DSPACE INSTALLATION

This article provides a step-by-step guide to the DSpace installation process.

The following website was referred for the installation: <http://wiki.lib.sun.ac.za/index.php?title=SUNScholar/DSpace>

The steps are as follows:

# **Install Ubuntu**

# **Prepare Ubuntu**

## **Login to remote server**

## **Install the Java software dependencies**

### Installing Java JDK

sudo apt-get install default-jdk default-jre

### Cross check the presence of Java JDK

sudo update-java-alternatives –l

### Installing ant

sudo apt-get install ant ant-optional

## **Install the Maven Java WAR builder**

### Install maven

sudo apt-get install maven

### 

### Create maven folder (Optional)

mkdir $HOME/.m2

## **Install the Tomcat Java server**

### Install Tomcat

sudo apt-get install tomcat7

sudo apt-get install tomcat7-admin

### Set autobind to yes

sudo nano /etc/default/tomcat7

Remove the hash sign from in front of the authbind parameter and change authbind to yes as follows:

# If you run Tomcat on port numbers that are all higher than 1023, then you

# do not need authbind. It is used for binding Tomcat to lower port numbers.

# NOTE: authbind works only with IPv4. Do not enable it when using IPv6.

# (yes/no, default: no)

AUTHBIND=yes

Save and exit the file.

Now we need to tell "authbind" that Tomcat is allowed to use lower port numbers

sudo touch /etc/authbind/byport/80

sudo touch /etc/authbind/byport/443

sudo chmod 0755 /etc/authbind/byport/80

sudo chmod 0755 /etc/authbind/byport/443

sudo chown tomcat7.tomcat7 /etc/authbind/byport/80

sudo chown tomcat7.tomcat7 /etc/authbind/byport/443

cd /etc/authbind/byport

ls –l

Now Tomcat has permission to use ports 80 and 443. See below for an example listing of the files in the /etc/authbind/byport folder.

dspace@dspace:/etc/authbind/byport# ls -l

total 0

-rwxr-xr-x 1 tomcat7 tomcat7 0 2011-06-10 18:33 443

-rwxr-xr-x 1 tomcat7 tomcat7 0 2011-06-10 18:33 80

### 

### Setup Tomcat to listen on insecure port 80

Now we tell the Tomcat server to listen on the “authbind” ports. Edit the following file:

sudo nano /etc/tomcat7/server.xml

Find the connector for port 8080 and change it to port 80. See example below:

<Connector port="80" protocol="HTTP/1.1"

enableLookups="false"

maxConnections="-1"

maxThreads="450"

maxHttpHeaderSize="16384"

connectionTimeout="20000"

URIEncoding="UTF-8"

redirectPort="443" />

Save and exit the file.

### 

### Setup Tomcat admin users

sudo nano /etc/tomcat7/tomcat-users.xml

Delete all content and copy paste the following lines of code:

<?xml version='1.0' encoding='utf-8'?>

<tomcat-users>

<role rolename="manager-gui"/>

<role rolename="manager-jmx"/>

<user username="dspace" password="XXXX" roles="manager-gui,manager-jmx"/>

</tomcat-users>

### Java environment settings for Tomcat webapp server

After determining how much RAM is installed on your server, it is best practice to use about 50% of the RAM for Java.Also Change "TOMCAT7\_SECURITY" to yes.

sudo nano /etc/default/tomcat7

After determining how much RAM is installed on your server, it is best practice to use about 50% of the RAM for Java.

Check the following for comparison:

# You may pass JVM startup parameters to Java here. If unset, the default

# options (-Djava.awt.headless=true -Xmx128m) will be used.

#JAVA\_OPTS="-Djava.awt.headless=true -Xmx128m"

JAVA\_OPTS="-Djava.awt.headless=true -Xmx2048m -Xms1024m -XX:MaxPermSize=1024m"

### Setup Tomcat server permissions

Type the following:

sudo nano /etc/default/tomcat7

Change "TOMCAT7\_SECURITY" to yes.

# Use the Java security manager? (yes/no, default: no)

TOMCAT7\_SECURITY=yes

Save and exit the file.

Create DSpace security policy:

sudo nano /etc/tomcat7/policy.d/05dspace.policy

Copy and paste the following lines of code:

grant codeBase "file:/dspace/-" {

permission java.security.AllPermission;

};

grant codeBase "file:/tmp/-" {

permission java.security.AllPermission;

};

Save and exit the file.

Update file permissions for the policy

sudo chown root.tomcat7 /etc/tomcat7/policy.d/05dspace.policy

### Setup user permissions

cd

sudo adduser tomcat7 dspace // dspace is user accont in ubuntu remote server

sudo adduser dspace tomcat7

### Restart the tomcat server

sudo service tomcat7 restart

### Post Tomcat installation checks

Tomcat should be listening on port 80 now:

sudo netstat -tapn | grep java

Following is the output of the above command:

dspace@dspace:~# sudo netstat -tapn | grep java

tcp6 0 0 127.0.0.1:8005 :::\* LISTEN 11093/java

tcp6 0 0 :::80 :::\* LISTEN 11093/java

That’s it, now you have a working Java webapp server.

## **Install the PostgreSQL database server**

### Increase the kernel shared memory for PostgreSQL server client connections

Edit the "/etc/sysctl.conf" file in the following manner:

sudo nano /etc/sysctl.conf

Copy and paste the following to the end of the file:

# For PostgreSQL server client connections

kernel.shmmax = 500000000

kernel.shmall = 500000000

Save and exit the file.

## Type the following in a terminal:

sudo sysctl –p

### Install PostgreSQL server software

sudo apt-get install postgresql-9.5 postgresql-contrib-9.5 libpg-java

### Setup the PostgreSQL server host based access permissions

Change database user permissions to "trust" only.

sudo sed -i 's/ident/trust/' /etc/postgresql/9.5/main/pg\_hba.conf

sudo sed -i 's/md5/trust/' /etc/postgresql/9.5/main/pg\_hba.conf

sudo sed -i 's/peer/trust/' /etc/postgresql/9.5/main/pg\_hba.conf

See example below.

# DO NOT DISABLE!

# If you change this first entry you will need to make sure that the

# database superuser can access the database using some other method.

# Noninteractive access to all databases is required during automatic

# maintenance (custom daily cronjobs, replication, and similar tasks).

#

# Database administrative login by Unix domain socket

local all postgres trust

# TYPE DATABASE USER ADDRESS METHOD

# "local" is for Unix domain socket connections only

local all all trust

# IPv4 local connections:

host all all 127.0.0.1/32 trust

# IPv6 local connections:

host all all  ::1/128 trust

# Allow replication connections from localhost, by a user with the

# replication privilege.

#local replication postgres trust

#host replication postgres 127.0.0.1/32 trust

#host replication postgres  ::1/128 trust

Restart database server.

sudo service postgresql restart

### Create the PostgreSQL “dspace” DB user

Create the "dspace" DB user with full privileges.

sudo createuser -U postgres -d -A -P dspace

Answer "y" for yes, for any of the user creation questions.

### Create the PostgreSQL “dspace” database

Enter the Ubuntu server postgres user shell.

sudo su - postgres

Create the "dspace" database.

createdb -E UNICODE dspace

### Setup PostgreSQL dspace DB user password, ownership and privileges

Connect to the PostgreSQL database server and enter a PostgreSQL database server shell.

psql -U postgres -d dspace

### Set the dspace DB user password: SECURITY WARNING: Use your unique dspace database password for this on a production system !

ALTER ROLE dspace WITH PASSWORD 'XXXXXX';

### Let the dspace DB user own the dspace database

ALTER DATABASE dspace OWNER TO dspace;

### Grant all privileges for the dspace database to the dspace DB user

GRANT ALL PRIVILEGES ON DATABASE dspace TO dspace;

### Add the "crypto" extension to the "dspace" database.

CREATE EXTENSION pgcrypto;

### Quit the database shell.

\q

### We exit from PostgreSQL database server postgres user shell and return to the Ubuntu server dspace user shell.

exit

### Setup the PostgreSQL server host based access permissions to the dspace database

Type the following:

sudo -i

sudo echo "## DSpace DB user access">> /etc/postgresql/9.5/main/pg\_hba.conf

sudo echo "host dspace dspace 127.0.0.1/32 md5" >> /etc/postgresql/9.5/main/pg\_hba.conf

exit

### Setup maximum number of PostgreSQL server client connections

Edit the postgresql config file:

sudo nano /etc/postgresql/9.5/main/postgresql.conf

Change the number of "max\_connections" to 300. Please note: If you get connection errors, then adjust this value!

Save and exit the file.

### Restart the PostgreSQL server

Type the following:

sudo service postgresql restart

## **Configure the environment variables**

### Java environment settings for other java web applications

To setup the environment variables for other java applications, type the following:

sudo nano /etc/environment

Copy and paste the following to the bottom of the file:

JAVA\_HOME="/usr/lib/jvm/default-java"

JAVA\_OPTS="-Djava.awt.headless=true -Xmx2048m -Xms1024m -Dfile.encoding=UTF-8"

Save and exit the file.

### Increase number of open file available

Open the following file as follows:

sudo nano /etc/security/limits.conf

Add the following to the bottom of the file:

\* hard nofile 65536

\* soft nofile 65536

Save and exit the file.

### Setup file creation permissions

nano $HOME/.bashrc

Add the following to the bottom of the file.

unmask 002

Save and exit the file.

# **Install DSpace**

## **Get DSpace**

The current stable version of DSpace is: 5.5

Type the following:

cd

**For DSpace 6.X:**

wget https://github.com/DSpace/DSpace/releases/download/dspace-6.0/dspace-6.0-src-release.tar.gz

## 

## **Unpack DSpace**

### Type the following to extract the source code

tar -xzvf $HOME/dspace-6.0-src-release.tar.gz

To be able to simplify the wiki documentation when doing upgrades and to simply path references to the source code we create a shortcut or in the Unix world a "symbolic link" to point to the source folder of interest.

This creates the **$HOME/**[**source**](http://wiki.lib.sun.ac.za/index.php?title=SUNScholar/Install_DSpace/S03#Step_3.2) path which will then be used for all of the following documentation to refer to the source code.

This is also the **[dspace-source]** folder referred to in the official DSpace documentation.

To create the **symbolic link** type the following:

cd $HOME

ln -s dspace-6.0-src-release source

See example below:

dspace@repository:~$ ls -l source

lrwxrwxrwx 1 dspace dspace 35 Dec 18 11:47 source -> /home/dspace/dspace-5.5-src-release

## **Edit the DSpace configuration**

Create your own ./source/dspace/config/local.cfg configuration file (you may wish to simply copy the provided ./source/dspace/config/local.cfg.EXAMPLE). This local.cfg file can be used to store *any* configuration changes that you wish to make which are local to your installation. ANY setting may be copied into this local.cfg file from the dspace.cfg or any other \*.cfg file in order to override the default setting (see note below).  For the initial installation of DSpace, there are some key settings you'll likely want to override, those are provided in the ./source/dspace/config/local.cfg.EXAMPLE

Check the file to make sure the following critical "Server Configuration" and "Database Configuration" is correct.

### Server Configuration

Replace all the places with a pair of percent signs (**%something%**) in the example below with the settings for your system.

|  |  |  |
| --- | --- | --- |
| **Description** | **Setting** | **Comments** |
| Installation Folder | **dspace.install.dir = /dspace** | [Make sure you have created the "dspace" user](http://wiki.lib.sun.ac.za/index.php?title=SUNScholar/Install_Ubuntu/S03/DSpace_User). |
| Hostname for the repository | **dspace.hostname = ip address** | [This is the hostname you decided to use for your repository](http://wiki.lib.sun.ac.za/index.php?title=SUNScholar/Install_Ubuntu/S03/Hostname). |
| Base URL for the repository | **dspace.baseUrl = %http://ipaddress%** | Make sure to remove the "8080" port reference. |
| Default user interface | **dspace.ui = jspui** | We selected the XMLUI. |
| The URL link used | **dspace.url = ${dspace.baseUrl}** | Make sure to remove the "**/${dspace.ui}**". |
| The long name for the repository | **dspace.name = %SUNScholar Research Repository%** | This is usually for the repository manager to decide. |
| SOLR server connection | **solr.server =**[**http://localhost/solr**](http://localhost/solr) | [Make sure that you deploy the SOLR java web app correctly and make sure to remove the "8080" port reference](http://wiki.lib.sun.ac.za/index.php?title=SUNScholar/Install_DSpace/S06). |
| The default language | **default.language = %en\_ZA%** | [Make sure to select the correct language for your region](http://wiki.lib.sun.ac.za/index.php?title=SUNScholar/Language). |

### Database Configuration

Replace all the places with a pair of percent signs (**%something%**) in the example below with the settings for your system.

|  |  |  |
| --- | --- | --- |
| **Description** | **Setting** | **Comments** |
| Database driver | **db.driver=org.postgresql.Driver** | [We selected the PostgreSQL driver](http://wiki.lib.sun.ac.za/index.php?title=SUNScholar/Prepare_Ubuntu/S06). |
| Database connection URL | **db.url=jdbc:postgresql://localhost:5432/dspace** | We connect locally on port 5432 to the "dspace" database. |
| Database credentials | **db.username=%dspace%** **db.password=%dspace%** | *Supply your own very secret credentials.* |

### Example Config

Check the following example for the other settings.

Replace all the places with a pair of percent signs (**%something%**) in the example below with the settings for your system.

# DSpace build.properties

# This file should be customised to suit your build environment.

# Note that not all configuration is handled here, only the most common

# properties that tend to differ between build environments.

# For adjusting global settings or more complex settings, edit the relevant config file.

#

# IMPORTANT: Do not remove or comment out settings in build.properties

# When you edit the "build.properties" file (or a custom \*.properties file),

# take care not to remove or comment out any settings. Doing so, may cause

# your final "dspace.cfg" file to be misconfigured with regards to that

# particular setting. Instead, if you wish to remove/disable a particular

# setting, just clear out its value. For example, if you don't want to be

# notified of new user registrations, ensure the "mail.registration.notify"

# setting has no value, e.g. "mail.registration.notify="

#

##########################

# SERVER CONFIGURATION #

##########################

# DSpace installation directory. This is the location where you want

# to install DSpace. NOTE: this value will be copied over to the

# "dspace.dir" setting in the final "dspace.cfg" file. It can be

# modified later on in your "dspace.cfg", if needed.

dspace.install.dir = /home/dspace

# DSpace host name - should match base URL. Do not include port number

dspace.hostname = %scholar.sun.ac.za%

# DSpace base host URL. Include port number etc.

dspace.baseUrl = %http://scholar.sun.ac.za%

# The user interface you will be using for DSpace. Common usage is either xmlui or jspui

dspace.ui = xmlui

# Full link your end users will use to access DSpace. In most cases, this will be the baseurl followed by

# the context path to the UI you are using.

#

# Alternatively, you can use a url redirect or deploy the web application under the servlet container root.

# In this case, make sure to remove the /${dspace.ui} from the dspace.url property.

dspace.url = ${dspace.baseUrl}

# Name of the site

dspace.name = %SUNScholar Research Repository%

# Solr server

solr.server = http://localhost/solr

# Default language for metadata values

default.language = %en\_ZA%

##########################

# DATABASE CONFIGURATION #

##########################

# Uncomment the appropriate block below for your database.

# postgres

db.driver=org.postgresql.Driver

db.url=jdbc:postgresql://localhost:5432/dspace

db.username=%dspace%

db.password=%dspace%

# oracle

#db.driver= oracle.jdbc.OracleDriver

#db.url=jdbc:oracle:thin:@//localhost:1521/xe

#db.username=dspace

#db.password=dspace

# Schema name - if your database contains multiple schemas, you can avoid

# problems with retrieving the definitions of duplicate object names by

# specifying the schema name that is used for DSpace.

# ORACLE USAGE NOTE: In Oracle, schema is equivalent to "username". This means

# specifying a "db.schema" is often unnecessary (i.e. you can leave it blank),

# UNLESS your Oracle DB Account (in db.username) has access to multiple schemas.

db.schema =

# Maximum number of DB connections in pool

db.maxconnections = 50

# Maximum time to wait before giving up if all connections in pool are busy (milliseconds)

db.maxwait = 5000

# Maximum number of idle connections in pool (-1 = unlimited)

db.maxidle = 150

# Determine if prepared statement should be cached. (default is true)

db.statementpool = true

# Specify a name for the connection pool (useful if you have multiple applications sharing Tomcat's dbcp)

# If not specified, defaults to 'dspacepool'

db.poolname = dspacepool

#######################

# EMAIL CONFIGURATION #

#######################

# SMTP mail server

mail.server = %smtp.example.com%

# SMTP mail server authentication username and password (if required)

# mail.server.username = myusername

# mail.server.password = mypassword

mail.server.username=

mail.server.password=

# SMTP mail server alternate port (defaults to 25)

mail.server.port = 25

# From address for mail

mail.from.address = %dspace-noreply@myu.edu%

# Currently limited to one recipient!

mail.feedback.recipient = %dspace-help@myu.edu%

# General site administration (Webmaster) e-mail

mail.admin = %dspace-help@myu.edu%

# Recipient for server errors and alerts

mail.alert.recipient = %dspace-help@myu.edu%

# Recipient for new user registration emails

mail.registration.notify = %dspace-help@myu.edu%

########################

# HANDLE CONFIGURATION #

########################

# Canonical Handle URL prefix

#

# By default, DSpace is configured to use http://hdl.handle.net/

# as the canonical URL prefix when generating dc.identifier.uri

# during submission, and in the 'identifier' displayed in JSPUI

# item record pages.

#

# If you do not subscribe to CNRI's handle service, you can change this

# to match the persistent URL service you use, or you can force DSpace

# to use your site's URL, eg.

#handle.canonical.prefix = ${dspace.url}/handle/

#

# Note that this will not alter dc.identifer.uri metadata for existing

# items (only for subsequent submissions), but it will alter the URL

# in JSPUI's 'identifier' message on item record pages for existing items.

#

# If omitted, the canonical URL prefix will be http://hdl.handle.net/

handle.canonical.prefix = http://hdl.handle.net/

# CNRI Handle prefix

handle.prefix = %123456789%

#######################

# PROXY CONFIGURATION #

#######################

# uncomment and specify both properties if proxy server required

# proxy server for external http requests - use regular hostname without port number

http.proxy.host =

# port number of proxy server

http.proxy.port =

#####################

# LOGLEVEL SETTINGS #

#####################

loglevel.other = INFO

# loglevel.other: Log level for other third-party tools/APIs used by DSpace

# Possible values (from most to least info): DEBUG, INFO, WARN, ERROR, FATAL

loglevel.dspace = INFO

# loglevel.dspace: Log level for all DSpace-specific code (org.dspace.\*)

# Possible values (from most to least info): DEBUG, INFO, WARN, ERROR, FATAL

Save and exit the file.

## **Build the DSpace Java webapps**

First make sure we have the right file permissions for a build.

sudo chown dspace.dspace -R $HOME

sudo chmod 0777 -R $HOME

Change to the source folder as follows:

cd $HOME/[source](http://wiki.lib.sun.ac.za/index.php?title=SUNScholar/Install_DSpace/S03)

Type the following to download the maven packages. Ensure you have an open connection to the internet first.

mvn -U clean package

A lot of stuff will start to be downloaded and scroll by on the screen.

If the downloads start, then go make a cup of coffee and check your emails... this takes quite a while with slow internet connections!

When complete you will get a message at the end like this:

[INFO] ------------------------------------------------------------------------

[INFO] ------------------------------------------------------------------------

[INFO] BUILD SUCCESSFUL

[INFO] ------------------------------------------------------------------------

[INFO] Total time: 5 minutes 15 seconds

[INFO] Finished at: Fri Aug 03 13:45:02 SAST 2012

[INFO] Final Memory: 95M/273M

[INFO] ------------------------------------------------------------------------

### Troubleshooting

If your [maven proxy settings](http://wiki.lib.sun.ac.za/index.php?title=SUNScholar/Prepare_Ubuntu/S04) are ok and you still get download errors, then try the following:

mvn install

If nothing starts downloading or you get download errors, then check your [maven config file for proxy settings](http://wiki.lib.sun.ac.za/index.php?title=SUNScholar/Prepare_Ubuntu/S04) or ask for an open connection to the internet for your server from your central IT department.

Another possibility of a failure to build maybe a slow machine, in that case just restart the build several times until the build is complete.

## **Install the DSpace Java webapps**

After the java webapp WAR files have been complied they need to be "installed" by the java "ant" installer in preparation for them to be hosted by the Tomcat java webapp server.

Change directory to the install directory by typing as follows:

cd $HOME/[source](http://wiki.lib.sun.ac.za/index.php?title=SUNScholar/Install_DSpace/S03)/dspace/target/dspace-installer

Type the following in the above named directory:

sudo ant fresh\_install

**Please Note:**

* If you change anything later then [rebuild your DSpace](http://wiki.lib.sun.ac.za/index.php?title=SUNScholar/Rebuild_DSpace).
* Do not run "ant fresh\_install" again, this is only done once during installation.
* If this is an upgrade, then type: ant update

## **Create the DSpace super-admin user**

If you get a "build successful" message from the previous step, then add an admin user for your DSpace installation.

### Stop the Tomcat server

Type the following as the "dspace" user:

cd

sudo service tomcat7 stop

### Create the account

Then create the account:

sudo ./source/dspace/bin/dspace create-administrator

Fill in all the details when prompted and keep the credentials a secret. See example activation below:

Creating an initial administrator account

E-mail address: %emailaddress%

First name: Hilton

Last name: Gibson

WARNING: Password will appear on-screen.

Password: XXXXXXXX

Again to confirm: XXXXXXXX

Is the above data correct? (y or n): y

Administrator account created

This is what should happen.

Change the **%emailaddress%** to the email address of the "system admin" or "repository manager" or "scholarly communications director".

### Start the Tomcat server

Type the following as the "dspace" user:

cd

sudo service tomcat7 start

## 

## **Enable the DSpace Java webapps on the Java Tomcat server**

The DSpace webapps have been compiled in the **$HOME/webapps** folder but Tomcat only serves up webapps in the **/var/lib/tomcatX/webapps** folder.

So, how do we get all the files into the Tomcat webapps folder?

There are several methods. I selected what I call the "automatic linkage" method: if you change anything in the DSpace **$HOME/webapps** folder and then re-compile, the changes automatically occur in the Tomcat **/var/lib/tomcatX/webapps** folder.

This method saves you from constantly having to copying webapps after a compile, which is always a risky business.

It also saves you from having to change the Tomcat server configuration files, which is **very definitely not recommended** by the Debian/Ubuntu software package maintainers.

### Create web application shortcuts

We create shortcuts in the default Tomcat webapps folder, to the DSpace webapps in the **$HOME/webapps** folder by typing as follows:

cd /var/lib/tomcat7/webapps

sudo ln -s /dspace/webapps/solr

sudo ln -s /dspace/webapps/rest

sudo ln -s /dspace/webapps/oai

sudo ln -s /dspace/webapps/sword

sudo ln -s /dspace/webapps/xmlui

### Configure the default ROOT webapp

DSpace has two web interfaces, the XMLUI and the JSPUI. This procedure allows you to select which interface will be used as the ROOT webapp. In other words, the one that does not need a /xmlui or a /jspui URL addition.

Start by removing the default Tomcat ROOT webapp with the following command:

sudo rm -rf /var/lib/tomcat7/webapps/ROOT

Then apply one of the following.

Easy to setup but hard to customize and has a high server load.

Type the following to make the JSPUI the default interface.

cd /var/lib/tomcat7/webapps

sudo ln -s /dspace/webapps/jspui ROOT

#### **Example listing of DSpace Java webapps in the Tomcat webapp folder**

To get a listing of active Tomcat webapps type the following:

cd /var/lib/tomcat7/webapps

sudo ls -l

See example listing below.

dspace@ir1:/var/lib/tomcat7/webapps$ ls -l

total 0

lrwxrwxrwx 1 root root 24 2012-09-05 11:28 oai -> /home/dspace/webapps/oai

lrwxrwxrwx 1 root root 25 2012-09-05 11:28 rest -> /home/dspace/webapps/rest

lrwxrwxrwx 1 root root 26 2012-09-05 11:28 ROOT -> /home/dspace/webapps/xmlui

lrwxrwxrwx 1 root root 25 2012-09-05 11:28 solr -> /home/dspace/webapps/solr

lrwxrwxrwx 1 root root 26 2012-09-05 11:28 sword -> /home/dspace/webapps/sword

### Restart Tomcat Server

Type the following:

sudo service tomcat7 restart

You can view the restart log if you want by typing the following:

tail -f /var/log/tomcat7/catalina.out

## **Login to the DSpace application as the “super-admin” user**

Restart your server by typing the following.

sudo reboot

After the reboot, type the following in the browser address bar on your local computer:

http://%hostname%

Replace **%hostname%** with the [hostname of your server](http://wiki.lib.sun.ac.za/index.php?title=SUNScholar/Install_Ubuntu/S02).

1. Select **Login**.
2. Then **Email Login**.
3. Login with the DSpace admin user, email address and password determined from [Step 7](http://wiki.lib.sun.ac.za/index.php?title=SUNScholar/Install_DSpace/S07) previously.

**Please Note:**

If you have installed a test version of DSpace on a local Ubuntu computer, then type the following to connect to your test server.

[http://localhost](http://localhost/)