Summary of the existing solutions

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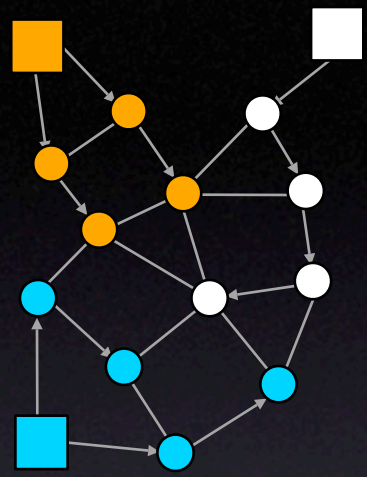
draft-jelger-manet-gateway-autoconf-v6-03.txt



- Scope:
  - Proactive autoconfiguration with prefix continuity
  - Prefix continuity : creation of a forest of logical spanning trees
- Basic mechanism:
  - Each gateway periodically sends global scope prefix_information
  - Each node selects one and only one prefix_information and creates a global address according to the prefix (with extended-EUI-64)
  - Because each node only forwards the information it uses, the propagation method leads to prefix continuity
  - With multiple gateways, multiple prefixes, each logical tree is formed by nodes using the same global prefix : forwarding to the Internet is coherent
- Drawbacks:
  - Overhead due to proactive nature (around 1kb/s per second per node, including data and IP, Ethernet, and 802.11 headers)
  - Cannot be applied straightforward to IPv4 (since EUI-64 are not usable)

draft-mase-manet-autoconf-noaolsr-00.txt

- Scope:
  - autoconf of standalone MANETs
- Basic mechanism:
  - self address selection based on the busy address list
  - on-going duplicated address detection (DAD) using 10 simple rules, that can deal with the optimization of the OLSR
  - gradual entry in the OLSR network and address conflict/routing table contamination avoidance using the three states
  - implemented and verified to have satisfactory duplicated address detection and resolution performance under various scenarios using real-world experiments and simulations
- Limitations:
  - routing protocol dependent
  - not yet extended for multiple interfaces

draft-clausen-manet-address-autoconf -00.txt

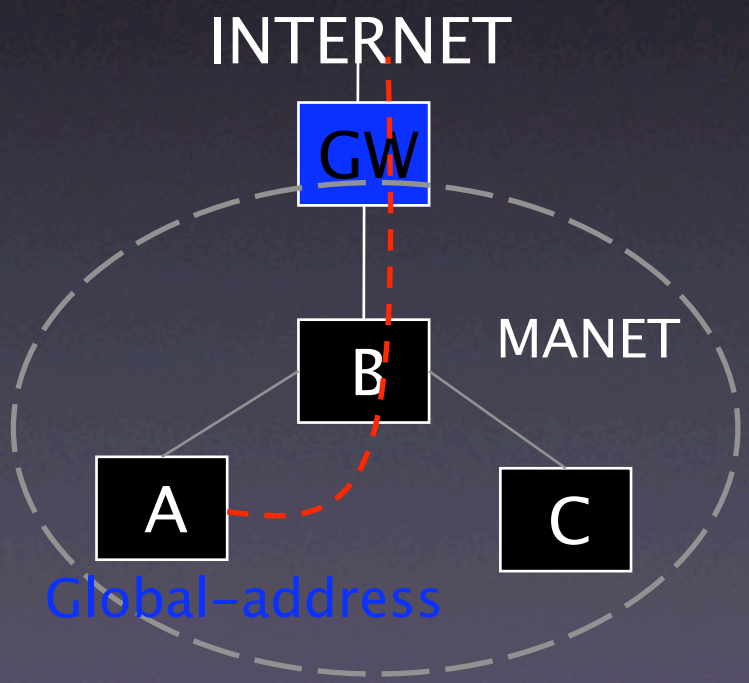
- Scope:
  - autoconf of MANETs which are edge-extenstions to the Internet
- Basic mechanism:
  - at least one node is “already configured” (Internet gw)
  - periodic beaconing by configured nodes ADDR_BEACON
  - new node select “already configured” node ADDR_CONFIG
  - selected node acquires global addr. for new node (dhcp, autonomously, ...)
- Limitations:
  - does not address partitioning/merger
  - routing protocol agnostic

draft-laouiti-manet-olsr-address-autoconf-00.txt

- Scope:
  - Autoconf of OLSR MANETs (duplicate address detection)
- Basic mechanism:
  - Each OLSR node periodically floods M.A.D. messages:
    - List of its addresses (like OLSR MID msg.) plus a "node identifier"
    - Node identifier is initialized with (big) sequence of random bits
  - Conflict: M.A.D. with same address but different node identifier.
  - Special mechanisms to avoid some MPR flooding limitations.
- Advantages and Limitations:
  - \+ Simple while supporting merge/split/multi-homing and any addressing
  - – Overhead of MAD messages, and specific to OLSR

draft-wakikawa-manet-global6-03.txt

- Scope:
  - Connecting MANET to the Internet (IPv6)
- Concept:
  - Internet Gateway
    - is a router connected to both MANET and the Internet
    - provides global address and route to the Internet
- Solved Items
  - **Internet Gateway Discovery**
    - Extended RA dissemination
    - Modified Routing Protocol exchange
  - **Global Routable Address Assignment**
  - **Route Setup toward the Internet**
  - **MobileIPv6/NEMO Support**
  - **Route Examination, etc.**
- Limitation
  - No multiple Gateways Support



draft-perkins-manet-autoconf-01.txt

- Scope
  - Address Autoconfiguration for MANET local address (v4/v6)
- Mechanism
  - Use a temporary address to acquire an address and to operate DAD
    - Temporary address is randomly selected from MANET initial prefix
    - It identifies a node by Unique ID and Requested IP address during address autoconfiguraiton
  - Send Address Request (AREQ) for address discover and receive Address Reply (AREP) if the requested address is already in use
    - similar to NS and NA for DAD in IPv6
  - Same Mechanism for both IPv4 and IPv6
- Limitation
  - Possibility of AREQ storm when MANET is merged

Draft-manet-singh-mmg-00.txt

- Scope
  - Global addressing and routing solution for hybrid MANET
- Basic mechanism
  - Gateway provides global prefix using modified NS/NA
  - Nodes assigns unique IPv6 address
  - Routes packet to the Internet using either routing header or tunneling
- Limitations
  - Supports only IPv6

(draft-jeong-adhoc-ip-addr-autoconf-04.txt)

- Step 1: Address Selection
  - How to select one of IP addresses in the address space?
    - Random Address Selection
- Step 2: Duplicate Address Detection
  - How to detect a duplicate address?
    - Hybrid DAD = Strong DAD + Weak DAD
- Step 3: Address Change Negotiation
  - Which node should perform a reallocation procedure?
    - Victim Node Selection
    - Address change indication similar to MIP binding update
- Step 4: Maintenance of Upper-layer Sessions
  - How to let an upper-layer session avoid a connection breakage?
    - Data delivery through IP tunneling