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Installation and Administration Guide
Open-Xchange™ Server 6

Open-Xchange™ Server 6 : Installation and Administration Guide

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Chapter 1. Open-Xchange Installation

This chapter describes the initial setup and configuration of the Open-Xchange services. Basically there need to be installed/available four types of machines as well as an additional service (further information can be found in the Architecture Whitepaper on the Open-Xchange website):

- **Frontend Server** that runs the Apache webserver and forwards the user requests to the application servers.

- **Application Server** that runs the Open-Xchange application itself.

- **Database Server** that runs the MySQL database or databases.

- **Administration Server** that is accessed through the RMI, SOAP or CLT interface for provisioning.

- **Filestore Service** that holds the storage space for the FileStore that needs to be available on all machines.

These services can be installed together on one machine, distributed over several machines or in high end environments, clustered over several clusters.
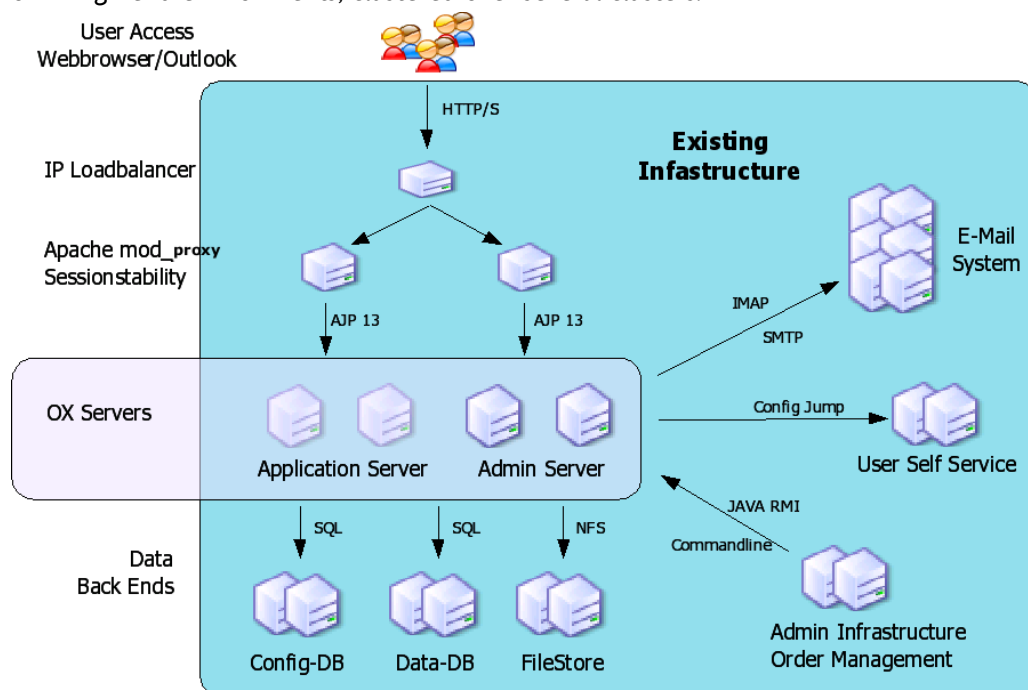
The following sections will guide you through the installation of the Open-Xchange Server. The basic configuration and software requirements will be described. As it is meant as a quick walk-through, it assumes an existing installation of the operating system and requires average system administration skills. It will show you how to set up a basic installation with none of the typically used distributed environment settings. The target of this instruction is:

To set up a single server installation
To set up a single Open-Xchange instance, no cluster
To set up a database for a single database service, no replication
To provide a basic configuration setup, no mailserver configuration

1.1. Open-Xchange Server 6 on Debian GNU/Linux 5.0

1.1.1. Requirements

Plain installed Debian GNU/Linux 5.0, no graphical tools required
A supported Java Virtual Machine
A working internet connection

Java runtimes and versions

Open-Xchange Server 6 is known to work with the Java runtimes and versions listed in the table below. Support for Java 1.6 runtimes has been added with version 6.10.

SUN Java 1.5
SUN Java 1.6
IBM Java 1.5
IBM Java 1.6

Setting the correct runtime to default

There are various implementations of Java available. The Open-Xchange Server is able to work with the most common ones. Using an unsupported Java platform will lead to odd errors or even to unavailability of service when operating the groupware. Operating systems are able to provide multiple Java virtual machines (JVM) at the same time. The Open-Xchange Server looks for installed JVMs in several places of the file system and uses the first it finds. Typically, /usr/bin/java contains a link pointing to the default JVM installation. On some operating system installations a JVM which is incompatible to the Open-Xchange Server is installed and set to default. In this case the default JVM can be configured using the update-alternatives tool.

```
$ update-alternatives --config java

There are 3 alternatives which provide `java'.

Selection    Alternative
--------------------------------------------
1    /usr/bin/gij-4.3
*+      2    /usr/lib/jvm/java-gcj/jre/bin/java
3    /usr/lib/jvm/java-1.5.0-sun/jre/bin/java
```

In this example, the GNU Compiler for Java (gcj) is set to default which is known to be incompatible with the Open-Xchange Server. The update-alternatives tool allows to set a different default JVM which should be java-1.5.0-sun in this case to make the Open-Xchange Server work. The tool does not modify any of your JVM installations. It just changes the target for the java binary. This can be checked very easily:

```
$ java -version
```

```
java version "1.5.0"
gij (GNU libgcj) version 4.3.2
```

Calling java -version shows that gcj is the default JVM. After changing the default JVM using update-alternatives it points to the SUN Java installation.

```
$ java -version

java version "1.5.0_14"
Java(TM) 2 Runtime Environment, Standard Edition (build 1.5.0_14-b03)
Java HotSpot(TM) Client VM (build 1.5.0_14-b03, mixed mode, sharing)
```

1.1.2. Adding Open-Xchange Repository

Open-Xchange maintains publicly available software repositories for different platforms, such as Debian. This repository should be added to the Debian installation to enable simple installation and updates.

Start a console and modify the Debian repository information file. It is required to add the non-free section of the Debian main repository for Sun Java. Also add the Open-Xchange software repository:

```
$ vim /etc/apt/sources.list

deb http://ftp.de.debian.org/debian/ lenny main contrib non-free
deb-src http://ftp.de.debian.org/debian/ lenny main contrib non-free

deb http://security.debian.org/ lenny/updates main contrib
deb-src http://security.debian.org/ lenny/updates main contrib

deb http://software.open-xchange.com/OX6/stable/DebianLenny/ /

# if you have a valid maintenance subscription, please uncomment the
# following and add the ldb account data to the url so that the most recent
# packages get installed
# deb http://LDBACCOUNT:LDBPASSWORD@software.open-xchange.com/OX6/updates/DebianLenny /
```

1.1.3. Updating repositories and installing packages

It is highly recommended to import the Open-Xchange build key to your package systems trusted keyring in order to make sure only Open-Xchange packages with valid signing are installed on the system. Otherwise you will encounter warnings about untrusted package sources. To import the Open-Xchange buildkey, please do the following:

Starting with SP5, Open-Xchange rpm packages will be signed using the Open-Xchange build gpg public key and the apt repository is signed according to http://wiki.debian.org/SecureApt.

```
Key ID: EED949F0
Key fingerprint: 8416 454E 1646 F085 9651  8FDE DD1A 5E9C EED9 49F0
```

The public key can be downloaded from the public pgp key servers or from http://soft-ware.open-xchange.com/oxbuildkey.pub

Note: If you are using the community packages, you need to import this key: http://soft-ware.open-xchange.com/oxbuildkey-community.pub

Importing key into apt based systems:

To import the key into the apt keyring, run

```
$ wget http://software.open-xchange.com/oxbuildkey.pub -O - | apt-key add -
```

If this command returns "OK", you are done importing the buildkey and can go on with the installation. In case that does not work, split it into two steps:

```
$ wget http://software.open-xchange.com/oxbuildkey.pub
$ apt-key add - < oxbuildkey.pub
```

To verify the success, run

```
$ apt-key list
```

The following or similar output should appear:

```
/etc/apt/trusted.gpg
--------------------
pub   1024D/2D230C5F 2006-01-03 [expired: 2007-02-07]
uid                  Debian Archive Automatic Signing Key (2006) <ftpmaster@debian.org>

pub   1024D/6070D3A1 2006-11-20 [expires: 2009-07-01]
uid                  Debian Archive Automatic Signing Key (4.0/etch) <ftpmaster@debian.org>

pub   1024D/ADB11277 2006-09-17
uid                  Etch Stable Release Key <debian-release@lists.debian.org>

pub   1024D/BBE55AB3 2007-03-31 [expires: 2010-03-30]
uid                  Debian-Volatile Archive Automatic Signing Key (4.0/etch)
sub   2048g/36CA98F3 2007-03-31 [expires: 2010-03-30]

pub   1024D/EED949F0 2005-04-15
uid                  RPM BUILD (OPEN-XCHANGE) <rpmbuild@open-xchange.org>
```

Importing key into rpm based systems

To import that key into the rpm database, use the following command (as root):

```
$ rpm --import http://software.open-xchange.com/oxbuildkey.pub
```

To verify the success, use

```
$ rpm -qi gpg-pubkey-eed949f0-425f910e
```

This should return an output similar to this one:

```
Name        : gpg-pubkey              Relocations: (not relocatable)
Version     : eed949f0                    Vendor: (none)
Release     : 425f910e                Build Date: Tue Jan 13 14:42:33  2009
Install Date: Tue Jan 13 14:42:33 2009     Build Host: localhost
Group       : Public Keys             Source RPM: (none)
Size        : 0                          License: pubkey
Signature   : (none)
Summary     : gpg(RPM BUILD (OPEN-XCHANGE) <rpmbuild@open-xchange.org>)
Description :
-----BEGIN PGP PUBLIC KEY BLOCK-----
Version: rpm-4.4.2 (beecrypt-4.1.2)

mQGiBEJfkQ4RBACX+9u2Ss9S2qNDdZ6jBVUzju8Viwgur/jJ0lQuvGT5GPYfjS1mMMS7NZCh
o0htlxlTbkb7ozVCbGQ2gDDgPW1EbWG+bcyl76BM79b6L0smtG2KFmJRC/9BpG8v5mRCj1Kd
RkbYi3FQceR6VJZmu7MOYtLx8dgdKnswYg1sKS5NNwCgwjJtXwSM6HHdW81LSnBZmojTdlkE
AJei5ENSStM57vU9S28jNXheqAFcP1j/+D2IDLpasDBpdIz54SGMYcmdIgHpL/G+/HgPTCh9
pbzEoPRk+bgUuZcPVTHqHj1cLb3yOWo7hLypWngRdENj1wyVGJr9i3SMlp4YXCXG9TpfEFWs
BqwR0zB8keANm69SyE02T14X9qTaA/0bZMBLN2kieFN1IwqrUWGooHkkHYdr2p45CZP0mkA2
6S0RBmZ43IMrRlS5eaCOpNEDyRx7dqx61MXcwkcWQuVFmnMg/YaE0XUvy0ta0dwgeW71Tih3
mLQOp53YFKxppEYAC31yrtCvfLVbgU1Ho6cEICLDwI2UbsGoOGzHbMX+G7Q0UlBNIEJVSUxE
IChPUEVOLVhDSEFOR0UpIDxycG1idWlsZEBvcGVuLXhjaGFuZ2UuZ3JnPohGBBMRAgAeBQJC
X5EOAhsDBgsJCAcDAgMVAgMDFgIBAh4BAheAAAoJEN0aXpzu2UnwW84An0dM2USHy91ajX7i
Pctw1Z1QEsEdAKCaKywEPsdgMWxsQyiPkIkq6ucP8YheBBMRAgAeBQJCX5EOAhsDBgsJCAcD
AgMVAgMDFgIBAh4BAheAAAoJEN0aXpzu2UnwW84AoIzeUHofOsWbL+ctCWxwk4I4qGXvAJ0Z
2WPIgSH1T82vdewToMiOWcc3slhGBBARAgAGBQJECEHnAAoJECYDgT/VMvLoBMIAoJB0hhRj
075DGEHbBOnwHQYZ7rWeAKCoWC0b3xUo3iJ0kftXEvDjOUkf2A==
=VluO
-----END PGP PUBLIC KEY BLOCK-----

Distribution: (none)
```

Reload the package index. This will download the package descriptions available at the software repositories and will enable the Open-Xchange repository as a valid source for signed packages:

```
$ apt-get update
```

Using meta packages

Starting with the 6.16 release, we introduced meta packages which depend on the various Open-Xchange packages. The following meta packages are available:

Name	Description
open-xchange-meta-admin	all provisioning packages
open-xchange-meta-gui	all gui packages
open-xchange-meta-messaging	the complete messaging packages like unified inbox, twitter, facebook, etc.
open-xchange-meta-mobility	OXtender for business mobility
open-xchange-meta-outlook	Outlook OXtender Updater
open-xchange-meta-pubsub	all publish/subscribe related packages

Name	Description
open-xchange-meta-server	the server backend packages
open-xchange-meta-databaseonly (starting with 6.18)	most of the above
open-xchange-meta-singleserver	most of the above

If you want to install everything on a single server, just run

```
$ apt-get install mysql-server open-xchange-meta-singleserver \
open-xchange-authentication-database open-xchange-spamhandler-default
```

Note: You have to choose between one of the available spamhandler and authentication packages depending on your requirements. Starting with 6.18: If you plan to just manage your open-xchange installation via database and not e.g. using LDAP and OXLDAPSync, you might also want to install the package open-xchange-meta-databaseonly.

Of course you can still install the single packages as usual to be able to select a specific set of functionality that you'd like to have:

```
$ apt-get install mysql-server \
open-xchange open-xchange-authentication-database \
open-xchange-admin-client open-xchange-admin-lib \
open-xchange-admin-plugin-hosting open-xchange-admin-plugin-hosting-client \
open-xchange-admin-plugin-hosting-lib open-xchange-configjump-generic \
open-xchange-admin-doc open-xchange-contactcollector \
open-xchange-conversion open-xchange-conversion-engine \
open-xchange-conversion-servlet open-xchange-crypto \
open-xchange-data-conversion-ical4j open-xchange-dataretention \
open-xchange-genconf open-xchange-genconf-mysql \
open-xchange-imap open-xchange-mailfilter \
open-xchange-management open-xchange-monitoring \
open-xchange-passwordchange-database open-xchange-passwordchange-servlet \
open-xchange-pop3 open-xchange-publish open-xchange-publish-basic \
open-xchange-publish-infostore-online open-xchange-publish-json \
open-xchange-publish-microformats open-xchange-push-udp \
open-xchange-resource-managerequest open-xchange-server \
open-xchange-settings-extensions open-xchange-smtp \
open-xchange-spamhandler-default open-xchange-sql open-xchange-subscribe \
open-xchange-xerces-sun open-xchange-subscribe-json \
open-xchange-subscribe-microformats open-xchange-subscribe-crawler \
open-xchange-templating open-xchange-threadpool open-xchange-unifiedinbox \
open-xchange-admin-plugin-hosting-doc open-xchange-charset \
open-xchange-control open-xchange-easylogin \
open-xchange-group-managerequest open-xchange-i18n open-xchange-jcharset \
open-xchange-sessiond open-xchange-calendar-printing \
open-xchange-user-json open-xchange-gui-wizard-plugin \
open-xchange-report-client \
open-xchange-configjump-generic-gui \
open-xchange-gui open-xchange-gui-wizard-plugin-gui \
open-xchange-online-help-de \
open-xchange-online-help-en open-xchange-online-help-fr
```

You will be asked multiple times to enter a MySQL password. Please do not enter a password at this point. You should enter a strong MySQL admin password for the user "mysql" after the installation has been finished. See: MySQL Reference Manual

Important: Some of the scripts assume you have mysql root access from the command line, therefore the advice of "not" to enter a password. If you do, you may find problems following the instructions provided in this howto.

1.1.4. Open-Xchange Configuration

To avoid confusion right at the start notice that Open-Xchange uses multiple administration levels and requires different credentials at some stages at the installation and server management. Note that the passwords chosen at this guide are weak and should be replaced by stronger passwords.

- The MySQL database user

  - Username: openexchange

  - Password used at this guide: db_password

  - Responsibility: Execute all kinds of database operations

- The Open-Xchange Admin Master

  - Username: oxadminmaster

  - Password used at this guide: admin_master_password

  - Responsibility: Manage contexts, manage all kinds of low level server configuration

- The Context Admin

  - Username: oxadmin

  - Password used at this guide: admin_password

  - Responsibility: Manage users/groups/resources inside a context

In order to setup the Open-Xchange Server it is mandatory to have the database running:

```
$ /etc/init.d/mysql start
```

Note: In case of a distributed setup, it is recommended to start mysql with --skip-name-resolve or to add all hosts to the hosts file of the database server so that slow DNS responses do not slow down the creation of new database connections.

A good idea is to add the Open-Xchange binaries to PATH:

```
$  echo PATH=$PATH:/opt/open-xchange/sbin/ >> ~/.bashrc && . ~/.bashrc
```

Now we have to initialize the Open-Xchange configdb database. This can all be done by executing the initconfigdb script.

```
$ /opt/open-xchange/sbin/initconfigdb --configdb-pass=db_password -a
```

Add the -i option if you want to remove an already existing open-xchange configdb

Note: The -a parameter adds an administrative account to mysql, this administrative account is required for the creation of the oxdatabase database, you may find problems following the instructions of this tutorial if you either set a mysql root password or do not create this administrative account, if you have manually setup this administrative account, grant the permissions for database creation or you may find a problem in the context creation.

Before starting any service, all basic configuration files need to be set up correctly. The --configdb-pass option indicates the password of the openexchange database user previously created, the --master-pass options specifies the password of the Open-Xchange adminmaster user that will be created when executing the oxinstaller script.

Important: You should have your Open-Xchange license code at hand. If you do not plan to license Open-Xchange, you can use the option --no-license instead. Please also check OXReportClient documentation for more information about configuring a supported and maintained Open-Xchange server.

```
$ /opt/open-xchange/sbin/oxinstaller --add-license=YOUR-OX-LICENSE-CODE \
--servername=oxserver --configdb-pass=db_password \
--master-pass=admin_master_password --ajp-bind-port=localhost
```

Note: In a clustered setup, --ajp-bind-port must be set to *

After initializing the configuration, start the Open-Xchange Administration service by executing:

```
$ /etc/init.d/open-xchange-admin start
```

Next we have to register the local server at the Open-Xchange configdb database:

```
$ /opt/open-xchange/sbin/registerserver -n oxserver -A oxadminmaster -P admin_master_password
```

Now we have to create a local directory that should be used as Open-Xchange filestore. This directory will contain all Infostore content and files attached to groupware objects. To maintain access by the Open-Xchange Groupware service, it is required to grant permissions to the open-xchange system user.

```
$ mkdir /var/opt/filestore
$ chown open-xchange:open-xchange /var/opt/filestore
```

Now register the directory as a filestore at the Open-Xchange server:

```
$ /opt/open-xchange/sbin/registerfilestore -A oxadminmaster -P admin_master_password \
-t file:/var/opt/filestore
```

Finally register the groupware database, this is a separated database where all groupware specific data is stored:

```
$ /opt/open-xchange/sbin/registerdatabase -A oxadminmaster -P admin_master_password \
-n oxdatabase -p db_password -m true
```

1.1.5. Configuring Services

Now as the Open-Xchange Server has been set up and the database is running, we have to configure the Apache webserver and the mod_proxy_ajp module to access the groupware frontend. To gain better GUI performance, the usage of mod_expires and mod_deflate is strongly recommended. Those modules will limit the amount of client requests and compress the delivered content.

```
$ a2enmod proxy proxy_ajp proxy_balancer expires deflate headers rewrite
```

Configure the mod_proxy_ajp module by creating a new Apache configuration file.

```
$ vim /etc/apache2/conf.d/proxy_ajp.conf
```

```
<Location /axis2>
    # restrict access to the soap provisioning API
    Order Deny,Allow
    Deny from all
    Allow from 127.0.0.1
    # you might add more ip addresses / networks here
    # Allow from 192.168 10 172.16
</Location>


<IfModule mod_proxy_ajp.c>
  ProxyRequests Off
  <Proxy balancer://oxcluster>
    Order deny,allow
    Allow from all
    # multiple server setups need to have the hostname inserted instead localhost
    BalancerMember ajp://localhost:8009 smax=0 ttl=60 retry=60 loadfactor=50 route=OX1 timeout=100
    # Enable and maybe add additional hosts running OX here
```

```
    # BalancerMember ajp://oxhost2:8009 smax=0 ttl=60 retry=60 loadfactor=50 route=OX2 timeout=100
    ProxySet stickysession=JSESSIONID timeout=100
  </Proxy>
  <Proxy /ajax>
    ProxyPass balancer://oxcluster/ajax
  </Proxy>
  <Proxy /axis2>
    ProxyPass balancer://oxcluster/axis2
  </Proxy>
  <Proxy /servlet>
    ProxyPass balancer://oxcluster/servlet
  </Proxy>
  <Proxy /infostore>
    ProxyPass balancer://oxcluster/infostore
  </Proxy>
  <Proxy /publications>
    ProxyPass balancer://oxcluster/publications
  </Proxy>
  <Proxy /Microsoft-Server-ActiveSync>
    ProxyPass balancer://oxcluster/Microsoft-Server-ActiveSync
  </Proxy>
  <Proxy /usm-json>
    ProxyPass balancer://oxcluster/usm-json
  </Proxy>
</IfModule>
```

Modify the default website settings to display the Open-Xchange GUI

```
$ vim /etc/apache2/sites-enabled/000-default
```

```
<VirtualHost *:80>
 ServerAdmin webmaster@localhost

 DocumentRoot /var/www/

 <Directory /var/www/>
  AllowOverride None
  Order allow,deny
  allow from all
  RedirectMatch ^/$ /ox6/
        Options +FollowSymLinks +SymLinksIfOwnerMatch
 </Directory>
     # deflate
    AddOutputFilterByType DEFLATE text/html text/plain text/javascript application/javascript text/css text/xml application/xml text/x-js ap

# pre-compressed files
AddType text/javascript .jsz
AddType text/css .cssz
AddType text/xml .xmlz
     AddType text/plain .po

AddEncoding gzip .jsz .cssz .xmlz
SetEnvIf Request_URI "\.(jsz|cssz|xmlz)$" no-gzip

ExpiresActive On
```

```
<Location /ox6>
      # Expires (via ExpiresByType to override global settings)
      ExpiresByType image/gif "access plus 6 months"
      ExpiresByType image/png "access plus 6 months"
      ExpiresByType image/jpg "access plus 6 months"
      ExpiresByType image/jpeg "access plus 6 months"
      ExpiresByType text/css "access plus 6 months"
      ExpiresByType text/html "access plus 6 months"
      ExpiresByType text/xml "access plus 6 months"
      ExpiresByType text/javascript "access plus 6 months"
      ExpiresByType text/x-js "access plus 6 months"
      ExpiresByType application/x-javascript "access plus 6 months"
      ExpiresDefault "access plus 6 months"
      Header append Cache-Control "private"
      Header unset Last-Modified
      Header unset Vary
      # Strip version
      RewriteEngine On
      RewriteRule v=\w+/(.+) $1 [L]
      # Turn off ETag
      Header unset ETag
      FileETag None
</Location>

<Location /ox6/ox.html>
      ExpiresByType text/html "now"
      ExpiresDefault "now"
      Header unset Last-Modified
      Header set Cache-Control "no-store, no-cache, must-revalidate, post-check=0, pre-check=0"
      # Turn off ETag
      Header unset ETag
      FileETag None
</Location>

<Location /ox6/index.html>
      ExpiresByType text/html "now"
      ExpiresDefault "now"
      Header unset Last-Modified
      Header set Cache-Control "no-store, no-cache, must-revalidate, post-check=0, pre-check=0"
      # Turn off ETag
      Header unset ETag
      FileETag None
 </Location>
</VirtualHost>
```

After the configuration is done, restart the Apache webserver

```
$ /etc/init.d/apache2 restart
```

Finally start the Open-Xchange Groupware service

```
$ /etc/init.d/open-xchange-groupware start
```

1.2. Open-Xchange Server 6 on Debian GNU/Linux 6.0

1.2.1. Requirements

Plain installed Debian GNU/Linux 6.0, no graphical tools required
A supported Java Virtual Machine
A working internet connection
vim is not installed by default on Debian Squeeze. If you want to copy and paste the commands from this article into a shell window, you need to apt-get install vim first.

Java runtimes and versions

Open-Xchange Server 6 is known to work with the Java runtimes and versions listed in the table below. Support for Java 1.6 runtimes has been added with version 6.10.

SUN Java 1.5
SUN Java 1.6
IBM Java 1.5
IBM Java 1.6

Setting the correct runtime to default

There are various implementations of Java available. The Open-Xchange Server is able to work with the most common ones. Using an unsupported Java platform will lead to odd errors or even to unavailability of service when operating the groupware. Operating systems are able to provide multiple Java virtual machines (JVM) at the same time. The Open-Xchange Server looks for installed JVMs in several places of the file system and uses the first it finds. Typically, /usr/bin/java contains a link pointing to the default JVM installation. On some operating system installations a JVM which is incompatible to the Open-Xchange Server is installed and set to default. In this case the default JVM can be configured using the update-alternatives tool.

```
$ update-alternatives --config java

There are 3 alternatives which provide `java'.

Selection    Alternative
--------------------------------------------
1    /usr/bin/gij-4.3
*+       2    /usr/lib/jvm/java-gcj/jre/bin/java
3    /usr/lib/jvm/java-1.5.0-sun/jre/bin/java
```

In this example, the GNU Compiler for Java (gcj) is set to default which is known to be incompatible with the Open-Xchange Server. The update-alternatives tool allows to set a different default JVM which should be java-1.5.0-sun in this case to make the Open-Xchange Server work. The tool does not modify any of your JVM installations. It just changes the target for the java binary. This can be checked very easily:

```
$ java -version

java version "1.5.0"
gij (GNU libgcj) version 4.3.2
```

Calling java -version shows that gcj is the default JVM. After changing the default JVM using update-alternatives it points to the SUN Java installation.

```
$ java -version

java version "1.5.0_14"
Java(TM) 2 Runtime Environment, Standard Edition (build 1.5.0_14-b03)
Java HotSpot(TM) Client VM (build 1.5.0_14-b03, mixed mode, sharing)
```

1.2.2. Adding Open-Xchange Repository

Open-Xchange maintains publicly available software repositories for different platforms, such as Debian. This repository should be added to the Debian installation to enable simple installation and updates.

Start a console and modify the Debian repository information file. It is required to add the non-free section of the Debian main repository for Sun Java. Also add the Open-Xchange software repository:

```
$ vim /etc/apt/sources.list

deb http://ftp.de.debian.org/debian/ squeeze main contrib non-free
deb-src http://ftp.de.debian.org/debian/ squeeze main contrib non-free

deb http://security.debian.org/ squeeze/updates main contrib
deb-src http://security.debian.org/ squeeze/updates main contrib

deb http://software.open-xchange.com/OX6/stable/DebianSqueeze/ /

# if you have a valid maintenance subscription, please uncomment the
# following and add the ldb account data to the url so that the most recent
# packages get installed
# deb http://LDBACCOUNT:LDBPASSWORD@software.open-xchange.com/OX6/updates/DebianSqueeze /
```

1.2.3. Updating repositories and installing packages

It is highly recommended to import the Open-Xchange build key to your package systems trusted keyring in order to make sure only Open-Xchange packages with valid signing are installed on the system. Otherwise you will encounter warnings about untrusted package sources. To import the Open-Xchange buildkey, please do the following:

Starting with SP5, Open-Xchange rpm packages will be signed using the Open-Xchange build gpg public key and the apt repository is signed according to http://wiki.debian.org/SecureApt.

```
Key ID: EED949F0
Key fingerprint: 8416 454E 1646 F085 9651  8FDE DD1A 5E9C EED9 49F0
```

The public key can be downloaded from the public pgp key servers or from http://software.open-xchange.com/oxbuildkey.pub

Note: If you are using the community packages, you need to import this key: http://soft-
ware.open-xchange.com/oxbuildkey-community.pub

Importing key into apt based systems:

To import the key into the apt keyring, run

```
$ wget http://software.open-xchange.com/oxbuildkey.pub -O - | apt-key add -
```

If this command returns "OK", you are done importing the buildkey and can go on with
the installation. In case that does not work, split it into two steps:

```
$ wget http://software.open-xchange.com/oxbuildkey.pub
$ apt-key add - < oxbuildkey.pub
```

To verify the success, run

```
$ apt-key list
```

The following or similar output should appear:

```
/etc/apt/trusted.gpg
--------------------
pub   1024D/2D230C5F 2006-01-03 [expired: 2007-02-07]
uid                  Debian Archive Automatic Signing Key (2006) <ftpmaster@debian.org>

pub   1024D/6070D3A1 2006-11-20 [expires: 2009-07-01]
uid                  Debian Archive Automatic Signing Key (4.0/etch) <ftpmaster@debian.org>

pub   1024D/ADB11277 2006-09-17
uid                  Etch Stable Release Key <debian-release@lists.debian.org>

pub   1024D/BBE55AB3 2007-03-31 [expires: 2010-03-30]
uid                  Debian-Volatile Archive Automatic Signing Key (4.0/etch)
sub   2048g/36CA98F3 2007-03-31 [expires: 2010-03-30]

pub   1024D/EED949F0 2005-04-15
uid                  RPM BUILD (OPEN-XCHANGE) <rpmbuild@open-xchange.org>
```

Importing key into rpm based systems

To import that key into the rpm database, use the following command (as root):

```
$ rpm --import http://software.open-xchange.com/oxbuildkey.pub
```

To verify the success, use

```
$ rpm -qi gpg-pubkey-eed949f0-425f910e
```

This should return an output similar to this one:

```
Name        : gpg-pubkey             Relocations: (not relocatable)
Version     : eed949f0                   Vendor: (none)
Release     : 425f910e                Build Date: Tue Jan 13 14:42:33  2009
Install Date: Tue Jan 13 14:42:33 2009     Build Host: localhost
Group       : Public Keys            Source RPM: (none)
Size        : 0                         License: pubkey
Signature   : (none)
Summary     : gpg(RPM BUILD (OPEN-XCHANGE) <rpmbuild@open-xchange.org>)
Description :
-----BEGIN PGP PUBLIC KEY BLOCK-----
Version: rpm-4.4.2 (beecrypt-4.1.2)

mQGiBEJfkQ4RBACX+9u2Ss9S2qNDdZ6jBVUzju8Viwgur/jJ0lQuvGT5GPYfjS1mMMS7NZCh
o0htlxlTbkb7ozVCbGQ2gDDgPW1EbWG+bcyl76BM79b6L0smtG2KFmJRC/9BpG8v5mRCj1Kd
RkbYi3FQceR6VJZmu7MOYtLx8dgdKnswYg1sKS5NNwCgwjJtXwSM6HHdW81LSnBZmojTdlkE
AJei5ENSStM57vU9S28jNXheqAFcP1j/+D2IDLpasDBpdIz54SGMYcmdIgHpL/G+/HgPTCh9
pbzEoPRk+bgUuZcPVTHqHj1cLb3yOWo7hLypWngRdENj1wyVGJr9i3SMlp4YXCXG9TpfEFWs
BqwR0zB8keANm69SyE02T14X9qTaA/0bZMBLN2kieFN1IwqrUWGooHkkHYdr2p45CZP0mkA2
6S0RBmZ43IMrRlS5eaCOpNEDyRx7dqx61MXcwkcWQuVFmnMg/YaE0XUvy0ta0dwgeW71Tih3
mLQOp53YFKxppEYAC31yrtCvfLVbgU1Ho6cEICLDwI2UbsGoOGzHbMX+G7Q0UlBNIEJVSUxE
IChPUEVOLVhDSEFOR0UpIDxycG1idWlsZEBvcGVuLXhjaGFuZGFuZGUub3JnPoheBBMRAgAeBQJC
X5EOAhsDBgsJCAcDAgMVAgMDFgIBAh4BAheAAAoJEN0aXpzu2UnwW84An0dM2USHy91ajX7i
Pctw1Z1QEsEdAKCaKywEPsdgMWxsQyiPkIkq6ucP8YheBBMRAgAeBQJCX5EOAhsDBgsJCAcD
AgMVAgMDFgIBAh4BAheAAAoJEN0aXpzu2UnwW84AoIzeUHofOsWbL+ctCWxwk4I4qGXvAJ0Z
2WPIgSH1T82vdewToMiOWcc3sIhGBBARAgAGBQJECEHnAAoJECYDgT/VMvLoBMIAoJB0hhRj
075DGEHbBOnwHQYZ7rWeAKCoWC0b3xUo3iJ0kftXEvDjOUkf2A==
=VluO
-----END PGP PUBLIC KEY BLOCK-----

Distribution: (none)
```

Reload the package index. This will download the package descriptions available at the software repositories and will enable the Open-Xchange repository as a valid source for signed packages:

```
$ apt-get update
```

Using meta packages

Starting with the 6.16 release, we introduced meta packages which depend on the various Open-Xchange packages. The following meta packages are available:

Name	Description
open-xchange-meta-admin	all provisioning packages
open-xchange-meta-gui	all gui packages
open-xchange-meta-messaging	the complete messaging packages like unified inbox, twitter, facebook, etc.
open-xchange-meta-mobility	OXtender for business mobility
open-xchange-meta-outlook	Outlook OXtender Updater
open-xchange-meta-pubsub	all publish/subscribe related packages
open-xchange-meta-server	the server backend packages
open-xchange-meta-databaseonly (starting with 6.18)	most of the above

Name	Description
open-xchange-meta-singleserver	most of the above

If you want to install everything on a single server, just run

```
$ apt-get install mysql-server open-xchange-meta-singleserver \
open-xchange-authentication-database open-xchange-spamhandler-default
```

Note: You have to choose between one of the available spamhandler and authentication packages depending on your requirements. Starting with 6.18: If you plan to just manage your open-xchange installation via database and not e.g. using LDAP and OXLDAPSync, you might also want to install the package open-xchange-meta-databaseonly.

Of course you can still install the single packages as usual to be able to select a specific set of functionality that you'd like to have:

```
$ apt-get install mysql-server \
open-xchange open-xchange-authentication-database \
open-xchange-admin-client open-xchange-admin-lib \
open-xchange-admin-plugin-hosting open-xchange-admin-plugin-hosting-client \
open-xchange-admin-plugin-hosting-lib open-xchange-configjump-generic \
open-xchange-admin-doc open-xchange-contactcollector \
open-xchange-conversion open-xchange-conversion-engine \
open-xchange-conversion-servlet open-xchange-crypto \
open-xchange-data-conversion-ical4j open-xchange-dataretention \
open-xchange-genconf open-xchange-genconf-mysql \
open-xchange-imap open-xchange-mailfilter \
open-xchange-management open-xchange-monitoring \
open-xchange-passwordchange-database open-xchange-passwordchange-servlet \
open-xchange-pop3 open-xchange-publish open-xchange-publish-basic \
open-xchange-publish-infostore-online open-xchange-publish-json \
open-xchange-publish-microformats open-xchange-push-udp \
open-xchange-resource-managerequest open-xchange-server \
open-xchange-settings-extensions open-xchange-smtp \
open-xchange-spamhandler-default open-xchange-sql open-xchange-subscribe \
open-xchange-xerces-sun open-xchange-subscribe-json \
open-xchange-subscribe-microformats open-xchange-subscribe-crawler \
open-xchange-templating open-xchange-threadpool open-xchange-unifiedinbox \
open-xchange-admin-plugin-hosting-doc open-xchange-charset \
open-xchange-control open-xchange-easylogin \
open-xchange-group-managerequest open-xchange-i18n open-xchange-jcharset \
open-xchange-sessiond open-xchange-calendar-printing \
open-xchange-user-json open-xchange-gui-wizard-plugin \
open-xchange-report-client \
open-xchange-configjump-generic-gui \
open-xchange-gui open-xchange-gui-wizard-plugin-gui \
open-xchange-online-help-de \
open-xchange-online-help-en open-xchange-online-help-fr
```

You will be asked multiple times to enter a MySQL password. Please do not enter a password at this point. You should enter a strong MySQL admin password for the user "mysql" after the installation has been finished. See: MySQL Reference Manual

Important: Some of the scripts assume you have mysql root access from the command line, therefore the advice of "not" to enter a password. If you do, you may find problems following the instructions provided in this howto.

1.2.4. Open-Xchange Configuration

To avoid confusion right at the start notice that Open-Xchange uses multiple administration levels and requires different credentials at some stages at the installation and server management. Note that the passwords chosen at this guide are weak and should be replaced by stronger passwords.

- The MySQL database user

  - Username: openexchange

  - Password used at this guide: db_password

  - Responsibility: Execute all kinds of database operations

- The Open-Xchange Admin Master

  - Username: oxadminmaster

  - Password used at this guide: admin_master_password

  - Responsibility: Manage contexts, manage all kinds of low level server configuration

- The Context Admin

  - Username: oxadmin

  - Password used at this guide: admin_password

  - Responsibility: Manage users/groups/resources inside a context

In order to setup the Open-Xchange Server it is mandatory to have the database running:

```
$ /etc/init.d/mysql start
```

Note: In case of a distributed setup, it is recommended to start mysql with --skip-name-resolve or to add all hosts to the hosts file of the database server so that slow DNS responses do not slow down the creation of new database connections.

A good idea is to add the Open-Xchange binaries to PATH:

```
$ echo PATH=$PATH:/opt/open-xchange/sbin/ >> ~/.bashrc && . ~/.bashrc
```

Now we have to initialize the Open-Xchange configdb database. This can all be done by executing the initconfigdb script.

```
$ /opt/open-xchange/sbin/initconfigdb --configdb-pass=db_password -a
```

Add the -i option if you want to remove an already existing open-xchange configdb

Note: The -a parameter adds an administrative account to mysql, this administrative account is required for the creation of the oxdatabase database, you may find problems following the instructions of this tutorial if you either set a mysql root password or do not create this administrative account, if you have manually setup this administrative account, grant the permissions for database creation or you may find a problem in the context creation.

Before starting any service, all basic configuration files need to be set up correctly. The --configdb-pass option indicates the password of the openexchange database user previously created, the --master-pass options specifies the password of the Open-Xchange adminmaster user that will be created when executing the oxinstaller script.

Important: You should have your Open-Xchange license code at hand. If you do not plan to license Open-Xchange, you can use the option --no-license instead. Please also check OXReportClient documentation for more information about configuring a supported and maintained Open-Xchange server.

```
$ /opt/open-xchange/sbin/oxinstaller --add-license=YOUR-OX-LICENSE-CODE \
--servername=oxserver --configdb-pass=db_password \
--master-pass=admin_master_password --ajp-bind-port=localhost
```

Note: In a clustered setup, --ajp-bind-port must be set to *

After initializing the configuration, start the Open-Xchange Administration service by executing:

```
$ /etc/init.d/open-xchange-admin start
```

Next we have to register the local server at the Open-Xchange configdb database:

```
$ /opt/open-xchange/sbin/registerserver -n oxserver -A oxadminmaster -P admin_master_password
```

Now we have to create a local directory that should be used as Open-Xchange filestore. This directory will contain all Infostore content and files attached to groupware objects. To maintain access by the Open-Xchange Groupware service, it is required to grant permissions to the open-xchange system user.

```
$ mkdir /var/opt/filestore
$ chown open-xchange:open-xchange /var/opt/filestore
```

Now register the directory as a filestore at the Open-Xchange server:

```
$ /opt/open-xchange/sbin/registerfilestore -A oxadminmaster -P admin_master_password \
-t file:/var/opt/filestore
```

Finally register the groupware database, this is a separated database where all groupware specific data is stored:

```
$ /opt/open-xchange/sbin/registerdatabase -A oxadminmaster -P admin_master_password \
-n oxdatabase -p db_password -m true
```

1.2.5. Configuring Services

Now as the Open-Xchange Server has been set up and the database is running, we have to configure the Apache webserver and the mod_proxy_ajp module to access the groupware frontend. To gain better GUI performance, the usage of mod_expires and mod_deflate is strongly recommended. Those modules will limit the amount of client requests and compress the delivered content.

```
$ a2enmod proxy proxy_ajp proxy_balancer expires deflate headers rewrite
```

Configure the mod_proxy_ajp module by creating a new Apache configuration file.

```
$ vim /etc/apache2/conf.d/proxy_ajp.conf
```

```
<Location /axis2>
    # restrict access to the soap provisioning API
    Order Deny,Allow
    Deny from all
    Allow from 127.0.0.1
    # you might add more ip addresses / networks here
    # Allow from 192.168 10 172.16
</Location>


<IfModule mod_proxy_ajp.c>
  ProxyRequests Off
  <Proxy balancer://oxcluster>
    Order deny,allow
    Allow from all
    # multiple server setups need to have the hostname inserted instead localhost
    BalancerMember ajp://localhost:8009 smax=0 ttl=60 retry=60 loadfactor=50 route=OX1 timeout=100
    # Enable and maybe add additional hosts running OX here
    # BalancerMember ajp://oxhost2:8009 smax=0 ttl=60 retry=60 loadfactor=50 route=OX2 timeout=100
    ProxySet stickysession=JSESSIONID timeout=100
  </Proxy>
  <Proxy /ajax>
```

```
    ProxyPass balancer://oxcluster/ajax
  </Proxy>
  <Proxy /axis2>
    ProxyPass balancer://oxcluster/axis2
  </Proxy>
  <Proxy /servlet>
    ProxyPass balancer://oxcluster/servlet
  </Proxy>
  <Proxy /infostore>
    ProxyPass balancer://oxcluster/infostore
  </Proxy>
  <Proxy /publications>
    ProxyPass balancer://oxcluster/publications
  </Proxy>
  <Proxy /Microsoft-Server-ActiveSync>
    ProxyPass balancer://oxcluster/Microsoft-Server-ActiveSync
  </Proxy>
  <Proxy /usm-json>
    ProxyPass balancer://oxcluster/usm-json
  </Proxy>
</IfModule>
```

Modify the default website settings to display the Open-Xchange GUI

```
$ vim /etc/apache2/sites-enabled/000-default
```

```
<VirtualHost *:80>
 ServerAdmin webmaster@localhost

 DocumentRoot /var/www/

 <Directory /var/www/>
  AllowOverride None
  Order allow,deny
  allow from all
  RedirectMatch ^/$ /ox6/
        Options +FollowSymLinks +SymLinksIfOwnerMatch
</Directory>
        # deflate
      AddOutputFilterByType DEFLATE text/html text/plain text/javascript application/javascript text/css text/xml application/xml text/x-js ap

# pre-compressed files
AddType text/javascript .jsz
AddType text/css .cssz
AddType text/xml .xmlz
        AddType text/plain .po

AddEncoding gzip .jsz .cssz .xmlz
SetEnvIf Request_URI "\.(jsz|cssz|xmlz)$" no-gzip

ExpiresActive On

<Location /ox6>
        # Expires (via ExpiresByType to override global settings)
        ExpiresByType image/gif "access plus 6 months"
        ExpiresByType image/png "access plus 6 months"
```

```
            ExpiresByType image/jpg "access plus 6 months"
            ExpiresByType image/jpeg "access plus 6 months"
            ExpiresByType text/css "access plus 6 months"
            ExpiresByType text/html "access plus 6 months"
            ExpiresByType text/xml "access plus 6 months"
            ExpiresByType text/javascript "access plus 6 months"
            ExpiresByType text/x-js "access plus 6 months"
            ExpiresByType application/x-javascript "access plus 6 months"
            ExpiresDefault "access plus 6 months"
            Header append Cache-Control "private"
            Header unset Last-Modified
            Header unset Vary
            # Strip version
            RewriteEngine On
            RewriteRule v=\w+/(.+) $1 [L]
            # Turn off ETag
            Header unset ETag
            FileETag None
     </Location>

     <Location /ox6/ox.html>
            ExpiresByType text/html "now"
            ExpiresDefault "now"
            Header unset Last-Modified
            Header set Cache-Control "no-store, no-cache, must-revalidate, post-check=0, pre-check=0"
            # Turn off ETag
            Header unset ETag
            FileETag None
     </Location>

     <Location /ox6/index.html>
            ExpiresByType text/html "now"
            ExpiresDefault "now"
            Header unset Last-Modified
            Header set Cache-Control "no-store, no-cache, must-revalidate, post-check=0, pre-check=0"
            # Turn off ETag
            Header unset ETag
            FileETag None
      </Location>
     </VirtualHost>
```

After the configuration is done, restart the Apache webserver

```
$ /etc/init.d/apache2 restart
```

Finally start the Open-Xchange Groupware service

```
$ /etc/init.d/open-xchange-groupware start
```

1.3. Open-Xchange Server 6 on SuSE Linux Enterprise Server 11

1.3.1. Requirements

Plain installed SuSE Linux Enterprise Server 11 with latest updates
Valid access to the Novell onlineupdate service
A configured internet connection

1.3.2. Adding Open-Xchange Repository

Open-Xchange maintains publicly available software repositories for different platforms, such as SLES. This repository should be added to the SLES installation to enable simple installation and updates.

Start a console and add the Open-Xchange software repository for SLES11:

```
$ zypper ar http://software.open-xchange.com/OX6/stable/SLES11/ ox
```

If you have a valid maintenance subscription, please run the following command so that the most recent packages get installed:

```
$ zypper ar http://LDBACCOUNT:LDBPASSWORD@software.open-xchange.com/OX6/updates/SLES11/ oxupdates
```

A warning will be shown because the Open-Xchange packages are not yet signed by a cryptographic key. To accept and continue the installation, press Y.

1.3.3. Updating repositories and installing packages

Using meta packages

Starting with the 6.16 release, we introduced meta packages which depend on the various Open-Xchange packages. The following meta packages are available:

Name	Description
open-xchange-meta-admin	all provisioning packages
open-xchange-meta-gui	all gui packages
open-xchange-meta-messaging	the complete messaging packages like unified inbox, twitter, facebook, etc.
open-xchange-meta-mobility	OXtender for business mobility
open-xchange-meta-outlook	Outlook OXtender Updater
open-xchange-meta-pubsub	all publish/subscribe related packages
open-xchange-meta-server	the server backend packages
open-xchange-meta-databaseonly (starting with 6.18)	all packages needed when open-xchange is only managed via database and not e.g. LDAP
open-xchange-meta-singleserver	most of the above

If you want to install everything on a single server, just run

```
$ zypper install mysql open-xchange-meta-singleserver \
open-xchange-authentication-database open-xchange-spamhandler-default
```

Note: You have to choose between one of the available spamhandler and authentication packages depending on your requirements. Starting with 6.18: If you plan to just manage your open-xchange installation via database and not e.g. using LDAP and OXLDAPSync, you might also want to install the package open-xchange-meta-databaseonly.

Of course you can still install the single packages as usual to be able to select a specific set of functionality that you'd like to have:

```
$ zypper install mysql \
open-xchange open-xchange-authentication-database \
open-xchange-admin-client open-xchange-admin-lib \
open-xchange-admin-plugin-hosting open-xchange-admin-plugin-hosting-client \
open-xchange-admin-plugin-hosting-lib open-xchange-configjump-generic \
open-xchange-admin-doc open-xchange-contactcollector \
open-xchange-conversion open-xchange-conversion-engine \
open-xchange-conversion-servlet open-xchange-crypto \
open-xchange-data-conversion-ical4j open-xchange-dataretention \
open-xchange-genconf open-xchange-genconf-mysql \
open-xchange-imap open-xchange-mailfilter \
open-xchange-management open-xchange-monitoring \
open-xchange-passwordchange-database open-xchange-passwordchange-servlet \
open-xchange-pop3 open-xchange-publish open-xchange-publish-basic \
open-xchange-publish-infostore-online open-xchange-publish-json \
open-xchange-publish-microformats open-xchange-push-udp \
open-xchange-resource-managerequest open-xchange-server \
open-xchange-settings-extensions open-xchange-smtp \
open-xchange-spamhandler-default open-xchange-sql open-xchange-subscribe \
open-xchange-xerces-ibm open-xchange-subscribe-json \
open-xchange-subscribe-microformats open-xchange-subscribe-crawler \
open-xchange-templating open-xchange-threadpool open-xchange-unifiedinbox \
open-xchange-admin-plugin-hosting-doc open-xchange-charset \
open-xchange-control open-xchange-easylogin \
open-xchange-group-managerequest open-xchange-i18n open-xchange-jcharset \
open-xchange-sessiond open-xchange-calendar-printing \
open-xchange-user-json open-xchange-gui-wizard-plugin \
open-xchange-report-client \
open-xchange-configjump-generic-gui \
open-xchange-gui open-xchange-gui-wizard-plugin-gui \
open-xchange-online-help-de \
open-xchange-online-help-en open-xchange-online-help-fr
```

A warning will be shown because the Open-Xchange packages are not yet signed by a cryptographic key. To accept and continue the installation, press Y.

1.3.4. Open-Xchange Configuration

To avoid confusion right at the start notice that Open-Xchange uses multiple administration levels and requires different credentials at some stages at the installation and server management. Note that the passwords chosen at this guide are weak and should be replaced by stronger passwords.

• The MySQL database user

- Username: openexchange

- Password used at this guide: db_password

- Responsibility: Execute all kinds of database operations

- The Open-Xchange Admin Master

  - Username: oxadminmaster

  - Password used at this guide: admin_master_password

  - Responsibility: Manage contexts, manage all kinds of low level server configuration

- The Context Admin

  - Username: oxadmin

  - Password used at this guide: admin_password

  - Responsibility: Manage users/groups/resources inside a context

In order to setup the Open-Xchange Server it is mandatory to have the database running:

```
$ /etc/init.d/mysql start
```

Note: In case of a distributed setup, it is recommended to start mysql with --skip-name-resolve or to add all hosts to the hosts file of the database server so that slow DNS responses do not slow down the creation of new database connections.

A good idea is to add the Open-Xchange binaries to PATH:

```
$ echo PATH=$PATH:/opt/open-xchange/sbin/ >> ~/.bashrc && . ~/.bashrc
```

Now we have to initialize the Open-Xchange configdb database. This can all be done by executing the initconfigdb script.

```
$ /opt/open-xchange/sbin/initconfigdb --configdb-pass=db_password -a
```

Add the -i option if you want to remove an already existing open-xchange configdb

Note: The -a parameter adds an administrative account to mysql, this administrative account is required for the creation of the oxdatabase database, you may find problems following the instructions of this tutorial if you either set a mysql root password or do not create this administrative account, if you have manually setup this administrative account, grant the permissions for database creation or you may find a problem in the context creation.

Before starting any service, all basic configuration files need to be set up correctly. The --configdb-pass option indicates the password of the openexchange database user previously

created, the --master-pass options specifies the password of the Open-Xchange adminmaster user that will be created when executing the oxinstaller script.

Important: You should have your Open-Xchange license code at hand. If you do not plan to license Open-Xchange, you can use the option --no-license instead. Please also check OXReportClient documentation for more information about configuring a supported and maintained Open-Xchange server.

```
$ /opt/open-xchange/sbin/oxinstaller --add-license=YOUR-OX-LICENSE-CODE \
--servername=oxserver --configdb-pass=db_password \
--master-pass=admin_master_password --ajp-bind-port=localhost
```

Note: In a clustered setup, --ajp-bind-port must be set to *

After initializing the configuration, start the Open-Xchange Administration service by executing:

```
$ /etc/init.d/open-xchange-admin start
```

Next we have to register the local server at the Open-Xchange configdb database:

```
$ /opt/open-xchange/sbin/registerserver -n oxserver -A oxadminmaster -P admin_master_password
```

Now we have to create a local directory that should be used as Open-Xchange filestore. This directory will contain all Infostore content and files attached to groupware objects. To maintain access by the Open-Xchange Groupware service, it is required to grant permissions to the open-xchange system user.

```
$ mkdir /var/opt/filestore
$ chown open-xchange:open-xchange /var/opt/filestore
```

Now register the directory as a filestore at the Open-Xchange server:

```
$ /opt/open-xchange/sbin/registerfilestore -A oxadminmaster -P admin_master_password \
-t file:/var/opt/filestore
```

Finally register the groupware database, this is a separated database where all groupware specific data is stored:

```
$ /opt/open-xchange/sbin/registerdatabase -A oxadminmaster -P admin_master_password \
-n oxdatabase -p db_password -m true
```

1.3.5. Configuring Services

Now as the Open-Xchange Server has been set up and the database is running, we have to configure the Apache webserver and the mod_proxy_ajp module to access the groupware frontend. To gain better GUI performance, the usage of mod_expires and mod_deflate is strongly recommended. Those modules will limit the amount of client requests and compress the delivered content.

```
$ a2enmod proxy && a2enmod proxy_ajp && a2enmod expires && a2enmod
deflate && a2enmod headers && a2enmod rewrite && a2enmod
proxy_balancer
```

To be on the save side and not interfere with YaST or SuSEconfig, add the following to /etc/sysconfig/apache2:

```
APACHE_MODULES="actions alias auth_basic authn_file authz_host
authz_groupfile authz_user authn_dbm autoindex cgi dir env expires
include log_config mime negotiation setenvif ssl suexec userdir
proxy headers deflate authz_default proxy_ajp rewrite proxy_balancer"
```

Configure the mod_proxy_ajp module by creating a new Apache configuration file.

```
$ vim /etc/apache2/conf.d/proxy_ajp.conf
```

```
<Location /axis2>
    # restrict access to the soap provisioning API
    Order Deny,Allow
    Deny from all
    Allow from 127.0.0.1
    # you might add more ip addresses / networks here
    # Allow from 192.168 10 172.16
</Location>


<IfModule mod_proxy_ajp.c>
  ProxyRequests Off
  <Proxy balancer://oxcluster>
    Order deny,allow
    Allow from all
```

```
     # multiple server setups need to have the hostname inserted instead localhost
     BalancerMember ajp://localhost:8009 smax=0 ttl=60 retry=60 loadfactor=50 route=OX1 timeout=100
     # Enable and maybe add additional hosts running OX here
     # BalancerMember ajp://oxhost2:8009 smax=0 ttl=60 retry=60 loadfactor=50 route=OX2 timeout=100
     ProxySet stickysession=JSESSIONID timeout=100
  </Proxy>
  <Proxy /ajax>
     ProxyPass balancer://oxcluster/ajax
  </Proxy>
  <Proxy /axis2>
     ProxyPass balancer://oxcluster/axis2
  </Proxy>
  <Proxy /servlet>
     ProxyPass balancer://oxcluster/servlet
  </Proxy>
  <Proxy /infostore>
     ProxyPass balancer://oxcluster/infostore
  </Proxy>
  <Proxy /publications>
     ProxyPass balancer://oxcluster/publications
  </Proxy>
  <Proxy /Microsoft-Server-ActiveSync>
     ProxyPass balancer://oxcluster/Microsoft-Server-ActiveSync
  </Proxy>
  <Proxy /usm-json>
     ProxyPass balancer://oxcluster/usm-json
  </Proxy>
</IfModule>
```

Modify the default website settings to display the Open-Xchange GUI

```
$ vim /etc/apache2/vhosts.d/ox.conf
```

```
<VirtualHost *:80>
 ServerAdmin webmaster@localhost

 DocumentRoot /srv/www/htdocs/

 <Directory /srv/www/htdocs/>
  AllowOverride None
  Order allow,deny
  allow from all
  RedirectMatch ^/$ /ox6/
          Options +FollowSymLinks +SymLinksIfOwnerMatch
 </Directory>
      # deflate
     AddOutputFilterByType DEFLATE text/html text/plain text/javascript application/javascript text/css text/xml application/xml text/x-js ap

 # pre-compressed files
 AddType text/javascript .jsz
 AddType text/css .cssz
 AddType text/xml .xmlz
       AddType text/plain .po

 AddEncoding gzip .jsz .cssz .xmlz
 SetEnvIf Request_URI "\.(jsz|cssz|xmlz)$" no-gzip
```

```
ExpiresActive On

<Location /ox6>
     # Expires (via ExpiresByType to override global settings)
     ExpiresByType image/gif "access plus 6 months"
     ExpiresByType image/png "access plus 6 months"
     ExpiresByType image/jpg "access plus 6 months"
     ExpiresByType image/jpeg "access plus 6 months"
     ExpiresByType text/css "access plus 6 months"
     ExpiresByType text/html "access plus 6 months"
     ExpiresByType text/xml "access plus 6 months"
     ExpiresByType text/javascript "access plus 6 months"
     ExpiresByType text/x-js "access plus 6 months"
     ExpiresByType application/x-javascript "access plus 6 months"
     ExpiresDefault "access plus 6 months"
     Header append Cache-Control "private"
     Header unset Last-Modified
     Header unset Vary
     # Strip version
     RewriteEngine On
     RewriteRule v=\w+/(.+) $1 [L]
     # Turn off ETag
     Header unset ETag
     FileETag None
</Location>

<Location /ox6/ox.html>
     ExpiresByType text/html "now"
     ExpiresDefault "now"
     Header unset Last-Modified
     Header set Cache-Control "no-store, no-cache, must-revalidate, post-check=0, pre-check=0"
     # Turn off ETag
     Header unset ETag
     FileETag None
</Location>

<Location /ox6/index.html>
     ExpiresByType text/html "now"
     ExpiresDefault "now"
     Header unset Last-Modified
     Header set Cache-Control "no-store, no-cache, must-revalidate, post-check=0, pre-check=0"
     # Turn off ETag
     Header unset ETag
     FileETag None
 </Location>
</VirtualHost>
```

After the configuration is done, restart the Apache webserver

```
$ rcapache2 restart
```

Finally start the Open-Xchange Groupware service

```
$ rcopen-xchange-groupware start
```

1.3.6. Adding services to runlevels

The new services are now installed and configured, but to make them start up on a server boot, they need to be added to some runlevels:

```
$ insserv mysql
$ insserv apache2
$ insserv open-xchange-groupware
$ insserv open-xchange-admin
```

1.4. Open-Xchange Server 6 on RedHat Enterprise Linux 6

1.4.1. Requirements

Plain installed RedHat Enterprise Linux 6 with latest updates
Valid access to the RedHat Network
A configured internet connection

1.4.2. Enabling required RedHat Repositories

When setting up RedHat Enterprise Linux (RHEL), only the base software channel is subscribed. This alone does not provide all required software packages. Before you start, please log in to the RedHat Network (https://rhn.redhat.com) using your RedHat Account and enable the channel RHEL Supplementary (v.6 for ...) by selecting the registered RHEL deployment and using the "Alter Subscriptions" button. After saving this configuration, the RHEL installation is capable to fetch all required software packages for Open-Xchange to work properly.

1.4.3. Adding Open-Xchange Repository

Open-Xchange maintains publicly available software repositories for different platforms, such as RHEL. This repository should be added to the RHEL installation to enable simple installation and updates.

Start a console and create a software repository file for Open-Xchange:

```
$ vim /etc/yum.repos.d/ox.repo

[ox]
name=Open-Xchange
baseurl=http://software.open-xchange.com/OX6/stable/RHEL6/
enabled=1
gpgcheck=0

# if you have a valid maintenance subscription, please uncomment the
# following and add the ldb account data to the url so that the most recent
# packages get installed

[ox-updates]
name=Open-Xchange Updates
baseurl=http://LDBACCOUNT:LDBPASSWORD@software.open-xchange.com/OX6/updates/RHEL6/
enabled=1
gpgcheck=0
```

In case there are issues with an username and password containing URL unsafe characters, e.g. an @, they have to be entered URL encoded. Details can be found at http://www.w3schools.com/tags/ref_urlencode.asp

1.4.4. Updating repositories and installing packages

Reload the package index. This will download the package descriptions available at the software repositories:

```
$ yum update
```

Using meta packages

Starting with the 6.16 release, we introduced meta packages which depend on the various Open-Xchange packages. The following meta packages are available:

Name	Description
open-xchange-meta-admin	all provisioning packages
open-xchange-meta-gui	all gui packages
open-xchange-meta-messaging	the complete messaging packages like unified inbox, twitter, facebook, etc.
open-xchange-meta-mobility	OXtender for business mobility
open-xchange-meta-outlook	Outlook OXtender Updater
open-xchange-meta-pubsub	all publish/subscribe related packages
open-xchange-meta-server	the server backend packages
open-xchange-meta-databaseonly (starting with 6.18)	all packages needed when open-xchange is only managed via database and not e.g. LDAP
open-xchange-meta-singleserver	most of the above

If you want to install everything on a single server, just run

```
$ yum install mysql-server open-xchange-meta-singleserver \
open-xchange-authentication-database open-xchange-spamhandler-default
```

Note: You have to choose between one of the available spamhandler and authentication packages depending on your requirements. Starting with 6.18: If you plan to just manage your open-xchange installation via database and not e.g. using LDAP and OXLDAPSync, you might also want to install the package open-xchange-meta-databaseonly.

Of course you can still install the single packages as usual to be able to select a specific set of functionality that you'd like to have:

```
$ yum install mysql-server \
open-xchange open-xchange-authentication-database \
open-xchange-admin-client open-xchange-admin-lib \
```

```
open-xchange-admin-plugin-hosting open-xchange-admin-plugin-hosting-client \
open-xchange-admin-plugin-hosting-lib open-xchange-configjump-generic \
open-xchange-admin-doc open-xchange-contactcollector \
open-xchange-conversion open-xchange-conversion-engine \
open-xchange-conversion-servlet open-xchange-crypto \
open-xchange-data-conversion-ical4j open-xchange-dataretention \
open-xchange-genconf open-xchange-genconf-mysql \
open-xchange-imap open-xchange-mailfilter \
open-xchange-management open-xchange-monitoring \
open-xchange-passwordchange-database open-xchange-passwordchange-servlet \
open-xchange-pop3 open-xchange-publish open-xchange-publish-basic \
open-xchange-publish-infostore-online open-xchange-publish-json \
open-xchange-publish-microformats open-xchange-push-udp \
open-xchange-resource-managerequest open-xchange-server \
open-xchange-settings-extensions open-xchange-smtp \
open-xchange-spamhandler-default open-xchange-sql open-xchange-subscribe \
open-xchange-xerces-sun open-xchange-subscribe-json \
open-xchange-subscribe-microformats open-xchange-subscribe-crawler \
open-xchange-templating open-xchange-threadpool open-xchange-unifiedinbox \
open-xchange-admin-plugin-hosting-doc open-xchange-charset \
open-xchange-control open-xchange-easylogin \
open-xchange-group-managerequest open-xchange-i18n open-xchange-jcharset \
open-xchange-sessiond open-xchange-calendar-printing \
open-xchange-user-json open-xchange-gui-wizard-plugin \
open-xchange-report-client \
open-xchange-configjump-generic-gui \
open-xchange-gui open-xchange-gui-wizard-plugin-gui \
open-xchange-online-help-de \
open-xchange-online-help-en open-xchange-online-help-fr
```

1.4.5. Open-Xchange Configuration

To avoid confusion right at the start notice that Open-Xchange uses multiple administration levels and requires different credentials at some stages at the installation and server management. Note that the passwords chosen at this guide are weak and should be replaced by stronger passwords.

- The MySQL database user

  - Username: openexchange

  - Password used at this guide: db_password

  - Responsibility: Execute all kinds of database operations

- The Open-Xchange Admin Master

  - Username: oxadminmaster

  - Password used at this guide: admin_master_password

  - Responsibility: Manage contexts, manage all kinds of low level server configuration

- The Context Admin

  - Username: oxadmin

  - Password used at this guide: admin_password

  - Responsibility: Manage users/groups/resources inside a context

In order to setup the Open-Xchange Server it is mandatory to have the database running:

```
$ /etc/init.d/mysql start
```

Note: In case of a distributed setup, it is recommended to start mysql with --skip-name-resolve or to add all hosts to the hosts file of the database server so that slow DNS responses do not slow down the creation of new database connections.

A good idea is to add the Open-Xchange binaries to PATH:

```
$ echo PATH=$PATH:/opt/open-xchange/sbin/ >> ~/.bashrc && . ~/.bashrc
```

Now we have to initialize the Open-Xchange configdb database. This can all be done by executing the initconfigdb script.

```
$ /opt/open-xchange/sbin/initconfigdb --configdb-pass=db_password -a
```

Add the -i option if you want to remove an already existing open-xchange configdb

Note: The -a parameter adds an administrative account to mysql, this administrative account is required for the creation of the oxdatabase database, you may find problems following the instructions of this tutorial if you either set a mysql root password or do not create this administrative account, if you have manually setup this administrative account, grant the permissions for database creation or you may find a problem in the context creation.

Before starting any service, all basic configuration files need to be set up correctly. The --configdb-pass option indicates the password of the openexchange database user previously created, the --master-pass options specifies the password of the Open-Xchange adminmaster user that will be created when executing the oxinstaller script.

Important: You should have your Open-Xchange license code at hand. If you do not plan to license Open-Xchange, you can use the option --no-license instead. Please also check OXReportClient documentation for more information about configuring a supported and maintained Open-Xchange server.

```
$ /opt/open-xchange/sbin/oxinstaller --add-license=YOUR-OX-LICENSE-CODE \
--servername=oxserver --configdb-pass=db_password \
--master-pass=admin_master_password --ajp-bind-port=localhost
```

Note: In a clustered setup, --ajp-bind-port must be set to *

After initializing the configuration, start the Open-Xchange Administration service by executing:

```
$ /etc/init.d/open-xchange-admin start
```

Next we have to register the local server at the Open-Xchange configdb database:

```
$ /opt/open-xchange/sbin/registerserver -n oxserver -A oxadminmaster -P admin_master_password
```

Now we have to create a local directory that should be used as Open-Xchange filestore. This directory will contain all Infostore content and files attached to groupware objects. To maintain access by the Open-Xchange Groupware service, it is required to grant permissions to the open-xchange system user.

```
$ mkdir /var/opt/filestore
$ chown open-xchange:open-xchange /var/opt/filestore
```

Now register the directory as a filestore at the Open-Xchange server:

```
$ /opt/open-xchange/sbin/registerfilestore -A oxadminmaster -P admin_master_password \
-t file:/var/opt/filestore
```

Finally register the groupware database, this is a separated database where all groupware specific data is stored:

```
$ /opt/open-xchange/sbin/registerdatabase -A oxadminmaster -P admin_master_password \
-n oxdatabase -p db_password -m true
```

1.4.6. Configuring Services

Now as the Open-Xchange Server has been set up and the database is running, we have to configure the Apache webserver and the mod_proxy_ajp module to access the groupware frontend. To gain better GUI performance, the usage of mod_expires and mod_deflate is strongly recommended. Those modules will limit the amount of client requests and compress the delivered content. The default installation of the Apache webserver on RHEL provides a welcome screen which is not necessary for server operation, it can be removed by deleting the corresponding configuration file:

```
$ rm /etc/httpd/conf.d/welcome.conf
```

Configure the mod_proxy_ajp module by creating a new Apache configuration file.

```
$ vim /etc/httpd/conf.d/proxy_ajp.conf
```

```
<Location /axis2>
    # restrict access to the soap provisioning API
    Order Deny,Allow
    Deny from all
    Allow from 127.0.0.1
    # you might add more ip addresses / networks here
    # Allow from 192.168 10 172.16
</Location>

LoadModule proxy_ajp_module modules/mod_proxy_ajp.so

<IfModule mod_proxy_ajp.c>
  ProxyRequests Off
  <Proxy balancer://oxcluster>
    Order deny,allow
    Allow from all
    # multiple server setups need to have the hostname inserted instead localhost
    BalancerMember ajp://localhost:8009 smax=0 ttl=60 retry=60 loadfactor=50 route=OX1 timeout=100
    # Enable and maybe add additional hosts running OX here
    # BalancerMember ajp://oxhost2:8009 smax=0 ttl=60 retry=60 loadfactor=50 route=OX2 timeout=100
    ProxySet stickysession=JSESSIONID timeout=100
  </Proxy>
  <Proxy /ajax>
    ProxyPass balancer://oxcluster/ajax
  </Proxy>
  <Proxy /axis2>
    ProxyPass balancer://oxcluster/axis2
  </Proxy>
  <Proxy /servlet>
    ProxyPass balancer://oxcluster/servlet
  </Proxy>
  <Proxy /infostore>
    ProxyPass balancer://oxcluster/infostore
  </Proxy>
  <Proxy /publications>
    ProxyPass balancer://oxcluster/publications
  </Proxy>
  <Proxy /Microsoft-Server-ActiveSync>
    ProxyPass balancer://oxcluster/Microsoft-Server-ActiveSync
  </Proxy>
  <Proxy /usm-json>
    ProxyPass balancer://oxcluster/usm-json
  </Proxy>
</IfModule>
```

Modify the default website settings to display the Open-Xchange GUI

```
$ vim /etc/httpd/conf.d/ox.conf
```

```
<VirtualHost *:80>
 ServerAdmin webmaster@localhost

 DocumentRoot /var/www/html/

 <Directory /var/www/html/>
  AllowOverride None
  Order allow,deny
  allow from all
  RedirectMatch ^/$ /ox6/
          Options +FollowSymLinks +SymLinksIfOwnerMatch
 </Directory>
     # deflate
    AddOutputFilterByType DEFLATE text/html text/plain text/javascript application/javascript text/css text/xml application/xml text/x-js ap

# pre-compressed files
AddType text/javascript .jsz
AddType text/css .cssz
AddType text/xml .xmlz
     AddType text/plain .po

AddEncoding gzip .jsz .cssz .xmlz
SetEnvIf Request_URI "\.(jsz|cssz|xmlz)$" no-gzip

ExpiresActive On

<Location /ox6>
     # Expires (via ExpiresByType to override global settings)
     ExpiresByType image/gif "access plus 6 months"
     ExpiresByType image/png "access plus 6 months"
     ExpiresByType image/jpg "access plus 6 months"
     ExpiresByType image/jpeg "access plus 6 months"
     ExpiresByType text/css "access plus 6 months"
     ExpiresByType text/html "access plus 6 months"
     ExpiresByType text/xml "access plus 6 months"
     ExpiresByType text/javascript "access plus 6 months"
     ExpiresByType text/x-js "access plus 6 months"
     ExpiresByType application/x-javascript "access plus 6 months"
     ExpiresDefault "access plus 6 months"
     Header append Cache-Control "private"
     Header unset Last-Modified
     Header unset Vary
     # Strip version
     RewriteEngine On
     RewriteRule v=\w+/(.+) $1 [L]
     # Turn off ETag
     Header unset ETag
     FileETag None
</Location>

<Location /ox6/ox.html>
     ExpiresByType text/html "now"
     ExpiresDefault "now"
     Header unset Last-Modified
     Header set Cache-Control "no-store, no-cache, must-revalidate, post-check=0, pre-check=0"
     # Turn off ETag
     Header unset ETag
     FileETag None
```

```
</Location>

<Location /ox6/index.html>
      ExpiresByType text/html "now"
      ExpiresDefault "now"
      Header unset Last-Modified
      Header set Cache-Control "no-store, no-cache, must-revalidate, post-check=0, pre-check=0"
      # Turn off ETag
      Header unset ETag
      FileETag None
 </Location>
</VirtualHost>
```

After the configuration is done, restart the Apache webserver

```
$ /etc/init.d/httpd restart
```

Finally start the Open-Xchange Groupware service

```
$ /etc/init.d/open-xchange-groupware start
```

1.4.7. Adding services to runlevels

The new services are now installed and configured, but to make them start up on a server boot, they need to be added to some runlevels:

```
$ chkconfig --level 345 mysqld on
$ chkconfig --level 345 httpd on
$ chkconfig --level 345 open-xchange-groupware on
$ chkconfig --level 345 open-xchange-admin on
```

1.5. Installing Open-Xchange Server Language Packages

1.5.1. Where to get the language packages?

The packages are contained in the standard Open-Xchange installation repositories.

1.5.2. How to install?

Use the package manager from your preferred distribution to search for packages with names

open-xchange-lang-*
open-xchange-gui-lang-*

The country code is as follows: de_DE, en_US, fr_FR, it_IT, es_ES, zh_CN, ja_JP, nl_NL, pl_PL, etc.

1.5.3. How to get access to the supported packages?

You need to purchase a valid license to access these packages. To do so please first read *How to create an OXAccount and unlock Keys within the License Database*: http://sdb.open-xchange.com/node/65

1.6. Software Packages and Platform Installation

The following Open-Xchange packages are to be installed on the relevant machines. If one server will e. g. act as frontend server and as application server, all packages for both server types are needed.

1.6.1. Shared Packages

Shared packages contain common functions and libraries that are used by the application and the administration server. They need to be installed on all machines which are to serve one or both services. Of course all dependencies for the packages have to be resolved.

- **open-xchange-common**

1.6.2. Groupware/Application Server

These Open-Xchange packages are needed on all machines which are to be used as groupware/application server.

- **open-xchange-sessiond**

- **open-xchange-i18n**

- **open-xchange-management**

- **open-xchange-server**

- **open-xchange-configread**

- **open-xchange**

- **open-xchange-jcharset**

- **open-xchange-monitoring**

- **open-xchange-control**

- **open-xchange-charset**

- **open-xchange-global**

- **open-xchange-cache**

- **open-xchange-push-udp**

- **open-xchange-smtp**

- **open-xchange-settings-extensions**

- **open-xchange-contactcollector**

Plug-ins for the Groupware/Application Server

These plug-ins can be installed to get additional functionality for the application server. Services for authentication (e.g., open-xchange-authentication-database) and mail backend (e.g., open-xchange-imap) are needed so that users can log in and access their mailbox.

- **open-xchange-configjump-generic**

  Integrates custom configuration website

- **open-xchange-authentication-database**

  User authentication against the password stored in the open-xchange database.

- **open-xchange-authentication-ldap**

  User authentication against an external ldap server.

- **open-xchange-authentication-imap**

  User authentication against an external imap server.

- **open-xchange-authentication-standard**

  It is possible to replace the default implementation with an own implementation.

- **open-xchange-axis2**

  Provides the backend for the SOAP interface to the admin daemon RMI interface. This framework has some problems leaking memory and new services are deployed in a most un-OSGi-like fashion (.aar archives have to be deployed to a certain directory, where they are picked up. This is more akin to how tomcat does things). To address these two shortcommings an apache-cxf based framework was added, to pluck WebServices right out of the OSGi system. It is hoped this framework doesn't display the same memory leak problems as axis did.

- **open-xchange-admin-soap**

  Provides the SOAP interface to the admin daemon RMI interface. The Open-Xchange SOAP interface is used to provision the OX system via SOAP calls. To restrict access to this interface only to allowed hosts in your network, we recommend that you add the following lines to your apache2 configuration (/etc/apache2/conf.d/ox_soap_access.conf). The following configuration will allow SOAP requests only from "localhost" and IP address "172.16.65.1". Make sure to edit this configuration according to your actual environ- ment/network. If you need more fine grained access restrictions see "mod_access" documentation at www.apache.org.

```
<Location /servlet/axis2/services>
Order Deny,Allow
Deny from all
Allow from 172.16.65.1 127.0.0.1
</Location>
```

- **open-xchange-imap**

  Provides IMAP functionality so that users can access their IMAP mailbox.

- **open-xchange-spamhandler-default**

  Provides basic spam functionality.

- **open-xchange-spamhandler-spamassassin**

  Provides spam functionality for spamassassin.

- **open-xchange-mailfilter**

  This plug-in provides access to backends that talk ManageSieve.

- **open-xchange-group-managerequest**

  Adds functionality to enable users to manage groups within the GUI settings tree.

- **open-xchange-resource-managerequest**

  Adds functionality to enable users to manage resources within the GUI settings tree.

- **open-xchange-commons-logging-log4j**

  Adds support for log4j so that open-xchange logs through syslog; depends on package open-xchange-log4j

- **open-xchange-log4j**

  Adds support for log4j so that open-xchange logs through syslog; depends on package open-xchange-commons-logging-log4j

- **com.openexchange.logging**

  This bundle configures some log levels in the logging framework JDK java.util.logging and org.apache.log4j. Log4J is still optional and the bundle has an optional dependency on it. Configuring the log levels from the code base is necessary to ensure some logging messages appear in the log files even if everything is disabled by configuration files.

- **open-xchange-passwordchange-database**

  Adds functionality to the passwordchange servlet so that the password can be changed in the open-xchange database.

- **open-xchange-passwordchange-servlet**

  Adds functionality so that users can cache their password in the open-xchange settings menu.

- **open-xchange-admin-plug-in-autocontextid**

  Enables the administrator to automatically generate the context id. After the installation, call **initconfigdb -i --configdb-pass=<password> --addon-sql autocid.sql** and the admin has to be restarted. Warning: This bundle should only be used when initially setting up the system. initconfigdb removes all content from the databases.

- **open-xchange-admin-plug-in-autocontextid-client**

Enables the administrator to automatically generate the context id. After the installation, call **initconfigdb -i --configdb-pass=<password> --addon-sql autocid.sql** and the admin has to be restarted. Warning: This bundle should only be used when initially setting up a system. initconfigdb removes all content from the databases. Note: The bundle removes the -c parameter from the createcontext commandline tool.

- **open-xchange-admin-plugin-reseller**

  Adds an additional layer of admin privileges in order to provide a reseller functionality. The oxadminmaster account is now able to manage sub admins which can then manage contexts according to specific restrictions like e.g. subadmin "foo" can create a maximum amount of 10 contexts or a maximum amount of 1000 users within all contexts. The package contains an additional RMI interface and a SOAP interface. The API might still be subject to change. Installation instructions can be found in the file README.SETUP shipped with the package. This feature is optional.

- **open-xchange-upsell-multiple-gui**

  Contains the new upsell UI. Currently a dummy/default Upsell UI is integrated since the final layout is not finally implemented/ready.

- **open-xchange-upsell-multiple-downgrade**

  Contains the new UI plugin, which enables OX users to "downgrade" their own context by clicking a simple button in the settings tree within OX UI. It uses the backend (servlet) from package open-xchange-upsell-multiple and triggers a downgrade to "pim" executed via RMI by the backend. WARNING: Should be used only on demo systems and not on production systems!!!!

- **open-xchange-upsell-multiple**

  Implements a completely new upsell backend (servlet bundle) which can be usee together with an existing infrastructure. Either you can redirect to external SHOP URI including all needed parameters to process an upsell process (cid, uid etc.) or send a generated Upsell Email to a configurable email address. This backend also supports down/up grade of contexts via some HTTP API calls.

- **open-xchange-syncml**

  It is possible to synchronize mobile phones through SyncML. This feature is packaged into the open-xchange-syncml package.

Plug-ins for the Administration Server

Optional bundles for the administration server.

- **open-xchange-admin-plug-in-contextrestore**

  The contextrestore bundle is a solution for restoring one single context out of a mysql dump from a complete database. In a distributed setup, it is possible to use several files containing the dumps of different databases. The tool described within this document does fetch the needed information out of these files.

  The context restore bundle is designed as an admin bundle so it has to be installed into the OSGi environment of the OX admin daemon.

The open-xchange-admin-plug-in-contextrestore package contains the bundle itself and the corresponding configuration files. The bundle will get installed as a directory below /opt/open-xchange/bundles. The configuration file can be found in:

/opt/open-xchange/etc/admindaemon/plug-in/contextrestore.properties.

For the restore process, the tool requires some information to be available in the database. One is the availability of the old database pool id. The tool will dig out the pool id the context used before from the mysql dump, and will try to get a connection to the corresponding database through this pool id. If the pool id does not exist any more, an error is thrown. The same applies to the filestore_id.

For correct operation it is required that the mysql dumps for this tool represent a consistent state of the whole database setup. Furthermore this consistent state should also include the backup of the filestore.

The Debian package has to be installed with the Debian management tool dpkg . Afterwards a new shell script named contextrestore is to be found under /opt/open-xchange/sbin. The admin daemon needs to be restarted to make the new functionality available. The functionality is accessible via RMI, CLT and SOAP.

A complete database backup has to be done before the new function can be used. The tool described within this document requires a full SQL dump of the databases involved. This can be done by executing the **mysqldump --all-databases --single-transaction** command, on all database machines registered in Open-Xchange as well as the configuration database. These two parameters are very important. The first one lets the dump contain every database on the specified database host, and the second is used for a consistent backup. Instead of **--all-databases** you can also use **--database** with the right database(s). If none of the switches are given as direct argument then mysql will leave out essential data in the dump. For a full backup the switch **--all-databases** is recommended.

The usage of the command line tool is self-explanatory as it confirms to the standard unix behavior. --help will show a short help with the available parameters. The main arguments of the tool are different database dumps (from the configdb and the distributed user data databases). On success the tool returns the path to the filestore of the given context. The files below this path have to be restored afterwards in a separate process which is not part of the Open-Xchange system. An example of a restore would look like this:

Example 1.1. restore

contextrestore -A <username> -P <password> -c 7777 -f <complete path to configdb dump>,<complete path to first user data database dump>

file:///tmp/filestore2/7777_ctx_store

Note that the parts in <> have to be replaced by the parameters for your setup

- **open-xchange-admin-plug-in-autocontextid**

This plug-in enables the administrator to automatically generate the context id. After the installation, call **initconfigdb -i --configdb-pass=<password> --addon-sql autocid.sql** and the admin has to be restarted. Warning: This bundle should only be used when initially setting up the system. initconfigdb removes all content from the databases.

- **open-xchange-admin-plug-in-autocontextid-client**

This plug-in enables the administrator to automatically generate the context id. After the installation, call **initconfigdb -i --configdb-pass=<password> --addon-sql autocid.sql** and the admin has to be restarted. Warning: This bundle should only be used when initially setting up a system. initconfigdb removes all content from the databases. Note: The bundle removes the -c parameter from the createcontext commandline tool.

Core Plug-ins

These plugins are part of the Open-Xchange Server Core platform.

- **open-xchange-authentication-ldap**

  Authentication against LDAP server

- **open-xchange-authentication-imap**

  Authentication against IMAP server

- **open-xchange-contextrestore**

  Plugin to restore one or more contexts from a complete database dump

- **open-xchange-configjump-generic**

  Integrate custom configuration website

- **open-xchange-dataretention / open-xchange-dataretention-csv**

  Module to be used for data retention

- **open-xchange-commons-logging-log4j / open-xchange-log4j**

  These packages must be installed when Open-Xchange should use syslog

- **open-xchange-contacts-ldap**

  Integrate LDAP address book into Open-Xchange public folder tree

- **open-xchange-subscribe-crawler**

  The open-xchange crawler bundle to subscribe/import data

- **open-xchange-upsell-generic**

  Basic examples to implement an up sell layer in Open-Xchange

- **open-xchange-easylogin**

  Example package to implement the EasyLogin mechanism

- **open-xchange-report-client**

  Tool to display and report the amount of users and contexts in the Open-Xchange environment

- **open-xchange-outlook-updater**

  Updater server bundle to download OXtender directly from Open-Xchange GUI

- **open-xchange-passwordchange-script**

  Use an external command to change a password

- **open-xchange-publish-microformats**

  Publishing of Open-Xchange internal data structures like contacts, documents.

- **open-xchange-calendar-printing**

  Generating printviews of calendar items

- **open-xchange-audit**

  User action tracking bundle

- **open-xchange-push-mailnotify**

  Accepting external new mail notifications

- **open-xchange-messaging-facebook**

  Using the Facebook messaging bundle

- **Single Sign on Plug-in**

  This plug-in is part of the core. It can be used to log in to an external application e.g.; an external php web application that is implemented via IFrame. The plug-in can be accessed via: <https://<OXSERVER>/ajax/sso> Note: It is only accessible via a secure connection. http does not work. The following data can be retrieved:

  login – credentials used for logging in to the GUI
  username – entry that identifies the user in the data base
  password – clear text user password
  context_id – the context id of the user logged in
  context_name – the context name of the user logged in

1.6.3. Administration Server

These Open-Xchange packages have to be installed on all machines which are to be used as administration server for administration and provisioning.

- **open-xchange-admin-client**

- **open-xchange-admin-plug-in-hosting**

- **open-xchange-admin-plug-in-hosting-doc**

- **open-xchange-admin**

- **open-xchange-admin-doc**

- **open-xchange-admin-plug-in-contextrestore**

1.6.4. Frontend Server

The following packages need to be installed on machines which provide the AJAX GUI frontend to the users.

- **open-xchange-online-help-he-en**

- **open-xchange-online-help-he-de**

- **open-xchange-online-help-he-fr**

- **open-xchange-gui**

1.7. Software Installation

Below, you will find a summary of the necessary packages for each server type. For the initial installation and configuration, all available Open-Xchange™ packages need to be installed on one single server. This is needed by the configuration scripts in order to set up the configuration files for all services. Later, this configuration can be distributed to the other peers in a clustered setup.

After the installation of the Open-Xchange packages, the administration and provisioning scripts are located in the **/opt/open-xchange/sbin/** directory and the configuration files in **/opt/open-xchange/etc/**.

1.7.1. Application Server

Packages to be installed on all application servers:

- **Groupware Service Packages**

- **Shared Packages**

- **MySQL 5 Client Packages**

- **Java 5 Packages**

- **Additional Plug-ins**

1.7.2. Administration Server

Packages to be installed on all administration and provisioning servers:

- **Administration Service Packages**

- **Groupware Packages**

- **Shared Packages**

- **MySQL 5 Client Packages**

- **Java 5 Packages**

- **Additional Plug-ins**

1.7.3. Frontend Server

Packages to be installed on all frontend servers (more details about the Apache configuration can be found in a separate chapter)

- **Ajax GUI Package**

- **Apache2**

- **mod_proxy**

1.7.4. Database Server

Packages to be installed on the database servers:

- **MySQL 5**

1.7.5. JAVA™ version

All Open-Xchange services are written in Java and depend on java™ version 1.5.0 patchlevel minimum 8.

JAVA™ needs to be installed on all types of machines, except pure frontend servers.

```
root@oxhet:~# java -version
java version "1.5.0_08"
Java(TM) 2 Runtime Environment, Standard Edition (build 1.5.0_08-b03)
Java HotSpot(TM) 64-Bit Server VM (build 1.5.0_08-b03, mixed mode)
```

1.7.6. Automatic mobile configuration

OX embeds the automatic mobile configuration systems of iPhone and Windows Mobile.

This introduces the backend bundle for the autoconfiguration. A servlet is provided to which the mobile device can connect to be configured automatically.

The bundle is called open-xchange-mobile-configuration-generator. The bundle has a dependency on the EAS package to be able to read some needed configuration settings. Thus the bundle must be installed on the same system as EAS.

1.8. Initial Setup

1.8.1. Requirements

Plain installed Debian GNU/Linux 4.0 (codename etch)
Configured network
Latest Open-Xchange packages

1.8.2. Preparations

Install the required packages through a Debian package tool. The required packages are:

apache2

libapache2-mod-proxy (preferred) or libapache2-mod-jk
sun-java5-jre
mysql-server
mysql-client-5.0
mysql-client metapackages (done automatically by apt, when using dpkg to install the open-xchange packages, the mysql-client package must be installed manually.)

Starting with this release, the apt repository is signed with the Open-Xchange buildkey and all rpm packages are also signed with this key. In order to install Debian packages, you need to import the key into the apt keyring. Please follow the instructions as documented in

http://www.open-xchange.com/wiki/index.php?title=Importing_OX_Buildkey

Install the packages by executing:

apt-get install apache2 sun-java5-jre mysql-server mysqlclient-5.0

Afterwards, start the mysql service:

/etc/init.d/mysql start

In a cluster setup the mysql server should be on a separate machine.

In a distributed setup, it is recommended to start mysql with **--skip-name-resolve** or to add all hosts to the database server's hosts file in order to prevent slowing down new connections to the database due to slow DNS responses.

1.8.3. Initialize the configuration database

First, an initial configuration scheme will be created inside a database. This database will hold pointers to and about contexts, filestores, Open-Xchange servers, database pools for contexts and their relations. This scheme is typically called configdb which should not be changed. The **initconfigdb** command is used to set up this scheme in the database.

Ensure, that the database process itself is set up correctly, started without errors and listens on a TCP/IP socket before running this script. More details on how to configure the MySQL database can be found in Chapter 5, *MySQL Configuration*the MySQL chapter. The database connection can be tested by issuing the **mysql** command:

Testing the mysql connection

The values in the example have to be replaced to match the target environment. The command needs to be executed on the machines where the Open-Xchange services should run.

```
root@oxhe:~# mysql -h db1 -u openexchange -P 3306 -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 800 to server version: 5.0.22-Debian_0ubuntu6.06.3-log

Type 'help;' or '\h' for help. Type '\c' to clear the buffer.

mysql> create database testdbox;
```

```
Query OK, 1 row affected (0.00 sec)

mysql> drop database testdbox;
Query OK, 0 rows affected (0.00 sec)

mysql> exit
Bye
```

Open-Xchange connects to the database with the user passed to **--configdb-user**. The user can also be created with the **initconfigdb** command and the -a switch. This switch only works when the database runs locally on the system and root access is not disabled for the database. When the database runs on a remote host, the user has to be created manually before running the script. The user is used by the applications to access and create the configuration database (configdb). It is important to also pass this user to the **oxinstaller** command later, to ensure that the credentials are written to the configuration files so that all applications are able to access this database schema. In the following examples, the user is named **openexchange**.

The machine passed to the parameter **--configdb-host** is the machine/cluster where the MySQL server dedicated for the configdb is installed.

More details about **initconfigdb** can be found in the CLT reference chapter.

Example 1.2. initconfigdb

Warning: the database schema given to the **initconfigdb** command (default configdb) will be deleted prior to its creation.

```
root@oxhe:~# /opt/open-xchange/sbin/initconfigdb --configdb-pass=secret
initializing configdb from scratch... done
```

1.8.4. Initial Configuration

The next step is to initially set up the Open-Xchange daemon. Before starting any service, all basic configuration files need to be set up correctly. Provide the appropriate parameters when running the **oxinstaller** command. Be sure to use a generic **--servername**, since all Open-Xchange servers must have the same name in a cluster setup. In detail i. e., **--servername** should not be a machine/DNS name as it is an OX internal name used to identify OX systems.

When authentication is not disabled, the "**master admin**" user is used to authenticate against the administration daemon to create, modify, and delete contexts. The default name of this admin is **oxadminmaster** and it is recommended not to change the name. The password for this user is set by the **--master-pass** option.

More details about oxinstaller can be found in the CLT reference chapter.

Example 1.3. oxinstaller

```
root@oxhe:/home/admin# /opt/open-xchange/sbin/oxinstaller --servername=oxapp \
--configdb-pass=secret --master-pass=mypw
setting up groupware configuration /opt/open-xchange/etc/groupware
......................................
setting up admin daemon configuration /opt/open-xchange/etc/admindaemon
..................
*** RMI authentication is enabled

using oxadminmaster as master account
groupware and admin configuration done
admin daemon must now be restarted if already running
```

Important: Beginning with 6.12 Public PTF, there's a new mandatory option for the oxin-staller. The license code must be specified to run it like below. If you do not plan to license Open-Xchange, you can use the option --no-license instead.

Important: Beginning with 6.18 an additional Java start-up option "-XX:MaxPermSize=128M" is needed as the Open-Xchange server runs out of PermGen space during class loading.

```
$ /opt/open-xchange/sbin/oxinstaller --add-license=YOUR-OX-LICENSE-CODE \
--servername=oxserver --configdb-pass=db_password \
--master-pass=admin_master_password --ajp-bind-port=localhost
```

1.8.5. Initial Registration of Objects in the Configuration Database

This chapter describes the initialization of the Open-Xchange data storages, databases and filestore. Additionally, all services will be registered and configured to work smoothly to-gether. At the end of this chapter the OX applications will be up and running. After finishing these steps, some other services like Apache need to be configured as well to access the Open-Xchange groupware as user.

Now the Open-Xchange administration daemon will be initially started and the application server (supplied as **servername** to the **oxinstaller** command) needs to be registered in the configuration database as well as the first filestore. This is necessary to allow all services to find the right connections and the stored files on disk. The **registerserver** and the **registerfilestore** commands will perform these steps.

There are different possibilities to distribute the data from different customers into sepa-rated logical database schemas as well as into separated database clusters on separate hardware. This distribution is done automatically through the administration daemon when adding a new customer to the system. To allow the administration daemon to do this, those databases need to be registered in the system (configuration database). This is done with the command **registerdatabase**.

The examples in this documentation are based on the most trivial installation, where every-thing is installed on the same machine.

When these steps are done the groupware service is to be started and customer objects can be created.

configdb and contextdb can be deployed on the same machine to save hardware costs or can be installed on different clusters to achieve a higher scalability.

Example 1.4. Starting the Administration Daemon

```
root@oxhe:~# /etc/init.d/open-xchange-admin start
Starting Open-Xchange Admin Daemon: open-xchange-admin.
```

Example 1.5. registerserver

```
root@oxhe:~# /opt/open-xchange/sbin/registerserver -n oxapp -A oxadminmaster \
-P mypw
server 10 registered
```

Create a local directory that can be used as Open-Xchange filestore.

To do so execute

mkdir data/filestores/fs1

chown open-xchange:open-xchange /var/opt/open-xchange-filestore-1

Example 1.6. registerfilestore

The groupware application needs write access to the toplevel filestore directory. This directory needs to be mounted on all application servers and be accessible under the same path. The share needs to have at least one subdirectory. Please ensure, that the user who is running the application server has sufficient rights. Typically, this is the **open-xchange** user.

```
root@oxhe:~# /opt/open-xchange/sbin/registerfilestore  -A oxadminmaster -P mypw \
 -t file:///var/opt/open-xchange-filestore-1/fs1 -s 10000 -x 50000
filestore 11 registered
```

Example 1.7. registerdatabase

--dbuser is the user which will be used by the groupware applications to access the created database. **--maxunit** gives the maximum number of contexts (customers) to insert into one database schema. When this limit is reached, the administration deamon tries to create the new customer on other registered databases. If there are none free, an error gets thrown.

```
root@oxhe:~# /opt/open-xchange/sbin/registerdatabase  -A oxadminmaster -P mypw \
-n "database22" -p secret -m true -l true -o 0 -a 10
database 12 registered
```

Example 1.8. Starting the Groupware Daemon

```
root@oxhe:~# /etc/init.d/open-xchange-groupware start
Starting Open-Xchange Groupware: open-xchange-groupware.
```

1.9. Network configuration

The Open-Xchange software relies on a working network setup and needs to have some special configuration.

1.9.1. IPv6 support:

The Open-Xchange Groupware supports Internet Protocol Version 6 partially: Running the frontend on an IPv6 basis is not a problem as long as domain names are used. IP-based addresses are not supported.

The backend does not support IPv6 internally, but clusters needing the IPv6 address range are exceedingly rare.

1.9.2. hosts file:

The own host name must be added to /etc/hosts so that the Java RMI clients can connect to the server, e.g.:

10.0.0.1 app1 app1.example.com

It is recommended to have a dns caching client installed or all servers added to local hosts files so that DNS problems do not affect the operation of the whole system.

1.9.3. routing:

Most open-xchange caches (*.ccf files) and the push service have an internal automatic configuration so they can find each other in clustered setups. This service is based on IP multicast. According to the configured multicast address, a route needs to be added to the linux kernel routing table, e.g.:

route add 224.0.0.0 netmask 240.0.0.0 dev eth0

1.9.4. port forwarding:

The Open-Xchange Oxtender (MS Outlook PlugIn) has PUSH functionality. For this feature to work, the PlugIn needs to be able to send and receive UDP packages directly to and from the configured port (default 44335) on the groupware server. So if there are GUI servers or load balancers in front of the groupware server, those machines need to forward those packages to the groupware hosts. To make the Open-Xchange groupware process able to send UDP packages back with the IP of the frontends, this IP has to be added as virtual IP.

> It is required to have no firewall between Open-Xchange servers in clustered setups.

1.9.5. External Mail Accounts

Each user manages his own account from within the user interface. The respective protocols have to be accessible per network configuration. For IMAP acounts port 143 has to be open, for ssl port 993. For POP3 port 110 has to be open or port 995 for ssl respectively.

1.9.6. Required Crawler Settings

Crawlers have to access external servers to be able to run their services. The following table shows the preconditions:

Crawler ID	Domain/server	Ports
com.openexchange.subscribe.crawler.yahoocom	yahoo.com	80/443
com.openexchange.subscribe.xing	xing.com	80/443
com.openexchange.subscribe.crawler.googlemail	google.com	80/443
com.openexchange.subscribe.crawler.google.calendar	google.com	80/443
com.openexchange.subscribe.crawler.webde	web.de	80/443
com.openexchange.subscribe.crawler.facebook	facebook.com	80/443
com.openexchange.subscribe.crawler.gmx	gmx.de, gmx.net	80/443
com.openexchange.subscribe.linkedin	linkedin.com	80/443
com.openexchange.subscribe.crawler.t-online.de	t-online.de	80/443
com.openexchange.subscribe.crawler.suncontacts	Individual server	80/443
com.openexchange.subscribe.crawler.suncalendar	Individual server	80/443
com.openexchange.subscribe.crawler.suntasks	Individual server	80/443

1.9.7. Proxy access to images

Bundle to replace image URLs with a proxied URI which follows certain restrictions e.g., only certain content type header is allowed (for images "image/*")

Proxy bundles	Description
com.openexchange.proxy	This bundle provides the interfaces.
com.openexchange.proxy.servlet	This is the servlet-based implementation of the "com.openexchange.proxy" bundle.

1.10. Webserver Configuration

This chapter describes the webserver configuration the Open-Xchange™ services depend on. In order to get web access to the Open-Xchange system, the web server has to be set up.

1.10.1. Apache Modules

Additionally, it is strongly recommended to use the following Apache modules to make the communication as efficient as possible.

- **mod_deflate** is used to compress the data between the web browsers and the Open-Xchange front-end servers to minimize the transferred data.

- **mod_expires** is used to enforce strong caching in the browser to avoid unnecessary requests for already retrieved files. This is extremely important when using the Internet Explorer.

- **headers**

- **mod_ssl** is used to allow secure encrypted access to the system (https).

Those modules are activated by generating links from **mods-enabled** to the corresponding files in **mods-available**.

```
root@oxhe:/etc/apache2/mods-enabled# ls -l
total 0
[...] deflate.load -> /etc/apache2/mods-available/deflate.load
[...] expires.load -> /etc/apache2/mods-available/expires.load
[...] headers.load -> /etc/apache2/mods-available/headers.load
[...] ssl.conf -> /etc/apache2/mods-available/ssl.conf
[...] ssl.load -> /etc/apache2/mods-available/ssl.load
[...] proxy.load -> ../mods-available/proxy.load
[...] proxy_balancer.load -> ../mods-available/proxy_balancer.load
```

On a typical installation it is necessary to create the links for **deflate.load** and **expires.load**. The file **deflate.conf** should not be linked, as the configuration is done in another place.

1.10.2. Configuring Services

Now the Apache webserver and the mod_proxy_ajp module have to be configured to access the groupware frontend. To get the best out of the GUI performance, the usage of mod_expires and mod_deflate is strongly recommended. Those modules will limit the amount of client requests and compress the delivered content.

The directory /usr/share/doc/open-xchange/examples/ contains current versions for proxy_ajp.conf and deflate.conf.

```
$ vim /etc/apache2/conf.d/proxy_ajp.conf
```

Configure the mod_proxy_ajp module by creating a new Apache configuration file.

```
$ vim /etc/apache2/conf.d/proxy_ajp.conf
```

```
<Proxy *>
Order deny,allow
allow from all
</Proxy%gt;

ProxyPass /axis2 ajp://127.0.0.1:8009/axis2 smax=0 ttl=60 retry=5
ProxyPass /ajax ajp://127.0.0.1:8009/ajax smax=0 ttl=60 retry=5
```

```
ProxyPass /servlet ajp://127.0.0.1:8009/servlet smax=0 ttl=60 retry=5
ProxyPass /infostore ajp://127.0.0.1:8009/infostore smax=0 ttl=60 retry=5
ProxyPass /publications ajp://127.0.0.1:8009/publications smax=0 ttl=60 retry=5
# next line is required for OXtender for Business Mobility only
ProxyPass /Microsoft-Server-ActiveSync ajp://127.0.0.1:8009/Microsoft-Server-ActiveSync smax=0 ttl=60 retry=5
```

Modify the default website settings to display the Open-Xchange GUI

```
$ vim /etc/apache2/sites-enabled/000-default
```

```
<VirtualHost *:80>
ServerAdmin webmaster@localhost

DocumentRoot /var/www/

<Directory /var/www/>
AllowOverride None
Order allow,deny
allow from all
RedirectMatch ^/$ /ox6/
Options +FollowSymLinks +SymLinksIfOwnerMatch
</Directory>
# deflate
AddOutputFilterByType DEFLATE text/html text/plain text/javascript application/javascript text/css text/xml application/xml text/x-js ap

# pre-compressed files
AddType text/javascript .jsz
AddType text/css .cssz
AddType text/xml .xmlz

AddEncoding x-gzip .jsz .cssz .xmlz
SetEnvIf Request_URI "\.(jsz|cssz|xmlz)$" no-gzip

ExpiresActive On

<Location /ox6>
# Expires (via ExpiresByType to override global settings)
ExpiresByType image/gif "access plus 6 months"
ExpiresByType image/png "access plus 6 months"
ExpiresByType image/jpg "access plus 6 months"
ExpiresByType image/jpeg "access plus 6 months"
ExpiresByType text/css "access plus 6 months"
ExpiresByType text/html "access plus 6 months"
ExpiresByType text/xml "access plus 6 months"
ExpiresByType text/javascript "access plus 6 months"
ExpiresByType text/x-js "access plus 6 months"
ExpiresByType application/x-javascript "access plus 6 months"
ExpiresDefault "access plus 6 months"
Header append Cache-Control "private"
Header unset Last-Modified
Header unset Vary
# Strip version
RewriteEngine On
RewriteRule v=\w+/(.+) $1 [L]
# Turn off ETag
Header unset ETag
FileETag None
</Location>
```

```
<Location /ox6/ox.html>
ExpiresByType text/html "now"
ExpiresDefault "now"
Header unset Last-Modified
Header set Cache-Control "no-store, no-cache, must-revalidate, post-check=0, pre-check=0"
# Turn off ETag
Header unset ETag
FileETag None
</Location>

<Location /ox6/index.html>
ExpiresByType text/html "now"
ExpiresDefault "now"
Header unset Last-Modified
Header set Cache-Control "no-store, no-cache, must-revalidate, post-check=0, pre-check=0"
# Turn off ETag
Header unset ETag
FileETag None
</Location>
</VirtualHost>
```

After the configuration is done, restart the Apache webserver

```
$ /etc/init.d/apache2 restart
```

Finally start the Open-Xchange Groupware service

```
$ /etc/init.d/open-xchange-groupware start
```

1.11. Creating your first context and users

Now that the whole setup is completed and you already should get a login screen when opening the server IP in the browser, we have to set up a context and a default user.

1.11.1. Create a context

```
/opt/open-xchange/sbin/createcontext -A oxadminmaster -P secret -c 1 -u oxadmin \
-d "Context Admin" -g Admin -s User -p secret -e oxadmin@example.com \
-q 1024 -L defaultcontext --access-combination-name=all
```

The mapping defaultcontext will allow you to set this context as default one of the entire system, so that users which will be created within this context can log in to the groupware without specifying their domain in the login screen. Note that only one context can be the default context. The user that will be created with this call (oxadmin) is the default admin of this context. He will gather additional functions that are also described in the adminis-

tration manual. Also note that the context id has to be unique and numeric, otherwise the server will complain when you try to create a context.

1.11.2. Create a user

```
/opt/open-xchange/sbin/createuser -c 1 -A oxadmin -P secret -u testuser -d "Test User" \
-g Test -s User -p secret -e testuser@example.com
```

Now connect to the server with a browser and log in with testuser / secret.

1.12. Imap and smtp server

The Open-Xchange server is designed to connect to the existing imap and smtp server. This configuration can be set up globally for all users in a configuration file or separately for each user. The configuration file "mail.properties" is described in detail in the Configuration Options chapter. In this file the required behaviour can be set. Important configurations are:

• User setting for IMAP and SMTP is written to the database and set by the user functions through RMI or on the command line. The command line options for create/changeuser are:

```
--imapserver
    --imaplogin
    --smtpserver
```

• The "imapCredSrc" parameter specifies the credentials to be used for authentication against the SMTP and IMAP server:

```
"session" password and open-xchange username given on login
    "user.imapLogin" password from login and username from "--imaplogin"
```

1.13. Authentication

The "login implementation" is a plug-in which is used for user authentication. This can be a self-developed plug-in that authenticates against an existing authorisation or a shipped one. Open-Xchange delivers packages for authentication against the database, ldap and IMAP. Choose one from the section called "Plug-ins for the Groupware/Application Server". This plug-in also controls which part of the login is the username or the context name. It also controls the separator in between, default is "@".

Example 1.9. Plug-in description

http://oxpedia.org/wiki/index.php?title=Plugin_Extension_Quickstart_Guide

1.14. User self service

The "config jump" is a plug-in that creates the URL which is opened in a separate window when a user clicks on "Extras" in the configuration tree of the user frontend. Choose the **open-xchange-configjump-generic_<version>_all.deb** plug-in. If you do not choose this package there will be no link available in the groupware.

Chapter 2. OSGi

2.1. OSGi – An Overview

OSGi is a dynamic module system for Java. The OSGi framework provides a plugin concept on top of a service-oriented architecture to enhance the Java technology to be more modular and dynamic. Dynamic means that components can be managed at runtime. Components in OSGi can provide a feature or function (service provider) or use other components and their services (service requester). To search and find services, OSGi provides a service registry.

A good analogy for a better understanding is this one: Java without OSGi behaves like Windows 95 where a change in the system requires a complete restart of the kernel (in the Java world so called Java VM). With OSGi it is more like the Linux kernel modules concept, modules can be added and removed at runtime. Modules in the OSGi world are called bundles. A bundle contains the service providers or requesters. A bundle from the Java perspective is at least one class or interface with an additional information file called "MANIFEST.MF". A bundle is associated with several activities like installation, removal, update, starting and stopping.

Interesting to know is that each bundle describes dependencies to other bundles and the offered services. With OSGi it can be possible to run different versions of the same bundle providing the same services. This can be used for interesting scenarios if you think about backwards compatibility and legacy systems. At runtime, it is possible to explore the installed bundles and view details like version numbers and other useful information. In addition, it is possible to start and stop bundles at runtime if for example a newer version is available. This very interesting feature can also be used to replace a bundle at runtime with a special debug bundle, a testing bundle or even a downgrade bundle because an issue occurred in a specific function. Administrators can decide which bundles fit best into their environment and start only those bundles.

In short here are some advantages of the OSGi technology:

Module boundaries	Clean and protected dependencies and declaration of service offerings
Service-oriented architecture	Start/stop bundles to provide features and functions in a live environment
Versioning	Same bundles can be started with different versions
Transparency	It is possible to list all available/installed bundles and view version and other useful information
Modularization/Flexibility	Start and run only those packages your system needs

Chapter 3. HTML Whitelist

An HTML Whitelist is a configuration file that defines allowed HTML tags and their attribute names or values. All tags and attributes that are not listed in this file have to be removed to filter dangerous HTML content.

3.1. HTML Whitelist Configuration

The HTML whitelist is defined in the 'whitelist.properties' configuration file. This file is divided in three sections:

HTML tags and attributes
CSS name/value pairs
CSS combi map

3.1.1. HTML Tags and Attributes

This section includes the allowed HTML tags and attributes. Each entry is preceded by „html.tag.", followed by the name of the allowed tag. The attributes form a comma-separated, quoted list. The attributes can be followed by their allowed values. The values are put in square brackets and separated by ':'. Example:

html.tag.area=",alt,coords,href,nohref[nohref],shape[:rect:circle:poly:default:],tabindex,target,"

This entry allows the „area" tag. The attributes are listed within the quotation marks. The allowed values for the „shape" attribute are listed within the square brackets. If the attributes list contains empty brackets, only numeric values are allowed:

html.tag.pre=",width[],"

If the attributes list is empty, only the HTML tag without any attributes is allowed:

html.tag.span=""

html.tag.i=""

html <base> to properly load linked images if it provides a valid URL in its "href" attribute; e.g. <base href="http://my.url.com/" />. Otherwise the <base> tag is removed.

3.1.2. Whitelist filtering

The bundle com.openexchange.html makes whitelist filtering of HTML content possible.

3.1.3. CSS Name/Value Pairs

Analogous to the HTML tags and attributes, this section includes allowed CSS elements with their allowed values. Each entry is preceded by „html.style.", followed by the name of the CSS element. Allowed values are defined in a comma-separated, quoted list.

For the values it is possible to use wildcards that comprise certain value types:

c: Any CSS color value
u: An URL; e. g. url(http://www.somewhere.com/myimage.jpg);

n: Any CSS number value without '%'
N: Any CSS number value
*: Any value allowed
d: delete
t: time

Example:

html.style.background-color="c,transparent,"

This allows the CSS element „background-color". For this element any CSS color values and the value „transparent" are allowed. Wildcards precede the list and are not comma-separated:

="uNc,scroll,fixed,..."

3.1.4. CSS Combi Map

The second section of CSS Name/Value Pairs allows entries with an empty value list:

html.style.border=""

Such entries refer to the CSS combi map i. e., the respective CSS element configuration is included in the CSS combi map:

html.style.combimap.border="Nc,transparent,none,hidden,dotted,dashed,solid,double,groove,ridge,inset,outset,separate,collapse,"

Entries in the combi map are preceded with „html.style.combimap.", followed by the respective CSS element. Analogous to the latter section, the element is followed by the value listing.

3.1.5. microformatWhitelist.properties

This properties file enables whitelisting of html and css elements for publications to be done separately from the whitelisting for E-Mails.

Chapter 4. Spam Handler

A spam handler is a dedicated service within the Open-Xchange Server's Osgi framework. Spam E-Mails are treated in a special way by this handler.

The spam handling is triggered whenever a user explicitly marks an E-Mail as spam. The ham handling is activated if the user marks an E-Mail in his spam E-Mail folder as 'No Spam'.

On the Open-Xchange Server there are several ways of implementing this service. For this purpose several spam handlers are registered with the OSGi framework under a special registration name. The registration name "NoSpamHandler" is reserved for an empty SpamHandler implementation that is used as a fallback.

4.1. Spam Handler Configuration

Every E-Mail implementation includes the registration name of the SpamHandler that is used in the E-Mail implementation. If no SpamHandler is used, "NoSpamHandler" is entered. The registration name configuration of a suitable spam handler depends on the respective E-Mail implementation. The IMAP implementation e. g. activates the spam handler via the 'com.openexchange.imap.spamHandler' entry in the 'imap.properties' properties file.

To make a Spam handler available for a special user the respective E-Mail implementation has to define a spam handler and the spam functionality explicitly has to be activated in the user's E-Mail settings.

Depending on the spam filter a dedicated spam handler has to be installed. The SpamAssassin spam filter e.g. wraps E-Mails that are recognized as spam in an extra created E-Mail i.e., the spam E-Mail comes as attachment.

Currently, two implementations are available:

DefaultSpamHandler   Assumes that the spam E-Mails are not wrapped and thus moves them without further action.

SpamAssassin   Assumes that the spam E-Mails are attached to the E-Mail. Thus the attachment is extracted and moved.

4.2. Phishing E-Mails

Phishing is an attempt to criminally acquire valuable user data, such as passwords, keys or other information. They often include official-looking logos from real organizations and other identifying information taken directly from legitimate Web sites.

Such E-Mails are different from typical Spam E-Mails as they appear to be legitimate and are thus difficult to recognize with normal Spam rules. An E-Mail's header and content needs to be checked thoroughly to find out if it is a phishing E-Mail.

Analogously to the Spam handling, certain header entries are used to mark the respective E-Mails as phishing E-Mail. Those header entries are called phishing header in the following paragraph.

4.2.1. Phishing Header Configuration

Which E-Mail header entries indicate a phishing header can be defined in the 'mail.properties' file. The respective property name is 'com.openexchange.mail.phishingHeader'. If there are multiple header identifiers, a comma separated list of header names can be used.

Those header names are made available to the front-end where further actions can be done.

If no header identifier is defined, no E-Mail header entries are seen as phishing header.

Chapter 5. MySQL Configuration

This chapter describes the requirements and the configuration needed to use the MySQL database as database back-end for the Open-Xchange™ application.

5.1. Software Packages

The following packages need to be installed on all Open-Xchange™ administration and groupware servers to access the database back-end:

- **mysql-client-5.0**

5.2. Recommended settings in my.cf

- **innodb_flush_log_at_trx_commit=1**

- **default-table-type=InnoDB**

- **query_cache_type=1**

- **innodb_flush_log_at_trx_commit=1**

The sql_mode must not be set to **ansi.**

5.3. Privileges for the Open-Xchange Database Users

It is possible to use different users for read connections and for write connections. Additionally, there can be different users for the **configdb** and for the groupware databases. In the examples a user called **openexchange** is used for both types of connections to the groupware database.

- Users for the write connections need the following permissions: **ALL**

- Users for the read connections need the following permissions: **SELECT**

Example 5.1. Grant User Access

The following GRANT statement was used for creating the **openexchange** user for the examples in this document:

```
oxhe:~# mysql
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 34
Server version: 5.0.32-Debian_7etch1-log Debian etch distribution

Type 'help;' or '\h' for help. Type '\c' to clear the buffer.


mysql> GRANT  ALL PRIVILEGES ON *.* TO 'openexchange'@'%' IDENTIFIED BY 'secret';
Query OK, 0 rows affected (0.00 sec)

mysql>
```

Chapter 6. IMAP Server

This chapter lists requirements that an OX server needs to be fulfilled by an IMAP server.

6.1. IMAP Server Requirements

The requirements are related and actually bound to an IMAP server's capabilities i.e., the response of the special IMAP command "CAPABILITY": a listing of capabilities that the server supports.

6.1.1. IMAP4 / IMAP4rev1

At least the IMAP server must support the IMAP4/IMAP4rev1 capability in order to allow access and manipulation of E-Mails and remote E-Mail folders, called "mailboxes", as per RFC 2060.

This extension is required by the OX server.

6.1.2. QUOTA

The QUOTA extension (RFC 2087) permits administrative limits on resource usage (quotas) to being set and manipulated through the IMAP protocol.

This extension is required by the OX Server.

6.1.3. NAMESPACE

The NAMESPACE extension (RFC 2342) allows a client to discover the prefixes of namespaces used by a server for personal mailboxes, other users' mailboxes, and shared mailboxes.

This extension is required by the OX Server in order to support public and shared folders to let the E-Mail folders fit into existing OX folder capabilities. Sharing of E-Mail folders is related to following ACL capability.

6.1.4. SORT

The SORT extension defines sorting performed on the IMAP server and is intended to improve performance for IMAP clients which offer sorted views.

This capability is not needed by the OX Server since it is able to sort E-Mails itself. Actually, server-based sorting is the recommended (and faster) way. Unless it is required that E-Mails can be sorted by their (thread) reference, this extension is required by the OX Server. Furthermore, an extended SORT extension must be supported by the IMAP server. The extension is called "THREAD=REFERENCES" in the capability list.

If "THREAD=REFERENCES" is not required, IMAP property "imapSort" must be set to false to let the server do the sorting.

6.1.5. ACL

The ACL extension (RFC 2086) permits access control lists. An access control list is a set of <identifier,rights> pairs. The identifier is a US-ASCII string naming the entity, and rights is a

string listing a (possibly empty) set of alphanumeric characters, each character listing an allowed set of operations.

Some IMAP servers even support a newer ACL extension as per RFC 4314 which defines some more rights and has a different view on the set of operations allowed by the single characters.

Currently, the OX server is designed to work with the older RFC extension but is also able to handle the newer one. Depending on the log level several warnings appear in the log file if a right violation has been detected caused by the newer ACL extension.

This extension is not required by the OX Server and can be completely disabled via IMAP configuration through the property "supportsACL". In consequence to disabling ACL support sharing of folders is not possible any more.

6.1.6. UIDPLUS

The UIDPLUS extension (RFC 2359) provides a set of features intended to reduce the amount of time and resources used by some client operations.

Since corresponding RFC 2359 provides (slower) fall-back approaches to take when the UIDPLUS extension is not supported, the OX Server does not require this extension.

6.1.7. Vacation date extension

Date operations like vacation start/end date are only available if the "date" capability is available.

telnet command examples:

```
$ telnet imap.open-xchange.com 2000
[...]
"IMPLEMENTATION" "Cyrus timsieved v2.2.13-Debian-2.2.13-14+lenny3"
"SIEVE" "fileinto reject envelope vacation imapflags notify subaddress relational comparator-i;ascii-numeric regex"
```

```
$ telnet 10.20.30.207 2000
[...]
"IMPLEMENTATION" "dovecot"
"SIEVE" "fileinto reject envelope date encoded-character vacation subaddress comparator-i;ascii-numeric relational regex imap4flags copy include body variables enotify environment"
```

6.2. Tested IMAP servers

A listing of IMAP servers tested against the OX Server.

1. 1.Cyrus IMAP4 v2.2.13

2. 1.Courier 4.1.1.20060828 (0.53.3)

3. 1.Dovecot 1.0.rc15

Chapter 7. Contacts LDAP (GAL)

This chapter contains descriptions about the contacts-ldap (global address list) server OSGI bundle. This bundle includes contacts from an ldap server (OpenLDAP, Active Directory), as a global address book inside the Open-Xchange folder tree.

7.1. Architecture

The contacts-ldap bundle is designed as a bundle for the groupware server and gets installed as a service within the OSGi environment.

7.2. Deliverables

7.2.1. Package description

The package contains the bundle itself and the corresponding example configuration files. The bundle will get installed as a directory below /opt/open-xchange/bundles. The example configuration file can be found in:

/opt/open-xchange/etc/groupware/contacts-ldap/

In detail it consists of the following files:

/opt/open-xchange/etc/groupware/contacts-ldap/111/LDAPglobal1.properties.example
/opt/open-xchange/etc/groupware/contacts-ldap/ldap/111/LDAPglobal.properties.example
/opt/open-xchange/etc/groupware/contacts-ldap/ldap/mapping.openldap.properties.example
/opt/open-xchange/etc/groupware/contacts-ldap/ldap/mapping.ads.properties.example

7.3. Limitations and specials

- The global LDAP folder can be deleted by the administrator of the context, in contrast to the other public folder which cannot. If the folder is deleted the folder will be re-created if the ldap bundle is restarted.
- Exception messages are not internationalized at the moment
- Only simple bind is possible
- LDAP sort is not tested
- LDAP multiple-values not tested with Active Directory
- Only the first value of multiple-values attributes will be used
- Folder names are not internationalized
- Automatic configuration reload on property change is not supported, for a reload the bundle has to be restarted
- LDAP structures from OX5 containing date information (e. g., date of birth) can not be used.
- The interface is read-only, it is not possible to create data throguh this bundle.

7.4. Installation

The package has to be installed with the package management tool of the distribution. Afterwards the bundle automatically starts during a groupware restart. The settings in the configuration files need to be done before. Wrong settings do cause the bundle to shutdown itself and the reason is to be found in the groupware log file.

7.5. Configuration

As written in the package description section, the bundle has some example configuration files which reside in the /opt/open-xchange/etc/groupware/contacts-ldap. In this section all are explained in more detail. The bundle has no main configuration file, all needed information is gathered from the directory structure. So all directories starting with digits can have to contain a property in the structure written below. The digits itself represent the corresponding context number. So a directory 111 will contain configuration files for the context with id 111.

In this directory the configuration files for the different global LDAP folder per context are stored. The name of the configuration files is not relevant, but it has to be used in the property key as well. The key property therefore matches the following scheme:

com.openexchange.contacts.ldap.context<contextid (number of directory)>.<name of property file without extension>.<property>

So for a scenario were the property file is named test.properties and which resides in the directory 111 the key for the uri property would be:

com.openexchange.contacts.ldap.context111.test.uri

For your configuration files you can just copy over the example files delivered with this bundle and adjust the property file name part in the keys and the context id.

In those example files all properties are documented, so this text will only shed some light on a few more interesting things.

One of them is the mapping file. Two examples for OpenLDAP and Active Directory are included in the package:

/opt/open-xchange/etc/groupware/contacts-ldap/mapping.openldap.properties.example
/opt/open-xchange/etc/groupware/contacts-ldap/mapping.ads.properties.example

The corresponding mapping file to a folder can be selected with the property com.openexchange.contacts.ldap.context<id>.<name of property file>.mappingfile here you only need to give the real filename without any path, the bundle will then search the right one. If you use the example files, please pay attention that you remove the .example extension beforehand.

The mapping file describes how the attributes of a contact in Open-Xchange are mapped to the attributes in the LDAP server. A special attribute is com.openexchange.contacts. ldap.<name of mapping file>.uniqueid. This property can specify an attribute which needs to be unique for all objects in the specified part of the LDAP tree. This is shortly connected to the property com.openexchange.contacts.ldap.context<id>.<name of property file>.memorymapping in the corresponding configuration file. The two are related in the following way:

If there is an attribute in the LDAP that is unique and an integer value in the range $0 - 2^{32}$ then this value can directly be used with Open-Xchange, and the same ids which are in the LDAP directory are used in Open-Xchange for object identification. In this case memorymapping can be set to false, because there is no need to hold a memorymap between the object identifiers in Open-Xchange and in LDAP. But if the value is an integer out of that range or if it is a unique string, you will have to turn memorymapping on. This way the bundle will create own ids for the contact object by a mapping table which is stored in-memory. The downside of this is that the links in the groupware won't work because the ids will change after a restart of the groupware. Currently this applies to Active Directory, because there seems to be no attribute which fulfills the range requirement.

7.5.1. Configuring distribution lists

The configuration allows to switch between normal contacts, distributionlists or both. This setting is done in com.openexchange.contacts.ldap.context<contextid (number of directory)>.contactTypes.

If distributionlists are enabled by either setting both or distributionlists here, a check of the distributionlists settings (searchfilter_distributionlist, searchScope_distributionlist, baseDN_distributionlist) for correctness must also be made. Special attention should be paid to the searchfilter_distributionlist setting, as this defines what types of objects are distributionslists.

Note: If both, distribution lists and contacts, are enabled they share the same unique ids i. e., the ids have to be unique across distribution lists and contacts. This is independent of the memorymapping setting.

7.5.2. Outlook Support

The Outlook support of the contacts-ldap bundle depends on the underlying LDAP directory server. If ADS is used, it depends on the individual setup whether memory mapping has to be used for generating unique ids (see section below). If memory mapping has to be used the ids will change after a server restart, which will confuse Outlook and lead to duplicates in some scenarios. To omit this, a property com.openexchange.contacts.ldap.context<contextid (number of directory)>.outlook_support can be used to configure outlook_support. If the property is missing or set to false, the support will be disabled and Outlook will only show an empty folder. If set to true the folder will contain the contacts.

Deletion detection

To detect deleted objects in Outlook the directory server must deliver what has been deleted since a timestamp. This information is not available on normal LDAP servers, but on ADS. If an ADS server is used, then and only then the configuration

com.openexchange.contacts.ldap.context<contextid (number of directory)>.ADS_deletion_support

can be enabled.

This will allow Outlook to detect deleted objects. But note that even if this option is enabled the ADS will not provide this information for ever, it is only kept for the following lifetimes:

60 days for forests initially built using Windows 2003 and Windows Server 2003
180 days for forests that were initially built with Windows Server 2003 SP1

So if one Outlook client performs a sync after these time frames it will not detect the object deleted before, because this information cannot be retrieved.

If ADS is used, Outlook will not remove contacts which are removed on the LDAP side, only new contacts are added. To get the actual list with contacts removed, Outlook must be restarted without OXtender and all contacts in the folder must be deleted. After a restart with OXtender a full sync is done, and deleted contacts will not appear any more.

7.5.3. Memorymapping and ADS

If an ADS is running, memorymapping can be disabled if the following precondition is met

Objects are only created on one DC and the objects are only read from this DC.

If this applies, the following settings can be changed in the mapping.ads.properties file:

com.openexchange.contacts.ldap.mapping.ads.uniqueid = sAMAccountName

can be changed to:

com.openexchange.contacts.ldap.mapping.ads.uniqueid = uSNCreated

and

com.openexchange.contacts.ldap.mapping.ads.distributionuid = sAMAccountName

can be changed to:

com.openexchange.contacts.ldap.mapping.ads.distributionuid = uSNCreated

7.5.4. Refresh interval

The example configuration files will get a new value specifying the refresh interval the thread in the background will use to update the cached contacts.

Specify the refresh interval for the cached contacts. If authtype is "anonymous" or "AdminDN" the contacts are cached and refreshed in the background in the interval specified here (given in ms).

com.openexchange.contacts.ldap.context111.LDAPglobal1.refreshinterval=10000

com.openexchange.contacts.ldap.context111.LDAPglobal.refreshinterval=10000

If a value is missing in a configuration file the default value of 10000 will be used.

7.5.5. Reading hostnames for multi-domain environments from a provided LDAP server

The new open-xchange-hostname-ldap bundle provides an implementation for the HostnameService to the system which will deliver a hostname for the given cid read from a LDAP server provided. The hostnames are cached for the local server using our caching system to minimize the requests to the LDAP server. Therefore not only the configuration file /opt/open-xchange/etc/groupware/ldaphostname.properties is added but also /opt/open-xchange/etc/groupware/ldaphostname.ccf which contains the cache settings.

Chapter 8. Session Migration

8.1. Introduction

Sessions are typically initiated by users via the web interface of the Open-Xchange Server, Outlook or mobile devices, every session is bound to one Open-Xchange server until it is terminated. In a clustered Open-Xchange environment, sessions are assigned to one server of the cluster by random algorithms. Since Open-Xchange uses caching via the network all data is available to every user on every server in the cluster. But sessions are still bound to one server and if that server is going to be shut down, users would encounter an error message and are kicked off the cluster. To solve this problem, session migration has been introduced with the OSGI implementation of Open-Xchange Server 6 SP4. This feature allows sessions to migrate to another server at the cluster without having any influence to the end user. Typical scenarios where sessions need to be migrated are hardware and software upgrades of the server as well as emergency shutdowns.

The implementation of the session migration is based on a cache which is filled with all sessions of a server if its "sessiond" bundle is shut down. Other groupware servers fetch the sessions from the cache and take over the migrated session. Therefore it is mandatory to shut down the sessiond bundle prior to the server shutdown. Note that it may take some time until all sessions are put to the cache. If a user request collides with the short time where sessions are put to the cache it is possible that the request will fail, but in most cases a user should not mention anything at all.

8.2. Preparation

To enable session migration, the session cache needs to be configured. This needs to be done for all Open-Xchange servers that should be capable to migrate sessions.

```
$ vim /opt/open-xchange/etc/groupware/sessioncache.ccf

[...]
jcs.auxiliary.SessionLTCP.attributes.TcpListenerPort=58849
jcs.auxiliary.SessionLTCP.attributes.UdpDiscoveryAddr=224.0.0.1
jcs.auxiliary.SessionLTCP.attributes.UdpDiscoveryPort=6789
jcs.auxiliary.SessionLTCP.attributes.UdpDiscoveryEnabled=true
```

In this case Open-Xchange is listening on port 58849 for incoming sessions and discovers other Open-Xchange session caches via UDP multicast on port 6789. Shortly after the server startup all servers should connect to the cache. This can be checked by running netstat. This is an example with two Open-Xchange Servers:

OX1:

```
$ netstat -tulpa
tcp6   0    0 *:58849              *:*               LISTEN      27449/java
tcp6   0    0 oxhegw01.open-xch:58849 oxhegw02.open-xch:55499 ESTABLISHED27449/java
```

OX2:

```
$ netstat -tulpa
tcp6    0    0 *:58849              *:*              LISTEN    11816/java
tcp6    0    0 oxhegw02.open-xch:55499 oxhegw01.open-xch:58849 ESTABLISHED11816/java
```

Both groupware servers have connected to each other and are ready to accept sessions.

8.3. Migration

First, shutdown the sessiond bundle

```
$ /opt/open-xchange/sbin/stopbundle com.openexchange.sessiond
```

Wait some seconds until all sessions are put to the cache, then shutdown the groupware

```
$ /etc/init.d/open-xchange-groupware stop
```

This is what happens to a user's session at the web interface:

```
GET http://server.ox/ajax/calendar?action=all&columns=1%2C20%2C207&end=1215043200000&
folder=25&session=6e3be7938169670c47fa4fe916045699&start=1214956800000 (34ms)
Cookie: JSESSIONID=41165f534d652a3e662d9c44b0b6efd439f310ad.OX-2
```

OX-2 is the identifier for the second Open-Xchange server at the cluster. Now this server is going to be shut down and the user triggers another request.

In some cases, requests and session migration collide. An error message is shown but the next request will succeed and does not terminate the user's session:

```
The required service com.openexchange.sessiond.SessiondService is temporary
not available. Please try again later. (SRV-0001,-1021469715-4)
```

The next request triggered by the user is answered by an Open-Xchange server that has taken over the session.

```
 GET http://server.ox/ajax/calendar?action=all&columns=1%2C20%2C207&end=1215216000000&
 folder=25&session=6e3be7938169670c47fa4fe916045699&start=1215129600000 (26ms)
Cookie: JSESSIONID=9235ba164ca5ac3119cee006a92e4a574e31c32b.OX-1
```

The identifier of the server has been set to OX-1 and the user is able to continue working on this server without any interruption.

Chapter 9. Open Xchange CLT reference

This chapter describes the administration tools available in Open-Xchange. Some command line tools start a java vm and directly generate RMI calls to the administration daemon that will make all necessary database operations, others are shell scripts.

9.1. Shell scripts

- generatempasswd
- initconfigdb
- open-xchange-admindaemon
- open-xchange-groupware
- oxinstaller
- oxsysreport
- report

Command path is **/opt/open-xchange/sbin/**

9.1.1. generatempasswd

Writes a username and a crypted password to the mpasswd file. Against this file the context administrator authentication is done by the groupware server

Parameters

-h,--help	Prints a help text
-A,--adminuser <adminuser>	Context admin username
-P,--adminpass <adminpass>	Context Admin password
-f,--mpasswdfile <mpasswd file>	Path and name of the mpasswd file

Return value

0   on success

>0   on failure

Mandatory parameters

This tool has no mandatory parameters. When no **--adminpass** parameter is given, the password will be read from the command line. Defaults are:

Default values

-A,--adminuser   oxadminmaster

-f,--file   /opt/open-xchange/etc/admindaemon/mpasswd

Command output

on success: <adminuser> succesfully added to the mpasswd file <file>

on failure: update/creation of file <file> failed. Error: <reason>

Example 9.1. generatempasswd

```
root@oxhe:~# /opt/open-xchange/sbin/generatempasswd
Enter oxadminmaster password:
oxadminmaster succesfully added to mpasswd file /opt/open-xchange/etc/admindaem
on/mpasswd
root@oxhe:~#
```

9.1.2. initconfigdb

Is the tool to initially set up the Open-Xchange configuration database. This database is needed and accessed from all Open-Xchange services and servers

Parameters

-h,--help   Prints a help text

--configdb-user   Database user for the Open-Xchange service

--configdb-pass   Password for the Open-Xchange database user

--configdb-host   Hostname or IP address of the Database

--configdb-port   Database port

--configdb-dbname   Database schema name for the Open-Xchange configuration database

Return value

0   on success

>0   on failure

Mandatory parameters

--configdb-pass   Mandatory is **--configdb-pass** because for those parameters, no default exists. Defaults are:

Default values

--configdb-user   openexchange

--configdb-host   localhost

--configdb-port	3306
--configdb-dbname	configdb

Command output

on success:	initializing Open-Xchange configuration database <configdb-dbname>… database generated
on failure:	initializing Open-Xchange configuration database <configdb-dbname>… error: <reason>

Example 9.2. configdb

```
root@oxhe:~# /opt/open-xchange/sbin/initconfigdb --configdb-pass=secret
initializing Open-Xchange configuration database configdb… database
generated
root@oxhe:~#
```

9.1.3. open-xchange-admindaemon

This is the start script for the Open-Xchange Admindaemon and is executed from the run-level script **/etc/init.d/open-xchange-admin**

9.1.4. open-xchange-groupware

Is the start script for the Open-Xchange Groupware and is executed from the runlevel script **/etc/init.d/open-xchange-admin-groupware**

Note: Best avoid manually calling this script as root as all permissions are lost then.

9.1.5. oxinstaller

Is the script to initially set up the Open-Xchange configuration files. This basic configuration can then be used to fine tune the installation

Parameters

-h,--help	Prints a help text
--servername	Open-Xchange internal server name
--imapserver	Mail (IMAP) server in case **imaplogintype** is **config** or **global**
--imapserver	Transport (SMTP) serverin case **imaplogintype** is **config** or **global**
--imaplogintype	Used login implementation. Needs to be **user**, **config**, **global** is for debugging purposes
--configdb-user	Database user for the Open-Xchange service
--configdb-pass	Password for the Open-Xchange database user

--configdb-readhost	Hostname or IP address of the Slave Database
--configdb-writehost	Hostname or IP address of the Master Database
--configdb-dbname	Database schema name for the Open-Xchange configuration database
--servermemory	Memory for the groupware daemon. Mandatory from 6.22 on.
--adminmemory	Memory for the admin daemon
--clt-memory	Memory for the admin command line tools
--configdb-readport	Port number of the Slave Database
--configdb-writeport	Port of the Master Database
--tmpdir-path	Path and directory for temporary files
--master-pass	Context admin master password, needed when context-auth is true
--master-user	Context admin master name, needed when context-auth is true
--jkroute	mod_jk routing name configured in jk configuration
--ajp-bind-port	Port where the groupware listens for incomming jk requests
--imap-credentials	Where to get the imap credentials from
--object-link-hostname	Link that is used in server generated emails (directlink in notifications)
--extras-link	Link which is opened in a new window if a users clicks on Extras in the GUI
--cache-udp-disc-addr	UDP address for the caches and push service auto configuration
--cache-udp-disc-port	UDP port for the caches auto configuration
--groupware-cache-port	Port where the groupware cache accept invalidation messages from other caches
--admin-cache-port	Port where the admin daemon cache accept invalidation messages from other caches
--gwsession-cache-port	Port where the groupware session cache accept invalidation messages from other caches
--ip-of-oxcluster	IP for which customers can access the groupware
--push-udp-disc-port	UDP port for the oxtender push service auto configuration

--push-outlook-port	UDP port where the oxtender registers for the push service
--SesssionContTimeout	Timeout for session containers
--NRSessionContainers	Number of session containers
--maxSession	Maximum numbers of session, 0 for unlimited
--DoubleLoginPerm	Allow users to have more sessions than one at the same time
--sessionDefLifeTime	Default session life time
--disableauth	Switch to turn off context authentication
--add-license=<LICENSE-CODE>	To override this default option, the option --no-license must be specified

Return value

0   on success

>0   on failure

Mandatory parameters

--servername --configdb-pass	because for this parameter, no default exists. Defaults are:

Default values

--imapserver	localhost
--imaplogintype	user
--configdb-user	openexchange
--configdb-readhost	localhost
--configdb-writehost	localhost
--configdb-dbname	configdb
--servermemory	50
--configdb-readport	3306
--configdb-writeport	3306
--tmpdir-path	/tmp
--context-auth	false

Command output

on success:

```
setting up groupware configuration /opt/open-xchange/etc/groupware
............................................
groupware daemon must now be restarted if already running
setting up admin daemon configuration /opt/open-xchange/etc/admindaemon
......................
*** RMI authentication is disabled
admin daemon must now be restarted if already running
```

On failure:　　　Setting up Open-Xchange configuration failed. Error: <reason>

Example 9.3. setting up groupware configuration

```
root@oxhe:~# /opt/open-xchange/sbin/oxinstaller --disableauth --servername=oxapp --configdb-pass=secret
setting up groupware configuration /opt/open-xchange/etc/groupware
............................................
groupware daemon must now be restarted if already running
setting up admin daemon configuration /opt/open-xchange/etc/admindaemon

......................
*** RMI authentication is disabled
admin daemon must now be restarted if already running
```

9.1.6. oxsysreport

Collects a number of system configuration files, which are related to the Open-Xchange functionality, system runtime parameters, whole the Open-Xchange configuration and the groupware and admindaemon log files. It is very useful to use this tool to collect most of the needed information in a single file in case of contacting Open-Xchange Support to identify any issues with the Open-Xchange installation

Parameters

-h,--help	Prints a help text
--tempdir	The directory, the temporary files are copied to (Default /tmp)
--tempdir	The directory, the temporary files are copied to (Default /tmp)
--logdir	The directory, the temporary files for the archive, are copied to (Default ox_support_infos-YYYYMMDD-HHMMSS)
--log-archive	The directory, the created archives is created in (Default /tmp/ox_support_infos-YYYYMMDD-HHMMSS.tar.gz)
--keep-tmp-files	Whether the temporary files should be deleted after the archive has been created (Default false)
-D	Debug output

Return value

0　　on success

1　　on errors

Mandatory parameters

This tool has no mandatory parameters

Example 9.4. Command output

```
# /opt/open-xchange/sbin/oxsysreport
  Debian system detected
  creating logdir /tmp/ox_support_infos-20091223-094853
  collecting files into
  /tmp/ox_support_infos-20091223-094853/ox_files_and_logs.tar.bz2
  collecting system data into /tmp/ox_support_infos-20091223-094853
    creating archive /tmp/ox_support_infos-20091223-094853.tar.gz
```

9.1.7. report

By default (if no option is given) the report client will display and send the generated report to an Open-Xchange service on activation.open-xchange.com. Note that only data that is displayed in the console will be transferred to Open-Xchange. If you want to know which data would be transferred to activation.open-xchange.com execute the report client with the option "-d" (display_only). If this option is given to the report client no data will be transfered to activation.open-xchange.com:

Parameters

-h,--help	Prints a help text
--environment	Shows info about commandline environment
--nonl	Removes all newlines (\n) from output
-H,--host <host>	Removes all newlines (\n) from output
-J,--jmxauthuser <jmxauthuser>	jmx username (required when jmx authentication enabled)
-P,--jmxauthpassword <jmxauthpassword>	jmx username (required when jmx authentication enabled)
-s,--sendonly	Sends report without displaying it (Disables default)
-d,--displayonly	Displays report without sending it (Disables default)
-c,--csv	Shows output as CSV

9.1.8. Automatic reports

Creating a cron entry which will automatically execute the report client once a week saves a lot of work. To create this cron entry execute:

```
$ vim /etc/cron.d/open-xchange_report

 0 3 * * 7 open-xchange /opt/open-xchange/sbin/report -s 1> /dev/null 2>&1
```

The report client will display and / or transfer the following information:

- Version number of the Open-Xchange server package

- Version number of the Open-Xchange admin package

- Total user count

- Total context count

- Version number of the Open-Xchange admin package

- Detailed user information (per context): User access combination flags (which modules have been activated for the users)

9.2. RMI calls

- [update, uninstall, stop, start, refresh, list, listall, listservices, shutdown, install]bundle

- [register,unregister,list,listcontextsby,moveconetxt,change]filestore

- [register,unregister,list,listcontextsby,movecontext,change]database

- [register,unregister,list]server

- checkconsistency

- jobcontrol

- contextrestore

- resetversion

- schemasandversions

- listExecutedTasks

- crawlerupdate

Command path is **/opt/open-xchange/sbin/**

9.2.1. Bundle handling scripts

Each script support parameters -h <jmx host> -p <jmx port> for defining the host the server is running on and the port it is listening on. Both are by default localhost and 9999.

installbundle

With this script a new bundle can be installed into the running server

Command

installbundle (-h <jmx host> -p <jmx port>) location   The location must be file URL with complete path:

file:/opt/openexchange/bundles/com.openexchange.control.jar

listbundles

Lists the installed bundles and their states

Command

listbundles (-h <jmx host> -p <jmx port>)

listservices

Lists the services provided and used by bundles

Command

listservices (-h <jmx host> -p <jmx port>)

refreshbundles

Restarts depending bundles if some bundle has been updated

Command

refreshbundles (-h <jmx host> -p <jmx port>)

shutdown

Starts the OSGi shutdown sequence. Every bundle is stopped and finally the OSGi runtime.

Command

shutdown (-h <jmx host> -p <jmx port>)

startbundle

Starts a single bundle.

Command

startbundle (-h <jmx host>) bundle name   The bundle name must be the unique bundle identifier:

com.openexchange.mail.filter

stopbundle

Stops a single bundle.

Command

stopbundle (-h <jmx host> -p <jmx port>) bundle name   The bundle name must be the unique bundle identifier:

com.openexchange.mail.filter

uninstallbundle

Removes a bundle from the running server.

Command

uninstallbundle (-h <jmx host> -p <jmx port>) bundle name   The bundle name must be the unique bundle identifier:

updatebundle

Updates a single bundle.

Command

updatebundle (-h <jmx host> -p <jmx port>) bundlename   (autorefresh (true|false) default value is false)

The bundlename must be the unique bundle identifier. If autorefresh is given as true, depending bundles will be restarted.

9.2.2. Filestore management

registerfilestore

The tool to make a filestore known to the Open-Xchange system. The filestore directory needs to only be accessible when the storage behind is present. It must not be possible to write to the directory when the storage subsystem is not mounted.

Parameters

-h,--help   Prints a help text

--environment   Displays information about the commandline environment

--nonl   Removes newlines (\n) from output

-t,--storepath \<string>	Path to store filestore contents in URI format. Example: file:///tmp/filestore
-s,--storesize \<integer>	The maximum size of the filestore in MB. Default is 1000.
-x,--maxcontexts \<integer>	The maximum number of contexts that can use this filestore. Default is 5000.

Extra parameters when authentication is enabled

-A,--adminuser \<string>	Context admin user name
-P,--adminpass \<string>	Context admin password

Return value

0	on success
>0	on failure

Mandatory parameters

{adminuser adminpass} storepath

Command output

filestore \<fsid> registered	On success
filestore could not be registered: \<reason from server>	On failure

Example 9.5. Mandatory parameters

```
root@oxhe~# /opt/open-xchange/sbin/registerfilestore -A oxadminmaster -P secret -t file:///tmp/
filestore 34 registered
```

unregisterfilestore

The tool to remove a filestore from the Open-Xchange system. The filestore must not be used by any contexts for this operation.

Parameters

-h,--help	Prints a help text
-i,--id \<integer>	The id of the filestore which should be removed

Extra parameters when authentication is enabled

-A,--adminuser \<string>	Context admin user name
-P,--adminpass \<string>	Context admin password

Return value

0	on success

>0   on failure

Mandatory parameters

{adminuser adminpass} id

Command output

filestore <fsid> unregistered	on success
filestore <fsid> could not be unregistered: <reason from server>	on failure

Example 9.6. Mandatory parameters

```
root@oxhe~# /opt/open-xchange/sbin/unregisterfilestore -A oxadminmaster -P secret --id=5
filestore 5 unregistered
```

listfilestore

The tool to list all filestores known to the Open-Xchange system.

Parameters

-h,--help	Prints a help text
--environment	Shows information about commandline environment
--nonl	Removes newlines (\n) from output
-s,--searchpattern <string>	Lists only entries where this search pattern matches their URI
--csv	Formats output as csv

Extra parameters when authentication is enabled

-A,--adminuser <string>	Context admin user name
-P,--adminpass <string>	Context admin password

Return value

0   on success

>0   on failure

Mandatory parameters

{adminuser adminpass}

Command output

id path size reserved used maxctx curctx	on success
could not list filestores: <reason from server>	on failure

Example 9.7. filestore

```
root@oxhe~# /opt/open-xchange/sbin/listfilestore -A oxadminmaster -P secret
id path                    size reserved    used maxctx curctx
 6 /fsmount/fs6            1000      0       0   5000      0
 3 /fsmount/fs3         8388608    200       0   1000      1
```

listcontextsbyfilestore

The tool to list all contexts that remain on the given filestore.

Parameters

-h,--help	Prints a help text
--environment	Shows information about commandline environment
--nonl	Removes newlines (\n) from output
--csv	Formats output as csv
-f,--filestore <filestore>	Target filestore id

Extra parameters when authentication is enabled

-A,--adminuser <string>	Context admin user name
-P,--adminpass <string>	Context admin password

Return value

0	on success
>0	on failure

Mandatory parameters

{adminuser adminpass} filestore

Command output

cid fid fname enabled qmax qused name lmappings	on success
contexts for filestore could not be listed: <reason from server>	on failure

Example 9.8. list context for filestore

```
root@oxhe:/opt/open-xchange/sbin# ./listcontextsbyfilestore -f 3
cid fid fname      enabled qmax qused name      lmappings
  6   3 6_ctx_store true    1000    0 contextname example.de
```

movecontextfilestore

The tool to move a given context from its current to another filestore. This operation will take place in the background.

Parameters

-h,--help	Prints a help text
--environment	Shows information about commandline environment
--nonl	Removes newlines (\n) from output
-c,--contextid <string>	The id of the context to be moved
-f,--filestore <integer>	Target filestore id

Extra parameters when authentication is enabled

-A,--adminuser <string>	Context admin user name
-P,--adminpass <string>	Context admin password

Return value

0	on success
>0	on failure

Mandatory parameters

{adminuser adminpass} contextid filestore

Command output

context <contextid> moved to filestore <fsid>	on success
context <contextid> could not be moved to filestore <fsid>: **<reason from server>**	on failure

Example 9.9. movefilestorecontext

```
root@oxhe~# /opt/open-xchange/sbin/movefilestorecontext -A oxadminmaster -P secret
-f 9 -c 4711
context 4711 moved to filestore 9
```

changefilestore

The tool to change attributes of registered filestores.

Parameters

-h,--help	Prints a help text
--environment	Shows information about commandline environment

--nonl	Removes newlines (\n) from output
-i,--id <integer>	The id of the filestore which should be changed
-t,--storepath <string>	Path to store filestore contents in URI format. Example: file:///tmp/filestore
-s,--storesize <integer>	The maximum size of the filestore in MB
-x,--maxcontexts <integer>	The maximum number of contexts that can use this filestore

Extra parameters when authentication is enabled

-A,--adminuser <string>	Context admin user name
-P,--adminpass <string>	Context admin password

Return value

0	on success
>0	on failure

Mandatory parameters

{adminuser adminpass} id and at least one parameter to change

Command output

filestore <fsid> changed	on success
filestore <fsid> could not be changed: <reason from server>	on failure

Example 9.10. changefilestore

```
root@oxhe~# /opt/open-xchange/sbin/changefilestore -A oxadminmaster -P secret --id=35 -s 100000
filestore 35 changed
```

9.2.3. Database registration management

registerdatabase

The tool to make a database known to the Open-Xchange system. For all databases, you can define one write (master) and one read (slave) connection. It is also possible to have multiple slaves behind a IP load balancer.

"dbweight" is used to configure the distribution of contexts over all DBMS. For example, a value of 60 would lead to 60% of all contexts to be stored in the DBMS (if the sum of all values is 100). It is also recommended that --OX DB POOL INIT is always set to 0. Be sure the --OX DB POOL MAX does not exceed the max connections configuration option of the MySQL server.

Parameters

-h,--help	Prints a help text
--environment	Shows information about commandline environment
--nonl	Removes newlines (\n) from output
-n,--name <name>	Name of the database
-H,--hostname <hostname>	Hostname of the server
-u,--dbuser <dbuser>	Name of the user for the database
-d,--dbdriver <dbdriver>	The driver to be used for the database
-p,--dbpasswd <dbpasswd>	Password for the database
-m,--master <true/false>	Set this if the registered database is the master
-M,--masterid <masterid>	If this database is not the master enter the master id here
-w,--dbweight <dbweight>	The db weight for this database
-x,--maxunit <maxunit>	The maximum number of contexts in this database
-l,--poolhardlimit <true/false>	Db pool hardlimit
-o,--poolinitial <poolinitial>	Db pool initial
-a,--poolmax <poolmax>	Db pool max.

Extra parameters when authentication is enabled

-A,--adminuser <string>	Context admin user name
-P,--adminpass <string>	Context admin password

Return value

0   on success

>0   on failure

Mandatory parameters

{adminuser adminpass} name dbpasswd master

Command output

database <dbid> registered	on success
database <dbid> could not be registered: <reason from server>	on failure

Example 9.11. Example

```
root@oxhe~# /opt/open-xchange/sbin/registerdatabase -n db1 -p secret -m true
database 12 registered
```

unregisterdatabase

The tool to remove a database from the Open-Xchange system. If present, the slaves must be unregistered prior to the master.

Parameters

-h,--help	Prints a help text
--environment	Shows information about commandline environment
--nonl	Removes newlines (\n) from output
-i,--id <id>	The id of the database
-n,--name <name>	Name of the database

Extra parameters when authentication is enabled

-A,--adminuser <string>	Context admin user name
-P,--adminpass <string>	Context admin password

Return value

0	on success
>0	on failure

Mandatory parameters

{adminuser adminpass} (id or name)

Command output

database <dbid> unregistered	on success
database <dbid> could not be unregistered: <reason from server>	on failure

Example 9.12. unregisterdatabase

```
root@oxhe~# /opt/open-xchange/sbin/unregisterdatabase --id=13
database 13 unregistered
```

listdatabase

The tool to list all databases registered in the Open-Xchange system.

Parameters

-h,--help	Prints a help text
--environment	Shows info about commandline environment
--nonl	Removes newlines (\n) from output
-s,--searchpattern <searchpattern>	Search/List pattern
--csv	Formats output to csv

Extra parameters when authentication is enabled

-A,--adminuser <string>	Context admin user name
-P,--adminpass <string>	Context admin password

Return value

0	on success
>0	on failure

Mandatory parameters

{adminuser adminpass}

Command output

id name hostname master mid weight maxctx curctx hlimit max inital	on success
databases could not be listed: <reason from server>	on failure

Example 9.13. listdatabases

```
root@oxhe~# /opt/open-xchange/sbin/listdatabases
id name          hostname  master mid weight maxctx curctx hlimit max inital
 1 DB1          db1       true   0   100   1000   843 true  100    0
 2 DB2          db2       true   0   100   1000   843 true  100    0
 3 DB3          db3       true   0   100   1000   843 true  100    0
 4 DB4          db4       true   0   100   1000   843 true  100    0
```

listcontextsbydatabase

The tool to list all contexts that remain on a schema in the given database.

Parameters

-h,--help	Prints a help text
--environment	Shows information about commandline environment
--nonl	Removes newlines (\n) from output

--csv	Formats output as csv
-d,--database <database>	The id of the database
-n,--name <name>	Name of the database

Extra parameters when authentication is enabled

-A,--adminuser <string>	Context admin user name
-P,--adminpass <string>	Context admin password

Return value

0	on success
>0	on failure

Mandatory parameters

{adminuser adminpass} (database or name)

Command output

cid fid fname enabled qmax qused name lmappings	on success
contexts for filestore could not be listed: <reason from server>	on failure

Example 9.14. listcontextsbydatabase

```
root@oxhe:/opt/open-xchange/sbin# ./listcontextsbydatabase --name db1
cid fid fname     enabled qmax qused name        lmappings
 6  3 6_ctx_store true   1000    0 contextname example.de
```

movedatabasecontext

The tool to move a given context from its current to another database

Parameters

-h,--help	Prints a help text
--environment	Shows information about commandline environment
--nonl	Removes newlines (\n) from output
-c,--contextid <contextid>	The id of the context
-N,--contextname <contextname>	Context name
-d,--database <database>	The id of the database
-n,--name <name>	Name of the database

Extra parameters when authentication is enabled

-A,--adminuser <string>	Context admin user name
-P,--adminpass <string>	Context admin password

Return value

0	on success
>0	on failure

Mandatory parameters

{adminuser adminpass} (contextid or contextname) (database or name)

Command output

context <contextid> moved to database <dbid>	on success
context <contextid> could not be moved to database <dbid>: <reason from server>	on failure

Example 9.15. movedatabasecontext

```
root@oxhe~# /opt/open-xchange/sbin/movedatabasecontext -A oxadminmaster -P secret
-d 3 -c 4711
context 4711 moved to database 3
```

changedatabase

The tool to change attributes of a registered database.

Parameters

-h,--help	Prints a help text
--environment	Shows info about commandline environment
--nonl	Removes newlines (\n) from output
-i,--id <id>	The id of the database
-n,--name <name>	Name of the database
-H,--hostname <hostname>	Hostname of the server
-u,--dbuser <dbuser>	Name of the user for the database
-d,--dbdriver <dbdriver>	The driver to be used for the database
-p,--dbpasswd <dbpasswd>	Password for the database
-w,--dbweight <dbweight>	The db weight for this database

-x,--maxunit <maxunit>	The maximum number of contexts in this database
-l,--poolhardlimit <true/false>	Db pool hardlimit
-o,--poolinitial <poolinitial>	Db pool initial
-a,--poolmax <poolmax>	Db pool max

Extra parameters when authentication is enabled

| -A,--adminuser <string> | Context admin user name |
| -P,--adminpass <string> | Context admin password |

Return value

| 0 | on success |
| >0 | on failure |

Mandatory parameters

{adminuser adminpass} (id or name) and at least one parameter
to change

Command output

| database <dbid> changed | on success |
| database <dbid> could not be changed: <reason from server> | on failure |

Example 9.16. changedatabase

```
root@oxhe~# /opt/open-xchange/sbin/changedatabase --id=5 -x 100000
database 5 changed
```

9.2.4. Server registration management

registerserver

The tool to make a new Open-Xchange application server known to the Open-Xchange system.

Parameters

-h,--help	Prints a help text
--environment	Shows information about commandline environment
--nonl	Removes newlines (\n) from output
-H,--hostname <servername>	Open-Xchange internal server name (normally the host name)

Extra parameters when authentication is enabled

-A,--adminuser <string>	Context admin user name
-P,--adminpass <string>	Context admin password

Return value

0	on success
>0	on failure

Mandatory parameters

{adminuser adminpass} hostname

Command output

server <id> registered	on success
server <servername> could not be registered: <reason from server>	on failure

Example 9.17. registerserver

```
root@oxhe~# /opt/open-xchange/sbin/registerserver -A oxadminmaster -P secret
-h ox1
server 4 registered
```

unregisterserver

The tool to remove a server from the Open-Xchange system. A server can only be removed when no context is bound to it any more.

Parameters

-h,--help	Prints a help text
--environment	Shows information about commandline environment
--nonl	Removes newlines (\n) from output
-i,--id <id>	The id of the server which should be removed
-H,--hostname <servername>	Open-Xchange internal server name (usually the host name)

Extra parameters when authentication is enabled

-A,--adminuser <string>	Context admin user name
-P,--adminpass <string>	Context admin password

Return value

0	on success

>0   on failure

Mandatory parameters

{adminuser adminpass} (id or hostname)

Command output

server <id> unregistered	on success
server <id> could not be unregistered: <reason from server>	on failure

Example 9.18. unregisterserver

```
root@oxhe~# /opt/open-xchange/sbin/unregisterserver --id=5
server 5 unregistered
```

listserver

The tool to list all servers registered in the Open-Xchange configuration database.

Parameters

-h,--help	Prints a help text
--environment	Shows info about commandline environment
--nonl	Removes newlines (\n) from output
-s,--searchpattern <string>	The search pattern which is used for listing
--csv	Formats output as csv

Extra parameters when authentication is enabled

-A,--adminuser <string>	Context Admin user name
-P,--adminpass <string>	Context Admin password

Return value

0	on success
>0	on failure

Mandatory parameters

{adminuser adminpass}

Command output

Id Name	on success
could not list filestores: <reason from server>	on failure

Example 9.19. listservers

```
root@oxhe~# /opt/open-xchange/sbin/listservers -A oxadminmaster -P secretId Name
 2 app1
```

9.2.5. Consistency Tool

The consistency tool serves the purpose to detect and fix inconsistencies between file storage and data base.

The following paragraphs describe:

possible inconsistencies
how to fix inconsistencies
where to store context file data
where to store meta data
the consistency tool's usage

Attachments to Infostore objects and files are stored on the hard drive, their meta data (title, description, file name, file size etc.) are stored in the MySQL data base. The file's path on the hard drive is also stored in the MySQL data base.

Problems arise if both systems are out of sync, e.g if an attachment or InfoStore entry points to a file that no longer exists on the hard drive (subsequently called "missing" files). And vice versa, if there is a file on the hard drive without attachment or InfoStore entry (subsequently called "orphaned" or "unassigned"). The consistency tool can trace and list both kinds of inconsistency.

There are different ways to fix such inconsistencies. If the file for a data base entry (info item or attachment) is missing, you can either delete the data base entry or create a dummy file. Respectively, an unassigned file can either be deleted or an infostore entry is created that belongs to the context admin which the orphaned file is assigned to.

The consistency tool can resolve the inconsistencies using the above described methods.

An OX:HE installation normally includes several contexts. The contexts are distributed to several data base schemas. Contexts 1 to 5 are e. g. located in the data base scheme ox_db1, 6 and 7 in ox_db2, and 8 bis 10 in ox_db3.

Likewise, the file data of a context are distributed to several file storages. A file storage is a directory with subdirectories for contexts. Depending on the presumed storage space needed for a context, the contexts are assigned to the single file storages. Context 1 to 3 could thus be located in file storage 1, context 4 to 9 in file storage 2 and context 10 in file storage 3.

Why does one need all that knowledge to use the consistency tool? The consistency tool can search for inconsistencies within a context, in all contexts within a scheme or in all contexts that store their data in a file store.

How to use the consistency tool?

Common way to start the consistency tool:

(action) (where to search) (how to resolve the inconsistency)

Possible actions are either "list missing" to list missing files, "list unassigned" to list unassigned files or "repair" to resolve inconsistencies. You can either search a context (context 1), a file storage (filestore 23), or a data base (database 12). How to resolve inconsistencies with "repair" is explained below. Some examples:

1. List missing files

   If you want to list all missing files in a context (1) use the command:

   checkconsistency list missing context 1

   You can add some noise words to make the command more intelligible (to be able to still understand the script in a few years time). Following commands do the same:

   checkconsistency list missing in context 1

   checkconsistency list missing files in context 1

   This command lists all file storage paths that, in the data base, are assigned to an attachment or InfoStore entry which files no longer exist though.

   It is also possible to search all files of a file storage:

   checkconsistency list missing in filestore 2

   or all files that belong to a data base:

   checkconsistency list missing in database 3

   or simply all missing files:

   checkconsistency list missing files everywhere

2. List unassigned files:

   Likewise the command for unassigned files. You just have to replace the word "missing" with "unassigned":

   checkconsistency list unassigned context 1

   checkconsistency list unassigned in context 1

   checkconsistency list unassigned files in context 1

   checkconsistency list unassigned files in filestore 2

   checkconsistency list unassigned files everywhere

3. Repair

   To resolve inconsistencies use the "repair" command instead of "list unassigned" or "list missing" as action. Additionally, state how to handle the errors (more later):

   check_consistecy repair context 1 (policies)

   or

   checkconsistency repair errors in context 1 with policies (policies)

checkconsistency repair errors in filestore 2 with policies (policies)

checkconsistency repair errors in database 3 with policies (policies)

The policies are divided in condition and action:

condition : action

The conditions are:

missing_file_for_infoitem	If a file is missing that points to an Infoitem
missing_file_for_attachment	If a file is missing that points to an attachment
missing_entry_for_file	
If a file exists that neither points to an attachment nor to an Infoitem.	

Actions are:

delete	
Deletes the DBEntry or the file	
create_dummy	
Creates a dummy file (valid for missing_file_for_infoitem and missing_file_for_attachment)	
create_admin_infoitem	
Creates an Infoitem with the unassigned file in the Contextadmin Infostore.	

If there is no action set for a condition the respective inconsistencies are ignored. Here are some examples:

checkconsistency repair errors in context 1 missing_file_for_infoitem : delete missing_file_for_attachment : create_dummy missing_entry_for_file : delete

Deletes all versions of Infoitems that point nowhere (only the versions, not the Infoitem itself), deletes all files with no assignment and creates dummy files for all attachments that point nowhere.

checkconsistency repair errors in database 3 missing_file_for_infoitem : create_dummy missing_entry_for_file : create_admin_infoitem

Repairs all contexts in data base 3, creates dummy files for Infoitems that point nowhere and creates Infoitems in the context admin's Infostore, for files that have no assignment in the data base. Attachments are not handled.

checkconsistency

The tool to make sure that filestore and database meta data is consistent.

Parameters

-h,--help   Prints a help text

Extra parameters when authentication is enabled

-A,--adminuser <string>	Context admin user name
-P,--adminpass <string>	Context admin password

Return value

0	on success
>0	on failure

Mandatory parameters

{adminuser adminpass}

Command output

filestore <fsid> registered	on success
filestore <fsid> could not be registered: <reason from server>	on failure

Example 9.20. registerfilestore

root@oxhe~# **/opt/open-xchange/sbin/registerfilestore**

jobcontrol

The tool to list and control the job queue within the Open-Xchange admin daemon. Jobs in the queue are generated by **movecontextdatabase** and **movecontextfilestore**

Parameters

-h,--help	Prints a help text
--environment	Shows information about commandline environment
--nonl	Removes newlines (\n) from output
-l,--list	Lists the jobs of this open-xchange server
-d,--delete <id>	Deletes the given job id
-t,--details <id>	Shows details for the given job
-f,--flush	Flushes all finished jobs from the queue

Extra parameters when authentication is enabled

-A,--adminuser <string>	Context admin user name
-P,--adminpass <string>	Context admin password

Return value

0	on success

>0   on failure

Mandatory parameters

{adminuser adminpass}

Command output

job <jobid> deleted	on success --delete
job	on success --details
job	on success --flush
job	on success --list
could not (list jobs|delete <jobid>| print details of <jobid>| | flush jobs): <reason from server>	on failure

Example 9.21. jobcontrol

root@oxhe~# **/opt/open-xchange/sbin/jobcontrol**

contextrestore

This bundle is a solution for restoring one single context out of a mysql dump from a complete database. In a distributed setup, it is possible to use several files containing the dumps of different databases. The tool described within this document does fetch the needed information out of these files.

The context restore bundle is designed as an admin bundle so it has to be installed into the OSGi environment of the OX admin daemon.

The package open-xchange-admin-plugin-contextrestore contains the bundle itself and the corresponding configuration files. The bundle will get installed as a directory below /opt/open-xchange/bundles. The configuration file can be found in:

/opt/open-xchange/etc/admindaemon/plugin/contextrestore.properties.

For the restore process, the tool requires some information to be available in the database. One is the availability of the old database pool id. The tool will dig out the pool id the context used before from the mysql dump, and will try to get a connection to the corresponding database through this pool id. If the pool id does not exist any more, an error is thrown. The same applies to the filestore_id.

For correct operation it is required that the mysql dumps for this tool represent a consistent state of the whole database setup. Furthermore this consistent state should also include the backup of the filestore.

The Debian package has to be installed with the Debian management tool dpkg . Afterwards a new shell script named contextrestore is to be found under /opt/open-xchange/sbin. The admin daemon needs to be restarted to make the new functionality available. The functionality is accessible via RMI, CLT and SOAP.

A complete database backup has to be done before the new function can be used. The Tool described within this document requires a full SQL dump of the databases involved. This can be done by executing the command **mysqldump --all-databases --single-transaction**, on all database machines registered in Open-Xchange as well as the configuration Database. These two parameters are very important. The first one lets the dump contain every database on the specified database host, and the second is used for a consistent backup. Instead of **--all-databases** you can also use **--database** with the right database(s), if none of the switches are given as direct argument then mysql will left out essential data in the dump. For a full backup the switch **--all-databases** is recommended.

The usage of the command line tool is self-explanatory as it confirms to the standard unix behavior. --help will show a short help with the available parameters. The main arguments of the tool are different database dumps (from the configdb and the distributed user data databases). On success the tool returns the path to the filestore of the given context. The files below this path have to be restored afterwards in a separate process which is not part of the Open-Xchange system. An example of a restore would look like this:

Example 9.22. restore

contextrestore -A <username> -P <password> -c 7777 -f <complete path to configdb dump>,<complete path to first user data database dump>

file:///tmp/filestore2/7777_ctx_store

Note that the parts in <> have to be replaced by the parameters for your setup

Parameters

-h,--help   Prints a help text

Example 9.23. contextrestore

root@oxhe~# **/opt/open-xchange/sbin/contextrestore**

9.2.6. resetversion

Sets the version of a database schema to a lower number. As update tasks are related to the version number, previous update tasks can be activated when setting the version number to a lower value.

9.2.7. forceupdatetask

"forceupdatetask" runs a specified update task in a defined schema. That way failed or suppressed update tasks can be re-run.

9.2.8. runupdate

Triggers the update process for a certain schema.

9.2.9. schemasandversions

Displays all schemas with version number in a table.

9.2.10. listExecutedTasks

listExecutedTasks

> "listExecutedTasks" lists all executed tasks, the time stamp and whether they were sucessfully executed.

Parameters

-h,--help	Prints a help text
-l,--login	The optional JMX login (if JMX has authentication enabled)
-n,--name	A valid schema name
-p,--port	The optional JMX port (default:9999)
-s,--password	The optional JMX password (if JMX has authentication enabled)
-n	Option -n must be defined

Example 9.24. listExecutedTasks

```
root@oxhe~# /opt/open-xchange/sbin/listExecutedTasks
```

9.2.11. crawlerupdate

This script runs an update according to the settings in crawler.properties, see Section 10.2.46, "crawler.properties"

Chapter 10. Tuning the Open-Xchange Server

This chapter describes all possible configuration options and their values.

Since many of our configuration options tend to be defineable on a server, context and user level, this handling is abstracted into a cascading configuration system. It allows single properties to be defined on one of the three levels with the search continuing from user to context to server.

Properties can be configured to:

only be overridable to a certain scope, e.g., to disallow users to override a context setting be mapped to a certain path in the ConfigTree

Server level configuration will be taken from the configuration service
User level configuration will be taken from the dynamic user attributes
Context level configuration will be taken from dynamic context attributes (later)

For custom integrations, dynamic user attributes can be added to a user object. In the command line tools they can be set by using a namespace/name pair to denote the dynamic nature of the attribute:

Example 10.1. User attribute

   --com.openexchange.recipes/favoriteFood=chocolate_pudding

Those can be removed by prefixing the (fully qualified) attribute name with --remove-:

--remove-com.openexhcange.recipes/favoriteFood

10.1. Groupware and Admin Configuration Options

There is a common configuration files directory for the administration daemon and the groupware server. On start the configread bundle fetches the properties located in this directory.

Configuration directory /opt/open-xchange/etc/common

10.1.1. foldercache.properties

Table 10.1. foldercache.properties

Variable	Value
ENABLE_DB_GROUPING	Specify where to perform folder grouping. This filters the database results for duplicate folders in the 'where' clause of the db statement or afterwards in the application. Possible values: TRUE / FALSE.
ENABLE_FOLDER_CACHE	Enable or disable folder caching. Possible values: TRUE / FALSE.
IGNORE_SHARED_ADDRESSBOOK	Specify whether to ignore 'shared addressbook' folder or not. Possible values: TRUE / FALSE.

Table 10.1. foldercache.properties

Variable	Value
ENABLE_INTERNAL_USER_EDIT	Specify whether users are allowed to edit their own contact object contained in the 'Global Address Book' folder aka 'Internal Users'. Switching this parameter only has an effect for newly created contexts.

Table 10.1. foldercache.properties

10.1.2. excludedupdatetask.properties

This file contains all update tasks that are to be excluded from the update process. The update tasks listed in this file are not executed.

10.2. Groupware Configuration Options

Configuration directory /opt/open-xchange/etc/groupware.

In order not to change the semantics of the /opt/open-xchange/etc/groupware/settings directory , properties defined there must remain read-only by default. In order to make a property writeable by the UI it has to be allowed explicitly by setting a metadata property. The file conf/meta/ui.yml that is installed at /opt/openexchange/etc/groupware/meta/ui.yml contains the necessary metadata to declare the two new ui properties ui/global/toolbar/mode/value and ui/global/windows/mode/value as writable. This has to be done to make them user changeable.

NOTE: All time values in the configuration files are in milliseconds.

10.2.1. system.properties

Table 10.2. system.properties

Variable	Value
SERVER_NAME	Server name registered by registerserver in the configuration database can be read with listservers.
com.openexchange.config.cascade.scopes	Allows you to configure the order of precedence in which configuration settings from the ConfigCascade module are handled. The value is a comma-separated list. Defaults: user, context, contextSets, server

Table 10.2. system.properties

10.2.2. easylogin.properties

Table 10.3. easylogin.properties

Variable	Value
com.openexchange.easylogin.allowInsecureTransmission = false	The default is to NOT allow an insecure transmission.
authId	The optional authId parameter should be a generated unique identifier. A random UUID e.g. is sufficient. This parameter must be transfered as URL parameter and not as body parameter of the login POST request. This ensures

Table 10.3. easylogin.properties

Variable	Value
	that the complete login request can be traced across different systems in a cluster setup.
client	The optional parameters 'client' and 'version' should contain a client application identifier and its version. This is required to trace all clients using the HTTP/JSON interface and for getting statistics about how many logins are generated by which client.
version	The optional parameters client and version should contain a client application identifier and its version. This is required to trace all clients using the HTTP/JSON interface and for getting statistics about how many logins are generated by which client.
com.openexchange.easylogin.autologinPara = autologin	GET/POST variable name for the autologin name
com.openexchange.easylogin.autologin.default = false	Default to assume for the autologin parameter. Setting this to true may be a security risk for clients using unsafe computers.
com.openexchange.easylogin.defaultClient=com.openexchange.ox.gui.dhtml	The default client to assume. This is used to discover an old session

Table 10.3. easylogin.properties

10.2.3. attachment.properties

Table 10.4. attachment.properties

Variable	Value
MAX_UPLOAD_SIZE	If the sum of all uploaded files in one request is larger than this value, the upload will be rejected. If this value is not set or 0, the more general MAX_UPLOAD_SIZE configured in server.properties will be used. If that value is also 0 or not set, uploads will be unrestricted. The size is in bytes.

Table 10.4. attachment.properties

10.2.4. calendar.properties

Table 10.5. calendar.properties

Variable	Value
CACHED_ITERATOR_FAST_FETCH	The CACHED_ITERATOR_FAST_FETCH option defines the numbers of pre-fetched results with the MAX_PRE_FETCH parameter.
com.openexchange.calendar.seriesconflictlimit	This boolean option switches on/off the conflict search limitation for a series to 1 year in the future i. e., a new/changed series will not conflict with appointments scheduled later than one year after the creation/change of the appointment. Default value: true
com.openexchange.calendar.undefinedstatusconflict	This boolean option switches on/off an appointment conflict when not having accepted or denied the appointment yet. Default value: true

Table 10.5. calendar.properties

Variable	Value
MAX_PRE_FETCH	MAX_PRE_FETCH results are gathered in one SQL query instead of MAX_PRE_FETCH single SQL queries. Normally, higher values result in higher performance if this option is enabled.
CHECK_AND_REMOVE_PAST_REMINDERS	If this option is enabled no event is triggered and no mail will be sent if the reminder is before the start date.
CHECK_AND_AVOID_SOLO_REMINDER_TRIGGER_EVENTS	This option prevents triggering and sending an E-Mail notification if only a reminder has been changed. If a notification should be sent in any case this option should be disabled.
defaultStatusPrivate	This option holds the confirmation status for newly created private appointments. Default is 0 ("none" or rather "waiting"). This does not affect the status for appointments created by the user as those appointments are always set to "accepted".
defaultStatusPublic	This option holds the confirmation status for newly created public appointments. Default is 0 ("none" or rather "waiting"). This does not affect the status for appointments created by the user as those appointments are always set to "accepted".

Table 10.5. calendar.properties

10.2.5. configjump.properties

Table 10.6. configjump.properties

Variable	Value
URL	URL to the config interface. %c is replaced with the context login information. %u is replaced with the user login information. %p is replaced with the user password. URL=http://localhost/?cid=%c<login=%u>pass=%p (This URL can be reached by clicking on Extras in the folder tree). This option only has effect if the configjump-generic plugin is installed.

Table 10.6. configjump.properties

10.2.6. configdb.properties

Table 10.7. configdb.properties

Variable	Value
useSeparateWrite	false, use read URL for both read and write true, different URLs are used for read and write
read*	Specifies the connection settings for the read database
write*	Specifies the connection settings for the write database (only used when useSeparateWrite is set to true)
cleanerInterval	Time interval of cleaner thread in milliseconds. This thread removes idle timed out database connections and removes

Table 10.7. configdb.properties

Variable	Value
	not used database connection pools after each cleanerInterval.
minIdle	Number of connections to keep open even if they are not used. This value is overwritten for OX databases from configdb. Sould be 0 so that no unnecessary connections are kept in the memory.
maxIdle	Number of maximum idle connections. If the maximum exceeds, no more connections are pooled but are closed instead. -1 stands for unlimited.
maxIdleTime	Maximum time in milliseconds a connection can be idle. If the maximum exceeds, the connection is closed.
maxActive	If exhaustedAction is set to BLOCK, not more than maxActive connections will be opened to the mysql database. This value is overwritten for OX databases from configdb.
maxWait	If exhaustedAction is set to BLOCK, a thread will not wait for more than maxWait milliseconds.
maxLifeTime	Maximum time in milliseconds a connection will be used. After this time the connection gets closed.
exhaustedAction	BLOCK: If maxActive number of connections is reached, threads have to wait for a connection. FAIL: If maxActive number of connections is reached, an exception is thrown. GROW: Open more connections even if maxActive is already reached. This value is overwritten for OX databases from configdb.
testOnActivate	Validate connections if they are activated. This is not necessary because the activation already includes a check if the connection is not closed.
testOnDeactivate	Check if connections can be reused after they are returned to the pool. .
testOnIdle	For test purposes. Should always be false.
testThreads	If testThreads is set to true, more information is logged to the Open-Xchange log files about database connections. If this option is enabled, the performance may degrade dramatically. The JVM then has to generate a lot of method call stack dumps.

Table 10.7. configdb.properties

10.2.7. imap.properties

Table 10.8. imap.properties

Variable	Value
com.openexchange.imap.imapSort	Specify where to sort emails: "imap" value to let the IMAP Server sort (faster but less reliable). Leave blank or fill in "application" value to sort within application (slower but good quality). The sorting is done on IMAP server if a

Table 10.8. imap.properties

Variable	Value
	mailbox' size exceeds the mailFetchLimit as defined in mail.properties. NOTE: This value is going to be set to "application" if IMAP server capabilities do not contain the "SORT" string.
com.openexchange.imap.imapSearch	Define where to search for emails: "imap" value to let the IMAP Server search. The search is done on IMAP server if a mailbox' size exceeds the mailFetchLimit as defined in mail.properties. Leave blank or fill in "application" value to search within the application.
com.openexchange.imap.imapFastFetch	This property determines whether a fast fetch is performed on large mail folders. Although the fetch is fast on IMAP side, a lot of data is transferred during reading response which causes a temporary memory peak. If disabled, only the necessary fields are used as command arguments. This is slower but needs less memory. NOTE: See property "imapMessageFetchLimit" to know which mail folders are treated as large mail folders.
com.openexchange.imap.imapSupportsACL	Specify whether the IMAP server supports ACLs. Possible values: true/false/auto NOTE: The "auto" value means to use server-defined ACL support as indicated by the response to the "CAPABILITY" IMAP command.
com.openexchange.imap.imapTimeout	Specify the socket I/O timeout value in milliseconds. A value less than or equal to zero is an infinite timeout. The IMAP timeout has to be smaller than the AJP timeout. Also see mail.imap.timeout.
com.openexchange.imap.imapConnectionTimeout	Specify the socket connection timeout value in milliseconds. A value less or equal to zero is an infinite timeout. The IMAP timeout has to be smaller than the AJP timeout. Also see mail.imap.connectiontimeout.
com.openexchange.imap.imapAuthEnc	Specify the encoding for the IMAP authentication. Default=UTF-8. Note: If an installation was running with "umlauts" before, the default setting might have to be changed to another charset.
com.openexchange.imap.maxIMAPConnectionIdleTime	Specify the maximum IMAP connection idle time in milliseconds i.e., the time an established IMAP connection is going to be kept alive while it is idle. NOTE: This is for future use and not yet implemented.
com.openexchange.imap.User2ACLImpl	Name of the class that implements User2ACL, their alias or "auto" to use auto-detection. Currently known aliases: Cyrus, Courier.
com.openexchange.imap.mboxEnable	Enable/disable mbox format: A mail folder can only either hold subfolders or messages. Furthermore, upon creation the folder type is determined by the folder name. If the folder name ends with the server-defined folder separator character its type is HOLDS-FOLDERS; otherwise its type is HOLDS-MESSAGES. Note that there is currently an unresolved problem concerning the deletion of mail folders. Since the trash folder is designed to hold messages only, no backup of the deleted folder can be copied to the trash folder i.e., the folder in question (including messages, all

Table 10.8. imap.properties

Variable	Value
	subfolders, and the subfolders' contents) is irretrievably lost.
com.openexchange.imap.blockSize	IMAP operations that should be applied to a number of messages exceeding the block size are performed in blocks. Example: A folder containing thousands of messages should be cleared. To avoid the risk of an IMAP timeout when trying to delete all messages at once, the messages are deleted in block size portions.
com.openexchange.imap.spamHandler	Specify the osgi registration name of the appropriate spam handler to use.
com.openexchange.imap.propagateClientIPAddress	Specifies whether the client's IP address should be propagated by a NOOP command; e.g. "A01 NOOP <CLIENT_IP>". Moreover this option only affects the primary IMAP mail account. External IMAP accounts are not considered. Default is false.
com.openexchange.imap.propagateHostNames	Allows to configure a list of host names which should also receive client's IP address by a NOOP command. By default, this property is empty.
com.openexchange.imap.maxNumExternalConnections	Set the maximum allowed number of concurrent connections to a subscribed/external IMAP account. Notation is a comma-separated list of: <host> + ':' + <max-count>; e.g.: com.openexchange.imap.maxNumExternalConnections=imap.host1.com:4, imap.host2.com:6. For convenience a max-count can be specified which applies to all subscribed/external IMAP accounts; e.g.: com.openexchange.imap.maxNumExternalConnections=4. Zero or less is interpreted as unlimited. By default an unlimited amount of concurrent connections is allowed, except for GMail and Googlemail, wher eit is set to 2.
com.openexchange.imap.notifyRecent	Notify about recent messages using mail push events. This is a poll-based alternative for any connection-keeping mail push bundle.
com.openexchange.imap.notifyFrequencySeconds	How often recent mails are checked for changes. Default is 300 seconds.
com.openexchange.imap.notifyFullNames	The full names of the folders to consider when sending notifications. The default is the inbox folder.
enableTls	Enable or disable the use of the STARTTLS command (if supported by IMAP server) to switch the connection to a TLS-protected connection. By default the value is "true", meaning to allow a TLS-protected connection if supported.
com.openexchange.imap.failedAuthTimeout	Specifiy how long such a failed authentication is remembered to avoid possible DoS attack. Default value is 10000 milliseconds (10 seconds).

Table 10.8. imap.properties

10.2.8. mail.properties

This file contains the general mail configuration. Specific implementations are configured in the mail plug-in used e. g., imap.properties for imap.

Table 10.9. mail.properties

Variable	Value
com.openexchange.mail.loginSource	Set the login source i.e., the source for determining a user's login for the mailing system. If 'login' is set, the user's individual mail login as defined in user storage is taken. If 'mail' is set, the user's individual primary email address is taken. If 'name' is set, the user's individual system user name is taken. Currently known values: login, mail, and name.
com.openexchange.mail.password-Source	Set the password source i.e., the source for determining a user's password for logging in to the mailing system. If 'session' is set, the user's individual system password is taken. If 'global' is set, the value specified through the 'com.openexchange.mail.masterPassword' property is taken. Currently known values: session and global.
com.openexchange.mail.mailServer-Source	Set the mail server source i.e., the source for determining the mail server used by the user to log in to, in order to access mails. Set to 'global' to take the value specified through the "com.openexchange.mail.mailServer" property. Set to 'user' to take the user's individual mail server settings as specified in storage. Currently known values: user and global.
com.openexchange.mail.transportServer-Source	Set the transport server source i.e., the source for determining the transport server used by the user to log in to, in order to transport mails. Set to 'global' to take the value specified through the "com.openexchange.mail.transport-Server" property. Set to 'user' to take the user's individual transport server settings as specified in storage. Currently known values: user and global.
com.openexchange.mail.masterPass-word	The master password for the mail server. This only takes effect if the "com.openexchange.mail.loginType" property is set to "global".
com.openexchange.mail.mailServer	Mail server: e.g., 192.168.178.32:8143 or imap://192.168.178.32:7143 This only takes effect if the "com.openex-change.mail.mailServerSource" property is set to "global"
com.openexchange.mail.transportServer	Mail transport server: e.g., 192.168.178.32:125 or smtp://192.168.178.32:225 This only takes effect if the "com.openexchange.mail.trans-portServerSource" property is set to "global"
mail.mime.charset	Specify the default MIME charset used for character encoding. This parameter takes effect for the complete mail module where no charset is given.
com.openexchange.mail.mailFetchLimit	Specify the maximum fetch limit i.e., all mails whose count is less than or equal to this value are going to be fetched with all attributes set. Thus these mails can be put into message cache for subsequent list requests.
com.openexchange.mail.attachmentDis-playSizeLimit	Maximum size of email text attachments that will be displayed inline (in bytes).
com.openexchange.mail.quoteLineCol-ors	Comma-separated hex values of colors for displaying quoted text emails. Default #a14044,#917722,#599351,#516193,#666666

Table 10.9. mail.properties

Variable	Value
com.openexchange.mail.userFlagsEnabled	Enable/disable user defined flags.
com.openexchange.mail.partModifierImpl	The default com.openexchange.mail.partmodifier.DummyPartModifier needs to be kept.
com.openexchange.mail.allowNestedDefaultFolderOnAltNamespace	This property defines if the default folders of a user (Draft, Sent, Spam & Trash) are going to be placed right below the "INBOX" folder even if the "altNamespace" feature is enabled. NOTE: This property requires that subfolders are still permitted below the initial "INBOX" folder even though "altNamespace" is enabled.
com.openexchange.mail.ignoreSubscription	Specifies whether folder subscription is ignored when listing mail folders. If set to 'true', all folders - regardless of their subscription status - are going to be listed.
com.openexchange.mail.hidePOP3StorageFolders	Mail configuration parameter to hide POP3 storage folders. Default value is "false". With this new property, hosters which have the "com.openexchange.mail.ignoreSubscription" property enabled, can hide POP3 storage folders to not confuse the user.
com.openexchange.mail.supportSubscription	Specify whether the underlying store should support subscription.
com.openexchange.mail.defaultSeparator	Specify the separator within folder full names - if not available from mail server.
com.openexchange.mail.watcherEnabled	The watcher checks after watcherFrequency for mail connection used for more than watcherTime milliseconds and logs this mail connection. If watcherShallClose is set to true those connections will be closed.
com.openexchange.mail.watcherFrequency	Specify the watcher's frequency in milliseconds.
com.openexchange.mail.watcherTime	Specify the exceeding time in milliseconds for mail connections. If the use time of a mail connection exceeds this value it is logged. This allows to detect unclosed connections.
com.openexchange.mail.watcherShallClose	Specify whether the watcher is allowed to close exceeded mail connections.
com.openexchange.mail.JavaMailProperties	JavaMail Properties. The default should not be changed.
com.openexchange.mail.phishingHeader	A comma-separated list of headers for identifying phishing headers e.g., X-Phishing1,X-Phishing2,etc. Leave empty for no phishing header.
autoSearch	The automatic search of users in the recipients dialog can be de/activated. Default is true.
com.openexchange.mail.mailAccessCacheShrinkerSeconds	Specifies the interval seconds of the mail access cache's shrinker thread
com.openexchange.mail.mailAccessCacheIdleSeconds	Specifies the idle seconds a mail access may reside in mail access cache before it is removed by the shrinker thread.
com.openexchange.mail.rateLimitPrimaryOnly	Define if the rateLimit and maxToCcBcc settings below will only affect. Default is true.
com.openexchange.mail.rateLimit	Define the time (in milliseconds) which must pass by before a new mail can be sent. A value of 0 disables the limit. Default is 0.

Table 10.9. mail.properties

Variable	Value
com.openexchange.mail.maxToCcBcc	Define the allowed maximum number of recipients in a mail. A value of 0 disables the limit. Default s 0.
com.openexchange.mail.authProxyDe-limiter	Define a delimiter to be used to seperate Proxy from user login. If defined, a proxy user can log in on behalf of a user using the form <PROXYACCOUNT><DELIMITER><USERAC-COUNT> NOTE: the underlying mailserver must support SASL AUTHPROXYING. The open-xchange mailfilter bundle does not support it, so it will cause errors.
com.openexchange.mail.deleteDraftOn-Transport	Defines whether a draft e-mail is deleted once it is sent. Default is false.
com.openexchange.mail.translateDe-faultFolders	Whether to translate the names of the default mail folders. If set to "true", the translation is always performed according to .po files. If set to "false" and if the name differs from the pre-defined name, the translation is not performed. Default is "true".

Table 10.9. mail.properties

10.2.9. mail-push.properties

This file contains the configuration for a bundles implementing a mail-push policy

Table 10.10. smtp.properties

Variable	Value
com.openexchange.push.allowedClients	white-list property to specify clients which are allowed to receive a notification about a new mail. Values are comma-ta-separated and wrapped with the quotation mark ". Values may use the asterisk (*) as a wildcard. The default values are: "USM-EAS*", "OpenXchange.HTTPClient.OXAddIn*"

Table 10.10. smtp.properties

10.2.10. push-imapidle.properties

This file contains the configuration for a bundles using imapidle for pushing messages

Table 10.11. smtp.properties

Variable	Value
com.openexchange.push.imapidle.push-mode	Allows you to decide when to fire push events. Possible values are "newmail" and "always". The first fires events only when a new e-mail arrives, the second one every time. The default is "always". Prior to the introduction of this config parameter, the behaviour was equivalent to setting it to "newmail".

Table 10.11. smtp.properties

10.2.11. smtp.properties

This file contains the configuration for the smtp server

Table 10.12. smtp.properties

Variable	Value
com.openexchange.smtp.smtpLocalhost	The default is set to InetAddress.getLocalHost().getHost-Name() but if either JDK or name service are not configured properly, this routine fails and the HELO or EHLO command is sent without a name which leads to an error: "501 HELO requires domain address". The value "null" falls back to InetAddress.getLocalHost().getHostName() which works in most cases.
com.openexchange.smtp.smtpAuthEnc	Specify the encoding for the SMTP authentication.
Enable/disable SMTP Authentication	Enable/disable SMTP Authentication
com.openexchange.smtp.setSMTPEnvelopeFrom	Specifies whether SMTP header ENVELOPE-FROM should explicitly be set to the user's primary email address or not.
com.openexchange.smtp.smtpTimeout	Specify the socket I/O timeout value in milliseconds. A value less than or equal to zero is an infinite timeout. See also mail.smtp.timeout.
com.openexchange.smtp.smtpConnectionTimeout	Define the socket connection timeout value in milliseconds. A value less or equal to zero is an infinite timeout. See also mail.smtp.connectiontimeout.

Table 10.12. smtp.properties

10.2.12. ajp.properties

This file contains the configuration for the OX server "ajp 13 protocol" implementation. The communication between apache jk and the Open-Xchange application server can be fine-tuned here.

Table 10.13. ajp.properties

Variable	Value
AJP_PORT	tcp port where the groupware server listens for incoming AJP requests
SERVLET_POOL_SIZE	Initial number of instances held in memory for each available single threaded servlet (single threaded servlets are deprecated and are not used by the Open-Xchange Server).
AJP_SERVER_THREAD_SIZE	Number of AJP server threads which create a client socket on an incoming request. This is the number of threads processing newly opened AJP sockets. AJP sockets are kept alive by default. Therefore only one thread is recommended.
AJP_LISTENER_POOL_SIZE	Number of initially created AJP listeners for processing incoming AJP requests. This pool grows dynamically but does not go below.
AJP_LISTENER_READ_TIMEOUT	The amount of time in milliseconds a listener is going to wait (or block) while waiting to read the initial bytes from the web server from the input stream. 0 stands for unlimited and should not be changed because if the server closes

Table 10.13. ajp.properties

Variable	Value
	connections here the sticky sessions would break. Default is 300000.
AJP_MOD_JK	This property defines whether mod_jk is used or not, since some mod_jk implementations force the servlet container not to close connections. If set to TRUE the AJP_MAX_NUM_OF_SOCKETS property will be ignored to avoid closing connections by the servlet container.
AJP_MAX_NUM_OF_SOCKETS	Defines the maximum number of open sockets. Any socket opened beyond will be closed automatically if AJP_MOD_JK is set to FALSE.
AJP_CONNECTION_POOL	Defines whether to use the AJP connection pool or not. The pool holds instances of AJP connection objects. This saves the time to create new objects.
AJP_CONNECTION_POOL_SIZE	The ajp connection pool size. This property only takes effect if AJP_CONNECTION_POOL is set to TRUE and defines the number of instances held in the pool.
AJP_REQUEST_HANDLER_POOL	Defines whether to use AJP request handler pool or not. The pool holds instances of AJP request handlers. This saves time to create new objects.
AJP_REQUEST_HANDLER_POOL_SIZE	The AJP request handler pool size. This property only takes effect if AJP_REQUEST_HANDLER_POOL is set to TRUE and defines the number of instances held.
AJP_WATCHER_ENABLED	Enable/Disable AJP watcher. The watcher is a thread that checks every AJP_WATCHER_FREQUENCY if AJP requests take longer than AJP_WATCHER_MAX_RUNNING_TIME. If AJP_WATCHER_PERMISSION is true, those requests will be terminated or otherwise logged into the groupware log.
AJP_WATCHER_PERMISSION	If true, the AJP watcher has the permission to stop & re-init system.
AJP_WATCHER_MAX_RUNNING_TIME	Defines the maximum AJP listener running time in milliseconds.
AJP_WATCHER_FREQUENCY	Defines the maximum AJP watcher frequency in milliseconds.
AJP_JVM_ROUTE	SET HOST'S UNIQUE JVM ROUTE IMPORTANT FOR LOAD BALANCING. This value is added to the JSESSIONID cookie so that mod_jk knows which server to route the requests to. This is needed to bind a session to one specific Open-Xchange server in a cluster.
JP_CHECK_MAGIC_BYTES_STRICT	Define if the mandatory first two bytes of an incoming AJP package (magic bytes) have to exactly match the sequence 0x12 0x34 or if just one byte has to match at # the proper position. It is recommended to leave that true.
AJP_SERVLET_CONFIG_DIR	Defines the path for the servlet configuration; null stands for "oxgroupwaresysconfdir@/servletConfig"
AJP_BIND_ADDR	Defines the address to which the opened AJP server socket will be bound to. A socket to all available interfaces will be bound if set to "*" .
AJP_LOG_FORWARD_REQUEST	Logs corresponding AJP forward request if an unexpected empty body request is detected.

Table 10.13. ajp.properties

Variable	Value
AJP_KEEP_ALIVE_TIME	If processing an incoming requests exceeds the time set in this property, a AJP-style keep-alive is flushed to web server to avoid a possible timeout on associated socket connection.
AJP_COYOTE_SOCKET_HANDLER	Due to stability reason Tomcat's (Coyote) AJP connector is taken by default. This can be changed here.
AJP_MAX_REQUEST_PARAMETER_COUNT	Specify the maximum number of allowed request parameters (to prevent DoS attacks). Default is 30.

Table 10.13. ajp.properties

10.2.13. push.properties

This file contains the configuration of the MS Outlook UDP connectivity subsystem.

Table 10.14. push.properties

Variable	Value
.pushEnabled	Defines if the server push port is opened or not.
.registerTimeout	Time in milliseconds a client registration is kept.
.registerPort	Port where the clients send the push registration request to.
.registerDistributionEnabled	Only one of registerDistribution or eventDistribution can be enabled at the same time. If set to true, registrations are distributed to all OX Servers.
.eventDistributionEnabled	Only one of registerDistribution or eventDistribution can be enabled at the same time. If set to true, events will be distributed to all Open-Xchange Servers.
.outputQueueDelay	Time in milliseconds before queued "push" packages are sent to clients.
.hostname	If empty, the output of the getHostName java function is used. This name is used for internal communication.
.senderAddress	Address used as the sender address when UDP packages are sent to the clients (should be the IP address of the load balancer in front of the Open-Xchange Server farm).
.multicastEnabled	true/false; send register or event information per multicast
.multicastAddress	IP multicast address
.multicastPort	Multicast port

Table 10.14. push.properties

10.2.14. push_mailnotify.properties

Table 10.15. push_mailnotify.properties

Variable	Value
com.openexchange.push.mail.notify.imap_login_delimiter	The mail push bundle does not work when the imap login does not match the open-xchange internal user login. On some systems like OXAE, the imap login consists of the login + @domainname. If set, every part after and including the delimiter will be cut off from the imap login as sent from

Table 10.15. push_mailnotify.properties

Variable	Value
	the imap server. This might be used in setups where the imap login contains a domain part like foo@example.com. The delimiter must be set to "@" in that case. Leave commented when not needed. com.openexchange.push.mail.notify.imap_login_delimiter=@.
com.openexchange.push.mail.notify.udp_listen_multicast=false	Option to allow receiving push mail notifications from mailservers as multicast messages.
com.openexchange.push.mail.notify.use_ox_login=false	Whether to use the ox login name to check for a valid push event. The default is to only check the users aliases. If mailboxname@example.com is not contained in the list of aliases, set this to true. Warning: This won't work in multidomain setups where the same login might exist in different contexts.
com.openexchange.push.mail.notify.use_full_email_address=false	Whether to use the full E-Mail address from aliases or just use the localpart. When using a multidomain setup where the imap login is an E-Mail address, this should be set to true. If not, login might not be unique because foo@example.com and foo@example.net might be different users. Note: Do NOT set com.openexchange.push.mail.notify.imap_login_delimiter in this case.

Table 10.15. push_mailnotify.properties

10.2.15. sessiond.properties

Table 10.16. sessiond.properties

Variable	Value
maxSession	Maximum number of concurrent sessions, 0 stands for unlimited.
sessionDefaultLifeTime	Maximum lifetime of idle sessions in milliseconds.
com.openexchange.sessiond.autologin	If set to "true" the autologin feature (reopening sessions after the in memory state of the client has been wiped from RAM, typically either by closing the UI in the browser or reloading the UI) is enabled, otherwise it is disabled. This defaults to true as to minimize impact on existing installations, as in previous versions of the Open-Xchange Groupware this feature was always enabled. Possible values: True/False
com.openexchange.sessiond.randomTokenTimeout	The timeout for the random token. Default value: com.openexchange.sessiond.randomTokenTimeout=1M .
com.openexchange.sessiond.sessionLongLifeTime	The timeout for very long session life times. Default value: com.openexchange.sessiond.sessionLongLifeTime=1W .
com.openexchange.sessiond.maxSessionPerUser	Maximum number of sessions per user.
com.openexchange.sessiond.sessionCacheConfig	Config file for session cache.
com.openexchange.sessiond.encryptionKey	When one node in a cluster goes down sessions are moved into other nodes caches where they can be retrieved on subsequent accesses. This is how the session migration feature of OX works. When transmitting sessions, and, more

Table 10.16. sessiond.properties

Variable	Value
	importantly the users passwords that has to be known for sessions, the data has been sent in clear text. To make it harder to gleam passwords from network traffic, passwords are encrypted and decrypted using a configurable encryption key. The property should be set by admins to a new value. Note that this value MUST be the same on all cluster nodes.

Table 10.16. sessiond.properties

10.2.16. ldapauth.properties

Table 10.17. ldapauth.properties

Variable	Value
ldapReturnField=	Field in the user object which should be returned as uid instead of the first part before the "@" character.
subtreeSearch=	Default is false. Set subtreeSearch to true if the user entries are not directly below the baseDN, and e.g. are distributed over one or more subtrees. The bindDN to authenticate the user will then be determined using a search over the complete tree below baseDN. NOTE: When two users exist with the same uidAttribute, authentication will be refused, though.
searchFilter=	Specify the filter to limit the search of user entries (used in combination with subtreeSearch=true. The filter will be ANDed with the attributes specified in uidAttribute. Example: (&(objectclass=posixAccount)(uid=foo))
bindDN=	If your LDAP server does not allow searches without any authentication, specify a dn here to bind in order to search (used in combination with subtreeSearch=true).
bindDNPassword=	The password required for the bindDN
adsBind	This option activates a special ADS bind. It allows the user to authenticate at the ADS with only the displayName as configured in Active Directory or by using the Windows domain logon form DOMAIN\LOGINID. Note that "\" cannot be used in user names when this option is activated. Default value is false. The new option referral might also be useful in other LDAP server setups. This option configures how to handle the chasing of referrals in LDAP (see http://java.sun.com/products/jndi/tutorial/ldap/referral/overview.html [http://java.sun.com/products/jndi/tutorial/ldap/referral/overview.html/] .
proxyUser=	Comma separated list of login names allowed to log in as a proxy for every other user.
proxyDelimiter=	Define a delimiter to be used to seperate Proxy from user login. If defined, a proxy user can log in on behalf of a user using the form <PROXYACCOUNT><DELIMITER><USERACCOUNT> NOTE: the underlying Mailserver must support

Table 10.17. ldapauth.properties

Variable	Value
	SASL AUTHPROXYING. The open-xchange mailfilter bundle does not support it, so it will cause errors.

Table 10.17. ldapauth.properties

10.2.17. malpoll.properties

Table 10.18. malpoll.properties

Variable	Value
com.openexchange.push.malpoll.period	Define the amount of time in milliseconds when to period-ically check for new mails. Default is 300000 (5 minutes).
com.openexchange.push.malpoll.global	Whether a global timer is set or a timer per user. Or in other words: Do you want a global heartbeat or a heartbeat per user? Default is true.
com.openexchange.push.malpoll.con-currentglobal	Whether the tasks executed by global timer are executed concurrently or by calling timer's thread. Note: This prop-erty only has effect if "com.openexchange.push.malpoll.glob-al" is set to "true".
com.openexchange.push.malpoll.folder	Define the folder to look-up for new mails in each mailbox. Default is INBOX folder.

Table 10.18. malpoll.properties

10.2.18. mailjsoncache.properties

Table 10.19. mailjsoncache.properties

Variable	Value
com.openex-change.mail.cache.json.shrinkerInter-valUserMap	The shrinker interval in seconds for the superior user map. Default is 60.
com.openex-change.mail.cache.json.shrinkerInterval-FolderMap	The shrinker interval in seconds for folder maps. Default is 60.
com.openex-change.mail.cache.json.ttlUserMap	The time-to-live in seconds for folder maps put into user map. Default is 300.
com.openexchange.mail.cache.json.ttl-FolderMap	The time-to-live in seconds for an ID-to-JSON mapping put into folder map. Default is 300.
com.openex-change.mail.cache.json.maxWaitTimeMil-lis	The maximum time in milliseconds to wait for a mail's JSON representation to become available in a folder map. Default is 100.
com.openexchange.mail.cache.json.en-abled	Whether the cache is enabled. Default is true.

Table 10.19. mailjsoncache.properties

10.2.19. open-xchange-gui-wizard-plugin.properties

Table 10.20. open-xchange-gui-wizard-plugin.properties

Variable	Value
module	With setting /module to true or false, the wizard can be activated or deactivated.
ui/wizard/mailaccounts	Contains a comma separated list of enabled mail services which are displayed in the wizard. By default every available service is listed here. This, together with the new config cascade allows to configure it for the system, context or user.
ui/wizard/firstrunmode	If enabled it will present the personal data on first run of the wizard as an empty form which must be filled with mandatory fields before the user can quit the wizard. The default is false.
ui/wizard/launchOnStartDefault	Sets the default value on the checkbox on the wizard about whether to start on launch or not.
ui/wizard/launchOnStart	This can be changed to disable the automatic start of the wizard. The wizard is still available from the help menu and can also be configured by the user to startup on login with the integrated checkbox. Note: If the parameter ui/wizard/firstrunmode is set to true, this must be set to true, too.

Table 10.20. open-xchange-gui-wizard-plugin.properties

10.2.20. config.js in open-xchange-gui-wizard-plugin-gui package

The file config.js within the open-xchange-gui-wizard-plugin-gui package is not overwritten anymore on update and therefore can be modified by the administrator.

10.2.21. Wizard code.js file

Only a small part of the wizard is loaded which checks for an activated wizard. If activated, the wizard gets loaded. This speeds up the load of the Groupware in case a user has a de-activated the wizard.

For this purpose, the wizard has been split into two files. The former register.js file was replaced with a code.js file which contains all the old common code. The new register.js only contains a check for the wizard status. If you have a customized wizard, you have to merge these changes to your customized code.

10.2.22. cache.ccf sessioncache.ccf mailcache.ccf

Configuration for the JCS implementation used in cache.ccf. Open-Xchange servers use JCS to cache frequently used objects and to keep these cached objects caches in sync on all machines in the cluster. It is used for cache invalidation only. The defaults for the pre-defined cache regions should be kept. The caches commmunicate through TCP/IP and find each other via multicast. In some situations those values need to be changed for the local network infrastructure in the auxiliary section.

Table 10.21.

Variable	Value
GlobalFolderCache	Cache region for configuring the cache.
UserFolderCache	Cache region for configuring the cache.
.TcpServers	This line must be commented to make auto configuration via udp possible.
.TcpListenerPort	The port where the caches listen for invalidation messages.
.UdpDiscoveryAddr	Multicast address where the caches send broadcasts to in order to find each other.
.UdpDiscoveryPort	Port number for the multicast setup.
.UdpDiscoveryEnabled	true/false needs to be true to make Udb discovery work.

Table 10.21.

For more in-depth information consult the project documentation of Apache JCS at http://jakarta.apache.org/jcs/ The groupware and admin caches must listen on the same multicast address and port. Same applies for the sessioncaches. The mailcache is only local and the default do not need to be changed.

10.2.23. noipcheck.cnf

In some scenarios it makes sense to use a single user session from different clients, say in a service cluster that is in turn backed by an OX cluster. Conventionally, an OX session would have to be created per node in the service cluster, so as not to fail the ip check. To enable the service cluster nodes to share a session (and thereby save resources on the OX cluster), a whitelisting option has been added to disable the ip check for certain IP ranges.

To enable this functionality, the "noipcheck.cnf" file has to be added to the configuration path. Each line in the configuration file should contain either a single ip address (e.g. 192.168.32.99) or an ip range (192.168.32.100 - 192.168.32.200). Addresses that match either single addresses or the ranges (with the boundaries considered as part of the range, so 192.168.32.100 and 192.168.32.200 would also match) are exempt from the ip check. Note though, that clients MUST still supply both the sessionID in the URL and the secret cookie, and, in cluster setups the JVM route either through the JSESSIONID cookie of a modified URL.

10.2.24. infostore.properties

Table 10.22. infostore.properties

Variable	Value
MAX_UPLOAD_SIZE	If the sum of all uploaded files in one request is larger than this value, the upload will be rejected. This value can be overridden on a per-user basis by setting the upload_quota in the mail configuration of this user. If this value is not set or 0, the more general MAX_UPLOAD_SIZE configured in server.properties will be used. If that value is also 0 or not set, uploads will be unrestricted. The size is in Bytes.

Table 10.22. infostore.properties

10.2.25. notification.properties

Table 10.23. notification.properties

Variable	Value
notify_participants_on_delete	If set to true, participants of appointments get a notification mail when the appointment gets deleted.
notify_external_participants_on_secondary	If set to true, external participants receive notification mails for accepted/declined/tentatively-accepted appointments/tasks.
object_link	url in notification mails [hostname] is replaced with the hostname of your machine. [module], [object] and [folder] are replaced with the relevant IDs to generate the direct link. "http://<HOSTNAME>/#m=[module]&i=[object]&f=[folder] " HOSTNAME must be replaced by the hostname of the frontend server. The notification.properties configuration file has a new default for the object_link. A new token was introduced there named [uiwebpath] and it is by default part of the object_link. That token is replaced by the content of the property com.openexchange.UIWebPath. This eases administration because the UI web path needs only be configured in one place.
imipForInternalUsers	IMip mails need to be deactivated for internal users as different oxtender versions are unable to handle such additional "synchronization" and creates duplicate entries. Default is false.
com.openexchange.notification.fromSource	Possible values are: 'primaryMail' - the primary mail address of the user. 'defaultSenderAddress' - the default sender address selected by the user from the list of aliases (default).

Table 10.23. notification.properties

10.2.26. ox-scriptconf.sh

Table 10.24. ox-scriptconf.sh

Variable	Value
JAVA_XTRAOPTS	This property sets the java options given to the groupware during launch time.
NRFILES	Maximun number of files the groupware is allowed to open (set through ulimit on startup)
UMASK	Specify the umask of file permissions to be created by ox, e.g. in the filestore, UMASK=066
-XX:MaxPermSize=128M	The Open-Xchange server runs out of PermGen space during class loading. This needs an additional Java start-up option "-XX:MaxPermSize=128M"
Dsun.net.inetaddr.ttl=3600	The default behaviour of java does not keep in mind that ip addresses could change. This is one of three properties that should solve the problem.

Table 10.24. ox-scriptconf.sh

Variable	Value
Dnetworkaddress.cache.ttl=3600	The default behaviour of java does not keep in mind that ip addresses could change. This is one of three properties that should solve the problem.
Dnetworkaddress.cache.negative.ttl=10	The default behaviour of java does not keep in mind that ip addresses could change. This is one of three properties that should solve the problem.

Table 10.24. ox-scriptconf.sh

10.2.27. participant.properties

Table 10.25. participant.properties

Variable	Value
ShowWithoutEmail	If true, a search for appointment participants also shows contacts without E-Mail addresses. Those addresses are grayed out and not selectable because an E-Mail address is needed for appointments.
autoSearch	The automatic search of users in the participants dialog can be de/activated. Default is true.

Table 10.25. participant.properties

10.2.28. server.properties

Table 10.26. server.properties

Variable	Value
PrefetchEnabled	Enable or disable SearchIterator prefetch. If prefetch is enabled the underlying ResultSet data is completely stored and all related resources are released immediately when creating a SearchIterator. Possible values: TRUE / FALSE.
UPLOAD_DIRECTORY	Upload Parameter. All uploads that are done by a client are temporarily saved in that directory.
MAX_UPLOAD_SIZE	If the sum of all uploaded files in one request is greater than this value, the upload will be rejected. This value can be overridden on a per-module basis by setting the MAX_UPLOAD_SIZE parameter in the module's config file (attachment.properties or infostore.properties). Or it can be overriden on a per-user basis by setting the upload_quota in the E-Mail configuration of this user. If this value is set to 0 and not overridden by the module config or user config uploads will be unrestricted. The size is in bytes.
MAX_UPLOAD_IDLE_TIME_MILLIS	The maximum idle time in milliseconds for an uploaded file temporarily stored in the upload directory.
DefaultEncoding	The encoding has to match the webservers default encoding. Default is UTF-8.
minimumSearchCharacters	Defines the minimum number of characters for a search. Default is 0. In large contexts it is recommended to set the minimum to 3.

Table 10.26. server.properties

Variable	Value
PUBLISH_REVOKE	Contact address for the server administrator in case a publication needs to be revoked.
UPLOAD_DIRECTORY	Upload Parameter. All uploads that are done by a client are temporarily saved # in that directory. UPLOAD_DIREC-TORY=/var/spool/open-xchange
IPCheck	On session validation of every request the client IP address is compared with the client IP address used for the login request. If this configuration parameter is set to "true" and the client IP addresses do not match, the request will be denied and the denied request is logged with level info. Setting this parameter to "false" will only log the different client IP addresses with debug level. WARNING! This should be only set to "false" if you know what you are doing and if all requests are secure - requests are always encrypted by using HTTPS.com.openexchange.IPCheck=true
com.openexchange.UIWebPath	That property contains the path to the UI on the web server. By default that path is /ox6/index.html. This is the default installation location of the ui. The notification.properties configuration file gets a new default for the object_link. A new token is introduced there named [uiwebpath] and it is by default part of the object_link. That token is replaced by the content of the property com.openexchange.UIWebPath. This eases administration because the UI web path needs only be configured in one place. The EasyLogin gets an additional parameter. This parameter can carry the path to the UI on the web server. This parameter is passed to the redirect action of the login servlet that now understands the same parameter.
com.openexchange.cookie.forceHTTPS	If Open-Xchange detects an encrypted connection through HTTPS, every cookie is automatically flagged as secure. When HTTPS is terminated in front of Open-Xchange by some load balancer, the code is not able to detect that the connection is encrypted. Then, this parameter can be used to force the secure flag for cookies. Tis parameter is deprecated: If you are still using it, rename it to com.openexchange.forceHTTPS
com.openexchange.forceHTTPS=false	If Open-Xchange detects an encrypted connection through HTTPS, every cookie is automatically flagged as secure. When HTTPS is terminated in front of Open-Xchange by some load balancer, the code is not able to detect that the connection is encrypted. Then, this parameter can be used to force the secure flag for cookies. It also tells the backend to generate links using https.
com.openexchange.servlet.echoHeader-Name	Configure the name of the header that contains the value of the excho response. Default is X-Echo-Header.
com.openexchange.log.propertyNames	Specify default logging properties to easily enhance logging by necessary information for request/session tracking.
MAX_BODY_SIZE	To prevent possible DOS attacks that might lead to an Out-Of-Memory-Error in the server, this property allows restrict-

Table 10.26. server.properties

Variable	Value
	ing the maximum size of HTTP body data. The default is 0, meaning an unlimited size.
com.openexchange.defaultMaxConcur-rentAJAXRequests	Limits the number of concurrent AJAX requests per use. This property only has effect if no individual value has been specified for active user. A value less than or equal to zero means infinite and by default this property is disabled.
com.openexchange.IPCheckWhitelist	Specify a comma-separated list of client identifiers for that no IP check will be performed. By default that property is disabled
com.openexchange.json.maxSize	Specify the maximum number of allowed attributes for a JSON object (to prevent DoS attacks). Defaults to 2500.
com.openexchange.servlet.maxAc-tiveSessions	The maximum number of active http sessions. -1 for an unlimited amount.
com.openexchange.servlet.maxInac-tiveInterval	The initial maximum time interval, in seconds, between client requests before an http session is invalidated. A negative value will result in sessions never timing out. If the attribute is not provided, a default of 1800 seconds is used.
com.openexchange.servlet.session-CleanerInterval	The frequency for checking whether to remove elapsed http sessions.
ccom.openexchange.servlet.maxBody-Size	Specify the maximum body size allowed being transferred via PUT or POST method. A request exceeding that limit will be responded with a 500 error and that request is discarded. Equal or less than zero means no restriction concerning body size. By default that property is set to 104857600 meaning a maximum body size of 100MB.

Table 10.26. server.properties

10.2.29. sessiond.properties

Table 10.27. sessiond.properties

Variable	Value
com.openexchange.sessiond.cookie.ttl	This parameter defines the lifetime of the session cookies. If the autologin feature is enabled the lifetime of both the secret cookie and the session cookie will be set according to this setting. Admissable values contain a value and a unit of measurement. Units of measurement are "W" for week, "d" for day or "h" for hour. 12h would denote 12 hours , 12W would denote 12 weeks. Default is one week.
com.openexchange.cookie.httpOnly	Enables/disables cookie HttpOnly flag. By default this property is set to true; meaning cookies will contain the "; HttpOnly" parameter.
com.openexchange.cookie.hash	This property configures if the hash for the cookie validation is calculated on every request or simply remembered in the session object. Calculating the hash value is more secure because changes in the User-Agent HTTP header lead to a session invalidation. Those changes are ignored if the hash is used from the session. Possible side effects of the hash calculation on every request may be more frequent session

Table 10.27. sessiond.properties

Variable	Value
	invalidation. If that takes place switch the property to re-member the hash in the session.
com.openexchange.cookie.hash.fields	This property allows to define additional HTTP headers that are added to the calculation of hash for the cookies. It is defined but commented in the configuration file server.prop-erties. The calculation always includes client parameter of login request and HTTP header User-Agent. This is sufficient for most cases. So the property does not define any addi-tional HTTP headers to be included by default and it is commented.
com.openexchange.sessiond.maxSes-sionPerClient	Allows to specify the max. number of sessions allowed per client (Web UI, EAS, WebDAV, ...). By default that restriction is disabled (value set to zero).

Table 10.27. sessiond.properties

10.2.30. management.properties

Table 10.28. management.properties

Variable	Value
JMXPort	Define the port which is then applied to the JMX-based agent.
JMXLogin	Define the JMX login for authentication. Leaving this prop-erty empty means not to use authentication and a non-root user can stop the complete server.
JMXPassword	Specify the JMX password in SHA hashed version. This property only has effect if the previous "JMXLogin" property is set. The following perl command can be used to generate such a password: perl -M'Digest::SHA1 qw(sha1_base64)' -e 'print sha1_base64("YOURSECRET")."=\n";' that requires to install the Digest::SHA1 perl module, of course.
JMXBindAddress	Specify the bind address for the JMX monitor agent. Use the "*" value to let the JMX monitor bind to all interfaces: JMXBindAddress=*
JMXServerPort	specify the port used by JMX RMI Connector Server. Thus customers are able to connect to JMX through a firewall if a dedicated port is specified that is granted by firewall. Default value is -1; meaning that port is randomly deter-mined by JVM.

Table 10.28. management.properties

10.2.31. contact.properties

Table 10.29. contact.properties

Variable	Value
contact_first_letter_field	First Letter Field, the field you sort in when you click on one of the start letters.

Table 10.29. contact.properties

Variable	Value
	field02 Last name field03 First name
validate_contact_email	Check the entered E-Mail address from a new contact for correctness (syntactic check user@domain.tld)
scale_images	Scale contact images down to the given ratio.
scale_image_width	Maximum width a contact image will be scaled to.
scale_image_height	Maximum height a contact image will be scaled to.
max_image_size	The maximum size in bytes for the upload of contact images.
quickSelect	Activates or deactivates the contact view's quick selection. Possible values: true/false.
com.openexchange.contacts.allFolders-ForAutoComplete	Defines if the auto complete search considers all readable contact folders or only the user's standard contact folder, his collected addresses folder and the global address book. If this parameter is not configured all readable folders will be searched. Possible values: true/false. Default: true. It may be necessary to limit the auto complete search to the above mentioned three folders if a context has a lot of users and/or a lot of contacts to lower the load on the database server.

Table 10.29. contact.properties

10.2.32. event.properties

This file contains the configuration of the event handling in OX6. Event handling is a core function and should never be turned off. For instance, when deleting a contact with attachments, the contact will be deleted immediately and an event is created to delete the attachment at a later time.

Table 10.30. event.properties

Variable	Value
.isEventQueueEnabled	This option enables or disables the complete event handling for OX. The event handling is an essential Open-Xchange component which always needs to run.
.eventQueueDelay	This parameter sets the delay in milliseconds when events are sent to the subscribed services. Events e. g. are triggered when deleting an appointment with attachment. The event then is for deleting the attachment.

Table 10.30. event.properties

10.2.33. file-logging.properties

This file contains the configuration for error and information logging.

Table 10.31. file-logging.properties

Variable	Value
.level	Default logging level, should be INFO in productive environments. Other possible values are ALL INFO DEBUG.
com.openexchange.login.internal.LoginPerformer.level=INFO	This should never be changed to be able to track session life times.
com.openexchange.sessiond.impl.SessionHandler.level=INFO	This should never be changed to be able to track session life times.

Table 10.31. file-logging.properties

10.2.34. mailfilter.properties

This file contains the configuration for the mailfilter plugin.

Table 10.32. mailfilter.properties

Variable	Value
SIEVE_LOGIN_TYPE	Specify the sieve server to be used. Two options are allowed here: user : use the setting stored for the user in the database global : use the sieve server given in this config file for all users
SIEVE_CREDSRC	Specify the sieve credentials to be used. Three options are allowed here: "session" : login name and password are used from the current session "session-full-login" : full login (incl. context part) name and password are used from the current session "imapLogin" : the login name is taken from the database (imapLogin) of the user, the password is taken from the current session "mail" : use the primary mail address of the user and the password from the session
SIEVE_SERVER	Sieve server
SIEVE_PORT	Sieve port - recommended is 4190.
SCRIPT_NAME	If you want the script to be generated with another script name, change it here. Note that the mail filter bundle will then leave the old script with the old script name behind, and does not delete it.
SIEVE_AUTH_ENC	The SIEVE mailfilter configuration is enhanced by an option called "SIEVE_AUTH_ENC" which allows to specifiy the character encoding to use when authenticating against SIEVE server, e.g. UTF-8, ISO-8859-1, etc. This is useful if a user password contains non-ASCII characters like German umlauts.
NON_RFC_COMPLIANT_TLS_REGEX	Define the regex which recognizes servers with incorrect sieve TLS implementation. NON_RFC_COMPLI-

Table 10.32. mailfilter.properties

Variable	Value
	ANT_TLS_REGEX=^Cyrus.*v([0-1]\\.[0-9].*|2\\.[0-2].*|2\\.3\\.[0-9]|2\\.3\\.[0-9][^0-9].*)$ Whether to use TLS if available. TLS=true
VACATION_DOMAINS	Specify whether vacation messages should only be sent to specific domains. If multiple domains are given, they should be separated by ", " e. g. VACATION_DOMAINS=testdomain.com, example.com. By default this is left blank, so nothing is changed and the vacation rule is written surrounded by an "if true" as usual. If the domains are specified, the condition will be changed so that a vacation message is only sent if the sender uses one of the allowed domains.
com.openexchange.mail.filter.connectionTimeout	The default timeout of 30000ms is the same as the one which was hard-coded before i.e., there will be no change in the default behaviour. If there are timeout messages though the service is running, the value can be increased. It is recommended not to exceed 120000ms though as otherwise the users might run out of patience.
com.openexchange.mail.filter.passwordSource=session	Set the password source i.e., the source taken to determine a user's password to log in to the mail filter system. If 'session' is set, the user's individual system password is taken. If 'global' is set, the value specified through the 'com.openexchange.mail.filter.masterPassword' property is taken. Currently known values: session and global
com.openexchange.mail.filter.masterPassword=	The master password for mail/transport server. Only takes effect when the "com.openexchange.mail.filter.passwordSource" property is set to "global".
com.openexchange.mail.filter.useUTF7FolderEncoding	Cyrus imap server uses MODIFIED UTF-7 encoding for folder names in older versions. The configuration property 'com.openexchange.mail.filter.useUTF7FolderEncoding' has to be set to 'true' if a cyrus imap server is used whose version is lower than 2.3.11. Otherwise moving E-Mails with the 'fileinto' command will not work for mail folders with special characters in their names.
com.openexchange.mail.filter.punycode	Enable punycode encoding for the username used in authentication against the managesieve server to support IDN domains.
com.openexchange.mail.filter.useSIEVEResponseCodes	This setting can be used to interpret the SIEVE response code as defined in RFC5804. This is an optional switch which usually does not need be changed. The default is false.
com.openexchange.mail.filter.redirectWhitelist	Filter allowed domain names to specify redirect rules for. By default this property is empty; meaning any address will be accepted for a redirect rule

Table 10.32. mailfilter.properties

10.2.35. settings/themes.properties

This file contains the configuration for available themes. More information about that and how to create themes can be found here: http://www.open-xchange.com/wiki/index.php?title=Gui_Theming_Description

10.2.36. servletmappings/servletmapping.properties

The request path to servlet class mapping. Wildcards are allowed as long as the '*' character is the last character in the specified servlet path.

For new potential login methods, the login servlet may require additional configuration parameters. Those configuration parameters can be passed more easily if the login servlet is added through a BundleActivator and not by static initialization through a class loader. The line /ajax/login:com.openexchange.ajax.Login was removed from the servletmappings.properties configuration file. The URL is now a Java string constant and the servlet is added to the servlet container using a BundleActivator and the HttpService.

10.2.37. transport.properties

Table 10.33. transport.properties

Variable	Value
com.openexchange.mail.transport.referencedPartLimit	Define the limit in bytes for keeping an internal copy of a referenced MIME message's part when sending a mail. If a part exceeds this limit a temporary file is created holding part's copy.
com.openexchange.mail.defaultTransportProvider	The transport provider fallback if an URL does not contain/define a protocol.
com.openexchange.mail.transport.enablePublishOnExceededQuota=false	Enable/disable to publish E-Mail attachments if quota is exceeded rather than throwing an appropriate error.
com.openexchange.mail.transport.publishingPublicInfostoreFolder=Email	Specify the name of the publishing infostore folder which is created below the public infostore folder. If absent, the denoted folder is only created if "com.openexchange.mail.transport.enablePublishOnExceededQuota" is enabled. The default is "i18n-defined", which means using the translation of the text "E-Mail attachments".
com.openexchange.mail.transport.publishPrimaryAccountOnly=true	Whether external recipients shall receive file attachments instead of publication links although quota is exceeded if property "com.openexchange.mail.transport.enablePublishOnExceededQuota" is enabled.
com.openexchange.mail.transport.sendAttachmentToExternalRecipients=false	Whether external recipients shall receive file attachments instead of publication links although quota is exceeded if property "com.openexchange.mail.transport.enablePublishOnExceededQuota" is enabled.
com.openexchange.mail.transport.provideLinksInAttachment=false	This option enables publication links to be provided in a separate "text/html" file attachment named "links.html, instead of inserting them to the top of the mail text. This avoids modification of the original mail text. If set to "false", the publication links are inserted to the top of the mail text.
com.openexchange.mail.transport.publishedDocumentTimeToLive=604800000	Define the time-to-live in milliseconds for published E-Mail attachments. If this is set to a negative value, automatically created infostore documents will not expire.
com.openexchange.mail.transport.externalRecipientsLocale=en	Set the identifier of the locale to use when composing text sent to external recipients. Possible values are locale shortcuts like "en", "fr" or "de" and the special property

Table 10.33. transport.properties

Variable	Value
	"user–defined", which makes the system use the locale set by the user sending the message.

Table 10.33. transport.properties

10.2.38. login.properties

Table 10.34. login.properties

Variable	Value
com.openexchange.ajax.login.http-auth.autologin	.Configures if a user is able to re-enter his existing session after closing the browser tab or the complete browser. Setting this to true may be a security risk for clients running on unsafe computers, therefore the default is false. If this is configured to true, check that the parameter client contains the same identifier the UI sends as client parameter on normal login request. Otherwise the backend will not be able to rediscover the users session after closing the browser tab. This parameter only applies to the HTTP authorization based login request.
com.openexchange.ajax.login.http-auth.client	Every client tells the backend through the client parameter his identy on the login request. This is not possible when using the HTTP authorization header based login. So the client identifier for that request is defined here. It must be the same identifier that the web front-end uses, if you set com.openexchange.cookie.hash to calculate and want the previously configured autologin to work. So the default is the same identifier as the web frontend sends.
com.openexchange.ajax.login.http-auth.version	The version of the client when using the HTTP authorization header based login. This should not be the normal web front-end version because a different version can be used to distinguish logins through HTTP authorization header and normal login request. So the default is "HTTP Auth".
com.openexchange.ajax.login.inse-cure=false	Configures whether an insecure login is allowed. Insecure means that local IP and/or user-agent strings are replaced in an associated user session on login redirect or login redeem requests. To create a session from a server for some client, you will have to pass on the client's IP address when creating the session. WARNING! Setting this parameter to true may result in users seeing a different users content if the infrastructure around OX does not work correctly.
com.openexchange.ajax.login.redi-rect.changeIPAllowed=true	This option has only an effect if com.openexchange.ajax.login.insecure is configured to true. This option allows to enable the IP check for /ajax/login?action=redirect requests. This request is mostly used to create a session without using the OX web UI login screen. The previous behavior allowed to change the IP for this request. Configure this option to false to have an IP check during this request. Additionally you can white-list IP addresses from that an IP change is

Table 10.34. login.properties

Variable	Value
	still allowed. This is useful if other systems in the infrastructure around OX want to create the session.

Table 10.34. login.properties

10.2.39. com.openexchange.secret

Table 10.35. com.openexchange.secret

Variable	Value
com.openexchange.secret	The Open-Xchange Server uses the users password to encrypt or decrypt certain data (usually passwords to third party systems, say twitter). In some deployments it may not be desirable or possible that the OX Server has access to the users password. In these cases an alternate secret will have to be used. The bundle com.openexchange.secret provides a hook for plugins to supply a secret and encapsulates the old behaviour (using the users password) as a default.

Table 10.35. com.openexchange.secret

10.2.40. open-xchange-secret-recovery

Table 10.36. open-xchange-secret-recovery

Variable	Value
open-xchange-secret-recovery	The Open-Xchange Server encrypts sensitive user data using a secret key (usually the users password). When the secret key changes, either when the password is changed or when the secret implementation is changed the sensitive user data has to be decrypted with the old secret and encrypted with the new one. The bundle open-xchange-secret-recovery contains the necessary interfaces and callback mechanisms to detect a change in the secret key and to re-encrypt sensitive user data.

Table 10.36. open-xchange-secret-recovery

10.2.41. open-xchange-secret-recovery-mail

Table 10.37. open-xchange-secret-recovery-mail

Variable	Value
open-xchange-secret-recovery-mail	The Open-Xchange Server encrypts sensitive user data using a secret key (usually the users password). When the secret key changes, either when the password is changed or when the secret implementation is changed the sensitive user data has to be decrypted with the old secret and encrypted with the new one. The bundle open-xchange-secret-recovery-mail contains the glue code to adapt the RDBMailAc-

Table 10.37. open-xchange-secret-recovery-mail

Variable	Value
	countStorage functionality to the interfaces as mandated by the secret recovery mechanisms.

Table 10.37. open-xchange-secret-recovery-mail

10.2.42. open-xchange-secret-recovery-mail

Table 10.38. open-xchange-secret-recovery-json

Variable	Value
open-xchange-secret-recovery-json	The Open-Xchange Server encrypts sensitive user data using a secret key (usually the users password). When the secret key changes, either when the password is changed or when the secret implementation is changed the sensitive user data has to be decrypted with the old secret and encrypted with the new one.The bundle open-xchange-secret-recovery-json contains the necessary HTTP-API calls used by clients to detect a change in secret keys and to trigger the migration to a new secret

Table 10.38. open-xchange-secret-recovery-json

10.2.43. Thread bundle

The thread bundle provides a central thread pool for simultaneously processing tasks in order to save memory. The bundle can be configured to enable the administrator to better control the system and thus avoid e.g. out of memory errors when using limited hardware.

Table 10.39.

Variable	Value
com.openexchange.threadpool.corePoolSize	The number of threads to keep in the pool, even if they are idle. If unsure follow this rule: Number of CPUs + 1.
com.openexchange.threadpool.prestartAllCoreThreads	Starts all core threads, causing them to idly wait for work. This overrides the default policy of starting core threads only when new tasks are executed. Default is true.
com.openexchange.threadpool.maximumPoolSize	The maximum number of threads to allow in the pool. Default is the maximum integer value of 2^31 - 1 which is considered as unlimited number of threads.
com.openexchange.threadpool.keepAliveTime	When the number of threads is greater than the core, this is the maximum time (in milliseconds) that excess idle threads will wait for new tasks before terminating. Default is 60000msec.
com.openexchange.threadpool.workQueue	The queue type to use for holding tasks before they are executed. Supported values: synchronous and linked. A synchronous queue is an appropriate choice when "com.openexchange.threadpool.maximumPoolSize" is unlimited or possible rejection of tasks is allowed. A linked queue is an appropriate choice when "com.openexchange.threadpool.maximumPoolSize" is limited and rejection of tasks is prohibited.

Table 10.39.

Variable	Value
com.openexchange.threadpool.re-fusedExecutionBehavior	The default behavior to obey when execution is blocked because the thread bounds and queue capacities are reached. Supported values: abort, caller-runs, discard; abort: Aborts execution by throwing an appropriate exception to the caller; caller-run: The caller is considered to run the task if the thread pool is unable to do so; discard: The task is silently discarded. No exception is thrown.

Table 10.39.

10.2.44. facebooksubscribe.properties

The facebook Social OX plug-in was switched from (encrypted) credential-storing to OAuth. With the new authentication method, users only need to authorize once to an external social service. After the initial authentication, all additional updates can be performed without having to log in again (as long as the credentials at the external service remain unchanged).

Please note: After the update to the new version introducing this change, users will need to set up their Facebook® subscription once more.

Table 10.40. facebooksubscribe.properties

com.openexchange.subscribe.socialplu-gin.facebook	Property for server-wide enabling / disabling the subscrip-tion source. Default is true.

Table 10.40. facebooksubscribe.properties

10.2.45. linkedinsubscribe.properties

The LinkedIn Social OX plug-in was switched from (encrypted) credential-storing to OAuth. With the new authentication method, users only need to authorize once to an external social service. After the initial authentication, all additional updates can be performed without having to log in again (as long as the credentials at the external service remain unchanged).

Please note: After the update to the new version introducing this change, users will need to set up their LinkedIn® subscription once more.

Table 10.41. linkedinsubscribe.properties

com.openexchange.subscribe.socialplu-gin.linkedin	Property for server-wide enabling / disabling the subscrip-tion source. Default is true.

Table 10.41. linkedinsubscribe.properties

10.2.46. crawler.properties

Contains the path to the yml files that contain the configuration for the single services like gmx.de, gmx.net, xing.com, web.de, yahoo.com, google.com, t-online.de. The yml files reside in the "crawlers" subdirectory. The crawler bundle detects updated yml-configuration-files provided by ox and downloads them. Precondition is the possibility to access external

servers on port 80 and 443 and the servers of the respective services and their subdomains must not be blocked.

LinkedIn and Facebook Social OX plug-ins are switched from (encrypted) credential-storing to OAuth. With the new authentication method, users only need to authorize once to an external social service. After the initial authentication, all additional updates can be performed without having to log in again (as long as the credentials at the external service remain unchanged).

Please note: After the update to the new version introducing this change, users will need to set up their Facebook® and LinkedIn® subscriptions once more.

Table 10.42. crawler.properties

com.openexchange.sub-scribe.crawler.path	Specify the path to the crawler config (yml) files in the system (usually this is set automatically)
com.openexchange.sub-scribe.crawler.updatepath	Specify the path to the auto update function (usually this is set automatically)
com.openexchange.sub-scribe.crawler.updateinterval	Specify the frequency of the auto update in millicesonds (default is 86400000 -> daily)
com.openexchange.subscribe.crawler.enableautoupdate	Switch the automatic update on or off i.e., set to true/false (default: true)
com.openexchange.sub-scribe.crawler.onlyupdatealreadyin-stalled	Specify whether to restrict the automatic update to already installed crawler (i.e. the yml file exists). In order to restrict the automatic update set the option to true. The default is false.
com.openexchange.subscribe.crawler.ya-hoocom	Switch the crawler on or off (true/false). The default is true.
com.openexchange.subscribe.xing	Switch the crawler on or off (true/false). The default is true.
com.openexchange.sub-scribe.crawler.googlemail	Switch the crawler on or off (true/false). The default is true.
com.openexchange.sub-scribe.crawler.webde	Switch the crawler on or off (true/false). The default is true.
com.openexchange.sub-scribe.crawler.google.calendar	Switch the crawler on or off (true/false). The default is true.
com.openexchange.sub-scribe.crawler.gmx	Switch the crawler on or off (true/false). The default is true.
com.openexchange.sub-scribe.crawler.gmx.com	Switch the crawler on or off (true/false). The default is true.
com.openexchange.oauth.linkedin	This bundle adds a subscription source for contacts from the linkedIn service to be used with the Social OX features
com.openexchange.subscribe.msn.de	Switch the crawler on or off (true/false). The default is true.
com.openexchange.sub-scribe.crawler.suncontacts	Switch the crawler on or off (true/false). The default is true.
com.openexchange.sub-scribe.crawler.suncalendar	Switch the crawler on or off (true/false). The default is true.
com.openexchange.sub-scribe.crawler.suntasks	Switch the crawler on or off (true/false). The default is true.

Table 10.42. crawler.properties

10.2.47. microformatSubscription.properties

Table 10.43. microformatSubscription.properties

com.openexchange.subscribe.microfor-mats.contacts.http=true	Property for the OXMF based subscription sources, indicating whether a certain subscription source is to be available or not.
com.openexchange.subscribe.microfor-mats.infostore.http=true	Property for the OXMF based subscription sources, indicating whether a certain subscription source is to be available or not.

Table 10.43. microformatSubscription.properties

10.2.48. publications.properties

Table 10.44. publications.properties

Variable	Value
com.openexchange.publish.microfor-mats.usesWhitelisting	This feature enables/disables whitelisting of HTML, which is used to exclude elements that might allow users to steal sessions of other users. Default is "true".

Table 10.44. publications.properties

10.2.49. twitter.properties

Twitter does no longer support basic authentication, but only OAuth mechanism

Table 10.45. twitter.properties

Variable	Value
com.openexchange.twitter.con-sumerKey	In order to use supported OAuth mechanism to authenticate a twitter account, a consumer key pair belonging to a registered application is needed. Currently there is no default.
com.openexchange.twitter.consumer-Secret	In order to use supported OAuth mechanism to authenticate a twitter account, a consumer secret pair belonging to a registered application is needed. Currently there is no default.

Table 10.45. twitter.properties

10.2.50. reportclient.properties

Proxy server support settings for the Open-Xchange report client.

10.2.51. defaultspamhandler.properties

File for defining the handling of confirmed-spam/confirmed-ham folders

Table 10.46. defaultspamhandler.properties

Variable	Value
com.openexchange.spamhandler.de-faultspamhandler.createCon-firmedSpam	Indicates whether to create the confirmed-spam folder during check for default mail folders during login if spam is enabled for logged in users. Default is true.
com.openexchange.spamhandler.de-faultspamhandler.createConfirmedHam	Indicates whether to create the confirmed-ham folder during check for default mail folders during login if spam is enabled for logged in user. Default is true.
com.openexchange.spamhandler.de-faultspamhandler.unsubscribeSpamFold-ers	Indicates whether the confirmed-spam/confirmed-ham folders shall automatically be unsubscribed during login. Default is true.

Table 10.46. defaultspamhandler.properties

10.2.52. spamassassin.properties

Table 10.47. spamassassin.properties

Variable	Value
com.openexchange.spamhandler.spa-massassin.spamd	Select whether an E-Mail is sent to spamd afterwards. Possible values: true/false. Default value is false.
com.openexchange.spamhandler.spa-massassin.hostname	If the E-Mail is to be sent to spamd specify the hostname of the spamassassin daemon here.
com.openexchange.spamhandler.spa-massassin.port	If the E-Mail is to be sent to spamd specify the port of the spamassassin daemon here.
com.openexchange.spamhandler.spa-massassin.timeout	If the E-Mail is to be sent to spamd specify the timeout after which the try to connect is aborted here
com.openexchange.spamhandler.spa-massassin.retries	If the E-Mail is to be sent to spamd specify the connect retries here
com.openexchange.spamhandler.spa-massassin.retrysleep	If the E-Mail is to be sent to spamd specify the connect retries sleep here. This specifies the time interval between the attempts.

Table 10.47. spamassassin.properties

10.2.53. javamail.properties

The configuration options for the javamail.properties file can be found here: http://java.sun.com/products/javamail/javadocs/overview-summary.html . As some of the options are set and configured by the application itself, they were removed from the configuration file on the system.

10.2.54. macupdater.properties

Configuration file that holds configurable information about files needed for delivering MacOXtender updates.

10.2.55. servlet.properties

The file servlet.properties contains an entry for the path /ajax/infostore. That line has to be removed, because the implementation of the infostore HTTP-API has moved into its

own OSGi Bundle using the current servlet registration mechanism. Therefore the old info-store servlet must not be mounted into the servlet container any more.

10.2.56. dataRetrieval.properties

Table 10.48. dataRetrieval.properties

Variable	Value
com.openexchange.groupware.dataRe-trieval.lifetime : 60000	Lifetime of a token in milliseconds. If this value is not set or negative the token only expires at the end of the session
com.openexchange.groupware.dataRe-trieval.onetime : true	Whether the token expires after the first access or not. Defaults to true.

Table 10.48. dataRetrieval.properties

10.2.57. threadpool.properties

Table 10.49. threadpool.properties

Variable	Value
com.openexchange.threadpool.blocking	Possibility to add a blocking behavior to thread pool when submitting a task. The caller waits for space to become available in work queue of the thread pool. The default value is: false.

Table 10.49. threadpool.properties

10.2.58. passwordchange.properties

Table 10.50. passwordchange.properties

Variable	Value
com.openexchange.password-change.showStrength	Show a widget, which displays the current passwort Strength while entering. The default value: false
com.openexchange.password-change.minLength	The minimum length of an entered password. The default value: 4
com.openexchange.password-change.maxLength	The maximum length of an entered password. 0 for unlimited. The default value: 0
com.openexchange.passwordchange.reg-exp	Defines the class of allowed special characters as Regular Expression. The default value: [^a-z0-9]
com.openexchange.password-change.special	Shows an example of allowed special characters to the user. Should be a subset of "regexp" in a human readable format. The default value: $, _, or %

Table 10.50. passwordchange.properties

10.2.59. /settings/ui.properties

The file is part of the bundle com.openexchange.groupware.settings.extensions

Table 10.51. ui.properties

Variable	Value
ui/global/windows/mode/value=embedded	UI: Window Manager setting. Possible values: embedded OR popups
ui/global/windows/mode/configurable=true	Allows users to configure the window manager. Possible values: true OR false
ui/global/toolbar/mode/value=tabbased	UI: Toolbar type. Possible values: tabbased OR simple
ui/global/toolbar/mode/configurable=true	Allows users to configure the toolbar type. Possible values: true OR false
ui/mail/showContactImage/value = true	Show contact images in email view. Possible values: true OR false
ui/mail/showContactImage/configurable = true	Allow user to configure whether images are shows in email view. Possible values: true OR false
ui/portal/autoRefresh = false	Allow refreshing the portal whenever a user enters the view. This might cause high traffic on some installations, therefore the default behavior has this switched off. Possible values: true OR false
ui/portal/customUWA = false	Disables adding of custom UWA widgets by removing the add/remove/edit buttons in the UWA configuration, removing the link to external widgets and not showing the column URL. Possible values: true OR false
ui/mail/showContactImage/value = true	Toggles the loading of contact images for sendings in the e-mail view. Possible values: true OR false
ui/mail/showContactImage/configurable = true	Toggles whether the users themselves can choose to display contact images or not. Possible values: true OR false
ui/global/notifier/report/sendEnabled = true	Enables the send error report option at the error history dialog.
ui/global/notifier/report/mailAddress = support@example.org	Default recipient address used when sending the error report.
ui/global/disableFeature/calendar-attachments = true	Disable the feature that allows to put attachments on calendar entries. Necessary if your backend service cannot handle attachments.
ui/global/disableFeature/calendar-flags = true	Disable the feature that allows to flag calendar entries. Necessary if your backend service cannot handle flags.
ui/global/disableUpsell/calendar-attachments = true	Disable the feature that allows to put attachments on calendar entries. Necessary if your backend service cannot handle attachments.
ui/global/disableUpsell/calendar-flags = true	Disable the feature that allows to flag calendar entries. Necessary if your backend service cannot handle flags.
ui/product/name	Allows you to change the product name shown via UI. Templates need to use the variable "documentTitle" to access this.

Table 10.51. ui.properties

10.2.60. uwa.properties

Some customers may wish to disable the UWA module in the frontend. This optional property allows you to apply settings regarding the UWA widgets.

Table 10.52. ui.properties

Variable	Value
com.openexchange.frontend.uwa.en-abled	This enables or disables the UWA module in the frontend. Possible values are true/false. Default is true, so it is backwards compatible.
ui.global.autoLogout	Does auto-logout a user from the Web UI when he's inactive for a specified time. When enabled the UI will track the user mouse clicks to resets the timeout which has been configured. If the user is inactive the timeout will trigger an auto-logout and terminates the session. The user then will have to re-login again. This is useful when working on public machines used by more than just one person. Value is time in minutes. To disable this completely, the property needs to be removed from the configuration.

Table 10.52. ui.properties

10.3. Configuration for the Admin Daemon

10.3.1. system.properties

Table 10.53. system.properties

SERVER_NAME	Server name registered by registerserver in the configuration database can be read with listservers.

Table 10.53. system.properties

10.3.2. plugin/hosting.properties

Table 10.54. plugin/hosting.properties

Variable	Value
AVERAGE_CONTEXT_SIZE	The average MB space a context is expected to use on the disk in the filestore.
CONTEXTS_PER_SCHEMA	Maximum amount of contexts that will be stored in a single mysql schema.
CREATE_CONTEXT_USE_UNIT	Must be set to context.
CHECK_CONTEXT_LOGIN_MAP-PING_REGEXP	Pattern of allowed characters in login mapping (context) names.
NEW_CONTEXT_DEFAULT_AC-CESS_COMBINATION_NAME	Default access combination template name for newly created contexts. See also "ModuleAccessDefinitions" file for details. If the name is NOT defined in the "ModuleAccessDefinitions" file, the fallback will be used.

Table 10.54. plugin/hosting.properties

10.3.3. management.properties

Table 10.55. management.properties

Variable	Value
JMX_PORT	Port number for JMX
JMX_BIND_ADDRESS	The port where the java JMX monitoring service is listening on.

Table 10.55. management.properties

10.3.4. AdminDaemon.properties

Table 10.56. AdminDaemon.properties

Variable	Value
SERVER_NAME	Server name set and registered during initial install.
MASTER_AUTHENTICATION_DISABLED	Disabling authentication for system calls like context/server etc. creation.
CONTEXT_AUTHENTICATION_DIS-ABLED	Disabling authentication for context calls like user/group etc. creation. This also disables authentication for calls which a "normal" user can make like changing his own data or getting his own data.
CONCURRENT_JOBS	Number of jobs to be be executed concurrently

Table 10.56. AdminDaemon.properties

10.3.5. Group.properties

Table 10.57. Group.properties

Variable	Value
CHECK_GROUP_UID_FOR_NOT_AL-LOWED_CHARS	true/false: enable check for allowed characters in group names on creation.
CHECK_GROUP_UID_REGEXP	Regexp for allowed chars
AUTO_TO_LOWERCASE_UID	This will lowercase the uid
DEFAULT_CONTEXT_GROUP_<locale>	When creating a new context, this is the default group name for the <locale>.

Table 10.57. Group.properties

10.3.6. Resource.properties

Table 10.58. Resource.properties

Variable	Value
CHECK_RES_UID_FOR_NOT_AL-LOWED_CHARS	true/false: enable check for allowed characters in resource names on creation.
CHECK_RES_UID_REGEXP	Regexp for allowed characters.
AUTO_TO_LOWERCASE_UID	this will lowercase the uid

Table 10.58. Resource.properties

10.3.7. User.properties

Table 10.59. User.properties

Variable	Value
DEFAULT_PASSWORD_MECHANISM	Specify the default password mechanism to use. Possible values: CRYPT / SHA
CHECK_USER_UID_FOR_NOT_AL-LOWED_CHARS	true/false: enable check for allowed characters in user names on creation.
CHECK_USER_UID_REGEXP	Regexp for allowed characters.
AUTO_TO_LOWERCASE_UID	This will lowercase the uid
USERNAME_CHANGEABLE	WARNING: Changing the username might have impact on external systems like imap server that allows acls to be set. Imap ACLS usually use symbolic names so when changing the user name without changing the ACL breaks the ACL. open-xchange-admin will NOT change those ACLS, so DO NOT CHANGE THIS SETTING ON OX Express.
PRIMARY_MAIL_UNCHANGEABLE	If false, it is possible to change primary E-Mail address (this breaks outlook oxtender support)
SENT_MAILFOLDER_<locale>	Default Sent Mail folder name for <locale> when not set per RMI.
TRASH_MAILFOLDER_<locale>	Default Trash folder name for <locale> when not set per RMI.
DRAFTS_MAILFOLDER_<locale>	Default Drafts folder name for <locale> when not set per RMI.
SPAM_MAILFOLDER_<locale>	Default SPAM folder name for <locale> when not set per RMI
com.openexchange.folder.tree	Defines the default folder tree if the user has not selected one. Currently, there are 2 folder trees: the OX folder tree and the new one that resembles the Outlook folder tree. The possible values are 0 for the OX folder tree and 1 for the Outlook like folder tree. If this property is not defined the default is the OX folder tree. Default is 1.
com.openexchange.admin.user.default-Language	Allows you to configure a server-wide default language. Note: This can be configured for a context by using the commandline tools or for a set of contexts using the config cascade system (see there).
com.openexchange.user.contactCollectOnMailAccess	Sets whether the sender of an e-mail is stored as contact in your addressbook upon checking an unread message. Default is false.
com.openexchange.user.contactCollectOnMailTransport	Sets whether the receiver of an e-mail is stored as contact in your addressbook when you send a message to them. Default is false.

Table 10.59. User.properties

10.3.8. configdb.properties

Same as the groupware configdb.properties above. useSeparateWrite has to be false. When true, the admin deamon cannot read its newly written changes from the configdb slave because of database replication times. readURL and writeURL have to point to the Master.

With SP5 groupware's and admindaemon's connection to the ConfigDB should be configured in the same way except the last parameter in the file.

If you have a MySQL master/slave setup, configure useSeparateWrite=true for both applications. The read connection must read from the slave; while the write connection has to connect to the master. All parameters to configure both connections start with the keywords read or write. If your ConfigDB is only a single database server configure useSeparateWrite=false let read and write connection both connect to your single database server.

All remaining parameters in this file configure the pooling of the database connections and it is suggested to not change them. If you need more connections to ConfigDB it is recommended to increase the maxActive parameter.

The last parameter writeOnly must be configured to false for the groupware and to true for the admindaemon. Beginning with 6.22, this parameter becomes obsolete.

10.3.9. RMI.properties

Table 10.60. RMI.properties

RMI_PORT	Port number the Admin Daemon listens on to accept RMI calls from remote machines.

Table 10.60. RMI.properties

10.3.10. secret.properties

Table 10.61. secret.properties

com.openexchange.secret.secretSource	The primary mechanism how to encrypt/decrypt user-sensitive data. You can use both literal text and tokens and you will probably use a combination of both. The avaiable tokens are: <password>, the session's password (also the fall-back to previous handling); <user-id>, the user identifier; <context-id>, the context identifier; <random>, the value specified in property 'com.openexchange.user.secretRandom'; <list>, a step-wise trial-and-error with tokens specified in file 'secrets'; Literals are surrounded by single-quotes, an example combination of literals and tokens would be: com.openexchange.user.secretSource="<user-id> + '@' + <context-id>"
com.openexchange.secret.secretRandom	A configurable random string which is comparable to the "salt" in a known crypt/hash mechanism.

Table 10.61. secret.properties

10.3.11. caldav.properties

Table 10.62. caldav.properties

com.openexchange.caldav.enabled	Enables or disables CalDAV support. Default: false, meaning disabled.

Table 10.62. caldav.properties

com.openexchange.caldav.tree	Controls which folder tree is used when fetching the available folders for publishing via the CalDAV interface. Defaults to 0.

Table 10.62. caldav.properties

10.3.12. twitteroauth.properties

Table 10.63. twitteroauth.properties

com.openexchange.oauth.twitter	Enables or disables the OAuth bundle for Twitter.

Table 10.63. twitteroauth.properties

10.3.13. cache.ccf

Same as the cache.ccf above for groupware. The .TcpListenerPort has to be different from the groupware when running on the same host.

10.3.14. file-logging.properties

Same as the groupware file-logging.properties above.

10.3.15. ModuleAccessDefinitions.properties

This configuration file holds the module access masks for creating users. Information about available modules und tested configurations is available directly in it.

10.4. USM

The configuration options of the usm_json.properties file can be found here: https://svn.open-xchange.com/USM/com.openexchange.usm/trunk/usm_json.properties

10.5. OXtender for MS Outlook plug-ins

In order to activate the OXtender for MS Outlook plug-ins, some preconditions have to be met:

10.5.1. Password change plug-in

--access-edit-password <on/off> has to be activated for the respective users
the open-xchange-passwordchange-servlet package has to be installed
an open-xchange-passwordchange backend sutitable for the installation, has to be installed

10.5.2. Personal data plug-in

ENABLE_INTERNAL_USER_EDIT=TRUE has to be configured in foldercache.properties

10.5.3. Mail filter plug-in

The open-xchange-mailfilter package has to be installed

10.5.4. Vacation notice plug-in

com.openexchange.mail.filter and the mailfilter configuration must contain the **vacation** command
The open-xchange-mailfilter package has to be installed

Chapter 11. Logging and Exception Handling

All error messages generated by the application come with an unique exception ID. The exception ID is written to log files with additional information. It is also shown to the customer in the front-end.

Per default, the Open-Xchange Server processes write all log messages into the files:

Groupware process:

/var/log/open-xchange/open-xchange.log*

/var/log/open-xchange/open-xchange-console.log

Admin process:

/var/log/open-xchange/open-xchange-admin.log*

/var/log/open-xchange/open-xchange-admin-console.log

All messages written on std out are redirected to the "*-console.log" files. This, for example, means errors from the java virtual machine. The other files contain messages directly from the application.

The log level as well as file names and file sizes can be tuned in the configuration file file-logging.properties under the admin and groupware configuration directories.

Possible log levels are:

* SEVERE (highest value)
* WARNING
* INFO (for production)
* CONFIG
* FINE
* FINER
* FINEST (lowest value)

For clustered setups Open-Xchanges recommends to log to a dedicated log host via syslog. For this the log4j bundles, as described in the section called "Plug-ins for the Groupware/Application Server", need to be installed. Then, per default the groupware directly logs to syslog with facility local2 and the admin with facility local5. The syslogd must run with the additional switch "-r" so that remote messages are accepted (on debian to be configured in /etc/default/syslogd). The log4j configuration file log4j.xml is located under the admin and groupware configuration directories. Log level, facility, messages and SyslogHost can be set there.

Possible log4j log levels are:

* DEBUG (lowest value)
* INFO (for production)
* WARN
* ERROR
* FATAL (highest value)

Enhanced error handling in open-
xchange-passwordchange-script
Logging and Exception Handling

The following lines in the log4j.xml file should not be changed:

```
<logger name="com.openexchange.login.internal.LoginPerformer">
 <level value="INFO"/>
</logger>
<logger name="com.openexchange.sessiond.impl.SessionHandler">
 <level value="INFO"/>
</logger>
```

11.1. Enhanced error handling in open-xchange-passwordchange-script

Since there might be many reasons for passwordchange failure, there should be a possibility to pass error codes from the script to user in a readable way. The following error codes can now optionally be submitted by an underlying script:

generic cannot change pasword <error code>
password too short
password too weak
user not found
ldap error
This is a compatible change, existing setups must not be changed. This code has been contributed by Sameul Kvasnica.

Chapter 12. Error codes

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
		1	USER_INPUT	1	Bad value %1$s in parameter %2$s	TODO	com.openexchange.ajax.helper.ParamContainerException
		1	USER_INPUT	1	Object not found. %s	TODO	com.openexchange.api.OXObjectNotFoundException
		1	USER_INPUT	1	Unable to convert task status %1$s.	TODO	com.openexchange.data.conversion.ical.ConversionWarning
		1	USER_INPUT	2	Unable to convert task priority %d.	TODO	com.openexchange.data.conversion.ical.ConversionWarning
		1	USER_INPUT	5	Request rejected because its size (%1$s) exceeds the maximum configured size of %2$s	TODO	com.openexchange.groupware.upload.impl.UploadException
		1	USER_INPUT	8	An uploaded file referenced by %1$s could not be found	TODO	com.openexchange.groupware.upload.impl.UploadException
		1	USER_INPUT	9	Parsing error parsing ical: %s	TODO	com.openexchange.data.conversion.ical.ConversionWarning
		1	USER_INPUT	10	Unknown Class: %1$s	TODO	com.openexchange.data.conversion.ical.ConversionWarning
		1	USER_INPUT	11	Cowardly refusing to convert confidential classified objects.	TODO	com.openexchange.data.conversion.ical.ConversionWarning
		1	USER_INPUT	12	Missing DTSTART	TODO	com.openexchange.data.conversion.ical.ConversionWarning
		1	USER_INPUT	14	Private Appointments can not have attendees. Removing attendees and accepting appointment anyway.	TODO	com.openexchange.data.conversion.ical.ConversionWarning
		1	USER_INPUT	15	Not supported recurrence pattern: BYMONTH	TODO	com.openexchange.data.conversion.ical.ConversionWarning
		1	USER_INPUT	1008	Invalid email address %1$s	TODO	com.openexchange.mail.mime.MIMEMailException

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
		1	USER_INPUT	1009	Wrong message header: %1$s	TODO	com.openexchange.mail.mime.MIMEMailException
		1	USER_INPUT	1013	Message could not be sent to the following recipients: %1$s	TODO	com.openexchange.mail.mime.MIMEMailException
		3	PERMISSION	1000	There was an issue in authenticating your E-Mail password. This may be because of a recent password change. To continue please logout now and then log back in with your most current password. (server=%1$s \| user=%2$s)	TODO	com.openexchange.mail.mime.MIMEMailException
		3	PERMISSION	1001	Wrong or missing login data to access server %1$s.	TODO	com.openexchange.mail.mime.MIMEMailException
		3	PERMISSION	1010	An attempt was made to open a read-only folder with read-write: %1$s	TODO	com.openexchange.mail.mime.MIMEMailException
		4	TRY_AGAIN	1017	Connection was reset. Please try again.	TODO	com.openexchange.mail.mime.MIMEMailException
		5	SUBSYSTEM_OR_SERVICE_DOWN	5	Cannot get database connection.	TODO	com.openexchange.groupware.ldap.LdapException
		5	SUBSYSTEM_OR_SERVICE_DOWN	1016	Connection was refused or timed out while attempting to connect to remote server %1$s for user %2$s	TODO	com.openexchange.mail.mime.MIMEMailException
		5	SUBSYSTEM_OR_SERVICE_DOWN	1018	No route to host: server (%1$s) cannot be reached	TODO	com.openexchange.mail.mime.MIMEMailException
		5	SUBSYSTEM_OR_SERVICE_DOWN	1019	Port %1$s was unreachable on remote server	TODO	com.openexchange.mail.mime.MIMEMailException
		5	SUBSYSTEM_OR_SERVICE_DOWN	1020	Connection is broken due to a socket exception on remote server: %1$s	TODO	com.openexchange.mail.mime.MIMEMailException

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
		5	SUBSYSTEM_OR_SER-VICE_DOWN	1022	The IP address of host %1$s could not be determined	TODO	com.openexchange.mail.mime.MIMEMailException
%4$s	TODO	6 com.openexchange.ajp13.exception.AJPv13Exception	SOCKET_CONNECTION	2			
		6	SOCKET_CONNECTION	3	Socket closed by web server. Wait for input data of package #%1$d took %2$dmsec.	TODO	com.openexchange.ajp13.exception.AJPv13Exception
		6	SOCKET_CONNECTION	4	No data provided from web server: input stream returned -1 while reading AJP magic bytes in package #%1$d. Wait for input data took %2$dmsec.	TODO	com.openexchange.ajp13.exception.AJPv13Exception
		6	SOCKET_CONNECTION	6	Problem writing to stream.	TODO	com.openexchange.data.conversion.ical.ConversionWarning
		6	SOCKET_CONNECTION	7	Unknown Request Prefix Code: %1$s	TODO	com.openexchange.ajp13.exception.AJPv13Exception
		6	SOCKET_CONNECTION	8	Missing payload data in client's body chunk package	TODO	com.openexchange.ajp13.exception.AJPv13Exception
		6	SOCKET_CONNECTION	12	Unparseable header field %1$s in forward request package	TODO	com.openexchange.ajp13.exception.AJPv13Exception
		6	SOCKET_CONNECTION	13	String parse exception: No ending 0x00 found	TODO	com.openexchange.ajp13.exception.AJPv13Exception
		6	SOCKET_CONNECTION	16	An I/O error occurred: %1$s	TODO	com.openexchange.ajp13.exception.AJPv13Exception
		6	SOCKET_CONNECTION	19	Cookie JSESSIONID contains non-matching JVM route: %1$s not equal to %2$s	TODO	com.openexchange.ajp13.exception.AJPv13Exception
%3$s	TODO	6 com.openexchange.ajp13.exception.AJPv13Exception	SOCKET_CONNECTION	20			

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
		6	SOCKET_CONNECTION	21	AJP server socket could not be bound to port %1$d. Probably another process is already listening on this port.	TODO	com.openexchange.ajp13.exception.AJPv13Exception
		7	INTERNAL_ERROR	1		TODO	com.openexchange.ajp13.exception.AJPv13Exception
		7	INTERNAL_ERROR	1	File upload failed: %1$s	TODO	com.openexchange.groupware.upload.impl.UploadException
		7	INTERNAL_ERROR	4	Cache %s could not be initialized due to following error: %s	TODO	com.openexchange.cache.OXCachingException
		7	INTERNAL_ERROR	1012	Message could not be sent because it is too large	TODO	com.openexchange.mail.mime.MIMEMailException
		8	CODE_ERROR	1	Put into cache failed.	TODO	com.openexchange.cache.OXCachingException
		8	CODE_ERROR	1	Sessiond Exception	TODO	com.openexchange.sessiond.exception.SessiondException
		8	CODE_ERROR	1	An SQL error occurred: %1$s	TODO	com.openexchange.tools.iterator.SearchIteratorException
		8	CODE_ERROR	1	Push UDP Exception	TODO	com.openexchange.push.udp.PushUDPException
		8	CODE_ERROR	2	The default element attributes could not be retrieved	TODO	com.openexchange.cache.OXCachingException
		8	CODE_ERROR	2	Max Session size reached	TODO	com.openexchange.sessiond.exception.SessiondException
		8	CODE_ERROR	2	Missing parameter %1$s	TODO	com.openexchange.ajax.helper.ParamContainerException
		8	CODE_ERROR	2	Cannot build distinguished name from %s.	TODO	com.openexchange.groupware.ldap.LdapException
		8	CODE_ERROR	2		TODO	com.openexchange.groupware.settings.SettingException
		8	CODE_ERROR	2	Missing affiliation id	TODO	com.openexchange.groupware.upload.impl.UploadException

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
		8	CODE_ERROR	2	A DBPool error occurred: 1$%s	TODO	com.openexchange.tools.iterator.SearchIteratorException
		8	CODE_ERROR	3	Remove on cache failed	TODO	com.openexchange.cache.OXCachingException
		8	CODE_ERROR	3	Sessiond Config Exception	TODO	com.openexchange.sessiond.exception.SessiondException
		8	CODE_ERROR	3	Can not create recurrence rule: %s	TODO	com.openexchange.data.conversion.ical.ConversionWarning
		8	CODE_ERROR	3	Unknown action value: %1$s	TODO	com.openexchange.groupware.upload.impl.UploadException
		8	CODE_ERROR	3	Operation not allowed on a closed SearchIterator	TODO	com.openexchange.tools.iterator.SearchIteratorException
		8	CODE_ERROR	4	Invalid session given to implementation %1$s.	TODO	com.openexchange.data.conversion.ical.ConversionWarning
		8	CODE_ERROR	4	Header content-type does not indicate multipart content	TODO	com.openexchange.groupware.upload.impl.UploadException
		8	CODE_ERROR	4	Mapping for %1$d not implemented	TODO	com.openexchange.tools.iterator.SearchIteratorException
		8	CODE_ERROR	5	Unknown event topic %s	TODO	com.openexchange.sessiond.exception.SessiondException
		8	CODE_ERROR	5	AJP connection is not set to status ASSIGNED	TODO	com.openexchange.ajp13.exception.AJPv13Exception
		8	CODE_ERROR	5	Can not generate uid.	TODO	com.openexchange.data.conversion.ical.ConversionWarning
		8	CODE_ERROR	5	FreeBusyResults calculation problem with oid: %1$d	TODO	com.openexchange.tools.iterator.SearchIteratorException
		8	CODE_ERROR	6	Password could not be changed	TODO	com.openexchange.sessiond.exception.SessiondException
		8	CODE_ERROR	6	Response package exceeds max package size value of 8192k: %1$s	TODO	com.openexchange.ajp13.exception.AJPv13Exception
		8	CODE_ERROR	6	SQL Problem: %s	TODO	com.openexchange.groupware.ldap.LdapException

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
		8	CODE_ERROR	6	Missing parameter %1$s	TODO	com.openexchange.groupware.upload.impl.UploadException
		8	CODE_ERROR	6	Invalid constructor argument. Instance of %1$s not supported	TODO	com.openexchange.tools.iterator.SearchIteratorException
		8	CODE_ERROR	7	Max. session size for user %1$s in context %2$s exceeded	TODO	com.openexchange.sessiond.exception.SessiondException
		8	CODE_ERROR	7	Validation of calendar failed.	TODO	com.openexchange.data.conversion.ical.ConversionWarning
		8	CODE_ERROR	7	Problem putting/removing an object into/from the cache.	TODO	com.openexchange.groupware.ldap.LdapException
		8	CODE_ERROR	7	Unknown module: %1$d	TODO	com.openexchange.groupware.upload.impl.UploadException
		8	CODE_ERROR	7	No such element.	TODO	com.openexchange.tools.iterator.SearchIteratorException
		8	CODE_ERROR	8	Can not resolve user: %d	TODO	com.openexchange.data.conversion.ical.ConversionWarning
		8	CODE_ERROR	8	Hash algorithm %s isn't found.	TODO	com.openexchange.groupware.ldap.LdapException
		8	CODE_ERROR	9	Empty SEND_BODY_CHUNK package MUST NOT be sent	TODO	com.openexchange.ajp13.exception.AJPv13Exception
		8	CODE_ERROR	9	Encoding %s cannot be used.	TODO	com.openexchange.groupware.ldap.LdapException
		8	CODE_ERROR	9	Invalid action value: %1$s	TODO	com.openexchange.groupware.upload.impl.UploadException
		8	CODE_ERROR	10	Integer value exceeds max allowed value (65535): %1$d	TODO	com.openexchange.ajp13.exception.AJPv13Exception
		8	CODE_ERROR	10	Cannot find resource group with identifier %d.	TODO	com.openexchange.groupware.ldap.LdapException
		8	CODE_ERROR	10	Upload file with id %1$s could not be found	TODO	com.openexchange.groupware.upload.impl.UploadException
		8	CODE_ERROR	11	Invalid content-type header value: %1$s	TODO	com.openexchange.ajp13.exception.AJPv13Exception

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
		8	CODE_ERROR	11	Found resource groups with same identifier %d.	TODO	com.openexchange.groupware.ldap.LdapException
		8	CODE_ERROR	11	Upload file's content type %1$s does not fit to given file filter %2$s	TODO	com.openexchange.groupware.upload.impl.Upload-Exception
		8	CODE_ERROR	12	Cannot find resource with identifier %d.	TODO	com.openexchange.groupware.ldap.LdapException
		8	CODE_ERROR	13	Can not resolve resource: %1$s	TODO	com.openexchange.data.conversion.ical.Conversion-Warning
		8	CODE_ERROR	13	Found resources with same identifier %d.	TODO	com.openexchange.groupware.ldap.LdapException
		8	CODE_ERROR	14	Unsupported encoding: %1$s	TODO	com.openexchange.ajp13.exception.AJPv13Exception
		8	CODE_ERROR	14	Cannot find user with email %s.	TODO	com.openexchange.groupware.ldap.LdapException
		8	CODE_ERROR	15	No attribute name could be found for code: %1$d	TODO	com.openexchange.ajp13.exception.AJPv13Exception
		8	CODE_ERROR	15	Cannot find user with identifier %1$s in context %2$d.	TODO	com.openexchange.groupware.ldap.LdapException
		8	CODE_ERROR	16	Found two user with same identifier %1$s in context %2$d.	TODO	com.openexchange.groupware.ldap.LdapException
		8	CODE_ERROR	17	A messaging error occurred: %1$s	TODO	com.openexchange.ajp13.exception.AJPv13Exception
		8	CODE_ERROR	17	Cannot find group with identifier %1$s in context %2$d.	TODO	com.openexchange.groupware.ldap.LdapException
		8	CODE_ERROR	22	File %1$s could not be found.	TODO	com.openexchange.ajp13.exception.AJPv13Exception
		8	CODE_ERROR	23	Invalid cookie header value: %1$s	TODO	com.openexchange.ajp13.exception.AJPv13Exception
		8	CODE_ERROR	1002	Mail folder could not be found: %1$s	TODO	com.openexchange.mail.mime.MIMEMailException
		8	CODE_ERROR	1003	Folder is closed: %1$s	TODO	com.openexchange.mail.mime.MIMEMailException

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
		8	CODE_ERROR	1004	Illegal write attempt: %1$s	TODO	com.openexchange.mail.mime.MIMEMailException
		8	CODE_ERROR	1005	Invalid method on an expunged message: %1$s	TODO	com.openexchange.mail.mime.MIMEMailException
		8	CODE_ERROR	1006	Method not supported: %1$s	TODO	com.openexchange.mail.mime.MIMEMailException
		8	CODE_ERROR	1007	Session attempts to instantiate a provider that doesn't exist: %1$s	TODO	com.openexchange.mail.mime.MIMEMailException
		8	CODE_ERROR	1011	Invalid search expression: %1$s	TODO	com.openexchange.mail.mime.MIMEMailException
		8	CODE_ERROR	1014	Store already closed: %1$s	TODO	com.openexchange.mail.mime.MIMEMailException
		8	CODE_ERROR	1021	A socket error occurred: %1$s	TODO	com.openexchange.mail.mime.MIMEMailException
		8	CODE_ERROR	1023	Messaging error: %1$s	TODO	com.openexchange.mail.mime.MIMEMailException
		9	CONCURRENT_MODIFICA-TION	1	The object has been changed in the meantime.	TODO	com.openexchange.api2.OXConcurrentModifica-tionException
		10	SETUP_ERROR	1	Cannot find property %s.	TODO	com.openexchange.groupware.ldap.LdapException
		10	SETUP_ERROR	3	Class %s can not be loaded.	TODO	com.openexchange.groupware.ldap.LdapException
		10	SETUP_ERROR	4	Missing property '%s'	TODO	com.openexchange.sessiond.exception.SessiondEx-ception
		10	SETUP_ERROR	4	Cannot instantiate class %s.	TODO	com.openexchange.groupware.ldap.LdapException
		10	SETUP_ERROR	18	Missing property AJP_JVM_ROUTE in file ajp.properties	TODO	com.openexchange.ajp13.exception.AJPv13Excep-tion
		10	SETUP_ERROR	1015	Could not bind connection to local port %1$s	TODO	com.openexchange.mail.mime.MIMEMailException
		11	EXTERNAL_RE-SOURCE_FULL	1024	Mail server's quota is exceeded	TODO	com.openexchange.mail.mime.MIMEMailException
ACL	ACL_ERROR	5	SUBSYSTEM_OR_SER-VICE_DOWN	2	An I/O error occurred while creating the socket connection to IMAP server (%1$s): %2$s	TODO	com.openexchange.imap.entity2acl.Entity2ACLEx-ception
ACL	ACL_ERROR	5	SUBSYSTEM_OR_SER-VICE_DOWN	4	An I/O error occurred: %1$s	TODO	com.openexchange.imap.entity2acl.Entity2ACLEx-ception

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
ACL	ACL_ERROR	8	CODE_ERROR	1	Implementing class could not be found	TODO	com.openexchange.imap.entity2acl.Entity2ACLException
ACL	ACL_ERROR	8	CODE_ERROR	3	Instantiating the class failed.	TODO	com.openexchange.imap.entity2acl.Entity2ACLException
ACL	ACL_ERROR	8	CODE_ERROR	6	Unknown IMAP server: %1$s	TODO	com.openexchange.imap.entity2acl.Entity2ACLException
ACL	ACL_ERROR	8	CODE_ERROR	7	Missing IMAP server arguments to resolve IMAP login to a user	TODO	com.openexchange.imap.entity2acl.Entity2ACLException
ACL	ACL_ERROR	8	CODE_ERROR	8	IMAP login %1$s could not be resolved to a user	TODO	com.openexchange.imap.entity2acl.Entity2ACLException
ACL	ACL_ERROR	10	SETUP_ERROR	5	Missing property %1$s in imap.properties.	TODO	com.openexchange.imap.entity2acl.Entity2ACLException
APP	APPOINTMENT	1	USER_INPUT	8	Mandatory field mail address for external participants	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	1	USER_INPUT	10	Folder type SHARED is not allowed in this situation.	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	1	USER_INPUT	20	End date is before start date	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	1	USER_INPUT	21	ERROR: Unsupported label value %d	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	1	USER_INPUT	22	ERROR: Private flag is only allowed inside of a private folder.	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	1	USER_INPUT	23	ERROR: Private flag and participants are not supported.	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	1	USER_INPUT	24	ERROR: Unsupported private flag value %d	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	1	USER_INPUT	25	ERROR:: Unsupported shown as value %d	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	1	USER_INPUT	26	Required value Start Date was not supplied.	TODO	com.openexchange.groupware.calendar.OXCalendarException

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
APP	APPOINTMENT	1	USER_INPUT	27	Required value End Date was not supplied.	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	1	USER_INPUT	28	Required value Title was not supplied.	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	1	USER_INPUT	29	Unable to create exception, recurring position can not be calculated !	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	1	USER_INPUT	31	Error: Got an UserParticipant object with a private folder id < 1 : Identifier = %d	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	1	USER_INPUT	32	Error: Got an UserParticipant object with a private folder id in a public folder : Identifier = %d	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	1	USER_INPUT	40	Fatal error. (DAILY) Missing or wrong Interval value: %d	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	1	USER_INPUT	41	Fatal error. (WEEKLY) Missing or wrong Interval value: %d	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	1	USER_INPUT	42	Fatal error. (MONTHLY) Missing or wrong value DayInMonth : %d	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	1	USER_INPUT	43	Fatal error. (MONTHLY) Missing or wrong value Month : %d	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	1	USER_INPUT	44	Fatal error. (MONTHLY2) Missing or wrong Day value: %d	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	1	USER_INPUT	45	Fatal error. (MONTHLY2) Missing or wrong DayInMonth value: %d	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	1	USER_INPUT	46	Fatal error. (YEARLY) Missing or wrong value DayInMonth : %d	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	1	USER_INPUT	47	Fatal error. (YEARLY2) Missing or wrong value day : %d	TODO	com.openexchange.groupware.calendar.OXCalendarException

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
APP	APPOINTMENT	1	USER_INPUT	48	Fatal error. (YEARLY2) Missing or wrong day_or_type : %d	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	1	USER_INPUT	49	Fatal error. (YEARLY2) Missing or wrong Interval value: %d	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	1	USER_INPUT	51	Unable to remove participant because this participant is the last one	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	1	USER_INPUT	54	Folder is not of type Calendar	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	1	USER_INPUT	55	The required value interval is missing or wrong	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	1	USER_INPUT	56	The required value days is missing or wrong	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	1	USER_INPUT	57	Moving appointment to a public folder flaged as private is not allowed!	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	1	USER_INPUT	64	Fatal error. (YEARLY) Missing or wrong Month value: %d	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	1	USER_INPUT	65	Fatal error. You are trying to create a new recurring from an exception!	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	1	USER_INPUT	66	You can not move one element of a recurring appointment into another folder.	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	1	USER_INPUT	68	Move not allowed to a shared folders if the private flag is set	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	1	USER_INPUT	69	You can not use different private flags for one element of a recurring appointment	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	1	USER_INPUT	70	You can not use the private flags in a non private folder	TODO	com.openexchange.groupware.calendar.OXCalendarException

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
APP	APPOINTMENT	1	USER_INPUT	71	Bad character in field %1$s. Error: %2$s	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	1	USER_INPUT	74	Recurrence position %1$s does not exist	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	1	USER_INPUT	75	One or more exception dates are not contained in recurring appointment	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	1	USER_INPUT	78	Value %1$d exceeds max. supported value of %2$d.	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	1	USER_INPUT	82	Changing recurrence type of a change exception denied	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	1	USER_INPUT	83	Changing recurrence position of a change exception denied.	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	1	USER_INPUT	86	Until is before start date	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	1	USER_INPUT	87	Incomplete recurring informations: Missing interval.	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	1	USER_INPUT	88	Incomplete recurring informations: Missing until date or number of occurrences.	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	1	USER_INPUT	89	Incomplete recurring informations: Missing weekday.	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	1	USER_INPUT	90	Incomplete recurring informations: Missing day in month.	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	1	USER_INPUT	91	Incomplete recurring informations: Missing month.	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	1	USER_INPUT	92	Incomplete recurring informations: Missing recurrence type.	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	3	PERMISSION	13	You do not have the necessary permissions	TODO	com.openexchange.groupware.calendar.OXCalendarException

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
APP	APPOINTMENT	3	PERMISSION	36	Insufficient rights to attach/de-tach an attachment to this folder!	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	3	PERMISSION	37	Insufficient read rights for this folder!	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	3	PERMISSION	58	You do not have the appropriate permissions to modify this object.	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	3	PERMISSION	59	Got the wrong folder identification. You do not have the appropriate permissions to modify this object.	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	3	PERMISSION	60	Got the wrong shared folder identification. You do not have the appropriate permissions to modify this object.	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	3	PERMISSION	61	You do not have the appropriate permissions to move this object.	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	3	PERMISSION	62	You do not have the appropriate permissions to read this object	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	3	PERMISSION	63	You do not have the appropriate permissions to create an object	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	3	PERMISSION	76	Appointment's owner must not be removed from participants	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	5	SUBSYSTEM_OR_SERVICE_DOWN	5	Unexpected SQL Error!	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	7	INTERNAL_ERROR	7	Unexpected exception %d!	TODO	com.openexchange.groupware.calendar.OXCalendarException

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
APP	APPOINTMENT	7	INTERNAL_ERROR	11	Unexpected state for deleting a virtual appointment (exception). uid:oid:position %d:%d:%d	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	7	INTERNAL_ERROR	30	Error: Got an UserParticipant object with an identifier < 1 Identifier:Folder_Type = %d:%d	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	7	INTERNAL_ERROR	38	FATAL:: Can not resolve recurrence position because we got neither the recurring position nor a recurring date position	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	7	INTERNAL_ERROR	67	Fatal error. An database update exception occurred.	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	7	INTERNAL_ERROR	80	The recurrence pattern is too complex. Giving up.	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	7	INTERNAL_ERROR	85	Some callbacks threw exceptions: %s	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	8	CODE_ERROR	1	FATAL: CalendarFolderObject not initialized!	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	8	CODE_ERROR	2	Not yet supported!	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	8	CODE_ERROR	3	Shared folder owner not given !	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	8	CODE_ERROR	4	Folder type unresolvable !	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	8	CODE_ERROR	6	clientLastModified IS NULL. Abort action!	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	8	CODE_ERROR	9	FATAL: Would create an object without participants	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	8	CODE_ERROR	12	SessionObject not initialized	TODO	com.openexchange.groupware.calendar.OXCalendarException

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
APP	APPOINTMENT	8	CODE_ERROR	14	Insert expected but the object id is already given. Aborting action...	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	8	CODE_ERROR	15	Update expected but no object id is given. Aborting action...	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	8	CODE_ERROR	16	Invalid request. Folder is shared!	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	8	CODE_ERROR	17	Invalid request. Folder is shared!	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	8	CODE_ERROR	18	Invalid request. Folder is shared!	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	8	CODE_ERROR	19	Unsupported type detected : %d	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	8	CODE_ERROR	33	Move not supported: Source:Destination %d:%d	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	8	CODE_ERROR	34	Move not allowed from shared folders	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	8	CODE_ERROR	35	Calendar operation: Context not set.	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	8	CODE_ERROR	39	Missing start date, unable to calculate recurring!	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	8	CODE_ERROR	50	Unable to remove participant %d	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	8	CODE_ERROR	52	Action type not supported : %d	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	8	CODE_ERROR	53	SearchIterator NULL	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	8	CODE_ERROR	73	Calendar calculation requires a proper defined time zone.	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	8	CODE_ERROR	77	An event error occurred: %1$s	TODO	com.openexchange.groupware.calendar.OXCalendarException

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
APP	APPOINTMENT	8	CODE_ERROR	79	Unable to calculate first occurrence.	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	8	CODE_ERROR	81	Unknown name-value-pair in recurrence string: %1$s=%2$s	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	8	CODE_ERROR	84	User changing the appointment is missing.	TODO	com.openexchange.groupware.calendar.OXCalendarException
APP	APPOINTMENT	12	TRUNCATED	72	Some data exceeds a field limit. Please shorten the input(s) for affected field(s).	TODO	com.openexchange.groupware.calendar.OXCalendarException
ATT	ATTACHMENT	1	USER_INPUT	401	Attachments must contain a file.	An Attachment must contain a file, otherwise it's invalid.	
ATT	ATTACHMENT	1	USER_INPUT	405	The attachment you requested no longer exists. Please refresh the view.	An attachment with the given ID does not exist, so it cannot be downloaded.	
ATT	ATTACHMENT	1	USER_INPUT	413	The attachment you requested no longer exists. Please refresh the view.	The Attachment does not exist (anymore). Reloading the view will propably help.	
ATT	ATTACHMENT	1	USER_INPUT	418	Validation failed: %s		
ATT	ATTACHMENT	5	SUBSYSTEM_OR_SERVICE_DOWN	400	Could not save file to the file store.	The file could not be saved in the file store. This probably means that the file store is not reachable.	

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
ATT	ATTACHMENT	5	SUBSYSTEM_OR_SER-VICE_DOWN	404	Could not retrieve file: %s	A file could not be loaded from the file store. This means either that the file does not exist (and your database is inconsistent), or that the file store is not reachable.	
ATT	ATTACHMENT	5	SUBSYSTEM_OR_SER-VICE_DOWN	415	Could not delete file from file store. Filestore: %s Context: %s	A file could not be removed from the file store. This can lead to inconsistencies if the change could not be undone. Keep your eyes peeled for messages indicating an inconsistency between DB and file store.	
ATT	ATTACHMENT	7	INTERNAL_ERROR	407	Could not delete attachment.	An error occurred while retrieving the attachments that should be deleted.	
ATT	ATTACHMENT	7	INTERNAL_ERROR	408	Could not find an attachment with the file_id %s. Either the file is orphaned or belongs to another module.	Didn't find an attachment with the given file_id, so the file is	

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
						propably or-phaned or does not belong to the Attachments.	
ATT	ATTACHMENT	7	INTERNAL_ERROR	416	Could not delete files from filestore. Context: %d.	Could not delete files from file-store. Context: %d.	
ATT	ATTACHMENT	7	INTERNAL_ERROR	600	Changes done to the object this attachment was added to could not be undone. Your database is probably inconsistent, run the consistency tool.	Changes done to the object this attachment was added to could not be undone. Your database is probably inconsis-tent, run the consistency tool.	
ATT	ATTACHMENT	7	INTERNAL_ERROR	600	Changes were made to the ob-ject of this attachment and cannot be undone. Your database is probably inconsis-tent, run the consistency tool.	Changes done to the object this attachment was added to could not be undone. Your database is probably inconsis-tent, run the consistency tool.	
ATT	ATTACHMENT	7	INTERNAL_ERROR	601	An error occurred attaching to the given object.	An error oc-curred attaching to the given ob-ject.	
ATT	ATTACHMENT	7	INTERNAL_ERROR	601	An error occurred attaching to the given object.	An error oc-curred attaching	

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
						to the given object.	
ATT	ATTACHMENT	7	INTERNAL_ERROR	602	The Object could not be detached because the update to an underlying object failed.	The Object could not be detached because the update to an underlying object failed.	
ATT	ATTACHMENT	7	INTERNAL_ERROR	602	The object could not be detached because the update to an underlying object failed.	The object could not be detached because the update to an underlying object failed.	
ATT	ATTACHMENT	8	CODE_ERROR	100	Invalid SQL Query: %s	An invalid SQL Query was sent to the Server. This can only be fixed in R&D.	
ATT	ATTACHMENT	8	CODE_ERROR	101	Invalid SQL Query: %s	An invalid SQL Query was sent to the Server. This can only be fixed in R&D.	
ATT	ATTACHMENT	8	CODE_ERROR	200	Invalid SQL query: %s	An invalid SQL query was sent to the Server. This can only be fixed in R&D.	
ATT	ATTACHMENT	8	CODE_ERROR	201	Invalid SQL query: %s	An invalid SQL query was sent to the Server. This	

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
						can only be fixed in R&D.	
ATT	ATTACHMENT	8	CODE_ERROR	300	Invalid SQL Query: %s	An invalid SQL Query was sent to the Server. This can only be fixed in R&D.	
ATT	ATTACHMENT	8	CODE_ERROR	301	Invalid SQL Query: %s	An invalid SQL Query was sent to the Server. This can only be fixed in R&D.	
ATT	ATTACHMENT	8	CODE_ERROR	402	Cannot generate ID for new attachment: %s	An SQL Error occurred while trying to generate an id for the new attachment.	
ATT	ATTACHMENT	8	CODE_ERROR	403	Invalid SQL query: %s	An invalid SQL query was sent to the server	
ATT	ATTACHMENT	8	CODE_ERROR	406	Invalid SQL query: %s	An invalid SQL query was sent to the database.	
ATT	ATTACHMENT	8	CODE_ERROR	409	Invalid SQL query: %s	An invalid SQL query was sent to the database.	
ATT	ATTACHMENT	8	CODE_ERROR	410	Invalid SQL query: %s	An invalid SQL query was sent to the database	
ATT	ATTACHMENT	8	CODE_ERROR	411	Invalid SQL query: %s	An invalid SQL query was sent to the database.	

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
ATT	ATTACHMENT	8	CODE_ERROR	412	Invalid SQL query: %s	An invalid SQL query was sent to the database.	
ATT	ATTACHMENT	8	CODE_ERROR	414	Invalid SQL query: %s	An invalid SQL query was snet to the database.	
ATT	ATTACHMENT	8	CODE_ERROR	417	Could not remove attachments from database. Context: %d.	Could not remove attachments from database. Context: %d.	
ATT	ATTACHMENT	8	CODE_ERROR	701	Invalid parameter sent in request. Parameter '%s' was '%s' which does not look like a number		
ATT	ATTACHMENT	8	CODE_ERROR	801	Invalid parameter sent in request. Parameter '%s' was '%s' which does not look like a number		
CAC	CACHE	8	CODE_ERROR	1	A cache error occurred: %1$s	TODO	com.openexchange.caching.CacheException
CAC	CACHE	8	CODE_ERROR	3	An I/O error occurred: %1$s	TODO	com.openexchange.caching.CacheException
CAC	CACHE	8	CODE_ERROR	5	The default element attributes could not be retrieved	TODO	com.openexchange.caching.CacheException
CAC	CACHE	8	CODE_ERROR	5	The default element attributes could not be assigned	TODO	com.openexchange.caching.CacheException
CAC	CACHE	8	CODE_ERROR	6	Put into cache failed.	TODO	com.openexchange.caching.CacheException
CAC	CACHE	8	CODE_ERROR	7	Safe put into cache failed. An object bound to given key already exists.	TODO	com.openexchange.caching.CacheException
CAC	CACHE	8	CODE_ERROR	8	Remove on cache failed	TODO	com.openexchange.caching.CacheException
CAC	CACHE	10	SETUP_ERROR	2	Missing cache config file at location: %1$s	TODO	com.openexchange.caching.CacheException

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
CAC	CACHE	10	SETUP_ERROR	4	Missing configuration property: %1$s	TODO	com.openexchange.caching.CacheException
CFG	CONFIGURATION	8	CODE_ERROR	8	Property %1$s is not an integer	TODO	com.openexchange.configuration.ConfigurationException
CFG	CONFIGURATION	8	CODE_ERROR	9	An I/O error occurred: %1$s	TODO	com.openexchange.configuration.ConfigurationException
CFG	CONFIGURATION	10	SETUP_ERROR	1	Filename for property file is not defined.	TODO	com.openexchange.configuration.ConfigurationException
CFG	CONFIGURATION	10	SETUP_ERROR	2	File %1$s does not exist.	TODO	com.openexchange.configuration.ConfigurationException
CFG	CONFIGURATION	10	SETUP_ERROR	3	File %1$s is not readable.	TODO	com.openexchange.configuration.ConfigurationException
CFG	CONFIGURATION	10	SETUP_ERROR	4	Cannot read file %1$s.	TODO	com.openexchange.configuration.ConfigurationException
CFG	CONFIGURATION	10	SETUP_ERROR	5	Property %1$s is not defined.	TODO	com.openexchange.configuration.ConfigurationException
CFG	CONFIGURATION	10	SETUP_ERROR	6	Cannot load class %1$s.	TODO	com.openexchange.configuration.ConfigurationException
CFG	CONFIGURATION	10	SETUP_ERROR	7	Invalid configuration: %1$s	TODO	com.openexchange.configuration.ConfigurationException
CSTY	CONSISTENCY	7	INTERNAL_ERROR	201	Could not register Consistency MBean. Internal Error: %s		
CSTY	CONSISTENCY	7	INTERNAL_ERROR	202	Could not unregister Consistency MBean. Internal Error: %s		
CSTY	CONSISTENCY	7	INTERNAL_ERROR	301	Error communicating with mbean in server: %s		
CON	CONTACT	1	USER_INPUT	100	The application was unable to validate a given email address from this contact: %s	0	
CON	CONTACT	1	USER_INPUT	101	Unable to scale this contact image. Either the file type is not supported or the image is too	1	

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
					large. Your mime type is %1$s and your image size is %2$d. The max. allowed image size is %3$d.		
CON	CONTACT	1	USER_INPUT	102	This gif image is too large. It can not be scaled and will not be accepted	2	
CON	CONTACT	1	USER_INPUT	122	No changes found. No update requiered. Context %1$d Object %2$d	22	
CON	CONTACT	1	USER_INPUT	136	Unable to save contact image. The image appears to be broken.	36	
CON	CONTACT	1	USER_INPUT	138	Unable to update contact image. The image appears to be broken.	38	
CON	CONTACT	1	USER_INPUT	156	One or more fields contain too much information. Field: %1$d Character Limit: %2$d Sent %3$d	56	
CON	CONTACT	1	USER_INPUT	168	Bad character in field %2$s. Error: %1$s	68	
CON	CONTACT	1	USER_INPUT	170	Mime type is null	70	
CON	CONTACT	1	USER_INPUT	171	A contact with private flag cannot be stored in a public folder. Folder: %1$d context %2$d user %3$d	71	
CON	CONTACT	1	USER_INPUT	172	Image size too large. Image size: %1$d. Max. size: %2$d.	72	
CON	CONTACT	1	USER_INPUT	400	Number of documents attached to this contact is below zero.		

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
					You can not remove any more attachments.		
CON	CONTACT	3	PERMISSION	103	You are not allowed to store this contact in a non-contact folder: folder id %1$d in context %2$d with user %3$d	3	
CON	CONTACT	3	PERMISSION	104	You do not have permission to create objects in this folder %1$d in context %2$d with user %3$d	4	
CON	CONTACT	3	PERMISSION	105	You do not have permission to create objects in this folder %1$d in context %2$d with user %3$d	5	
CON	CONTACT	3	PERMISSION	110	You are not allowed to store this contact in a non-contact folder: folder id %1$d in context %2$d with user %3$d	10	
CON	CONTACT	3	PERMISSION	111	You do not have permission to create objects in this folder %1$d in context %2$d with user %3$d	11	
CON	CONTACT	3	PERMISSION	112	You do not have permission to create objects in this folder %1$d in context %2$d with user %3$d	12	
CON	CONTACT	3	PERMISSION	113	You are not allowed to store this contact in a non-contact folder: folder id %1$d in context %2$d with user %3$d	13	
CON	CONTACT	3	PERMISSION	114	You do not have permission to create objects in this folder	14	

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
					%1$d in context %2$d with user %3$d		
CON	CONTACT	3	PERMISSION	115	You do not have permission to create objects in this folder %1$d in context %2$d with user %3$d	15	
CON	CONTACT	3	PERMISSION	117	You do not have permission to create objects in this folder %1$d in context %2$d with user %3$d	17	
CON	CONTACT	3	PERMISSION	118	You are not allowed to mark this contact as private contact: Context %1$d Object %2$d	18	
CON	CONTACT	3	PERMISSION	119	Edit Conflict. Your change cannot be completed because somebody else has made a conflicting change to the same item. Please refresh or synchronize and try again.	19	
CON	CONTACT	3	PERMISSION	142	You do not have permission to delete objects from folder %1$d in context %2$d with user %3$d	42	
CON	CONTACT	3	PERMISSION	147	Unable to delete Contacts from this user. Context %1$d User %2$d	47	
CON	CONTACT	3	PERMISSION	152	Unable to delete contacts from user because this is a non-contact folder. Context %1$d Folder %2$d User %3$d	52	
CON	CONTACT	3	PERMISSION	157	Unable to trigger object Events: Context %1$d User %2$d	57	

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
CON	CONTACT	3	PERMISSION	165	Unable to move this contact because it is marked as private: Context %1$d Object %2$d	65	
CON	CONTACT	3	PERMISSION	169	You do not have permission to delete objects from folder %1$d in context %2$d with user %3$d	69	
CON	CONTACT	3	PERMISSION	173	Primary email address in system contact must not be edited: Context %1$d Object %2$d User %3$d	73	
CON	CONTACT	3	PERMISSION	174	The contact %1$d is not located in folder %2$s (%3$d)	74	
CON	CONTACT	3	PERMISSION	202	You are not allowed to store this contact in a non-contact folder: folder id %1$d in context %2$d with user %3$d	2	
CON	CONTACT	3	PERMISSION	204	You do not have permission to create objects in this folder %1$d in context %2$d with user %3$d	4	
CON	CONTACT	3	PERMISSION	205	You do not have permission to create objects in this folder %1$d in context %2$d with user %3$d	5	
CON	CONTACT	3	PERMISSION	209	You do not have permission to create objects in this folder %1$d in context %2$d with user %3$d	9	
CON	CONTACT	3	PERMISSION	210	You do not have permission to create objects in this folder %1$d in context %2$d with user %3$d	10	

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
CON	CONTACT	3	PERMISSION	215	You do not have permission to create objects in this folder %1$d in context %2$d with user %3$d	15	
CON	CONTACT	3	PERMISSION	216	You do not have permission to create objects in this folder %1$d in context %2$d with user %3$d	16	
CON	CONTACT	3	PERMISSION	222	You do not have permission to create objects in this folder %1$d in context %2$d with user %3$d	22	
CON	CONTACT	3	PERMISSION	223	You do not have permission to create objects in this folder %1$d in context %2$d with user %3$d	23	
CON	CONTACT	3	PERMISSION	228	You do not have permission to read objects in folder %1$d in context %2$d with user %3$d	28	
CON	CONTACT	3	PERMISSION	232	You do not have permission to create objects in this folder %1$d in context %2$d with user %3$d	32	
CON	CONTACT	3	PERMISSION	242	You do not have permission to delete objects from folder %1$d in context %2$d with user %3$d	42	
CON	CONTACT	3	PERMISSION	246	You do not have permission to delete objects from folder %1$d in context %2$d with user %3$d	46	
CON	CONTACT	3	PERMISSION	258	You do not have permission to delete objects from folder %1$d in context %2$d with user %3$d	58	

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
CON	CONTACT	3	PERMISSION	401	Insufficient write rights for this folder. Unable to attach document. Context %4$d Folder %1$d Object %2$d User %3$d		
CON	CONTACT	3	PERMISSION	402	Insufficient write rights for this folder. Unable to attach document. Context %4$d Folder %1$d Object %2$d User %3$d		
CON	CONTACT	4	TRY_AGAIN	158	The image you tried to attach is not a valid picture. It may be broken or is not a valid file.	58	
CON	CONTACT	4	TRY_AGAIN	159	The image you tried to attach is not a valid picture. It may be broken or is not a valid file.	59	
CON	CONTACT	4	TRY_AGAIN	162	Mandatory field last name is not set.	62	
CON	CONTACT	4	TRY_AGAIN	163	Mandatory field last name is not set.	63	
CON	CONTACT	4	TRY_AGAIN	166	Unable to compare contacts for update. Make sure you have entered a valid display name. Context %1$d Object %2$d	66	
CON	CONTACT	4	TRY_AGAIN	167	The name you entered is not available. Choose another display name. Context %1$d Object %2$d	67	
CON	CONTACT	4	TRY_AGAIN	226	The object you requested can not be found. Try again. Context %1$d Folder %2$d User %3$d Object %4$d	26	
CON	CONTACT	4	TRY_AGAIN	240	Edit Conflict. Your change cannot be completed because	40	

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
					somebody else has made a conflicting change to the same item. Please refresh or synchronize and try again. Context %1$d Folder %2$d User %3$d Object %4$d		
CON	CONTACT	4	TRY_AGAIN	259	The contact you requested is not valid.	59	
CON	CONTACT	6	SOCKET_CONNECTION	203	Unable to pick up a connection from the DBPool	3	
CON	CONTACT	6	SOCKET_CONNECTION	207	Unable to pick up a connection from the DBPool	7	
CON	CONTACT	6	SOCKET_CONNECTION	213	Unable to pick up a connection from the DBPool	13	
CON	CONTACT	6	SOCKET_CONNECTION	219	Unable to pick up a connection from the DBPool	19	
CON	CONTACT	6	SOCKET_CONNECTION	220	Unable to pick up a connection from the DBPool	20	
CON	CONTACT	6	SOCKET_CONNECTION	229	Unable to pick up a connection from the DBPool	29	
CON	CONTACT	6	SOCKET_CONNECTION	230	Unable to pick up a connection from the DBPool	30	
CON	CONTACT	6	SOCKET_CONNECTION	236	Unable to pick up a connection from the DBPool	36	
CON	CONTACT	6	SOCKET_CONNECTION	243	Unable to pick up a connection from the DBPool	43	
CON	CONTACT	6	SOCKET_CONNECTION	245	Unable to pick up a connection from the DBPool	45	
CON	CONTACT	6	SOCKET_CONNECTION	247	Unable to pick up a connection from the DBPool	47	
CON	CONTACT	8	CODE_ERROR	106	Unable to insert contacts! Context: %d	6	

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
CON	CONTACT	8	CODE_ERROR	107	Got a -1 ID from IDGenerator	7	
CON	CONTACT	8	CODE_ERROR	108	Unable to scale image down.	8	
CON	CONTACT	8	CODE_ERROR	109	Unable to insert Contact. Context: %d	9	
CON	CONTACT	8	CODE_ERROR	116	Unable to synchronize the old contact with the new changes: Context %1$d Object %2$d	16	
CON	CONTACT	8	CODE_ERROR	120	Unable to update contact. Context %1$d Object %2$d	20	
CON	CONTACT	8	CODE_ERROR	121	An error occurred: Object id is -1	21	
CON	CONTACT	8	CODE_ERROR	123	Unable to scale image down.	23	
CON	CONTACT	8	CODE_ERROR	124	Unable to update contact. Context %1$d Object %2$d	24	
CON	CONTACT	8	CODE_ERROR	125	Contact not found! Context %1$d	25	
CON	CONTACT	8	CODE_ERROR	126	Unable to load contact: Context %1$d	26	
CON	CONTACT	8	CODE_ERROR	127	Unable to delete Contact: Context %1$d Contact %2$d	27	
CON	CONTACT	8	CODE_ERROR	128	Unable to load dristributionlist: Context %1$d Contact %2$d	28	
CON	CONTACT	8	CODE_ERROR	129	Unable to save dristributionlist: Context %1$d Contact %2$d	29	
CON	CONTACT	8	CODE_ERROR	130	Unable to update dristributionlist : Context %1$d Contact %2$d	30	
CON	CONTACT	8	CODE_ERROR	131	Unable to delete dristributionlist by id : Context %1$d Contact %2$d	31	

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
CON	CONTACT	8	CODE_ERROR	132	Unable to load linked contacts : Context %1$d Contact %2$d	32	
CON	CONTACT	8	CODE_ERROR	133	Unable to save Linking between Contacts : Context %1$d Contact %2$d	33	
CON	CONTACT	8	CODE_ERROR	134	Unable to delete linking between contacts : Context %1$d Contact %2$d	34	
CON	CONTACT	8	CODE_ERROR	135	Unable to load contact image: Context %1$d Contact %2$d	35	
CON	CONTACT	8	CODE_ERROR	137	Unable to save contact Image: Context %1$d Contact %2$d	37	
CON	CONTACT	8	CODE_ERROR	139	Unable to update contact image: Context %1$d Contact %2$d	39	
CON	CONTACT	8	CODE_ERROR	140	Unable to perform contact folder check for readable content: Context %1$d Folder %2$d	40	
CON	CONTACT	8	CODE_ERROR	144	Critical Error occurred. This folder contains a contact with no id. Context %1$d Folder %2$d	44	
CON	CONTACT	8	CODE_ERROR	145	Unable to delete contacts from this folder. Context %1$d Folder %2$d	45	
CON	CONTACT	8	CODE_ERROR	146	Unable to trigger object Events: Context %1$d Folder %2$d	46	
CON	CONTACT	8	CODE_ERROR	148	Unable to delete dristribution-list by id : Context %1$d Contact %2$d	48	
CON	CONTACT	8	CODE_ERROR	149	Unable to pick up a connection from the DBPool	49	

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
CON	CONTACT	8	CODE_ERROR	150	Unable to pick up a connection from the DBPool	50	
CON	CONTACT	8	CODE_ERROR	151	Unable to pick up a connection from the DBPool	51	
CON	CONTACT	8	CODE_ERROR	153	Unable to pick up a connection from the DBPool	53	
CON	CONTACT	8	CODE_ERROR	155	Unable to pick up a connection from the DBPool	55	
CON	CONTACT	8	CODE_ERROR	160	This contact has no folder id: Entry %1$d Context %2$d	60	
CON	CONTACT	8	CODE_ERROR	161	This Contact has no FolderID: Entry %1$d Context %2$d	61	
CON	CONTACT	8	CODE_ERROR	200	Unable to initialize Event queue	0	
CON	CONTACT	8	CODE_ERROR	201	Unable to initialize Event queue	1	
CON	CONTACT	8	CODE_ERROR	206	Unable fetch the number of elements in this Folder. Context %1$d Folder %2$d User %3$d	6	
CON	CONTACT	8	CODE_ERROR	208	You are not allowed to store this contact in a non-contact folder: folder id %1$d in context %2$d with user %3$d	8	
CON	CONTACT	8	CODE_ERROR	211	An error occurred during the load of folder objects. Context %1$d Folder %2$d User %3$d	11	
CON	CONTACT	8	CODE_ERROR	212	An error occurred during the load of folder objects. Context %1$d Folder %2$d User %3$d	12	
CON	CONTACT	8	CODE_ERROR	214	You are not allowed to store this contact in a non-contact folder: folder id %1$d in context %2$d with user %3$d	14	

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
CON	CONTACT	8	CODE_ERROR	217	An error occurred during the load of folder objects by an extended search. Context %1$d Folder %2$d User %3$d	17	
CON	CONTACT	8	CODE_ERROR	218	An error occurred during the load of folder objects by an extended search. Context %1$d Folder %2$d User %3$d	18	
CON	CONTACT	8	CODE_ERROR	221	You are not allowed to store this contact in a non-contact folder: folder id %1$d in context %2$d with user %3$d	21	
CON	CONTACT	8	CODE_ERROR	224	An error occurred during the load of folder objects by a simple search. Context %1$d Folder %2$d User %3$d	24	
CON	CONTACT	8	CODE_ERROR	225	An error occurred during the load of folder objects by a simple search. Context %1$d Folder %2$d User %3$d	25	
CON	CONTACT	8	CODE_ERROR	227	You are not allowed to store this contact in a non-contact folder: folder id %1$d in context %2$d with user %3$d	27	
CON	CONTACT	8	CODE_ERROR	231	You are not allowed to store this contact in a non-contact folder: folder id %1$d in context %2$d with user %3$d	31	
CON	CONTACT	8	CODE_ERROR	233	You do not have permission to create objects in this folder %1$d in context %2$d with user %3$d	33	

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
CON	CONTACT	8	CODE_ERROR	234	An error occurred during the load of modified objects from a folder. Context %1$d Folder %2$d User %3$d	34	
CON	CONTACT	8	CODE_ERROR	235	An error occurred during the load of modified objects from a folder. Context %1$d Folder %2$d User %3$d	35	
CON	CONTACT	8	CODE_ERROR	237	An error occurred during the load of deleted objects from a folder. Context %1$d Folder %2$d User %3$d	37	
CON	CONTACT	8	CODE_ERROR	238	An error occurred during the load of deleted objects from a folder. Context %1$d Folder %2$d User %3$d	38	
CON	CONTACT	8	CODE_ERROR	239	Unable to delete this contact. Object not found. Context %1$d Folder %2$d User %3$d Object %4$d	39	
CON	CONTACT	8	CODE_ERROR	241	You are not allowed to store this contact in a non-contact folder: folder id %1$d in context %2$d with user %3$d	41	
CON	CONTACT	8	CODE_ERROR	244	Unable to delete contact object. Context %1$d Folder %2$d User %3$d Object %4$d	44	
CON	CONTACT	8	CODE_ERROR	248	Unable to load objects. Context %1$d User %2$d	48	
CON	CONTACT	8	CODE_ERROR	249	Unable to load objects. Context %1$d User %2$d	49	

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
CON	CONTACT	8	CODE_ERROR	250	Unable to load objects. Context %1$d User %2$d	50	
CON	CONTACT	8	CODE_ERROR	251	Unable to load objects. Context %1$d User %2$d	51	
CON	CONTACT	8	CODE_ERROR	256	Unable to initialize Event queue	56	
CON	CONTACT	8	CODE_ERROR	500	Need at least a ContactObject and a value to set %s		
CON	CONTACT	8	CODE_ERROR	600	Could not convert given string %s to a date.		
CON	CONTACT	8	CODE_ERROR	600	Could not convert given object %s to a date when setting %s.		
CON	CONTACT	8	CODE_ERROR	800	Need at least a ContactObject to get the value of %s		
CON	CONTACT	8	CODE_ERROR	910	Unable to pick up a connection from the DBPool	10	
CON	CONTACT	8	CODE_ERROR	913	Unable to load this LDAP addressbook: %1$s	13	
CON	CONTACT	10	SETUP_ERROR	900	Unablel to load this LDAP addressbook. Check the configuration for this LDAP server: Folder %1$d Context %2$d	0	
CON	CONTACT	10	SETUP_ERROR	901	Unablel to read this Object from this LDAP addressbook. Check the configuration for this LDAP server: Object %1$d Folder %2$d Context %3$d	1	
CON	CONTACT	10	SETUP_ERROR	902	Unablel to load this LDAP addressbook. Check the configuration for this LDAP server: Folder %1$d Context %2$d	2	

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
CON	CONTACT	10	SETUP_ERROR	903	This action is not supported in this LDAP addressbook: Folder %1$d Context %2$d	3	
CON	CONTACT	10	SETUP_ERROR	904	This action is not supported in this LDAP addressbook: Folder %1$d Context %2$d	4	
CON	CONTACT	10	SETUP_ERROR	905	Unablel to load this LDAP addressbook. Check the configuration for this LDAP server: Folder %1$d Context %2$d	5	
CON	CONTACT	10	SETUP_ERROR	906	Unablel to load this LDAP addressbook. Check the configuration for this LDAP server: Folder %1$d Context %2$d	6	
CON	CONTACT	10	SETUP_ERROR	907	This action is not supported in this LDAP addressbook: Folder %1$d Context %2$d	7	
CON	CONTACT	10	SETUP_ERROR	908	You are not allowed to see this addressbook! Folder %1$d Context %1$d	8	
CON	CONTACT	10	SETUP_ERROR	909	You are not allowed to see this addressbook! Folder %1$d Context %1$d	9	
CON	CONTACT	10	SETUP_ERROR	911	You are not allowed to see this addressbook! Folder %1$d Context %1$d	11	
CON	CONTACT	10	SETUP_ERROR	912	You are not allowed to see this addressbook! Folder %1$d Context %1$d	12	
CON	CONTACT	10	SETUP_ERROR	914	This action is not supported in this LDAP addressbook: Folder %1$d Context %2$d	14	

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
CON	CONTACT	10	SETUP_ERROR	915	This action is not supported in this LDAP addressbook: Folder %1$d Context %2$d	15	
CON	CONTACT	10	SETUP_ERROR	916	This action is not supported in this LDAP addressbook: Folder %1$d Context %2$d	16	
CON	CONTACT	12	TRUNCATED	154	Import failed. Some data entered exceed the database field limit. Please shorten following entries: %1$s Character Limit: %2$s Sent %3$s	54	
CTX	CONTEXT	1	USER_INPUT	10	Cannot find context %s.	TODO	com.openexchange.groupware.contexts.impl.ContextException
CTX	CONTEXT	4	TRY_AGAIN	7	Updating database ... Try again later.	TODO	com.openexchange.groupware.contexts.impl.ContextException
CTX	CONTEXT	5	SUBSYSTEM_OR_SERVICE_DOWN	5	Cannot get connection to database.	TODO	com.openexchange.groupware.contexts.impl.ContextException
CTX	CONTEXT	7	INTERNAL_ERROR	3	Cannot put object %s into cache.	TODO	com.openexchange.groupware.contexts.impl.ContextException
CTX	CONTEXT	7	INTERNAL_ERROR	9	Cannot remove object %s from cache.	TODO	com.openexchange.groupware.contexts.impl.ContextException
CTX	CONTEXT	8	CODE_ERROR	6	SQL problem: %1$s.	TODO	com.openexchange.groupware.contexts.impl.ContextException
CTX	CONTEXT	10	SETUP_ERROR	1	Cannot resolve mailadmin for context %d.	TODO	com.openexchange.groupware.contexts.impl.ContextException
CTX	CONTEXT	10	SETUP_ERROR	2	Cannot find context %d.	TODO	com.openexchange.groupware.contexts.impl.ContextException
CTX	CONTEXT	10	SETUP_ERROR	8	Problem initializing the cache.	TODO	com.openexchange.groupware.contexts.impl.ContextException
DBP	DB_POOLING	5	SUBSYSTEM_OR_SERVICE_DOWN	1	Cannot get connection to config DB.	TODO	com.openexchange.server.impl.DBPoolingException

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
DBP	DB_POOLING	5	SUBSYSTEM_OR_SERVICE_DOWN	3	Cannot get connection to database %d.	TODO	com.openexchange.server.impl.DBPoolingException
DBP	DB_POOLING	5	SUBSYSTEM_OR_SERVICE_DOWN	12	Connection used for %1$d milliseconds.	TODO	com.openexchange.server.impl.DBPoolingException
DBP	DB_POOLING	6	SOCKET_CONNECTION	4	Cannot set schema in database connection.	TODO	com.openexchange.server.impl.DBPoolingException
DBP	DB_POOLING	8	CODE_ERROR	2	Resolving database for context %1$d and server %2$d not possible!	TODO	com.openexchange.server.impl.DBPoolingException
DBP	DB_POOLING	8	CODE_ERROR	5	Null is returned to connection pool.	TODO	com.openexchange.server.impl.DBPoolingException
DBP	DB_POOLING	8	CODE_ERROR	6	Problem with executing SQL: %s	TODO	com.openexchange.server.impl.DBPoolingException
DBP	DB_POOLING	8	CODE_ERROR	7	Cannot get information for pool %d.	TODO	com.openexchange.server.impl.DBPoolingException
DBP	DB_POOLING	8	CODE_ERROR	9	Cannot return connection to pool %d.	TODO	com.openexchange.server.impl.DBPoolingException
DBP	DB_POOLING	8	CODE_ERROR	11	%s is not initialized.	TODO	com.openexchange.server.impl.DBPoolingException
DBP	DB_POOLING	8	CODE_ERROR	13	%1$d statements aren't closed.	TODO	com.openexchange.server.impl.DBPoolingException
DBP	DB_POOLING	8	CODE_ERROR	14	Connection not reset to auto commit.	TODO	com.openexchange.server.impl.DBPoolingException
DBP	DB_POOLING	10	SETUP_ERROR	8	Driver class missing.	TODO	com.openexchange.server.impl.DBPoolingException
DBP	DB_POOLING	10	SETUP_ERROR	10	Server name is not defined.	TODO	com.openexchange.server.impl.DBPoolingException
DEL	DELETE_EVENT	8	CODE_ERROR	1	Unknown delete event type: %1$d	TODO	com.openexchange.groupware.delete.DeleteFailedException
DEL	DELETE_EVENT	8	CODE_ERROR	2	A SQL error occurred: %1$s	TODO	com.openexchange.groupware.delete.DeleteFailedException
DEL	DELETE_EVENT	8	CODE_ERROR	3	An error occurred: %1$s	TODO	com.openexchange.groupware.delete.DeleteFailedException
DOW	DOWNGRADE_EVENT	8	CODE_ERROR	1	A SQL error occurred: %1$s	TODO	com.openexchange.groupware.downgrade.DowngradeFailedException

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
DOW	DOWNGRADE_EVENT	8	CODE_ERROR	2	An error occurred: %1$s	TODO	com.openexchange.groupware.downgrade.DowngradeFailedException
FLS	FILESTORE	1	USER_INPUT	3	The file cannot be added to filestore. File size: %s Quota: %s Used: %s	TODO	com.openexchange.tools.file.QuotaFileStorageException
FLS	FILESTORE	5	SUBSYSTEM_OR_SERVICE_DOWN	3	An IO error occurred: %s	TODO	com.openexchange.tools.file.FileStorageException
FLS	FILESTORE	5	SUBSYSTEM_OR_SERVICE_DOWN	4	Couldn't reach the filestore: %s	TODO	com.openexchange.tools.file.FileStorageException
FLS	FILESTORE	5	SUBSYSTEM_OR_SERVICE_DOWN	13	Cannot remove lock file.	TODO	com.openexchange.tools.file.FileStorageException
FLS	FILESTORE	5	SUBSYSTEM_OR_SERVICE_DOWN	14	Cannot create lock file.	TODO	com.openexchange.tools.file.FileStorageException
FLS	FILESTORE	5	SUBSYSTEM_OR_SERVICE_DOWN	15	Cannot create file %1$s.	TODO	com.openexchange.tools.file.FileStorageException
FLS	FILESTORE	5	SUBSYSTEM_OR_SERVICE_DOWN	16	Eliminating the FileStorage failed.	TODO	com.openexchange.tools.file.FileStorageException
FLS	FILESTORE	5	SUBSYSTEM_OR_SERVICE_DOWN	305	Can't access DBPool	No Description	
FLS	FILESTORE	7	INTERNAL_ERROR	4	A file storage error occurred on the server. Please try again later. Additional information: file storage id: %1$s, context id: %2$s, message from the low-level file storage class: %3$s	TODO	com.openexchange.tools.file.QuotaFileStorageException
FLS	FILESTORE	8	CODE_ERROR	1	Invalid constructor parameter at %1$d with type %2$s.	TODO	com.openexchange.tools.file.QuotaFileStorageException
FLS	FILESTORE	8	CODE_ERROR	2	An invalid SQL query was sent to the server.	TODO	com.openexchange.tools.file.QuotaFileStorageException
FLS	FILESTORE	8	CODE_ERROR	5	Invalid constructor parameter at %1$d with type %2$s.	TODO	com.openexchange.tools.file.FileStorageException

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
FLS	FILESTORE	8	CODE_ERROR	7	'Depth' must be >= 1 but is %1$d.	TODO	com.openexchange.tools.file.FileStorageException
FLS	FILESTORE	8	CODE_ERROR	8	'Entries' must be >= 1 but is %1$d.	TODO	com.openexchange.tools.file.FileStorageException
FLS	FILESTORE	8	CODE_ERROR	9	Unsupported encoding.	TODO	com.openexchange.tools.file.FileStorageException
FLS	FILESTORE	8	CODE_ERROR	10	Number parsing problem.	TODO	com.openexchange.tools.file.FileStorageException
FLS	FILESTORE	8	CODE_ERROR	12	'Depth' mismatch while computing next entry.	TODO	com.openexchange.tools.file.FileStorageException
FLS	FILESTORE	8	CODE_ERROR	201	Wrong filestore %1$d for context %2$d needing filestore %3$d.		
FLS	FILESTORE	8	CODE_ERROR	306	Got SQL Exception	No Description	
FLS	FILESTORE	10	SETUP_ERROR	1	Cannot find property %s.	TODO	com.openexchange.tools.file.FileStorageException
FLS	FILESTORE	10	SETUP_ERROR	2	Class %s can not be loaded.	TODO	com.openexchange.tools.file.FileStorageException
FLS	FILESTORE	10	SETUP_ERROR	6	Cannot create directory %1$s for FileStorage.	TODO	com.openexchange.tools.file.FileStorageException
FLS	FILESTORE	10	SETUP_ERROR	202	Problem with URI when creating context specific filestore location.		
FLS	FILESTORE	10	SETUP_ERROR	303	Cannot find filestore with id %1$d.		
FLS	FILESTORE	10	SETUP_ERROR	304	Cannot create URI from %1$s.		
FLS	FILESTORE	11	EXTERNAL_RE-SOURCE_FULL	11	File storage is full.	TODO	com.openexchange.tools.file.FileStorageException
FLD	FOLDER	1	USER_INPUT	58	Bad value %1$s in parameter %2$s	TODO	com.openexchange.tools.oxfolder.OXFolderException
FLD	FOLDER	1	USER_INPUT	71	Owner %1$s of default folder %2$s must keep the folder admin permission	TODO	com.openexchange.tools.oxfolder.OXFolderException
FLD	FOLDER	1	USER_INPUT	76	Folder contains invalid data: %1$s	TODO	com.openexchange.tools.oxfolder.OXFolderException

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
FLD	FOLDER	1	USER_INPUT	77			
Please enter another name to share the folder.	TODO	com.openexchange.tools.oxfolder.OXFolderException					
FLD	FOLDER	1	USER_INPUT	78	Folder module cannot be updated since folder is not empty	TODO	com.openexchange.tools.oxfolder.OXFolderException
FLD	FOLDER	2	USER_CONFIGURATION	2	User %1$s has no access to module %2$s in context %3$s due to user configuration	TODO	com.openexchange.tools.oxfolder.OXFolderException
FLD	FOLDER	2	USER_CONFIGURATION	4	User %1$s has no access on shared folder %2$s in context %3$s due to user configuration	TODO	com.openexchange.tools.oxfolder.OXFolderException
FLD	FOLDER	2	USER_CONFIGURATION	5	User %1$s has no write access on public folder %2$s in context %3$s due to user configuration	TODO	com.openexchange.tools.oxfolder.OXFolderException
FLD	FOLDER	2	USER_CONFIGURATION	72	User %1$s is not allowed to share folder %2$s in context %3$s due to user configuration	TODO	com.openexchange.tools.oxfolder.OXFolderException
FLD	FOLDER	2	USER_CONFIGURATION	73	Defined permissions for folder %1$s in context %2$s are not applicable to user %3$s due to user configuration	TODO	com.openexchange.tools.oxfolder.OXFolderException
FLD	FOLDER	3	PERMISSION	3	Folder %1$s not visible to user %2$s in context %3$s	TODO	com.openexchange.tools.oxfolder.OXFolderException
FLD	FOLDER	3	PERMISSION	6	User %1$s has no create-sub-folder permission on folder %2$s in context %3$s	TODO	com.openexchange.tools.oxfolder.OXFolderException
FLD	FOLDER	3	PERMISSION	10	User %1$s has no admin access to folder %2$s in context %3$s	TODO	com.openexchange.tools.oxfolder.OXFolderException

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
FLD	FOLDER	3	PERMISSION	11	Default folder %1$s cannot be renamed in context %2$s	TODO	com.openexchange.tools.oxfolder.OXFolderException
FLD	FOLDER	3	PERMISSION	12	A duplicate folder exists in parent folder %1$s in context %2$s	TODO	com.openexchange.tools.oxfolder.OXFolderException
FLD	FOLDER	3	PERMISSION	21	Not allowed to move default folder %1$s in context %2$s	TODO	com.openexchange.tools.oxfolder.OXFolderException
FLD	FOLDER	3	PERMISSION	22	Target folder %1$s contains a duplicate folder in context %2$s	TODO	com.openexchange.tools.oxfolder.OXFolderException
FLD	FOLDER	3	PERMISSION	23	Shared folder %1$s cannot be moved in context %2$s	TODO	com.openexchange.tools.oxfolder.OXFolderException
FLD	FOLDER	3	PERMISSION	24	Shared folder %1$s cannot be target of move operation in context %2$s	TODO	com.openexchange.tools.oxfolder.OXFolderException
FLD	FOLDER	3	PERMISSION	25	System folder %1$s cannot be moved in context %2$s	TODO	com.openexchange.tools.oxfolder.OXFolderException
FLD	FOLDER	3	PERMISSION	26	Private folder %1$s can only be moved to a private folder in context %2$s	TODO	com.openexchange.tools.oxfolder.OXFolderException
FLD	FOLDER	3	PERMISSION	27	Public folder %1$s can only be moved to a public folder in context %2$s	TODO	com.openexchange.tools.oxfolder.OXFolderException
FLD	FOLDER	3	PERMISSION	28	Target and source folder cannot be equal in context %1$s	TODO	com.openexchange.tools.oxfolder.OXFolderException
FLD	FOLDER	3	PERMISSION	29	User %1$s is not allowed to move all subfolders of folder %2$s in context %3$s	TODO	com.openexchange.tools.oxfolder.OXFolderException
FLD	FOLDER	3	PERMISSION	30	User %1$s is not allowed to delete shared folder %2$s in context %3$s	TODO	com.openexchange.tools.oxfolder.OXFolderException
FLD	FOLDER	3	PERMISSION	31	User %1$s is not allowed to delete default folder %2$s in context %3$s	TODO	com.openexchange.tools.oxfolder.OXFolderException

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
FLD	FOLDER	3	PERMISSION	32	User %1$s is not allowed to delete all contained objects in folder %2$s in context %3$s	TODO	com.openexchange.tools.oxfolder.OXFolderException
FLD	FOLDER	3	PERMISSION	49	A source folder of module %1$s must not be moved to a target folder of module %2$s	TODO	com.openexchange.tools.oxfolder.OXFolderException
FLD	FOLDER	3	PERMISSION	54	User %1$s has no write permission on folder %2$s in context %3$s	TODO	com.openexchange.tools.oxfolder.OXFolderException
FLD	FOLDER	3	PERMISSION	63	Shared folder %1$s MUST NOT be updated in context %2$s	TODO	com.openexchange.tools.oxfolder.OXFolderException
FLD	FOLDER	3	PERMISSION	69	No subfolder creation underneath shared folder %1$s in context %2$s	TODO	com.openexchange.tools.oxfolder.OXFolderException
FLD	FOLDER	3	PERMISSION	70	User %1$s grants invalid permissions on shared folder %2$s in context %3$s. Only owner of parental shared folder %4$s may be folder admin	TODO	com.openexchange.tools.oxfolder.OXFolderException
FLD	FOLDER	3	PERMISSION	74	Folder %1$s in context %2$s contains a hidden subfolder. User %3$s has no delete rights for this subfolder and consequently cannot delete its parent folder.	TODO	com.openexchange.tools.oxfolder.OXFolderException
FLD	FOLDER	3	PERMISSION	75	An infostore folder named %1$s already exists below folder %2$s (%3$s) in context %4$s. Please choose another display name.	TODO	com.openexchange.tools.oxfolder.OXFolderException
FLD	FOLDER	7	INTERNAL_ERROR	36	Folder %1$s could not be put into cache in context %2$s	TODO	com.openexchange.tools.oxfolder.OXFolderException

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
FLD	FOLDER	7	INTERNAL_ERROR	67	A runtime error occurred in context %1$s	TODO	com.openexchange.tools.oxfolder.OXFolderException
FLD	FOLDER	8	CODE_ERROR	7	Missing field %1$s in folder %2$s in context %3$s	TODO	com.openexchange.tools.oxfolder.OXFolderException
FLD	FOLDER	8	CODE_ERROR	8	Folder %1$s does not exist in context %2$s	TODO	com.openexchange.tools.oxfolder.OXFolderException
FLD	FOLDER	8	CODE_ERROR	13	Parent folder %1$s does not allow folder's type setting %2$s in context %3$s	TODO	com.openexchange.tools.oxfolder.OXFolderException
FLD	FOLDER	8	CODE_ERROR	14	Parent folder %1$s does not allow folder's module setting (%2$s) in context %3$s	TODO	com.openexchange.tools.oxfolder.OXFolderException
FLD	FOLDER	8	CODE_ERROR	15	Only one admin permission is allowed on a private folder	TODO	com.openexchange.tools.oxfolder.OXFolderException
FLD	FOLDER	8	CODE_ERROR	16	A group must not hold admin permission on a private folder	TODO	com.openexchange.tools.oxfolder.OXFolderException
FLD	FOLDER	8	CODE_ERROR	17	Only folder owner may hold admin permission on a private folder	TODO	com.openexchange.tools.oxfolder.OXFolderException
FLD	FOLDER	8	CODE_ERROR	18	Administration rights required. In the Rights tab add at least one user with administration rights.	TODO	com.openexchange.tools.oxfolder.OXFolderException
FLD	FOLDER	8	CODE_ERROR	19	Invalid object ID %1$s	TODO	com.openexchange.tools.oxfolder.OXFolderException
FLD	FOLDER	8	CODE_ERROR	20	Not allowed to change parent id of folder %1$s through an update call. Use move method instead	TODO	com.openexchange.tools.oxfolder.OXFolderException
FLD	FOLDER	8	CODE_ERROR	33	No admin user found in context %1$s	TODO	com.openexchange.tools.oxfolder.OXFolderException

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
FLD	FOLDER	8	CODE_ERROR	34	No default folder could be found in module %1$s for user %2$s in context %3$s	TODO	com.openexchange.tools.oxfolder.OXFolderException
FLD	FOLDER	8	CODE_ERROR	35	Folder %1$s could not be loaded in context %2$s	TODO	com.openexchange.tools.oxfolder.OXFolderException
FLD	FOLDER	8	CODE_ERROR	37	Effective permission of folder %1$s could not be determined for user %2$s in context %3$s	TODO	com.openexchange.tools.oxfolder.OXFolderException
FLD	FOLDER	8	CODE_ERROR	38	An SQL error occurred in context %1$s	TODO	com.openexchange.tools.oxfolder.OXFolderException
FLD	FOLDER	8	CODE_ERROR	39	An SQL error occurred in context %1$s	TODO	com.openexchange.tools.oxfolder.OXFolderException
FLD	FOLDER	8	CODE_ERROR	41	Delivered sequence id %1$s from database is less than allowed min. folder id of %2$s in context %3$s	TODO	com.openexchange.tools.oxfolder.OXFolderException
FLD	FOLDER	8	CODE_ERROR	42	Module %1$s is unknown in context %2$s	TODO	com.openexchange.tools.oxfolder.OXFolderException
FLD	FOLDER	8	CODE_ERROR	43	Folder %1$s could not be updated in context %2$s	TODO	com.openexchange.tools.oxfolder.OXFolderException
FLD	FOLDER	8	CODE_ERROR	44	Invalid entity id %1$s detected in permissions of folder %2$s in context %3$s	TODO	com.openexchange.tools.oxfolder.OXFolderException
FLD	FOLDER	8	CODE_ERROR	45	Folder %1$s must not be moved to one of its subfolders in context %2$s	TODO	com.openexchange.tools.oxfolder.OXFolderException
FLD	FOLDER	8	CODE_ERROR	46	UNKNOWN EXCEPTION	TODO	com.openexchange.tools.oxfolder.OXFolderException
FLD	FOLDER	8	CODE_ERROR	47	A LDAP error occurred in context %1$s	TODO	com.openexchange.tools.oxfolder.OXFolderException

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
FLD	FOLDER	8	CODE_ERROR	48	Attribute %1$s is not set in FolderObject instance %2$s in context %3$s	TODO	com.openexchange.tools.oxfolder.OXFolderException
FLD	FOLDER	8	CODE_ERROR	50	Operation not executable on folder %1$s in context %2$s	TODO	com.openexchange.tools.oxfolder.OXFolderException
FLD	FOLDER	8	CODE_ERROR	51	Folder cache (region name = %1$s) could not be initialized due to following reason: %2$s	TODO	com.openexchange.tools.oxfolder.OXFolderException
FLD	FOLDER	8	CODE_ERROR	52	Folder cache has not been enabled in config file %1$s	TODO	com.openexchange.tools.oxfolder.OXFolderException
FLD	FOLDER	8	CODE_ERROR	53	Folder %1$s could not be removed from folder cache	TODO	com.openexchange.tools.oxfolder.OXFolderException
FLD	FOLDER	8	CODE_ERROR	55	A JSON error occurred: %1$s	TODO	com.openexchange.tools.oxfolder.OXFolderException
FLD	FOLDER	8	CODE_ERROR	56	Unknown parameter container type: %1$s	TODO	com.openexchange.tools.oxfolder.OXFolderException
FLD	FOLDER	8	CODE_ERROR	57	Missing parameter %1$s	TODO	com.openexchange.tools.oxfolder.OXFolderException
FLD	FOLDER	8	CODE_ERROR	59	Unknown field: %1$s	TODO	com.openexchange.tools.oxfolder.OXFolderException
FLD	FOLDER	8	CODE_ERROR	60	Parameter %1$s does not match JSON key %2$s	TODO	com.openexchange.tools.oxfolder.OXFolderException
FLD	FOLDER	8	CODE_ERROR	61	Invalid permission values: fp=%1$s orp=%2$s owp=%3$s odp=%4$s	TODO	com.openexchange.tools.oxfolder.OXFolderException
FLD	FOLDER	8	CODE_ERROR	62	Unknown action: %1$s	TODO	com.openexchange.tools.oxfolder.OXFolderException
FLD	FOLDER	8	CODE_ERROR	65	Unable to map OCL permission value %1$s to a JSON permission value	TODO	com.openexchange.tools.oxfolder.OXFolderException

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
FLD	FOLDER	8	CODE_ERROR	66	Folder existence cannot be checked due to unsufficient folder information)	TODO	com.openexchange.tools.oxfolder.OXFolderException
FLD	FOLDER	8	CODE_ERROR	68	This method is not applicable to an IMAP permission	TODO	com.openexchange.tools.oxfolder.OXFolderException
FLD	FOLDER	9	CONCURRENT_MODIFICATION	9	Folder %1$s has been modified after last sync timestamp in context %2$s	TODO	com.openexchange.tools.oxfolder.OXFolderException
FLD	FOLDER	12	TRUNCATED	64	The attribute %1$s contains too much characters. Current length %3$d is more than allowed length of %2$d characters.	TODO	com.openexchange.tools.oxfolder.OXFolderException
GRP	GROUP	1	USER_INPUT	4	The mandatory field %1$s is not defined.	TODO	com.openexchange.group.GroupException
GRP	GROUP	1	USER_INPUT	5	The simple name contains this not allowed characters: %1$s.	TODO	com.openexchange.group.GroupException
GRP	GROUP	1	USER_INPUT	6	Another group with same identifier name exists: %1$d.	TODO	com.openexchange.group.GroupException
GRP	GROUP	1	USER_INPUT	7	Group contains a not existing member %1$d.	TODO	com.openexchange.group.GroupException
GRP	GROUP	1	USER_INPUT	8	Group contains invalid data: %1$s.	TODO	com.openexchange.group.GroupException
GRP	GROUP	1	USER_INPUT	13	Group %1$s can not be deleted.	TODO	com.openexchange.group.GroupException
GRP	GROUP	1	USER_INPUT	14	Group %1$s can not be changed.	TODO	com.openexchange.group.GroupException
GRP	GROUP	3	PERMISSION	9	You are not allowed to create groups.	TODO	com.openexchange.group.GroupException
GRP	GROUP	3	PERMISSION	11	You are not allowed to change groups.	TODO	com.openexchange.group.GroupException
GRP	GROUP	3	PERMISSION	12	You are not allowed to delete groups.	TODO	com.openexchange.group.GroupException

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
GRP	GROUP	5	SUBSYSTEM_OR_SER-VICE_DOWN	1	Cannot get database connection.	TODO	com.openexchange.group.GroupException
GRP	GROUP	8	CODE_ERROR	2	SQL Problem: %1$s	TODO	com.openexchange.group.GroupException
GRP	GROUP	8	CODE_ERROR	3	No group given.	TODO	com.openexchange.group.GroupException
GRP	GROUP	9	CONCURRENT_MODIFICA-TION	10	Edit Conflict. Your change cannot be completed because somebody else has made a conflicting change to the same item. Please refresh or synchronize and try again.	TODO	com.openexchange.group.GroupException
I_E	IMPORT_EXPORT	1	USER_INPUT	202	User input error %s		
I_E	IMPORT_EXPORT	1	USER_INPUT	302	User input error %s		
I_E	IMPORT_EXPORT	1	USER_INPUT	502	User input error %s		
I_E	IMPORT_EXPORT	1	USER_INPUT	503	Problem while reading ICal file: %s.		
I_E	IMPORT_EXPORT	1	USER_INPUT	505	Broken file uploaded: %s		
I_E	IMPORT_EXPORT	1	USER_INPUT	506	Cowardly refusing to import an entry flagged as confidential.		
I_E	IMPORT_EXPORT	1	USER_INPUT	509	The element %s is not supported.		
I_E	IMPORT_EXPORT	1	USER_INPUT	510	Couldn't convert object: %s		
I_E	IMPORT_EXPORT	1	USER_INPUT	511	No ICal to import found.		
I_E	IMPORT_EXPORT	1	USER_INPUT	513	Failed importing appointment due to hard conflicting resource.		
I_E	IMPORT_EXPORT	1	USER_INPUT	602	User input error %s		
I_E	IMPORT_EXPORT	1	USER_INPUT	605	Could not recognize format of the following data: %s		
I_E	IMPORT_EXPORT	1	USER_INPUT	608	No VCard to import found.		
I_E	IMPORT_EXPORT	1	USER_INPUT	800	Can only import into one folder at a time.		

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
I_E	IMPORT_EXPORT	1	USER_INPUT	804	Could not translate a single column title. Is this a valid CSV file?		
I_E	IMPORT_EXPORT	1	USER_INPUT	805	Could not translate a single field of information, did not insert entry %s.		
I_E	IMPORT_EXPORT	1	USER_INPUT	1000	Broken CSV file: Lines have different number of cells, line #1 has %d, line #%d has %d. Is this really a CSV file?		
I_E	IMPORT_EXPORT	1	USER_INPUT	1200	Cannot translate id=%d to a constant from Types.		
I_E	IMPORT_EXPORT	1	USER_INPUT	1201	Cannot translate id=%d to a constant from FolderObject.		
I_E	IMPORT_EXPORT	1	USER_INPUT	1300	Can only handle one file, not %s		
I_E	IMPORT_EXPORT	1	USER_INPUT	1301	Unknown format: %s		
I_E	IMPORT_EXPORT	1	USER_INPUT	1302	Uploaded file is of type %s, cannot handle that		
I_E	IMPORT_EXPORT	1	USER_INPUT	1303	Empty file uploaded.		
I_E	IMPORT_EXPORT	3	PERMISSION	100	Could not export the folder %s in the format %s.		
I_E	IMPORT_EXPORT	3	PERMISSION	200	Could not import into the folder %s.		
I_E	IMPORT_EXPORT	3	PERMISSION	300	Could not import into the folder %s.		
I_E	IMPORT_EXPORT	3	PERMISSION	500	Could not import into the folder %s.		
I_E	IMPORT_EXPORT	3	PERMISSION	507	Module Calendar not enabled for user, cannot import appointments.		

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
I_E	IMPORT_EXPORT	3	PERMISSION	508	Module Tasks not enabled for user, cannot import tasks.		
I_E	IMPORT_EXPORT	3	PERMISSION	600	Could not import into the folder %s.		
I_E	IMPORT_EXPORT	3	PERMISSION	607	Module Contacts is not enabled for this user, cannot store contacts contained in VCard.		
I_E	IMPORT_EXPORT	3	PERMISSION	806	Module Contacts not enabled for user, cannot import contacts		
I_E	IMPORT_EXPORT	5	SUBSYSTEM_OR_SERVICE_DOWN	101	Could not load folder %s		
I_E	IMPORT_EXPORT	5	SUBSYSTEM_OR_SERVICE_DOWN	102	Could not load contacts		
I_E	IMPORT_EXPORT	5	SUBSYSTEM_OR_SERVICE_DOWN	201	Could not import into folder %s		
I_E	IMPORT_EXPORT	5	SUBSYSTEM_OR_SERVICE_DOWN	301	Could not import into folder %s		
I_E	IMPORT_EXPORT	5	SUBSYSTEM_OR_SERVICE_DOWN	501	Subsystem down		
I_E	IMPORT_EXPORT	5	SUBSYSTEM_OR_SERVICE_DOWN	601	Subsystem down		
I_E	IMPORT_EXPORT	5	SUBSYSTEM_OR_SERVICE_DOWN	900	Could not load folder %s		
I_E	IMPORT_EXPORT	5	SUBSYSTEM_OR_SERVICE_DOWN	1100	Cannot find an importer for format %s into folders %s		
I_E	IMPORT_EXPORT	5	SUBSYSTEM_OR_SERVICE_DOWN	1101	Cannot find an exporter for folder %s to format %s		
I_E	IMPORT_EXPORT	7	INTERNAL_ERROR	104	Could not encode as UTF-8		
I_E	IMPORT_EXPORT	8	CODE_ERROR	103	Could not create folder id from string %s		

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
I_E	IMPORT_EXPORT	8	CODE_ERROR	203	Could not import into folder %s		
I_E	IMPORT_EXPORT	8	CODE_ERROR	204	Could not load folder %s		
I_E	IMPORT_EXPORT	8	CODE_ERROR	303	Could not import into folder %s		
I_E	IMPORT_EXPORT	8	CODE_ERROR	504	Could not load folder %s		
I_E	IMPORT_EXPORT	8	CODE_ERROR	603	Programming error - folder %s		
I_E	IMPORT_EXPORT	8	CODE_ERROR	604	Could not load folder %s		
I_E	IMPORT_EXPORT	8	CODE_ERROR	606	Could not use UTF-8 encoding.		
I_E	IMPORT_EXPORT	8	CODE_ERROR	801	Cannot import this kind of data. Use method canImport() first.		
I_E	IMPORT_EXPORT	8	CODE_ERROR	802	Cannot read given InputStream.		
I_E	IMPORT_EXPORT	8	CODE_ERROR	901	Could not create folder id from string %s		
I_E	IMPORT_EXPORT	8	CODE_ERROR	902	Could not read InputStream as string		
I_E	IMPORT_EXPORT	8	CODE_ERROR	903	Missing ability to encode or decode UTF-8 on server, cannot read file.		
I_E	IMPORT_EXPORT	8	CODE_ERROR	1001	Illegal state: Found data after presumed last line.		
I_E	IMPORT_EXPORT	10	SETUP_ERROR	205	Could not find ICalEmitter service. Has the service been exported?	No Description	
I_E	IMPORT_EXPORT	10	SETUP_ERROR	512	Could not find suitable ICalParser. Is an ICalParser exported as a service?		
I_E	IMPORT_EXPORT	12	TRUNCATED	1500	The following field(s) are too long to be imported: %s		
I_E	IMPORT_EXPORT	12	TRUNCATED	1600	The following field(s) are too long to be imported: %s		
I_E	IMPORT_EXPORT	13	WARNING	514	Warning importing file: %s		

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
I_E	IMPORT_EXPORT	13	WARNING	803	Could not find the following fields %s		
IFO	INFOSTORE	1	USER_INPUT	0	Validation failed: %s		
IFO	INFOSTORE	1	USER_INPUT	300	The requested item does not exist.	The infoitem does not exist, so the permissions cannot be loaded.	
IFO	INFOSTORE	1	USER_INPUT	301	Could not load documents to check the permissions	To check permissions infoitems must be loaded to find their folderId and creator.	
IFO	INFOSTORE	1	USER_INPUT	400	You do not have sufficient read permissions.	The User does not have read permissions on the requested Infoitem.	
IFO	INFOSTORE	1	USER_INPUT	401	You do not have sufficient read permissions.	The User does not have read permissions on the requested Infoitem.	
IFO	INFOSTORE	1	USER_INPUT	402	You do not have sufficient permissions to create objects in this folder.	The user may not create objects in the given folder.	
IFO	INFOSTORE	1	USER_INPUT	403	You are not allowed to update this item.	The user doesn't have the required write permissions to up-	

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
						date the in-foitem.	
IFO	INFOSTORE	1	USER_INPUT	404	You are not allowed to create objects in the target folder.	The user isn't allowed to create objects in the target folder when moving an infoitem.	
IFO	INFOSTORE	1	USER_INPUT	406	You do not have sufficient permission to delete this version.	The user must be allowed to delete the object in order to delete a version of it.	
IFO	INFOSTORE	1	USER_INPUT	407	You do not have sufficient permissions to read objects in this folder.	The user may not read objects in the given folder.	
IFO	INFOSTORE	1	USER_INPUT	408	You do not have sufficient permissions to read objects in this folder.	The user may not read objects in the given folder.	
IFO	INFOSTORE	1	USER_INPUT	409	You do not have sufficient permissions to read objects in this folder.	The user may not read objects in the given folder.	
IFO	INFOSTORE	1	USER_INPUT	410	You do not have sufficient permissions to read objects in this folder.	The user may not read objects in the given folder.	
IFO	INFOSTORE	1	USER_INPUT	411	You do not have sufficient permissions to read objects in this folder.	The user may not read objects in the given folder.	
IFO	INFOSTORE	1	USER_INPUT	417	You need write permissions to unlock a document.	The user does not have sufficient write permissions to un-	

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
						lock this infoitem.	
IFO	INFOSTORE	1	USER_INPUT	418	You need write permissions to lock a document.	The user does not have sufficient write permissions to lock this infoitem.	
IFO	INFOSTORE	1	USER_INPUT	421	You are not allowed to delete objects in the source folder, so this document cannot be mo Tved.	Need delete permissions in original folder to move an item	
IFO	INFOSTORE	1	USER_INPUT	438	The document you requested doesn't exist.	The document could not be loaded because it doesn't exist.	
IFO	INFOSTORE	1	USER_INPUT	441	Files attached to InfoStore items must have unique names. Filename: %s. The other document with this file name is %s.	To remain consistent in WebDAV no two current versions in a given folder may contain a file with the same filename. The user must either choose a different filename, or switch the other file to a version with a different filename.	
IFO	INFOSTORE	1	USER_INPUT	1700	This folder is a virtual folder. It cannot contain documents.	The folders to which this user has access, but	

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
						that belong to other users, are collected in a virtual folder. This virtual folder cannot contain documents itself.	
IFO	INFOSTORE	4	TRY_AGAIN	219	Cannot pre-fetch results.	Thrown when a result cannot be prefetched. This indicates a problem with the DB Connection. Have a look at the underlying SQLException	
IFO	INFOSTORE	4	TRY_AGAIN	221	Cannot pre-fetch results.	Thrown when a result cannot be prefetched. This indicates a problem with the DB Connection. Have a look at the underlying SQLException	
IFO	INFOSTORE	4	TRY_AGAIN	223	Cannot pre-fetch results.	Thrown when a result cannot be prefetched. This indicates a problem with the DB Connection. Have a look at the un-	

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
						derlying SQLException	
IFO	INFOSTORE	4	TRY_AGAIN	225	Cannot pre-fetch results.	Thrown when a result cannot be prefetched. This indicates a problem with the DB Connection. Have a look at the underlying SQLException	
IFO	INFOSTORE	4	TRY_AGAIN	601	Cannot pre-fetch results.	Thrown when a result cannot be prefetched. This indicates a problem with the DB Connection. Have a look at the underlying SQLException	
IFO	INFOSTORE	4	TRY_AGAIN	1900	Could not fetch result from result set. Probably the database may be busy or not running. Please try again.	Could not fetch result from result set. Probably the database may be busy or not running. Please try again.	
IFO	INFOSTORE	4	TRY_AGAIN	1903	Could not fetch result from result set. Probably the database may be busy or not running. Please try again.	Could not fetch result from result set. Probably the database may be busy or not run-	

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
						ning. Please try again.	
IFO	INFOSTORE	5	SUBSYSTEM_OR_SERVICE_DOWN	203	Could not access file store.	This indicates a problem accessing the underlying filestorage. Look at the exceptions given as cause for this one.	
IFO	INFOSTORE	5	SUBSYSTEM_OR_SERVICE_DOWN	231	Could not remove file. %s	An error occurred while removing the file from the file storage.	
IFO	INFOSTORE	5	SUBSYSTEM_OR_SERVICE_DOWN	419	The file store could not be reached.	The file store couldn't be reached.	
IFO	INFOSTORE	5	SUBSYSTEM_OR_SERVICE_DOWN	435	Cannot reach the file store so I cannot remove the documents.	Cannot reach the file store so some documents were not deleted.	
IFO	INFOSTORE	5	SUBSYSTEM_OR_SERVICE_DOWN	436	Cannot remove file. Database and file store are probably inconsistent. Please contact an administrator to run the recovery tool.	Cannot reach the file store so some documents were not deleted. This propably means that file store and db are inconsistent. Run the recovery tool.	

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
IFO	INFOSTORE	5	SUBSYSTEM_OR_SERVICE_DOWN	437	Could not remove file from file store.	Could not remove file from file store.	
IFO	INFOSTORE	5	SUBSYSTEM_OR_SERVICE_DOWN	439	The file store could not be reched	The file store couldn't be reached and is probably down.	
IFO	INFOSTORE	5	SUBSYSTEM_OR_SERVICE_DOWN	440	The file could not be retrieved.	The file could not be found in the file store. This means either that the file store was not available or that database and file store are inconsistent. Run the recovery tool.	
IFO	INFOSTORE	7	INTERNAL_ERROR	230	Cannot find file store location.	A Context Exception occurred while trying to open the filestorage. Look at the Context Exception for further details	
IFO	INFOSTORE	7	INTERNAL_ERROR	232	Could not remove file. %s	An error occurred while removing the file from the file storage.	
IFO	INFOSTORE	7	INTERNAL_ERROR	233	Could not remove file. %s	An error occurred while re-	

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
						moving the file from the file storage.	
IFO	INFOSTORE	7	INTERNAL_ERROR	413	Could not iterate result	The system couldn't iterate the result dataset. This can have numerous exciting causes.	
IFO	INFOSTORE	7	INTERNAL_ERROR	414	Could not iterate result	The system couldn't iterate the result dataset. This can have numerous exciting causes.	
IFO	INFOSTORE	7	INTERNAL_ERROR	420	Could not generate new ID.	The IDGenerator threw an SQL Exception look at that one to find out what's wrong.	
IFO	INFOSTORE	7	INTERNAL_ERROR	442	Could not determine number of versions for infoitem %s in context %s. Invalid Query: %s	The query to cound the versions in a document failed.	
IFO	INFOSTORE	7	INTERNAL_ERROR	443	Could not iterate result	The system couldn't iterate the result dataset. This can have numerous exciting causes.	

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
IFO	INFOSTORE	7	INTERNAL_ERROR	444	Could not iterate result	The system couldn't iterate the result dataset. This can have numerous exciting causes.	
IFO	INFOSTORE	7	INTERNAL_ERROR	1902	Cannot close database connection	Cannot close database connection	
IFO	INFOSTORE	8	CODE_ERROR	200	Invalid SQL Query: %s	A faulty SQL Query was sent to the SQL server. This can only be fixed in R&D	
IFO	INFOSTORE	8	CODE_ERROR	201	Invalid SQL Query: %s	A faulty SQL Query was sent to the SQL server. This can only be fixed in R&D	
IFO	INFOSTORE	8	CODE_ERROR	202	Invalid SQL Query: %s	A faulty SQL Query was sent to the SQL server. This can only be fixed in R&D	
IFO	INFOSTORE	8	CODE_ERROR	204	Could not get file store location.	The context specific data about a filestorage could not be loaded. Look at the underlying exceptions for a hint.	

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
IFO	INFOSTORE	8	CODE_ERROR	214	Invalid SQL Query: %s	A faulty SQL Query was sent to the SQL server. This can only be fixed in R&D	
IFO	INFOSTORE	8	CODE_ERROR	215	Invalid SQL Query: %s	A faulty SQL Query was sent to the SQL server. This can only be fixed in R&D	
IFO	INFOSTORE	8	CODE_ERROR	216	Invalid SQL Query: %s	A faulty SQL Query was sent to the SQL server. This can only be fixed in R&D	
IFO	INFOSTORE	8	CODE_ERROR	217	Invalid SQL Query: %s	A faulty SQL Query was sent to the SQL server. This can only be fixed in R&D	
IFO	INFOSTORE	8	CODE_ERROR	218	Incorrect SQL Query: %s	Indicates a faulty SQL Query. Only R&D can fix this	
IFO	INFOSTORE	8	CODE_ERROR	220	Incorrect SQL Query: %s	Indicates a faulty SQL Query. Only R&D can fix this	
IFO	INFOSTORE	8	CODE_ERROR	222	Incorrect SQL Query: %s	Indicates a faulty SQL Query. Only R&D can fix this	
IFO	INFOSTORE	8	CODE_ERROR	224	Incorrect SQL Query.	Indicates a faulty SQL Query. Only R&D can fix this	

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
IFO	INFOSTORE	8	CODE_ERROR	226	Invalid SQL Query: %s	A faulty SQL Query was sent to the SQL server. This can only be fixed in R&D	
IFO	INFOSTORE	8	CODE_ERROR	227	Invalid SQL Query: %s	A faulty SQL Query was sent to the SQL server. This can only be fixed in R&D	
IFO	INFOSTORE	8	CODE_ERROR	228	Invalid SQL Query: %s	A faulty SQL Query was sent to the SQL server. This can only be fixed in R&D	
IFO	INFOSTORE	8	CODE_ERROR	229	Invalid SQL Query: %s	A faulty SQL Query was sent to the SQL server. This can only be fixed in R&D	
IFO	INFOSTORE	8	CODE_ERROR	234	Invalid SQL Query : %s	An invalid SQL Query was sent to the server.	
IFO	INFOSTORE	8	CODE_ERROR	235	Invalid SQL Query: %s	A faulty SQL Query was sent to the SQL server. This can only be fixed in R&D	
IFO	INFOSTORE	8	CODE_ERROR	302	The folder %d is not an Infostore folder	The client tries to put an infoitem into a non infoitem folder.	

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
IFO	INFOSTORE	8	CODE_ERROR	500	Illegal argument: Document %d contains no file	A WebdavPath for a document without an at-tached file was requested. In WebDAV only in-foitems with files are visible. This points to a prob-lem with the cola supply for the developer and can only be fixed by R&D.	
IFO	INFOSTORE	8	CODE_ERROR	501	Folder %d has two subfolders named %s. Your database is not consistent.	A folder contains two folders with the same folder name. This points to an inconsisten-cy in the database, as the second folder by the same name should not have been created. This will certainly cause some headaches in R&D.	
IFO	INFOSTORE	8	CODE_ERROR	502	Incorrect SQL Query: %s	A faulty SQL statement was sent to the DB.	

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
						R&D must fix this.	
IFO	INFOSTORE	8	CODE_ERROR	600	Incorrect SQL Query: %s	Indicates a faulty SQL Query. Only R&D can fix this	
IFO	INFOSTORE	8	CODE_ERROR	800	Invalid SQL: '%s'	Indicates a faulty SQL query or a problem with the database. Ususally only R&D can do anything about this.	
IFO	INFOSTORE	8	CODE_ERROR	801	Error in SQL Update	Indicates a faulty SQL query or a problem with the database. Ususally only R&D can do anything about this.	
IFO	INFOSTORE	8	CODE_ERROR	802	Invalid SQL: '%s'	Indicates a faulty SQL query or a problem with the database. Ususally only R&D can do anything about this.	
IFO	INFOSTORE	8	CODE_ERROR	803	Invalid SQL: '%s'	Indicates a faulty SQL query or a problem with the database. Ususally only R&D can do anything about this.	

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
IFO	INFOSTORE	8	CODE_ERROR	804	Invalid SQL: '%s'	Indicates a faulty SQL query or a problem with the database. Ususally only R&D can do anything about this.	
IFO	INFOSTORE	8	CODE_ERROR	805	Invalid SQL: '%s'	Indicates a faulty SQL query or a problem with the database. Ususally only R&D can do anything about this.	
IFO	INFOSTORE	8	CODE_ERROR	806	Invalid SQL: '%s'	Indicates a faulty SQL query or a problem with the database. Ususally only R&D can do anything about this.	
IFO	INFOSTORE	8	CODE_ERROR	807	Invalid SQL: '%s'	Indicates a faulty SQL query or a problem with the database. Ususally only R&D can do anything about this.	
IFO	INFOSTORE	8	CODE_ERROR	900	Invalid SQL: '%s'	Indicates a faulty SQL query or a problem with the database. Ususally only R&D can	

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
						do anything about this.	
IFO	INFOSTORE	8	CODE_ERROR	901	Invalid SQL: '%s'	Indicates a faulty SQL query or a problem with the database. Ususally only R&D can do anything about this.	
IFO	INFOSTORE	8	CODE_ERROR	902	Invalid SQL: '%s'	Indicates a faulty SQL query or a problem with the database. Ususally only R&D can do anything about this.	
IFO	INFOSTORE	8	CODE_ERROR	903	Invalid SQL: '%s'	Indicates a faulty SQL query or a problem with the database. Ususally only R&D can do anything about this.	
IFO	INFOSTORE	8	CODE_ERROR	904	Invalid SQL: '%s'	Indicates a faulty SQL query or a problem with the database. Ususally only R&D can do anything about this.	
IFO	INFOSTORE	8	CODE_ERROR	905	Invalid SQL: '%s'	Indicates a faulty SQL query or a problem with the	

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
						database. Ususally only R&D can do anything about this.	
IFO	INFOSTORE	8	CODE_ERROR	906	Invalid SQL: '%s'	Indicates a faulty SQL query or a problem with the database. Ususally only R&D can do anything about this.	
IFO	INFOSTORE	8	CODE_ERROR	1000	Invalid SQL query: %s	An invalid SQL query was used sent to the SQL Server. This can only be fixed by R&D	
IFO	INFOSTORE	8	CODE_ERROR	1001	Invalid SQL query: %s	An invalid SQL query was used sent to the SQL Server. This can only be fixed by R&D	
IFO	INFOSTORE	8	CODE_ERROR	1100	Invalid SQL Query : %s	An invalid SQL Query was sent to the server	
IFO	INFOSTORE	8	CODE_ERROR	1101	Invalid SQL Query : %s	An invalid SQL Query was sent to the server	
IFO	INFOSTORE	8	CODE_ERROR	1200	Invalid SQL Query : %s	An invalid SQL Query was sent to the server	

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
IFO	INFOSTORE	8	CODE_ERROR	1201	Invalid SQL Query : %s	An invalid SQL Query was sent to the server	
IFO	INFOSTORE	8	CODE_ERROR	1300	Invalid SQL Query : %s	An invalid SQL Query was sent to the server	
IFO	INFOSTORE	8	CODE_ERROR	1301	Invalid SQL Query : %s	An invalid SQL Query was sent to the server	
IFO	INFOSTORE	8	CODE_ERROR	1400	Invalid SQL Query : %s	An invalid SQL Query was sent to the server	
IFO	INFOSTORE	8	CODE_ERROR	1401	Invalid SQL Query : %s	An invalid SQL Query was sent to the server	
IFO	INFOSTORE	8	CODE_ERROR	1500	Invalid SQL Query : %s	An invalid SQL Query was sent to the server	
IFO	INFOSTORE	8	CODE_ERROR	1501	Invalid SQL Query : %s	An invalid SQL Query was sent to the server	
IFO	INFOSTORE	8	CODE_ERROR	1600	Invalid SQL Query : %s	An invalid SQL Query was sent to the server	
IFO	INFOSTORE	8	CODE_ERROR	1601	Invalid SQL Query : %s	An invalid SQL Query was sent to the server	
IFO	INFOSTORE	8	CODE_ERROR	1901	Invalid SQL query: %s	An invalid query was sent to the database.	

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
IFO	INFOSTORE	8	CODE_ERROR	2400	Invalid SQL Query : %s	An invalid SQL Query was sent to the server	
IFO	INFOSTORE	8	CODE_ERROR	2401	Invalid SQL Query : %s	An invalid SQL Query was sent to the server	
IFO	INFOSTORE	8	CODE_ERROR	2500	Invalid SQL Query : %s	An invalid SQL Query was sent to the server	
IFO	INFOSTORE	8	CODE_ERROR	2501	Invalid SQL Query : %s	An invalid SQL Query was sent to the server	
IFO	INFOSTORE	8	CODE_ERROR	2601	Invalid SQL Query : %s	An invalid SQL Query was sent to the server	
IFO	INFOSTORE	9	CONCURRENT_MODIFICA-TION	405	Could not delete all objects.	Not all infoitems in the given folder could be deleted. This may be due to the infoitems being modified since the last request, or the objects might not even exist anymore or the user doesn't have enough delete permissions on certain objects.	

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
IFO	INFOSTORE	9	CONCURRENT_MODIFICA-TION	415	This document is locked.	The infoitem was locked by some other user. Only the user that locked the item (the one that modified the entry) can modify a locked infoitem.	
IFO	INFOSTORE	9	CONCURRENT_MODIFICA-TION	416	You cannot unlock this document.	The infoitem was locked by some other user. Only the user that locked the item and the creator of the item can unlock a locked infoitem.	
IFO	INFOSTORE	9	CONCURRENT_MODIFICA-TION	700	Could not delete Document-Metadata %d. Please try again.	The Document-Metadata entry in the DB for the given resource could not be created. This is mostly due to someone else modifying the entry. This can also mean, that the entry has been deleted already.	

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
IFO	INFOSTORE	9	CONCURRENT_MODIFICA-TION	1302	The document could not be updated because it was modified. Reload the view.	The document could not be updated because it was modified.	
IFO	INFOSTORE	9	CONCURRENT_MODIFICA-TION	1303	The document was updated in between do and undo. The Database is now probably inconsistent.	The document was updated in between do and undo. The Database is now probalby inconsistent.	
IFO	INFOSTORE	9	CONCURRENT_MODIFICA-TION	1402	The document could not be updated because it was modified. Reload the view.	The document could not be updated because it was modified.	
IFO	INFOSTORE	9	CONCURRENT_MODIFICA-TION	1403	The document was updated in between do and undo. The Database is now probalby inconsistent.	The document was updated in between do and undo. The Database is now probably inconsistent.	
IFO	INFOSTORE	12	TRUNCATED	100	Some fields have values, that are too long	The User entered values that are to long for the database schema.	
LNK	LINKING	1	USER_INPUT	101	Unable to create a link between these two objects. This link already exists. 1. Object %1$d Folder %2$d 2. Object %3$d Folder %4$d Context %5$d		

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
LNK	LINKING	3	PERMISSION	100	Unable to create a link between these two objects. Insufficient rights. 1. Object %1$d Folder %2$d 2. Object %3$d Folder %4$d Context %5$d		
LNK	LINKING	3	PERMISSION	105	Unable to create a link between these two objects. Insufficient rights. 1. Object %1$d 2. Object %2$d Context %3$d		
LNK	LINKING	3	PERMISSION	106	Unable to create a link between these two objects. Insufficient rights. 1. Object %1$d Folder %2$d 2. Object %3$d Folder %4$d Context %5$d		
LNK	LINKING	3	PERMISSION	110	Unable to create a link between these two objects. Insufficient rights. Object %1$d Folder %2$d Context %3$d		
LNK	LINKING	8	CODE_ERROR	102	Unable to pick up a connection from the DBPool		
LNK	LINKING	8	CODE_ERROR	103	An error occurred. Unable to save this linking between those two objects. 1. Object %1$d Folder %2$d 2. Object %3$d Folder %4$d Context %5$d		
LNK	LINKING	8	CODE_ERROR	104	An error occurred. Unable to save this linking between those two objects. 1. Object %1$d Folder %2$d 2. Object %3$d Folder %4$d Context %5$d		
LNK	LINKING	8	CODE_ERROR	107	An error occurred. Unable to load some links for this objects.		

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
					1. Object %1$d 2. Object %2$d Context %3$d		
LNK	LINKING	8	CODE_ERROR	109	Unable to load all links from this objects. Object %1$d Folder %2$d User %3$d Context %4$d		
LNK	LINKING	8	CODE_ERROR	111	An error occurred. Unable to delete some links from this objects. Object %1$d Folder %2$d Context %3$d		
LNK	LINKING	8	CODE_ERROR	112	Unable to delete all links from this objects. Object %1$d Context %2$d		
LNK	LINKING	8	CODE_ERROR	113	Unable to delete all links from folder. Folder %1$d Context %2$d		
LNK	LINKING	8	CODE_ERROR	114	Unable to load all links from this objects. Object %1$d User %2$d Context %3$d		
LGI	LOGIN	1	USER_INPUT	2	Too few (%d) login attributes.	TODO	com.openexchange.configjump.ConfigJumpException
LGI	LOGIN	5	SUBSYSTEM_OR_SERVICE_DOWN	3	Problem while communicating with external authorization.	TODO	com.openexchange.configjump.ConfigJumpException
LGI	LOGIN	8	CODE_ERROR	1	Unknown problem: %s.	TODO	com.openexchange.configjump.ConfigJumpException
LGI	LOGIN	8	CODE_ERROR	4	Instantiating the class failed.	TODO	com.openexchange.configjump.ConfigJumpException
LGI	LOGIN	8	CODE_ERROR	7	URL %s is malformed.	TODO	com.openexchange.configjump.ConfigJumpException
LGI	LOGIN	10	SETUP_ERROR	5	Class %1$s can not be found.	TODO	com.openexchange.configjump.ConfigJumpException
LGI	LOGIN	10	SETUP_ERROR	6	Missing property %1$s in system.properties.	TODO	com.openexchange.configjump.ConfigJumpException

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
LGI	LOGIN	10	SETUP_ERROR	8	Extras link is not implemented.	TODO	com.openexchange.configjump.ConfigJumpException
MSG	MAIL	1	USER_INPUT	24	No attachment was found with id %1$s in message	TODO	com.openexchange.mail.MailException
MSG	MAIL	1	USER_INPUT	25	Versit attachment could not be saved due to an unsupported MIME type: %1$s	TODO	com.openexchange.mail.MailException
MSG	MAIL	1	USER_INPUT	28	Upload quota (%1$s) exceeded for file %2$s (size=%3$s)	TODO	com.openexchange.mail.MailException
MSG	MAIL	1	USER_INPUT	29	Upload quota (%1$s) exceeded	TODO	com.openexchange.mail.MailException
MSG	MAIL	1	USER_INPUT	46	Bad value %1$s in parameter %2$s	TODO	com.openexchange.mail.MailException
MSG	MAIL	1	USER_INPUT	47	No reply on multiple message possible	TODO	com.openexchange.mail.MailException
MSG	MAIL	1	USER_INPUT	56	The specified email address %1$s is not covered by allowed email address aliases	TODO	com.openexchange.mail.MailException
MSG	MAIL	3	PERMISSION	13	No mail module access permitted	TODO	com.openexchange.mail.MailException
MSG	MAIL	3	PERMISSION	50	Folder %1$s does not hold messages and is therefore not selectable	TODO	com.openexchange.mail.MailException
MSG	MAIL	4	TRY_AGAIN	15	Process was interrupted while waiting for a free mail connection. Please try again.	TODO	com.openexchange.mail.MailException
MSG	MAIL	7	INTERNAL_ERROR	0	Unexpected error: %1$s	TODO	com.openexchange.mail.MailException
MSG	MAIL	7	INTERNAL_ERROR	7	A part's content could not be read from message %1$s in mail folder %2$s	TODO	com.openexchange.mail.MailException
MSG	MAIL	8	CODE_ERROR	1	Missing parameter %1$s	TODO	com.openexchange.mail.MailException
MSG	MAIL	8	CODE_ERROR	1	Missing parameter %1$s	TODO	com.openexchange.mail.MailException

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
MSG	MAIL	8	CODE_ERROR	2	Invalid permission values: fp=%1$s orp=%2$s owp=%3$s odp=%4$s	TODO	com.openexchange.mail.MailException
MSG	MAIL	8	CODE_ERROR	3	A JSON error occurred: %1$s	TODO	com.openexchange.mail.MailException
MSG	MAIL	8	CODE_ERROR	4	Missing parameter in user's mail config: %1$s	TODO	com.openexchange.mail.MailException
MSG	MAIL	8	CODE_ERROR	6	Invalid multipart content. Number of enclosed contents is 0	TODO	com.openexchange.mail.MailException
MSG	MAIL	8	CODE_ERROR	8	An I/O error occurred %1$s	TODO	com.openexchange.mail.MailException
MSG	MAIL	8	CODE_ERROR	9	Invalid message path: %1$s	TODO	com.openexchange.mail.MailException
MSG	MAIL	8	CODE_ERROR	10	Unknown color label: %1$s	TODO	com.openexchange.mail.MailException
MSG	MAIL	8	CODE_ERROR	16	Unsupported charset-encoding: %1$s	TODO	com.openexchange.mail.MailException
MSG	MAIL	8	CODE_ERROR	17	Header %1$s could not be properly parsed	TODO	com.openexchange.mail.MailException
MSG	MAIL	8	CODE_ERROR	18	Missing default %1$s folder in user mail settings	TODO	com.openexchange.mail.MailException
MSG	MAIL	8	CODE_ERROR	20	Invalid Content-Type value: %1$s	TODO	com.openexchange.mail.MailException
MSG	MAIL	8	CODE_ERROR	21	Messaging error: %1$s	TODO	com.openexchange.mail.MailException
MSG	MAIL	8	CODE_ERROR	22	Message field %1$s cannot be handled	TODO	com.openexchange.mail.MailException
MSG	MAIL	8	CODE_ERROR	23	Versit error: %1$s	TODO	com.openexchange.mail.MailException
MSG	MAIL	8	CODE_ERROR	26	Invalid parameter name: %1$s	TODO	com.openexchange.mail.MailException
MSG	MAIL	8	CODE_ERROR	27	Could not create a PartModifier instance from name %1$s	TODO	com.openexchange.mail.MailException
MSG	MAIL	8	CODE_ERROR	31	Invalid integer value %1$s	TODO	com.openexchange.mail.MailException
MSG	MAIL	8	CODE_ERROR	32	Mail(s) %1$s could not be found in folder %2$s	TODO	com.openexchange.mail.MailException

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
MSG	MAIL	8	CODE_ERROR	33	Action %1$s is not supported by %2$s	TODO	com.openexchange.mail.MailException
MSG	MAIL	8	CODE_ERROR	35	Message could not be sent	TODO	com.openexchange.mail.MailException
MSG	MAIL	8	CODE_ERROR	36	Unknown or unsupported action: %1$s	TODO	com.openexchange.mail.MailException
MSG	MAIL	8	CODE_ERROR	37	Missing field %1$s	TODO	com.openexchange.mail.MailException
MSG	MAIL	8	CODE_ERROR	38	Unsupported MIME type %1$s	TODO	com.openexchange.mail.MailException
MSG	MAIL	8	CODE_ERROR	40	The message part with sequence ID %1$s could not be found in message %2$s in folder %3$s	TODO	com.openexchange.mail.MailException
MSG	MAIL	8	CODE_ERROR	41	No content available in mail part	TODO	com.openexchange.mail.MailException
MSG	MAIL	8	CODE_ERROR	45	Protocol cannot be parsed: %1$s	TODO	com.openexchange.mail.MailException
MSG	MAIL	8	CODE_ERROR	48	Illegal system flag argument %1$s. Flag must be to the power of 2	TODO	com.openexchange.mail.MailException
MSG	MAIL	8	CODE_ERROR	49	Attachment %1$s not found inside mail %2$s of mail folder %3$s	TODO	com.openexchange.mail.MailException
MSG	MAIL	8	CODE_ERROR	51	Insufficient folder attributes: Either existence status or fullname have to be present to determine if a mail folder create or update shall be performed	TODO	com.openexchange.mail.MailException
MSG	MAIL	8	CODE_ERROR	52	Root folder must not be modified or deleted	TODO	com.openexchange.mail.MailException
MSG	MAIL	8	CODE_ERROR	54	Missing mail folder fullname	TODO	com.openexchange.mail.MailException

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
MSG	MAIL	8	CODE_ERROR	55	Image attachment with Content-Id %1$s not found inside mail %2$s of mail folder %3$s	TODO	com.openexchange.mail.MailException
MSG	MAIL	8	CODE_ERROR	57	Checking default folders on connect failed: %1$s	TODO	com.openexchange.mail.MailException
MSG	MAIL	8	CODE_ERROR	58	The types of specified data source are not supported	TODO	com.openexchange.mail.MailException
MSG	MAIL	10	SETUP_ERROR	5	Configuration error: %1$s	TODO	com.openexchange.mail.MailException
MSG	MAIL	10	SETUP_ERROR	11	Cannot instantiate class %1$s.	TODO	com.openexchange.mail.MailException
MSG	MAIL	10	SETUP_ERROR	12	Cannot initialize mail module	TODO	com.openexchange.mail.MailException
MSG	MAIL	10	SETUP_ERROR	14	No mail account exists for admin user in context %1$s	TODO	com.openexchange.mail.MailException
MSG	MAIL	10	SETUP_ERROR	19	Spam handler initialization failed: %1$s	TODO	com.openexchange.mail.MailException
MSG	MAIL	10	SETUP_ERROR	44	No provider could be found for protocol/URL %1$s	TODO	com.openexchange.mail.MailException
MSG	MAIL	10	SETUP_ERROR	53	No transport provider could be found for protocol/URL %1$s	TODO	com.openexchange.mail.MailException
MSG	MAIL	11	EXTERNAL_RE-SOURCE_FULL	39	Mail could not be moved to trash folder. Quota exceeded	TODO	com.openexchange.mail.MailException
MSG	MAIL	11	EXTERNAL_RE-SOURCE_FULL	42	Message has been successfully sent, but a copy could not be placed in your sent folder due to exceeded quota.	TODO	com.openexchange.mail.MailException
MSG	MAIL	11	EXTERNAL_RE-SOURCE_FULL	43	Message has been successfully sent, but a copy could not be placed in your sent folder.	TODO	com.openexchange.mail.MailException
PERMISSION	PERMISSION	1	USER_INPUT	1	No permission for modul: %s.	TODO	com.openexchange.api.OXPermissionException
PERMISSION	PERMISSION	3	PERMISSION	2	No folder permission.	TODO	com.openexchange.api.OXPermissionException
REM	REMINDER	8	CODE_ERROR	1	User is missing for the reminder.	TODO	com.openexchange.groupware.reminder.ReminderException

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
REM	REMINDER	8	CODE_ERROR	2	Identifier of the object is missing.	TODO	com.openexchange.groupware.reminder.ReminderException
REM	REMINDER	8	CODE_ERROR	3	Alarm date for the reminder is missing.	TODO	com.openexchange.groupware.reminder.ReminderException
REM	REMINDER	8	CODE_ERROR	4	Unable to insert reminder	TODO	com.openexchange.groupware.reminder.ReminderException
REM	REMINDER	8	CODE_ERROR	5	Unable to update reminder.	TODO	com.openexchange.groupware.reminder.ReminderException
REM	REMINDER	8	CODE_ERROR	6	Unable to delete reminder	TODO	com.openexchange.groupware.reminder.ReminderException
REM	REMINDER	8	CODE_ERROR	7	Unable to load reminder	TODO	com.openexchange.groupware.reminder.ReminderException
REM	REMINDER	8	CODE_ERROR	8	Unable to list reminder	TODO	com.openexchange.groupware.reminder.ReminderException
REM	REMINDER	8	CODE_ERROR	9	Cannot find reminder (identifier %d). Context %d.	TODO	com.openexchange.groupware.reminder.ReminderException
REM	REMINDER	8	CODE_ERROR	10	Folder of the object is missing.	TODO	com.openexchange.groupware.reminder.ReminderException
REM	REMINDER	8	CODE_ERROR	11	Module type of the object is missing.	TODO	com.openexchange.groupware.reminder.ReminderException
REM	REMINDER	8	CODE_ERROR	12	Updated too much reminder.	TODO	com.openexchange.groupware.reminder.ReminderException
REM	REMINDER	8	CODE_ERROR	13	SQL Problem: %s.	TODO	com.openexchange.groupware.reminder.ReminderException
RES	RESOURCE	1	USER_INPUT	11	Invalid resource identifier: %1$s	TODO	com.openexchange.resource.ResourceException
RES	RESOURCE	1	USER_INPUT	12	Invalid resource email address: %1$s	TODO	com.openexchange.resource.ResourceException
RES	RESOURCE	3	PERMISSION	9	No permission to modify resources in context %1$s	TODO	com.openexchange.resource.ResourceException
RES	RESOURCE	5	SUBSYSTEM_OR_SERVICE_DOWN	1	Cannot get database connection.	TODO	com.openexchange.resource.ResourceException

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
RES	RESOURCE	8	CODE_ERROR	2	SQL Problem: %1$s	TODO	com.openexchange.resource.ResourceException
RES	RESOURCE	8	CODE_ERROR	3	Cannot find resource group with identifier %1$d.	TODO	com.openexchange.resource.ResourceException
RES	RESOURCE	8	CODE_ERROR	4	Found resource groups with same identifier %1$d.	TODO	com.openexchange.resource.ResourceException
RES	RESOURCE	8	CODE_ERROR	5	Cannot find resource with identifier %1$d.	TODO	com.openexchange.resource.ResourceException
RES	RESOURCE	8	CODE_ERROR	6	Found resource(s) with same identifier %1$s.	TODO	com.openexchange.resource.ResourceException
RES	RESOURCE	8	CODE_ERROR	7	No resource given.	TODO	com.openexchange.resource.ResourceException
RES	RESOURCE	8	CODE_ERROR	8	Missing mandatory field(s) in given resource.	TODO	com.openexchange.resource.ResourceException
RES	RESOURCE	8	CODE_ERROR	10	Found resource(s) with same email address %1$s.	TODO	com.openexchange.resource.ResourceException
RES	RESOURCE	9	CONCURRENT_MODIFICA-TION	13	The resource has been changed in the meantime	TODO	com.openexchange.resource.ResourceException
SRV	SERVICE	4	TRY_AGAIN	1	The required service %1$s is temporary not available. Please try again later.	TODO	com.openexchange.server.ServiceException
SRV	SERVICE	8	CODE_ERROR	2	An I/O error occurred	TODO	com.openexchange.server.ServiceException
SRV	SERVICE	8	CODE_ERROR	3	Service initialization failed	TODO	com.openexchange.server.ServiceException
SVL	SERVLET	1	USER_INPUT	5	Value %1$s of attribute %2$s contains non digit characters.	TODO	com.openexchange.tools.servlet.OXJSONException
SVL	SERVLET	1	USER_INPUT	6	Too many digits within field %1$s.	TODO	com.openexchange.tools.servlet.OXJSONException
SVL	SERVLET	1	USER_INPUT	8	Invalid value %2$s in JSON attribute %1$s.	TODO	com.openexchange.tools.servlet.OXJSONException
SVL	SERVLET	4	TRY_AGAIN	3	Invalid cookie.	TODO	com.openexchange.tools.servlet.OXJSONException
SVL	SERVLET	7	INTERNAL_ERROR	5	I/O error while writing to Writer object: %s	TODO	com.openexchange.tools.servlet.AjaxException
SVL	SERVLET	8	CODE_ERROR	1	Unknown AJAX action: %s.	TODO	com.openexchange.tools.servlet.AjaxException

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
SVL	SERVLET	8	CODE_ERROR	1	Exception while writing JSON.	TODO	com.openexchange.tools.servlet.OXJSONException
SVL	SERVLET	8	CODE_ERROR	2	Missing the following request parameter: %s	TODO	com.openexchange.tools.servlet.AjaxException
SVL	SERVLET	8	CODE_ERROR	2	Exception while parsing JSON: %s.	TODO	com.openexchange.tools.servlet.OXJSONException
SVL	SERVLET	8	CODE_ERROR	3	Missing upload image.	TODO	com.openexchange.tools.servlet.AjaxException
SVL	SERVLET	8	CODE_ERROR	4	Invalid parameter: %s	TODO	com.openexchange.tools.servlet.AjaxException
SVL	SERVLET	8	CODE_ERROR	4	Exception while building JSON.	TODO	com.openexchange.tools.servlet.OXJSONException
SVL	SERVLET	8	CODE_ERROR	4	Servlet mappings could not be loaded due to following error: %s	TODO	com.openexchange.tools.servlet.OXServletException
SVL	SERVLET	8	CODE_ERROR	6	Missing AJAX request handler for module %s	TODO	com.openexchange.tools.servlet.AjaxException
SVL	SERVLET	8	CODE_ERROR	7	Unknown module: %s.	TODO	com.openexchange.tools.servlet.AjaxException
SVL	SERVLET	8	CODE_ERROR	7	Unable to parse value %1$s within field %2$s as a number.	TODO	com.openexchange.tools.servlet.OXJSONException
SVL	SERVLET	8	CODE_ERROR	7	SecurityException while loading servlet class %s	TODO	com.openexchange.tools.servlet.OXServletException
SVL	SERVLET	8	CODE_ERROR	8	Couldn't find servlet class %s	TODO	com.openexchange.tools.servlet.OXServletException
SVL	SERVLET	8	CODE_ERROR	9	No default constructor specified in servlet class %s	TODO	com.openexchange.tools.servlet.OXServletException
SVL	SERVLET	10	SETUP_ERROR	1	Missing property %s in 'system.properties'	TODO	com.openexchange.tools.servlet.OXServletException
SVL	SERVLET	10	SETUP_ERROR	2	Servlet mapping directory does not exist: %s	TODO	com.openexchange.tools.servlet.OXServletException
SVL	SERVLET	10	SETUP_ERROR	3	File is not a directory: %s	TODO	com.openexchange.tools.servlet.OXServletException
SVL	SERVLET	10	SETUP_ERROR	5	No servlet class name found for key %s. Please check servlet mappings.	TODO	com.openexchange.tools.servlet.OXServletException

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
SVL	SERVLET	10	SETUP_ERROR	6	Name %s already mapped to %s. Ignoring servlet class %s	TODO	com.openexchange.tools.servlet.OXServletException
SES	SESSION	3	PERMISSION	205	Wrong client IP address.	If a session exists every request is checked for its client IP address to match the one while creating the session.	
SES	SESSION	4	TRY_AGAIN	203	Your session %s expired. Please start a new browser session.	A session with the given identifier can not be found.	
SES	SESSION	4	TRY_AGAIN	204	Context is locked.		
SES	SESSION	8	CODE_ERROR	201	The session parameter is missing.	Every AJAX request must contain a parameter named session that value contains the identifier of the session cookie.	
SES	SESSION	8	CODE_ERROR	202	The cookie with the session identifier is missing.	Your browser does not send the cookie for identifying your session.	
TSK	TASK	1	USER_INPUT	8	Cannot create private task in public/shared folder %1$d.	TODO	com.openexchange.groupware.tasks.TaskException
TSK	TASK	1	USER_INPUT	28	Private flagged tasks cannot be delegated.	TODO	com.openexchange.groupware.tasks.TaskException

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
TSK	TASK	1	USER_INPUT	30	Percent is %d but must be between 0 and 100.	TODO	com.openexchange.groupware.tasks.TaskException
TSK	TASK	1	USER_INPUT	31	For tasks which are not started the percentage done must be 0 and not %d.	TODO	com.openexchange.groupware.tasks.TaskException
TSK	TASK	1	USER_INPUT	36	Unknown recurrence type %d.	TODO	com.openexchange.groupware.tasks.TaskException
TSK	TASK	1	USER_INPUT	37	Value for the recurrence is missing: %d.	TODO	com.openexchange.groupware.tasks.TaskException
TSK	TASK	1	USER_INPUT	38	For finished tasks the percentage must be 100 and not %d.	TODO	com.openexchange.groupware.tasks.TaskException
TSK	TASK	1	USER_INPUT	40	Start date %1$s must be before end date %2$s.	TODO	com.openexchange.groupware.tasks.TaskException
TSK	TASK	1	USER_INPUT	43	Only the task creator is allowed to set private flag.	TODO	com.openexchange.groupware.tasks.TaskException
TSK	TASK	1	USER_INPUT	44	Cannot add external participant without email address.	TODO	com.openexchange.groupware.tasks.TaskException
TSK	TASK	1	USER_INPUT	47	Task contains invalid data: %1$s	TODO	com.openexchange.groupware.tasks.TaskException
TSK	TASK	3	PERMISSION	6	Folder %1$s (%2$d) is not a task folder.	TODO	com.openexchange.groupware.tasks.TaskException
TSK	TASK	3	PERMISSION	14	You are not allowed to delete the task.	TODO	com.openexchange.groupware.tasks.TaskException
TSK	TASK	3	PERMISSION	23	You are not allowed to read the contents of folder %1$s (%2$d).	TODO	com.openexchange.groupware.tasks.TaskException
TSK	TASK	3	PERMISSION	24	Tasks are disable for you (%d).	TODO	com.openexchange.groupware.tasks.TaskException
TSK	TASK	3	PERMISSION	25	You are not allowed to create tasks in folder %1$s (%2$d).	TODO	com.openexchange.groupware.tasks.TaskException
TSK	TASK	3	PERMISSION	26	You are not allowed to delegate tasks.	TODO	com.openexchange.groupware.tasks.TaskException
TSK	TASK	3	PERMISSION	33	You are not allowed to edit tasks in folder %1$s (%2$d).	TODO	com.openexchange.groupware.tasks.TaskException

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
TSK	TASK	3	PERMISSION	34	Moving items from or into shared folder %1$s (%2$d) is not allowed.	TODO	com.openexchange.groupware.tasks.TaskException
TSK	TASK	3	PERMISSION	42	Task with private flags cannot be moved to public folder %1$s (%2$d).	TODO	com.openexchange.groupware.tasks.TaskException
TSK	TASK	3	PERMISSION	46	You are not allowed to see the task %1$d in folder %2$s (%3$d).	TODO	com.openexchange.groupware.tasks.TaskException
TSK	TASK	3	PERMISSION	48	The task %1$d is not stored in folder %2$s (%3$d).	TODO	com.openexchange.groupware.tasks.TaskException
TSK	TASK	5	SUBSYSTEM_OR_SER-VICE_DOWN	2	Problem setting auto commit to true.	TODO	com.openexchange.groupware.tasks.TaskException
TSK	TASK	5	SUBSYSTEM_OR_SER-VICE_DOWN	3	Cannot get database connection.	TODO	com.openexchange.groupware.tasks.TaskException
TSK	TASK	8	CODE_ERROR	1	Error while inserting task: %s.	TODO	com.openexchange.groupware.tasks.TaskException
TSK	TASK	8	CODE_ERROR	4	This method is not implemented.	TODO	com.openexchange.groupware.tasks.TaskException
TSK	TASK	8	CODE_ERROR	5	SQL Problem: %s.	TODO	com.openexchange.groupware.tasks.TaskException
TSK	TASK	8	CODE_ERROR	9	SQL problem while updating task: %s.	TODO	com.openexchange.groupware.tasks.TaskException
TSK	TASK	8	CODE_ERROR	10	Counting tasks did not return a result.	TODO	com.openexchange.groupware.tasks.TaskException
TSK	TASK	8	CODE_ERROR	11	SQL problem while deleting task: %s.	TODO	com.openexchange.groupware.tasks.TaskException
TSK	TASK	8	CODE_ERROR	12	Cannot find folder of task participant %1$d.	TODO	com.openexchange.groupware.tasks.TaskException
TSK	TASK	8	CODE_ERROR	13	SQL problem while listing tasks: %s.	TODO	com.openexchange.groupware.tasks.TaskException
TSK	TASK	8	CODE_ERROR	15	Tried to delete %1$d folders but only %2$d were deleted.	TODO	com.openexchange.groupware.tasks.TaskException

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
TSK	TASK	8	CODE_ERROR	16	Tried to delete %1$d participants but only %2$d were deleted.	TODO	com.openexchange.groupware.tasks.TaskException
TSK	TASK	8	CODE_ERROR	18	Participant %d for task %d is not found.	TODO	com.openexchange.groupware.tasks.TaskException
TSK	TASK	8	CODE_ERROR	19	Cannot find task %d in context %d.	TODO	com.openexchange.groupware.tasks.TaskException
TSK	TASK	8	CODE_ERROR	20	Unknown task attribute %d.	TODO	com.openexchange.groupware.tasks.TaskException
TSK	TASK	8	CODE_ERROR	21	Date range in search must contain 2 and not %d values.	TODO	com.openexchange.groupware.tasks.TaskException
TSK	TASK	8	CODE_ERROR	22	Cannot decrease number of attachments below zero.	TODO	com.openexchange.groupware.tasks.TaskException
TSK	TASK	8	CODE_ERROR	27	Missing folder id for creating task.	TODO	com.openexchange.groupware.tasks.TaskException
TSK	TASK	8	CODE_ERROR	32	Cannot send event to event system.	TODO	com.openexchange.groupware.tasks.TaskException
TSK	TASK	8	CODE_ERROR	35	Missing folder mapping for task %1$d.	TODO	com.openexchange.groupware.tasks.TaskException
TSK	TASK	8	CODE_ERROR	39	Invalid task state %d.	TODO	com.openexchange.groupware.tasks.TaskException
TSK	TASK	8	CODE_ERROR	45	Problem with a thread.	TODO	com.openexchange.groupware.tasks.TaskException
TSK	TASK	8	CODE_ERROR	49	Unknown participant type %1$d.	TODO	com.openexchange.groupware.tasks.TaskException
TSK	TASK	9	CONCURRENT_MODIFICATION	7	Edit Conflict. Your change cannot be completed because somebody else has made a conflicting change to the same item. Please refresh or synchronize and try again.	TODO	com.openexchange.groupware.tasks.TaskException
TSK	TASK	12	TRUNCATED	41	The task could not be saved. Please shorten the %1$s and try again. Current length %3$d is	TODO	com.openexchange.groupware.tasks.TaskException

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
					more than allowed length of %2$d characters.		
TAX	TRANSACTION	5	SUBSYSTEM_OR_SER-VICE_DOWN	100	Database cannot be reached.	The Database does not seem to be reachable. This must be fixed by the system administration	
TAX	TRANSACTION	5	SUBSYSTEM_OR_SER-VICE_DOWN	101	Database cannot be reached.	The Database does not seem to be reachable. This must be fixed by the system administration	
TAX	TRANSACTION	5	SUBSYSTEM_OR_SER-VICE_DOWN	400	Cannot commit transaction to write DB		
TAX	TRANSACTION	5	SUBSYSTEM_OR_SER-VICE_DOWN	401	Cannot rollback transaction in write DB		
TAX	TRANSACTION	5	SUBSYSTEM_OR_SER-VICE_DOWN	402	Cannot finish transaction		
TAX	TRANSACTION	7	INTERNAL_ERROR	201	This transaction could not be fully undone. Some components are probably not consistent anymore. Run the recovery tool!	This transaction could not be fully undone. Some components are probably not consistent anymore. Run the recovery tool!	

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
UPD	UPDATE	3	PERMISSION	108	Update conflict detected. Another process is currently updating schema %1$s.		
UPD	UPDATE	3	PERMISSION	112	Update conflict detected. Schema %1$s is not marked as LOCKED.		
UPD	UPDATE	5	SUBSYSTEM_OR_SER-VICE_DOWN	801	Cannot get database connection.		
UPD	UPDATE	5	SUBSYSTEM_OR_SER-VICE_DOWN	803	Cannot get database connection.		
UPD	UPDATE	5	SUBSYSTEM_OR_SER-VICE_DOWN	805	Cannot get database connection.		
UPD	UPDATE	5	SUBSYSTEM_OR_SER-VICE_DOWN	901	Cannot get database connection.		
UPD	UPDATE	5	SUBSYSTEM_OR_SER-VICE_DOWN	903	Cannot get database connection.		
UPD	UPDATE	5	SUBSYSTEM_OR_SER-VICE_DOWN	908	Cannot get database connection.		
UPD	UPDATE	7	INTERNAL_ERROR	107	Though expected, SQL query returned no result.		
UPD	UPDATE	7	INTERNAL_ERROR	109	Table update failed. Schema %1$s could not be locked.		
UPD	UPDATE	7	INTERNAL_ERROR	111	Though expected, SQL query returned no result.		
UPD	UPDATE	7	INTERNAL_ERROR	113	Table update failed. Schema %1$s could not be unlocked.		
UPD	UPDATE	8	CODE_ERROR	101	A SQL error occurred while reading schema version information: %1$s.		
UPD	UPDATE	8	CODE_ERROR	103	A SQL exception occurred while checking for schema version table: %1$s.	Checking if a table exist failed.	

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
UPD	UPDATE	8	CODE_ERROR	106	A SQL error occurred while reading schema version information: %1$s.		
UPD	UPDATE	8	CODE_ERROR	110	A SQL error occurred while reading schema version information: %1$s.		
UPD	UPDATE	8	CODE_ERROR	114	A SQL error occurred while creating table 'version': %1$s.		
UPD	UPDATE	8	CODE_ERROR	115	A database error occurred while creating table 'version': %1$s.		
UPD	UPDATE	8	CODE_ERROR	116	A database error occurred while reading schema version information: %1$s.		
UPD	UPDATE	8	CODE_ERROR	130	A SQL error occurred while creating table 'version': %1$s.		
UPD	UPDATE	8	CODE_ERROR	131	A database error occurred while creating table 'version': %1$s.		
UPD	UPDATE	8	CODE_ERROR	601	Update process initialization failed: %1$s.		
UPD	UPDATE	8	CODE_ERROR	700	A SQL Error occurred while resolving folder name conflicts: %s		
UPD	UPDATE	8	CODE_ERROR	701	An SQL error occurred: %1$s.		
UPD	UPDATE	8	CODE_ERROR	701	An SQL error occurred: %1$s.		
UPD	UPDATE	8	CODE_ERROR	701	An SQL error occurred: %1$s.		
UPD	UPDATE	8	CODE_ERROR	701	An SQL error occurred: %1$s.		
UPD	UPDATE	8	CODE_ERROR	701	An SQL error occurred while performing task ClearLeftoverAttachmentsUpdateTask: %1$s.		
UPD	UPDATE	8	CODE_ERROR	701	An SQL error occurred: %1$s.		

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
UPD	UPDATE	8	CODE_ERROR	701	An SQL error occurred while performing task ContactsChangedFromUpdateTask: %1$s.		
UPD	UPDATE	8	CODE_ERROR	701	SQL error occurred while performing task ContactsFieldSizeUpdateTask: %1$s.		
UPD	UPDATE	8	CODE_ERROR	701	An SQL error occurred while performing task ContactsFieldSizeUpdateTask: %1$s.		
UPD	UPDATE	8	CODE_ERROR	701	An SQL error occurred: %1$s.		
UPD	UPDATE	8	CODE_ERROR	701	An SQL error occurred: %1$s.		
UPD	UPDATE	8	CODE_ERROR	701	An SQL error occurred: %1$s.		
UPD	UPDATE	8	CODE_ERROR	701	An SQL error occurred while performing task CreateTableVersion: %1$s.		
UPD	UPDATE	8	CODE_ERROR	701	An SQL error occurred while performing task DelFolderTreeTableUpdateTask: %1$s.		
UPD	UPDATE	8	CODE_ERROR	701	SQL error occurred while performing task FolderAddPermColumnUpdateTask: %1$s.		
UPD	UPDATE	8	CODE_ERROR	701	Error in SQL Statement		
UPD	UPDATE	8	CODE_ERROR	701	An SQL error occurred while performing task MailUploadQuotaUpdateTask: %1$s.		
UPD	UPDATE	8	CODE_ERROR	701	A SQL error occurred while performing task NewInfostoreFolderTreeUpdateTask: %1$s.		
UPD	UPDATE	8	CODE_ERROR	701	An SQL error occurred while performing task PasswordMechUpdateTask: %1$s.		

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
UPD	UPDATE	8	CODE_ERROR	701	An SQL error occurred while performing task SpamUpdate-Task: %1$s.		
UPD	UPDATE	8	CODE_ERROR	701	A SQL error occurred while performing task SpellCheckUserDictTableTask: %1$s.		
UPD	UPDATE	8	CODE_ERROR	701	An SQL error occurred while performing task DelFold-erTreeTableUpdateTask: %1$s.		
UPD	UPDATE	8	CODE_ERROR	702	SQL error occurred while per-forming task ContactsFieldSize-UpdateTask: %1$s.		
UPD	UPDATE	8	CODE_ERROR	702	SQL error occurred while per-forming task FolderAddPerm-ColumnUpdateTask: %1$s.		
UPD	UPDATE	8	CODE_ERROR	702	An SQL error occurred while performing task Password-MechUpdateTask: %1$s.		
UPD	UPDATE	8	CODE_ERROR	702	An SQL error occurred while performing task Password-MechUpdateTask: %1$s.		
UPD	UPDATE	8	CODE_ERROR	703	SQL error occurred while per-forming task FolderAddPerm-ColumnUpdateTask: %1$s.		
UPD	UPDATE	8	CODE_ERROR	802	SQL Problem: %s.		
UPD	UPDATE	8	CODE_ERROR	804	SQL Problem: %s.		
UPD	UPDATE	8	CODE_ERROR	806	SQL Problem: %s.		
UPD	UPDATE	8	CODE_ERROR	807	SQL Problem: %s.		
UPD	UPDATE	8	CODE_ERROR	808	SQL Problem: %s.		
UPD	UPDATE	8	CODE_ERROR	902	SQL Problem: %s.		
UPD	UPDATE	8	CODE_ERROR	904	SQL Problem: %s.		

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
UPD	UPDATE	8	CODE_ERROR	905	SQL Problem: %s.		
UPD	UPDATE	8	CODE_ERROR	906	SQL Problem: %s.		
UPD	UPDATE	8	CODE_ERROR	907	SQL Problem: %s.		
UPD	UPDATE	8	CODE_ERROR	909	SQL Problem: %s.		
UPD	UPDATE	8	CODE_ERROR	910	SQL Problem: %s.		
UPD	UPDATE	10	SETUP_ERROR	102	No row found in table update.		
UPD	UPDATE	10	SETUP_ERROR	104	Multiple rows found.		
UPD	UPDATE	10	SETUP_ERROR	105	Resolving schema for context %1$d failed.	Strange context identifier or a mapping is missing.	
UPD	UPDATE	10	SETUP_ERROR	301	Class %1$s can not be loaded.		
UPD	UPDATE	10	SETUP_ERROR	302	Cannot instantiate class %1$s.		
UPD	UPDATE	10	SETUP_ERROR	501	Cannot instantiate updater implementation %1$s.		
UPD	UPDATE	10	SETUP_ERROR	702	Can't resolve filestore.	No Description	
USR	USER	1	USER_INPUT	15	New password contains invalid characters	TODO	com.openexchange.groupware.ldap.UserException
USR	USER	3	PERMISSION	13	No permission to modify resources in context %1$s	TODO	com.openexchange.groupware.ldap.UserException
USR	USER	5	SUBSYSTEM_OR_SERVICE_DOWN	5	Cannot get database connection.	TODO	com.openexchange.groupware.ldap.UserException
USR	USER	8	CODE_ERROR	2	Cannot build distinguished name from %s.	TODO	com.openexchange.groupware.ldap.UserException
USR	USER	8	CODE_ERROR	6	Cannot clone object %1$s.	TODO	com.openexchange.groupware.ldap.UserException
USR	USER	8	CODE_ERROR	7	SQL Problem: %s.	TODO	com.openexchange.groupware.ldap.UserException
USR	USER	8	CODE_ERROR	8	Hash algorithm %s isn't found.	TODO	com.openexchange.groupware.ldap.UserException
USR	USER	8	CODE_ERROR	9	Encoding %s cannot be used.	TODO	com.openexchange.groupware.ldap.UserException
USR	USER	8	CODE_ERROR	10	Cannot find user with identifier %1$s in context %2$d.	TODO	com.openexchange.groupware.ldap.UserException

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
USR	USER	8	CODE_ERROR	11	Found two user with same identifier %1$s in context %2$d.	TODO	com.openexchange.groupware.ldap.UserException
USR	USER	8	CODE_ERROR	12	Problem putting/removing an object into/from the cache.	TODO	com.openexchange.groupware.ldap.UserException
USR	USER	8	CODE_ERROR	14	Missing or unknown password mechanism %1$s	TODO	com.openexchange.groupware.ldap.UserException
USR	USER	10	SETUP_ERROR	1	Cannot find property %s.	TODO	com.openexchange.groupware.ldap.UserException
USR	USER	10	SETUP_ERROR	3	Class %s can not be loaded.	TODO	com.openexchange.groupware.ldap.UserException
USR	USER	10	SETUP_ERROR	4	Cannot instantiate class %s.	TODO	com.openexchange.groupware.ldap.UserException
USS	USER_SETTING	1	USER_INPUT	9	Invalid value %s written to setting %s.	TODO	com.openexchange.groupware.settings.SettingException
USS	USER_SETTING	3	PERMISSION	3	Writing the setting %1$s is not permitted.	TODO	com.openexchange.groupware.settings.SettingException
USS	USER_SETTING	5	SUBSYSTEM_OR_SERVICE_DOWN	1	Cannot get connection to database.	TODO	com.openexchange.groupware.settings.SettingException
USS	USER_SETTING	8	CODE_ERROR	1	A SQL error occurred: %1$s	TODO	com.openexchange.groupware.userconfiguration.UserConfigurationException
USS	USER_SETTING	8	CODE_ERROR	2	A DBPooling error occurred	TODO	com.openexchange.groupware.userconfiguration.UserConfigurationException
USS	USER_SETTING	8	CODE_ERROR	3	Configuration for user %1$s could not be found in context %2$d	TODO	com.openexchange.groupware.userconfiguration.UserConfigurationException
USS	USER_SETTING	8	CODE_ERROR	4	Unknown setting path %1$s.	TODO	com.openexchange.groupware.settings.SettingException
USS	USER_SETTING	8	CODE_ERROR	5	Setting %1$s is not a leaf one.	TODO	com.openexchange.groupware.settings.SettingException
USS	USER_SETTING	8	CODE_ERROR	6	Exception while parsing JSON.	TODO	com.openexchange.groupware.settings.SettingException
USS	USER_SETTING	8	CODE_ERROR	6	Instantiating the class failed.	TODO	com.openexchange.groupware.userconfiguration.UserConfigurationException

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
USS	USER_SETTING	8	CODE_ERROR	7	Cache initialization failed. Region: %1$s	TODO	com.openexchange.groupware.userconfiguration.UserConfigurationException
USS	USER_SETTING	8	CODE_ERROR	8	Problem while initialising configuration tree.	TODO	com.openexchange.groupware.settings.SettingException
USS	USER_SETTING	8	CODE_ERROR	8	User configuration could not be put into cache: %1$s	TODO	com.openexchange.groupware.userconfiguration.UserConfigurationException
USS	USER_SETTING	8	CODE_ERROR	9	User configuration cache could not be cleared: %1$s	TODO	com.openexchange.groupware.userconfiguration.UserConfigurationException
USS	USER_SETTING	8	CODE_ERROR	9	User configuration could not be removed from cache: %1$s	TODO	com.openexchange.groupware.userconfiguration.UserConfigurationException
USS	USER_SETTING	8	CODE_ERROR	10	Found duplicate database identifier %d. Not adding preferences item.	TODO	com.openexchange.groupware.settings.SettingException
USS	USER_SETTING	8	CODE_ERROR	10	Mail settings for user %1$s could not be found in context %2$d	TODO	com.openexchange.groupware.userconfiguration.UserConfigurationException
USS	USER_SETTING	8	CODE_ERROR	11	Exception while writing JSON object.	TODO	com.openexchange.groupware.settings.SettingException
USS	USER_SETTING	10	SETUP_ERROR	4	Missing property %1$s in system.properties.	TODO	com.openexchange.groupware.userconfiguration.UserConfigurationException
USS	USER_SETTING	10	SETUP_ERROR	5	Class %1$s can not be found.	TODO	com.openexchange.groupware.userconfiguration.UserConfigurationException
IMAP	imap_imaps	1	USER_INPUT	25	Versit attachment could not be saved due to an unsupported MIME type: %1$s	TODO	com.openexchange.imap.IMAPException
IMAP	imap_imaps	1	USER_INPUT	2013	Mail folder cannot be created/renamed. Name must not contain character '%1$s'	TODO	com.openexchange.imap.IMAPException
IMAP	imap_imaps	1	USER_INPUT	2017	No administer permission specified for folder %1$s	TODO	com.openexchange.imap.IMAPException

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
IMAP	imap_imaps	1	USER_INPUT	2036	Message move aborted for user %1$s. Source and destination folder are equal: %2$s	TODO	com.openexchange.imap.IMAPException
IMAP	imap_imaps	1	USER_INPUT	2043	No attachment was found with id %1$s in message	TODO	com.openexchange.imap.IMAPException
IMAP	imap_imaps	2	USER_CONFIGURATION	2003	User %1$s has no mail module access due to user configuration	TODO	com.openexchange.imap.IMAPException
IMAP	imap_imaps	3	PERMISSION	50	Folder %1$s does not hold messages and is therefore not selectable	TODO	com.openexchange.imap.IMAPException
IMAP	imap_imaps	3	PERMISSION	1010	An attempt was made to open a read-only folder with read-write: %1$s	TODO	com.openexchange.imap.IMAPException
IMAP	imap_imaps	3	PERMISSION	2003	No access to mail folder %1$s	TODO	com.openexchange.imap.IMAPException
IMAP	imap_imaps	3	PERMISSION	2004	No lookup access to mail folder %1$s	TODO	com.openexchange.imap.IMAPException
IMAP	imap_imaps	3	PERMISSION	2005	No read access to mail folder %1$s	TODO	com.openexchange.imap.IMAPException
IMAP	imap_imaps	3	PERMISSION	2006	No delete access to mail folder %1$s	TODO	com.openexchange.imap.IMAPException
IMAP	imap_imaps	3	PERMISSION	2007	No insert access to mail folder %1$s	TODO	com.openexchange.imap.IMAPException
IMAP	imap_imaps	3	PERMISSION	2008	No create access to mail folder %1$s	TODO	com.openexchange.imap.IMAPException
IMAP	imap_imaps	3	PERMISSION	2009	No administer access to mail folder %1$s	TODO	com.openexchange.imap.IMAPException
IMAP	imap_imaps	3	PERMISSION	2010	No write access to IMAP folder %1$s	TODO	com.openexchange.imap.IMAPException
IMAP	imap_imaps	3	PERMISSION	2011	No keep-seen access to mail folder %1$s	TODO	com.openexchange.imap.IMAPException

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
IMAP	imap_imaps	3	PERMISSION	2012	Folder %1$s does not allow subfolders.	TODO	com.openexchange.imap.IMAPException
IMAP	imap_imaps	3	PERMISSION	2014	A folder named %1$s already exists	TODO	com.openexchange.imap.IMAPException
IMAP	imap_imaps	3	PERMISSION	2016	The composed rights could not be applied to new folder %1$s due to missing administer right in its initial rights specified by IMAP server. However, the folder has been created.	TODO	com.openexchange.imap.IMAPException
IMAP	imap_imaps	3	PERMISSION	2018	Default folder %1$s cannot be updated	TODO	com.openexchange.imap.IMAPException
IMAP	imap_imaps	3	PERMISSION	2023	Folder %1$s cannot be deleted	TODO	com.openexchange.imap.IMAPException
IMAP	imap_imaps	3	PERMISSION	2024	Default folder %1$s cannot be deleted	TODO	com.openexchange.imap.IMAPException
IMAP	imap_imaps	3	PERMISSION	2032	Mail folder %1$s must not be moved to subsequent folder %2$s	TODO	com.openexchange.imap.IMAPException
IMAP	imap_imaps	3	PERMISSION	2041	Not allowed to open folder %1$s due to missing read access	TODO	com.openexchange.imap.IMAPException
IMAP	imap_imaps	5	SUBSYSTEM_OR_SERVICE_DOWN	1016	Connection was refused or timed out while attempting to connect to remote server %1$s for user %2$s	TODO	com.openexchange.imap.IMAPException
IMAP	imap_imaps	5	SUBSYSTEM_OR_SERVICE_DOWN	2029	IMAP search failed due to following reason: %1$s. Switching to application-based search	TODO	com.openexchange.imap.IMAPException
IMAP	imap_imaps	5	SUBSYSTEM_OR_SERVICE_DOWN	2030	IMAP sort failed due to following reason: %1$s Switching to application-based sorting	TODO	com.openexchange.imap.IMAPException
IMAP	imap_imaps	7	INTERNAL_ERROR	2025	Flag %1$s could not be changed due to following reason: %2$s	TODO	com.openexchange.imap.IMAPException

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
IMAP	imap_imaps	7	INTERNAL_ERROR	2039	Message(s) %1$s in folder %2$s could not be deleted due to following error: %3$s	TODO	com.openexchange.imap.IMAPException
IMAP	imap_imaps	7	INTERNAL_ERROR	2047	A protocol exception occurred during execution of an IMAP request: %1$s	TODO	com.openexchange.imap.IMAPException
IMAP	imap_imaps	8	CODE_ERROR	1	Missing parameter %1$s	TODO	com.openexchange.imap.IMAPException
IMAP	imap_imaps	8	CODE_ERROR	2	Invalid permission values: fp=%1$s orp=%2$s owp=%3$s odp=%4$s	TODO	com.openexchange.imap.IMAPException
IMAP	imap_imaps	8	CODE_ERROR	3	A JSON error occurred: %1$s	TODO	com.openexchange.imap.IMAPException
IMAP	imap_imaps	8	CODE_ERROR	4	Missing parameter in user's mail config: %1$s	TODO	com.openexchange.imap.IMAPException
IMAP	imap_imaps	8	CODE_ERROR	8	An I/O error occurred %1$s	TODO	com.openexchange.imap.IMAPException
IMAP	imap_imaps	8	CODE_ERROR	16	Unsupported charset-encoding: %1$s	TODO	com.openexchange.imap.IMAPException
IMAP	imap_imaps	8	CODE_ERROR	22	Message field %1$s cannot be handled	TODO	com.openexchange.imap.IMAPException
IMAP	imap_imaps	8	CODE_ERROR	1002	Mail folder could not be found: %1$s	TODO	com.openexchange.imap.IMAPException
IMAP	imap_imaps	8	CODE_ERROR	2001	No connection available to access mailbox	TODO	com.openexchange.imap.IMAPException
IMAP	imap_imaps	8	CODE_ERROR	2015	Mail folder %1$s could not be created (maybe due to insufficient permission on parent folder %2$s or due to an invalid folder name)	TODO	com.openexchange.imap.IMAPException
IMAP	imap_imaps	8	CODE_ERROR	2019	Deletion of folder %1$s failed	TODO	com.openexchange.imap.IMAPException
IMAP	imap_imaps	8	CODE_ERROR	2020	IMAP default folder %1$s could not be created	TODO	com.openexchange.imap.IMAPException
IMAP	imap_imaps	8	CODE_ERROR	2021	Missing default %1$s folder in user mail settings	TODO	com.openexchange.imap.IMAPException

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
IMAP	imap_imaps	8	CODE_ERROR	2022	Update of folder %1$s failed	TODO	com.openexchange.imap.IMAPException
IMAP	imap_imaps	8	CODE_ERROR	2028	Number of search fields (%d) do not match number of search patterns (%d)	TODO	com.openexchange.imap.IMAPException
IMAP	imap_imaps	8	CODE_ERROR	2031	Unknown search field: %1$s	TODO	com.openexchange.imap.IMAPException
IMAP	imap_imaps	8	CODE_ERROR	2035	Missing %1$s folder in mail move operation	TODO	com.openexchange.imap.IMAPException
IMAP	imap_imaps	8	CODE_ERROR	2037	IMAP folder read-only check failed	TODO	com.openexchange.imap.IMAPException
IMAP	imap_imaps	8	CODE_ERROR	2038	Unknown folder open mode %d	TODO	com.openexchange.imap.IMAPException
IMAP	imap_imaps	8	CODE_ERROR	2042	The raw content's input stream of message %1$s in folder %2$s cannot be read	TODO	com.openexchange.imap.IMAPException
IMAP	imap_imaps	8	CODE_ERROR	2045	Versit object could not be saved	TODO	com.openexchange.imap.IMAPException
IMAP	imap_imaps	8	CODE_ERROR	2046	IMAP server does not support capability THREAD=REFERENCES	TODO	com.openexchange.imap.IMAPException
IMAP	imap_imaps	8	CODE_ERROR	2048	Mailbox' root folder must not be source or the destination fullname of a move operation.	TODO	com.openexchange.imap.IMAPException
IMAP	imap_imaps	8	CODE_ERROR	2049	Sort field %1$s is not supported via IMAP SORT command	TODO	com.openexchange.imap.IMAPException
IMAP	imap_imaps	8	CODE_ERROR	2050	Missing personal namespace	TODO	com.openexchange.imap.IMAPException
IMAP	imap_imaps	11	EXTERNAL_RE-SOURCE_FULL	2034	Message could not be moved to trash folder	TODO	com.openexchange.imap.IMAPException
LGI	com.openexchange.authentication	3	PERMISSION	1	Account %s is locked.		
LGI	com.openexchange.authentication	4	TRY_AGAIN	2	Account %s is not ready yet.		
LGI	com.openexchange.authentication	8	CODE_ERROR	3	Unknown problem: %s.		

Table 12.1. Registry entries for themeability

Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
LGI	com.openexchange.authentication	5	SUBSYSTEM_OR_SERVICE_DOWN	5	Login not possible at the moment. Please try again later.		
LGI	com.openexchange.authentication	1	USER_INPUT	6	Invalid credentials.		
LGI	com.openexchange.authentication	8	CODE_ERROR	7	Instantiating the class failed.		
LGI	com.openexchange.authentication	10	SETUP_ERROR	8	Class %1$s can not be found.		
LGI	com.openexchange.authentication	10	SETUP_ERROR	9	Missing property %1$s.		
LGI	com.openexchange.authentication	5	SUBSYSTEM_OR_SERVICE_DOWN	10	Database down.		
LGI	com.openexchange.authentication	3	PERMISSION	11	Your password has expired. In order to change it, please log in to %1$s.		
CNV	com.openexchange.conversion	8	CODE_ERROR	1	The given type of %1$s is not supported		
CNV	com.openexchange.conversion	8	CODE_ERROR	2	Missing argument %1$s		
CNV	com.openexchange.conversion	8	CODE_ERROR	3	Invalid value for argument %1$s: %2$s		
CNV	com.openexchange.conversion	8	CODE_ERROR	4	Unknown data source identifier: %1$s		
CNV	com.openexchange.conversion	8	CODE_ERROR	5	Unknown data handler identifier: %1$s		
CNV	com.openexchange.conversion	8	CODE_ERROR	6	No matching type could be found for data source %1$s and data handler %2$s		
CNV	com.openexchange.conversion	8	CODE_ERROR	7	An error occurred: %1$s		
CNV	com.openexchange.conversion	12	TRUNCATED	8	The following field(s) are too long: %1$s		

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Component	Component Name	Category Code	Category String	Sequence No	Message	Description	Exception Class
I18N	com.openex-change.i18n	10	SETUP_ERROR	101	Unexpected token %s in .po file %s:%s. Expected one of %s	Please check that the file is correctly formatted.	
I18N	com.openex-change.i18n	10	SETUP_ERROR	102	Unexpected token %s in .po file %s:%s. Expected one of %s	Please check that the file is correctly formatted.	
I18N	com.openex-change.i18n	10	SETUP_ERROR	103	Got %s, but expected a number in .po file %s:%s.	Please check that the file is correctly formatted.	
I18N	com.openex-change.i18n	10	SETUP_ERROR	104	Malformed token or a unsupported token. Got %s but expected %s in .po file %s:%s.	Please check that the file is correctly formatted.	
I18N	com.openex-change.i18n	10	SETUP_ERROR	105	An IOException ocurred reading .po file %s.	Please make sure the file is readable by the groupware.	

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