The DSpace Course - Upgrading from 1.4 to 1.5

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Module: Upgrading from 1.4 to 1.5

Module overview:
This module provides an introduction to upgrading DSpace from version 1.4 to 1.5. General DSpace upgrade principles are also given to assist with upgrades from earlier versions.

Module objectives:
By the end of this module you will:

1. Understand how DSpace uses version numbers.
2. Understand the upgrade path.
3. Know how to upgrade a DSpace installation from version 1.4 to 1.5
DSpace version numbers

- Major releases:
  - 1.0 → 2.0
    - Requires lots of effort! (Code, Database schema, structural changes, architecture changes)

- Minor releases:
  - 1.1 → 1.2 → 1.3 → 1.4 → 1.5
    - Requires effort (Code, database schema, structural changes)

- Sub-minor releases
  - 1.4 → 1.4.1 → 1.4.2
    - Requires a bit of effort (Code)

Major releases
Major releases (version 1.0, version 2.0) will require a lot of effort to upgrade. There will not only be changes to the code and database schema, but there will probably be architectural changes requiring some sort of migration. An upgrade of this scale will involve considerable effort and much testing.

Any local customizations you have written may be need major changes in order to work with the new API.

Minor releases
Minor releases (version 1.4, version 1.5) will require some effort to upgrade. There will be code changes, and most likely database schema changes. An upgrade of this scale will require some effort and testing.
Any local customizations you have written may need some changes in order to work with the changed API.

**Sub-minor releases**

Sub-minor releases (1.4.1 -> 1.4.2) should only require a small amount of effort to upgrade. There will be no database changes (unless they are to fix serious bugs), only code changes to fix bugs or introduce new small features.

Most local customizations you have written should continue to work unchanged.
DSpace upgrade path

- Major version
  - To upgrade to the next major version you must already be on the latest minor version (any sub-minor version)

- Minor version
  - To upgrade to the next minor version you must be running the previous minor version (any sub-minor version)

- Sub-minor version
  - To upgrade to the next sub-minor version you must be running the same minor version already

Major version
To upgrade to the next major version you must already be on the latest minor version (any sub-minor version)

Minor version
To upgrade to the next minor version you must be running the previous minor version (any sub-minor version)

Sub-minor version
To upgrade to the next sub-minor version you must be running the same minor version already
**DSpace upgrade path - examples**

- **1.3 to 1.4.2**
  - 1.3 to 1.4
  - 1.4 to 1.4.2

- **1.3.1 to 1.5**
  - 1.3.1 to 1.4
  - 1.4 to 1.5

- **1.1.1 to 1.5**
  - 1.1.1 to 1.2
  - 1.2 to 1.3
  - 1.3 to 1.4
  - 1.4 to 1.5

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**1.3 to 1.4.2**
To upgrade from 1.3 to 1.4.2 you would first have to upgrade to 1.4, and then to 1.4.2.

**1.3.1 to 1.5**
To upgrade from 1.3.1 to 1.5 you would first have to upgrade to 1.4, and then to 1.5.

**1.1.1 to 1.5**
To upgrade from 1.1.1 to 1.5 you would first have to upgrade to 1.2, then to 1.3, then to 1.4 and then to 1.5.
**Typical upgrade steps**

There are several typical upgrade steps that you will have to undertake:

- **Upgrade the code**
  - Get a new copy of the code

- **Upgrade the configuration files**
  - New features may require new configuration settings or files

- **Upgrade the database**
  - Run scripts to edit the database schema

- **Upgrade any local customisations**
  - Upgrade local changes you have made
Upgrade procedure

- **Prepare:**
  - Make a backup!
  - Perform a test upgrade on a test server
  - Test new version
  - Report bugs to DSpace

- **Perform**
  - Make a backup!
  - Perform the upgrade
  - Test new version

**Prepare**
Before starting to upgrade it is always wise to take a full backup of your server.

Following that, assuming you have access to a test server (or it could be run on your own desktop computer) it is a good idea to run a test upgrade from the backup that you created. If you find any bugs, submit them to DSpace.

**Perform**
Again – ensure that you have a good backup of your contents and code in case you need to roll back to the previous version of DSpace.

Then perform the upgrade and test the upgraded system.
**Upgrading from 1.4 to 1.5**

Taken from [dspace-src]/docs/update.html:

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**Updating From 1.4.2 to 1.5**

The changes in DSpace 1.5 are significant and wide spread involving database schema upgrades, code restructuring, completely new user and programatic interfaces, and new build system.

In the notes below [dspace] refers to the install directory for your existing DSpace installation, and [dspace-source] to the source directory for DSpace 1.5. Whenever you see these path references, be sure to replace them with the actual path names on your local system.

1. **Backup your DSpace**

   First and foremost, make a complete backup of your system, including:

   - A snapshot of the database
   - The asset store ([dspace]/assetstore by default)
   - Your configuration files and customizations to DSpace
   - Your statistics scripts ([dspace]/bin/stat*) which contain customizable dates

2. **Download DSpace 1.5**

   Get the new DSpace 1.5 source code either as a download from SourceForge or check it out directly from the SVN code repository. If you downloaded DSpace do not unpack it on top of your existing installation.

3. **Build DSpace**

   The build process has radically changed for DSpace 1.5. With this new release the build system has moved to a maven-based system enabling the various projects (JSPUI, XMLUI, OAI, and Core API) into separate projects. See the Installation section for more information on building DSpace using the new maven-based build system. Run the following commands to compile DSpace.

   ```
   cd [dspace-source]/dspace/;
   mvn package
   ```
You will find the result in [dspace-source]/dspace/target/dspace-1.5-build.dir/; inside this directory is the compiled binary distribution of DSpace.

4. **Stop Tomcat**

Take down your servlet container, for Tomcat use the `bin/shutdown.sh` script.

5. **Update dspace.cfg**

Several new parameters need to be added to your [dspace]/config/dspace.cfg. While it is advisable to start with a fresh **DSpace 1.5 dspace.cfg configuration file** here are the minimum set of parameters that need to be added to an old **DSpace 1.4.2 configuration**.

```
#### Stackable Authentication Methods ####
# Stack of authentication methods
# (See org.dspace.authenticate.AuthenticationManager)
# Note when upgrading you should remove the parameter:
plugin.sequence.org.dspace.eperson.AuthenticationMethod = \
   org.dspace.authenticate.PasswordAuthentication

###### JSPUI item sytle plugin ####
# Specify which strategy use for select the style for an item
plugin.single.org.dspace.app.webui.util.StyleSelection = \
org.dspace.app.webui.util.CollectionStyleSelection

###### Browse Configuration ######
# The following configuration will mimic the previous
# behavior exhibited by DSpace 1.4.2. For alternative
# configurations see the manual.

# Browse indexes
webui.browse.index.1 = dateissued:item:dateissued
webui.browse.index.2 = author:metadata:dc.contributor.*:text
webui.browse.index.3 = title:item:title
webui.browse.index.4 = subject:metadata:dc.subject.*:text

# Sorting options
webui.itemlist.sort-option.1 = title:dc.title:title
webui.itemlist.sort-option.2 = dateissued:dc.date.issued:date
webui.itemlist.sort-option.3 = dateaccessioned:dc.date.accessioned:date
```
6. **Add xmlui.xconf Manakin configuration**

The new Manakin user interface available with DSpace 1.5 requires an extra configuration file that you will need to manually copy it over to your configuration directory.

```bash
cp [dspace-source]/dspace/config/xmlui.xconf [dspace]/config/xmlui.xconf
```
7. **Add item-submission.xml and item-submission.dtd configurable submission configuration**

The new configurable submission system that enables an administrator to re-arrange, or add/remove item submission steps requires this configuration file. You need to manually copy it over to your configuration directory.

cp [dspace-source]/dspace/config/item-submission.xml [dspace]/config/item-submission.xml

cp [dspace-source]/dspace/config/item-submission.dtd [dspace]/config/item-submission.dtd

8. **Add new input-forms.xml and input-forms.dtd configurable submission configuration**

The input-forms.xml now has an included dtd reference to support validation. You'll need to merge in your changes to both file/and or copy them into place.

cp [dspace-source]/dspace/config/input-forms.xml [dspace]/config/input-forms.xml

cp [dspace-source]/dspace/config/input-forms.dtd [dspace]/config/inputforms.dtd

9. **Add sword-swap-ingest.xsl and xhtml-head-item.properties crosswalk files**

New crosswalk files are required to support SWORD and the inclusion of metadata into the head of items.

cp [dspace-source]/dspace/config/crosswalks/sword-swap-ingest.xsl [dspace]/config/crosswalks/sword-swap-ingest.xsl

cp [dspace-source]/dspace/config/crosswalks/xhtml-head-item.properties [dspace]/config/crosswalks/xhtml-head-item.properties

10. **Update the database**

The database schema needs updating. SQL files contain the relevant updates are provided, note if you have made any local customizations to the database schema you should consult these updates and make sure they will work for you.
11. **Apply any customizations**

   If you have made any local customizations to your DSpace installation they will need to be migrated over to the new DSpace. Commonly these modifications are made to "JSP" pages located inside the 
   [dspace-1.4.2]/jsp/local directory. These should be moved [dspace-source]/dspace/modules/jspui/src/main/webapp/ in the new build structure. See [Customizing the JSP Pages] for more information.

12. **Update DSpace**

   Update the DSpace installed directory with new code and libraries. Inside the [dspace-source]/dspace/target/dspace-1.5-build.dir/ directory run:

   ```bash
   cd [dspace-source]/dspace/target/dspace-1.5-build.dir/
   ant -Dconfig=[dspace]/config/dspace.cfg update
   ```

13. **Update the Metadata Registry**

   New Metadata Registry updates are required to support SWORD.

   ```bash
   cp [dspace-source]/dspace/config/registries/sword-metadata.xml [dspace]/config/registries/sword-metadata.xml;
   [dspace]/bin/dsrun org.dspace.administer.MetadataImporter -f [dspace]/config/registries/sword-metadata.xml
   ```

14. **Rebuild browse and search indexes**

   One of the major new features of DSpace 1.5 is the browse system which necessitates that the indexes be recreated. To do this run the following command from your DSpace installed directory:

   ```bash
   [dspace]/bin/index-init
   ```
15. Update statistics scripts

The statistics scripts have been rewritten for DSpace 1.5. Prior to 1.5 they were written in Perl, but have been rewritten in Java to avoid having to install Perl. First, make a note of the dates you have specified in your statistics scripts for the statistics to run from. You will find these in [dspace]/bin/stat-initial, as $start_year and $start_month. Note down these values.

Copy the new stats scripts:

```bash
  cp [dspace-source]/dspace/bin/stat* [dspace]/bin/
```

Then edit your statistics configuration file with the start details. Add the following to [dspace]/conf/dstat.cfg

```bash
# the year and month to start creating reports from
# - year as four digits (e.g. 2005)
# - month as a number (e.g. January is 1, December is 12)
start.year = 2005
start.month = 1
```

Replace '2005' and '1' as with the values you noted down.

dstat.cfg also used to contain the hostname and service name as displayed at the top of the statistics. These values are now taken from dspace.cfg so you can remove host.name and host.url from dstat.cfg if you wish. The values now used are dspace.hostname and dspace.name from dspace.cfg

16. Deploy webapplications

Copy the webapplications files from your [dspace]/webapps directory to the subdirectory of your servlet container (e.g. Tomcat):

```bash
  cp [dspace]/webapps/* [tomcat]/webapps/
```

17. Restart Tomcat

Restart your servlet container, for Tomcat use the bin/startup.sh script
Credits

- These notes have been produced by:
  - Stuart Lewis & Chris Yates
  - Repository Support Project
    - http://www.rsp.ac.uk/
  - Part of the RepositoryNet
  - Funded by JISC
    - http://www.jisc.ac.uk/