MIMI Content Format

draft-mahy-mimi-content-02

Rohan Mahy, IETF 116, 30-Mar-2023

Goal

- If content is end-to-end encrypted, we need a standard format for common messaging features
  - plain text and rich text messaging
  - mentions
  - replies
  - reactions
  - edit or delete previously sent messages
  - expiring messages
  - delivery notifications/read receipts
  - shared files/audio/videos
  - calling / conferencing
  - message threading
- Addresses a MIMI charter item
- Should be able to extend this format and also send proprietary formats alongside of or instead of the standard format when appropriate

Approach

- Current version has an abstract syntax to focus on the semantics
    - Look! No CPIM!
- Semantics have been stable for most features since draft debuted at IETF113
- Introduces a **Message Container** type
    - each Message Container MUST have a **timestamp** (when was this encrypted) and a **unique message ID** (UUID properties)
    - Messages can refer to other messages (by the target message's message ID)
        - Reply or Reaction. A reaction uses a reaction disposition
    - Messages can be edited by providing a new message which updates the old one, or deleted by updating with zero length content
    - Messages can have an expiration; messages can be part of a thread
    - most Messages have bodies, which can be nested. Deletions do not have bodies
- … and a **Message Report** type
    - Message Reports can update the status of *a list of messages* (ex: delivered, read, unread, error)
- When used with MLS, the Message Container does not duplicate information integrity protected by MLS (ex: group ID, and sender). (Corresponding fields could be included when using another protocol.)

Issues from the list

Values already in MLS

- The message container does not have a “To” address. The MLS group is already specified and integrity protected in an MLS application message.
- Likewise the Sender (client), which is like a “From” address is integrity protected in the MLS application message, and the user identity would typically already be known to all the clients in the group through the client’s Credential.
- There are other fields which the client can derive from the MLS state. Which depends on how we define the MLS profile.
- **Q:** Should we send fields with these semantics in the message container anyway?
- **Propose:** we can create relevant fields when not using MLS, but that these fields are omitted when MLS is used.

How does client know what formats are OK?

- For MLS this is covered in Section 2.3 of draft-ietf-mls-extensions (content advertisement) and related to Sections 7.2, 11.1, 12.1.7 of draft-ietf-mls-protocol (MLS core protocol)

- In brief:

  - ***supported*** media types are listed **for each member** of the group. are updated periodically in long-lived groups (after client upgrade very likely)

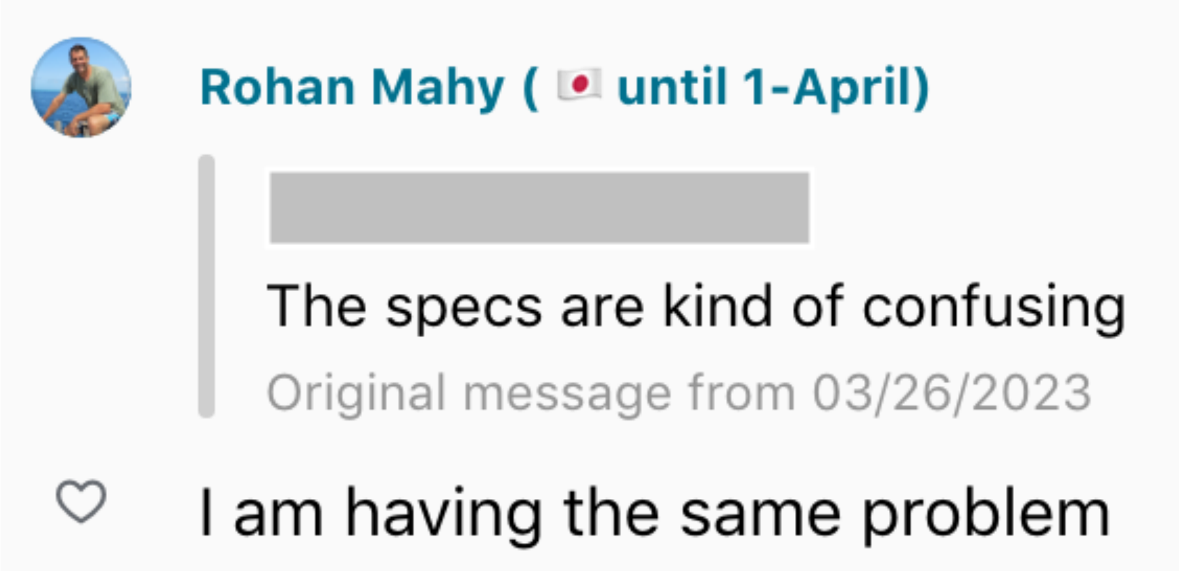
  - ***supported*** media types are advertised **in KeyPackages** (used to add clients). clients update these periodically and very likely after upgrade.

  - creator can list ***required*** media types for a group. All clients need to have support for these.

  - the required media types can be ***updated*** with a GroupContextExtensions Proposal, as long as the resulting clients

Threads vs *replies* 1/2

- inReplyTo says that a single message is in reply to a single previous message. *It should not be used for selecting the order of messages in a thread*.
- inReplyTo is also used for reactions (likes and unlikes), because the reaction is directly in response to a single specific previous message.
- You can reply to a reply, or like a reply. The composer of the reply cannot edit the replied message. (Currently most messaging systems just quote the most recent message in the reply).
- Replies do not affect rendering order (you can reply to a message days, weeks, or months old). Indeed this is often used to bump a conversation.



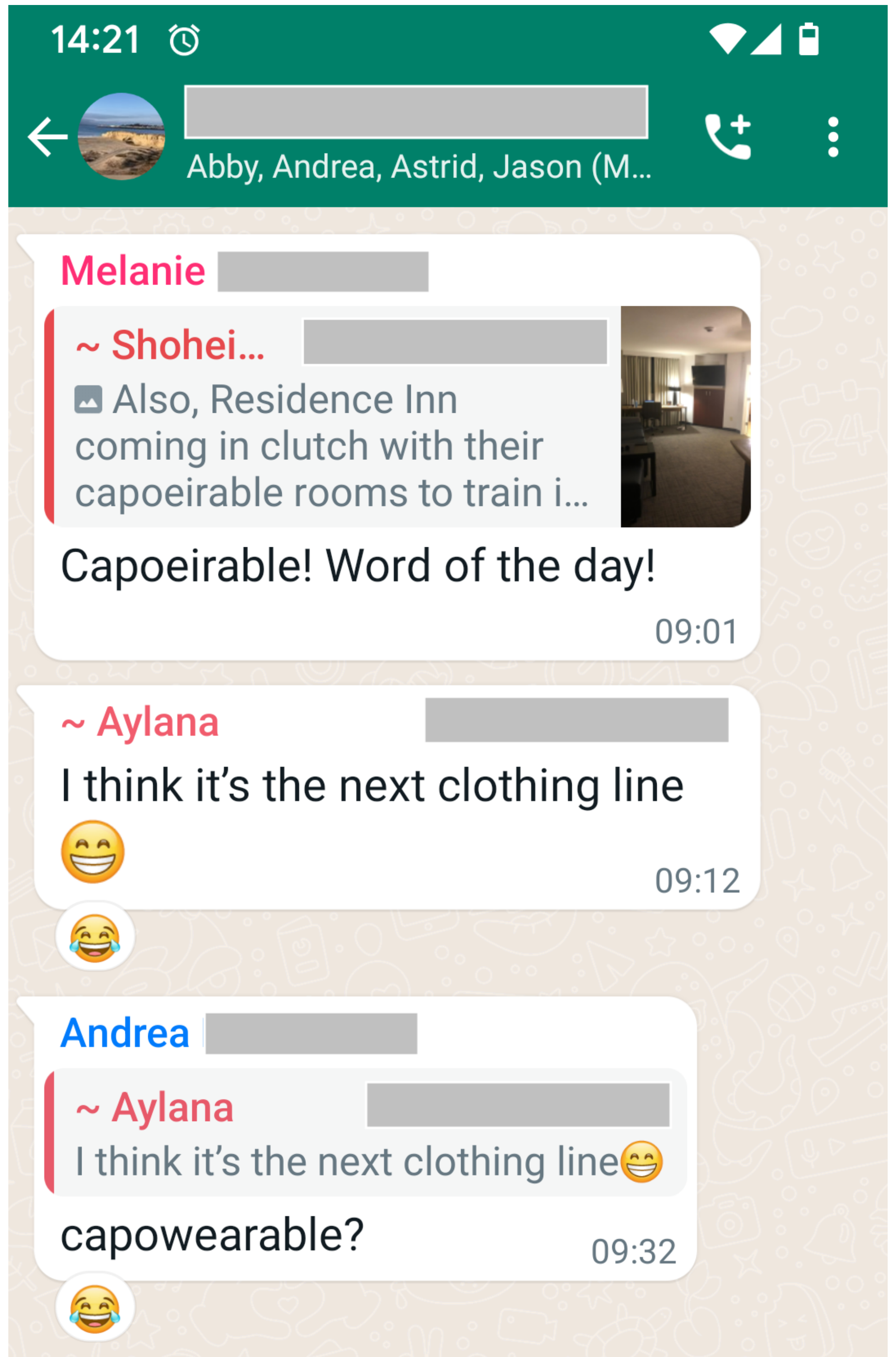
Rohan Mahy (🇯🇵 until 1-April)

[redacted]

The specs are kind of confusing

Original message from 03/26/2023

I am having the same problem



14:21

[redacted]

Abby, Andrea, Astrid, Jason (M...

Melanie [redacted]

~ Shohei... [redacted]

Also, Residence Inn coming in clutch with their capoeirable rooms to train i...

Capoeirable! Word of the day! 09:01

~ Aylana [redacted]

I think it's the next clothing line 😁 09:12

😂

Andrea [redacted]

~ Aylana [redacted]

I think it's the next clothing line😁

capowearable? 09:32

😂

Threads vs replies 2/2

- Threading is a feature of some enterprise IM systems like Slack and Teams. All messages in the thread are rendered linearly. There is no indentation as in email or netnews.
- threadId identifies a **single ancestor message ID**. All messages with the same threadId would likely be rendered in a single list of messages.
- The only time that inReplyTo seems appropriate in a threaded message is when sending a reaction about an earlier message in the thread.
- **Q:** Does the content format need to specify a specific rendering order?
- **Propose:** No. Use the timestamp

Report on multiple messages

- The draft as written has reports which can update status of multiple messages.
- Assumed requirements:
  - Especially during federation and interop, small amounts of processing delay and clock skew means saying “I read everything from time x or message y” won’t work. (would result in marking an unread message as read and vice versa.)
  - Is it possible to mark a single message as read which is not the most recent message? Is it possible to mark a message unread before a message which is read?
  - Do we want to be able to mark multiple messages read in a group at the same time?
- **OK?**

Mentions

- the draft describes mentions using a link to a URI with the `im:` scheme type.
  - Markdown: `Kudos to [@Alice Smith](im:alice-smith@example.com) for…`
  - HTML: `Kudos to <a href=“im:alice-smith@example.com”>@Alice Smith</a> for…`
- **Q:** Can we do better than this?

What else?

- Several things about the behavior should be more specified
  - Content-Disposition meaning and behavior
  - Sanitizing inputs
- Privacy and Security Considerations need to be fleshed out.
- **Q:** What about such and such thing that was mentioned on the list before the plenary?
  - **Yes**. These will be included in the **next version** of the draft.

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Next Steps

- **Q:** Are the semantics of this approach a reasonable start?

- Assume we will revisit concrete syntax as the transfer protocol matures

- **Q:** Can we adopt this draft as a WG item supporting the content format work item?