Simplified MAAP proposal

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Concerns

- Complexity introduced by server support
- Server support unproven since server behavior is unspecified
- Other issues

Server benefits

- Reduction in multicast traffic.
  - MAAP messages are small and infrequent.
  - MAAP multicast traffic is very small in comparison to traffic generated by transmission on the multicast address allocated by MAAP
- Potential improvement in time required to allocate a multicast address. Guess and check could take an indeterminate amount of time.
  - The layer 2 networks targeted by 1722 are presumably of limited scale.
  - Increasing the size of the allocation pool from 65,000 to, say, 16 million address would significantly improve performance
- Assignment persistence - same devices get same addresses
  - Protocol does not identify distinct applications on a single device
  - Persistence on the device is already encouraged
  - Server improves but does not guarantee persistence

Server issues

- Additional complexity
  - Protocol complexity
  - Server implementation
  - Merging networks
- Improper operation when multiple servers are (erroneously) present on the network
- Server behavior must be specified

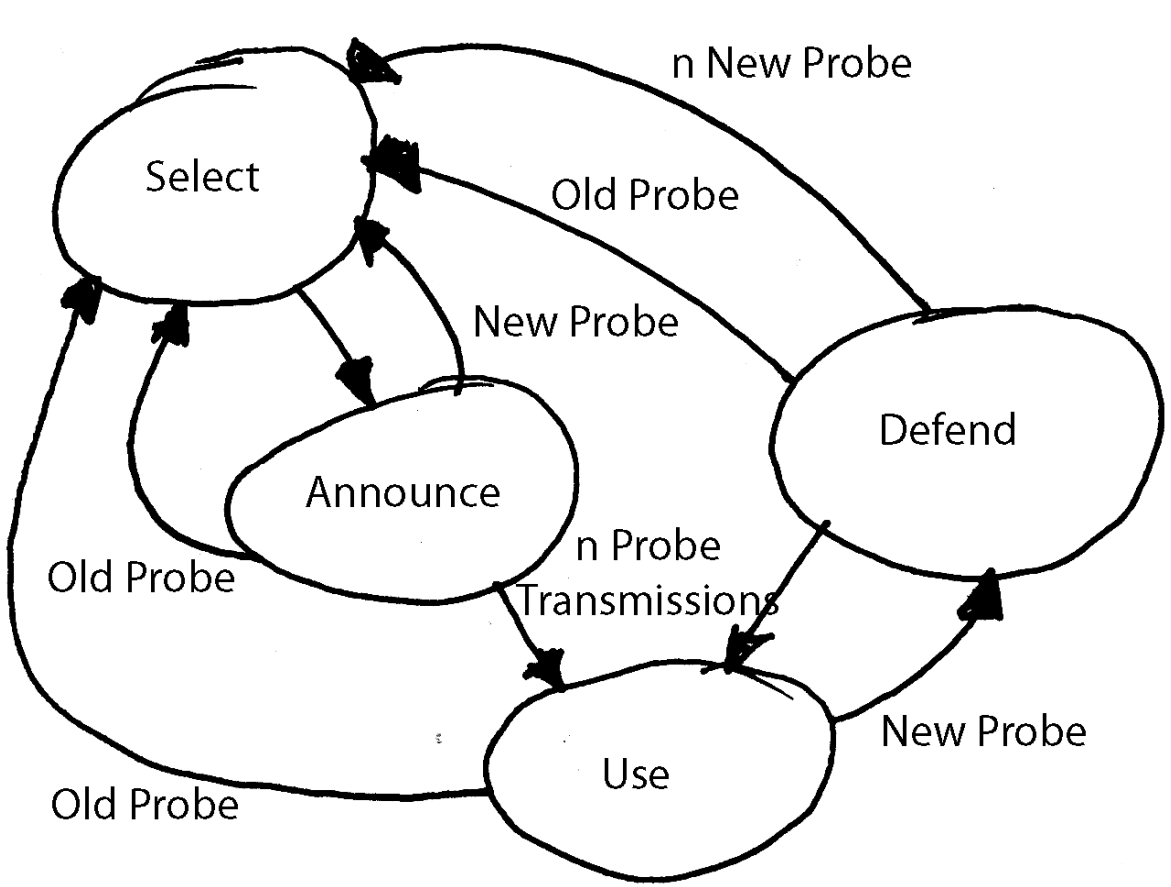
Other issues

- DEFEND_ALL causes multicast flury and is not a reliable discovery mechanism
- Justify distinct PROBE, DEFEND and ANNONCE messages
- Announce procedure does not address merged networks
- Justify need for explicit RELEASE
- Reliable communications to server

Proposal overview

- Single message type
- No server support
- 300-500 ms multicast address acquisition
- 10 s recovery on network merge

State diagram



State descriptions

- Select
  - Random or persistent selection of multicast address (range)
- Announce
  - Use **not** permitted
  - Transmit Probe at accelerated rate
  - Listen for overlapping Probe from others
    - Select
- Defend
  - Use permitted
  - Transmit Probe at accelerated rate
  - Listen for overlapping Probe from others
    - Select on Old or insistent new
- Use
  - Use permitted
  - Transmit Probe at nominal rate with variation
  - Listen for overlapping Probe from others
    - Defend

Probe message

Message_type – 16 bits
Age – 32 bits
Start_address – 48 bits
Count – 16 bits

Message_type

- Unnecessary with single message type
- Future new messages?
- Message updates?
- What to do on version mismatch?

Age

- Seconds since first Probe transmission
- Address allocation relinquished on receipt of overlapping Probe with equal or greater Age
  - With equal ages, both lose

Requested address

- Address range specification
  - Start_address
  - Count

Constants

- MAAP_PROBE_INTERVAL – 100 ms
- MAAP_PROBE_RETRIES – 3
- MAAP_ANNOUNCE_INTERVAL – 10 s
- MAAP_ANNOUNCE_VARIATION – 1 s

Releasing an address (range)

- Cease transmission of associated Probe messages

Merging or extending

- Announce/Defend with revised Probe
  - Expand range
  - Reset age to 0
- Separate Probe of extension
  - Merge in Run state
  - Use largest age