This HOWTO describes a setup for a Cyrus Murder using Kolab Cyrus IMAP packages.

These packages come from [http://git.kolabsys.com/cyrus-imapd.git](http://git.kolabsys.com/cyrus-imapd.git) and are distributed through a local mirror, after being built in our [Koji Infrastructure](https://wiki.kolabsys.com/Cyrus_Murder_HOWTO).

**Related Documentation**

- Installing the Cyrus Murder from upstream Carnegie Mellon University.
**Cyrus Replication** from upstream Carnegie Mellon University.

**man 5 imapd.conf**

### Detailed Description

Our environment is a standalone environment, connected to the Internet through a single IP address, like if it were a consumer ADSL connection of some kind. No ports have been forwarded from the Internet IP addresses available, and so no communication can come in to the environment (except from the Kolab Systems Management Network).

All communication, therefore, is limited to the nodes in the test90 network, with the following notable exceptions:

- DNS allows recursive queries, thus the environment knows where to deliver mail not intended for delivery on its local domains.
  - Note that one must be careful as to which email is going to be sent, as email to anything external will be delivered if possible.
- Connections from within the test 90 network to the outside world are allowed.

The domain name space for the environment is test90.kolabsys.com.

The MX records for test90.kolabsys.com have been set to mx01.test90.kolabsys.com and mx02.test90.kolabsys.com. These are then configured to end up with the Cyrus Murder Frontend servers -which thus also run Postfix (MTA).

### Systems

1. test90-1.test90.kolabsys.com on IP Address 18.18.90.1 - Cyrus Murder Master Update Server
2. test90-2.test90.kolabsys.com on IP Address 18.18.90.2 - Cyrus Murder Backend Server
3. test90-3.test90.kolabsys.com on IP Address 18.18.90.3 - Cyrus Murder Backend Server
4. test90-4.test90.kolabsys.com on IP Address 18.18.90.4 - Cyrus Murder Frontend Server
5. test90-5.test90.kolabsys.com on IP Address 18.18.90.5 - Cyrus Murder Frontend Server

### Authentication & Authorization

- test90-1 and test90-2 run 389 Directory Services in Multi-Master Replication, Load-Balancing mode
- ldap.test90.kolabsys.com is a DNS Round-Robin IN A to 18.18.90.1 (test90-1) and 18.18.90.2 (test90-2)
- The systems themselves do not make use of LDAP Authentication/Authorization/User Information, **only the services do.**

### Munin

Munin is available at [http://10.10.90.4/munin/](http://10.10.90.4/munin/) (if you are connected to the VPN and the test nodes are up and running)

### System Installation

```
[root@kvm01 ~]# for i in `seq 5`; do lvcreate -n guest_test90-$i -L 8G vg_virt_iscsi; done
[root@kvm01 ~]# virsh pool-refresh vg_virt_iscsi
[root@kvm01 ~]# for i in `seq 5`; do 
> virt-install -n test90-$i -r 512 --vcpus=1 \
> --disk vol=vg_virt_iscsi/guest_test90-$i \
> --os-type linux --os-variant rhel5.4 --accelerate \
> --network=bridge:br90 --mac 00:04:76:ed:90:0$i --hvm --pxe; \
> done
```

For each of the `virt-install` commands, make sure you choose the CentOS-5-x86_64 minimal installation, and then escape by giving a `^C` signal.

### DNS Settings

For truly load-balanced mail exchanger servers, please note that the DNS MX records for the domain name space are to have the same weight:

```
$ORIGIN test90.kolabsys.com.
mx01 A 18.18.90.4
mx02 A 18.18.90.5

$ORIGIN test90.kolabsys.com.
mx01 A 18.18.90.1
mx02 A 18.18.90.2
```

; Use the same MX priority to load-balance between the two frontend MTA servers
MX 10 mx01.test90.kolabsys.com.
MX 10 mx02.test90.kolabsys.com.

; Use Round-Robin DNS to load-balance users between the Cyrus Murder frontend servers
Architectural Considerations

In this HOWTO, we specifically set up the frontend Postfix MTAs to not use the lmtpproxyd on the frontend Cyrus Murder servers. Instead, we use the `mailHost` attribute for the user to determine the Cyrus Murder backend server to relay the email to.

The alternative design would be to have the frontend Postfix MTA servers deliver email through their local lmtpproxyd, but then the mailbox needs to be known within the Cyrus Murder already, and cannot be automatically created.

Prerequisites

The minimal prerequisites for a supported Cyrus Murder environment are:

- LDAP environment
  - In this HOWTO, a L/B LDAP environment is available at `ldap://ldap.test90.kolabsys.com/` with a base dn of `dc=test90,dc=kolabsys,dc=com`
- One `mupdate` server
  - In this HOWTO, the hostname of the Cyrus Murder master update server is `test90-1`
- One `backend` server
  - In this HOWTO, the hostnames of the backend servers are `test90-2` and `test90-3`
- One `frontend` server
  - In this HOWTO, the hostname(s) of the frontend server(s) is/are `test90-4` and `test90-5`

Creating the LDAP Users

Create the following users in LDAP:

1. cyrus-admin
   - This user is used for Cyrus Administration privileges.
2. cyrus-murder
   - This user is used for `login as` privileges between a frontend and a backend.

Make sure they include objectClass `posixAccount` with the appropriate uidNumber and a proper login shell.

Users cyrus-admin vs. cyrus

The system services will run under the cyrus user account, which you should therefore not use as a Cyrus administrator account. For one, cyrus is the owner of `/var/lib/imap/` and `/var/spool/imap/`. You would want those parties you delegate Cyrus administrator privileges to not to gain POSIX permissions on the contents of these locations, but instead use their `cyradm` privileges for day-to-day operations.

mailRecipient objectClass

Use the mailRecipient objectClass to indicate a user is a mail recipient. Make sure you add attribute mailHost to the user, indicating the backend Cyrus Murder server this user has a mailbox on.

Setting Up Cyrus Murder

This section is about setting up the Cyrus Murder. We install and configure actual mail delivery using Postfix later on.

On All Servers

Install `kolab-2.2-release`

On all servers, install `kolab-2.2-release` as follows:

```bash
# rpm -Uvh http://mirror.kolabsys.com/pub/kolab-2.2/el5/development/x86_64/kolab-2.2-release-5.2.el5.kolab.noarch.rpm
http://mirror.kolabsys.com/pub/kolab-2.2/el5/development/x86_64/kolab-2.2-release-development-5.2.el5.kolab.noarch.rpm
```

Install `kolab-cyrus-imapd`

On all servers, install `kolab-cyrus-imapd` as a required component:

```bash
# yum -y install kolab-cyrus-imapd
```

This will also pull in `cyrus-sasl` and dependencies for the backend.

Install and Configure `saslauthd`
On all servers, provide file `/etc/saslauthd.conf` with the following contents:

```
ldap_servers: ldap://ldap.test90.kolabsys.com/
ldap_search_base: dc=test90,dc=kolabsys,dc=com
```

Modify `/etc/sysconfig/saslauthd` to use LDAP as the authentication mechanism:

```
# sed -i -r -e 's/^MECH.*/MECH=ldap/g' /etc/sysconfig/saslauthd
```

Configure the service to start on boot and start it:

```
# chkconfig saslauthd on
# service saslauthd start
```

**[edit] Replace Sendmail with Postfix**

```
# yum -y remove sendmail
# yum -y install postfix
# chkconfig postfix on
# service postfix start
```

**[edit] Setting Up the Master Update Server (test90-1)**

On the master update server, provide the following contents in `/etc/cyrus.conf`:

```
START {
    recover      cmd="ctl_cyrusdb -r"
    idled        cmd="idled"
}
SERVICES {
    mupdate     cmd="mupdate -m" listen=3905 prefork=1
}
EVENTS {
    checkpoint  cmd="ctl_cyrusdb -c" period=30
}
```

Also, provide the following contents in `/etc/imapd.conf`:

```
servername: test90-1
partition-default: /var/tmp
configdirectory: /var/lib/imap
admins: cyrus-admin cyrus-murder
sasl_pwcheck_method: saslauthd
sasl_mech_list: PLAIN LOGIN
allowplaintext: 1
tls_cert_file: /etc/pki/cyrus-imapd/cyrus-imapd.pem
tls_key_file: /etc/pki/cyrus-imapd/cyrus-imapd.pem
tls_ca_file: /etc/pki/cyrus-imapd/cyrus-imapd.pem
allowanonymouslogin: 0
allowusermoves: 1
altnamespace: 1
autocreatequota: -1
createemptyfolders: Drafts|Junk|Sent Items|Trash
autosubscribeinboxfolders: Drafts|Junk|Sent Items|Trash
autosubscribe_all_sharedfolders: 1
anyseivefolder: 1
ieemailhomendir: 0
hashimapspool: 1
fulldirhash: 0
```

**[edit] Setting Up the Backend Servers**

On all the backend servers, test90-2 and test90-3 in this HOWTO, make sure that the contents of `/etc/cyrus.conf` is:

```
START {
    recover      cmd="ctl_cyrusdb -r"
    idled        cmd="idled"
    # The backend server pushes out the list of local mailboxes
    # to the master update server on startup.
    # mupdatepush cmd="ctl_mboxlist -m"
}
SERVICES {
    imap        cmd="imapd" listen="imap"                     prefork=6
    sieve       cmd="timsieved" listen="sieve"                  prefork=0
    ```
# In this HOWTO, we do not have to listen to remote LMTP connections, but
# if you want to, you can split up the backend Postfix MTA from the
# Cyrus Murder backend server. In those cases, uncomment this line.
#
# #lmtp        cmd="lmtpd"     listen="lmtp"                       prefork=0
#
# The following line is for local delivery only. If you have uncommented
# the remote LMTP delivery, maybe you want to comment this out if there
# is no local LMTP delivery.
#
# lmtpunix    cmd="lmtpd"     listen="/var/lib/imap/socket/lmtp"  prefork=0
#

EVENTS {
  checkpoint  cmd="ctl_cyrusdb -c"    period=30
  delprune    cmd="cyr_expire -E 3"   at=0400
  tlsprune    cmd="tls_prune"         at=0400
}

[edit] On Backend Server test90-2

The contents of /etc/imapd.conf on test90-2 look as follows:

##
## System Specific Settings
##

# First, the hostname for this node, if in any way different
# from the system Fully Qualified Domain Name
# servername: test90-2

##
## General System Settings
##

# This block of settings is generally the same
# across all servers in the Cyrus Murder.

configdirectory: /var/lib/imap
admins: cyrus-admin cyrus-murder

# Note: It has not been tested yet, what the effect
# is of keeping this setting as it is now but using the
# same storage volume (e.g. the following directory is
# available in the same location across all nodes)
# partition-default: /var/spool/imap/
sasl_pwcheck_method: saslauthd
sasl_mech_list: PLAIN LOGIN

# On the backend servers, you can allow plaintext authentication
# if no other nodes or users are on the same network.
#
# # Note: Plaintext authentication is stupid, but we have not
# # yet found another way without having to create a local SASL
# # authentication database.
# allowplaintext: 1
tls_cert_file: /etc/pki/cyrus-imapd/cyrus-imapd.pem
tls_key_file: /etc/pki/cyrus-imapd/cyrus-imapd.pem
tls_ca_file: /etc/pki/cyrus-imapd/cyrus-imapd.pem

mupdate_server: test90-1.test90.kolabsys.com
mupdate_authname: cyrus-murder
mupdate_username: cyrus-murder
mupdate_password: Welcome2KolabSystems

proxyservers: cyrus-murder
test90-2_password: Welcome2KolabSystems
test90-3_password: Welcome2KolabSystems
test90-4_password: Welcome2KolabSystems
test90-5_password: Welcome2KolabSystems

allowanonymouslogin: 0
allowusermoves: 1
altnamespace: 1
autocreatequota: 1
createpost: 1
autocreateinboxfolders: Drafts|Junk|Sent Items|Trash
autosubscribeinboxfolders: Drafts|Junk|Sent Items|Trash
autosubscribe_all_sharedfolders: 1
anyviewfolder: 1
sievemovedir: 0
hashimapspool: 1
fulldirhash: 0

Make sure that the cyrus-imapd service starts on boot:
chkconfig cyrus-imapd on
service cyrus-imapd start

**[edit] On Backend Server test90-3**

The contents of /etc/imapd.conf on test90-3 look as follows:

```
##
## System Specific Settings
##
# First, the hostname for this node, if in any way different
# from the system Fully Qualified Domain Name
#
servername: test90-3

##
## General System Settings
##
## The following block of settings is generally the same
## across all servers in the Cyrus Murder.

cfgdirectory: /var/lib/imap
admins: cyrus-admin cyrus-murder

# Note: It has not been tested yet, what the effect
# is of keeping this setting as it is now but using the
# same storage volume (e.g. the following directory is
# available in the same location across all nodes)
#
# partition-default: /var/spool/imap/
sasl_pcheck_method: saslauthd
sasl_mech_list: PLAIN LOGIN

# On the backend servers, you can allow plaintext authentication
# if no other nodes or users are on the same network.
#
# Note: Plaintext authentication is stupid, but we have not
# yet found another way without having to create a local SASL
# authentication database.
#
# allowplaintext: 1
tls_cert_file: /etc/pki/cyrus-imapd/cyrus-imapd.pem
tls_key_file: /etc/pki/cyrus-imapd/cyrus-imapd.pem
tls_ca_file: /etc/pki/cyrus-imapd/cyrus-imapd.pem

mupdate_server: test90-1.test90.kolabsys.com
mupdate_authname: cyrus-murder
mupdate_username: cyrus-murder
mupdate_password: Welcome2KolabSystems
proxyservers: cyrus-murder

# Make sure that the cyrus-imapd service starts on boot:
#
chkconfig cyrus-imapd on
service cyrus-imapd start
```

**[edit] Setting Up the Frontend Servers**

On all the frontend servers, test90-4 and test90-5 in this HOWTO, make sure that the contents of /etc/cyrus.conf is:

```
START {
    recover  cmd="ctl cyrusdb -r"
    idled    cmd="/usr/sbin/idled"
}

SERVICES {
```
# The following lines enable the frontend server to proxy connections
# to the appropriate backend server.
#
imap        cmd="proxyd"     listen="imap"                      prefork=5
imaps       cmd="proxyd -s"  listen="imaps"                     prefork=5
# Note that for POP daemons nothing actually changes.
pop3        cmd="pop3d"      listen="pop3"                      prefork=0
pop3s       cmd="pop3d -s"   listen="pop3s"                     prefork=0
# LMTP proxying is not required in our HOWTO setup.
#lmtp        cmd="lmtpproxyd" listen="/var/lib/imap/socket/lmtp" prefork=1
#
# The frontend servers need to communicate about where the backend servers
# are, since they contain the mailboxes.
#
map update  cmd="mupdate"    listen=3905                        prefork=1
}

EVENTS {
  checkpoint  cmd="ctl_cyrusdb -c" period=30
  delpriune   cmd="cyr_expire -E 3" at=0400
  tlsprune    cmd="tls_prune" at=0400
}

---

**[edit] On Frontend Server test90-4**

The contents of `/etc/imapd.conf` on `test90-4` look as follows:

```
## System Specific Settings

# First, the hostname for this node, if in any way different
# from the system Fully Qualified Domain Name
#
servername: test90-4
#
## General System Settings

# The following block of settings is generally the same
# across all servers in the Cyrus Murder.

cconfigdirectory: /var/lib/imap
admins: cyrus-admin cyrus-murder
serverlist: test90-2 test90-3

# Note: This is a mandatory setting, even though
# on the Cyrus Murder frontend server, this partition
# is not ever going to be used.
# partition-default: /var/spool/imap/
sasl_pwcheck_method: saslauthd
sasl_mech_list: PLAIN LOGIN

# On the frontend servers, you should not allow plaintext
# authentication without at least TLS. Because the exchange
# of information still starts (it's just... authentication
# fails without TLS), we recommend to disable the port 143
# IMAP daemon altogether in /etc/cyrus.conf
#
# allowplaintexttls: 0
tls_cert_file: /etc/pki/cyrus-imapd/cyrus-imapd.pem
tls_key_file: /etc/pki/cyrus-imapd/cyrus-imapd.pem
tls_ca_file: /etc/pki/cyrus-imapd/cyrus-imapd.pem

mupdate_server: test90-1.test90.kolabsys.com
mupdate_authname: cyrus-murder
mupdate_username: cyrus-murder
mupdate_password: Welcome2KolabSystems

proxy_authname: cyrus-murder
test90-2_password: Welcome2KolabSystems
test90-3_password: Welcome2KolabSystems
allowanonymouslogin: 0
allowusermoves: 1
altnamespace: 1

Make sure that the `cyrus-imapd` service starts on boot:

# chkconfig cyrus-imapd on
# service cyrus-imapd start
```

---

**[edit] On Backend Server test90-5**
The contents of `/etc/imapd.conf` on `test90-5` look as follows:

```
##
## System Specific Settings
##
# First, the hostname for this node, if in any way different
# from the system Fully Qualified Domain Name
# servername: test90-5
##
## General System Settings
##
## The following block of settings is generally the same
## across all servers in the Cyrus Murder.

cfgdirectory: /var/lib/imap
admins: cyrus-admin cyrus-murder
serverlist: test90-2 test90-3

# Note: This is a mandatory setting, even though
# on the Cyrus Murder frontend server, this partition
# is not ever going to be used.
# partition-default: /var/spool/imap/

sasl_pcheck_method: saslauthd
sasl_mech_list: PLAIN LOGIN

# On the frontend servers, you should not allow plaintext
# authentication without at least TLS. Because the exchange
# of information still starts (it's just... authentication
# fails without TLS), we recommend to disable the port 143
# IMAP daemon altogether in `/etc/cyrus.conf`
# allowplainwithouttls: 0

tls_cert_file: /etc/pki/cyrus-imapd/cyrus-imapd.pem
tls_key_file: /etc/pki/cyrus-imapd/cyrus-imapd.pem
tls_ca_file: /etc/pki/cyrus-imapd/cyrus-imapd.pem

mupdate_server: test90-1.test90.kolabsys.com
mupdate_authname: cyrus-murder
mupdate_username: cyrus-murder
mupdate_password: Welcome2KolabSystems
proxy_authname: cyrus-murder
test90-2_password: Welcome2KolabSystems
test90-3_password: Welcome2KolabSystems

allowanonymouslogin: 0
allowusermoves: 1
altnamespace: 1

Make sure that the `cyrus-imapd` service starts on boot:

```
# chkconfig cyrus-imapd on
# service cyrus-imapd start
```

[edit] Setting Up Postfix

Make sure that your DNS settings are configured correctly. This means that the frontend Postfix MTA servers will need to be the ones receiving and distributing all email.

In this HOWTO, the frontend Postfix MTA servers are the same nodes as the Cyrus Murder frontend servers.

[edit] Install EPEL

For `amavisd-new` and related packages, install the Extra Packages for Enterprise Linux YUM repository:

```
# rpm -Uvh http://mirror.kolabsys.com/epel/5/x86_64/epel-release-5-3.noarch.rpm
```

For more information about EPEL, please refer to [http://fedoraproject.org/wiki/EPEL](http://fedoraproject.org/wiki/EPEL)

Note that Kolab Systems provides or may provide its own version(s) for some of the packages in EPEL, such as, for example, a more recent version of SpamAssassin, and improved ClamAV packages.

[edit] Configure Postfix on Your Cyrus Backend Servers

[edit] On test90-2
queue_directory = /var/spool/postfix
command_directory = /usr/sbin
daemon_directory = /usr/libexec/postfix
mail_owner = postfix
default_prv = nobody
myhostname = test90-2.test90.kolabsys.com
mydomain = test90.kolabsys.com
myorigin = $mydomain

# In this HOWTO, make sure we listen on all interfaces available.
# # In real deployments, adjust as appropriate.
# inet_interfaces = all
# mydestination = $myhostname, localhost.$mydomain, localhost, $mydomain
# On the backend Postfix MTA servers, we still need to verify who is
# actually our target, because we want to get the recipient in an
# appropriate format (e.g. user or user@domain.tld).
# local_recipient_maps = ldap:/etc/postfix/ldap.cf
#
# The local delivery method on the backend Postfix MTA server is the
# transport method listed as cyrus in /etc/postfix/master.cf
# local_transport = cyrus
unknown_local_recipient_reject_code = 550

# There is no reason to trust anyone other then myself.
mynetworks_style = host

# In this HOWTO, we provide no additional content filter on the backend
# Postfix MTA server. However, one may choose to enable (additional)
# spam filtering and/or anti-virus with Amavis, or Archiving, or whatnot.
#
#content_filter = amavis:[127.0.0.1]:10024
alias_maps = hash:/etc/aliases
virtual_alias_maps = ldap:/etc/postfix/ldap.cf

debug_peer_level = 2
debugger_command =
PATH=/bin:/usr/bin:/usr/local/bin:/usr/X11R6/bin
xxgdb $daemon_directory/$process_name $process_id & sleep 5
sendmail_path = /usr/sbin/sendmail.postfix
newaliases_path = /usr/bin/newaliases.postfix
mailq_path = /usr/bin/mailq.postfix
setgid_group = postdrop
html_directory = no
manpage_directory = /usr/share/man
sample_directory = /usr/share/doc/postfix-2.3.3/samples
readme_directory = /usr/share/doc/postfix-2.3.3/README_FILES

Make sure that /etc/postfix/master.cf has the following contents:

smtp    inet n - n - - setp
pickup   fifo n - n 66 1 pickup
cleanup  unix n - n - 0 cleanup
gqgr     fifo n - n 300 1 gqgr
tlsmgr   unix - - n 10007 1 tlsmgr
rewrite  unix - - n - - trivial-rewrite
bounce   unix - - n - 0 bounce
defer    unix - - n - 0 bounce
trace    unix - - n - 0 bounce
verify   unix - - n - 1 verify
flush    unix n - n 10007 0 flush
proxymap unix - - n - - proxymap
smtp     unix - - n - - smtp
showq   unix n - n - - showq
error   unix - - n - - error
discard unix - - n - - discard
local   unix n - n - local
virtual  unix n - n - virtual
SMTP    unix - - n - - smtp
anvil   unix - - n - 1 anvil
scache  unix - - n - 1 scache
relay   unix - - n - - smtp
-o smtp_fallback_relay=
cyrus    unix - n n - - pipe
user=cyrus arg0=/usr/lib/cyrus-imapd/deliver -e -n -d "$sender" -m "$extension" "$user"
#
# The following transport is only really required if you decide to implement
# spam filtering and anti-virus on the backend Postfix MTA server. In the
# default configuration as used in this HOWTO, the backend Postfix MTA server
# does not use this. Uncomment to enable using the content_filter in
# /etc/postfix/main.cf
#
#amavis    unix - - n - 3 smtp
#-o smtp_data_done_timeout=1800
#-o disable_dns_lookups=yes
#-o smtp_send_xforward_command=yes
# -o max_use=20
#127.0.0.1:10025 inet n - n - 100 smtpd
# -o content_filter=archiver:dummy
# -o myhostname=test90-2.test90.kolabsys.com
# -o local_recipient_maps=
# -o relay_recipient_maps=
# -o smtpd_restriction_classes=
# -o smtpd_client_restrictions=
# -o smtpd_helo_restrictions=
# -o smtpd_sender_restrictions=
# -o smtpd_recipient_restrictions=permit_mynetworks,reject
# -o mynetworks=127.0.0.0/8
#archiver unix n n n . pipe
# user=nobody argv=/usr/libexec/postfix/archiver ${sender} ${recipient}
#127.0.0.1:10030 inet n - n - 100 smtpd
# -o content_filter=
# -o myhostname=test90-2.test90.kolabsys.com
# -o local_recipient_maps=
# -o relay_recipient_maps=
# -o smtpd_restriction_classes=
# -o smtpd_client_restrictions=
# -o smtpd_helo_restrictions=
# -o smtpd_sender_restrictions=
# -o smtpd_recipient_restrictions=permit_mynetworks,reject
# -o mynetworks=127.0.0.0/8

/etc/postfix/ldap.cf looks as follows:

# LDAP configuration for Postfix
version = 3
server_host = ldap.test90.kolabsys.com
search_base = dc=test90,dc=kolabsys,dc=com

# Note: We filter here on:
# - recipient email address
# - objectClass mailRecipient
# - mailHost attribute
# In a legacy Kolab environment, the latter may need to be kolabHomeServer
# Also note that using $myhostname does not suffice here.
# query_filter = (&(mail=%s)(objectClass=mailrecipient)(mailhost=test90-2.test90.kolabsys.com))

# Note: Without virtual domain support in Cyrus (as it is in this HOWTO),
# only the uid of the result is required. Should virtual domain support be
# enabled in /etc/imapd.conf, then using uid as the result attribute is
# going to deliver the email to uid@defaultdomain where defaultdomain is
# configured in /etc/imapd.conf as well. Instead, consider using
# result_attribute = mail if virtual domain support is enabled.
# result_attribute = uid

Execute the following to ensure the Postfix MTA starts on boot and is started:

# chkconfig postfix on
# service postfix restart

[edit] On test90-3

queue_directory = /var/spool/postfix
cmd_directory = /usr/sbin
daemon_directory = /usr/libexec/postfix
mail_owner = postfix
default_privs = nobody
myhostname = test90-3.test90.kolabsys.com
mydomain = test90.kolabsys.com
myorigin = $mydomain

# In this HOWTO, make sure we listen on all interfaces available.
# In real deployments, adjust as appropriate.
# inet_interfaces = all
mydestination = $myhostname, localhost.$mydomain, localhost, $mydomain

# On the backend Postfix MTA servers, we still need to verify who is
# actually our target, because we want to get the recipient in an
# appropriate format (e.g. user or user@domain.tld).
# local_recipient_maps = ldap:/etc/postfix/ldap.cf
# The local delivery method on the backend Postfix MTA server is the
# transport method listed as cyrus in /etc/postfix/master.cf
# local_transport = cyrus
unknown_local_recipient_reject_code = 550

# There is no reason to trust anyone other than myself.
In this HOWTO, we provide no additional content_filter on the backend Postfix MTA server. However, one may choose to enable (additional) spam filtering and/or anti-virus with Amavis, or Archiving, or whatnot.

```
content_filter = amavis:127.0.0.1:10024
```

```
alias_maps = hash:/etc/aliases
virtual_alias_maps = ldap:/etc/postfix/ldap.cf
```

```
debug_peer_level = 2
debugger_command =
    PATH=/bin:/usr/bin:/usr/local/bin:/usr/X11R6/bin
    xxgdb $daemon_directory/$process_name $process_id & sleep 5
```

```
sendmail_path = /usr/sbin/sendmail.postfix
newaliases_path = /usr/bin/newaliases.postfix
mailq_path = /usr/bin/mailq.postfix
setgid_group = postdrop
html_directory = no
manpage_directory = /usr/share/man
sample_directory = /usr/share/doc/postfix-2.3.3/samples
readme_directory = /usr/share/doc/postfix-2.3.3/README_FILES
```

Make sure that `/etc/postfix/master.cf` has the following contents:

```
smtp            inet  n       -       n       -       -       smtpd
pickup          fifo  n       -       n       60      1       pickup
cleanup         unix  n       n       -       0       cleanup
qmgr            fifo  n       n       366     1       qmgr
sslqmgr         unix  -       n       10000?   1       sslqmgr
rewrite         unix  -       n       -       -       trivial-rewrite
bounce          unix  -       n       -       0       bounce
defer           unix  -       n       0       bounce
trace           unix  -       n       -       0       bounce
verify          unix  -       n       1       1       verify
flush           unix  n       n       10000?   0       flush
proxymap        unix  -       n       -       -       proxymap
smtp            unix  -       n       -       -       smtp
    -o smtp_data_done_timeout=1800
    -o disable_dns_lookups=yes
    -o smtp_send_xforward_command=yes
    -o max_use=20
127.0.0.1:10025 inet n - n - 100 smtpd
    -o content_filter=archiver:dummy
    -o myhostname=test90-3.test90.kolabsys.com
    -o local_recipient_maps=
    -o relay_recipient_maps=
    -o smtpd_restriction_classes=
    -o smtpd_client_restrictions=
    -o smtpd_sender_restrictions=
    -o smtpd_recipient_restrictions=permit_mynetworks,reject
    -o mynetworks=127.0.0.0/8
archiver unix - n - - pipe
    user=nobody arg=/usr/libexec/postfix/archiver $sender $recipient
```

```
# The following transport is only really required if you decide to implement
# spam filtering and anti-virus on the backend Postfix MTA server. In the
# default configuration as used in this HOWTO, the backend Postfix MTA server
# does not use this. Uncomment to enable using the content_filter in
# `/etc/postfix/main.cf`
```

```
# #amavis       unix  -       n       -       3       smtp
# -o smtp_data_done_timeout=1800
# -o disable_dns_lookups=yes
# -o smtp_send_xforward_command=yes
# -o max_use=20
#127.0.0.1:10025 inet n - n - 100 smtpd
# -o content_filter=archiver:dummy
# -o myhostname=test90-3.test90.kolabsys.com
# -o local_recipient_maps=
# -o relay_recipient_maps=
# -o smtpd_restriction_classes=
# -o smtpd_client_restrictions=
# -o smtpd_sender_restrictions=
# -o smtpd_recipient_restrictions=permit_mynetworks,reject
# -o mynetworks=127.0.0.0/8
archiver unix - n - - pipe
    user=nobody arg=/usr/libexec/postfix/archiver $sender $recipient
```

```
# archiver unix - n - - pipe
    user=nobody arg=/usr/libexec/postfix/archiver $sender $recipient
#127.0.0.1:10030 inet n - n - 100 smtpd
# -o content_filter=archiver:dummy
# -o myhostname=test90-3.test90.kolabsys.com
# -o local_recipient_maps=
# -o relay_recipient_maps=
# -o smtpd_restriction_classes=
# -o smtpd_client_restrictions=
# -o smtpd_sender_restrictions=
# -o smtpd_recipient_restrictions=permit_mynetworks,reject
# -o mynetworks=127.0.0.0/8
archiver unix - n - - pipe
    user=nobody arg=/usr/libexec/postfix/archiver $sender $recipient
```

/etc/postfix/ldap.cf looks as follows:
# LDAP configuration for Postfix

version = 3

server_host = ldap.test90.kolabsys.com

search_base = dc=test90,dc=kolabsys,dc=com

# Note: We filter here on:
# - recipient email address
# - objectClass mailRecipient
# - mailHost attribute
#
# In a legacy Kolab environment, the latter may need to be kolabHomeServer
#
# Also note that using $myhostname does not suffice here.
#
query_filter = (&(mail=%s)(objectClass=mailrecipient)(mailhost=test90-3.test90.kolabsys.com))

# Note: Without virtual domain support in Cyrus (as it is in this HOWTO),
# only the uid of the result is required. Should virtual domain support be
# enabled in /etc/imapd.conf, then using uid as the result attribute is
# going to deliver the email to uid@defaultdomain where defaultdomain is
# configured in /etc/imapd.conf as well. Instead, consider using
# result_attribute = mail if virtual domain support is enabled.
# result_attribute = uid

Execute the following to ensure the Postfix MTA starts on boot and is started:

# chkconfig postfix on
# service postfix restart

[edit] Configure Postfix on Your Frontend MTA Servers

[edit] On mx01 (test90-4)

queue_directory = /var/spool/postfix
command_directory = /usr/sbin
daemon_directory = /usr/libexec/postfix
mail_owner = postfix
default_prvix = nobody
myhostname = mx01.test90.kolabsys.com
mydomain = test90.kolabsys.com
myorigin = $mydomain
inet_interfaces = all
mydestination = $myhostname, localhost.$mydomain, localhost, $mydomain
local_recipient_maps =
unknown_local_recipient_reject_code = 550
transport_maps = ldap:/etc/postfix/ldap.cf
mynetworks_style = host
#content_filter = amavis:127.0.0.1:10024
debug_peer_level = 2
debugger_command =
    PATH=/bin:/usr/bin:/usr/local/bin:/usr/X11R6/bin
    xxd gdb $daemon_directory/$process_name $process_id & sleep 5
sendmail_path = /usr/sbin/sendmail.postfix
newaliases_path = /usr/bin/newaliases.postfix
mailq_path = /usr/bin/mailq.postfix
setgid_group = postdrop
html_directory = no
manpage_directory = /usr/share/man
sample_directory = /usr/share/doc/postfix-2.3.3/samples
readme_directory = /usr/share/doc/postfix-2.3.3/README_FILES

Make sure that /etc/postfix/master.cf has the following contents:

```
smtp    inet   n   -       -       -       -       smtpd
        myhostname mydomain
anon    n       -       n       -       10000? 1        relay
        myhostname mydomain
pickup  fifo   n   -       60      1        pickup
cleanup fifo   n   -       0        cleanup
qmgr   fifo   n   300    1        qmgr
tlsmgr unix  -       n  18888? 1        tlsmgr
rewrite unix  -       n       -      0       trivial-rewrite
bounce  unix  -       n       -      0       bounce
defer   unix  -       n       -      0       bounce
trace   unix  -       n       -      0       bounce
verify  unix  -       n       -      1       verify
flush   unix  -       n  18888? 0       flush
proxymap unix  -       n       -      -       proxymap
smtp    unix  -       n       -      -       smtp
showq  unix  -       n       -       showq
error   unix  -       n       -       -       error
discard unix  -       n       -       discard
delay   unix  -       n       -       delay
local   unix  -       n       -       local
temporary unix  -       n       -       virtual
tmp unix  -       n       -       tmp
anvil   unix  -       n       -      1      anvil
scache  unix  -       n       -      1      scache
relay   unix  -       n       -      -       relay
```


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- o smtp_fallback_relay=cyrus
  - user=cyrus argv=/usr/lib/cyrus-imapd/deliver -e -r '${sender}' -m '${extension}' '${user}'
- o content_filter=archiver:dummy
  - o myhostname=mx01.test90.kolabsys.com
  - o local_recipient_maps=amavis
  - o smtpd_recipient_maps=
  - o smtpd_restriction_classes=
  - o smtpd_client_restrictions=
  - o smtpd_helo_restrictions=
  - o smtpd_sender_restrictions=
  - o smtpd_recipient_restrictions=permit_mynetworks, rejecting
- o mynetworks=127.0.0.0/8
- o transport_maps=ldap:/etc/postfix/ldap.cf

/etc/postfix/ldap.cf looks as follows:

# LDAP configuration for Postfix
version = 3
server_host = ldap.test90.kolabsys.com
search_base = dc=test90,dc=kolabsys,dc=com

# The query filter finds our LDAP entry. See result_filter and
# result_attribute to see what happens with the actual LDAP
# information.
# query_filter = (&(mail=%s)(objectClass=mailrecipient))
#
# Note: You can also try and verify that the backend mail server belongs to the
# same domain the system is receiving email for. The %d macro expands
# to the domain.tld part of a user@domain.tld email address.
# To enable that, uncomment the following line but do not forget to comment out or
# remove the former query_filter.
# query_filter = (&(mail=%s)(objectClass=mailrecipient)(mailhost=*.%d))

# The result_attribute setting gives us the value of the attribute that we require.
# Note that in legacy Kolab deployments this may need to be kolabHomeServer.
result_attribute = mailhost

# The result_filter setting gives us the transport method to use as well as the
# target value.
result_filter = smtp: [%s]

Execute the following to ensure the Postfix MTA starts on boot and is started:

# chkconfig postfix on
# service postfix restart

[edit] On mx02 (test90-5)

queue_directory = /var/spool/postfix
command_directory = /usr/sbin
daemon_directory = /usr/libexec/postfix
mail_owner = postfix
default_prives = nobody
myhostname = mx02.test90.kolabsys.com
mydomain = test90.kolabsys.com
myorigin = $mydomain
inet_interfaces = all
mydestination = $myhostname, localhost.$mydomain, localhost, $mydomain
local_recipient_maps = unknown
local_recipient_reject_code = 550
transport_maps = ldap:/etc/postfix/ldap.cf
mynetworks_style = host
content_filter = amavis:[127.0.0.1]:10024
debug_peer_level = 2
debugger_command =
PATH=/bin:/usr/bin:/usr/local/bin:/usr/X11R6/bin

xxgdb $daemon_directory/$process_name $process_id & sleep 5

sendmail_path = /usr/sbin/sendmail.postfix
newaliases_path = /usr/bin/newaliases.postfix
mailq_path = /usr/bin/mailq.postfix
usetid_group = postdrop

html_directory = no
manpage_directory = /usr/share/man
sample_directory = /usr/share/doc/postfix-2.3.3/samples
readme_directory = /usr/share/doc/postfix-2.3.3/README_FILES

Make sure that /etc/postfix/master.cf has the following contents:

smtp  inet  n       -       n       -       -       smtpd
pickup fifo  n       -       n       60      1       pickup
cleanup unix  n       -       n       0       cleanup
gmapper fifo  n       -       n       300     1       gmapper
t classified unix  -       n       1000?    1       classified
rewrite unix  -       n       -       -       trivial-rewrite
bounce unix  -       n       -       0       bounce
defer unix  -       n       -       0       bounce
trace unix  -       n       -       0       bounce
verify unix  -       n       -       1       verify
flush unix  n       -       n       1000?    0       flush
proxymap unix  -       n       -       -       proxymap
smtp unix  -       n       -       -       smtp
showq unix  n       -       -       showq
error unix  -       n       -       -       error
discard unix  -       n       -       -       discard
local unix  -       n       -       local
virtual unix  -       n       -       virtual
smtp unix  -       n       -       -       smtp
tlmtp unix  -       n       -       -       smtp
relay unix  -       n       -       -       smtp
-o smtp_fallback_relay=
cyrus unix  -       n       -       -       pipe
user=cyrus argv=/usr/lib/cyrus-imapd/deliver -e -r $(sender) -m ${extension} $(user)
amavis unix  -       n       -       3       amavis
-o smtp_data_done_timeout=1000
-o disable_dns_lookups=yes
-o smtp_send_xforward_command=yes
-o max_use=20
127.0.0.1:10025 inet  n       -       n       100     smtpd
-o content_filter=archiver:dummy
-o myhostname=mx02.test90.kolabsys.com
-o local_recipient_maps=
-o smtpd_restriction_classes=
-o smtpd_helo_restrictions=
-o smtpd_sender_restrictions=
-o smtpd_recipient_restrictions=permit_mynetworks,reject
-o mynetworks=127.0.0.8
archiver unix  -       n       -       -       pipe
user=nobody argv=/usr/libexec/postfix/archiver $(sender) $(recipient)
127.0.0.1:10030 inet  n       -       n       100     smtpd
-o content_filter=
-o myhostname=mx02.test90.kolabsys.com
-o local_recipient_maps=
-o smtpd_restriction_classes=
-o smtpd_helo_restrictions=
-o smtpd_sender_restrictions=
-o smtpd_recipient_restrictions=permit_mynetworks,reject
-o mynetworks=127.0.0.8

/etc/postfix/ldap.cf looks as follows:

# LDAP configuration for Postfix
version = 3
server_host = ldap.test90.kolabsys.com
search_base = dc=test90,dc=kolabsys,dc=com

# The query filter finds our LDAP entry. See result_filter and
# result_attribute to see what happens with the actual LDAP
# information.
# query_filter = (&(mail=%s)(objectClass=mailrecipient))
# Note: You can also try and verify that the backend mail server belongs to the
# same domain the system is receiving email for. The %d macro expands
to the domain.tld part of a user@domain.tld email address.
# To enable that, uncomment the following line but do not forget to comment out or
# remove the former query_filter.
#query_filter = (&(mail=%s)(objectClass=mailrecipient)(mailhost=*.%d))
The result_attribute setting gives us the value of the attribute that we require.

Note that in legacy Kolab deployments this may need to be kolabHomeServer.

result_attribute = mailhost

The result_filter setting gives us the transport method to use as well as the target value.

result_filter = smtp: [%s]

Execute the following to ensure the Postfix MTA starts on boot and is started:

# chkconfig postfix on
# service postfix restart

## Post-Installation Notes

### Mail Delivery and Automatic Inbox Creation

In the environment such as configured in this HOWTO, Inbox folders as well as some sub-folders are automatically created when an email message is posted to a user. To demonstrate, we log on to the Cyrus Murder master update server (this can in fact be any server), and execute the following commands:

```
# su -s /bin/bash -c 'date | mail -s 'test' vanmeeuwen@test90.kolabsys.com'
# su -s /bin/bash -c '/usr/lib/cyrus-imapd/ctl_mboxlist -d'
```

As you can see, while the mail is sent from test90-1 to either one of the frontend MTA servers test90-4 or test90-5, these deliver the mail to one of the backend servers instead of to a Cyrus Murder mailbox.

### Troubleshooting

Sieve may not have the defaultbc script for a user:

```
Jul 31 18:49:22 test90-2 lmtp[19318]: IOERROR: fstating sieve script /var/lib/imap/sieve/v/vanmeeuwen/defaultbc: No such file or directory
```

LDAP Queries may time out:

```
Jul 31 14:56:29 test90-4 postfix/smtp[7075]: 7CB6B90A12: to=<vanmeeuwen@test90.kolabsys.com>, relay=127.0.0.1[127.0.0.1]:10024, conn_use=55, delay=4584/0/0/17, delays=4584/0/0/17, dsn=4.3.0, status=deferred (host 127.0.0.1[127.0.0.1] said: 451 4.3.0 Failed, id=05484-02-55, from MTA(127.0.0.1]: 451 4.3.0 <vanmeeuwen@test90.kolabsys.com>: Temporary lookup failure (in reply to end of DATA command))
```

**General**

1. Remove package logwatch
2. Remove package mlocate

### Cyrus IMAP Settings

Valuable settings in /etc/imapd.conf to consider, are listed here.

#### System Settings

- **allowallsubstrcre: 0**
  - *From the man-page:* Allow subscription to nonexistent mailboxes. This option is typically used on backend servers in a Murder so that users can subscribe to mailboxes that don't reside on their "home" server. This option can also be used as a workaround for IMAP clients which don't play well with nonexistent or unselectable mailboxes (eg. Microsoft Outlook).
  - *Extra Notes:* The default is 0, please set to 1 to allow users to subscribe to folders not on their own backend server.
- **altnamespace: 0**
  - *From the man-page:* Use the alternate IMAP namespace, where personal folders reside at the same level in the hierarchy as INBOX. This option ONLY applies where interaction takes place with the client/user. Currently this is limited to the IMAP protocol (imapd) and Sieve scripts (lmtpd). This option does NOT apply to admin tools such as cyradm (admins ONLY), reconstruct, quota, etc., NOR does it affect LMTP delivery of messages directly to mailboxes via plus-addressing.
  - *Extra Notes:* The default is 0, please set to 1. The difference shows in the consuming side most prominently. Either all your folders are sub-folders of your Inbox, or it is a flat tree:
Management Related Settings

When first creating a user, no folders yet exist but the upper level mailbox directory (e.g. INBOX).

- **createonpost**: 0
  - Whether or not to automatically create the INBOX folder when a delivery is attempted for an INBOX that does not yet exist.
  - **Note** that enabling this option may cause the lmtpproxyd to be situated in the middle of a catch-22.
- **autocreatequota**: 0
  - Make this a non-zero number to enable the automatic creation of mailboxes.
- **autocreateinboxfolders**: <none>
  - `'|'` separated list of folders to automatically create, for example: `autocreateinboxfolders: Junk | Spam | Sent Items | Drafts | Calendar | Journal | Tasks | Notes`
- **autosubscribeinboxfolders**: <none>
  - `'|'` separated list of folders to automatically subscribe the user to. For example: `autosubscribeinboxfolders: Junk | Spam | Sent Items | Drafts | Calendar | Journal | Tasks | Notes`
- **autosubscribesharedfolders**: <none>
  - `'|'` separated list of folders to attempt subscribing the user to. For example, shared.memo.
- **autosubscribe_all_sharedfolders**: 0
  - Probably more appropriate then **autosubscribesharedfolders**, automatically subscribes the user to all shared folders the user has permissions to.

[Sieve Related Settings](#)
• sieve_allowreferrals: 1
  ◦ Whether the client should be redirected(1) or proxied(0) by timsieved. We recommend the client be proxied.
• sieve_extensions: fileinto reject vacation imapflags notify envelope relational regex subaddress copy
  ◦ Which extensions can be used by Sieve scripts.
• anysievefolder: 0
  ◦ Whether or not to allow Sieve scripts to submit to / file into non-existent INBOX sub-folders (and sub-folders of INBOX only!!)
• autosievesfolders: <none>
  ◦ '|' seperated list of INBOX sub-folders that may be automatically created, such as autosievesfolders: Junk | Spam
• autocreate_sieve_script: <none>
  ◦ Full path of a file that contains a Sieve script that'll become the default first user sieve script.
• autocreate_sieve_compiledscript: <none>
• generate_compiled_sieve_script: 0

[edit] Postfix, Amavis and Multiple Domains

Instead of maintaining lists of domains in both /etc/postfix/ somewhere, as well as /etc/amavisd/amavisd.conf, one could use (in /etc/amavisd/amavisd.conf):

@local_domains_maps = read_hash("/etc/postfix/relay_domains");

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