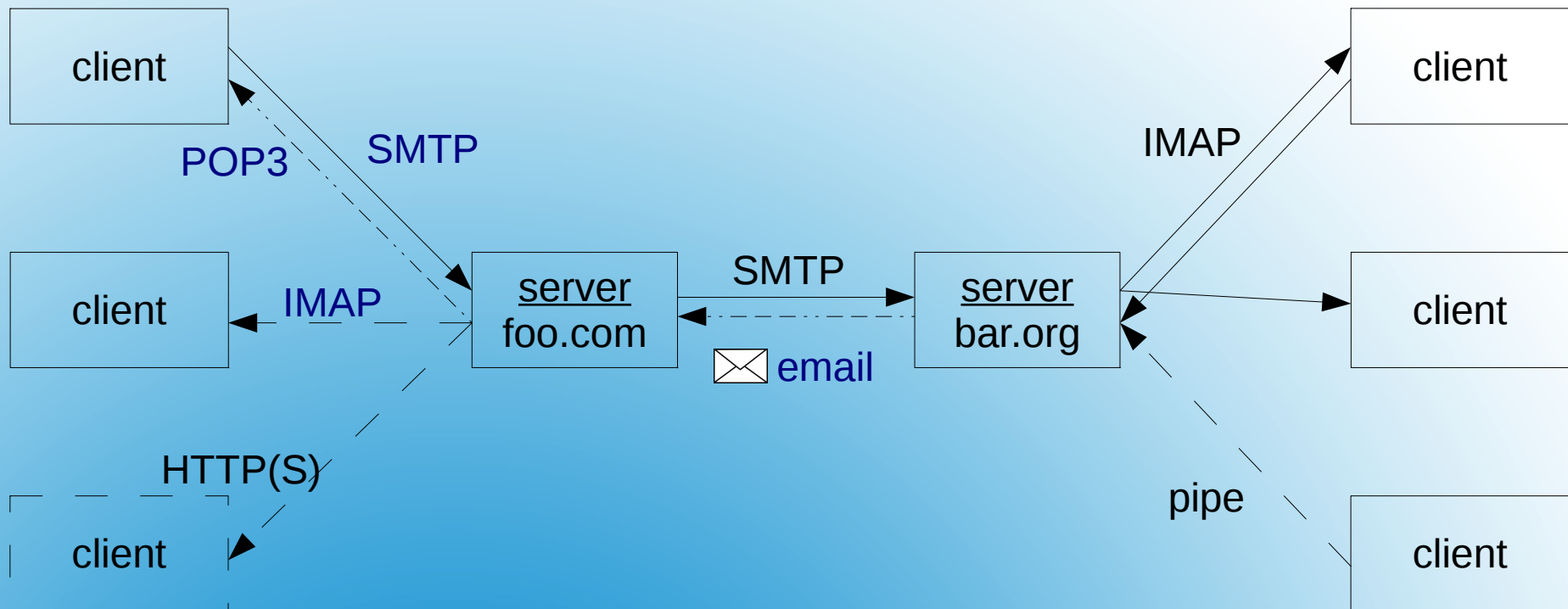
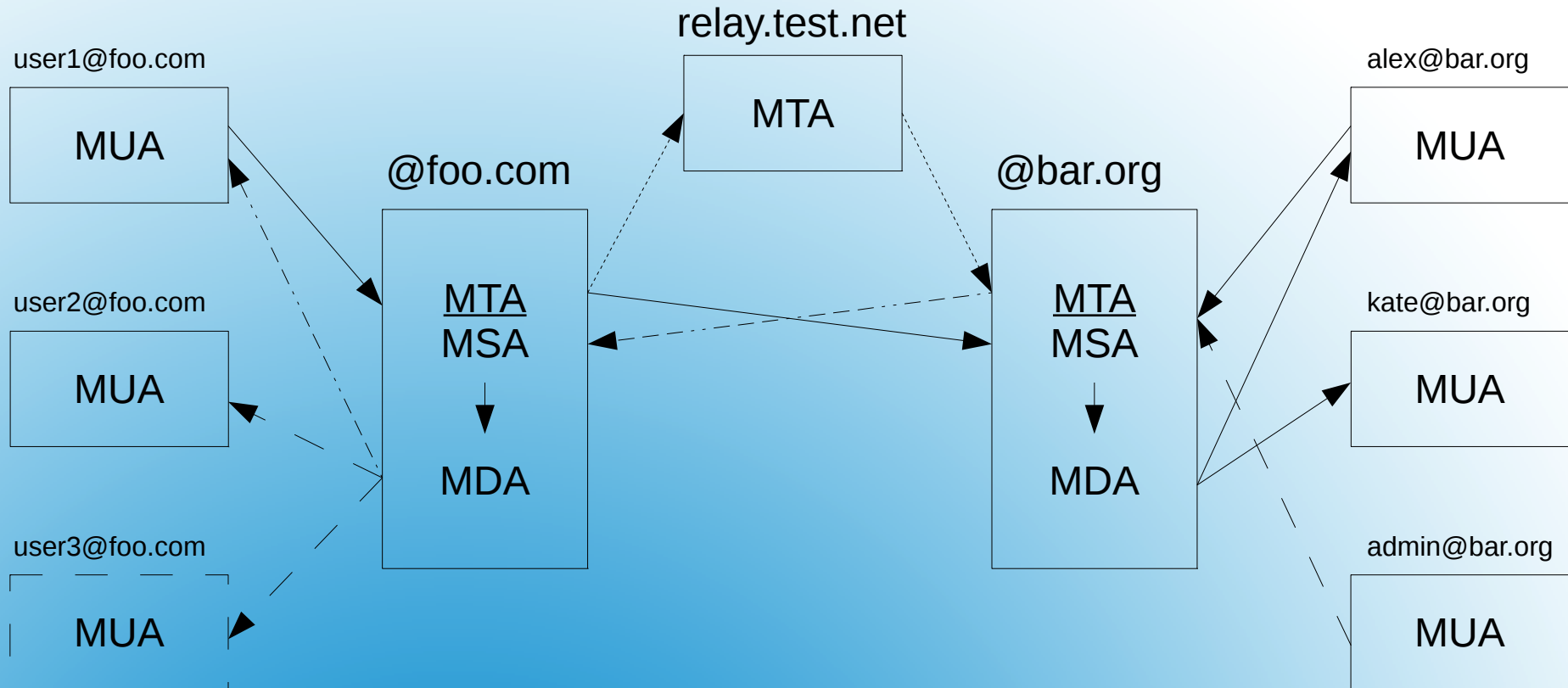


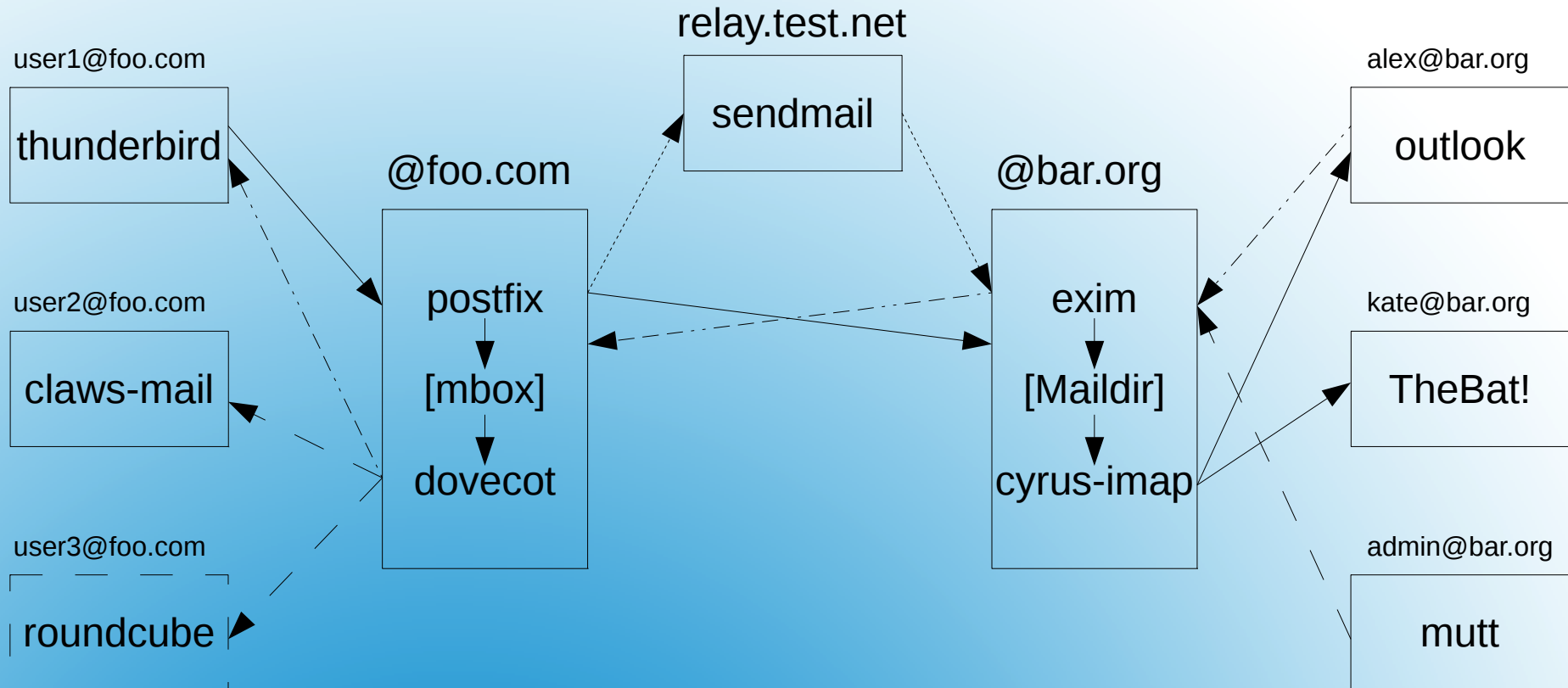
Общая схема почтовой системы (протоколы)



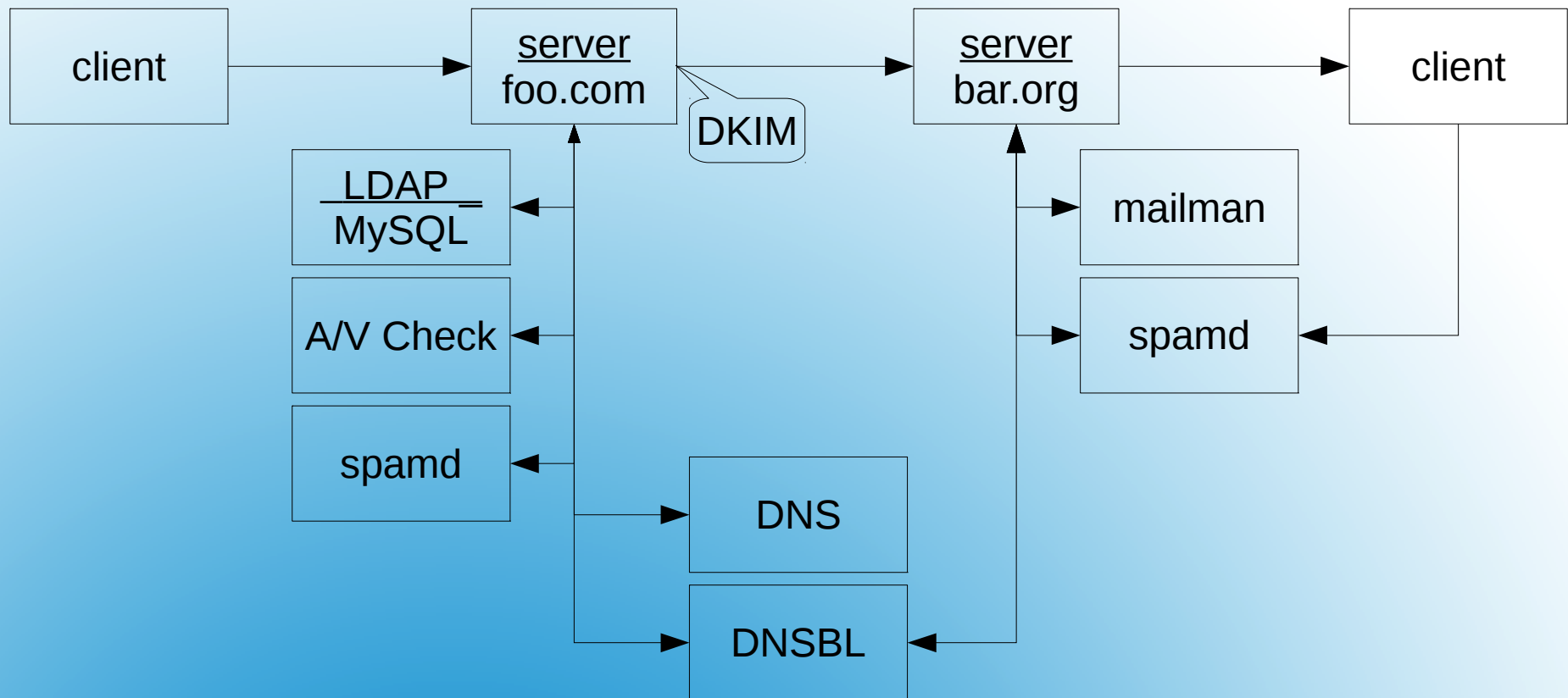
Общая схема почтовой системы (роли)



Общая схема почтовой системы (программы)



Общая схема почтовой системы (плюшки)



Протокол SMTP (1/2)

```
>>  : 1: 220 mail.foo.com ESMTP Postfix
    <<: 2: EHLO mail.foo.com
>>  : 3: 250-PIPELINING
>>  : 4: 250-SIZE 1024000
>>  : 5: 250-ETRN
>>  : 6: 250-STARTTLS
>>  : 7: 250-8BITMIME
>>  : 8: 250-ENHANCEDSTATUSCODES
>>  : 9: 250 DSN
>> :10: 250 AUTH LOGIN PLAIN CRAM-MD5
    <<:11: AUTH LOGIN
>> :12: 334 VXNlcm5hbWU6
    <<:13: dXNlcjFAZm9vLmNvbQo=
>> :14: 334 UGFzc3dvcmQ6
    <<:15: cGFzc3dvcmQK
```

Протокол SMTP (2/2)

```
<<:16: MAIL FROM: <user1@foo.com>
>> :17: 250 2.1.0 Ok.
<<:18: RCPT TO: <alex@bar.org>
>> :19: 250 2.1.5 Ok.
<<:20: DATA
>> :21: 354 End data with <CR><LF>.<CR><LF>
<<:22: From: user1@bar.org
<<:23: To: alex@bar.org
<<:24: Subject: test message
<<:25: Hi!
<<:26: .
>> :27: 250 2.0.0 Ok: queued as 282E051A13
<<:28: QUIT
>> :29: 221 2.0.0 Bye
```

Протокол POP3 (1/2)

```
>>  : 1:  +OK POP3 server ready
    <<: 2:  USER user1@foo.com
>>  : 3:  +OK
    <<: 4:  PASS password
>>  : 5:  +OK Welcome
    <<: 6:  STAT
>>  : 7:  +OK 3 12288
    <<: 8:  LIST
>>  : 9:  +OK 3 messages (12288 octets)
>>  :10:  1 4175
>>  :11:  2 4059
>>  :12:  3 3554
>>  :13:  .
    <<:14:  RETR 1
>>  :15:  +OK 4175 octets
```

Протокол POP3 (2/2)

```
>>  :16:  <skipped>
>>  :17:  .
      <<:18:  STAT
>>  :19:  +OK 3 12288
      <<:20:  DELE 1
>>  :21:  +OK message 1 deleted
      <<:22:  QUIT
>>  :23:  +OK POP3 server signing off
```


Протокол IMAP4 (1/3)

```
>>  : 1: IMAP4< * OK IMAP4 ready
    <<: 2: IMAP4> 1 CAPABILITY
>>  : 3: IMAP4< * CAPABILITY IMAP4rev1 UIDPLUS ID NAMESPACE LOGIN-
REFERRALS IDLE STARTTLS STARTTLS
>>  : 4: IMAP4< 1 OK completed
    <<: 5: IMAP4> Logging user2@foo.com to mail.foo.com using LOGIN
>>  : 6: IMAP4< LOGIN completed
>>  : 7: IMAP4< Login to mail.foo.com successful
    <<: 8: IMAP4> 3 LIST "" ""
>>  : 9: IMAP4< * LIST (\Noselect) "/" ""
>>  :10: IMAP4< 3 OK LIST completed
    <<:11: IMAP4> 4 STATUS INBOX (MESSAGES UIDNEXT UIDVALIDITY UNSEEN)
>>  :12: IMAP4< * STATUS "INBOX" (MESSAGES 70 UIDNEXT 2042
UIDVALIDITY 1 UNSEEN 5)
>>  :13: IMAP4< 4 OK STATUS completed
```

Протокол IMAP4 (2/3)

```
<<:14: IMAP4> 5 SELECT INBOX
>> :15: IMAP4< * 70 EXISTS
>> :16: IMAP4< * 0 RECENT
>> :17: IMAP4< * OK [UIDVALIDITY 1] UID validity status
>> :18: IMAP4< * OK [UIDNEXT 2042] predicted next UID
>> :19: IMAP4< * FLAGS ($Submitted \Answered \Deleted \Draft
\Flagged \Seen $Forwarded $MDNSent Forwarded $hasAttached
$hasEmbedded $Aggregated $Junk $NotJunk Junk JunkRecorded NotJunk)
>> :20: IMAP4< * OK [PERMANENTFLAGS ($Submitted \Answered
\Deleted \Draft \Flagged \Seen $Forwarded $MDNSent Forwarded)]
Permanent flags
>> :21: IMAP4< 5 OK [READ-WRITE] SELECT completed
>> :22: IMAP4- [fetching UIDs...]
<<:23: IMAP4> 6 UID FETCH 1:* (FLAGS UID)
>> :24: IMAP4< [FETCH data - 1460 bytes]
>> :25: IMAP4< [FETCH data - 2636 bytes]
>> :26: IMAP4< [FETCH data - 1460 bytes]
>> :27: IMAP4< [FETCH data - 457 bytes]
```

Протокол IMAP4 (3/3)

```
<<:28: IMAP4> 7 STATUS Sent (MESSAGES UIDNEXT UIDVALIDITY UNSEEN)
>> :29: IMAP4< * STATUS "Sent" (MESSAGES 17 UIDNEXT 1962 UIDVALIDITY
1 UNSEEN 0)
>> :30: IMAP4< 7 OK STATUS completed
<<:31: IMAP4> 8 STATUS Drafts (MESSAGES UIDNEXT UIDVALIDITY UNSEEN)
>> :32: IMAP4< * STATUS "Drafts" (MESSAGES 1 UIDNEXT 1951
UIDVALIDITY 1 UNSEEN 0)
>> :33: IMAP4< 8 OK STATUS completed
<<:34: IMAP4> 9 STATUS Queue (MESSAGES UIDNEXT UIDVALIDITY UNSEEN)
>> :35: IMAP4< * STATUS "Queue" (MESSAGES 0 UIDNEXT 2061 UIDVALIDITY
4700 UNSEEN 0)
>> :36: IMAP4< 9 OK STATUS completed
<<:37: IMAP4> 10 STATUS Trash (MESSAGES UIDNEXT UIDVALIDITY UNSEEN)
>> :38: IMAP4< * STATUS "Trash" (MESSAGES 0 UIDNEXT 1841 UIDVALIDITY
1 UNSEEN 0)
>> :39: IMAP4< 10 OK STATUS completed
```

Типовое почтовое сообщение (1/2)

```
: 1: Return-path: <admin@bar.org>
: 2: Received-SPF: fail
: 3: Received: from [1.2.3.4] (port=51951 helo=mail.bar.org)
: 4:   by mail.foo.com with esmtp (envelope-from
<admin@bar.org>)
: 5:   id 1SMBjD-0005Q3-5C
: 6:   for user1@foo.com; Mon, 23 Apr 2012 09:22:23 +0400
: 7: X-Mru-BL: -1:-1:-1:-1:-1
: 8: X-Mru-PTR: none
: 9: X-Mru-NR: 1
:10: X-Mru-RC: RU
:11: Received: from [192.168.0.15] ([192.168.0.15])
:12:   by mail.bar.org (Exim 4.65)
:13:   for user1@foo.com;
:14:   Mon, 23 Apr 2012 16:22:03 +1000
```

Типовое почтовое сообщение (2/2)

```
:15: To: user1@foo.com
:16: From: Admin <admin@bar.org>
:17: Subject: 1nv01c3
:18: Message-ID: <20120423062203.fd5b88d6@mail.bar.org>
:19: Date: Mon, 23 Apr 2012 16:22:03 +1000
:20: User-Agent: Mutt/1.5.20 (2009-06-14)
:21: MIME-Version: 1.0
:22: X-Spam: Not detected
:23: X-Mras: Ok
:24:
:25: w3 5711L Hav3 N07 r3C31v3D AN FUx0R1N' 1nv01c3 Fr0m J00.
:26: .
```

RTFM!

Спасибо за внимание.