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WITHIN Search extension to the IMAP Protocol
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Abstract

This document describes the WITHIN extension to IMAP SEARCH. IMAP SEARCH returns messages whose internal date is within or outside a specified interval. The mechanism described here, OLDER and YOUNGER, differs from BEFORE and SINCE in that the client specifies an interval, rather than a date. We expect WITHIN to be most useful for persistent searches from mobile devices.

Conventions Used in this Document

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

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 [1].

When describing the general syntax, we omit some definitions as RFC 3501 [2] defines them.

1. Introduction

This extension exposes two new search keys, OLDER and YOUNGER, each of which takes a non-zero integer argument corresponding to a time interval. The server calculates the time of interest by subtracting the time interval presented by the client, and either returning messages older or younger than the resultant time and date.

2. Protocol Operation

An IMAP4 server that supports the capability described here MUST return "WITHIN" as one of the server supported capabilities in the CAPABILITY command.

For both the OLDER and YOUNGER search keys, the server calculates a target date and time by subtracting the interval from the current date and time of the server. The server then compares the target time with the INTERNALDATE of the message, as specified in IMAP [2]. For OLDER, messages match if the INTERNALDATE is less recent than, or equal to, the target time. For YOUNGER, messages match if the INTERNALDATE is more recent than, or equal to, the target time.

In some cases, the server may be unable, or unwilling, to use a precision of a single second. This is expected to be the case particularly for dynamically updated searches. In these cases, servers are permitted to reduce the precision used for date calulcations and comparisons, but SHOULD ensure that a precision of no less than an hour (3600 seconds) is used. This might mean re-running the search criteria only every hour for a dynamic search, for example. Clients MUST be aware that search results, whether viewed directly or through some other mechanism, MAY not be accurate as a result.

For example, if the client requests messages that are younger than 4020 (67 minutes), but the server only performs searches with hourly accuracy (as mandated above), the server performs the search as if the client requested a 60-minute interval. Note the choice of rounding up or down is at the discretion of the server. However, rounding down to zero is NOT RECOMMENDED, as this may result in searches for messages YOUNGER than a value being rounded to YOUNGER 0, which will always fail.

3. Formal Syntax

The following syntax specification uses the Augmented Backus-Naur Form (ABNF) notation. Elements not defined here can be found in the formal syntax of ABNF [1], IMAP [2], and IMAP Extended ABNF [3]

This document extends RFC 3501 [2] with two new search keys: OLDER <interval> and YOUNGER <interval>.

```
search-key /= ( "OLDER" | "YOUNGER" ) SP nz-number
               ; search-key defined in RFC 3501
```

4. Example

C: a1 SEARCH UNSEEN YOUNGER 259200
S: a1 * SEARCH 4 8 15 16 23 42

Search for all unseen messages within the past 3 days (72 hours) according to the server's current time.

5. Security Considerations

The WITHIN extension does not raise any security considerations which are not present in the base protocol. Considerations are the same as for IMAP [2].

6. IANA Considerations

None.

7. Normative References

[1] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", RFC 2119, BCP 14, March 1997.

[2] Crispin, M., "Internet Message Access Protocol - Version 4rev1", RFC 3501, March 2003.

[3] Melnikov, A. and C. Daboo, "Collected Extensions to IMAP4 ABNF", RFC 4466, April 2006.

Appendix A. Acknowledgements

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