Mobile Agent Discovery Proxy (MADP) in IPv4 Mobility Management

draft-yao-mip4-mobile-agent-proxy-00.txt

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Background and Objectives

- In xDSL networks with WiFi extension, periodical transmission of Agent Advertisements (AA) by mobility agents is used by Mobile Nodes (MN) to detect movement.
  - the interval at which AAs are sent should not be long.

- Home Agents (HA) and Foreign Agents (FA) are located on or beside Edge Routers (ER) that usually serves thousands of MNs (typically between 2000 and 5000 in xDSL networks)

- Periodically multicasting AA to MNs in such a large link consumes a significant amount of the aggregation network bandwidth and CPU resources of ERs.

- A MADP can be set in access nodes to make the MNs detect movement fast meanwhile avoiding CPU and network bandwidth consumption
Summary of MADP draft (1/2)

• The MADP behaves as a proxy to the MNs regarding the Agent Discovery process.
  – MADP maintains mobility agents information locally (we name this locally information as “Cached Information”)
  – MADP transmits AAs to MN periodically on behalf of its HA/FA and responds to AS from MNs on behalf of its HA/FA.
  – MADP transmits AS when it needs them (e.g. at its startup, re-configuration, at the request of a MN if required)

• Loop Prevention
  – The MADP should be configured to know which of its interfaces is the upstream interface and which are downstream interfaces.
  – An AS received on the upstream interface should be silently dropped. An AA received on a downstream interface should be silently dropped.
Summary of MADP draft (2/2)

• MADP’s Cached Information includes:
  – All fields required to build valid AA messages for MNs that are consistent with mobility agents (HA/FA) information

• MADP maintains its Cached Information as following:
  – The Cached Information can be statically configured or dynamically received from upstream HA/FA solicited or unsolicited AA messages
  – If dynamically received from upstream HA/FA, there are two possible ways:
    – One is to retrieve Cached Information at its startup or re-configuration or on MADP’s demand
    – The other is to refresh Cached Information with a period relatively longer than the one that would be in use without MADP.
Next steps

• Request that the MADP draft becomes a
  WG Document

• Resolve upcoming comments
Thanks!

Any Comments?
Backup
Cached Information

- MADP’s Cached Information includes:
  - The Values in ICMP Router Advertisement fields of AA (specified in section 2.1 of [RFC3344]): ICMP Code, Lifetime, Router Address(es), Num Addr(s).
  - The values in Mobility Agent Advertisement Extension fields of AA
    - Length, Sequence Number, Registration Lifetime, "R" bit, "B" bit, "H" bit, "F" bit, "M" bit, "G" bit, "r" bit, "T" bit, "reserved" field, Care-of Address(es), the number of Care-of Addresses
  - The values in Prefix-Lengths Extension fields of AA
  - Mobile IP Agent Advertisement Challenge Extension as defined in [RFC4721]
Layer 3 handover needs fast movement detection. This detection cannot be done without AA information.
Basic Idea of MADP

MADP Agent Advertising function on behalf of ER

Reduce or remove Frequent AA multicast/broadcast in EMAN.