                      IMAP4 Login Referrals

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1. Abstract

   When dealing with large amounts of users and many IMAP4 [RFC-2060]
   servers, it is often necessary to move users from one IMAP4 server to
   another. For example, hardware failures or organizational changes
   may dictate such a move.

   Login referrals allow clients to transparently connect to an
   alternate IMAP4 server, if their home IMAP4 server has changed.

   A referral mechanism can provide efficiencies over the alternative
   'proxy method', in which the local IMAP4 server contacts the remote
   server on behalf of the client, and then transfers the data from the
   remote server to itself, and then on to the client. The referral
   mechanism's direct client connection to the remote server is often a
   more efficient use of bandwidth, and does not require the local
   server to impersonate the client when authenticating to the remote
   server.

2. Conventions used in this document

   In examples, "C:" and "S:" indicate lines sent by the client and
   server respectively.

   A home server, is an IMAP4 server that contains the user's inbox.

   A remote server is a server that contains remote mailboxes.

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT",
"SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this
document are to be interpreted as described in [RFC-2119].

3. Introduction and Overview

   IMAP4 servers that support this extension MUST list the keyword
   LOGIN-REFERRALS in their CAPABILITY response. No client action is
   needed to invoke the LOGIN-REFERRALS capability in a server.

   A LOGIN-REFERRALS capable IMAP4 server SHOULD NOT return a referral
   to a server that will return a referral. A client MUST NOT follow
   more than 10 levels of referral without consulting the user.

   A LOGIN-REFERRALS response code MUST contain as an argument a valid
   IMAP server URL as defined in [IMAP-URL].

   A home server referral consists of either a tagged NO or OK, or an
   untagged BYE response that contains a LOGIN-REFERRALS response code.

   Example: A001 NO [REFERRAL IMAP://user;AUTH=*@SERVER2/] Remote Server

   NOTE: user;AUTH=* is specified as required by [IMAP-URL] to avoid a
   client falling back to anonymous login.

4. Home Server Referrals

   A home server referral may be returned in response to an AUTHENTICATE
   or LOGIN command, or it may appear in the connection startup banner.
   If a server returns a home server referral in a tagged NO response,
   that server does not contain any mailboxes that are accessible to the
   user. If a server returns a home server referral in a tagged OK
   response, it indicates that the user's personal mailboxes are
   elsewhere, but the server contains public mailboxes which are
   readable by the user. After receiving a home server referral, the
   client can not make any assumptions as to whether this was a
   permanent or temporary move of the user.

4.1. LOGIN and AUTHENTICATE Referrals

   An IMAP4 server MAY respond to a LOGIN or AUTHENTICATE command with a
   home server referral if it wishes to direct the user to another IMAP4
   server.

   Example: C: A001 LOGIN MIKE PASSWORD
             S: A001 NO [REFERRAL IMAP://MIKE@SERVER2/] Specified user
                   is invalid on this server. Try SERVER2.

       Example: C: A001 LOGIN MATTHEW PASSWORD
                 S: A001 OK [REFERRAL IMAP://MATTHEW@SERVER2/] Specified
                        user's personal mailboxes located on Server2, but
                        public mailboxes are available.

       Example: C: A001 AUTHENTICATE GSSAPI
                 <authentication exchange>
                 S: A001 NO [REFERRAL IMAP://user;AUTH=GSSAPI@SERVER2/]
                        Specified user is invalid on this server. Try
                        SERVER2.

4.2. BYE at connection startup referral

   An IMAP4 server MAY respond with an untagged BYE and a REFERRAL
   response code that contains an IMAP URL to a home server if it is not
   willing to accept connections and wishes to direct the client to
   another IMAP4 server.

       Example: S: * BYE [REFERRAL IMAP://user;AUTH=*@SERVER2/] Server not
                        accepting connections. Try SERVER2

5. Formal Syntax

   The following syntax specification uses the augmented Backus-Naur
   Form (BNF) as described in [ABNF].

   This amends the "resp_text_code" element of the IMAP4 grammar
   described in [RFC-2060]

   resp_text_code =/ "REFERRAL" SPACE <imapurl>
      ; See [IMAP-URL] for definition of <imapurl>
      ; See [RFC-2060] for base definition of resp_text_code

6. Security Considerations

   The IMAP4 login referral mechanism makes use of IMAP URLs, and as
   such, have the same security considerations as general internet URLs
   [RFC-1738], and in particular IMAP URLs [IMAP-URL].

   A server MUST NOT give a login referral if authentication for that
   user fails. This is to avoid revealing information about the user's
   account to an unauthorized user.

   With the LOGIN-REFERRALS capability, it is potentially easier to
   write a rogue 'password catching' server that collects login data and
   then refers the client to their actual IMAP4 server. Although
   referrals reduce the effort to write such a server, the referral
   response makes detection of the intrusion easier.

7. References

   [RFC-2060], Crispin, M., "Internet Message Access Protocol - Version
   4rev1", RFC 2060, December 1996.

   [IMAP-URL], Newman, C., "IMAP URL Scheme", RFC 2192, Innosoft,
   September 1997.

   [RFC-1738], Berners-Lee, T., Masinter, L. and M. McCahill, "Uniform
   Resource Locators (URL)", RFC 1738, December 1994.

   [RFC-2119], Bradner, S., "Key words for use in RFCs to Indicate
   Requirement Levels", RFC 2119, March 1997.

   [ABNF], DRUMS working group, Dave Crocker Editor, "Augmented BNF for
   Syntax Specifications: ABNF", Work in Progress.

8. Acknowledgments

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