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.

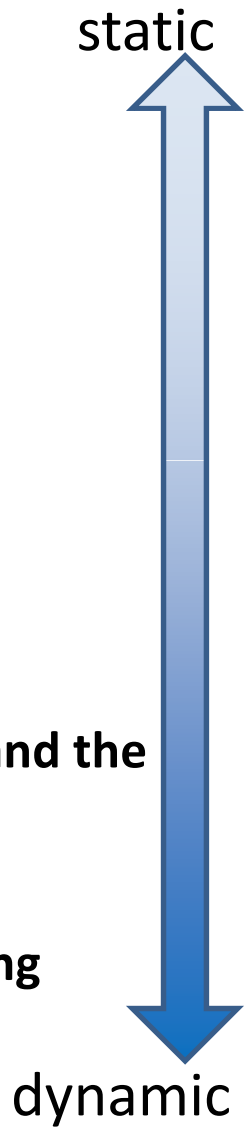
Next Step

- 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.