Installing and testing RWebServices and enabled packages

Martin T. Morgan*, Nianhua Li, Seth Falcon,
Robert Gentleman,

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Abstract

1 Prerequisites

1.1 Hardware

This software requires a linux operating system; Windows is NOT supported.

1.2 Software

The following software prerequisites are required. Generally, software earlier in the list are prerequisites for software later in the list. The software requirements listed here are strict (i.e., specific versions are required); expect these to relax with time.

Java 1.5.x. Follow directions at `http://java.sun.com`. Define an environment variable `JAVA_HOME` to point to the Java runtime environment home.

ant >= 1.7.0Beta2. Follow directions at `http://ant.apache.org`.

activeMQ 4.0.2. Follow directions at `http://www.activemq.org`. Define an environment variable `JMS_HOME` pointing to the activeMQ root directory.

R >= 2.5.0 Visit `http://www.r-project.org` and follow 'Manuals' and then 'R Installation and Administration' links. Alternatively use subversion (as described on the web site) to download the development version of R. Step-by-step instructions are:

1. Download `R-<vers>.tar.gz` from the site indicated above, by following the Sources link and saving the file to disk.

*Fred Hutchinson Cancer Research Center, 1100 Fairview Ave. N., PO Box 19024 Seattle, WA 98109

2. Unpack the source to a temporary location with `tar xzf R-<vers>.tar.gz`
3. Create a directory for installation and change to this directory, e.g.,

   ```
   mkdir ~/TOP_DIR/R-2.5.0
   cd ~/TOP_DIR/R-2.5.0
   ```

4. Configure to enable shared libraries (and other relevant options – read the R Installation and Administration manual for details)

   ```
   /path/to/tmpLocation/R-2.4.0/configure --enable-R-shlib
   ```

5. Make the R binary.

   ```
   make
   ```

   Ensure that the `R_HOME` environment variable is set and that your PATH environment variable includes R, using instructions at the R installation site. Ensure that R is configured to correctly identify the intended Java system. On linux, execute the command `grep JAVA $R_HOME/Makeconf`. `JAVAC` should be defined; use the command `R CMD javareconf` to re-configure `$R_HOME/Makeconf` (e.g., after correcting `JAVA_HOME` to point to the location of the JDK) without re-installing R.

SJava, TypeInfo, RWebServices These packages are all hosted on the Bioconductor web site and can be installed from within R with

```
> source("http://bioconductor.org/biocLite.R")
> biocLite("RWebServices")
```

SJava may require installation 'by hand'. If so, download the version of SJava available from http://bioconductor.org/help/bioc-views/2.7/bioc/html/SJava.html and evaluate

```
tar xzf SJava_<vers>.tar.gz
R CMD INSTALL --clean SJava_<vers>.tar.gz
```

RWebServices and TypeInfo can both be accessed via the subversion version control system, with

```
svn co https://hedgehog.fhcrc.org/bioconductor/trunk/madman/Rpacks/TypeInfo
svn co https://hedgehog.fhcrc.org/bioconductor/trunk/madman/Rpacks/RWebServices
```

and installed from source as

```
R CMD INSTALL --clean TypeInfo
R CMD INSTALL --clean RWebServices
```

(**Optional**) The following provides unit testing facilities in R

RUnit >= 0.4.14. Install RUnit from the command line, or from within an R session with

```
> source("http://bioconductor.org/biocLite.R")
> biocLite("RUnit")
```

(**Optional**) The following are required for web service deployment:

axis (optional)

Tomcat >= 5.5.20. Follow directions at http://tomcat.apache.org. Define an environment varialbe `CATALINA_HOME` pointing to the Tomcat root directory.

(**Optional**) The following are required to deploy caGrid services:

caGrid >= 1.0. Follow directions at https://gforge.nci.nih.gov/frs/?group_id=25&release_id=952.

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2 Testing RWebServices installation and data translation

1. Unpack ant scripts using the R `unpackAntScript` function, or at the command line with

   ```
   echo "library(RWebServices); unpackAntScript('~/tmp')" | R --vanilla
   ```

   where `~/tmp` is the path to a temporary directory.

2. Check basic configuration properties with

   ```
   cd ~/tmp
   ant basic-prop
   ```

   Confirm that the variables are reasonable. If the output contains a line

   ```
   [echo] sjava configuration? WARNING! please run 'ant recompile-sjava' ...
   ```

   then it is necessary to evaluate the command `ant recompile-sjava`. This command must be run with permissions identical to those used to install SJava.

3. Check R/Java conversion of native and other types with

   ```
   ant rservices-test
   ```

Test results are in the directory `test/output`; tests of some specific SJava functionality fail, but expected failure is noted in the log file and does not influence the SJava functionality used by RWebServices.

4. Remove binary files created from the test with

   ```
   ant reservices-clean
   ```

   Removing these files means that subsequent tests do not re-evaluate the basic tests.

3 More information

The vignette "Enabling packages as web services" provides guidance on how web services can be created.

Additional vignettes contain thoughts and 'lessons learned' from this project, and are not essential reading.