

Network Working Group  
Internet-Draft  
Intended status: Standards Track  
Expires: December 3, 2006

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June 2006

IMAP4 Extensions for Quick Mailbox Resynchronization  
draft-ietf-lemonade-reconnect-client-01.txt

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Abstract

This document defines an IMAP4 extension, which gives an IMAP client the ability to quickly resynchronize any previously opened mailbox as part of the SELECT command, without the need for server-side state or additional client round-trips.

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Changes since [draft-ietf-lemonade-reconnect-client-01.txt](#)

- o If client's UIDVALIDITY doesn't match server's, the server will not return any flags anymore.
- o Clarified that SELECT (QRESYNC) is a CONDSTORE-enabling command.
- o Other minor editorial changes and fixes.

Changes since [draft-ietf-lemonade-reconnect-client-00.txt](#)

- o Changed server behavior when the specified UIDVALIDITY doesn't match the current. This allows the client to chose how to proceed after that.
- o Other minor editorial changes and fixes.

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## 1. Requirements notation

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 [[RFC2119](#)].

In examples, "C:" and "S:" indicate lines sent by the client and server respectively. If a single "C:" or "S:" label applies to multiple lines, then the line breaks between those lines are for editorial clarity only and are not part of the actual protocol exchange.

## 2. Introduction and Overview

IMAP [[CONDSTORE](#)] extension provides a way to quickly resynchronize changes to IMAP flags since a known moment. This can be done using FETCH modifier once a mailbox is opened.

The [[EXPUNGED](#)] IMAP extension allows to quickly discover expunged messages.

The IMAP extension described in this document combines functionality provided by both [[CONDSTORE](#)] and [[EXPUNGED](#)] extensions, while reducing one more round-trip.

In particular this extension can be useful for mobile clients that can experience frequent disconnects caused by environmental factors (battery life, signal strength, etc.). Such clients would need a way

to quickly reconnect to the IMAP server, without forcing the user to experience long delay and pay big bills for the amount of traffic generated by resynchronization.

By extending the SELECT command to perform the additional resynchronization, this also allows clients to reduce concurrent connections to the IMAP server held purely for the sake of avoiding the resynchronization.

[[anchor3: Note to RFC editor: This document is compliant with "transitional IMAP capabilities" document [TRANS-CAPA]. Please change the capability name below to "QRESYNC"]]

The quick resync IMAP extension is present if an IMAP4 server returns "X-DRAFT-W01-QRESYNC" as one of the supported capabilities to the CAPABILITY command. Note, that this extension REQUIRES support for the [[CONDSTORE](#)] and the [[EXPUNGED](#)] IMAP extensions, so they MUST be announced in the CAPABILITY response as well.

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### [3.](#) Quick resynchronization extension

#### [3.1.](#) QRESYNC parameter to SELECT/EXAMINE

The Quick Resynchronization parameter to SELECT/EXAMINE commands has three arguments:

- o the last known UIDVALIDITY,
- o the last known modification sequence
- o and the optional list of known UIDs.

The parameter acts as a CONDSTORE enabling command, as defined in [[CONDSTORE](#)]. In other words, the use of the QRESYNC parameter implies the CONDSTORE parameter. Also, the QRESYNC parameter implies the EXPUNGED parameter, as defined in [[EXPUNGED](#)].

Before opening the specified mailbox the server verifies all arguments for syntactic validity. If any parameter is not syntactically valid, the server return the tagged BAD response, and the mailbox remains unselected. Once the check is done the server

opens the mailbox as if no SELECT/EXAMINE parameters are specified (this is subject to processing of other parameters as defined in other extensions). In particular this means that server MUST send all untagged responses as specified in [Section 6.3.1/6.3.2](#) of [\[RFC3501\]](#).

After that the server checks the UIDVALIDITY value provided by the client. If the provided UIDVALIDITY doesn't match the UIDVALIDITY for the mailbox being opened, then the server MUST ignore the remaining parameters and behave as if no dynamic message data changed. The client can discover this situation by comparing the UIDVALIDITY value returned by the server. This behaviour allows the client not to synchronize the mailbox or decide on the best synchronization strategy.

Example: Attempting to resynchronize INBOX, but the provided UIDVALIDITY parameter doesn't match the current UIDVALIDITY value.

```
C: A02 SELECT INBOX (QRESYNC (67890007 20050715194045000
41,43:211,214:541))
S: * 464 EXISTS
S: * 3 RECENT
S: * OK [UIDVALIDITY 3857529045] UIDVALIDITY
S: * OK [UIDNEXT 550] Predicted next UID
S: * OK [HIGHESTMODSEQ 20060128194045007]
```

```
S: * OK [UNSEEN 12] Message 12 is first unseen
S: * FLAGS (\Answered \Flagged \Draft \Deleted \Seen)
S: * OK [PERMANENTFLAGS (\Answered \Flagged \Draft
\Deleted \Seen *)] Permanent flags
S: A02 OK [READ-WRITE] Sorry, UIDVALIDITY mismatch
```

#### Modification Sequence and UID Parameters:

If the provided UIDVALIDITY matches that of the selected mailbox, the server then checks the last known modification sequence. The server sends the client any pending flag changes (using FETCH responses that MUST contain UIDs) and expunges that have occurred in this mailbox since the provided modification sequence.

If the list of known UIDs was also provided, the server should only

report flag changes and expunges for the provided messages. If the client doesn't provide the list of UIDs, the server acts as if the client has specified "1:\*".

Thus, the client can process just these pending events and need not perform a full resynchronization. The result of this step is semantically equivalent to the client issuing:  
tag1 UID FETCH "known-uids" (FLAGS) (CHANGEDSINCE "mod-sequence-value" REPORTEXPUNGES)

Example:

```
C: A02 SELECT INBOX (QRESYNC (67890007
    20060115194045000 41,43:211,214:541))

S: * 314 EXISTS

S: 15 RECENT

S: * OK [UIDVALIDITY 67890007] UIDVALIDITY

S: * OK [UIDNEXT 567] Predicted next UID

S: * OK [HIGHESTMODSEQ 20060115205545359]

S: * OK [UNSEEN 7] There are some unseen messages in the mailbox

S: * FLAGS (\Answered \Flagged \Draft \Deleted \Seen)

S: * OK [PERMANENTFLAGS (\Answered \Flagged \Draft
    \Deleted \Seen \*)] Permanent flags
```

```
S: * 49 FETCH (UID 117 FLAGS (\Seen \Answered))

S: * 50 FETCH (UID 119 FLAGS (\Draft $MDNSent))

S: ...

S: * 100 FETCH (UID 541 FLAGS (\Seen $Forwarded))
```

S: \* EXPUNGED 41,43:116,118,120:211,214:540

S: A02 OK [READ-WRITE] mailbox selected

#### [4.](#) Formal Syntax

The following syntax specification uses the Augmented Backus-Naur Form (ABNF) notation as specified in [\[ABNF\]](#).

Non-terminals referenced but not defined below are as defined by [\[RFC3501\]](#), [\[CONDSTORE\]](#), [\[EXPUNGED\]](#) or [\[IMAPABNF\]](#).

Except as noted otherwise, all alphabetic characters are case-insensitive. The use of upper or lower case characters to define token strings is for editorial clarity only. Implementations MUST accept these strings in a case-insensitive fashion.

```
select-param      = "QRESYNC" SP "(" uidvalidity SP
                    mod-sequence-value [SP known-uids] ")"
                    ;; conforms to the generic select-param
                    ;; syntax defined in \[IMAPABNF\]
```

```
uidvalidity      = nz-number
```

```
known-uids       = sequence-set
                    ;; sequence of UIDs, "*" is not allowed
```

#### [5.](#) Security Considerations

Security considerations relevant to [\[CONDSTORE\]](#) and [\[EXPUNGED\]](#) are relevant to this extension.

This document doesn't raise any new security concerns not already raised by [\[CONDSTORE\]](#).

#### [6.](#) IANA Considerations

IMAP4 capabilities are registered by publishing a standards track or IESG approved experimental RFC. The registry is currently located at:

<http://www.iana.org/assignments/imap4-capabilities>

This document defines the X-DRAFT-W01-QRESYNC [[anchor9: The final capability name will be chosen during AUTH48]] IMAP capability. IANA is requested to add this capability to the registry.

## 7. Normative References

- [ABNF] Crocker, D., Ed. and P. Overell, Ed., "Augmented BNF for Syntax Specifications: ABNF", [RFC 4234](#), October 2005.
- [CONDSTORE] Melnikov, A. and S. Hole, "IMAP Extension for Conditional STORE Operation or Quick Flag Changes Resynchronization", [RFC 4551](#), June 2006.
- [EXPUNGED] Melnikov, A., "IMAP4 extension for reporting expunged messages", June 2006.
- [IMAPABNF] Melnikov, A. and C. Daboo, "Collected Extensions to IMAP4 ABNF", [RFC 4466](#), April 2006.
- [RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", [BCP 14](#), [RFC 2119](#), March 1997.
- [RFC3501] Crispin, M., "INTERNET MESSAGE ACCESS PROTOCOL – VERSION 4rev1", [RFC 3501](#), March 2003.

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#### Acknowledgment

Funding for the RFC Editor function is provided by the IETF Administrative Support Activity (IASA).

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