Addressing Free MANET w/ Global Connectivity: MANEMO + NAT

Requirements for the addressing in MANET node
- Assign the unique address over multi-hop neighbor in MANET node
- (MAY) provide global reachability to the MANET node

Problem
- Assignment of the topologically correct address/prefix is difficult if Internet Gateway (IGW) moves (Prefix flapping during IGW movement makes unstable core network)

Idea
- Topologically Incorrect address + NAT (for addressing assignment)
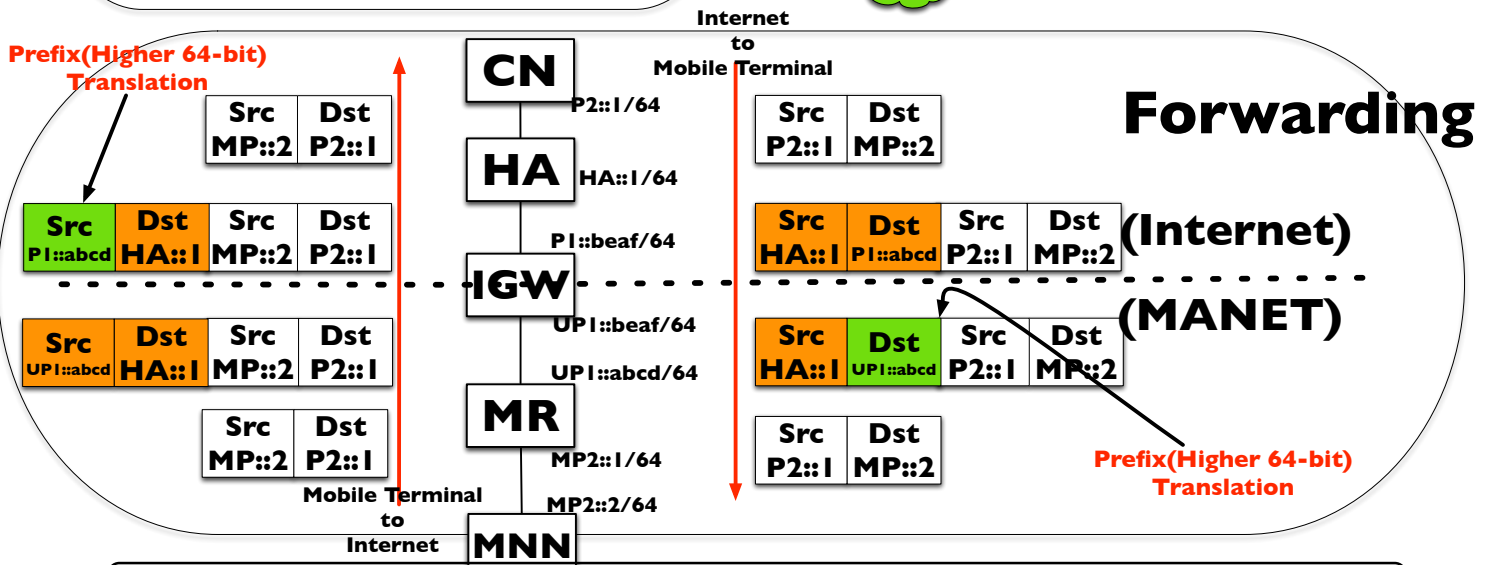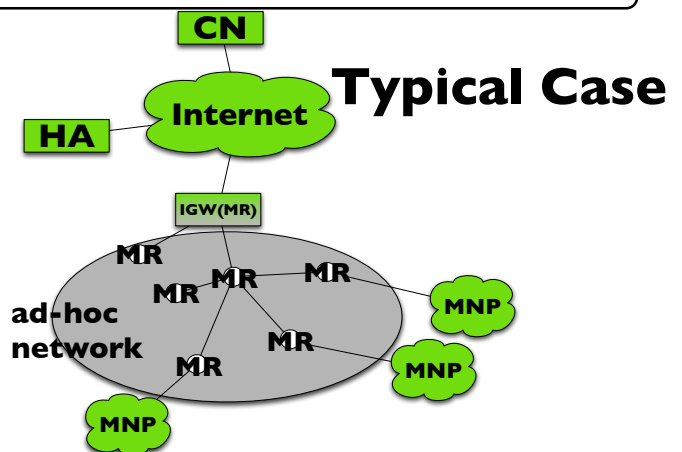- With NEMO (Prefix assignment with statically assigned MNP)

Application
- Remote medical service in temporary network (like FON, Internet Connection Sharing)
- Solution for the nested NEMO problem

Typical Case

Signaling

Internet

2) Use Routing Information (RIB/FIB) as NAT mapping table

1) Share MR (include IGW)'s address by routing protocol (e.g. OLSR)

IGW

MR

CN

Internet

HA

IGW(MR)

ad-hoc network

MR MR MR MR MR MR

MNP

MNP

MNP

Forwarding

Prefix(Higher 64-bit) Translation

Internet to Mobile Terminal

CN — P2::1/64

HA — HA::1/64

Src	Dst
MP::2	P2::1

Src	Dst	Src	Dst
P1::abcd	HA::1	MP::2	P2::1

P1::beaf/64

IGW — (Internet)

---- (MANET)

UP1::beaf/64
UP1::abcd/64

Src	Dst	Src	Dst
UP1::abcd	HA::1	MP::2	P2::1

MR

Src	Dst
MP::2	P2::1

MP2::1/64
MP2::2/64

Mobile Terminal to Internet

MNN

(Internet)

Src	Dst
P2::1	MP::2

Src	Dst	Src	Dst
HA::1	P1::abcd	P2::1	MP::2

(MANET)

Src	Dst	Src	Dst
HA::1	UP1::abcd	P2::1	MP::2

Src	Dst
P2::1	MP::2

Prefix(Higher 64-bit) Translation

- **No translation on end node's addresses (pros)**
- **Security association between MR and HA with translated address (issue)**
- **draft-vogt-address-translation-harmfulness**

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Usage Scene

draft-clausen-manet-autoconf-recommendations-00

192.168.1.1/**32**

192.168.1.0/**24**

192.168.1.1/**24**

192.168.1.2/**24**

192.168.1.5/**24**

192.168.1.3/**24**

192.168.1.4/**24**
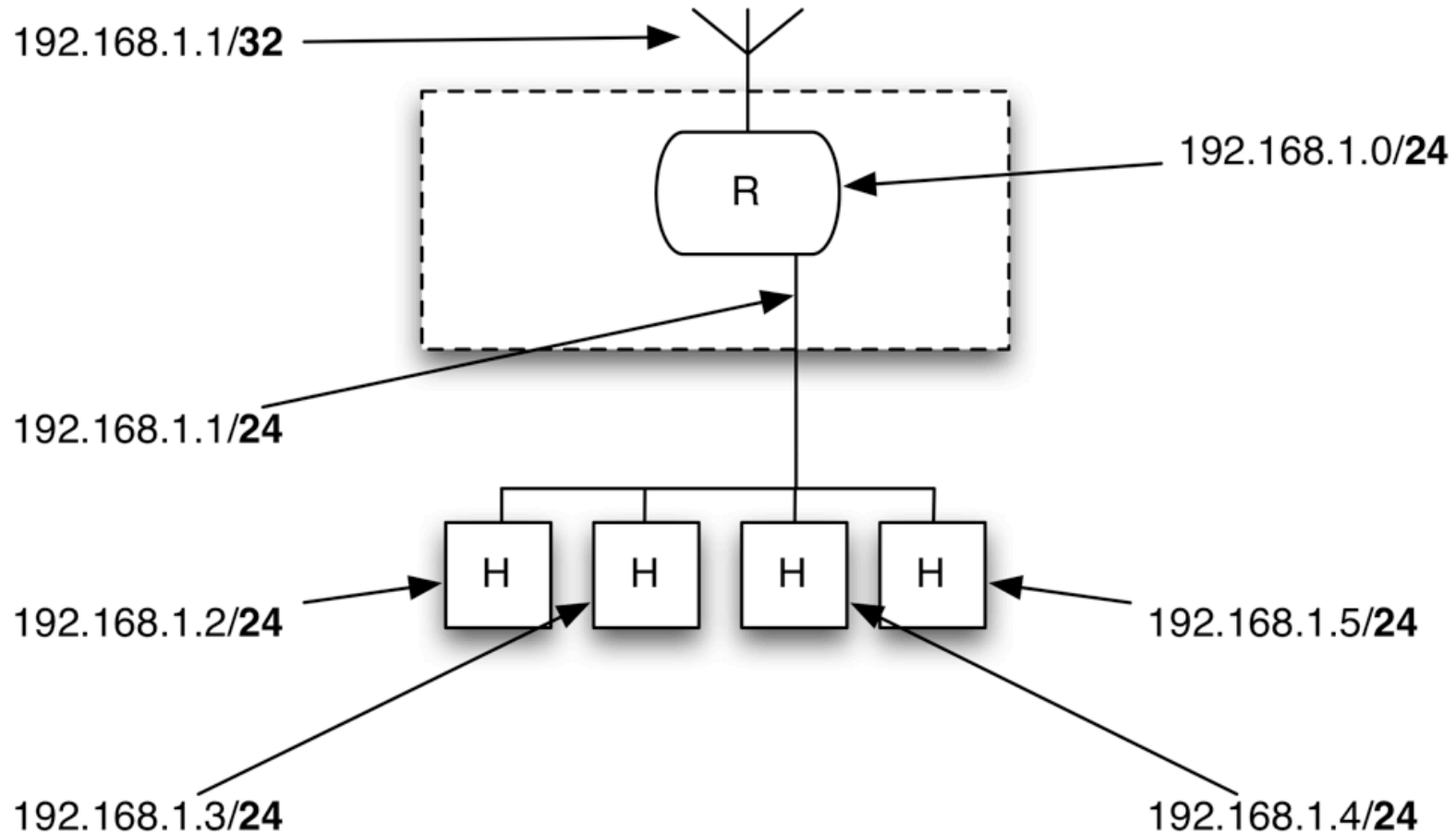
Addressing Model for MANET node (w/ 2 interfaces)

Usage Scene (cont.d)

Unnumbered Interface

802.11 ad-hoc

MP1,MP2 are statically configured MNP

egress
MP1::beaf/128

egress
MP2::abcd/128

P1::baba/64

IGW

MR

MP1::beaf/64

MP2::abcd/64

MP1::1/64

MP1::2/64

MP2::2/64

MP2::2/64

Host

Host

Host

Host