Application State Sync

draft-ralston-mimi-protocol
Group State Agreement is Powerful

MLS confirms that the group agrees on the state of the group

Applications frequently want all clients to agree on application state

Let’s import application state into the state of the group!
Envisioned Use in MIMI

Participant list is included in the MLS key schedule viaAppState extension

Changes to the PList are communicated in AppSync proposals

The Commit includes regular Adds and an AppSync Proposal updates app state

ClientA1: Prepare Commit over AppSync(+Bob), Add*
ServerA: Verify that AppSync, Adds are allowed by policy
ServerA: Identifies Welcome domains based on KP hash in Welcome
ServerA->ServerB: POST /notify/a.example/r/clubhouse Intro{ Welcome, RatchetTree? }
ServerB: Recognizes that Welcome is adding Bob to room clubhouse
ServerB->ClientB*: [[ Welcome, RatchetTree? ]]
struct {
    uint32 applicationId;
    StateType stateType;
    select (stateType) {
        case irreducible:
            OpaqueElement state;
        case map:
            OpaqueMapElement mapEntries<V>;
        case unorderedList:
            OpaqueElement unorderedEntries<V>;
        case orderedArray:
            OpaqueElement orderedEntries<V>;
    }
} ApplicationState;

struct {
    uint32 applicationId;
    StateType stateType;
    select (stateType) {
        case irreducible:
            OpaqueElement newState;
        case map:
            OpaqueMapElement removedKeys<V>;
            OpaqueMapElement newOrUpdatedElements<V>;
        case unorderedList:
            uint32 removedIndices<V>;
            OpaqueElement addedEntries<V>;
        case orderedArray:
            ElementWithIndex replacedElements<V>;
            uint32 removedIndices<V>;
            ElementWithIndex insertedElements<V>;
            OpaqueElement appendedEntries<V>;
    }
} AppSync;
APIs and Design Choices

State **intelligible** to MLS (current)

State **opaque** to MLS
Current Status

Described in draft-ralston-mimi-protocol

If MIMI adopts that draft, it will have a dependency on MLS WG doing something like this