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ON-DEMAND MAIL RELAY (ODMR)
SMTP with Dynamic IP Addresses

Status of this Memo

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1. Abstract

With the spread of low-cost computer systems and Internet connectivity, the demand for local mail servers has been rising. Many people now want to operate a mail server on a system which has

only an intermittent connection to a service provider. If the system has a static IP address, the ESMTP ETRN command [ETRN] can be used. However, systems with dynamic IP addresses (which are very common with low-cost connections) have no widely-deployed solution.

This memo proposes a new service, On-Demand Mail Relay (ODMR), which is a profile of SMTP [SMTP, ESMTP], providing for a secure, extensible, easy to implement approach to the problem.

2. Conventions Used in this Document

Because the client and server roles reverse during the session, to avoid confusion, the terms "customer" and "provider" will be used in place of "client" and "server", although of course this protocol may be useful in cases other than commercial service providers and customers.

In examples, "P:" is used to indicate lines sent by the provider, and "C:" indicates those sent by the customer. Line breaks within a command are for editorial purposes only.

The key words "MUST", "MUST NOT", "SHOULD", "SHOULD NOT", and "MAY" in this document are to be interpreted as defined in [KEYWORDS].

Examples use ’example.net’ as the provider, and ’example.org’ and ’ example.com’ as the customers.

3. Comments

Private comments should be sent to the author. Public comments may be sent to the IETF Disconnected SMTP mailing list, <ietf-disconn-smtp@imc.org>. To subscribe, send a message to <ietf-disconn-smtp-request@imc.org> containing the word SUBSCRIBE as the body.

4. Description

On-Demand Mail Relay is a restricted profile of SMTP [SMTP, ESMTP]. Port 366 is reserved for On-Demand Mail Relay. The initial client and server roles are short-lived, as the point is to allow the intermittently-connected host to request mail held for it by a service provider.

The customer initiates a connection to the provider, authenticates, and requests its mail. The roles of client and server then reverse, and normal SMTP [SMTP, ESMTP] proceeds.

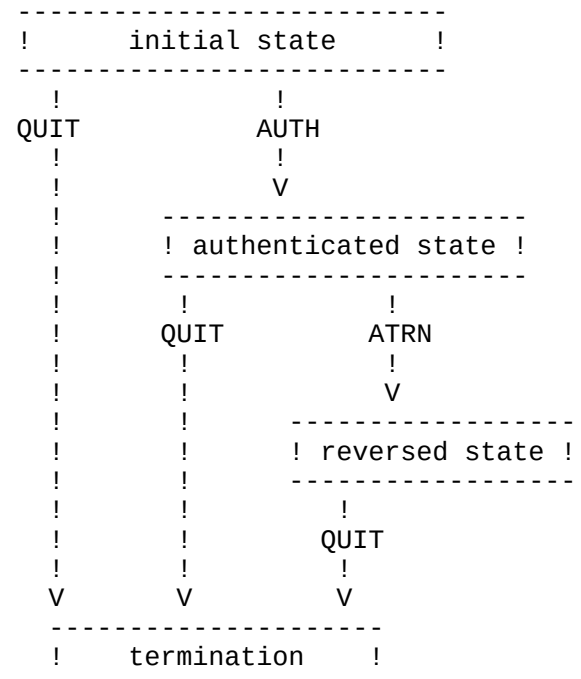
The provider has an On-Demand Mail Relay process listening for connections on the ODMR port. This process does not need to be a full SMTP server. It does need to be an SMTP client with access to the outgoing mail queues, and as a server implement the EHLO, AUTH, ATRN, and QUIT commands.

An MTA normally has a mail client component which processes the outgoing mail queues, attempting to send mail for particular domains, based on time or event (such as new mail being placed in the queue, or receipt of an ETRN command by the SMTP server component). The On-Demand Mail Relay service processes the outgoing queue not on a timer or new mail creation, but on request.

The provider side has normal SMTP server responsibilities [SMTP], including generation of delivery failure notices, etc. as needed.

5. States

The On-Demand Mail Relay service has three states: an initial state, an authenticated state, and a reversed state. The state progression is illustrated in the following diagram:



(Note that in the reversed state, commands are sent by the provider, not the customer.)

5.1. Initial State

In the initial state, the provider is the server and the customer is the client. Three commands are valid: EHLO, AUTH, and QUIT.

5.1.1. EHLO

The EHLO command is the same as in [ESMTP]. The response MUST include AUTH and ATRN.

5.1.2. AUTH

The AUTH command is specified in [AUTH]. The AUTH command uses a [SASL] mechanism to authenticate the session. The session is not considered authenticated until a success response to AUTH has been sent.

For interoperability, implementations MUST support the CRAM-MD5 mechanism [CRAM]. Other SASL mechanisms may be supported. A site MAY disable CRAM-MD5 support if it uses more secure methods. The EXTERNAL mechanism [SASL] might be useful in some cases, for example, if the provider has already authenticated the client, such as during a PPP connection.

5.1.3. QUIT

The QUIT command is the same as in [SMTP].

5.2. Authenticated State

The authenticated state is entered after a successful AUTH command. Two commands are valid in the authenticated state: ATRN and QUIT.

5.2.1. ATRN (Authenticated TURN)

Unlike the TURN command in [SMTP], the ATRN command optionally takes one or more domains as a parameter. The ATRN command MUST be rejected if the session has not been authenticated. Response code 530 [AUTH] is used for this.

The timeout for this command MUST be at least 10 minutes to allow the provider time to process its mail queue.

An ATRN command sent with no domains is equivalent to an ATRN command specifying all domains to which the customer has access.

If the authentication used by the customer does not provide access to all of the domains specified in ATRN, the provider MUST NOT send mail for any domains to the customer; the provider MUST reject the ATRN command with a 450 code.

If the customer does have access to all of the specified domains, but none of them have any queued mail, the provider normally rejects the ATRN command with response code 453. The provider MAY instead issue a 250 success code, and after the roles are reversed, send a QUIT following the EHLO.

The provider MAY also reject the ATRN command with a 450 response to indicate refusal to accept multiple requests issued within a particular time interval.

If the customer has access to all of the specified domains and mail exists in at least one of them, the provider issues a 250 success code.

If the server is unable to verify access to the requested domains (for example, a mapping database is temporarily unavailable), response code 451 is sent.

[ABNF] for ATRN:

```
atrn          = "ATRN" [SP domain *("," domain)]

domain        = sub-domain 1*("." sub-domain)

sub-domain    = (ALPHA / DIGIT) *(ldh-str)

ldh-str       = *(ALPHA / DIGIT / "-") (ALPHA / DIGIT)
```

5.3. Reversed State

After the provider has sent a success reply to the ATRN command, the roles reverse, and the customer becomes the server, and the provider becomes the client.

After receiving the success response to ATRN, the customer sends a standard SMTP initial greeting line. At this point normal SMTP [SMTP, ESMTP] commands are used. Typically the provider sends EHLO after seeing the customer’s greeting, to be followed by MAIL FROM and so on.

5.4. Other Commands

The provider MAY reject all commands other than EHLO, AUTH, ATRN, and QUIT with response code 502.

6. Example On-Demand Mail Relay Session

```
P:  220 EXAMPLE.NET on-demand mail relay server ready
C:  EHLO example.org
P:  250-EXAMPLE.NET
P:  250-AUTH CRAM-MD5 EXTERNAL
P:  250 ATRN
C:  AUTH CRAM-MD5
P:  334 MTg5Ni42OTcxNzA5NTJASVNQLkNPTQo=
C:  Zm9vYmFyLm5ldCBiOTEzYTYwMmM3ZWRhN2E0OTViNGU2ZTczMzRkMzg5MAo=
P:  235 now authenticated as example.org
C:  ATRN example.org,example.com
P:  250 OK now reversing the connection
C:  220 example.org ready to receive email
P:  EHLO EXAMPLE.NET
C:  250-example.org
C:  250 SIZE
P:  MAIL FROM: <Lester.Tester@dot.foo.bar>
C:  250 OK
P:  RCPT TO: <l.eva.msg@example.com>
C:  250 OK, recipient accepted
...
P:  QUIT
C:  221 example.org closing connection
```

7. Response Codes

The response codes used in this document are:

```
250  Requested mail action okay, completed
450  ATRN request refused
451  Unable to process ATRN request now
453  You have no mail
502  Command not implemented
530  Authentication required [AUTH]
```

8. Security Considerations

Because access to the On-Demand Mail Relay server is only useful with a prior arrangement between the parties (so the provider is the target of MX records for the customer’s domains and thus has mail to relay), it may be useful for the provider to restrict access to the On-Demand Mail Relay port. For example, the ODMR server could be

configurable, or a TCP wrapper or firewall could be used, to block access to port 366 except within the provider's network. This might be useful when the provider is the customer's ISP. Use of such mechanisms does not reduce the need for the AUTH command, however, but can increase the security it provides.

Use of SASL in the AUTH command allows for substitution of more secure authentication mechanisms in the future.

See sections 5.1.2 and 5.2.1 for additional security details.

9. Acknowledgments

This memo has been developed in part based on comments and discussions which took place on and off the IETF-disconn-smtp mailing list. Special thanks to Chris Newman and Ned Freed for their comments.

10. References

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12. Full Copyright Statement

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