Network Proxy Protocol
\<draft-jeong-eman-network-proxy-protocol-02\>

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EMAN WG meeting @ IETF89

Network Proxy Protocol

- Objective:

  Develop a protocol that allows to delegate network node's traffic processing to an external system within a network, so that the nodes maintain network presence during their sleep
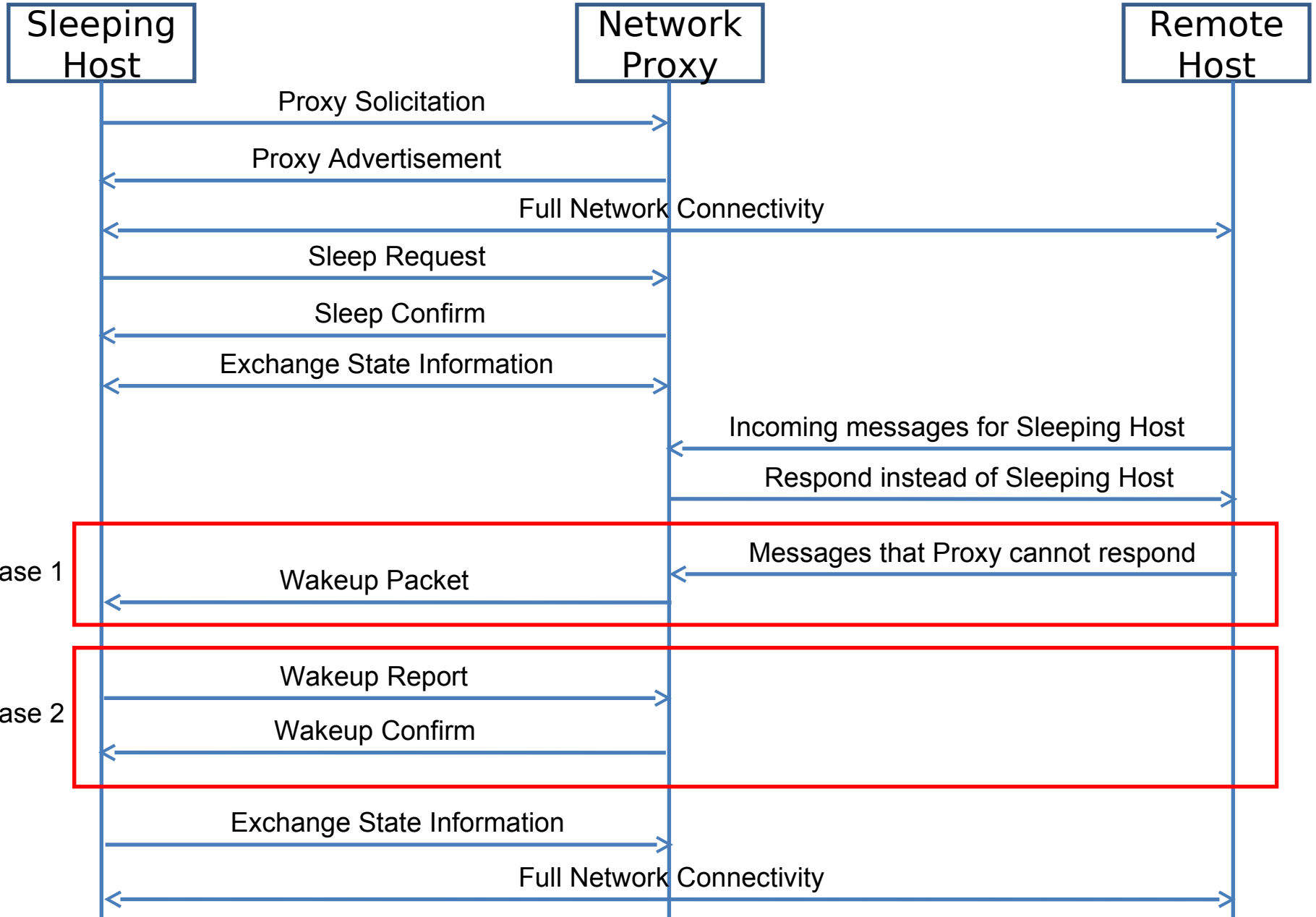
  –Maintain network connectivity and respond incoming messages on behalf of the sleeping hosts
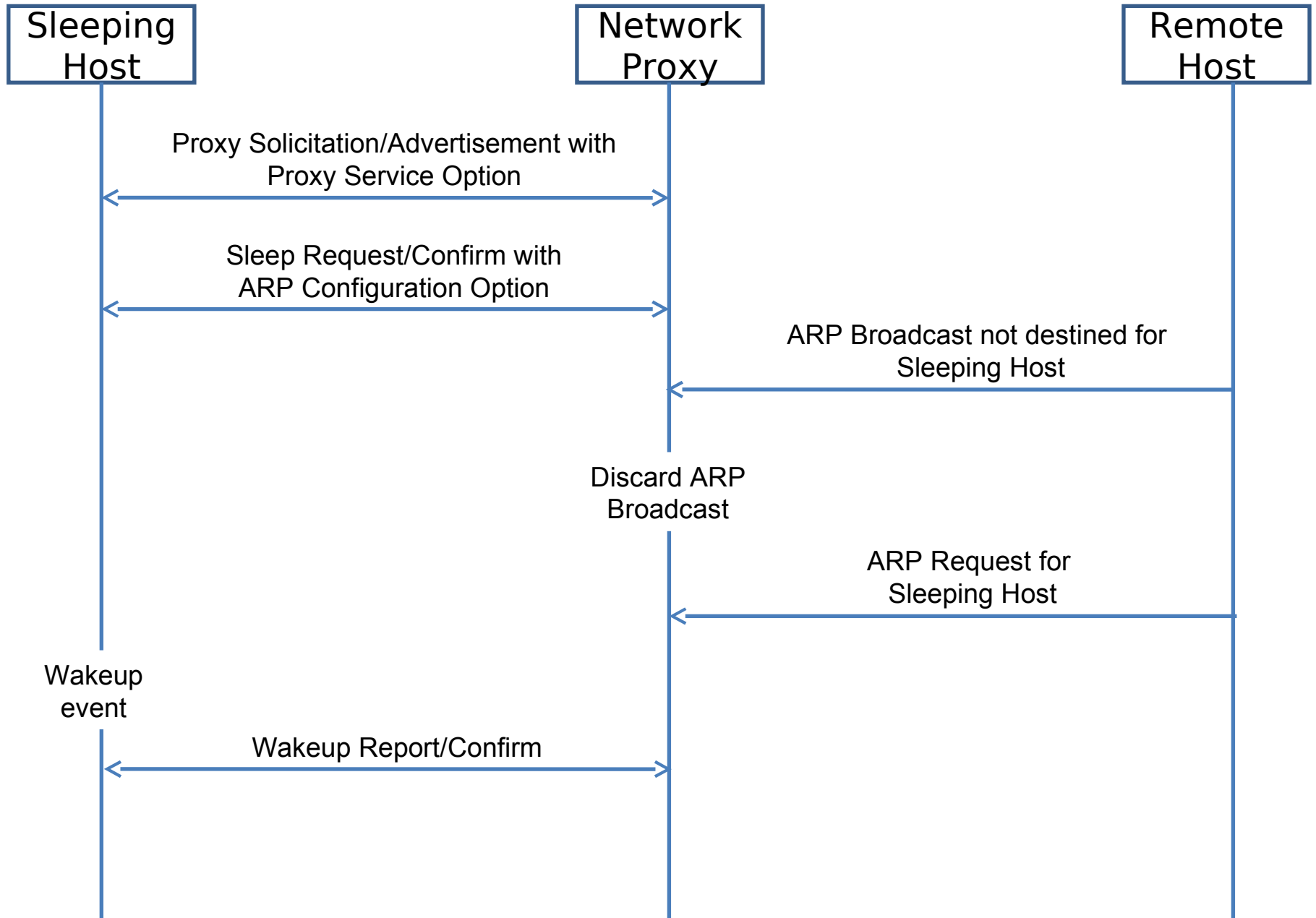 –Wakeup a sleeping host so that the host can process incoming messages

Document History

- First discussion @ IETF 86

- Updated draft @ IETF 89
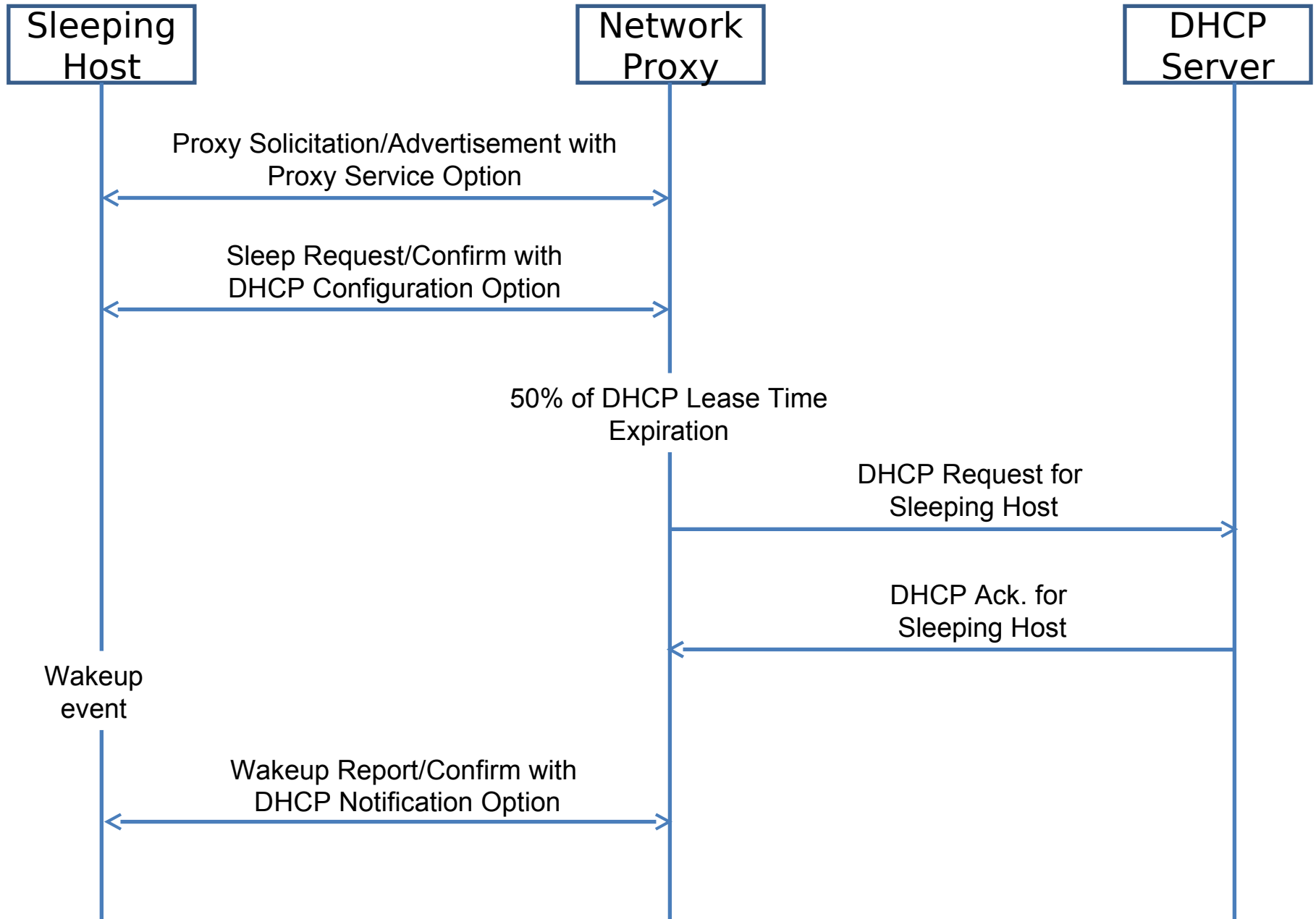 - Modified proxy operation for IPv4 ARP
  - Added DHCP operation

Network Proxy High Level Operation

Network Proxy Operation for IPv4 ARP

Sleeping Host

Network Proxy

Remote Host

Proxy Solicitation/Advertisement with Proxy Service Option

Sleep Request/Confirm with ARP Configuration Option

ARP Broadcast not destined for Sleeping Host

Discard ARP Broadcast

ARP Request for Sleeping Host

Wakeup event

Wakeup Report/Confirm

Network Proxy Operation for DHCP Renewal

Sleeping Host

Network Proxy

DHCP Server

Proxy Solicitation/Advertisement with
Proxy Service Option

Sleep Request/Confirm with
DHCP Configuration Option

50% of DHCP Lease Time
Expiration

DHCP Request for
Sleeping Host

DHCP Ack. for
Sleeping Host

Wakeup
event

Wakeup Report/Confirm with
DHCP Notification Option

Wakeup Method

- Magic Packet defined by Wake-on-LAN standard
- Implementation of Magic Packet
  - UDP datagram
- Magic Packet over UDP
  - dest. IP: 255.255.255.255
  - UDP data: FF FF FF FF FF FF [Target MAC * 16 duplications]

```
0000  FF FF FF FF FF FF 00 19 DB 00 DB 68   ÿÿÿÿÿÿ..Û.Ûh
000C  08 00 45 00 00 82 21 AE 00 00 80 11   ..E..□!®..□.
0018  55 B1 C0 A8 02 64 FF FF FF FF 07 8D   U±À¨.dÿÿÿÿ.□
0024  9C 40 00 6E 4B 48 FF FF FF FF FF FF   □@.nKHÿÿÿÿÿÿ
0030  04 4B 80 80 80 03 04 4B 80 80 80 03   .K□□□..K□□□.
003C  04 4B 80 80 80 03 04 4B 80 80 80 03   .K□□□..K□□□.
0048  04 4B 80 80 80 03 04 4B 80 80 80 03   .K□□□..K□□□.
0054  04 4B 80 80 80 03 04 4B 80 80 80 03   .K□□□..K□□□.
0060  04 4B 80 80 80 03 04 4B 80 80 80 03   .K□□□..K□□□.
006C  04 4B 80 80 80 03 04 4B 80 80 80 03   .K□□□..K□□□.
0078  04 4B 80 80 80 03 04 4B 80 80 80 03   .K□□□..K□□□.
0084  04 4B 80 80 80 03 04 4B 80 80 80 03   .K□□□..K□□□.
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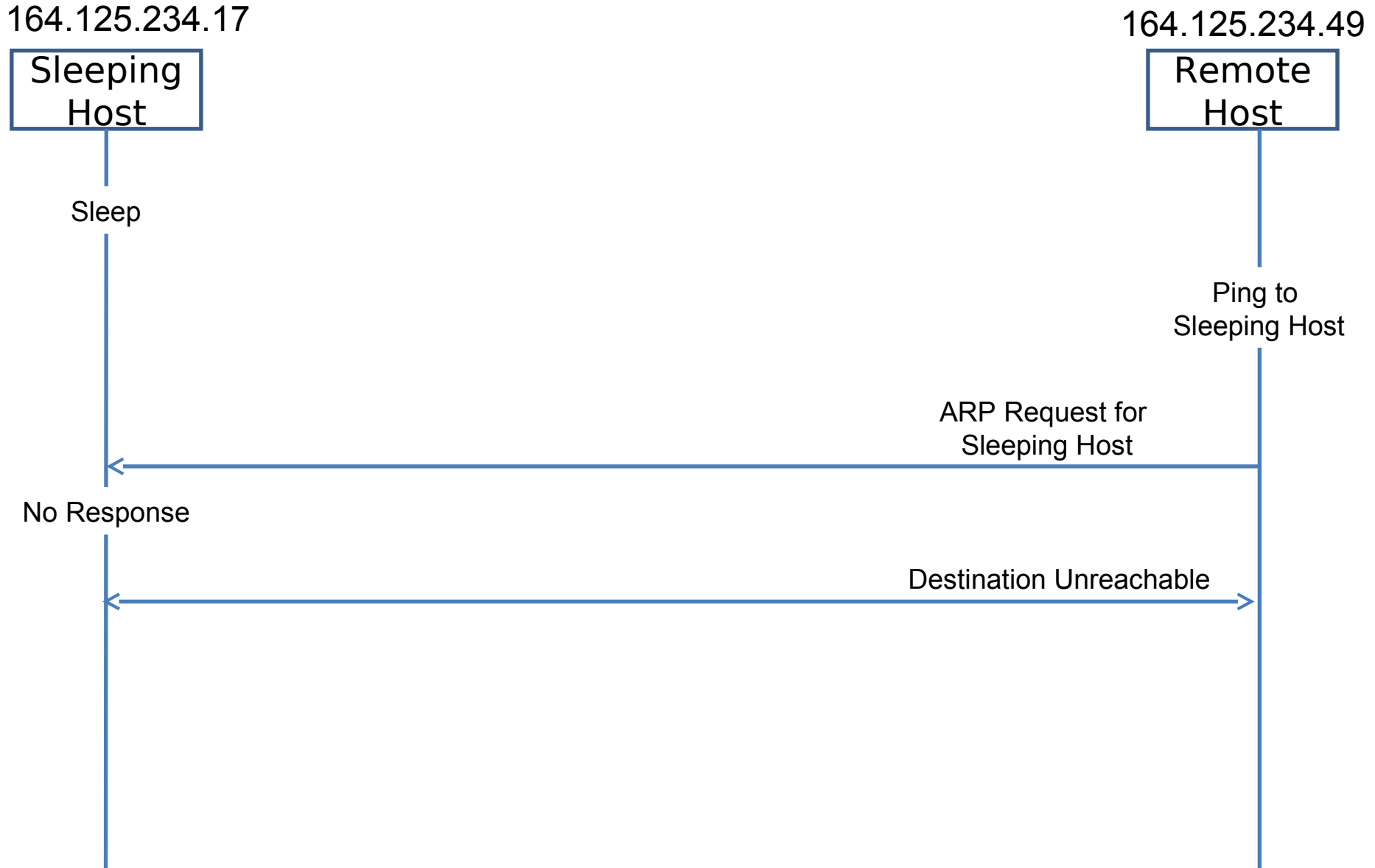
Prototype Implementation (1/2)

164.125.234.17

┌─────────────┐
│ Sleeping   │
│   Host   │
└─────────────┘

164.125.234.49

┌─────────────┐
│   Remote   │
│   Host   │
└─────────────┘

Sleep

Ping to
Sleeping Host

ARP Request for
Sleeping Host

No Response

Destination Unreachable

Sleeping Host

Prototype Implementation (2/2)
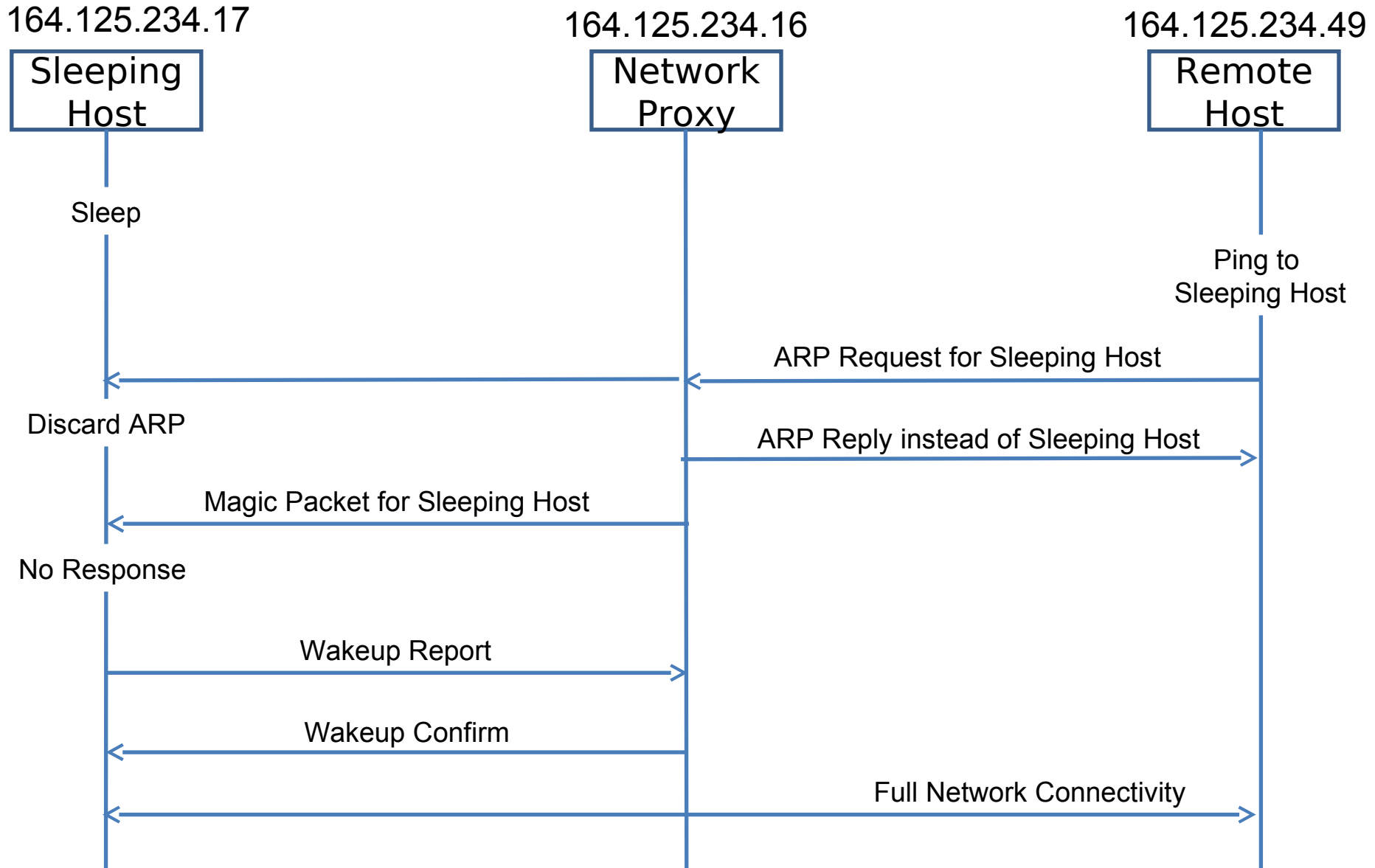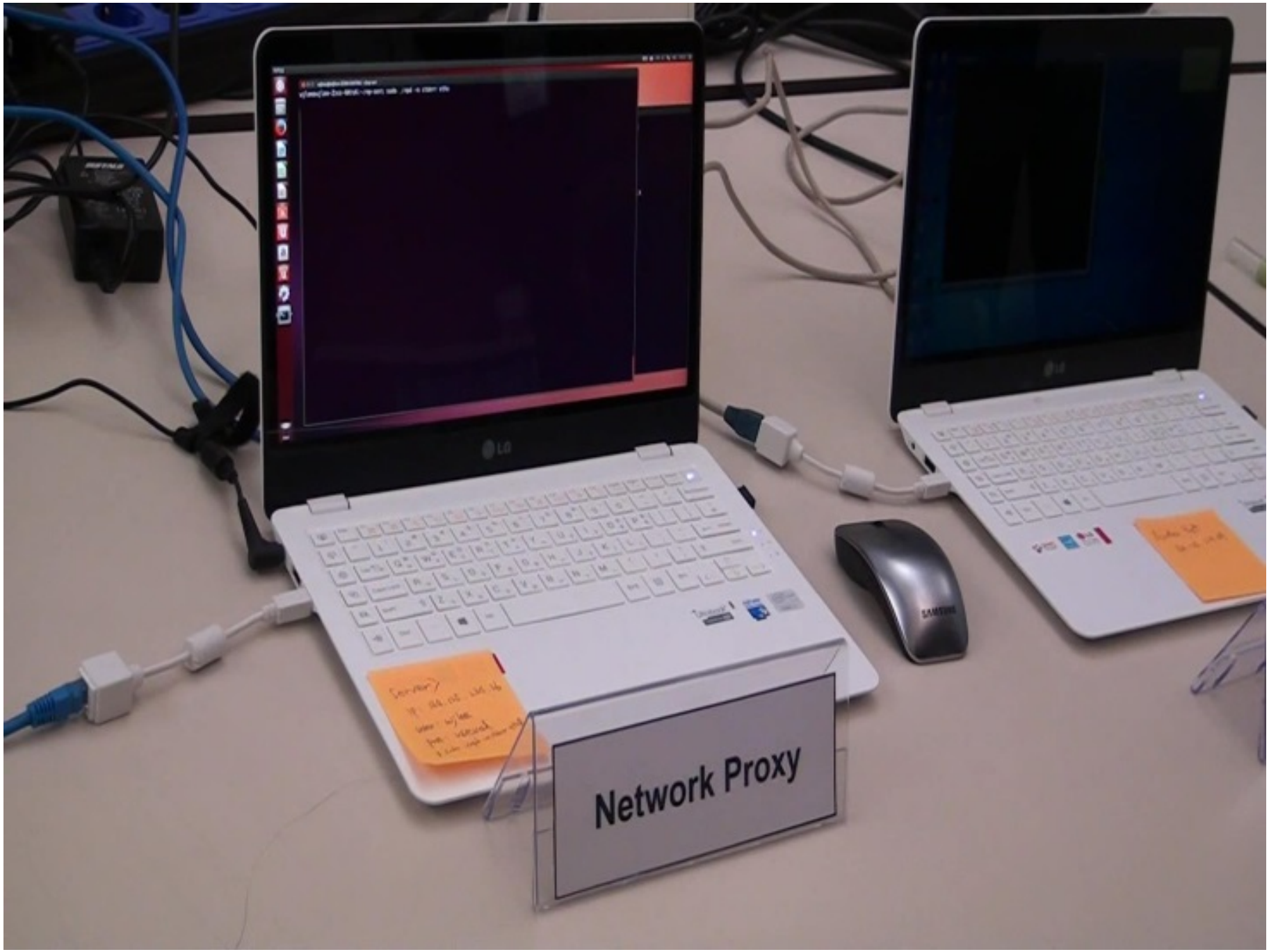
164.125.234.17

164.125.234.16

164.125.234.49

| Sleeping Host | Network Proxy | Remote Host |

Sleep

Ping to Sleeping Host

ARP Request for Sleeping Host

Discard ARP

ARP Reply instead of Sleeping Host

Magic Packet for Sleeping Host

No Response

Wakeup Report

Wakeup Confirm

Full Network Connectivity

Network Proxy

Next Steps

- Status: updated draft covers IPv4 ARP and DHCP related operation
  - Solicit for reviews and comments
  - Needs to add applicability section of this protocol

- Within the scope of WG?
  - Any interest in this topic?