Multihoming Issues

Prepared for 57th IETF

By

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Drafts

- ## draft-ng-nemo-multihoming-issues-01
  - *From IETF56, need a more clearly organized multihoming taxonomy*
  - *Present multihoming taxonomy in NEMO*
  - *Discuss issues in multihoming of NEMO*
- ## draft-charbon-nemo-multihoming-evaluation-00
  - *Evaluate NEMO basic support on multihoming requirements*
  - *Missed IETF57 deadline*
  - *However, should be useful to discuss it here*

Mailing List Discussions

- Pascal first identified 4 problem categories

  - *See mailing list on "Multiple Egress vs multihoming"*

  - *Also in draft-ng-nemo-multihoming-issues-01.txt*

- Chan-Wah and Julien came up with 8 usage categories

  - *Categories are divided using (x,y,w)*

    - x differentiates single MR vs multiple MRs

    - y differentiates single HA vs multiple HAs

    - w differentiates single MNP vs multiple MNPs

  - *See draft-ng-nemo-multihoming-issues-01.txt*

- These are largely convergent, since by analyzing the usage scenarios, similar set of problems are identified

Issues (1/4)

- Registration of multiple CoAs
  - *More of a MIPv6 problem*
  - *Addressed by Wakikawa's multiple CoA draft*
- Registration of multiple MNPs
  - *Support already available in NEMO Basic Support*
  - *Need to identify how to combine multiple CoAs with multiple MNPs*

Issues (2/4)

- BU registration involving same HoA to multiple HAs
  - *MIPv6 specific?*
  - *Can HAs be in different domains?*

- Registration of one MNP to multiple HAs
  - *Suggestion to disallow this when the HAs belong to different administration domains*
    - Routing issues, ingress filtering

Issues (3/4)

- Indication of policy preferences
  - *There is a need for MR to indicate routing/policy preferences for*
    - Different MNPs
    - Different CoAs
    - Different HoAs
  - *Note that policy preference is tied to a (HoA, CoA) tuplet, which uniquely identifies an egress link*

Issues (4/4)

- # Fault Tolerance
  - *When egress interface of MR fails*
  - *Should use alternate path*
    - Ingress filtering problem when alternate path is through another HA at a different administrative domain (either another egress interface or another MR)
    - Otherwise, MNNs are forced to change their source address, and all current on-going TCP connections will fail

Eliminating Scenarios (1/ 2)

- **(1,0,0) : Multiple MRs, Single HA, Single Prefix**

  - *No special issue*

- **(1,0,1) : Multiple MRs, Single HA, Multiple Prefixes**

  - *No special issue*

- **(0,0,0) : Single MR, Single HA, Single Prefix**

  - *Multiple CoAs Registration (Need ID to each CoA)*

- **(0,0,1) : Single MR, Single HA, Multiple Prefixes**

  - *Multiple CoAs Registration (Need ID to each CoA)*

  - *Multiple MNPs Registration (Supported by Basic)*

Eliminating Scenarios (2/2)

·(0,1,0) : Single MR, Multiple HAs, Single Prefix

·(1,1,0) : Multiple MRs, Multiple HAs, Single Prefix

- *Acceptable for HAs to be in different domains?*

- *Suggestion to restrict to single domain*

·(0,1,1) : Single MR, Multiple HAs, Multiple Prefixes

·(1,1,1) : Multiple MRs, Multiple HAs, Multiple Prefixes

- *Possible to simplify support for this scenario by requiring each prefix to be registered to only one HA*

- *Problem of Fault Tolerance*

Moving Forward

- Multiple CoAs and MNPs Registration

  - *Introduce text in NEMO Basic Support how to incorporate multiple CoAs (with IFIDs) and multiple MNPs registrations?*

- Preference Indication

  - *Preference of CoA in BU (eg IFPRI)?*

  - *Preference in announced MNP?*

- Fault Tolerance

  - *Devise solution to enable fault tolerance that will overcome ingress filtering?*

- Status of this Multihoming document

  - *Accept this as a WG item?*