A Common Framework for Autoconfiguration of Stand-Alone Ad Hoc Networks

Draft-mase-autoconf-framework-03
Draft-mase-autoconf-framework-04 (to be submitted)

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Aims

- Autoconfiguration of MANET local address for a stand-alone MANET.
- Give a framework or guidelines for solutions.

Background:

- Address uniqueness issues are stated in the PS draft.
- Pre-service issues and in-service issues are identified.
- This draft gives four phases models for address uniqueness issues in terms of pre-service DAD and in-service DAD.
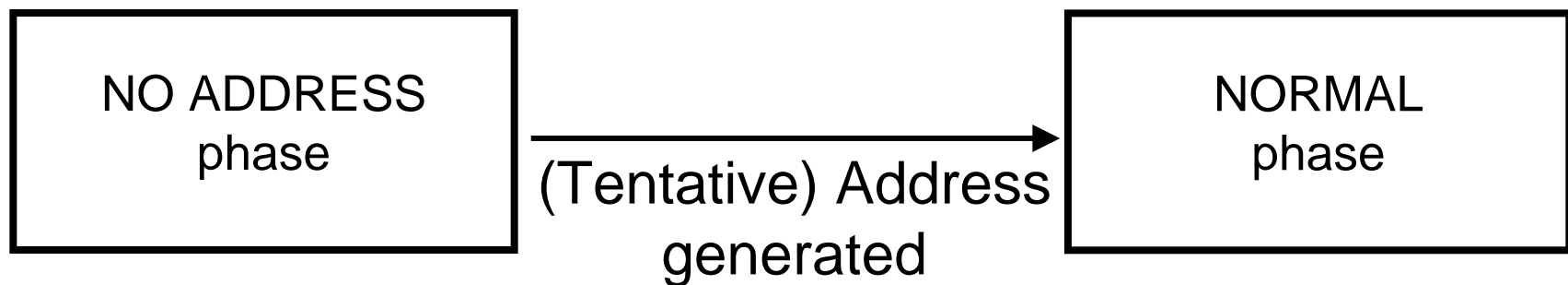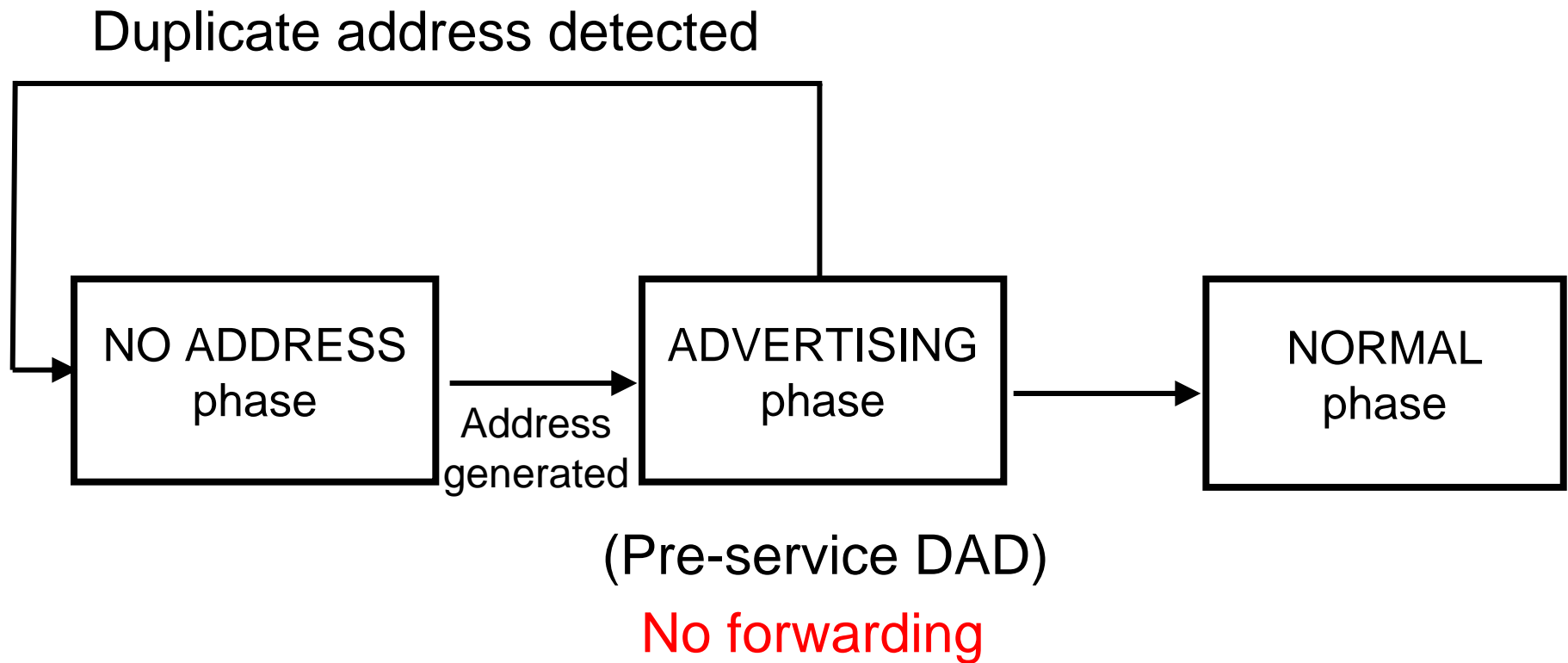
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Fig. 1 Phases model without DAD.

Duplicate address detected

NO ADDRESS phase → (Address generated) → ADVERTISING phase → NORMAL phase

(Pre-service DAD)
No forwarding

Fig. 2 Phases model with pre-service DAD.

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Duplicated address detected

NO ADDRESS
phase

Address
generated

NORMAL
phase

(In-service DAD)

Fig. 3 Phases model with in-service DAD.

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(Address generation) (In-service DAD)

NO ADDRESS phase —Duplicate address detected→ NORMAL phase

Full routing

(Tentative) address generated

Duplicate address detected

Address checked

ADVERTISING phase

LOCAL AD. phase → GLOBAL AD. phase

(Pre-service DAD)

No forwarding
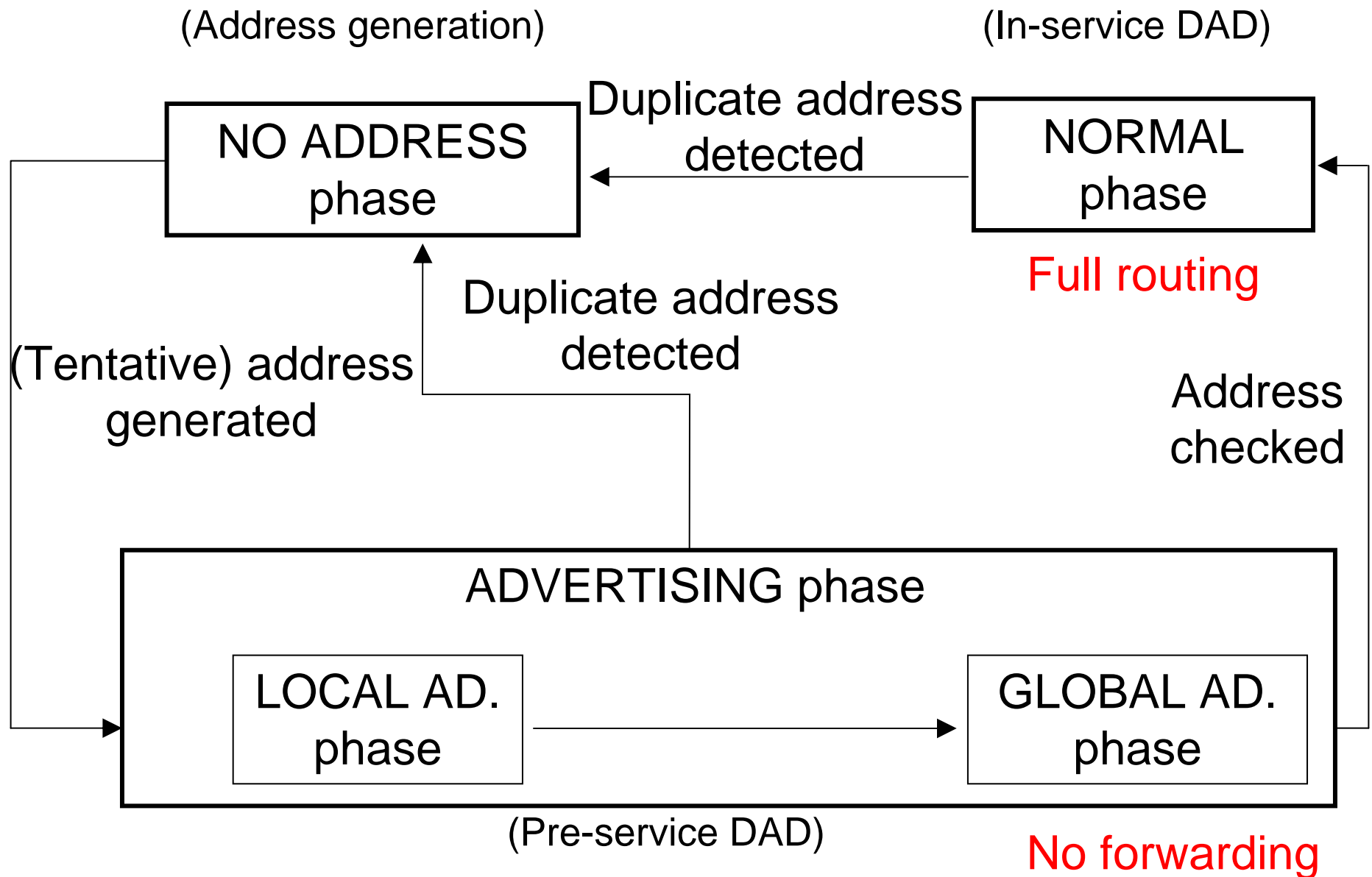
Fig.4 Phases model with full DAD.

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Change from ver.02

- Ver.02 Only full DAD phases model
- Ver.04 Four phases models

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Duplicate address advertisement (DAA)

A ①   ① B

○ C
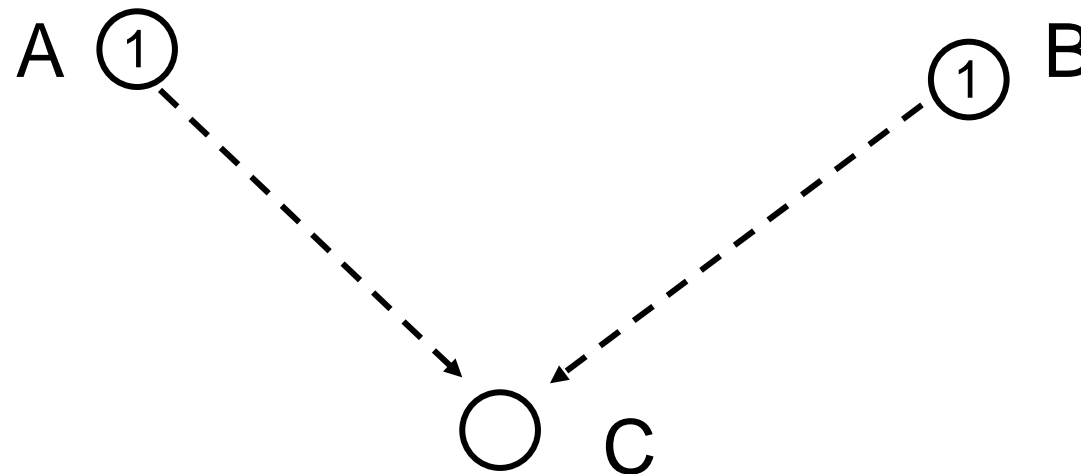
Detect a duplicate address → Advertise the detected address

Aims

- Notify node A and B about address conflict.
- Notify other nodes about address conflict.

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The baselines of the framework

- Each node MAY perform "pre-service DAD" and "in-service DAD", before and after address assignment, respectively.

- A node, that detects duplicate address between other nodes, MAY perform "DAA".

- Pre-service DAD, in-service DAD and DAA functions could be embedded in routing control messages.
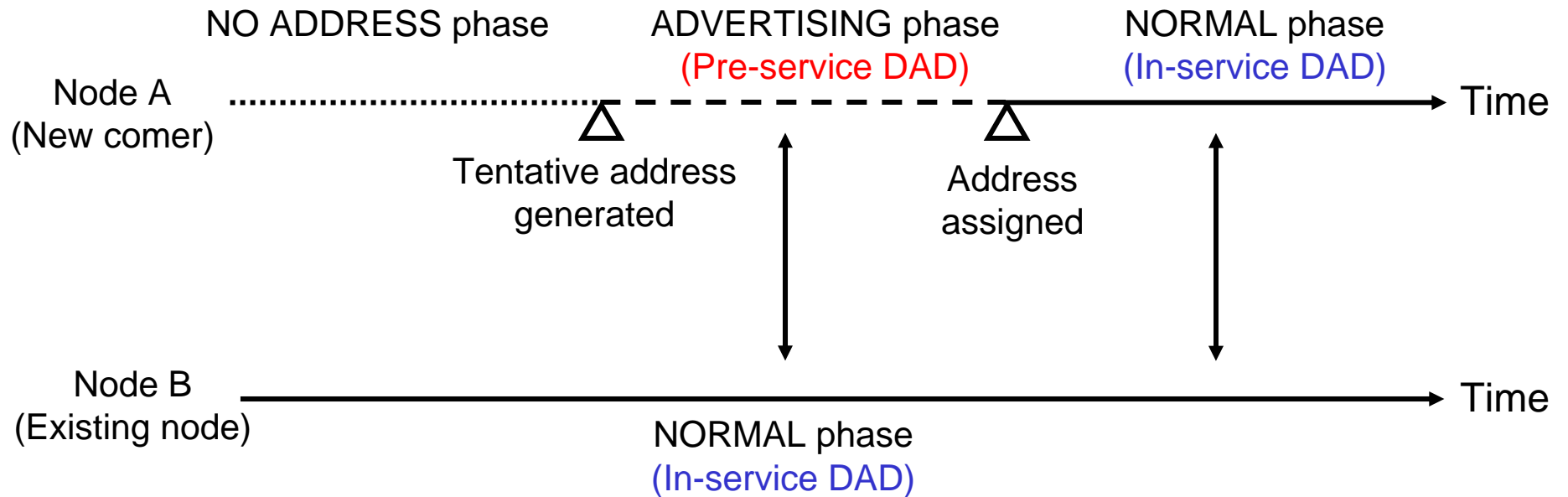
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Appendix

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DAD Interaction between Nodes

- Generalized routing control messages can be used both for pre-service and in-service DAD
- Nodes in ADVERTISING phase and those in NORMAL phase can interact to each other with regard to pre-service and in-service DAD

Benefits
- Minimize DAD overhead
- Minimize erroneous route formulation

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