
Properties
=
{LEXEVS_PR
OPERTIES_H
OME}
<
/attribute
>
```

...is added to this file between the <mbean> tags. The back slash escape character is NOT required for LEXEVS\_PROPERTIES\_HOME.



**Note**

In some server installations you may not have authority to modify this file. In that case you can simply move thelexevs.properties file somewhere on the web application servers class path.

## Testing LexEVS Distributed

Step	Action
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1. Start your application or servlet container if it is not already started. The start command will be web server specific. See the documentation for your web server for information on how to do this.

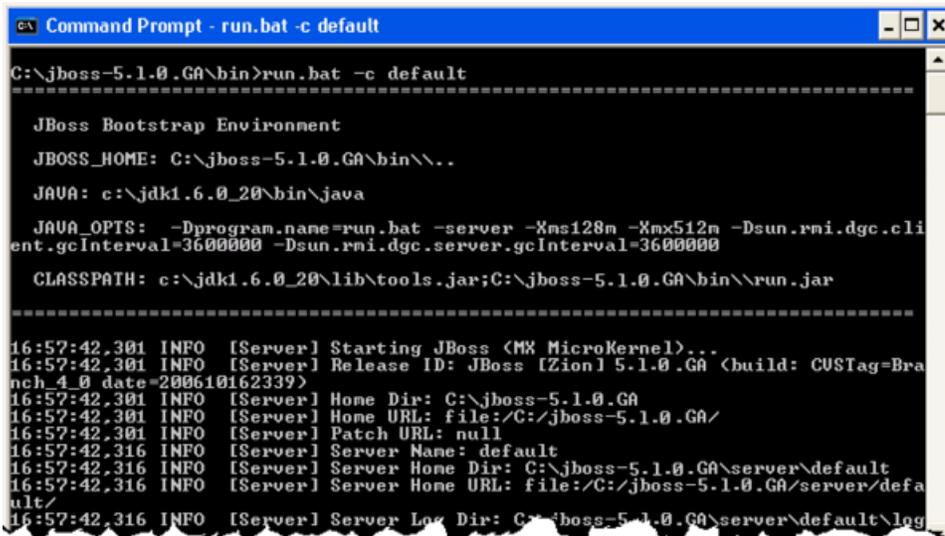
JBoss example:

- Windows:

```
Run.  
bat  
\-c  
defau  
lt
```

- Unix:

```
./Run.  
sh \  
-c  
defau  
lt
```



```
c:\ Command Prompt - run.bat -c default  
C:\jboss-5.1.0.GA\bin>run.bat -c default  
=====
```

JBoss Bootstrap Environment

```
JBOSS_HOME: C:\jboss-5.1.0.GA\bin\..  
JAVA: c:\jdk1.6.0_20\bin\java  
JAVA_OPTS: -Dprogram.name=run.bat -server -Xms128m -Xmx512m -Dsun.rmi.dgc.client.gcInterval=3600000 -Dsun.rmi.dgc.server.gcInterval=3600000  
CLASSPATH: c:\jdk1.6.0_20\lib\tools.jar;C:\jboss-5.1.0.GA\bin\run.jar  
=====
```

```
16:57:42.301 INFO [Server] Starting JBoss (MX MicroKernel)...  
16:57:42.301 INFO [Server] Release ID: JBoss [Zion] 5.1.0.GA (build: CUSTag=Branch_4_0 date=200610162339)  
16:57:42.301 INFO [Server] Home Dir: C:\jboss-5.1.0.GA  
16:57:42.301 INFO [Server] Home URL: file:/C:/jboss-5.1.0.GA/  
16:57:42.301 INFO [Server] Patch URL: null  
16:57:42.316 INFO [Server] Server Name: default  
16:57:42.316 INFO [Server] Server Home Dir: C:\jboss-5.1.0.GA\server\default  
16:57:42.316 INFO [Server] Server Home URL: file:/C:/jboss-5.1.0.GA/server/default/  
16:57:42.316 INFO [Server] Server Log Dir: C:\jboss-5.1.0.GA\server\default\log
```

2. Verify the installation by opening a browser to:

```
http://  
{SERVER_  
ADDRESS}  
/  
{WAR_FIL  
E_DEPLOY  
ED}
```

...where `SERVER_ADDRESS` is the address of your server (domain and optionally the port number). `WAR_FILE_DEPLOYED` is the name of the WAR file you placed in the server directories for deployment. For example:

```
http://l  
ocalhost  
:8080  
/lexevs  
pi65
```

If you are using `localhost` then your browser must be running on the same server as LexEVS.

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**EVS Enterprise Vocabulary Services**

HOME JAVA DOCS

**WELCOME TO LexEVS** **SELECT CRITERIA**

LexEVS is a collection of programmable interfaces that provide users with the ability to access controlled terminologies supplied by the NCI Enterprise Vocabulary Services (EVS) Project. The controlled terminologies hosted by the NCI EVS Project are published via the Open-Source LexEVS Terminology Server.

The LexEVS 6.0 Release includes the following components:

- LexEVS Java API – A Java interface which provide the entry points for programmatic access to all system features and data.
- LexEVS Distributed API - The Distributed LexEVS Portion of LexEVS API. This interface is a framework for calling LexEVS API methods remotely, along with enforcing security measures.
- LexEVS caCORE SDK Services - includes:
  - REST Interface
  - SOAP Interface
  - RMI Interface - provides:
    - Query-by-Example (QBE)
    - HQL Interface
    - Hibernate Detached Criteria
    - SDK CQL
    - caGrid CQL
- LexEVS Grid Service - An interface which uses the caGRID infrastructure to provide access to LexEVS content.

References:

- [LexEVS API Forge site](#) - Contains news, information, documents, defects, feedback, and reports
- [LexEVS API Download site](#) - Contains documents, information, and downloads for LexEVS.
- [caBIG Vocabulary Knowledge Center](#) - Contains LexEVS information provided by Vocabulary Knowledge Center
- [LexEVS 6.0 Release Notes](#) - Contains the release history information, highlights New Features and Updates, Bug fixes since the last release, identifies Known Issues, and provides information on documentation and other helpful reference links.
- [caGRID Portal](#) – Link to the caGrid Portal/Browser
- [LexEVS 6.0 Data Grid Service URL](#) - URL of the LexEVS Data Grid Services
- [LexEVS 6.0 Analytical Grid Service URL](#) - URL of the LexEVS Analytical Grid Services

NOTE: This page allows users to conduct simple queries against the underlying API. Advanced level searching is NOT supported here but, is available by accessing the EVS API programmatically or by using the [NCI Term Browser](#).

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If you see the Enterprise Vocabulary Services "Welcome to LexEVS" web page then you have successfully installed the LexEVS Distributed. **Congratulations!**

## Troubleshooting

- If the Local Runtime environment is properly installed and tested then the Distributed environment should have few problems.
- If you receive deployment errors in JBoss and are unable to see the EVS home page then you may not have configured the properties attribute in JBoss's `properties-service.xml`.
- You may also need to adjust the path in `lexevs.properties` where `lbconfig.props` location is defined.
- We recommend no threading limits less than 512mb being applied when starting JBoss. (These would usually be configured as a `JAVA_OPTS` variable in a `run.conf` or similar file and would be set as follows: `-Xss512M`)
- We recommend a minimum heap size of `-Xmx750m` when starting JBoss and about 1000m per million entities loaded. (Also a `JAVA_OPTS` variable)
- We recommend a minimum Perm Gen size of 256m.