“Communication Unlimited”
with OPEN-XCHANGE™

How to install OPEN-XCHANGE™ with Webmin, APACHE2, OpenLDAP and PostgreSQL on Mandriva Linux LE 2005?

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0. Introduction

OPEN-XCHANGE™ is a collaboration and integration server environment with a continuous right management for modules and objects. OPEN-XCHANGE™ ("OX") is a GPL Groupware solution provided by Netline. It's the "community" version of Novell/SUSE LINUX OPEN-XCHANGE™ Server ("SLOX").
The product is based on existing components like a web server, mail server, directory server and a database. OPEN-XCHANGE™ is JAVA™ based with some pieces of C for security components.

OPEN-XCHANGE™ provides the following modules:

- Portal
- Calendar
- Contacts
- Addresses
- Tasks
- Projects
- Documents
- Knowledge
- Bookmarks
- Pinbord
- Forums
- Webmailer

This guide contains all the necessary information for installing and understanding the architectural layout of the implementation. It was written with the assumption that you understand how to install programs and have a basic understanding of Linux Mandriva. This includes installing Linux Mandriva and RPM packages, editing files, making directories, compiling software and understanding general UNIX commands. This guide doesn't explain how to use or configure OPEN-XCHANGE™, Apache, Postfix, Cyrus and all the other server but information on where to obtain this information can be found in the "Additional information" section.
Please note, the way the software is installed here is good enough for testing purposes, but certainly not for a production environment. I am also not responsible of possible data losses caused by the use of this guide.
The guide is divided in for parts. In the first part we will perform a basic Mandriva installation and the basic configuration of the needed servers. The second part continues with Java installation and compiling. In the third part we will discuss the Post-Installation process. This guide ends with additional information and add-ons.

1.0 Basic Mandriva Installation

I'm using Mandriva Linux LE 2005 (DVD) for this installation. To make the most of your Mandriva Linux system, I recommend joining the Mandriva Club, which will allow you to benefit from exclusive privileges and services.

You can alternatively download the free version of Mandriva Linux here:
http://www1.mandrivalinux.com/en/ftp-premium.php3

or buy it here:

http://store.mandriva.com/

I don't want to explain how to install Mandriva. It is very easy theses days. If you need help, please use the following link:

http://www1.mandrivalinux.com/en/fdoc.php3

It is now time to specify which programs you wish to install on your system. There are thousands of packages available for Mandriva Linux, and to make it simpler to manage the packages have been placed into groups of similar applications. We just need a basis system. For that reason you should select the following groups:

· Console Tools
· Development
· KDE Workstation (or Gnome)

Now you need to install additional software. Please use Mandriva Control Center and search for the following packages. To satisfy dependencies, please install all necessary packages like recommended.

· Webmin
· Apache2
· PostgreSQ-server
· Open-LDAP-server
. perl-DBD-Pg
· Cyrus-imapd

That's it so far. We'll later install additional packages.

Please use the Mandriva Control Center to perform an update of your software. By clicking on "Mandriva Update" the system will be connected to the nearest FTP server and will get security updates, bugfixes and normal updates.

1.1 Get Webmin running

It is time to get Webmin running. Webmin is a web-based interface for system administration for UNIX. Using any browser that supports tables and forms (and Java for the File Manager module), you can setup user accounts, Apache, DNS, MySQL, file sharing and so on. Webmin consists of a simple web server, and a number of CGI programs which directly update system files like /etc/inetd.conf and /etc/passwd. The web server and all CGI programs are written in Perl version 5, and use no non-standard Perl modules. Please get more information about Webmin here:

http://www.webmin.com/

Honestly, we really do not need Webmin to get everything running, but it is a wonderful tool for a LINUX system administrator and it will help us to configure Apache, PostgresSQL, Open-LDAP and all other servers. After the installation please check if Webmin is already running:

/etc/init.d/webmin status

If not, please start it like this:

/etc/init.d/webmin start

You can now use the Webmin interface with your favorite browser via the following URLs:

https://localhost:10000 or https://IP-address:10000

1.2 Configure PostgreSQL

Please use Webmin to open PostgreSQL Database Server by clicking on **Servers - PostgreSQL Database Server**.

If you get the following error message, please click on the "initialize" button:

The PostgreSQL host configuration file /var/lib/pgsql/data/pg_hba.conf was not found on your system, indicating that the database has not been initialized yet. Click the button below to setup PostgreSQL with the command /etc/rc.d/init.d/postgresql start.

This will prepare PostgreSQL for the first run and will start it.

In the file **/var/lib/pgsql/data/pg_hba.conf** we need this the following:

```
local   all      all                                    trust
host    all      all     127.0.0.1  255.255.255.255     trust
```

1.3 Create users and databases

OPEN-XCHANGE™ needs few users and groups on Mandriva and PostgresSQL to make the installation go without an error message. Please make sure that PostgresSQL Server is running before you perform the next step:

```
useradd ox
su  postgres
createuser -A -D -P openexchange
createdb openexchange exit
```

Note: Please remember the passwords.

If you refresh your webmin page (PostgreSQL Database Server), you will find a new database openexchange (just empty) and the openexchange user already installed. In this phase just make sure that PostgreSQL starts and stops without an error. We'll come back later.

Note: You need the perl-DBD-Pg package installed to avoid error messages.

1.4 Configuring Apache2

To configure Apache2 use Webmin – Servers – Apache Webserver and click on Module Config.

Configure the necessary modules (just leave it like it is) and you will find the global configuration overview. In this phase just make sure that Apache starts and stops without an error message. We will configure it later.

1.5 Configuring Open-LDAP

To configure Open-LDAP use Webmin – Servers – OpenLDAP Server. Leave everything like it is. Just make sure that the daemon starts and stops without error.

Note: To avoid later problems according to ldap-search, please install the rpm package ldap-clients-2.2.23-5mdk.

2.0 Installing Java and compiling OPEN-XCHANGE™

This part is not so easy like the first part. We need to download a lot more rpm packages and other files from different locations. It is not always uncomplicated to find the correct file on the Mandriva DVD or CDs. I downloaded some software from Sun as well.

2.1 Java stuff

Lets go to Sun first. Download the following files and store them in your favourite installation directory: (i.e. /installations)

http://java.sun.com/products/javamail/downloads/index.html
download **javamail-1_3_2.zip**

http://java.sun.com/products/javabeans/glasgow/jaf.html
download **jaf-1_0_2-upd.zip**

http://java.sun.com/products/jta/
Download the following class files and javadocs:
jta-1_0_1B-classes.zip
jta-1_0_1B-doc.zip

Install javamail like this:

```
cd /installations
```

```
unzip javamail-1_3_2.zip
cd javamail-1.3.2/
mkdir /usr/share/java
cp mail.jar /usr/share/java
```

Install jaf like this:

```
cd /installations
unzip jaf-1_0_2-upd.zip
cd  jaf-1.0.2
cp –R * /usr/share/java
```

Install Jta

```
cd /installations
unzip jta-1_0_1B-classes.zip
unzip jta-1_0_1B-docs.zip
cp –R docs/ /usr/share/java
cp –R javax/ /usr/share/java
```

2.2 Install additional RPM packages from Installation CD

Please use RPMDrake in Mandriva Control Center to install the following files:

- jdom-1.0.0.b8.2jpp
- ant-1.5.4-2jpp
- j2re-1.4.2_07-1mdk
- j2sdk-1.4.2_07-1mdk
- servletapi5-5.0.18-1jpp
- postgresql-jdbc-8.0.1-6mdk
- apache2-devel-2.0.53-9mdk

We also need some perl libraries:

- perl-Convert-ASN1-0.16-4mdk
- perl-ldap-0.31-2mdk
- perl-IO-Socket-SSL-0.96-1mdk
- perl-Authen-SASL-2.08-1mdk
- perl-Net_SSLeay-1.25-4mdk

Remarks:

1. If RPMDrake asks to install depended files, please do it.
2. Unfortunately I couldn't find all java related packages on my DVD. I went to my Mandriva Media Manager

(Control Center), added the following source and tried it again:

URL:
http://ftp.surfnet.nl/pub/os/Linux/distr/Mandrakelinux/devel/2005/i586/media/jpackage

Path:
../../media/media_info/hdlist_jpackage.cz

2.3 Compiling OPEN-XCHANGE™ and first check

Please download the OPEN-XCHANGE™ from the following website and store it in your installation directory:

http://mirror.open-xchange.org/ox/EN/community/

```
cd /installations
tar xzf open-xchange-0.8.0-0tar.gz
cd open-xchange.0.8.0-0/
chown -R root:root *
./configure \
--prefix=/usr/local/ox \
--with-mailjar=/usr/share/java/mail.jar \
--with-activationjar=/usr/share/java/activation.jar \
--with-jdomjar=/usr/share/java/jdom.jar \
--with-xercesjar=/usr/share/java/xerces-j2.jar \
--with-jdbcjar=/usr/share/pgsql/pg74.215.jdbc3.jar \
--with-jsdkjar=/usr/share/java/servletapi5.jar \
--enable-webdav \
--with-runuid=ox \
--with-rungid=ox

make
make install
chown –R ox:ox /usr/local/ox/var
```

Note: To avoid the following error message, you should start PostgrSQL sever first:

configure: WARNING: it seems that the database can not be reached ... maybe the application will not work as expected

Next we need to copy the following files to Apache's cgi-bin directory: login.pl and login.pm

```
cd /usr/local/ox/share/perl
cp login.* /var/www/cgi-bin
```

Please try to enter the login screen using your favourite browser:

http://servername/cgi-bin/login.pl or **http://IPaddress/cgi-bin/login.pl**

You should see the Open-Xchange Login Window.

2.4 Installing Jakarta Tomcat 5

Please download jakarta-tomcat from the source below and store it in you installations directory:

http://jakarta.apache.org/site/downloads/downloads_tomcat-5.cgi

or from here:

http://apache.belnet.be/jakarta/tomcat-5/v5.5.9/bin/jakarta-tomcat-5.5.9.zip
http://apache.belnet.be/jakarta/tomcat-5/v5.5.9/bin/jakarta-tomcat-5.5.9-admin.zip
http://apache.belnet.be/jakarta/tomcat-5/v5.5.9/bin/jakarta-tomcat-5.5.9-compat.zip

Install Tomcat like this:

```
cd /installations
unzip jakarta-tomcat-5.5.9.zip
unzip jakarta-tomcat-5.5.9-admin.zip
unzip jakarta-tomcat-5.5.9-compat.zip
cd  jakarta-tomcat-5.5.9
mkdir  /usr/local/tomcat
cp –R * /usr/local/tomcat
```

Edit /usr/local/tomcat/conf/tomcat-users.xml and set:

'user username="admin" password="Your password" roles="manager,admin" '

Start tomcat like this:

```
cd /usr/local/tomcat/
./startup.sh
```

If you point you favourite browser (IE or Netscape) to the following URL, you should see tomcat running.

http://Your Server IP:8080

2.5 Installling Servlets

Copy needed servlet file into the tomcat webapps tree:

```
cd /usr/local/tomcat/
mkdir -p webapps/servlet/WEB-INF/lib
mkdir -p webapps/servlet/WEB-INF/classes
cd servlet/WEB-INF/classes
cp /usr/local/ox/share/servlets/*.class .
cd ../lib
cp /usr/local/ox/lib/*  .
```

Now copy the file **web.xml** from your installation directory:

```
cd /installation/open-exchange-0.8.0/system/servlet/
cp web.xml /usr/local/tomcat/webapps/servlet/WEB-INF
```

Use your user and password created in **2.4** and login as tomcat manager:

http://Your Server IP:8080/manager/html/

DEPLOY the files “umin.war” and “servlet.war” (from the directory of OX under lib). You will later find two new entries in you “Application Manager”: "/umin" and "/servlet".

Finally do not forget to restart Tomcat 5 like this:

```
/usr/local/tomcat/bin/shutdown.sh
/usr/local/tomcat/bin/startup.sh
```

To check if everything is working fine, open you favourite Browser and go to the following URL:

http://Your Server IP:8080/servlet/intranet

You should see a message "No running Server found“: it means that all is OK.

Let us dobble check the configuration. You shoud have the following file in /usr/local/tomcat/ webapps/servlet/WEB-INF/lib:

activation.jar, comfiretools.jar, intranet.jar, jdom.jar, mail.jar, nas.jar, postgresql.jar and webdav.jar

Please make sure to have correct ownership and permissions:
If necessary do:

```
chown –R tomcat:tomcat /usr/local/tomcat/webapps/servlet/WEB-INF
```

For security reasons, all files should have 644 permissions.

2.6 Install Apache Module Mod_jk

I downloaded `mod_jk-ap20-1.2.10-1jpp.i386.rpm` to the installation directory:

http://www.jpackage.org/rpm.php?id=1165

… and installed it like this:

```
su
cd /installation
rpm –i mod_jk-ap20-1.2.10-1jpp.i386.rpm
```

If everything went fine, we just have to copy the following files into the Tomcat and Apache directory:

workers2.properties
mod_jk.conf

```
cp /usr/share/doc/mod_jk-ap20-1.2.10/workers.properties.sample
/etc/httpd/conf/workers2.properties
cp /usr/share/doc/mod_jk-ap20-1.2.10/mod_jk.conf.sample
/etc/httpd/conf.d/mod_jk.conf
```

You will also find the file mod_jk.so in /usr/lib/httpd/modules/

Please edit mod_jk.conf (see chapter 6.0).

Restart Apache like this:

```
service httpd restart
```

Watch for errors in **var/log/httpd/error.log!**

3.0 Post-Installation and first run

3.1 Postgresql database

In the last part we'll finally configure Postgresql, LDAP and will start the necessary services.

Lets start to populate the database. Just do the following:

```
su postgres
psql -U openexchange openexchange < /usr/local/ox/share/init_database.sql
exit
/usr/local/ox/sbin/dbinit_ox
service ldap restart
```

Note: Please use the password you created in 1.3

3.2 Configuring LDAP

Edit your **/etc/openldap/slapd.conf** and add the following lines:

```
include /usr/local/ox/share/openxchange.schema

suffix "dc=example,dc=org"
rootdn "cn=Manager,dc=example,dc=org"
rootpw secret

index uid,mailEnabled,cn,sn,givenname,lnetMailAccess,alias,loginDestination
eq,sub
```

Note: To avoid error messages add the schema files just like this in the right order:

include /etc/openldap/schema/core.schema
include /etc/openldap/schema/cosine.schema
include /etc/openldap/schema/inetorgperson.schema
include /etc/openldap/schema/nis.schema
include /etc/openldap/schema/openxchange.schema

If you get the following error message:

usr/share/openldap/schema/openxchange.schema: line 14: ***Duplicate attributeType: "alias"***

Check what other schemas you're including (slapd.conf) and see which one already includes an "alias" attribute. When their OID or syntax and matching rule are identical, you can comment out one of the attribute definitions.

Now create a password as stated in the INSTALL file:

```
perl -e 'print crypt("mypassword",pack("C2",(int(rand 26)+65),(int(rand
26)+65))."\n";'
```

This is my password: SZbUD6ayTkCFk

Edit **/usr/local/ox/share/init_ldap.ldif** and modify the line

userPassword: {CRYPT}newmailadminpass

... to the result of the perl command. In my example it is:

userPassword: {CRYPT}SZbUD6ayTkCFk

Now insert the LDAP data:

slapadd -l /usr/local/ox/share/init_ldap.ldif

If you have an error, check your config and try again until it works ... If you need to reset the LDAP database, here's the solution:

```
/etc/init.d/lapd stop
rm /var/lib/ldap/*
/etc/init.d/ldap start
```

Note: Please check if all files in /var/lib/ldap are owned by ldap.

Now modify your **/etc/openldap/ldap.conf** like this:

```
BASE   dc=example,dc=org
HOST    localhost
```

Note: Do not put any space after the comma in dc=example,dc=org !!!

Create a symbolic link like this:

```
ln -s /etc/openldap/ldap.conf /usr/local/ox/etc/groupware/ldap.conf
```

3.3 Create a user

Let's try your PostgreSQL / LDAP config by adding a user:

```
cd /usr/local/ox/sbin/
./adduser_ox \
--username="john" \
--passwd="password" \
--name="doe" \
--sname="john" \
--maildomain="example.org" \
--ox_timezone="Europe/Paris"
```

Check carefully the feedback of the command. Even if you have a green "OK" message, you can have an error message ... If this is the case, don't go further **until it is corrected!**

3.4 Website files preparation

Copy the following files to wwwroot (Mandriva normally uses /var/www/html)

```
cd /var/www/html
mkdir cfintranet
mkdir cfintranet/webmail

cd /usr/local/ox/share/groupware/data
cp -R images css javascript /var/www/html/cfintranet

cd /usr/local/ox/share/webmail/data
cp -R images css javascript /var/www/html/cfintranet/webmail
```

Do not forget to create this two symbolic links:

```
cd /usr/local/ox/etc/webmail
ln –s /etc/openldap/ldap.conf
cd ../groupware
ln -s /etc/openldap/ldap.conf
```

Now, all should be OK for a test run. First, start the openxchange service as root:

```
/usr/local/ox/etc/init.d/openexchange start
```

Then open the login page **http://myhost/cgi-bin/login.pl**, and login with the username and password supplied previously to the command adduser_ox :

4.0 Face Lifting

OK, what you now see is not nice. (no icons but ugly squares instead). Fortunately somebody did allady great work.

Please download the file **ox_zenith_iconset-0.1.tar.gz** from here:

http://ox.cutmasta.org/

Install the new icons like this:

```
tar xzf ox_zenith_iconset-0.1.tar.gz
cd ox_zenith_iconset/top
cp * /var/www/html/cfintranet/images/top/EN/
cp * /var/www/html/cfintranet/images/top/DE/
```

5.0 Cyrys-IMAP and Webmail installation

To do ...

6.0 File Listings

/var/lib/pgsql/data/pg_hba.conf

```
local all postgres ident sameuser
#
# All other connections by UNIX sockets
local all all trust
#
# All IPv4 connections from localhost
host all all 127.0.0.1 255.255.255.255 trust
#
# All IPv6 localhost connections
host all all ::1 ffff:ffff:ffff:ffff:ffff:ffff:ffff:ffff ident sameuser
host all all ::ffff:127.0.0.1/128 ident sameuser
#
# reject all other connection attempts
host all all 0.0.0.0 0.0.0.0 reject
```

/usr/local/tomcat/conf/tomcat-users.xml

```
<?xml version='1.0' encoding='utf-8'?>
<tomcat-users>
  <role rolename="tomcat"/>
  <role rolename="role1"/>
  <role rolename="manager"/>
  <role rolename="admin"/>
  <user username="tomcat" password="tomcat"
roles="tomcat,admin,manager"/>
  <user username="both" password="tomcat" roles="tomcat,role1"/>
  <user username="role1" password="tomcat" roles="role1"/>
</tomcat-users>
```

/etc/httpd/conf.d/mod_jk.conf

```
#LoadModule      jk_module modules/mod_jk.so
LoadModule       jk_module /usr/lib/httpd/modules/mod_jk.so

JkWorkersFile   /etc/httpd/conf/workers2.properties
JkLogFile       logs/mod_jk.log
JkLogLevel      error

#######################################################################
#                     SSL configuration                               #
#
```

```
# By default mod_jk is configured to collect SSL information from
# the apache environment and send it to the Tomcat workers. The
# problem is that there are many SSL solutions for Apache and as
# a result the environment variable names may change.
#
# The following (commented out) JK related SSL configureation
# can be used to customize mod_jk's SSL behaviour.
#
# Should mod_jk send SSL information to Tomcat (default is On)
# JkExtractSSL Off
#
# What is the indicator for SSL (default is HTTPS)
# JkHTTPSIndicator HTTPS
#
# What is the indicator for SSL session (default is SSL_SESSION_ID)
# JkSESSIONIndicator SSL_SESSION_ID
#
# What is the indicator for client SSL cipher suit (default is
SSL_CIPHER)
# JkCIPHERIndicator SSL_CIPHER
#
# What is the indicator for the client SSL certificated (default is
SSL_CLIENT_CERT)
# JkCERTSIndicator SSL_CLIENT_CERT
#
#                                                                    #
######################################################################

#
# Root context mounts for Tomcat
#
JkMount /*.jsp ajp13
JkMount /servlet/* ajp13

############################################################
# Auto configuration for the /examples context starts.
############################################################

#
# The following line makes apache aware of the location of the
/examples context
#
Alias /examples "/usr/share/tomcat5/webapps/examples"
<Directory "/usr/share/tomcat5/webapps/examples">
    Options Indexes FollowSymLinks
</Directory>

#
# The following line mounts all JSP files and the /servlet/ uri to
tomcat
#
JkMount /examples/servlet/* ajp13
JkMount /examples/*.jsp ajp13

#
# The following line prohibits users from directly access WEB-INF
#
<Location "/examples/WEB-INF/">
    AllowOverride None
    deny from all
</Location>
```

```
############################################################
# Auto configuration for the /examples context ends.
############################################################

############################################################
# Auto configuration for the /admin context starts.
############################################################

#
# The following line makes apache aware of the location of the
/admin context
#
Alias /admin "/usr/share/tomcat5/webapps/admin"
<Directory "/usr/share/tomcat5/webapps/admin">
    Options Indexes FollowSymLinks
</Directory>

#
# The following line mounts all JSP files and the /servlet/ uri to
tomcat
#
JkMount /admin/servlet/* ajp13
JkMount /admin/*.jsp ajp13

#
# The following line prohibits users from directly access WEB-INF
#
<Location "/admin/WEB-INF/">
    AllowOverride None
    deny from all
</Location>

############################################################
# Auto configuration for the /admin context ends.
############################################################

############################################################
# Auto configuration for the /test context starts.
############################################################

#
# The following line makes apache aware of the location of the /test
context
#
Alias /test "/usr/share/tomcat5/webapps/test"
<Directory "/usr/share/tomcat5/webapps/test">
    Options Indexes FollowSymLinks
</Directory>

#
# The following line mounts all JSP files and the /servlet/ uri to
tomcat
#
JkMount /test/servlet/* ajp13
JkMount /test/*.jsp ajp13
JkMount /servlet/webdav.contacts/* ajp13

#
# The following line prohibits users from directly access WEB-INF
#
```

```
<Location "/test/WEB-INF/">
    AllowOverride None
    deny from all
</Location>

############################################################
# Auto configuration for the /test context ends.
############################################################

#
# JBoss JMX console mount
#
JkMount /jmx-console/* jboss

#
# Restrict access to JBoss JMX console
#
<Location "/jmx-console/">
    Order Deny,Allow
    Deny from all
    Allow from 127.0.0.1
</Location>
```

/usr/local/tomcat/conf/workers2.properties

```
# workers.properties -
#
# This file provides jk derived plugins with the needed information to
# connect to the different tomcat workers.  Note that the distributed
# version of this file requires modification before it is usable by a
# plugin.
#
# As a general note, the characters $( and ) are used internally to define
# macros. Do not use them in your own configuration!!!
#
# Whenever you see a set of lines such as:
# x=value
# y=$(x)\something
#
# the final value for y will be value\something
#
# Normaly all you will need to do is un-comment and modify the first three
# properties, i.e. workers.tomcat_home, workers.java_home and ps.
# Most of the configuration is derived from these.
#
# When you are done updating workers.tomcat_home, workers.java_home and ps
# you should have 5 workers configured:
#
# - An ajp12 worker that connects to localhost:8007
# - An ajp13 worker that connects to localhost:8009
# - An ajp13 worker that connects to localhost:8809
# - A jni inprocess worker.
# - A load balancer worker
#
# However by default the plugins will only use the ajp12 worker. To have
```

```
# the plugins use other workers you should modify the worker.list property.
#
#

# OPTIONS ( very important for jni mode )

#
# workers.tomcat_home should point to the location where you
# installed tomcat. This is where you have your conf, webapps and lib
# directories.
#
workers.tomcat_home=/usr/share/tomcat5

#
# workers.java_home should point to your Java installation. Normally
# you should have a bin and lib directories beneath it.
#
workers.java_home=/usr/lib/jvm/java

#
# You should configure your environment slash... ps=\ on NT and / on UNIX
# and maybe something different elsewhere.
#
ps=/

#
#------ ADVANCED MODE ----------------------------------------------
#-------------------------------------------------------------------
#

#
#------ DEFAULT worket list ----------------------------------------
#-------------------------------------------------------------------
#
#
# The workers that your plugins should create and work with
#
# Add 'inprocess' if you want JNI connector
worker.list=ajp12, ajp13, jboss
# , inprocess


#
#------ DEFAULT ajp12 WORKER DEFINITION ----------------------------
#-------------------------------------------------------------------
#

#
# Defining a worker named ajp12 and of type ajp12
# Note that the name and the type do not have to match.
#
worker.ajp12.port=8007
worker.ajp12.host=localhost
worker.ajp12.type=ajp12
#
# Specifies the load balance factor when used with
# a load balancing worker.
# Note:
#  ----> lbfactor must be > 0
#  ----> Low lbfactor means less work done by the worker.
worker.ajp12.lbfactor=1
```

```
#
#------ DEFAULT ajp13 WORKER DEFINITIONS ----------------------------
#-------------------------------------------------------------------
#

#
# Defining a worker named ajp13 and of type ajp13
# Note that the name and the type do not have to match.
#
worker.ajp13.port=8009
worker.ajp13.host=localhost
worker.ajp13.type=ajp13
#
# Specifies the load balance factor when used with
# a load balancing worker.
# Note:
#  ----> lbfactor must be > 0
#  ----> Low lbfactor means less work done by the worker.
worker.ajp13.lbfactor=1

#
# Specify the size of the open connection cache.
#worker.ajp13.cachesize

#
# Defining a worker named jboss and of type ajp13
#
worker.jboss.port=8809
worker.jboss.host=localhost
worker.jboss.type=ajp13
#
# Specifies the load balance factor when used with
# a load balancing worker.
# Note:
#  ----> lbfactor must be > 0
#  ----> Low lbfactor means less work done by the worker.
worker.jboss.lbfactor=1

#
# Specify the size of the open connection cache.
#worker.jboss.cachesize

#
#------ DEFAULT LOAD BALANCER WORKER DEFINITION ----------------------
#-------------------------------------------------------------------
#

#
# The loadbalancer (type lb) workers perform wighted round-robin
# load balancing with sticky sessions.
# Note:
#  ----> If a worker dies, the load balancer will check its state
#        once in a while. Until then all work is redirected to peer
#        workers.
worker.loadbalancer.type=lb
worker.loadbalancer.balanced_workers=ajp12, ajp13, jboss


#
#------ DEFAULT JNI WORKER DEFINITION--------------------------------
```

```
#---------------------------------------------------------------------
#

#
# Defining a worker named inprocess and of type jni
# Note that the name and the type do not have to match.
#
worker.inprocess.type=jni

#
#------ CLASSPATH DEFINITION --------------------------------------
#---------------------------------------------------------------------
#

#
# Additional class path components.
#
worker.inprocess.class_path=$(workers.tomcat_home)$(ps)lib$(ps)tomcat.jar

#
# Setting the command line for tomcat.
# Note: The cmd_line string may not contain spaces.
#
worker.inprocess.cmd_line=start

# Not needed, but can be customized.
#worker.inprocess.cmd_line=-config
#worker.inprocess.cmd_line=$(workers.tomcat_home)$(ps)conf$(ps)server.xml
#worker.inprocess.cmd_line=-home
#worker.inprocess.cmd_line=$(workers.tomcat_home)

#
# The JVM that we are about to use
#
worker.inprocess.jvm_lib=$(workers.java_home)$
(ps)jre$(ps)lib$(ps)i386$(ps)server$(ps)libjvm.so

#
# Setting the place for the stdout and stderr of tomcat
#
worker.inprocess.stdout=$(workers.tomcat_home)$(ps)logs$(ps)inprocess.stdout
worker.inprocess.stderr=$(workers.tomcat_home)$(ps)logs$(ps)inprocess.stderr

#
# Setting the tomcat.home Java property
#
#worker.inprocess.sysprops=tomcat.home=$(workers.tomcat_home)

#
# Java system properties
#
# worker.inprocess.sysprops=java.compiler=NONE
# worker.inprocess.sysprops=myprop=mypropvalue

#
# Additional path components.
#
# worker.inprocess.ld_path=d:$(ps)SQLLIB$(ps)bin
#
```

/etc/openldap/ldap.conf

```
# $OpenLDAP: pkg/ldap/libraries/libldap/ldap.conf,v 1.9 2000/09/04
19:57:01 kurt Exp $
#
# LDAP Defaults
#

# See ldap.conf(5) for details
# This file should be world readable but not world writable.

BASE  dc=example,dc=org
HOST  localhost
#URI  ldap://ldap.example.com ldap://ldap-master.example.com:666

#SIZELIMIT  12
#TIMELIMIT  15
#DEREF            never

# SSL/TSL configuration. With CA-signed certs, TLS_REQCERT should be
# "demand", with the CA certificate accessible
#TLS_CACERT      /etc/ssl/cacert.pem
#TLS_CACERTDIR    /etc/ssl/openldap
#TLS_REQCERT    ([demand],never,allow,try)
TLS_REQCERT     allow
```

/etc/openldap/slapd.conf

```
# $OpenLDAP: pkg/ldap/servers/slapd/slapd.conf,v 1.8.8.6 2001/04/20
23:32:43 kurt Exp $
#
# See slapd.conf(5) for details on configuration options.
# This file should NOT be world readable.
#
# Modified by Christian Zoffoli <czoffoli@linux-mandrake.com>
# Version 0.2
#

include     /usr/share/openldap/schema/core.schema
include     /usr/share/openldap/schema/cosine.schema
#include    /usr/share/openldap/schema/corba.schema
include     /usr/share/openldap/schema/inetorgperson.schema
#include    /usr/share/openldap/schema/java.schema
#include    /usr/share/openldap/schema/krb5-kdc.schema
#include /usr/share/openldap/schema/kerberosobject.schema
#include    /usr/share/openldap/schema/misc.schema
include     /usr/share/openldap/schema/nis.schema
#include    /usr/share/openldap/schema/openldap.schema
#include /usr/share/openldap/schema/autofs.schema
#include /usr/share/openldap/schema/samba.schema
#include /usr/share/openldap/schema/kolab.schema
#include /usr/share/openldap/schema/evolutionperson.schema
#include /usr/share/openldap/schema/calendar.schema
#include /usr/share/openldap/schema/sudo.schema
#include /usr/share/openldap/schema/dnszone.schema
#include /usr/share/openldap/schema/dhcp.schema
include /usr/local/ox/share/openxchange.schema
#include /usr/share/openldap/schema/rfc822-MailMember.schema
```

```
#include /usr/share/openldap/schema/pilot.schema
#include /usr/share/openldap/schema/qmail.schema
#include /usr/share/openldap/schema/mull.schema
#include /usr/share/openldap/schema/netscape-profile.schema
#include /usr/share/openldap/schema/trust.schema

#include    /etc/openldap/schema/local.schema


# Define global ACLs to disable default read access and provide default
# behaviour for samba/pam use
#include    /etc/openldap/slapd.access.conf

# Provide write access to replicators, and cover access to any other
# attributes (default anonymous read access may be undesirable)
access to dn.subtree="dc=example,dc=org"
        by group="cn=Replicator,ou=Group,dc=example,dc=org"
        by users read
        by anonymous read

# Do not enable referrals until AFTER you have a working directory
# service AND an understanding of referrals.
#referral   ldap://root.openldap.org

pidfile           /var/run/ldap/slapd.pid
argsfile    /var/run/ldap/slapd.args

modulepath  /usr/lib/openldap
#moduleload      back_dnssrv.la
#moduleload      back_ldap.la
#moduleload      back_meta.la
#moduleload      back_monitor.la
#moduleload      back_passwd.la
#moduleload      back_sql.la

# SASL config
#sasl-host ldap.example.com

# To allow TLS-enabled connections, create /etc/ssl/openldap/ldap.pem
# and uncomment the following lines.
#TLSRandFile            /dev/random
#TLSCipherSuite         HIGH:MEDIUM:+SSLv2
TLSCertificateFile      /etc/ssl/openldap/ldap.pem
TLSCertificateKeyFile   /etc/ssl/openldap/ldap.pem
#TLSCACertificatePath   /etc/ssl/openldap/
#TLSCACertificateFile    /etc/ssl/cacert.pem
TLSCACertificateFile    /etc/ssl/openldap/ldap.pem
#TLSVerifyClient never # ([never]|allow|try|demand)

# logging
#loglevel 256

########################################################################
# database definitions
########################################################################

database    bdb
suffix            "dc=example,dc=org"
#suffix           "o=My Organization Name,c=US"
rootdn            "cn=Manager,dc=example,dc=org"
#rootdn           "cn=Manager,o=My Organization Name,c=US"
```

```
# Cleartext passwords, especially for the rootdn, should
# be avoided.  See slappasswd(8) and slapd.conf(5) for details.
# Use of strong authentication encouraged.
rootpw            secret
# rootpw          {crypt}ijFYNcSNctBYg

# The database directory MUST exist prior to running slapd AND
# should only be accessable by the slapd/tools. Mode 700 recommended.
directory   /var/lib/ldap

# Tuning settings, please see the man page for slapd-bdb for more
information
# as well as the DB_CONFIG file in the database directory
# commented entries are at their defaults
# In-memory cache size in entries
#cachesize 1000
# Checkpoint the bdb database after 256kb of writes or 5 minutes have
passed
# since the last checkpoint
checkpoint 256 5

# Indices to maintain
#index      objectClass                    eq
#index      objectClass,uid,uidNumber,gidNumber,memberuid   eq
#index      cn,mail,surname,givenname           eq,subinitial
index
uid,mailEnabled,cn,sn,givenname,lnetMailAccess,alias,loginDestination
eq,sub

# samba searches on sid
#index      sambaSID                       eq

# Basic ACL (deprecated in favour of ACLs in
/etc/openldap/slapd.access.conf)
#access to attr=userPassword
#        by self write
#        by anonymous auth
#        by dn="uid=root,ou=People,dc=example,dc=com" write
#        by * none

#access to *
#        by dn="uid=root,ou=People,dc=example,dc=com" write
#        by * read

# ACL ensuring replicator has write access
#access to *
#     by group="cn=Replicator,ou=Group,dc=example,dc=com" write
#     by * read

# Replica configuration (if this server is a slave)
#updatedn        "cn=ldap-
master.example.com,ou=Hosts,dc=example,dc=com"
#updateref       "ldap://ldap-master.example.com"

# Replication configuration (if this server is a master)
#replica host=ldap-slave1.example.com:389
#        binddn="cn=ldap-master.example.com,ou=Hosts,dc=example,dc=com"
#        bindmethod=simple credentials="mypassword"

# Uncomment to enable statistics gathering at basedn cn=monitor (load
```

```
monitor
# module above too)
#database monitor
```

/usr/local/ox/share/init_ldap.ldif

```
dn: dc=example,dc=org
objectClass: dcObject
objectClass: organization
dc: example
o: Example Organization

dn: ou=OxObjects,dc=example,dc=org
objectClass: top
objectClass: organizationalUnit
ou: OxObjects

dn: ou=Users,ou=OxObjects,dc=example,dc=org
objectClass: top
objectClass: organizationalUnit
ou: Users

dn: ou=Groups,ou=OxObjects,dc=example,dc=org
objectClass: top
objectClass: organizationalUnit
ou: Groups

dn: ou=ResourceObjects,ou=OxObjects,dc=example,dc=org
objectClass: top
objectClass: organizationalUnit
ou: ResourceObjects

dn: ou=ResourceGroups,ou=ResourceObjects,ou=OxObjects,dc=example,dc=org
objectClass: top
objectClass: organizationalUnit
ou: ResourceGroups

dn: ou=Resources,ou=ResourceObjects,ou=OxObjects,dc=example,dc=org
objectClass: top
objectClass: organizationalUnit
ou: Resources

dn: ou=AdminObjects,ou=OxObjects,dc=example,dc=org
objectClass: top
objectClass: organizationalUnit
ou: AdminObjects

dn: ou=SMTPObjects,ou=AdminObjects,ou=OxObjects,dc=example,dc=org
objectClass: top
objectClass: organizationalUnit
ou: SMTPObjects

dn: ou=DNSObjects,ou=AdminObjects,ou=OxObjects,dc=example,dc=org
objectClass: top
objectClass: organizationalUnit
ou: DNSObjects

dn: o=AddressBook,ou=OxObjects,dc=example,dc=org
objectClass: top
objectClass: organization
o: AddressBook

dn: cn=AddressAdmins,o=AddressBook,ou=OxObjects,dc=example,dc=org
objectClass: top
objectClass: groupOfNames
cn: AddressAdmins
member: uid=mailadmin,ou=Users,ou=OxObjects,dc=example,dc=org

dn: cn=users,ou=Groups,ou=OxObjects,dc=example,dc=org
objectClass: top
```

```
objectClass: posixGroup
cn: users
userPassword: {crypt}SZbUD6ayTkCFk
gidNumber: 500

dn: cn=OXSMTPAdmins,ou=Administration,ou=Groups,ou=OxObjects,dc=example,dc=org
objectClass: top
objectClass: groupOfNames
member: uid=mailadmin,ou=Users,ou=OxObjects,dc=example,dc=org
cn: OXSMTPAdmins

dn: cn=OXUserAdmins,ou=Administration,ou=Groups,ou=OxObjects,dc=example,dc=org
objectClass: top
objectClass: groupOfNames
member: uid=mailadmin,ou=Users,ou=OxObjects,dc=example,dc=org
cn: OXUserAdmins

dn: cn=OXGroupAdmins,ou=Administration,ou=Groups,ou=OxObjects,dc=example,dc=org
objectClass: top
objectClass: groupOfNames
cn: OXGroupAdmins
member: uid=mailadmin,ou=Users,ou=OxObjects,dc=example,dc=org

dn: cn=OXDNSAdmins,ou=Administration,ou=Groups,ou=OxObjects,dc=example,dc=org
objectClass: top
objectClass: groupOfNames
cn: OXDNSAdmins
member: uid=mailadmin,ou=Users,ou=OxObjects,dc=example,dc=org

dn: cn=OXResourceAdmins,ou=Administration,ou=Groups,ou=OxObjects,dc=example,dc=org
objectClass: top
objectClass: groupOfNames
cn: OXResourceAdmins
member: uid=mailadmin,ou=Users,ou=OxObjects,dc=example,dc=org

dn: cn=OXIMAPAdmins,ou=Administration,ou=Groups,ou=OxObjects,dc=example,dc=org
objectClass: top
objectClass: groupOfNames
member: uid=mailadmin,ou=Users,ou=OxObjects,dc=example,dc=org
cn: OXIMAPAdmins

dn: ou=Administration,ou=Groups,ou=OxObjects,dc=example,dc=org
objectClass: top
objectClass: organizationalUnit
ou: Administration

dn: uid=mailadmin,ou=Users,ou=OxObjects,dc=example,dc=org
objectClass: top
objectClass: shadowAccount
objectClass: posixAccount
objectClass: person
objectClass: inetOrgPerson
objectClass: OXUserObject
OpenLDAPaci: 1#entry#grant;r,w,s,c;cn,initials,mail,title,ou,l,birthday,description,street,
postalcode,st,c,oxtimezone,homephone,mobile,pager,facsimiletelephonenumber,telephonenumber,
labeleduri,jpegphoto,loginDestination,sn,givenname,;r,s,c;[all]#self#
uidNumber: 501
homeDirectory: /home/mailadmin/
loginShell: /bin/bash
mailEnabled: OK
gidNumber: 500
mailDomain: example.org
ou: Administration
uid: mailadmin
sn: Admin
preferredLanguage: EN
mail: mailadmin@example.org
o: Example Organization
smtpServer: localhost
imapServer: localhost
alias: postmaster@example.org
alias: root@example.org
givenName: Admin
cn: Admin Admin
shadowMin: 0
shadowMax: 9999
```

```
shadowWarning: 7
shadowExpire: 0
userPassword: secret
OXAppointmentDays: 5
OXGroupID: 500
OXTaskDays: 5
OXTimeZone: Europe/Berlin

dn: ou=addr,uid=mailadmin,ou=Users,ou=OxObjects,dc=example,dc=org
ou: addr
objectClass: top
objectClass: organizationalUnit

dn: ou=MailTransports,ou=SMTPObjects,ou=AdminObjects,ou=OxObjects,dc=example,dc=org
objectClass: top
objectClass: organizationalUnit
ou: MailTransports

dn: smtpDomain=example.org,ou=MailTransports,ou=SMTPObjects,ou=AdminObjects,
ou=OxObjects,dc=example,dc=org
smtpDomainTransportNexthop: smtp:192.168.32.134
smtpDomain: example.org
objectClass: top
objectClass: OXMailTransportObject
cn: example transport map entry

dn: ou=AvailableServers,ou=AdminObjects,ou=OxObjects,dc=example,dc=org
objectClass: top
objectClass: organizationalUnit
ou: AvailableServers
description: List of available Servers for OX

dn: ou=directoryServer,ou=AvailableServers,ou=AdminObjects,ou=OxObjects,dc=example,dc=org
objectClass: top
objectClass: organizationalUnit
ou: directoryServer

dn: ou=webmailServer,ou=AvailableServers,ou=AdminObjects,ou=OxObjects,dc=example,dc=org
objectClass: top
objectClass: organizationalUnit
ou: webmailServer

dn: ou=smtpServer,ou=AvailableServers,ou=AdminObjects,ou=OxObjects,dc=example,dc=org
objectClass: top
objectClass: organizationalUnit
ou: smtpServer

dn: ou=SharedFolder,ou=OxObjects,dc=example,dc=org
objectClass: top
objectClass: organizationalUnit
ou: SharedFolder

dn: ou=imapServer,ou=AvailableServers,ou=AdminObjects,ou=OxObjects,dc=example,dc=org
objectClass: top
objectClass: organizationalUnit
ou: imapServer

dn: domainName=example.org,ou=DNSObjects,ou=AdminObjects,ou=OxObjects,dc=example,dc=org
objectClass: top
objectClass: OXVDomainObject
MTALocaldomain: TRUE
domainName: example.org

dn: ou=groupwareServer,ou=AvailableServers,ou=AdminObjects,ou=OxObjects,dc=example,dc=org
objectClass: top
objectClass: organizationalUnit
ou: groupwareServer
```