Problem Statement of Default Use Of RFC3484 Rules and Requirements for policy distribution #2

draft-ietf-v6ops-addr-select-ps
draft-ietf-v6ops-addr-select-req

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updates from previous version

• for problem statement draft
  – no additional comments from WG

• for requirements draft
  – Targeted for wider scope than that of RFC 3484
    • Requirements for distributing RFC3484 address selection policy
    • Requirements for the address selection mechanisms
  – Added some requirements discussed at San Diego
Revised requirements

1. The mechanism can modify RFC 3484 default address selection behavior.
2. Timing: Nodes can get address selection information when it is necessary.
3. Address selection behavior at nodes can be dynamically updated.
4. The mechanism can support host-specific address selection.
5. Application specific policy is supported.
   – This can be achieved in a combination with APIs.
6. Multiple I/Fs cases should be considered.
7. Node’s address selection behavior can be centrally controlled.
Next Step

• Any additional comments?
• Ready for WG last call?

• Then, let’s start to discuss about solutions.
Possible Approaches for Address Selection Problem

• Proactive Approach
  – Deliver Everything Needed At Once Approach
    • E.g. A host acquires RFC 3484 Policy Table
  – A Question and An Answer Approach
    • A host asks an Agent Server(e.g. a router) “which of my addresses is the best for a destination?”

• Reactive Approach
  – Try-and-Error Approach
    • An ICMP Error notifies the host of address mal-selection and the host stores cache in case for the next try.
  – All by Oneself Approach
    • Shim6: A host performs failure detection and address cycling
Proactive Approach 1/2

“Deliver Everything Needed At Once Approach”

• **Advantages** and **Disadvantages**
  – Per-connection overhead time can be minimized.
  – Traffic volume = # of policies * # of hosts in the network.
  – Hosts and Servers need to have this function support.
  – In a dynamically changing network traffic increases.

• **E.g.** “RFC 3484 Policy Table Delivery by DHCPv6”
  – draft-fujisaki-dhc-addr-select-opt-03.txt
  – OS needs no change if it has RFC 3484 Policy Table.
  – Both Dst. and src. address selections are supported.
  – Policies beyond Policy Table capability are not supported.
  – DHCPv6 isn’t suitable for frequent information update.
Proactive Approach 2/2
“A Question and An Answer Approach”

• **Advantages and Disadvantages**
  – Dynamically changing network status is easily reflected.
  – Both Dst. and src. address selections are supported.
  – Per-connection overhead process and time.
  – Host implementation needs a big change.
  – Every application also has to be modified.
    • Today, dst address selection at App, src at kernel.

• E.g. “Address Selection Agent Server”
  – No concrete specification yet.
Reactive Approach 1/2
“Try-and-Error Approach”

• An ICMP Error notifies the host of address mal-selection.
• The host stores cache in case for the next try.
• Advantages and Disadvantages
  – Can reflect dynamically changing routing status if cache lifetime works nicely.
  – Per destination host cache can be so big.
  – Host and Router needs to be changed.
  – There is not enough experience about this cache mechanism.
  – The user has to wait before finding working address pair.
• E.g. RFC3484-update by M. Bagnulo
Reactive Approach 2/2
“All by Oneself Approach”

• A host performs failure detection and address cycling
• E.g. Shim6
• **Advantages and Disadvantages**
  – Dynamic network failures between E2E can be reflected to address selection.
  – A session survivability supported.
  – No router modification needed.
  – The host implementation has to be changed significantly.
  – A User has to wait before finding working address pair. (?)
  – A host stores address selection cache per host.
  – Site address selection policy(TE) cannot be reflected. (?)
Next next step

• Any other solution?
• We will write a new draft for solution comparison.

• Thank you.