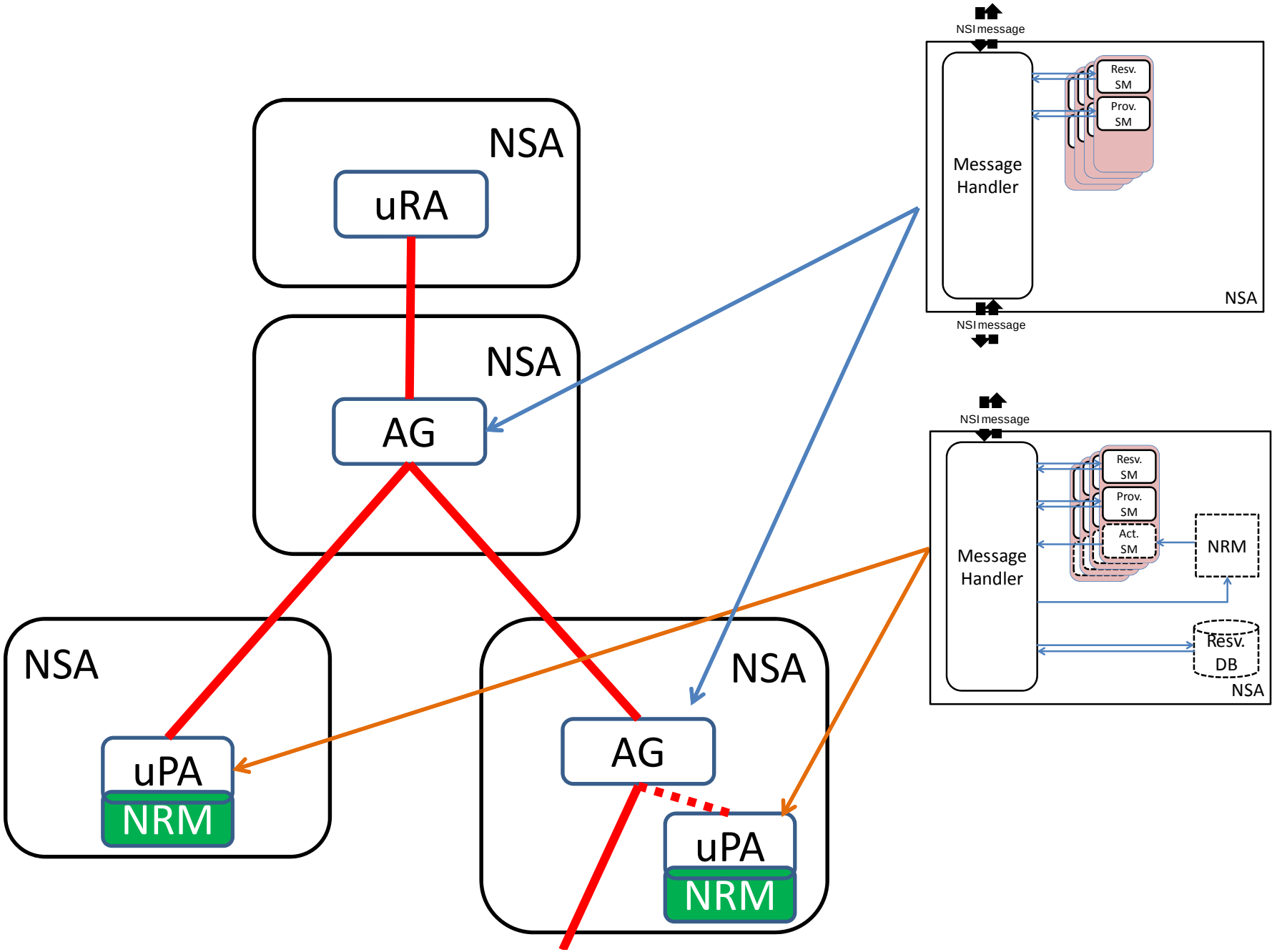
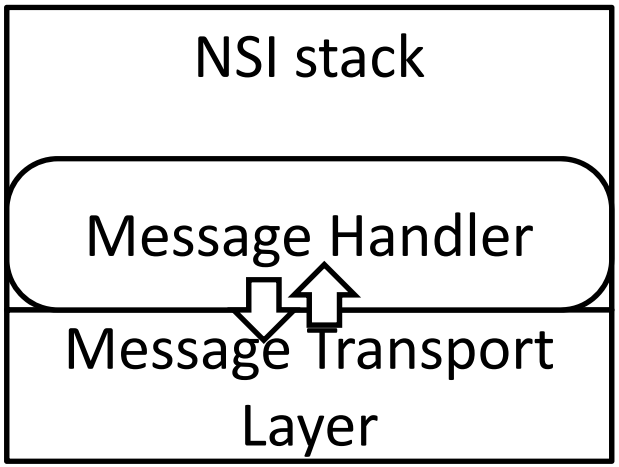
NSI Message handling and delivery

Feb. 6, 2013

NSA: uRA, Aggregator and uPA

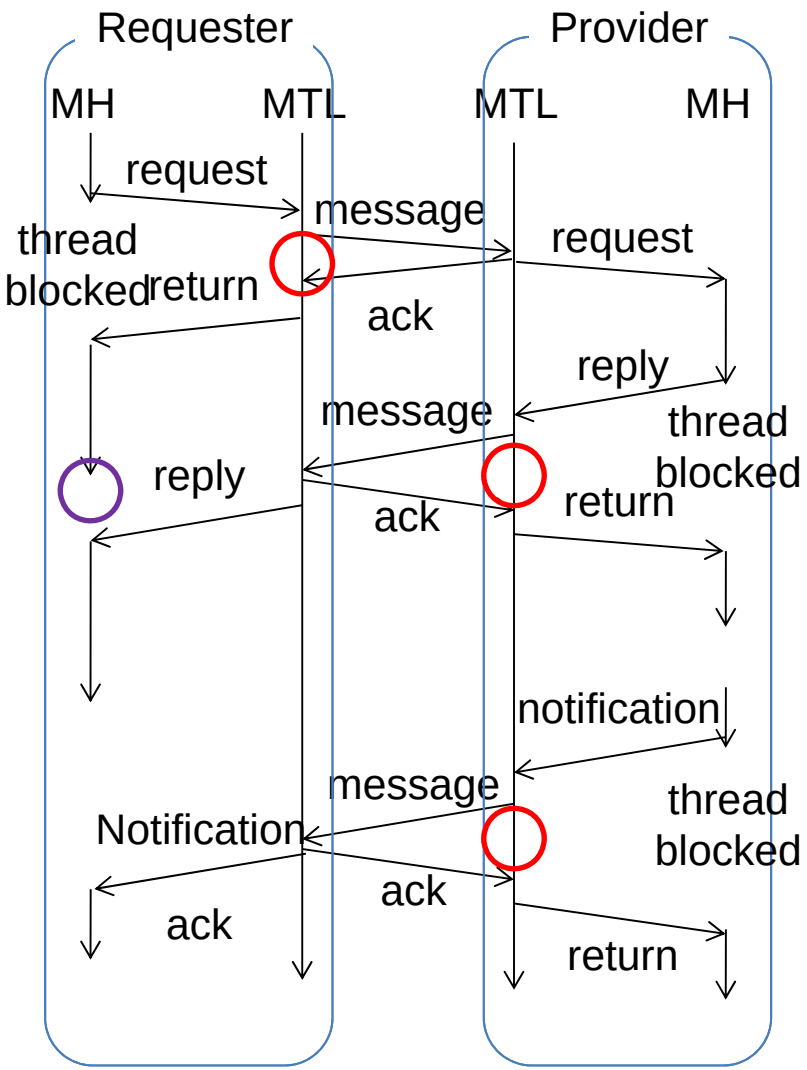


MTL and its API



- Message Handler is a part of NSI stack, and uses MTL to send/receive messages
- MTL API (for MH) includes:
  - send: blocks until ack is returned by destination MTL, or timeout happens. Timeout value is implementation dependent
    - MTL may re-try transmitting a message. Ack means the message is delivered “at least once”
  - receive: a thread in MH is invoked when a message is received

Message ack, reply and timeouts



: MTL timeout may happen

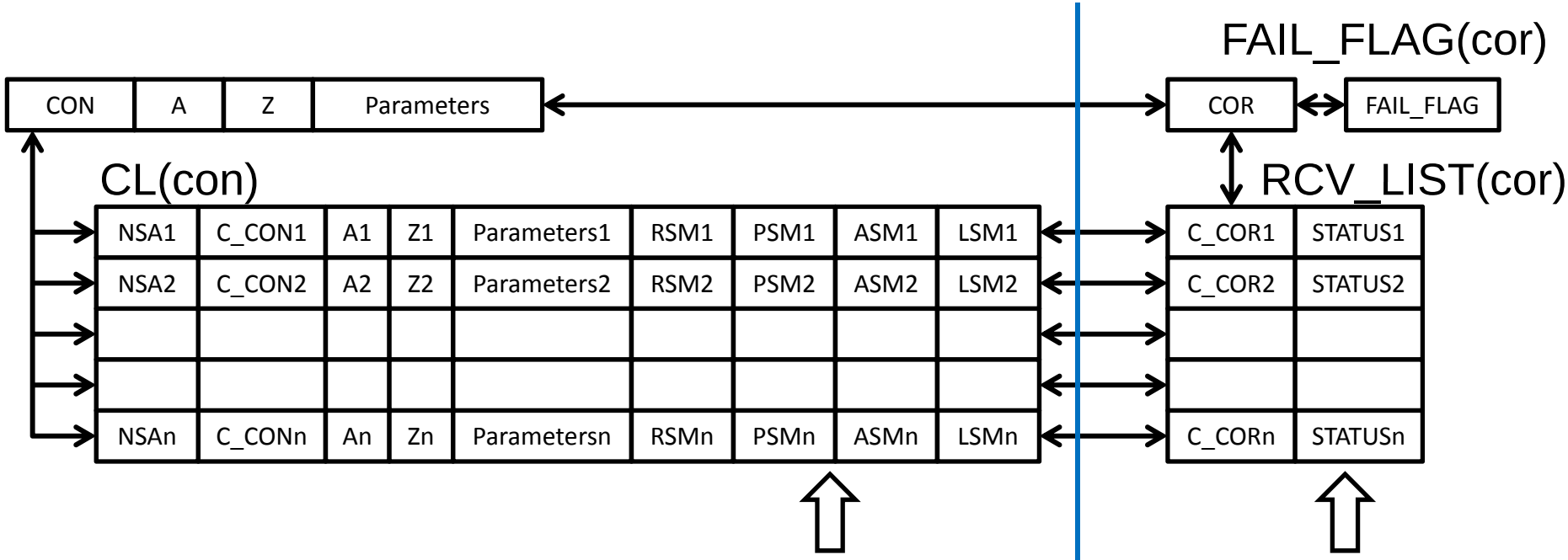
: MH timeout may happen

- Ack is sent by MTL for each message
  - If ack is not returned in a certain period of time, MTL timeout occurs
- Reply is sent by MH and is either confirm, fail or not_applicable
  - MH can timeout if expected reply is not received from a child

Timeouts

- Message transport layer (MTL) timeout
  - Underlying MTL (http/tcp) initiates a MTL timeout
  - Happens when an ack is not returned for a message.
- Message Handler (MH) timeout
  - MH can timeout if a reply message is not returned in a certain period of time
- MH notifies both MTL and MH timeouts to the parent RA
- When a MTL/MH timeout is notified, uRA can either retry or terminate the connection.
  - Retry is requested by NSI_messageRetry.rq, which has the original request message's id (correlation id) as a parameter
  - MH keeps not-yet-replied requests in a table, so that it can re-send the request.

Tables an aggregator MH maintains for each reservation (connection)



Expected states of children including version info. (for non-recursive queries)

Flags to indicate:
- A reply has been received
- A MTL timeout has occurred
- A MH timeout has occurred

Generated for each reservation (connection)

Generated for each request