Enabling Session Mobility in Full Mesh Conferencing Model

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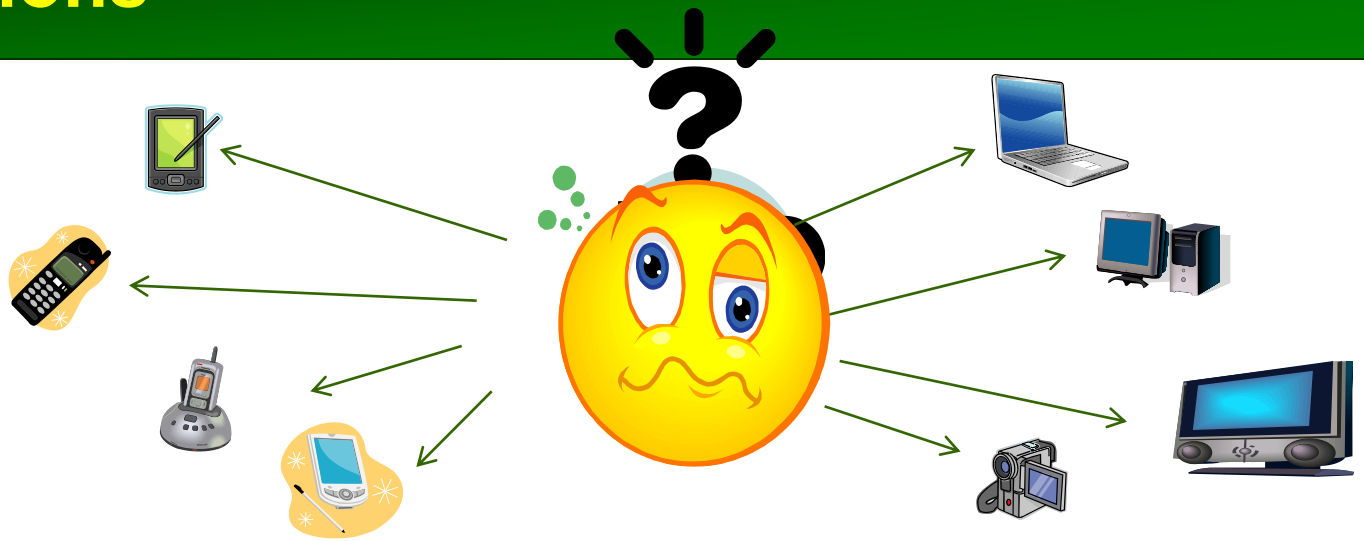
Outline

- Motivations
- Session mobility constraints and options
- Multiparty communication topology approaches
- Full Mesh Conference establishment
- Mobile Node Control Mode in Full Mesh
- Session Handoff Mode in Full Mesh
- Mapping abstract message to SIP
- Stack architecture components
- Extra signalling traffic – Results
- Conclusion

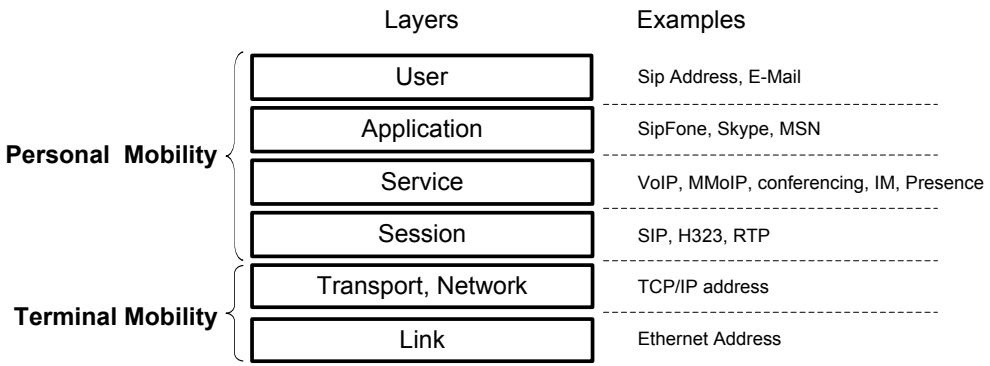
Motivations



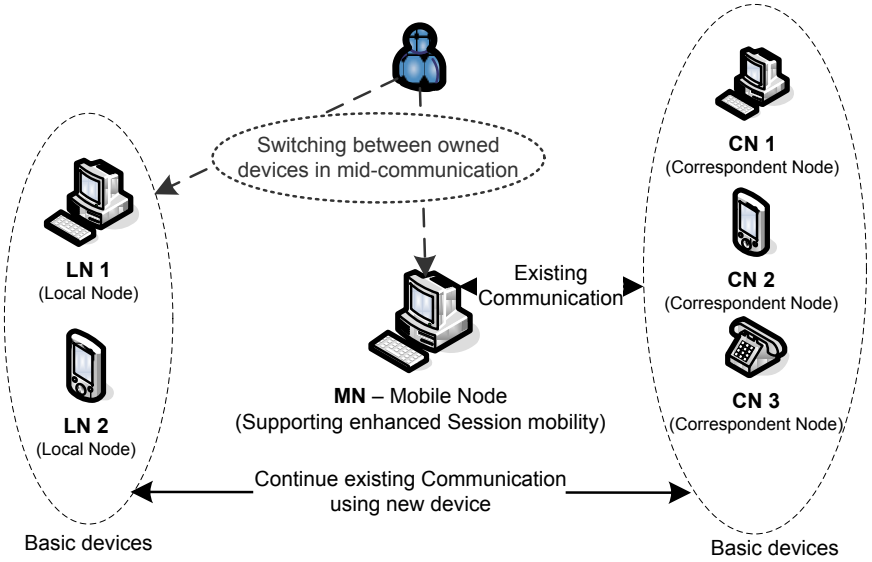
- Various devices are available for the same user at same moment
  - Stationary devices : comfort of use but not mobility
  - Handheld devices: mobility but limited capabilities
- Target: Seamlessly switching between these devices even during communication.
  - Some solutions have been proposed on the context of one-to-one communication. This work is focused on the multipaty communication case.

Introduction

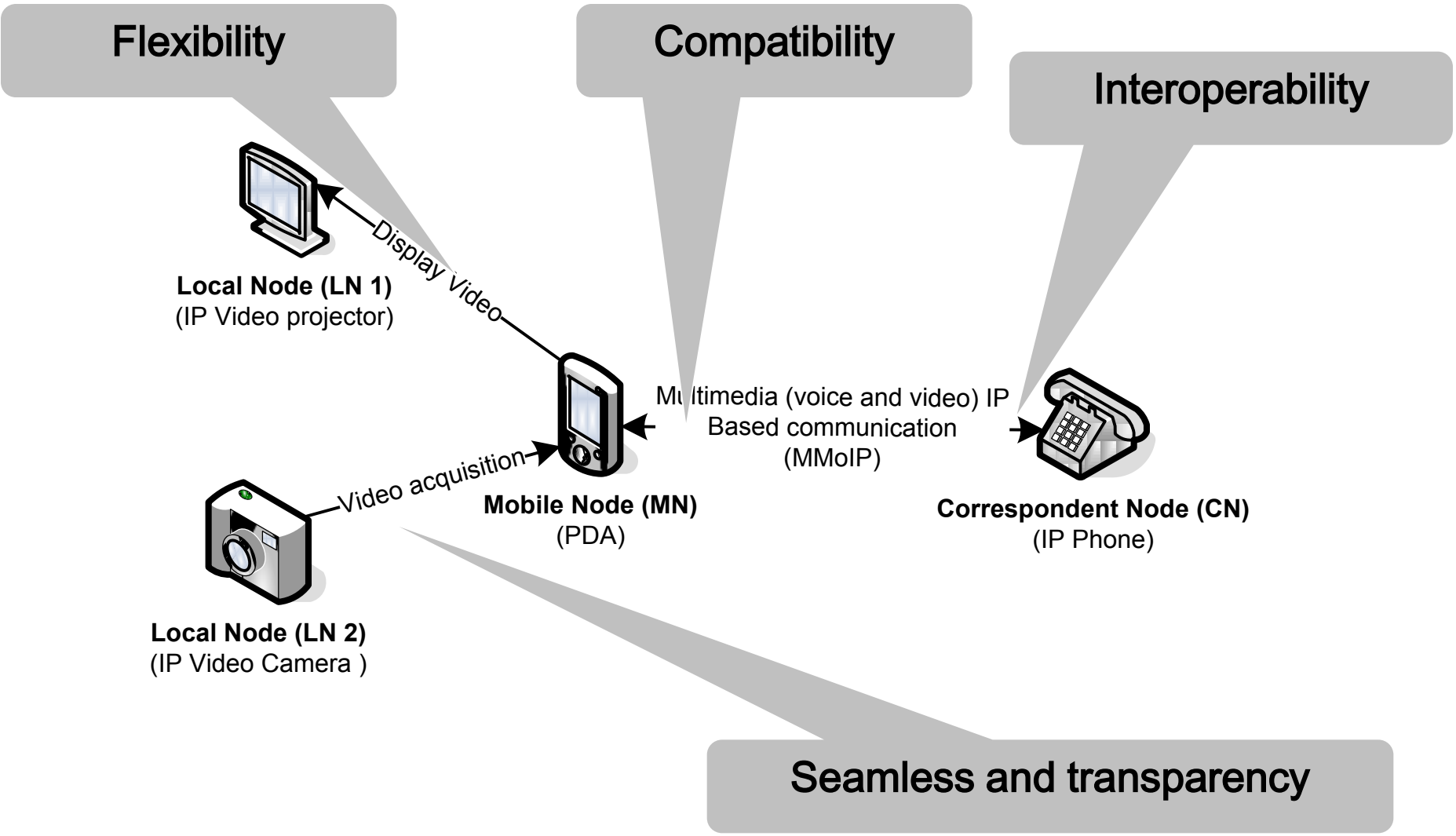
- Ensuring user mobility :
  - With his device : Terminal Mobility
  - Without his device : Personal Mobility



- Personal Mobility in IMS
  - Service/application seamless transition
    - Session Mobility

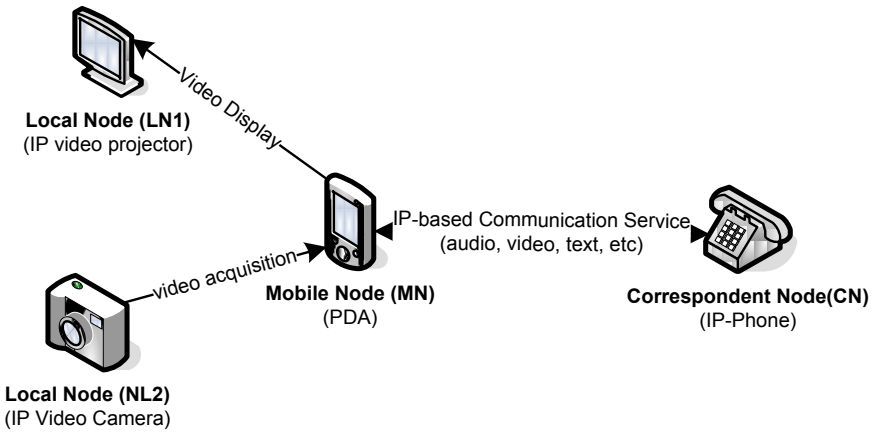


Session Mobility constraints

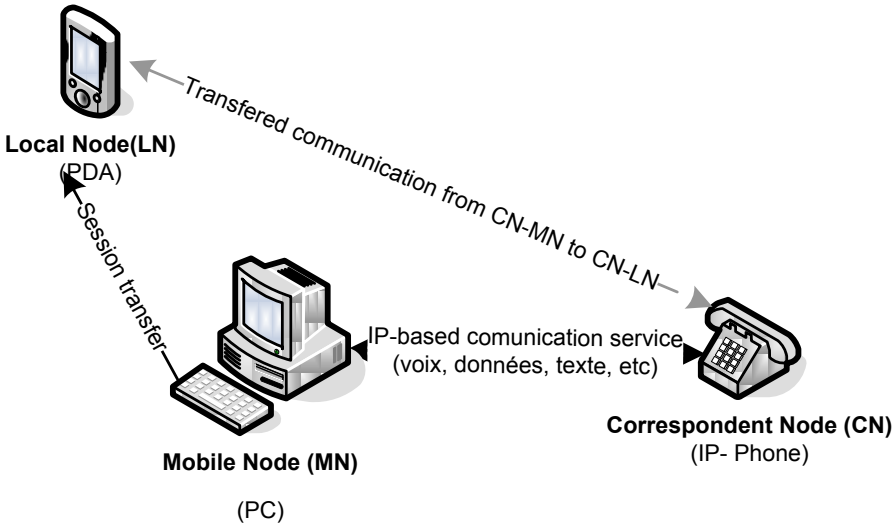


Session Mobility Options

- Session transfer and retrieve
- Total or Partial transfer
- Transfer modes
  - Mobile Node Control Mode



  - Session Handoff Mode



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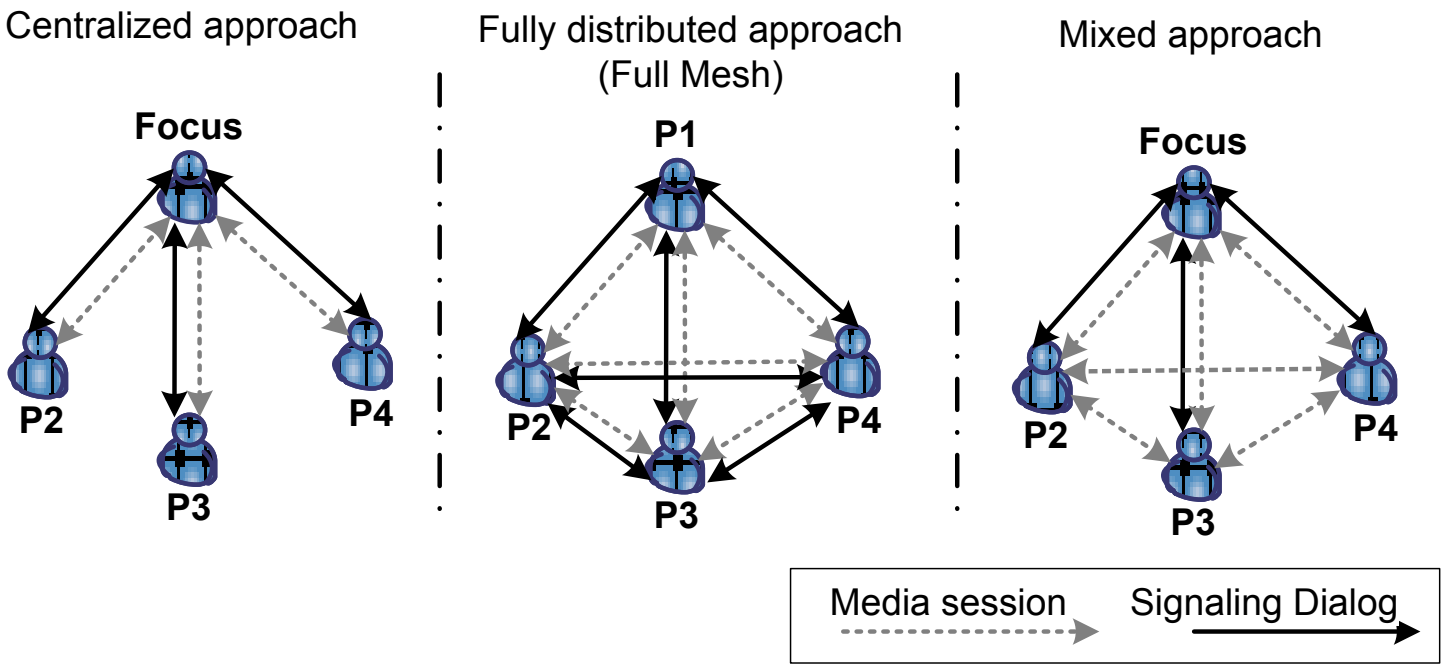
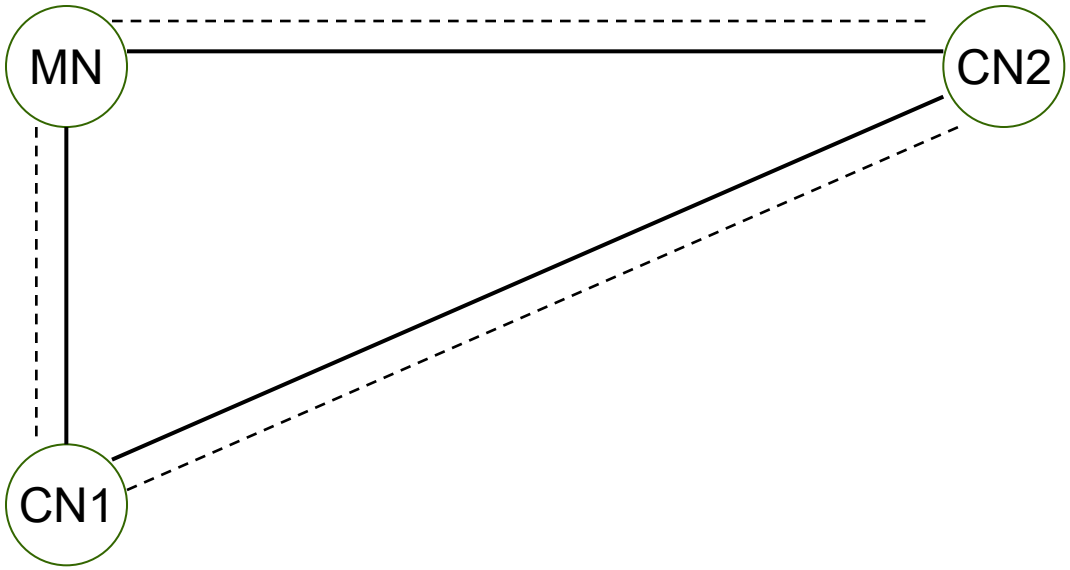
Multiparty communication topology approaches



Full Mesh Conference establishment

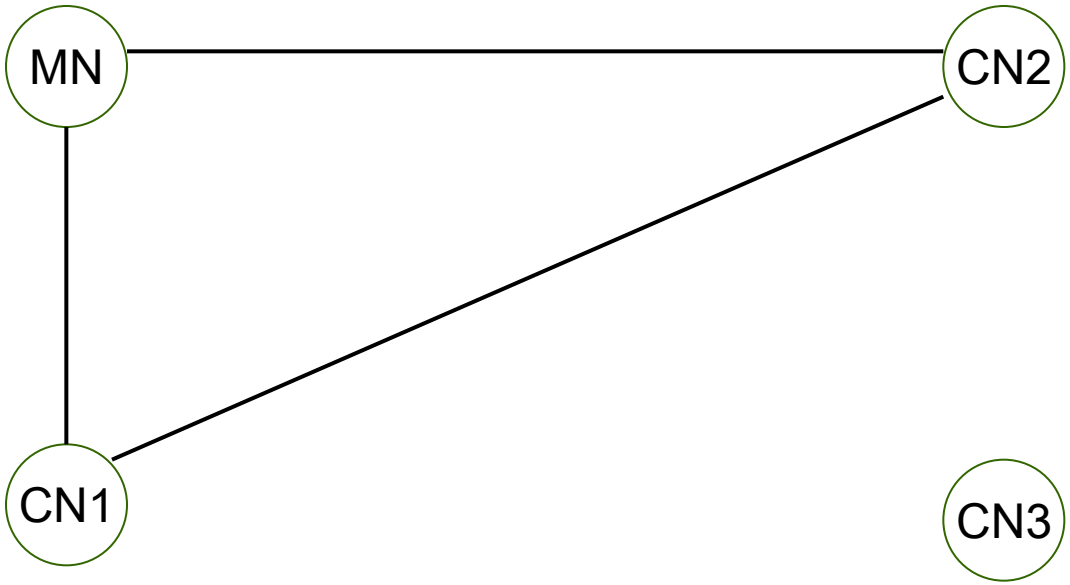


Media Session flow

Signaling Dialog

Full Mesh Conference establishment

- CN is invited to join conference



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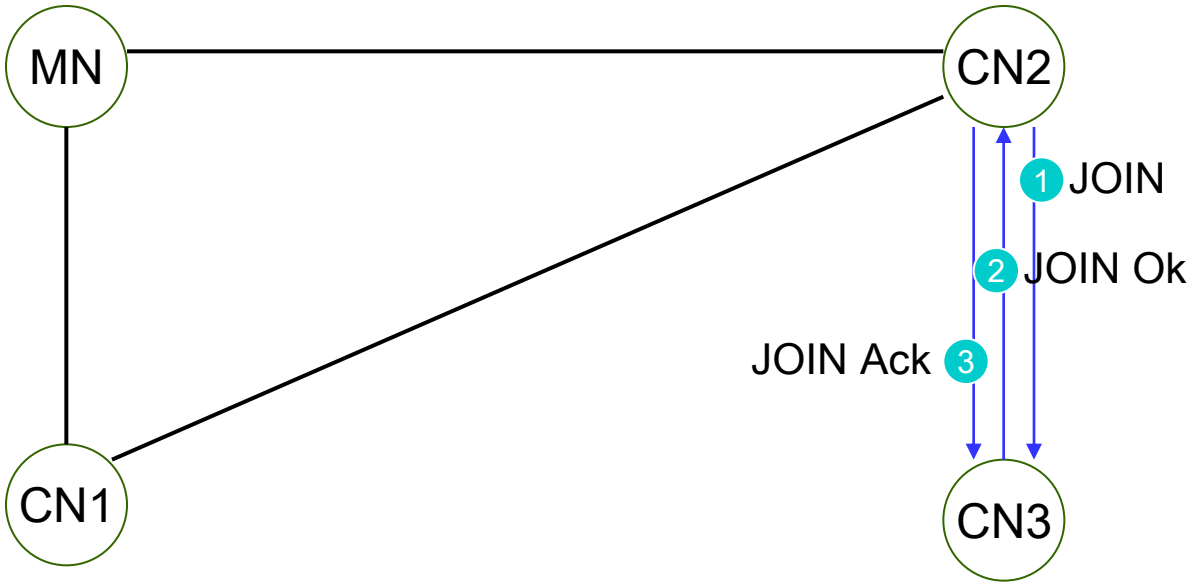

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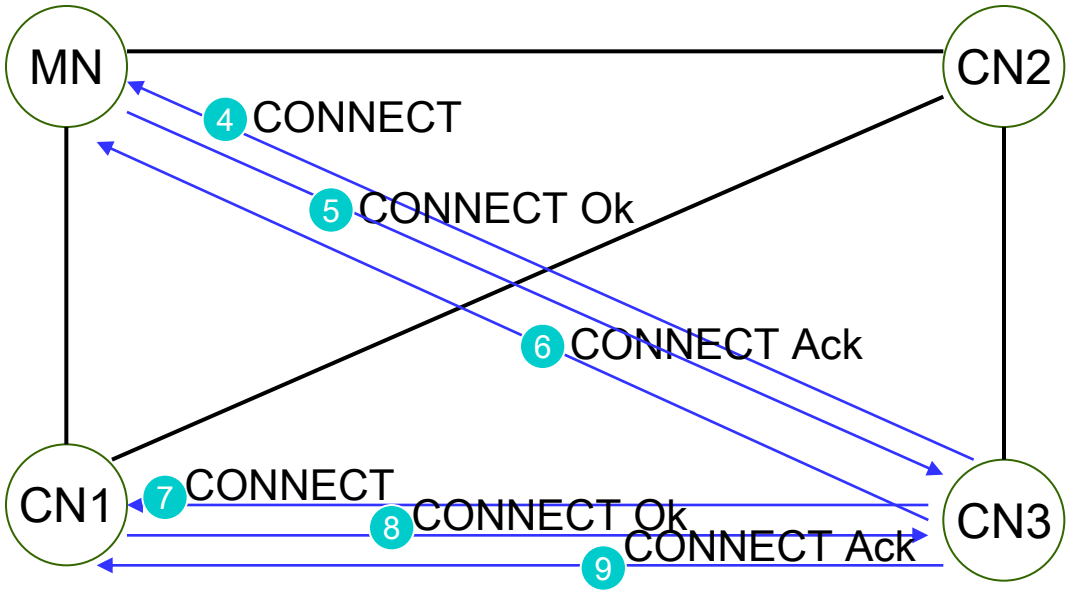

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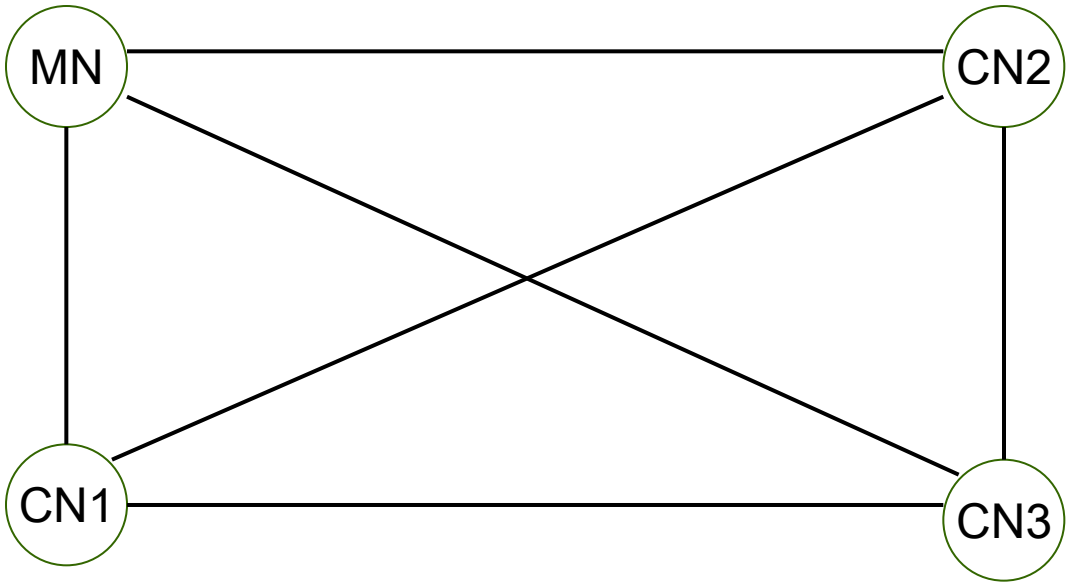
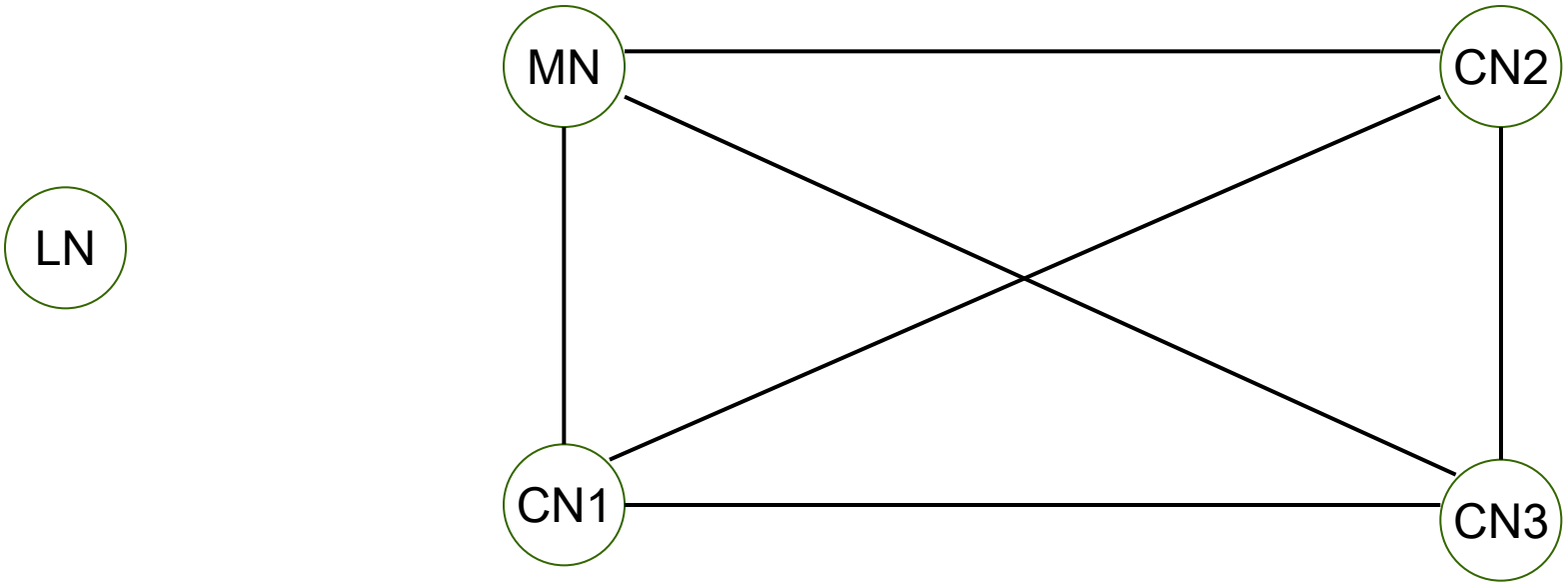


Mobile Node Control Mode in Full Mesh

- MN transfer its session to MN in Mobile Node Control Mode



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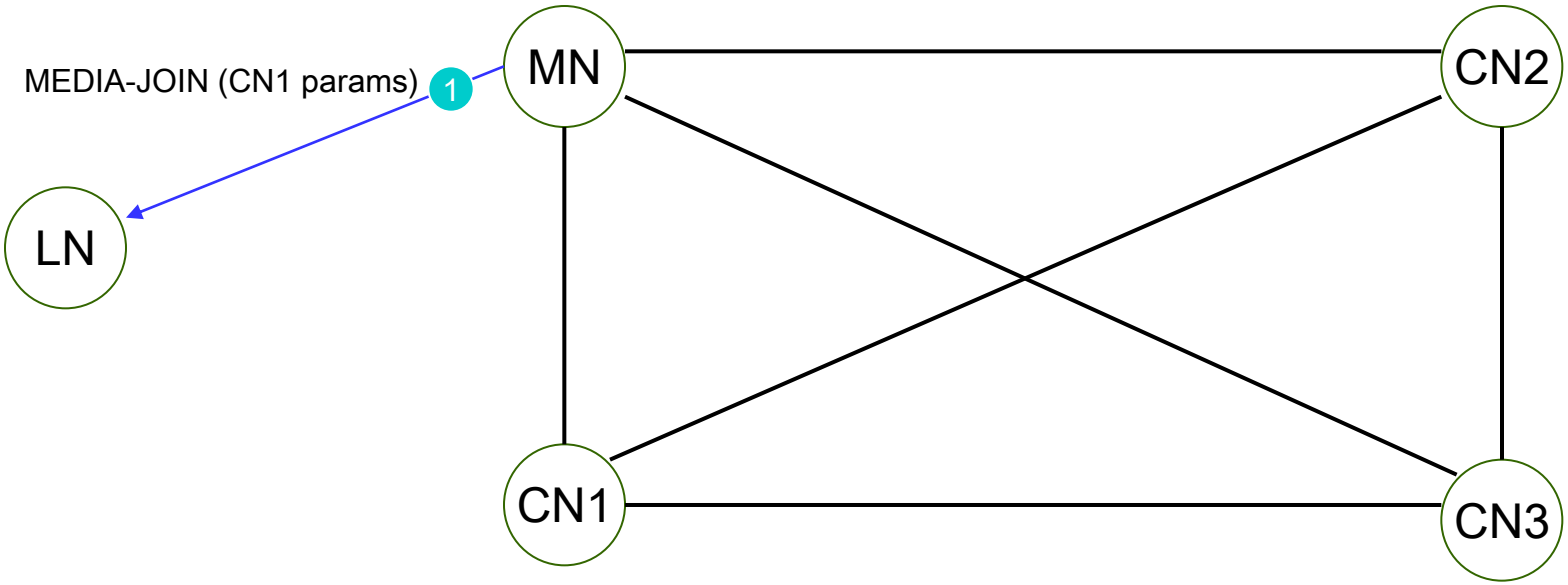

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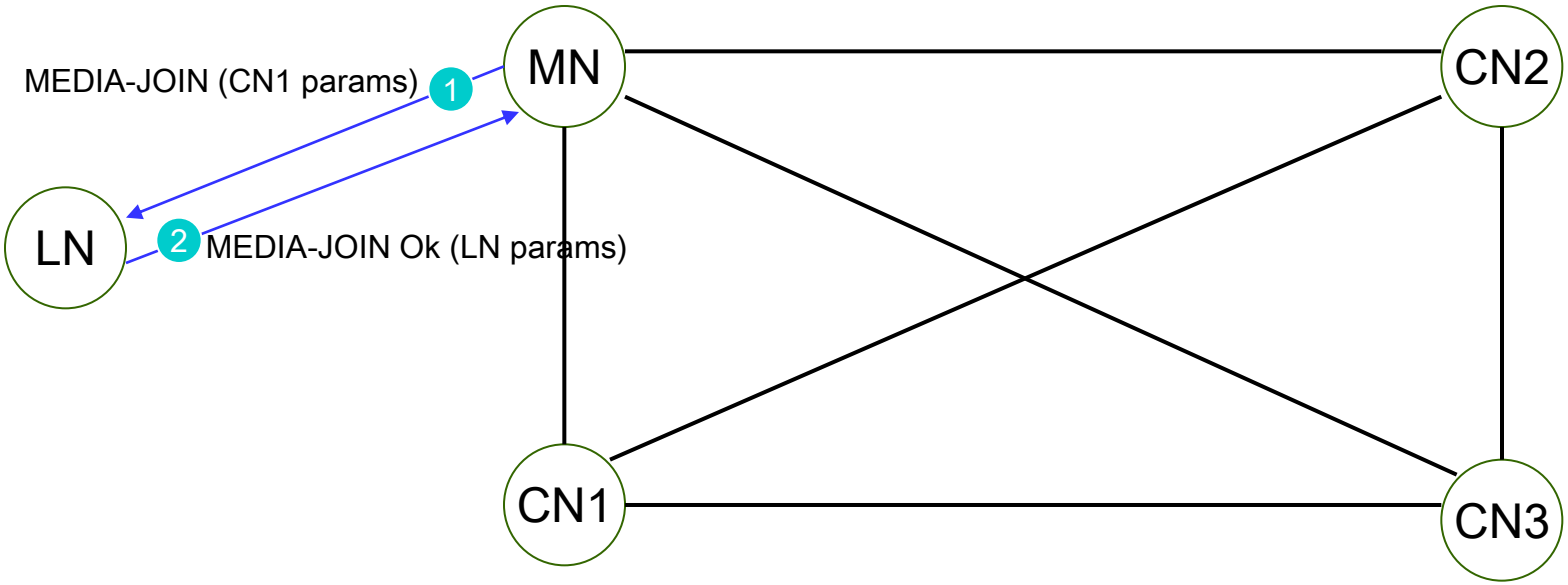

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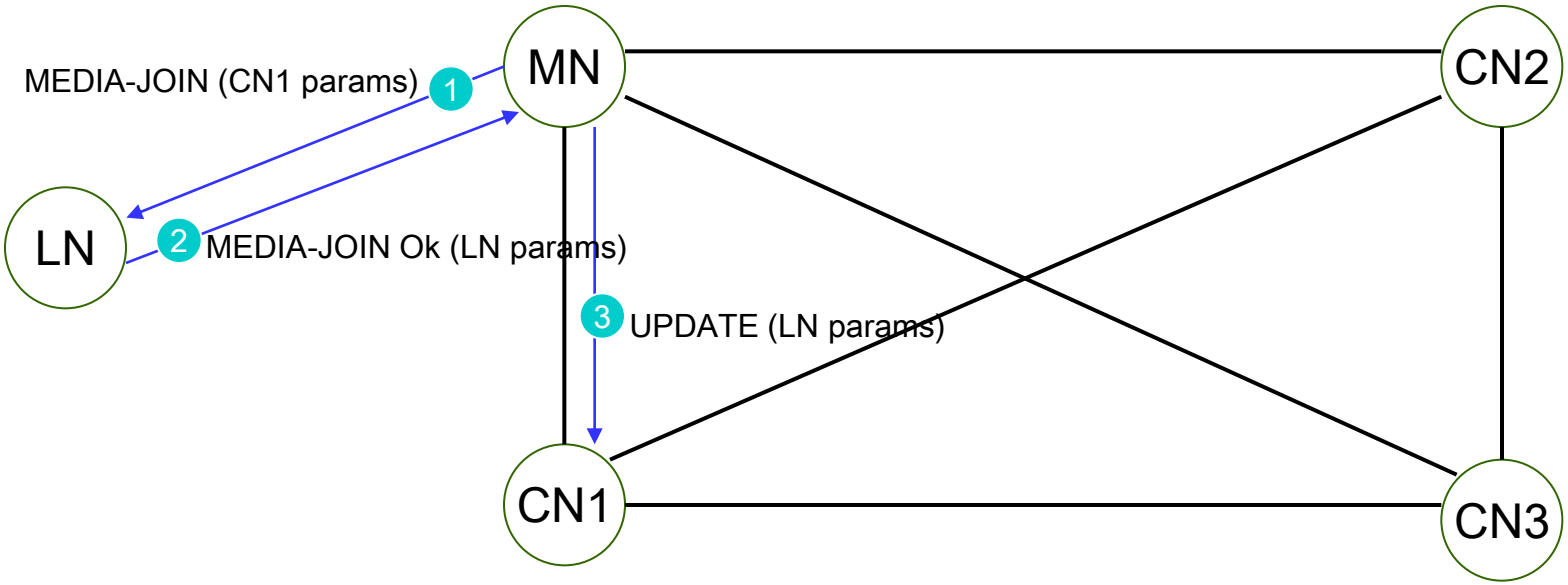

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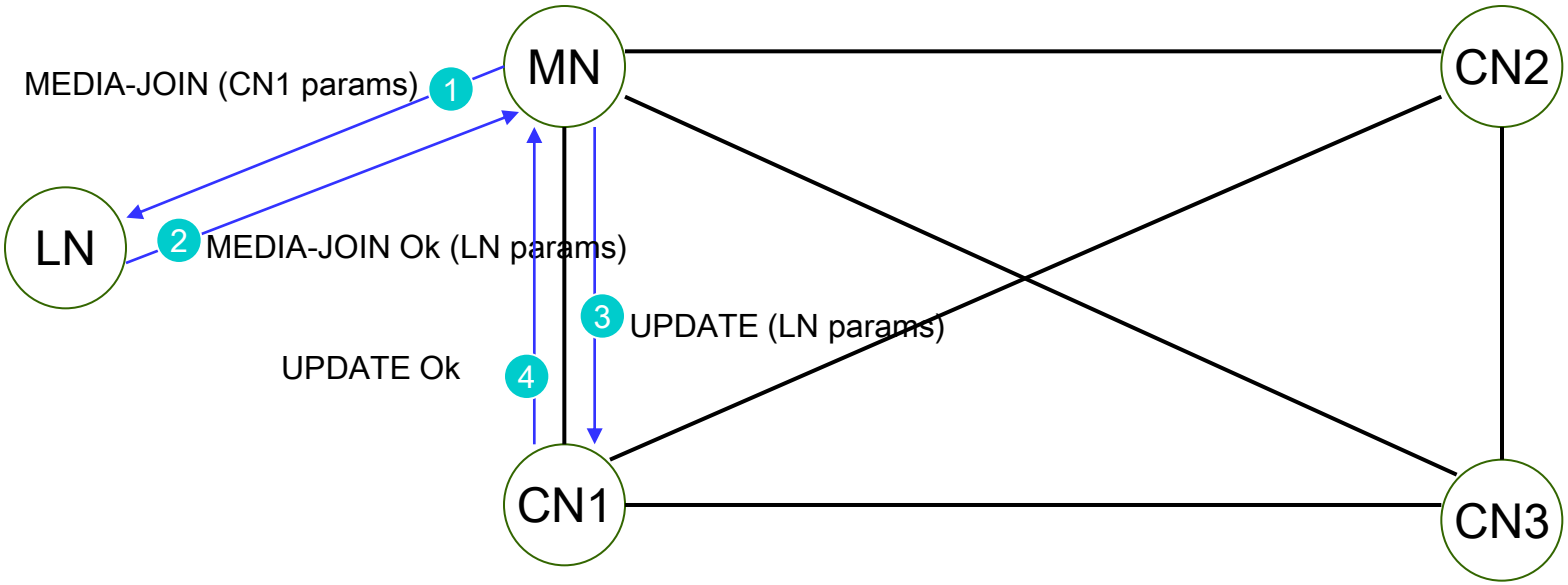

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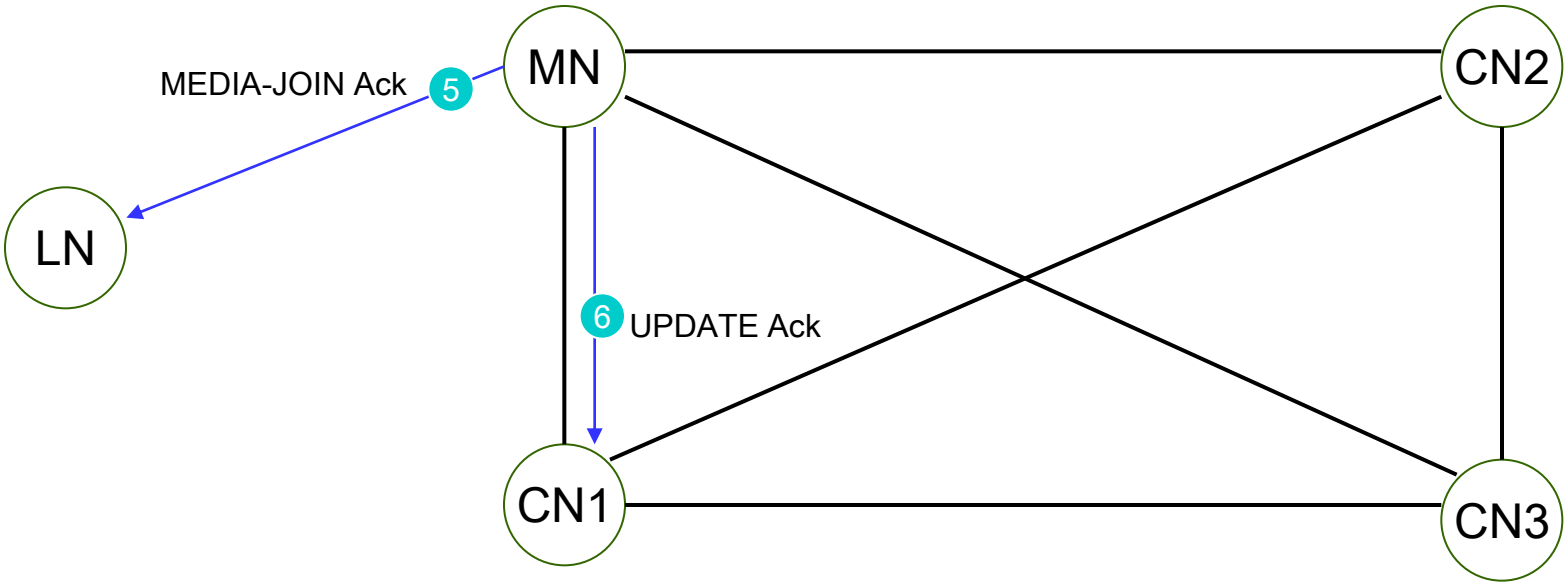

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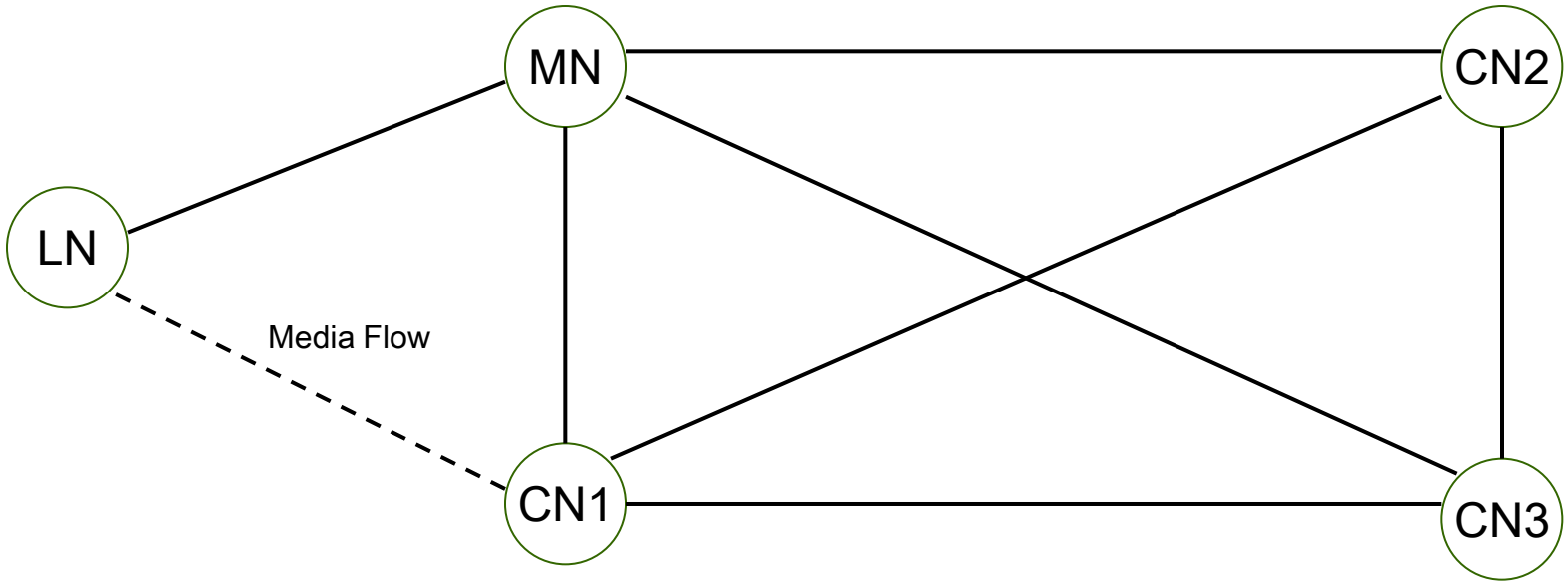

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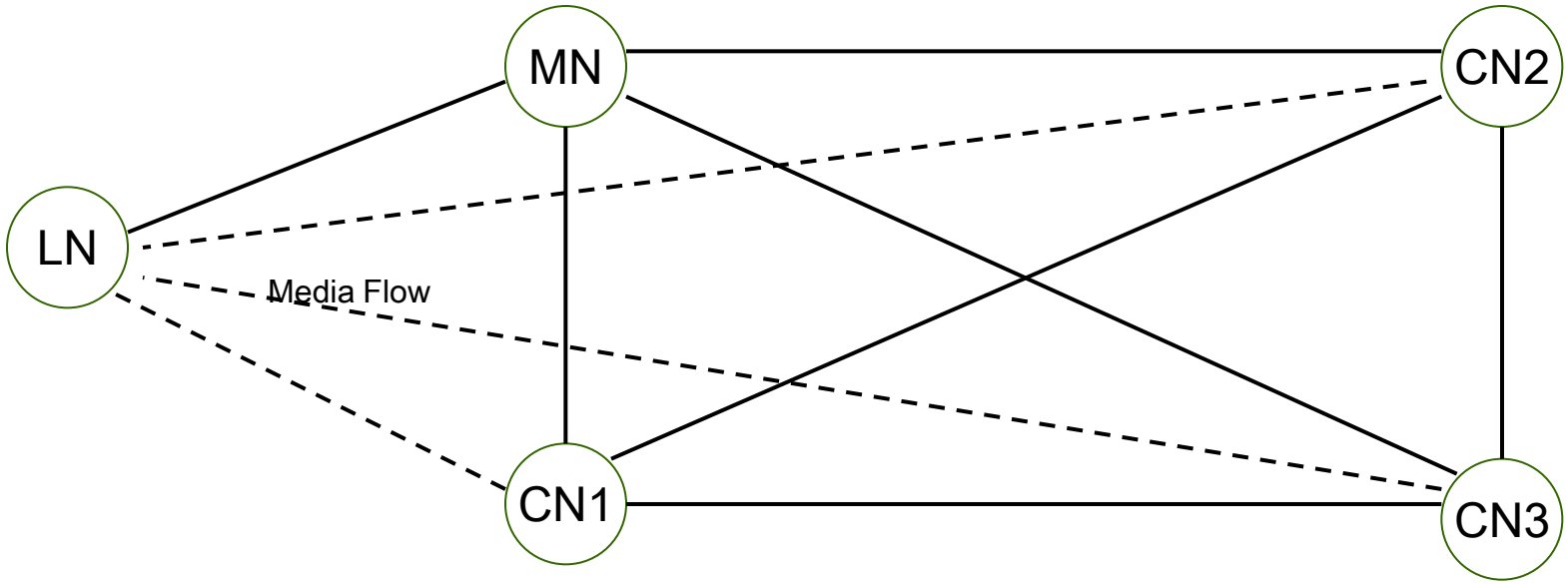
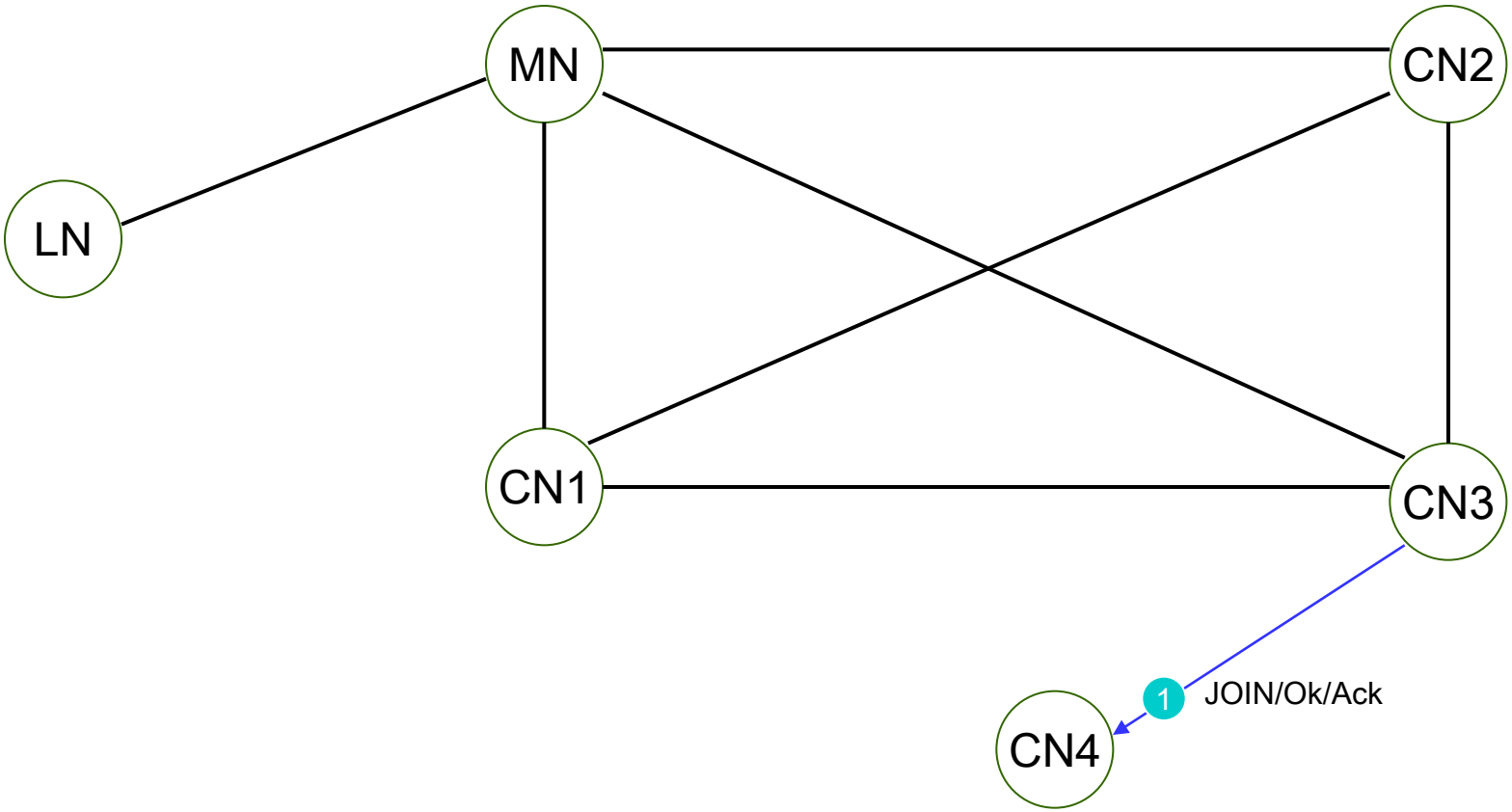


Mobile Node Control Mode in Full Mesh

- New user (CN4) joins the conference



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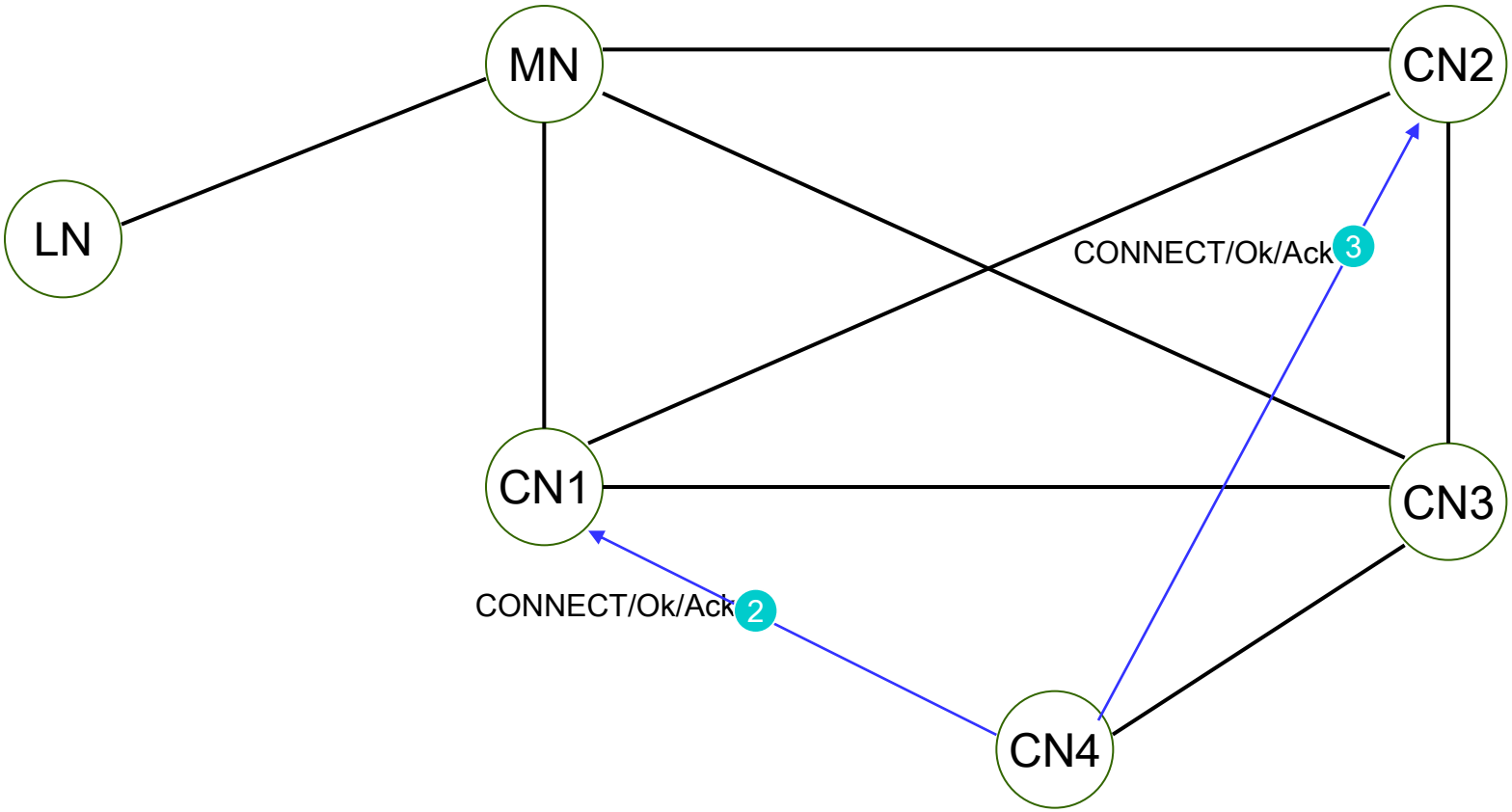

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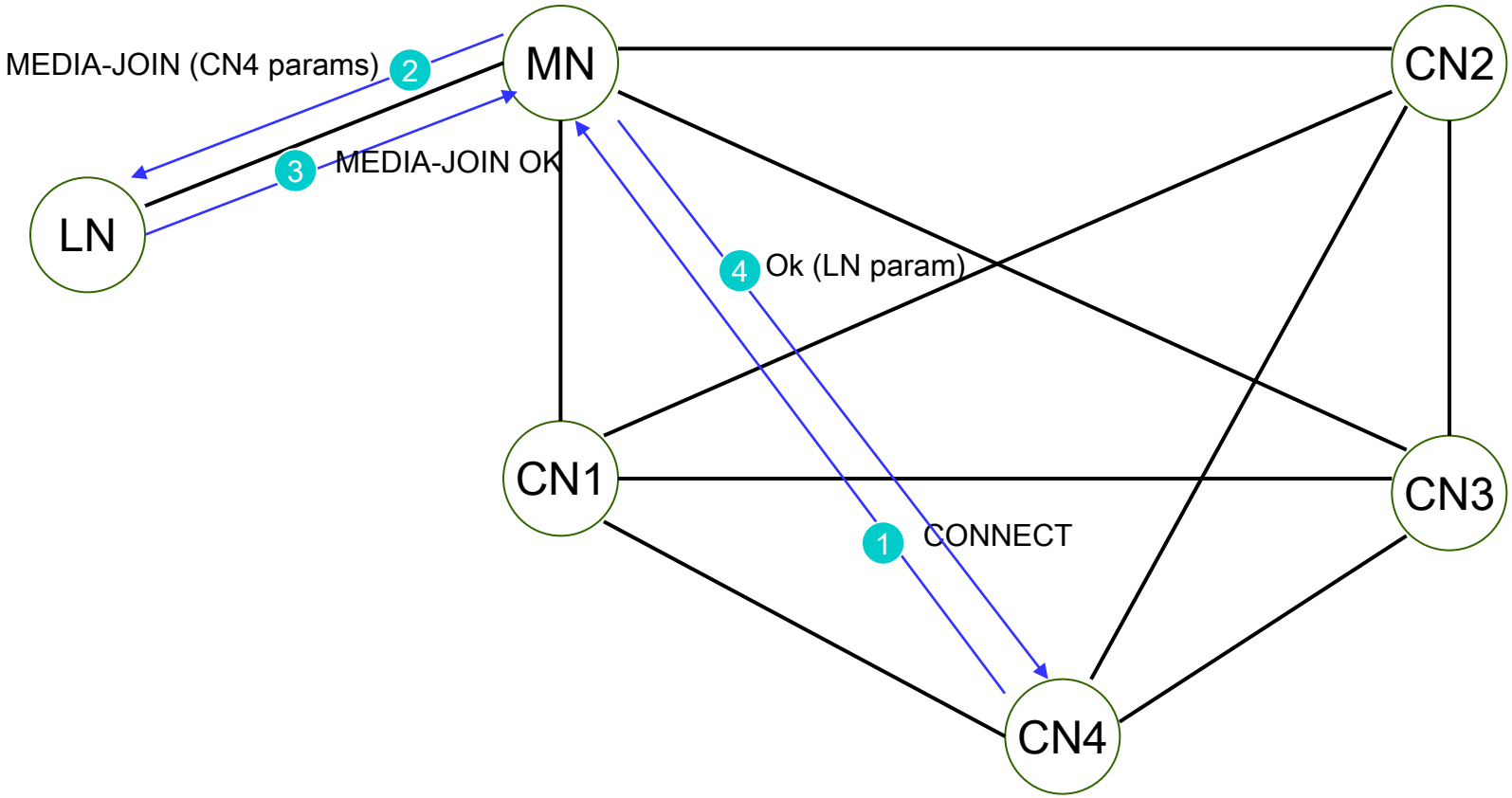

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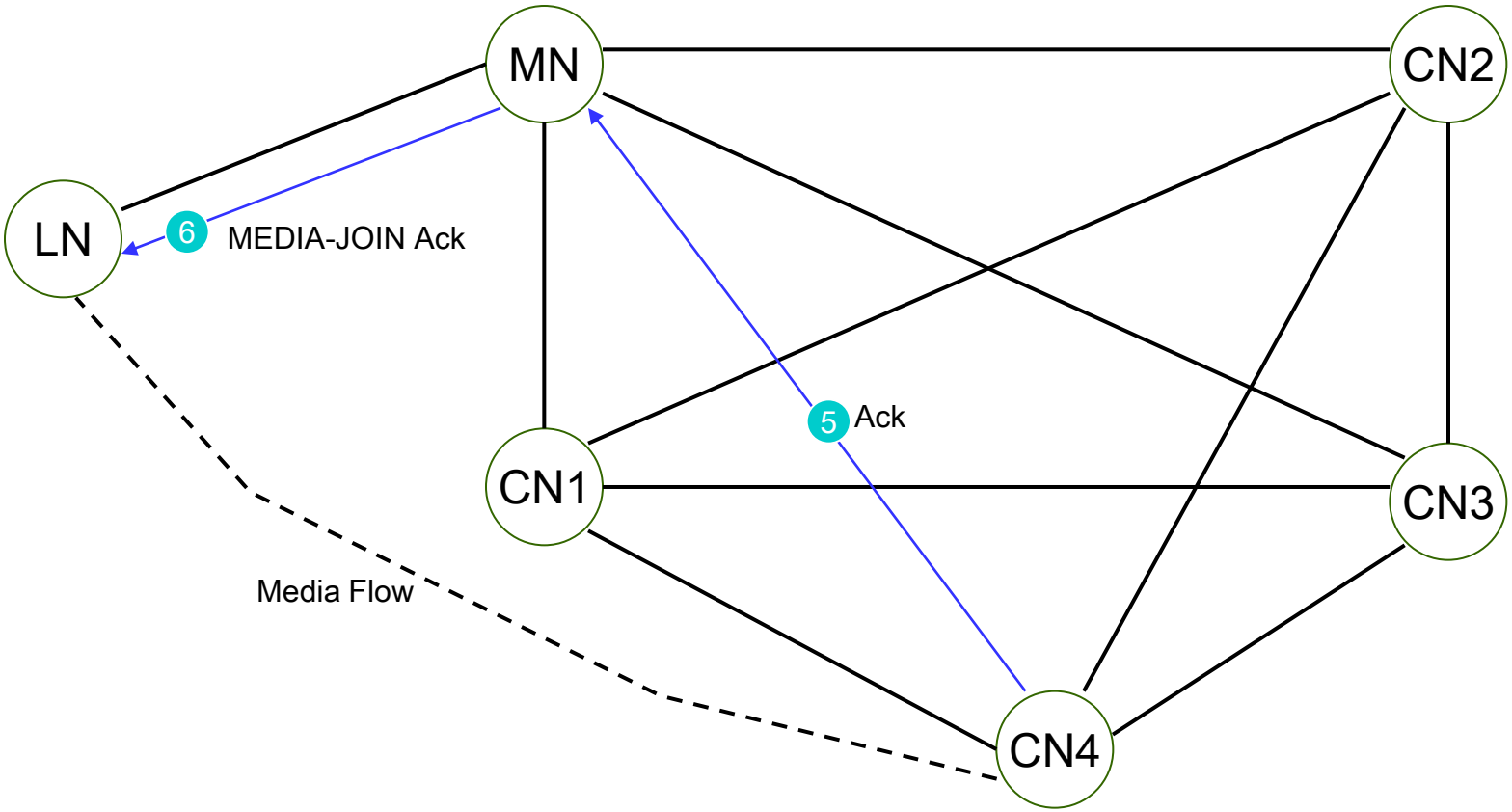
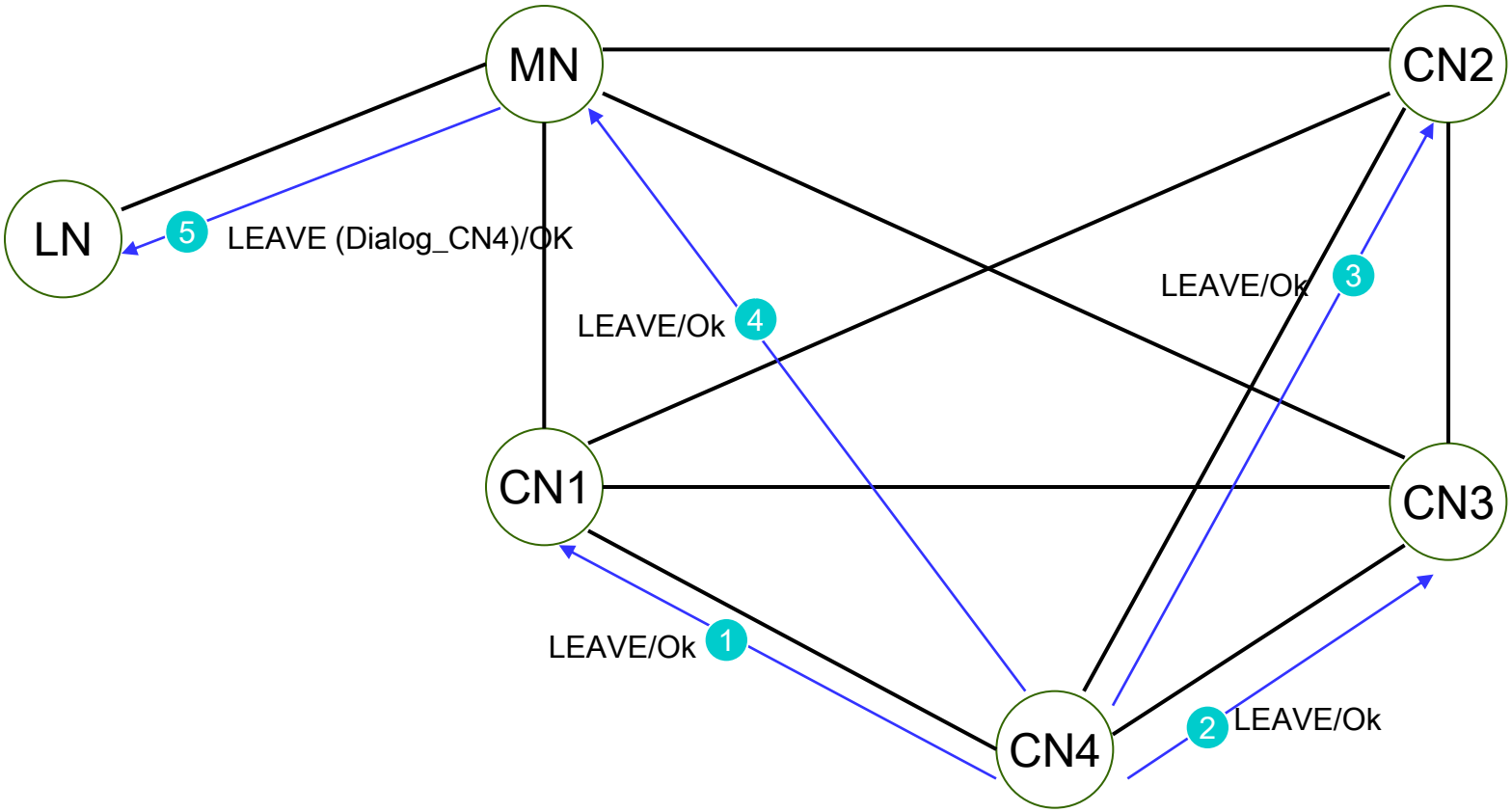


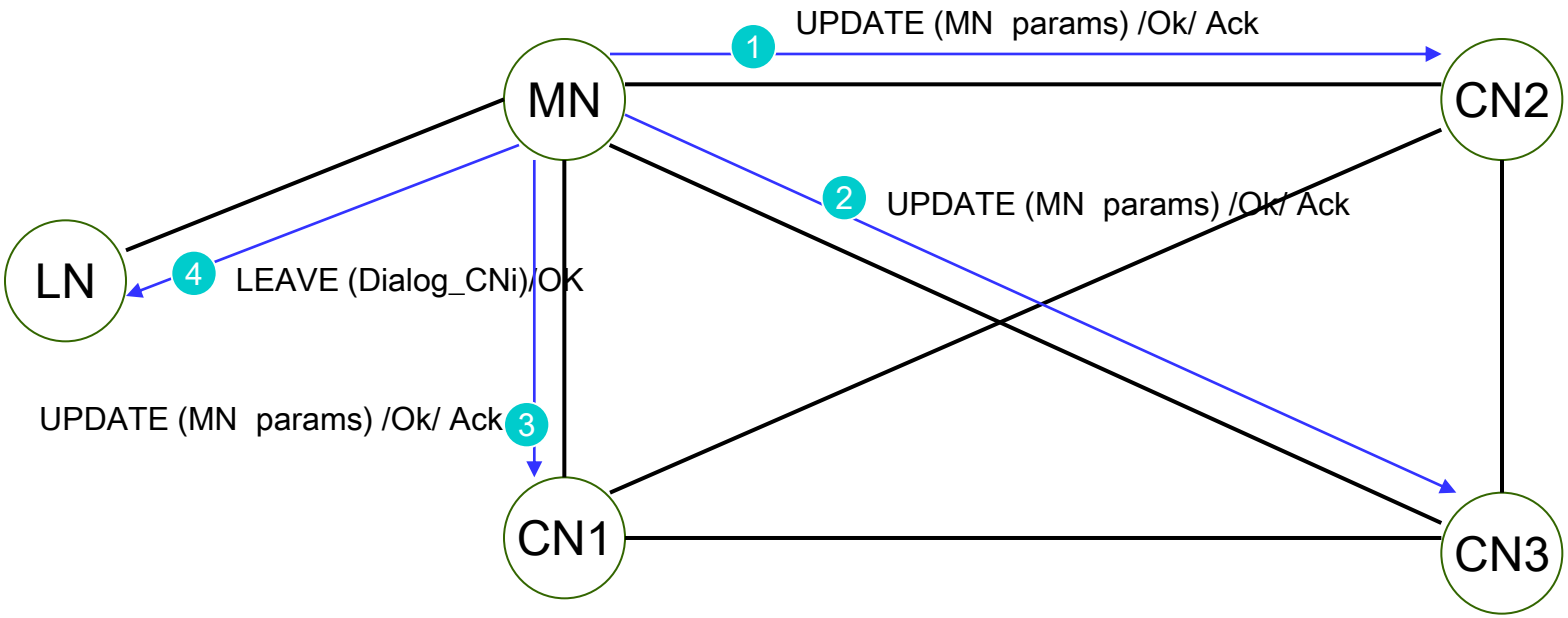
Mobile Node Control Mode in Full Mesh

- User (CN4) leaves conference



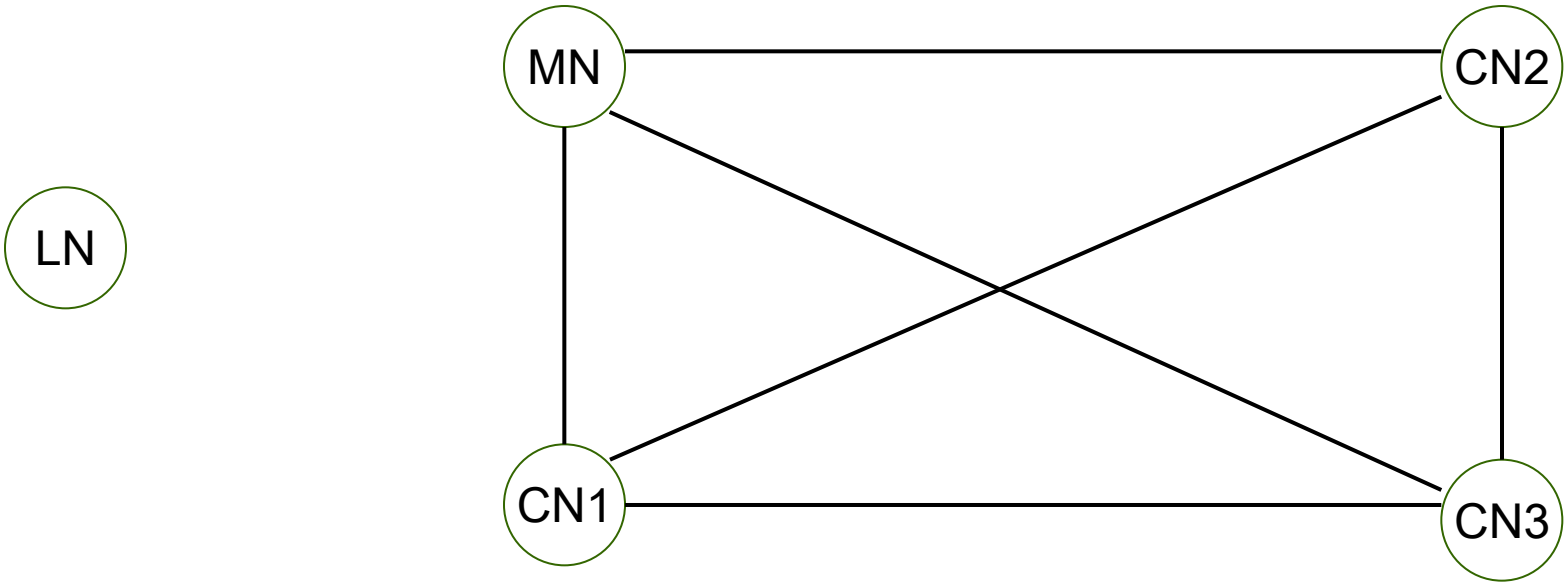
Mobile Node Control Mode in Full Mesh

- MN retrieves session



Session Handoff Mode in Full Mesh

- MN transfer session to LN



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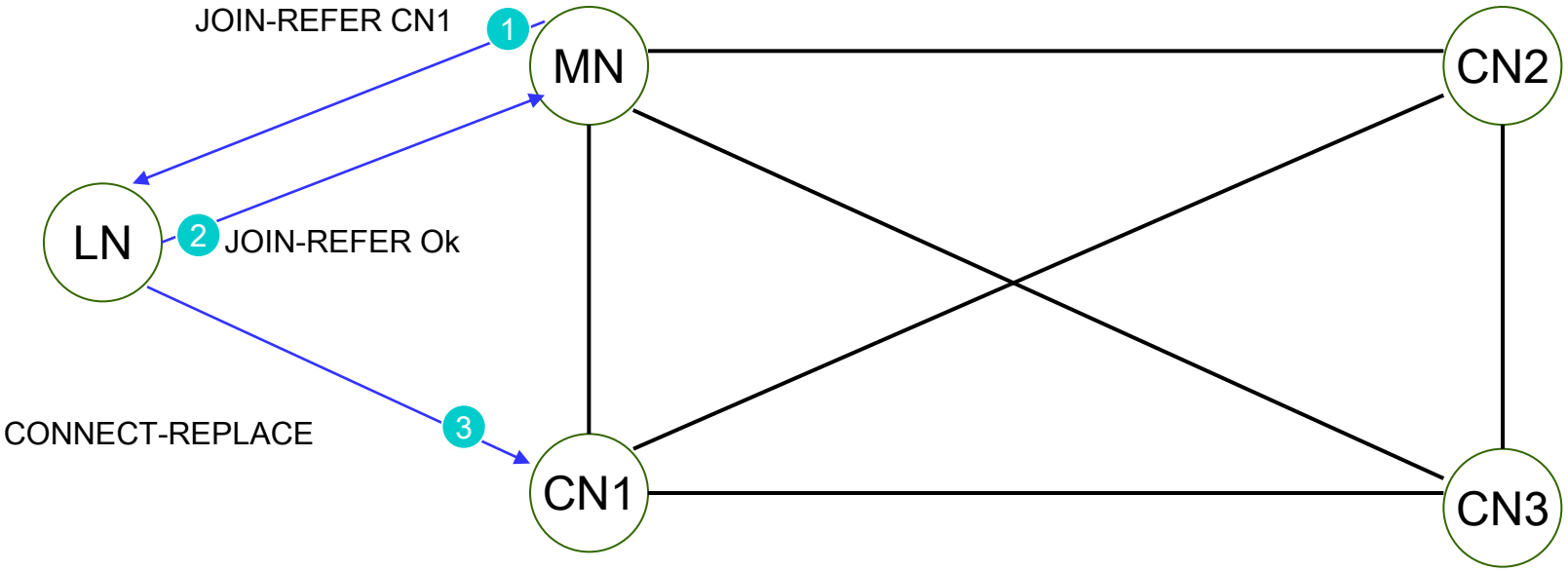

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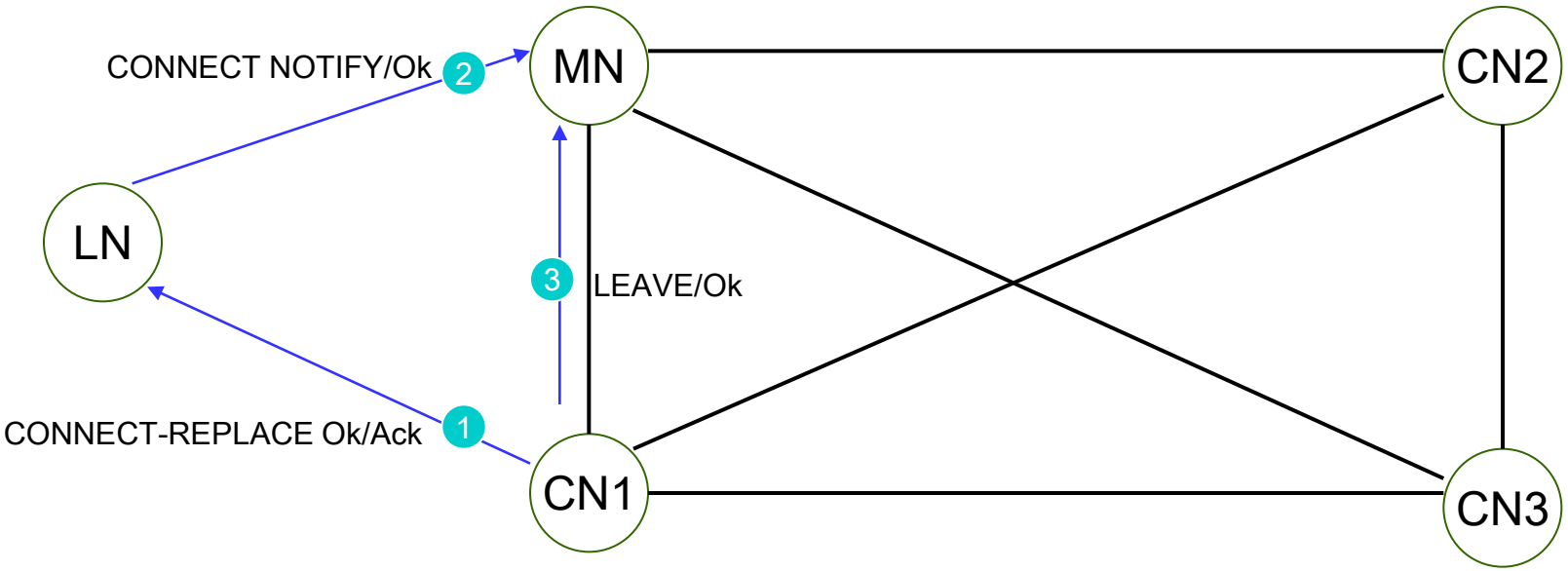

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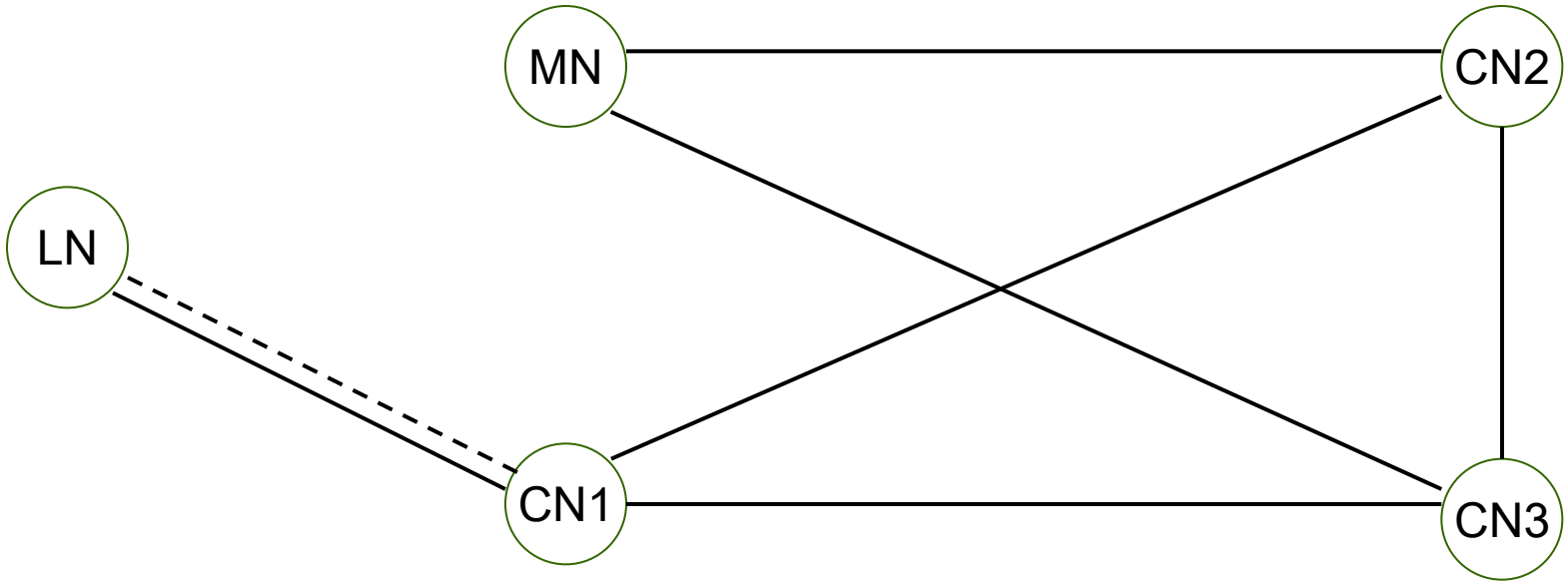

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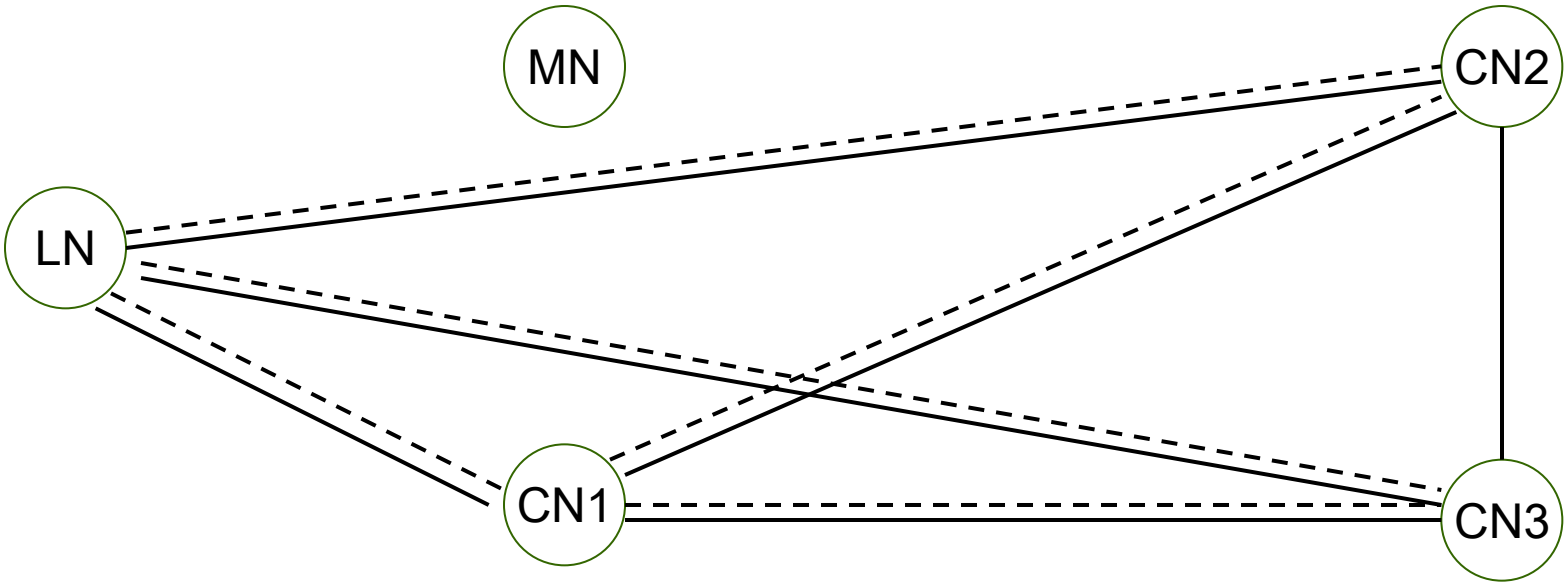

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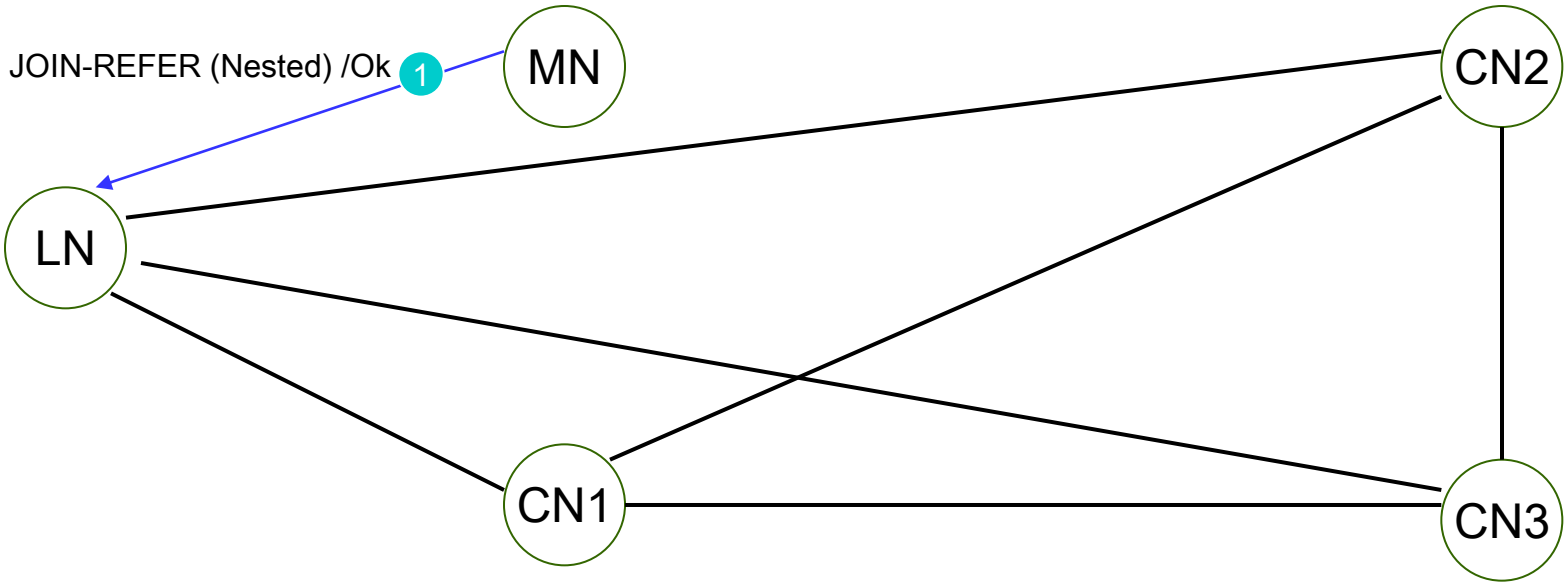

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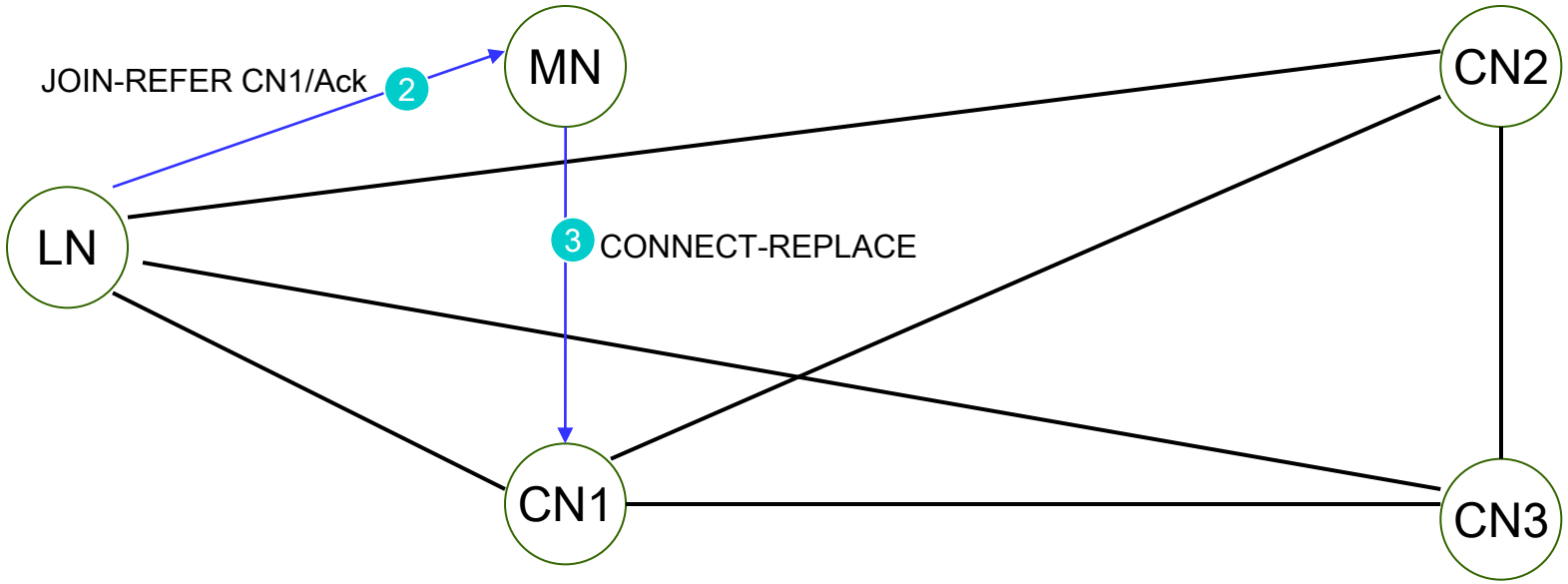

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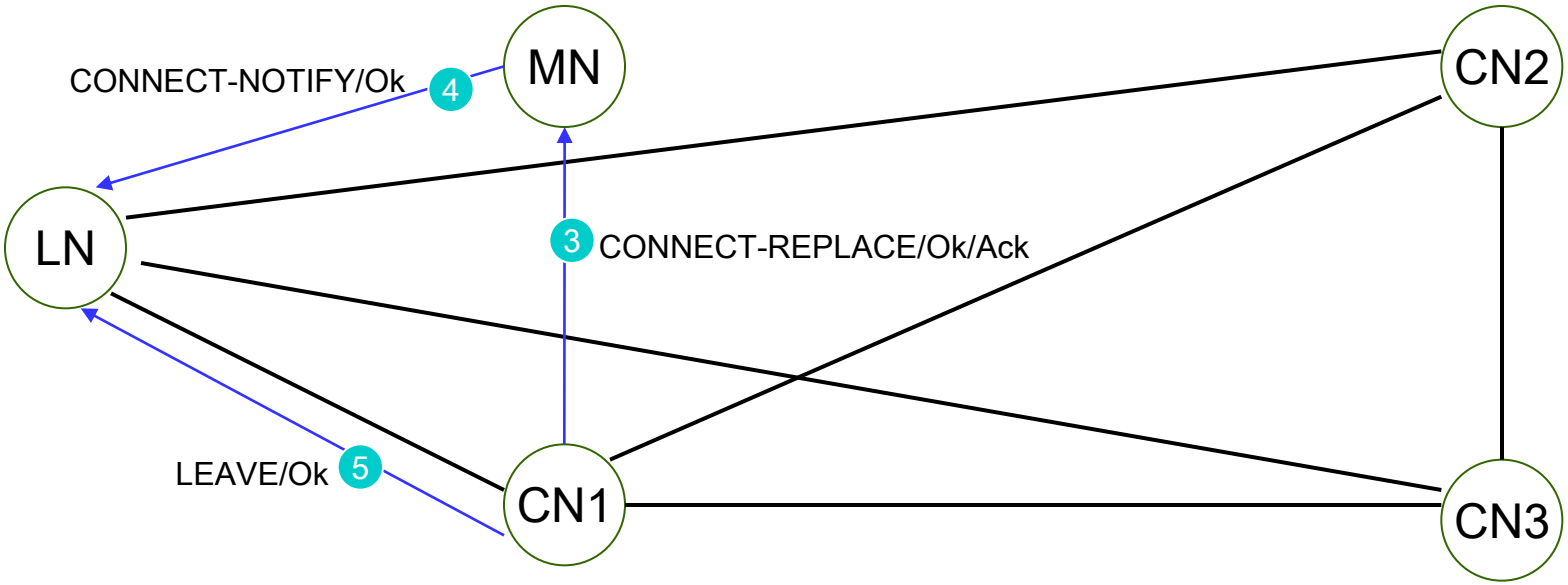

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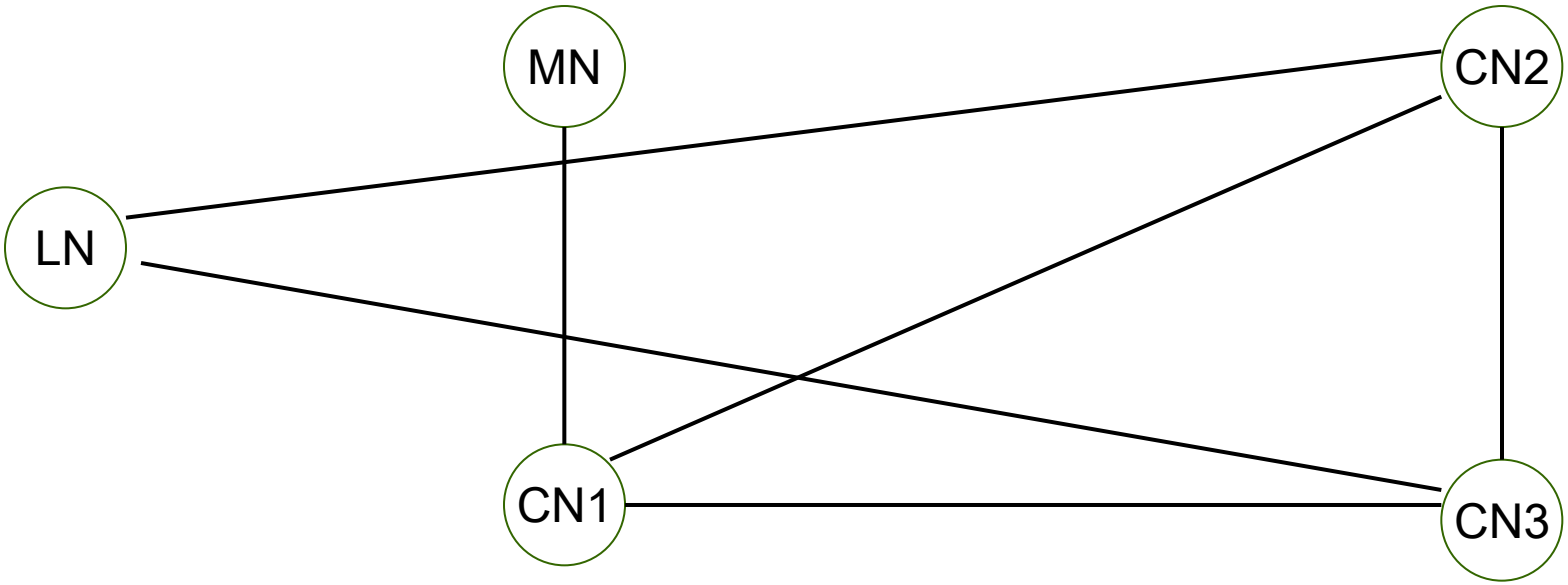

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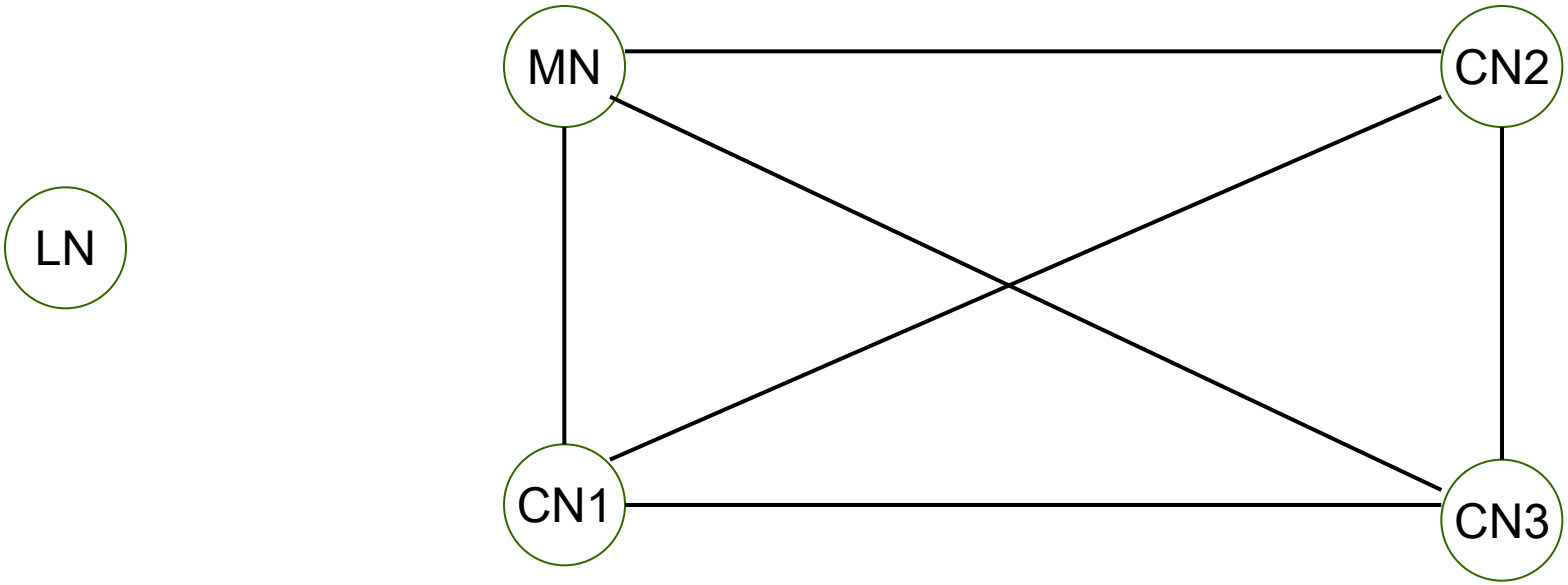


Mapping abstract message to SIP

- Message protocol for Full mesh management

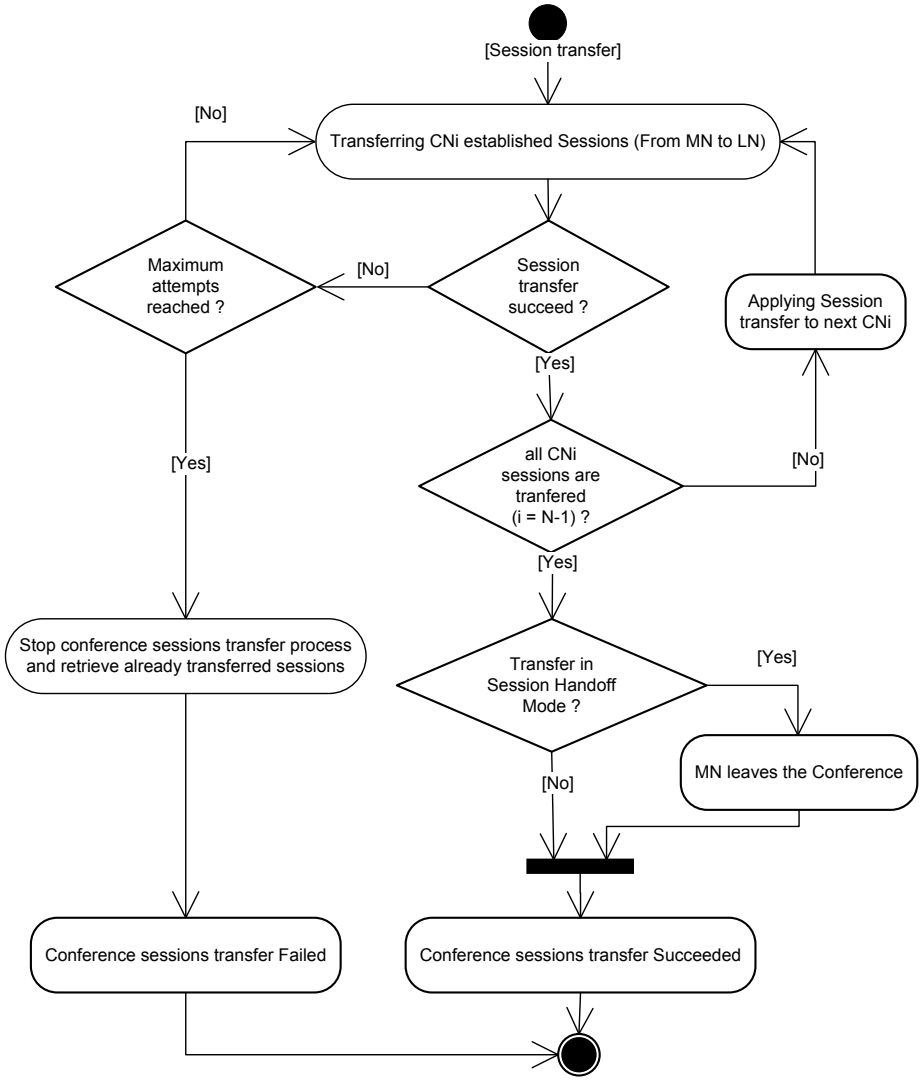
Abstract message	SIP method	Added header
JOIN	INVITE	Conference-Id Conference-Member
CONNECT	INVITE	Conference-Id Invited-by
UPDATE	reINVITE UPDATE	Conference-Id Conference-Member
OK	2xx	Conference-Id Conference-Member*
ACK	ACK	Conference-Id Conference-Member*
LEAVE	BYE or CANCEL	Conference-Id
REJECT	4xx, 5xx or 6xx	Conference-Id

Mapping abstract message to SIP

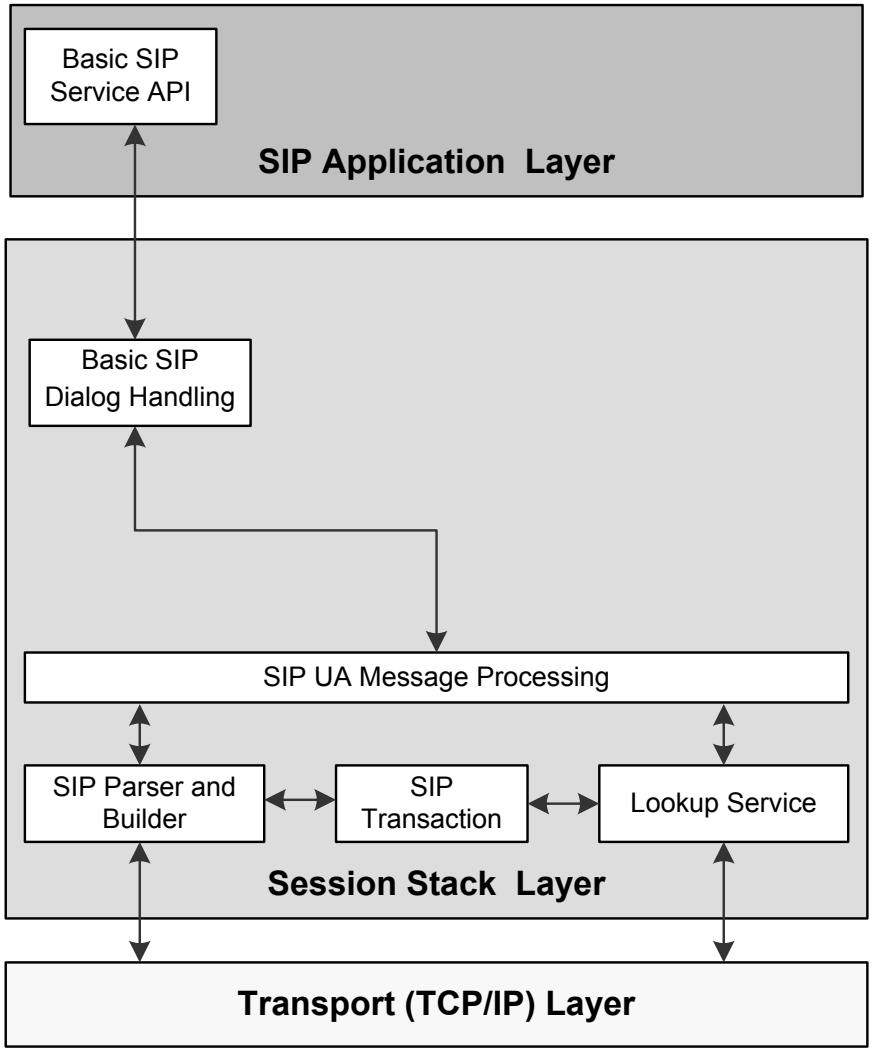
- Message protocol for Full mesh management

Abstract message	SIP method	Added header
MEDIA-JOIN	INVITE	Conference-ID Conference-Member*
JOIN-REFER	REFER	Conference-ID Conference-Members*
CONNECT-REPLACE	INVITE	Replaces Conference-ID Invited-by* Conference-Members*
CONNECT-NOTIFY	NOTIFY	Conference-ID

Session transfer organization chart



Stack architecture components



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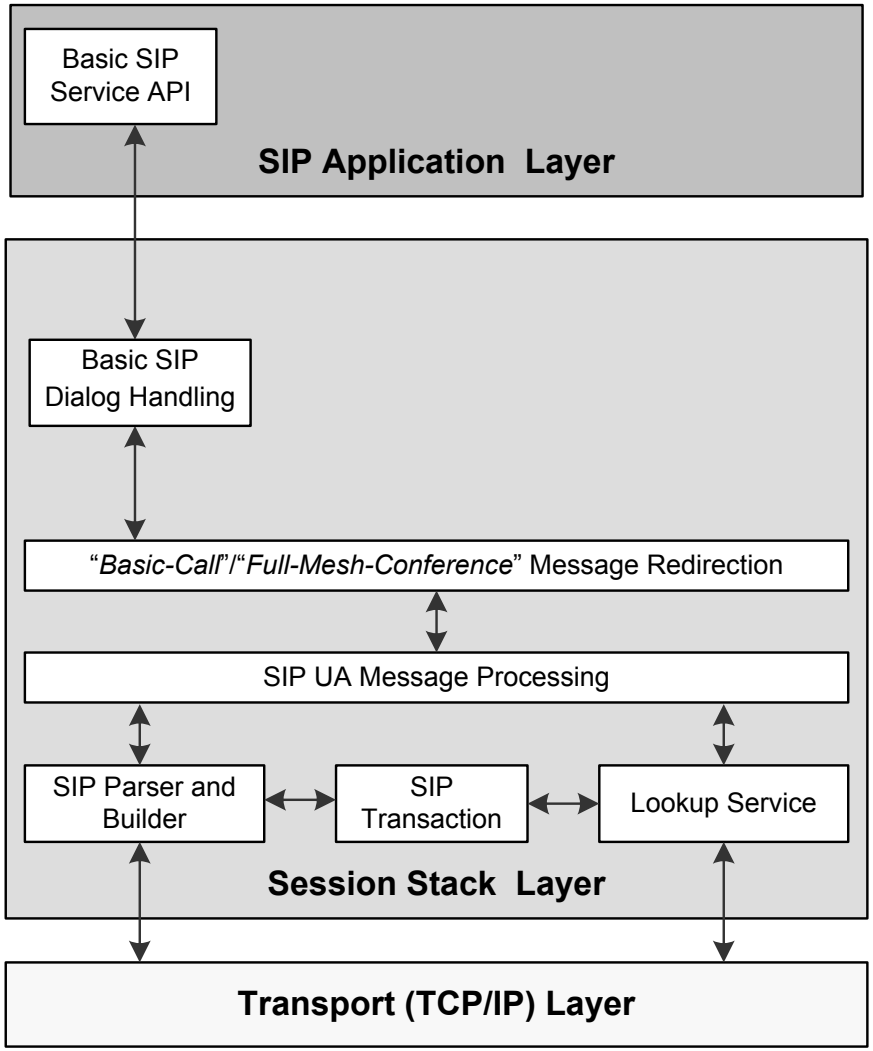

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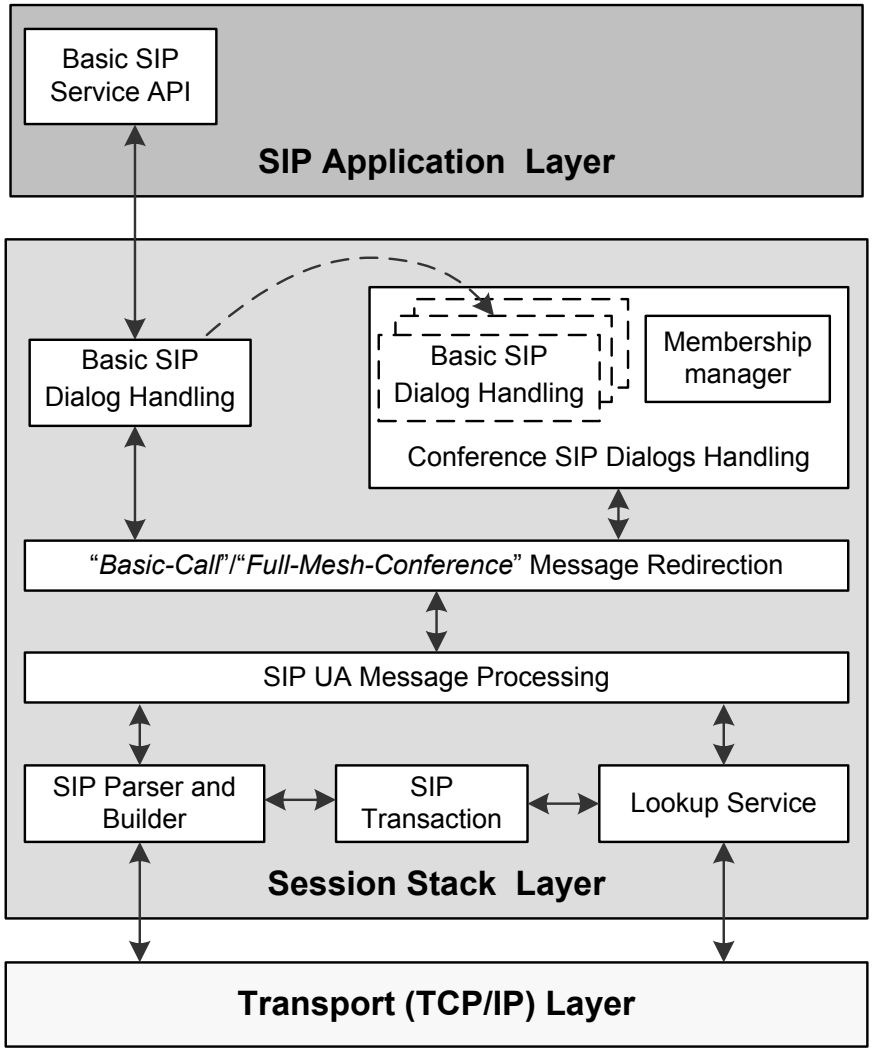

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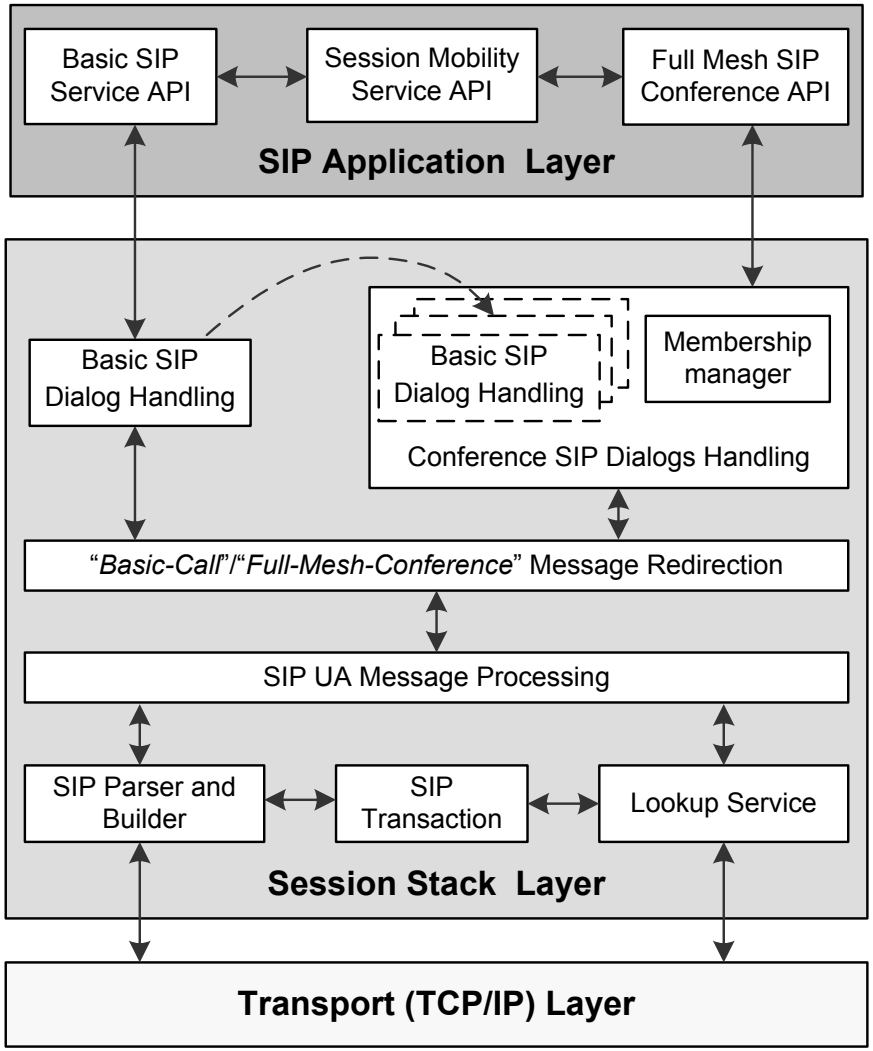
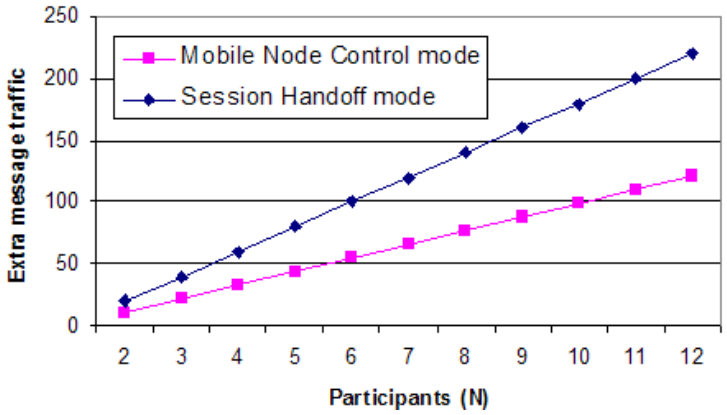
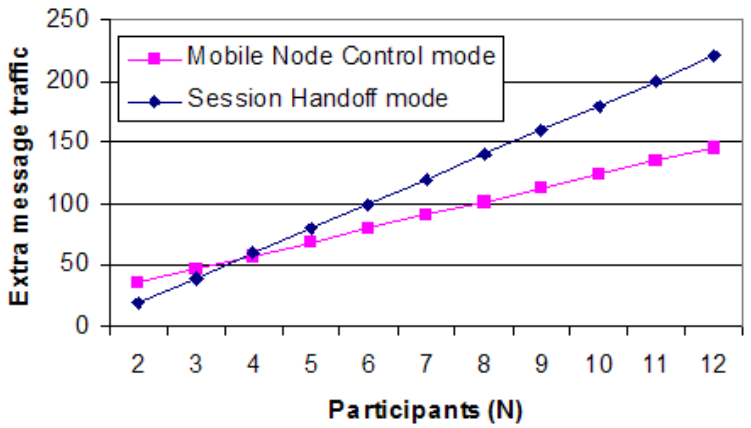


Extra signalling traffic – Results

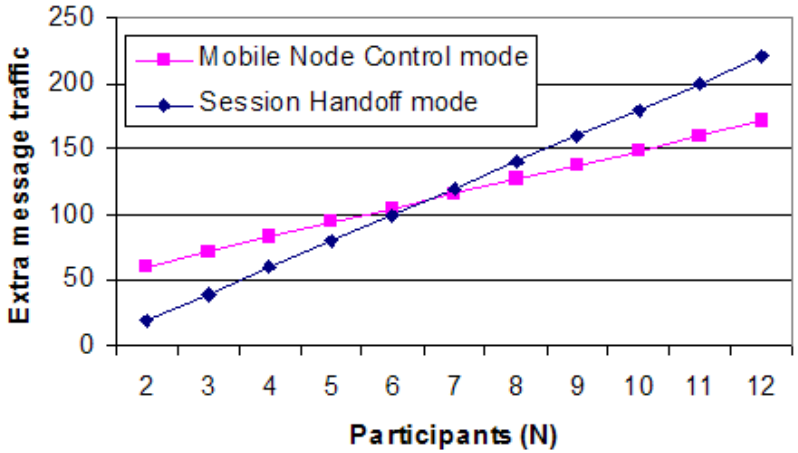
Scenario 1 : 1 Session transfer + 1 Session retrieve



Scenario 2 : 1 Session transfer + 5 added users + 5 removed users + 1 Session retrieve



Scenario 3 : 1 Session transfer + 10 added users + 10 removed users + 1 Session retrieve



Conclusion

- Enabling session Mobility is realizable using SIP
- The Mobile Node Control Mode seams to be more interoperable with basic CN SIP UA
- Generated media disruption of total latency during transfer are very similar between the two Modes
- In general, “Session Handoff Mode” requires more message exchange than “Mobile Node Control Mode”, aside cases of small full mesh conference characterized by large number of user Join/Leave activity