

Sendmail/Sendmail.cf/Пример Sendmail.cf — Urbanculture

[обратно к статье «Sendmail»](#)
[Sendmail.cf](#)

```
#
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#
#####
#####
#####
#####          SENDMAIL CONFIGURATION FILE
#####
##### built by czyborra@czyborra on Wed May 20 14:02:17 CEST 1998
##### in /etc
##### using /usr/share/sendmail/ as configuration include directory
#####
#####
##### @(#)cfhead.m4      8.9 (Berkeley) 1/18/97  #####
##### @(#)cf.m4        8.24 (Berkeley) 8/16/95  #####
##### $Id: sendmail.mc,v 1.1 1998/05/20 12:02:08 czyborra Exp $  #####
##### @(#)linux.m4     8.2 (Berkeley) 8/21/93  #####
##### @(#)local_procmail.m4  8.6 (Berkeley) 10/20/96  #####
##### @(#)nouucp.m4    8.1 (Berkeley) 6/7/93  #####
##### @(#)always_add_domain.m4 8.1 (Berkeley) 6/7/93  #####
##### @(#)masquerade_envelope.m4      8.1 (Berkeley) 7/9/95  #####
##### @(#)nocanonify.m4      8.1 (Berkeley) 6/7/93  #####
##### @(#)nodns.m4         8.1 (Berkeley) 8/6/93  #####
```

@(#)proto.m4 8.151 (Berkeley) 7/31/97

level 7 config file format
V7/Berkeley

local info #
#####

Cwlocalhost

my official domain name
... define this only if sendmail cannot automatically determine your domain
#Dj\$w.Foo.COM

CP.

"Smart" relay host (may be null)
DSsmtp8:mail

place to which unknown users should be forwarded
#Kuser user -m -a<>
#DLname_of_luser_relay

operators that cannot be in local usernames (i.e., network indicators)
CO @ %

a class with just dot (for identifying canonical names)
C..

a class with just a left bracket (for identifying domain literals)
C[[

Mailer table (overriding domains)
#Kmailertable dbm /etc/mailertable

Domain table (adding domains)
#Kdomaintable dbm /etc/domaintable

Generics table (mapping outgoing addresses)
#Kgenerics dbm /etc/genericstable

Virtual user table (maps incoming users)
#Kvirtuser dbm /etc/virtusertable

who I send unqualified names to (null means deliver locally)
DR

who gets all local email traffic (\$R has precedence for unqualified names)
DH

dequoting map
Kdequote dequote

class E: names that should be exposed as from this host, even if we masquerade
class L: names that should be delivered locally, even if we have a relay
class M: domains that should be converted to \$M
#CL root
CE root

who I masquerade as (null for no masquerading) (see also \$=M)
DMcs.tu-berlin.de

my name for error messages
DnMAILER-DAEMON

Configuration version number

DZ8.8.8

```
#####  
# Options #  
#####
```

```
# strip message body to 7 bits on input?  
0 SevenBitInput=False  
  
# 8-bit data handling  
0 EightBitMode=pass8  
  
# wait for alias file rebuild (default units: minutes)  
0 AliasWait=10  
  
# location of alias file  
0 AliasFile=/etc/aliases  
  
# minimum number of free blocks on filesystem  
0 MinFreeBlocks=100  
  
# maximum message size  
#0 MaxMessageSize=1000000  
  
# substitution for space (blank) characters  
0 BlankSub=.  
  
# avoid connecting to "expensive" mailers on initial submission?  
0 HoldExpensive=False  
  
# checkpoint queue runs after every N successful deliveries  
#0 CheckpointInterval=10  
  
# default delivery mode  
0 DeliveryMode=background  
  
# automatically rebuild the alias database?  
#0 AutoRebuildAliases  
  
# error message header/file  
#0 ErrorHandler=/etc/sendmail.oE  
  
# error mode  
#0 ErrorMode=print  
  
# save Unix-style "From_" lines at top of header?  
#0 SaveFromLine  
  
# temporary file mode  
0 TempFileMode=0660  
  
# match recipients against GECOS field?  
#0 MatchGECOS  
  
# maximum hop count  
#0 MaxHopCount=17  
  
# location of help file  
0 HelpFile=/usr/lib/sendmail.hf  
  
# ignore dots as terminators in incoming messages?  
#0 IgnoreDots  
  
# name resolver options  
#0 ResolverOptions=+AAONLY  
  
# deliver MIME-encapsulated error messages?  
0 SendMimeErrors=True  
  
# Forward file search path  
0 ForwardPath=$z/.forward.$w:$z/.forward  
  
# open connection cache size  
0 ConnectionCacheSize=2  
  
# open connection cache timeout  
0 ConnectionCacheTimeout=5m
```

```
# persistent host status directory
#0 HostStatusDirectory=.hoststat

# single thread deliveries (requires HostStatusDirectory)?
#0 SingleThreadDelivery

# use Errors-To: header?
0 UseErrorsTo=False

# log level
0 LogLevel=9

# send to me too, even in an alias expansion?
#0 MeToo

# verify RHS in newaliases?
0 CheckAliases=False

# default messages to old style headers if no special punctuation?
0 OldStyleHeaders=True

# SMTP daemon options
#0 DaemonPortOptions=Port=esmtplib

# privacy flags
0 PrivacyOptions=authwarnings

# who (if anyone) should get extra copies of error messages
#0 PostMasterCopy=Postmaster

# slope of queue-only function
#0 QueueFactor=600000

# queue directory
0 QueueDirectory=/var/spool/mqueue

# timeouts (many of these)
#0 Timeout.initial=5m
#0 Timeout.connect=5m
#0 Timeout.icconnect=5m
#0 Timeout.helo=5m
#0 Timeout.mail=10m
#0 Timeout.rcpt=1h
#0 Timeout.datainit=5m
#0 Timeout.datablock=1h
#0 Timeout.datafinal=1h
#0 Timeout.rset=5m
#0 Timeout.quit=2m
#0 Timeout.misc=2m
#0 Timeout.command=1h
#0 Timeout.ident=30s
#0 Timeout.fileopen=60s
0 Timeout.queuereturn=5d
#0 Timeout.queuereturn.normal=5d
#0 Timeout.queuereturn.urgent=2d
#0 Timeout.queuereturn.non-urgent=7d
0 Timeout.queuwarn=4h
#0 Timeout.queuwarn.normal=4h
#0 Timeout.queuwarn.urgent=1h
#0 Timeout.queuwarn.non-urgent=12h
#0 Timeout.hoststatus=30m

# should we not prune routes in route-addr syntax addresses?
#0 DontPruneRoutes

# queue up everything before forking?
0 SuperSafe=True

# status file
0 StatusFile=/etc/sendmail.st

# time zone handling:
# if undefined, use system default
# if defined but null, use TZ envariable passed in
# if defined and non-null, use that info
#0 TimeZoneSpec=

# default UID (can be username or userid:groupid)
0 DefaultUser=1:1
```

```
# list of locations of user database file (null means no lookup)
#0 UserDatabaseSpec=/etc/userdb

# fallback MX host
#0 FallbackMXhost=fall.back.host.net

# if we are the best MX host for a site, try it directly instead of config err
#0 TryNullMXList

# load average at which we just queue messages
#0 QueueLA=8

# load average at which we refuse connections
#0 RefuseLA=12

# maximum number of children we allow at one time
#0 MaxDaemonChildren=12

# maximum number of new connections per second
#0 ConnectionRateThrottle=3

# work recipient factor
#0 RecipientFactor=30000

# deliver each queued job in a separate process?
#0 ForkEachJob

# work class factor
#0 ClassFactor=1800

# work time factor
#0 RetryFactor=90000

# shall we sort the queue by hostname first?
#0 QueueSortOrder=priority

# minimum time in queue before retry
#0 MinQueueAge=30m

# default character set
#0 DefaultCharSet=iso-8859-1

# service switch file (ignored on Solaris, Ultrix, OSF/1, others)
#0 ServiceSwitchFile=/etc/service.switch

# hosts file (normally /etc/hosts)
#0 HostsFile=/etc/hosts

# dialup line delay on connection failure
#0 DialDelay=10s

# action to take if there are no recipients in the message
#0 NoRecipientAction=add-to-undisclosed

# chrooted environment for writing to files
#0 SafeFileEnvironment=/arch

# are colons OK in addresses?
#0 ColonOkInAddr

# how many jobs can you process in the queue?
#0 MaxQueueRunSize=10000

# shall I avoid expanding CNAMEs (violates protocols)?
#0 DontExpandCnames

# SMTP initial login message (old $e macro)
0 SmtpgreetingMessage=$j Sendmail $v/$Z; $b

# UNIX initial From header format (old $l macro)
0 UnixFromLine=From $g $d

# delimiter (operator) characters (old $o macro)
0 OperatorChars=.:!~/[]+

# shall I avoid calling initgroups(3) because of high NIS costs?
#0 DontInitGroups

# are group-writable :include: and .forward files (un)trustworthy?
#0 UnsafeGroupWrites
```



```

R< $* > $+          < $1 >          strip excess on right
R<>                 $@ < @ >        MAIL FROM:<> case
R< $+ >             $: $1           remove housekeeping <>

# make sure <@a,@b,@c:user@d> syntax is easy to parse -- undone later
R@ $+ , $+         @ $1 : $2       change all ", " to ":"

# localize and dispose of route-based addresses
R@ $+ : $+         @$>96 < @$1 > : $2 handle <route-addr>

# find focus for list syntax
R $+ : $* ; @ $+   @$>96 $1 : $2 ; < @ $3 > list syntax
R $+ : $* ;        @$ $1 : $2;      list syntax

# find focus for @ syntax addresses
R$+ @ $+          $: $1 < @ $2 >    focus on domain
R$+ < $+ @ $+ >   $1 $2 < @ $3 >    move gaze right
R$+ < @ $+ >      @$>96 $1 < @ $2 > already canonical

# do some sanity checking
R$* < @ $* : $* > $* $1 < @ $2 $3 > $4 nix colons in addr

# if we have % signs, take the rightmost one
R$* % $*          $1 @ $2          First make them all @s.
R$* @ $* @ $*     $1 % $2 @ $3     Undo all but the last.
R$* @ $*          @$>96 $1 < @ $2 > Insert < > and finish

# else we must be a local name
R$*               @$>96 $1

#####
### Ruleset 96 -- bottom half of ruleset 3 ###
#####

S96

# handle special cases for local names
R$* < @ localhost > $* $: $1 < @ $j . > $2 no domain at all
R$* < @ localhost . $m > $* $: $1 < @ $j . > $2 local domain
R$* < @ [ $+ ] > $* $: $1 < @@ [ $2 ] > $3 mark [a.b.c.d]
R$* < @@ $=w > $* $: $1 < @ $j . > $3 self-literal
R$* < @@ $+ > $* @$ $1 < @ $2 > $3 canon IP addr

# look up domains in the domain table
#R$* < @ $+ > $* $: $1 < @ $(domaintable $2 $) > $3

# pass to name server to make hostname canonical
#R$* < @ $* $-P > $* $: $1 < @ $[ $2 $3 $ ] > $4

# local host aliases and pseudo-domains are always canonical
R$* < @ $=w > $* $: $1 < @ $2 . > $3
R$* < @ $j > $* $: $1 < @ $j . > $2
R$* < @ $=M > $* $: $1 < @ $2 . > $3
R$* < @ $* $-P > $* $: $1 < @ $2 $3 . > $4
R$* < @ $* . . > $* $1 < @ $2 . > $3

#####
### Ruleset 4 -- Final Output Post-rewriting ###
#####

S4

R$* <@>           @$          handle <> and list;;

# strip trailing dot off possibly canonical name
R$* < @ $+ . > $* $1 < @ $2 > $3

# eliminate internal code -- should never get this far!
R$* < @ *LOCAL* > $* $1 < @ $j > $2

# externalize local domain info
R$* < $+ > $* $1 $2 $3 defocus
R@ $+ : @ $+ : $+ @ $1 , @ $2 : $3 <route-addr> canonical
R@ $* @$ @ $1 ... and exit

# delete duplicate local names
R$+ % $=w @ $=w $1 @ $2 u%host@host => u@host

```

```
#####  
### Ruleset 97 -- recanonicalize and call ruleset zero ###  
### (used for recursive calls) ###  
#####
```

```
S97  
R$* $: $>3 $1  
R$* $@ $>0 $1
```

```
#####  
### Ruleset 0 -- Parse Address ###  
#####
```

```
S0
```

```
R$* $: $>Parse0 $1 initial parsing  
R$* $: $>98 $1 handle local hacks  
R$* $: $>Parse1 $1 final parsing
```

```
SParse0
```

```
R<@> $#local $: <@> special case error msgs  
R$* : $* ; <@> $#error $@ 5.1.3 $: "list;; syntax illegal for recipient addresses"  
R<@ $+> $#error $@ 5.1.1 $: "user address required"  
R$* $: <> $1  
R<> $* < @ [ $+ ] > $* $1 < @ [ $2 ] > $3  
R<> $* <$* : $* > $* $#error $@ 5.1.1 $: "colon illegal in host name part"  
R<> $* $1  
R$* < @ . $* > $* $#error $@ 5.1.2 $: "invalid host name"  
R$* < @ $* .. $* > $* $#error $@ 5.1.2 $: "invalid host name"
```

```
# handle numeric address spec
```

```
R$* < @ [ $+ ] > $* $: $>98 $1 < @ [ $2 ] > $3 numeric internet spec  
R$* < @ [ $+ ] > $* $#smtp8 $@ [ $2 ] $: $1 < @ [ $2 ] > $3 still numeric: send
```

```
# now delete the local info -- note $=0 to find characters that cause forwarding
```

```
R$* < @ > $* $@ $>Parse0 $>3 $1 user@ => user  
R< @ $=w . > : $* $@ $>Parse0 $>3 $2 @here:... -> ...  
R$- < @ $=w . > $: $(dequote $1 $) < @ $2 . > dequote "foo"@here  
R< @ $+ > $#error $@ 5.1.1 $: "user address required"  
R$* $=0 $* < @ $=w . > $@ $>Parse0 $>3 $1 $2 $3 ...@here -> ...
```

```
SParse1
```

```
# handle virtual users
```

```
#R$+ < @ $=w . > $: < $(virtuser $1 @ $2 $@ $1 $: @ $) > $1 < @ $2 . >  
#R<@> $+ + $* < @ $* . > $: < $(virtuser $1 + * @ $3 $@ $1 $: @ $) > $1 + $2 < @ $3 . >  
#R<@> $+ + $* < @ $* . > $: < $(virtuser $1 @ $3 $@ $1 $: @ $) > $1 + $2 < @ $3 . >  
#R<@> $+ < @ $+ . > $: < $(virtuser @ $2 $@ $1 $: @ $) > $1 < @ $2 . >  
#R<@> $+ $: $1  
#R< error : $- $+ > $* $#error $@ $( dequote $1 $) $: $2  
#R< $+ > $+ < @ $+ > $: $>97 $1
```

```
# short circuit local delivery so forwarded email works
```

```
#R$+ . USENET < @ $=w . > $#usenet $: $1 handle usenet specially  
R$=L < @ $=w . > $#local $: @ $1 special local names  
R$+ < @ $=w . > $#local $: $1 regular local name
```

```
# not local -- try mailer table lookup
```

```
#R$* <@ $+ > $* $: < $2 > $1 < @ $2 > $3 extract host name  
#R< $+ . > $* $: < $1 > $2 strip trailing dot  
#R< $+ > $* $: < $(mailertable $1 $) > $2 lookup  
#R< $-[ : $+ > $* $>95 < $1 : $2 > $3 check -- resolved?  
#R< $+ > $* $: $>90 <$1> $2 try domain
```

```
# resolve fake top level domains by forwarding to other hosts
```

```
# pass names that still have a host to a smarthost (if defined)
```

```
R$* < @ $* > $* $: $>95 < $S > $1 < @ $2 > $3 glue on smarthost name
```

```
# deal with other remote names
```

```
R$* < @$* > $* $#smtp8 $@ $2 $: $1 < @ $2 > $3 user@host.domain
```



```

# if this is quoted, strip the quotes and try again
R$+          $: $(dequote $1 $)          strip quotes
R$+ $=0 $+   @$>97 $1 $2 $3             try again

# handle locally delivered names
R$=L         $#local $: @ $1             special local names
R$+         $#local $: $1                regular local names

#####
### Ruleset 5 -- special rewriting after aliases have been expanded ###
#####

S5

# deal with plussed users so aliases work nicely
R$+ + *      $#local @$&h $: $1
R$+ + $*     $#local @$ + $2 $: $1 + *

# prepend an empty "forward host" on the front
R$+         $: <> $1

# send unrecognized local users to a relay host
#R< > $+    $: < $L . > $( user $1 $)    look up user
#R< $* > $+ <> $*   $: < > $2 $3        found; strip $L
#R< $* . > $+     $: < $1 > $2          strip extra dot

# see if we have a relay or a hub
R< > $+      $: < $H > $1                try hub
R< > $+      $: < $R > $1                try relay
R< > $+      $: < > < $1 $(dequote "" $&h $) >   nope, restore +detail
R< > < $+ + $* > $*   < > < $1 > + $2 $3    find the user part
R< > < $+ > + $*     $#local @$ $2 $: @ $1    strip the extra +
R< > < $+ >         @$ $1                  no +detail
R$+         $: $1 $(dequote "" $&h $)    add +detail back in
R< local : $* > $*   $: $>95 < local : $1 > $2  no host extension
R< error : $* > $*   $: $>95 < error : $1 > $2  no host extension
R< $- : $+ > $+     $: $>95 < $1 : $2 > $3 < @ $2 >
R< $+ > $+         @$ $>95 < $1 > $2 < @ $1 >

#####
### Ruleset 90 -- try domain part of mailtable entry ###
#####

S90
#R$* <$- . $+ > $*   $: $1$2 < $(mailtable . $3 @$ $1$2 @$ $2 $) > $4
#R$* <$-[ : $+ > $*   $>95 < $2 : $3 > $4    check -- resolved?
#R$* < . $+ > $*     @$>90 $1 . <$2> $3    no -- strip & try again
#R$* < $* > $*       $: < $(mailtable . @$ $1$2 $) > $3    try "."
#R< $-[ : $+ > $*   $>95 < $1 : $2 > $3    "." found?
#R< $* > $*         @$ $2                no mailtable match

#####
### Ruleset 95 -- canonify mailer:[user@]host syntax to triple ###
#####

S95
R< > $*          @$ $1                strip off null relay
R< error : $- $+ > $*   $#error @$ $( dequote $1 $) $: $2
R< local : $* > $*     $>CanonLocal < $1 > $2
R< $- : $+ @ $+ > $* <$*>$*   $# $1 @$ $3 $: $2<@$3>    use literal user
R< $- : $+ > $*       $# $1 @$ $2 $: $3    try qualified mailer
R< $=w > $*         @$ $2                delete local host
R< $+ > $*         $#relay @$ $1 $: $2    use unqualified mailer

#####
### Ruleset CanonLocal -- canonify local: syntax ###
#####

SCanonLocal
# strip trailing dot from any host name that may appear
R< $* > $* < @ $* . >   $: < $1 > $2 < @ $3 >

# handle local: syntax -- use old user, either with or without host
R< > $* < @ $* > $*     $#local @$ $1@$2 $: $1
R< > $+               $#local @$ $1    $: $1

# handle local:user@host syntax -- ignore host part
R< $+ @ $+ > $* < @ $* >   $: < $1 > $3 < @ $4 >

# handle local:user syntax

```

```
R< $+ > $* <@ $* > $*          $#local @$ $2@$3 $: $1
R< $+ > $*                      $#local @$ $2 $: $1
```

```
#####
### Ruleset 93 -- convert header names to masqueraded form ###
#####
```

S93

```
# handle generics database
#$+ < @ $=G . >          $: < $1@$2 > $1 < @ $2 . > @ mark
#$+ < @ *LOCAL* >      $: < $1@$j > $1 < @ *LOCAL* > @ mark
#R< $+ > $+ < $* > @    $: < $(generics $1 $: $) > $2 < $3 >
#R< > $+ < @ $+ >      $: < $(generics $1 $: $) > $1 < @ $2 >
#R< $* @ $* > $* < $* > @$ >$3 $1 @ $2          found qualified
#R< $+ > $* < $* >     $: $>3 $1 @ *LOCAL*      found unqualified
#R< > $*              $: $1                    not found
```

```
# special case the users that should be exposed
R$=E < @ *LOCAL* >      @$ $1 < @ $j . >          leave exposed
R$=E < @ $=M . >        @$ $1 < @ $2 . >
R$=E < @ $=w . >        @$ $1 < @ $2 . >
```

```
# handle domain-specific masquerading
R$* < @ $=M . > $*      $: $1 < @ $2 . @ $M > $3    convert masqueraded doms
R$* < @ $=w . > $*      $: $1 < @ $2 . @ $M > $3
R$* < @ *LOCAL* > $*    $: $1 < @ $j . @ $M > $2
R$* < @ $+ @ > $*      $: $1 < @ $2 > $3          $M is null
R$* < @ $+ @ $+ > $*    $: $1 < @ $3 . > $4        $M is not null
```

```
#####
### Ruleset 94 -- convert envelope names to masqueraded form ###
#####
```

```
S94
R$+          @$ $>93 $1
#$* < @ *LOCAL* > $* $: $1 < @ $j . > $2
```

```
#####
### Ruleset 98 -- local part of ruleset zero (can be null) ###
#####
```

```
S98
#0
#####
#####
#####
##### MAILER DEFINITIONS #####
#####
#####
```

```
#####
### Local and Program Mailer specification ###
#####
```

```
##### @(#)local.m4 8.23 (Berkeley) 5/31/96 #####
```

```
Mlocal, P=/usr/bin/procmail, F=lsDFMAw5:/|@qSPfhn9, S=10/30, R=20/40,
T=DNS/RFC822/X-Unix,
A=procmail -Y -a $h -d $u
Mprog, P=/bin/sh, F=lsDFMoqeu9, S=10/30, R=20/40, D=$:/,
T=X-Unix,
A=sh -c $u
```

```
#
# Envelope sender rewriting
#
S10
R<@>          $n          errors to mailer-daemon
R$+          $: $>50 $1    add local domain if needed
R$*          $: $>94 $1    do masquerading
```

```
#
# Envelope recipient rewriting
#
S20
R$+ < @ $* >    $: $1          strip host part
```

```

#
# Header sender rewriting
#
S30
R<@>          $n          errors to mailer-daemon
R$+          $: $>50 $1    add local domain if needed
R$*          $: $>93 $1    do masquerading

#
# Header recipient rewriting
#
S40
R$+          $: $>50 $1    add local domain if needed
#R$*        $: $>93 $1    do all-masquerading

#
# Common code to add local domain name (only if always-add-domain)
#
S50
R$* < @ $* > $*    $@ $1 < @ $2 > $3    already fully qualified
R$+          $@ $1 < @ *LOCAL* >    add local qualification

#####*****#####
### PROCMAIL Mailer specification ###
#####*****#####

##### @(#)procmail.m4 8.6 (Berkeley) 4/30/97 #####

Mprocmail,      P=/usr/bin/procmail, F=DFMSPHnu9, S=11/31, R=21/31, T=DNS/RFC822/X-Unix,
                A=procmail -Y -m $h $f $u

#####
### SMTP Mailer specification ###
#####

##### @(#)smtp.m4 8.33 (Berkeley) 7/9/96 #####

Msmtp,          P=[IPC], F=mDFMuX, S=11/31, R=21, E=\r\n, L=990,
                T=DNS/RFC822/SMTP,
                A=IPC $h
Mesmtp,         P=[IPC], F=mDFMuXa, S=11/31, R=21, E=\r\n, L=990,
                T=DNS/RFC822/SMTP,
                A=IPC $h
Msmtp8,         P=[IPC], F=mDFMuX8, S=11/31, R=21, E=\r\n, L=990,
                T=DNS/RFC822/SMTP,
                A=IPC $h
Mrelay,         P=[IPC], F=mDFMuXa8, S=11/31, R=61, E=\r\n, L=2040,
                T=DNS/RFC822/SMTP,
                A=IPC $h

#
# envelope sender rewriting
#
S11
R$+          $: $>51 $1    sender/recipient common
R$* ;: <@>    $@          list;; special case
R$*          $: $>61 $1    qualify unqual'ed names
R$+          $: $>94 $1    do masquerading

#
# envelope recipient rewriting --
# also header recipient if not masquerading recipients
#
S21
R$+          $: $>51 $1    sender/recipient common
R$+          $: $>61 $1    qualify unqual'ed names

#
# header sender and masquerading header recipient rewriting
#
S31
R$+          $: $>51 $1    sender/recipient common
R:; <@>      $@          list;; special case

# do special header rewriting
R$* <@> $*    $@ $1 <@> $2    pass null host through
R< @ $* > $*  $@ < @ $1 > $2    pass route-addr through

```

```
R$*           $: $>61 $1           qualify unqual'ed names
R$+           $: $>93 $1           do masquerading
```

```
#
# convert pseudo-domain addresses to real domain addresses
#
S51
```

```
# pass <route-addr>s through
R< @ $+ > $*           $@ < @ $1 > $2           resolve <route-addr>

# output fake domains as user%fake@relay
```

```
#
# common sender and masquerading recipient rewriting
#
S61
```

```
R$* < @ $* > $*           $@ $1 < @ $2 > $3           already fully qualified
R$+                       $@ $1 < @ *LOCAL* >           add local qualification
```

```
#
# relay mailer header masquerading recipient rewriting
#
S71
```

```
R$+           $: $>61 $1
R$+           $: $>93 $1
```