DSpace Installation (dspace 5.0)

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Required Software

- Operating System:
  - Linux: Redhat/Fedora, Suse,Mandrake, Debian etc.
  - Unix: Solaris (Sun system), HP-UX (Hewlett Packard), AIX (IBM), Mac OS X
- Mail server (Sendmail/postfix)
- RDBMS (postgres/oracle)
- DSpace
- Java compiler (jdk)
- Java Servlet Container
- Maven
- Ant
  - Java build tool, similar to make in the world of 'C'
  - Complies java programs of dspace source code, generates war files

Role of RDBMS

- Database backend (postgres/oracle) of DSpace, stores information on:
  - ◇ Communities
  - ◇ Collection
  - ◇ Members - passwords
  - ◇ E-groups etc.

Step1: Linux Installation

- Strongly advise to Load Linux fully unless you are a Linux Guru
- Make sure the following are installed
  - Mail server
- Copy all the files provided on CD-ROM tar.gz files in /opt directory
- Or Download the following (or latest) files from Internet
  - jdk-7u11-linux-i586.rpm   (java compiler)
  - Apache-ant-1.8.4-bin.tar.gz (ant)
  - Postgresql-9.0.11-1-linux.run   (RDBMS)
  - Apache-tomcat-7.0.35.tar.gz (servlet container)
  - Apache-maven-3.0.4-bin.tar.gz (maven)
  - Dspace-source-5.0-src-release.zip   (dspace software)

■ Install java1.7 or later

■ First we have to give execute permission to java install package file before executing it.

■ cd /opt

[root@localhost opt]#chmod a+x jdk-7u11-linux-i586.rpm

[root@localhost opt]#sudo rpm -ivh jdk-7u11-linux-i586.rpm

#By default java is installed under /usr/java/

❑ cd /usr/java/jdk1.7.0_11

alternatives --install /usr/bin/java java /usr/java/jdk1.7.0_11/bin/java 2

alternatives --config java

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Step 5: PostgreSQL installation

- You need to become Linux root user to install postgresql
- Use the following commands to install
  - ◇ #cd /opt
  - ◇ #chmod +x postgresql-9.0.11-1-linux.run
  - ◇ #./postgresql-9.0.11-1-linux.run
  - ◇ You will get the PostgreSQL GUI wizard.
  - ◇ It will prompt for Database Superuser (postgres) password, Enter the password.
  - ◇ It will prompt for the database port no. (By default it is 5432), Click on Next to proceed.
  - ◇ At the end of installation it will prompt for the "Stack builder installation", uncheck the "Stack Builder at exit" checkbox.
  - ◇ Click on Finish

Tune PostgreSQL for DSpace

❑ Firstly we need to get into **/opt/postgreSQL/9.0/data/**

[root@localhost opt]# cd /opt/postgreSQL/9.0/data/

Now add the line "host dspace dspace 127.0.0.1/32 md5" in pg_hba.conf

To achieve this please type following command

[root@localhost data]$#vi pg_hba.conf

#IPv4 Local Connections:

host   all   all   127.0.0.1/32   md5

host   dspace   dspace   127.0.0.1/32   md5

❑ Now restart the **postgres** service

[root@localhost data]# service postgresql-9.0 restart

Now , add the postgres to our Environment Variable (PATH), to execute the postgres commands.

[root@localhost data]#gedit /etc/profile.d/java.sh

And edit the PATH.

PATH=/opt/PostgreSQL/9.0/bin:$JAVA_HOME/bin: $ANT_HOME/bin:$MAVEN_HOME/bin:$PATH

And save the file /etc/profile.d/java.sh

Now give effect to the System Environment by [root@localhost data]$#source /etc/profile.d/java.sh

Step 4: Apache-ant installation

■ Check Apache Ant is already installed or not using the command:

■ #which ant

■ You need to login as Linux root user

■ If not installed type the following commands to install

◇ #cd /opt

◇ #tar -zxvf apache-ant-1.8.4-bin.tar (extract files)

Step 6: Installation of Apache Tomcat

- You have to become root user and type the following commands
  - ◇ #cd /opt
  - ◇ #tar -zxvf apache-tomcat-7.0.35.tar.gz [extract files]

■ You have to become root user and type the following commands

◇ #cd /opt

◇ #tar -zxvf apache-maven-3.0.4-bin.tar.gz [extract files]

Set Envirnment Variable(PATH)

Now write the following lines in /etc/profile.d/java.sh

■ #gedit /etc/profile.d/java.sh

   ANT_HOME=/opt/apache-ant-1.8.4

   CATALINA_HOME=/opt/apache-tomcat-7.0.35

   MAVEN_HOME=/opt/apache-maven-3.0.4

   **PATH=/opt/PostgreSQL/9.0/bin:$JAVA_HOME/bin:$ANT_HOME/bin:
   $MAVEN_HOME/bin:$PATH**

   export PATH JAVA_HOME ANT_HOME MAVEN_HOME

   export CLASSPATH="."

Save the file and exit

Type the following commands at command prompt

#chmod +x /etc/profile.d/java.sh

#source   /etc/profile.d/java.sh

Verify all the software installations

- [root@localhost profile.d]#echo $JAVA_HOME

/usr/java/jdk1.7.0_11

- [root@localhost profile.d]# echo $CATALINA_HOME

/opt/apache-tomcat-7.0.35

- [root@localhost profile.d]# ant -version

Apache Ant(TM) version 1.8.4 complied on May 22 2012

- [root@localhost profile.d]#mvn -version

Apache Maven 3.0.4(r1232337; 2012-01-17 14:14:56+0530)

Maven home: /opt/apache-maven-3.0.4

Java version: 1.7.0_11, vendor: Oracle Corporation

Java home: usr/java/jdk1.7.0_11/jre

Default locale: en_US, platform encoding: UTF-8

OS name: "Linux", version::"2.6.32-279.el6.i686", arch: "1386, family: "unix"

Contd.

❑ Now start the tomcat server by executing

[root@localhost profile.d]# cd $CATALINA_HOME/bin

[root@localhost bin]# ./startup.sh

Using CATALINA_BASE: /opt/apache-tomcat-7.0.35

Using CATALINA_HOME: /opt/apache-tomcat-7.0.35

Using CATALINA_TMPDIR: /opt/apache-tomcat-7.0.35./temp

Using JRE_HOME: /usr/java/jdk1.7.0_11

Using CLASSPATH: /opt/apache-tomcat-7.0.35/bin/bootstrap.jar:/opt/apache-tomcat-7.0.35/bin/tomcat-juli.jar

[root@localhost bin]#

Contd.

❑ Now shutdown the tomcat server by executing

[root@localhost profile.d]#cd $CATALINA_HOME/bin

[root@localhost bin]# ./shutdown.sh

Using CATALINA_BASE: /opt/apache-tomcat-7.0.35

Using CATALINA_HOME: /opt/apache-tomcat-7.0.35

Using CATALINA_TMPDIR: /opt/apache-tomcat-7.0.35./temp

Using JRE_HOME: /usr/java/jdk1.7.0_11

Using CLASSPATH: /opt/apache-tomcat-7.0.35/bin/bootstrap.jar:/opt/apache-tomcat-7.0.35/bin/tomcat-juli.jar

Step 7: Installation of Dspace Application

- You have to login as Linux root user
- Create the DSpace Linux user by using the commands
  - #groupadd dspace [create group]
  - #useradd dspace –g dspace [create dspace user]
- Now we will go to the **/opt/PostgreSQL/9.0/data**
- **[root@localhost data]# cd /opt/PostgreSQL/9.0/data**
- **Now we will create "dspace" user for the database and a database named "dspace" owned by "dspace" user that we created in the step1, step just above**
- [root@localhost data]$ createuser –U postgres –d –A –P dspace

Enter password for new role: - Enter dspace Password (for simplicity keep it "dspace")

Enter it again:- Enter dspace Password(for simplicity keep it "dspace")

Shall the new role be allowed to create more new roles? (y/n) y

Password: Enter the postgres password (superuser password)

Now create a database name "dspace"

[root@localhost data]$ createdb –U dspace –E UNICODE dspace

Password: Enter the dspace password (if followed instructions at Step 3 then enter "dspace").

■ Now it's time to actually install the Dspace

  ◇ [root@localhost data]# cd /

  ◇ Now copy the Dspace package into the root /.

  [root@localhost /]# cp /opt/dspace-5.0-src-release.zip .

  ◇ Now run(unzip) the installation package of the Dspace

    [root@localhost /]# unzip dspace-5.0-src-release.zip

  ◇ Now we will create the new directory at root to contain the Dspace application files.

    [root@localhost /]#mkdir dspace

  ◇ Now we have to change the ownership of both the directories, from root to **dspace user**, as it is to be used by **dspace user.**

  ◇ [root@localhost /]#chown dspace.dspace /dspace –R

(Note:- There is a space between /dspace and –R)

[root@localhost /] chown dspace.dspace /dspace-5.0-src-release

■ Now login as dspace user.

[root@localhost /]# su dspace

[dspace@localhost /]#

❑ Now we have to configure the dspace configuration file.

Reach to the folder containing the configuration file.

[dspace@localhost /]# cd /dspace-5.0-src-release/dspace/config/

Now edit the **dspace.cfg** file

[dspace@localhost config]# vi dspace.cfg

db.name=postgres

   db.username=dspace

db.password=whatever password you have given

remove the { } and $ after inserting value in these fields).

Step 7: Installation of Dspace contd..

❑ Now it's time for the dspace compilation.

➤ Firstly we have to move to /dspace-5.0-src-release/dspace

[dspace@localhost config]$ cd /dspace-5.0-src-release/dspace

➤ Now begin the compilation

[dspace@localhost dspace]# mvn package

(Note: - It might take several minutes to it get installed & internet connection should not get terminate).

➤ After installation is completed the BUILD SUCCESS message will be displayed.

Now we have go to the /dspace-5.0-src-release/dspace/target/dspace-installer

[dspace@localhost dspace]$ cd / dspace-5.0-src-release/dspace/target/dspace-installer/

[dspace@localhost dspace-installer]$

❑ Now we have to give ant fresh_install command.

[dspace@localhost dspace-installer]$ ant fresh_install

(Note: - It might take some time, so be patient).

➢ After installation is completed the BUILD SUCCESS message will be displayed.

Contd.

❑ Now we have to build the Administrator account for dspace

[dspace@localhost dspace-installer]#/dspace/bin/dspace create-administrator

Creating an initial administrator account

E-mail address:mukeshpun@gmail.com

First name:- mukesh

Last name:- pund

WARNING: **Password will not dispaly on-screen**.

Password:

Again to confirm:

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

[dspace@localhost dspace-installer]#

Now it's time to tell tomcat server where dspace is

Go to root directory

        [dspace@localhost dspace-installer]$#cd /

❑ Login as root user

        [dspace@localhost /]# su

        [root@localhost /]#

❑ Now go to **/opt/apache-tomcat-7.0.35/conf/Catalina/localhost/**

        [root@localhost /]#cd /opt/apache-tomcat-7.0.35/conf/catalina/localhost/

        [root@localhost localhost]#

Contd.

❑ Now create 3 files named **jspui.xml, xmlui.xml, oai.xml one by one.**

❑ **<u>JSPUI.XML</u>**

      [root@localhost localhost]# vi jspui.xml

      Add the following text into it.

<Context path="/jspui" docBase="/dspace/webapps/jspui" debug="0" reloadable= "true" cachingAllowed="false" crosscontext="true" />

          Press **<Esc>** and press **:wq** then press Enter.

❑ **<u>XMLUI.XML</u>**

[root@localhost localhost]# vi xmlui.xml

Add the following text into it.

<Context path="/xmlui" docBase="/dspace/webapps/xmlui" debug="0" reloadable= "true" cachingAllowed="false" crosscontext="true" />

Press **<Esc>** and press **:wq** then press Enter.

❑ **JSPUI.XML**

[root@localhost localhost]# vi oai.xml

Add the following text into it.

<Context path="/oai" docBase="/dspace/webapps/oai" debug="0" reloadable= "true" cachingAllowed="false" crosscontext="true" />

Press **<Esc>** and press **:wq** then press Enter.

❑ Now it's time to permission of tomcat owner, so that tomcat can be executed by **dspace** user.

[root@localhost localhost] cd /opt

[root@localhost opt]$ chown dspace.dspace apache-tomcat-7.0.35/ -R

❑ Now login as dspace, and start tomcat server.

[root@localhost opt] su dspace

[root@localhost opt] cd $CATALINA_HOME/bin

[root@localhost bin] ./startup.sh

Installation of Dspace- Summary

■ Dspace is based on open source technlogy

■ The installation process is some what complex for new users

■ The following components should properly work :

♢ Postgresql server

♢ Jdbc driver for postgres server

♢ Apache tomcat

■ Initially there may be few errors related to above components if not properly installed

Cron jobs

■ To perform certain task periodically we may use cron jobs by typing following command:

crontab -e

Send out subscription e-mails at 01:00 every day
　　0 1 * * * /dspace/bin/sub-daily

Run the media filter at 02:00 every day
　　0 2 * * * /dspace/bin/filter-media

Generate full-text index at 2.15 am for (lucene based search engine, not required in Dspace 4.x and 5.x)
　　15 2 * * * /dspace/bin/index-all

 # build discovery index at 2.15 am (default index)
　　15 2 * * * /dspace/bin/ dspace index-discovery

 # build discovery index optimize at 3.15 am
　　15 3 * * * /dspace/bin/index-discovery -o

Clean up the database nightly at 2.40am
　　40 2 * * * vacuumdb --analyze dspace > /dev/null 2>&1" > /var/spool/cron/dspace

*	*	*	*	*
Minute 0-59	Hour 0-23 (0 = midnight)	Day 1-31	Month 1-12	Weekday 0-6 (0 = Sunday)

Dspace

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Cron jobs .....

■ To perform certain task periodically we may use cron jobs by typing following command:

   #CleanupWebSpidersfromDSpaceStatisticsSolr   **at 4.15 am**

15 4 * * * /dspace/bin/dspacestats-util-i

#Re-OptimizeDSpaceStatisticsSolrIndex   **at 4.15 am**

15 4 * * * /dspace/bin/dspacestats-util-o

#ThisensureseachyearhasitsownSolrindex,whichimprovesperformance.(yearly)

15 3 1 1 * /dspace/bin/dspacestats-util-s

#Thisensuresthesystemadministratorisnotifiedwhetheranychecksumswerefoundto bedifferentat05:00everySunday

05**0/dspace/bin/dspacechecker-emailer

FormoredetailsDspacecron-jobsettings:

https://wiki.duraspace.org/display/DSDOC5x/Scheduled+Tasks+via+Cron

■ To make your repository start at the boot time adds the following to /etc/rc.d/rc.local

■ su –l dspace –c '/dspace/apache-tomcat-7.0.35/bin/startup.sh

Trouble shooting..

- Check your environment variable by giving the following commands

- echo $PATH

- echo $JAVA_HOME

- See whether java's bin directory is in your PATH

- JAVA_HOME is pointing to Java directory

- Change your /dspace/.bash_profile

Trouble shooting: while fresh_install

■ Mostly you get database related errors, the cause could be

◇ You did not copy jdbc drivers in dspace-source/lib directory

◇ Or changes in the postgresql .conf file were not made at all, or done improperly

Trouble shooting: Once you launch DSpace

■ If you do not see dspace on the screen

  ◆ Tomcat was not launched

  ◆ Or the port (8080) was already in use

  ◆ You started tomcat second time

  Solution

  Kill tomcat if you have started second time (using ps –a | grep java or killall java

  Change to another port in tomcat/config/server.xml

■ Check $TOMCAT-HOME/logs/catalina.out

■ For specific problem identification

Troubleshooting: Internal System Error

- Most common error message

- To generic and is not specific

- The reasons could be many

- Check /dspace/log/dspace.log file, which may provide the specific problem

- Mail configuration is wrong

- You did not make mail server entry in /dspace/conf/dspace.cfg file

- DNS problem

- You do not have FQDN (Fully Qualified Domain Name) for you system
  - ◇ It should hostname.domainname
    - ✔ Ex: localhost.localdomain (not just localhost)
    - ✔ nsdl.niscair.res.in (not jst nsdl)

LOG FILES

- $TOMCAT_HOME/logs/catalina.out
- /dspace/log/dspace.log

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