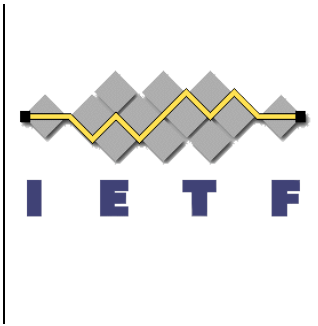


IPv6 Address Selection Considerations

Tim Chown (editor)
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(see draft for design team credits)

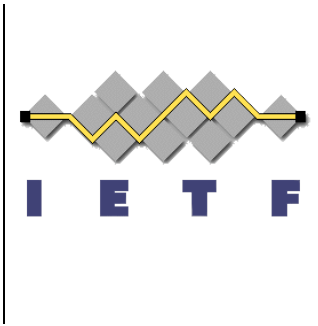


IETF 74, San Francisco, 22-27 March 2009



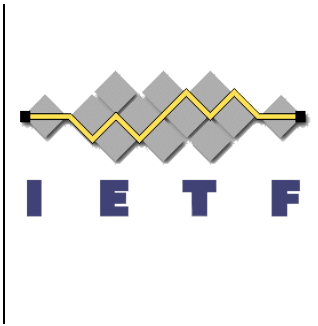
Scope of draft

- Looking at RFC3484 policy update requirements
 - Frequency – how dynamic?
 - Approaches/solutions given the frequency
 - Host detection/communication of policy changes
 - Potential RFC3484 ‘default’ rule/policy updates
- New draft available
 - draft-chown-addr-select-considerations-02
 - (output of the Design Team)



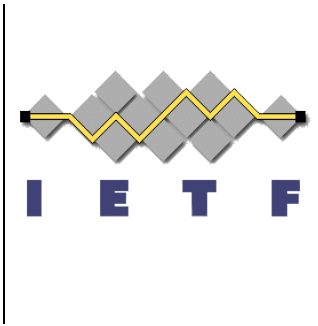
Current scenario focus

- Enterprise/site network
- Administrator wants to convey policy to hosts
 - Policy may be different to 'default' 3484 policy
 - May vary across site
 - By topology
 - By time
 - May have nomadic nodes within the site
 - Policy may change as nodes move within topology



Changes since -01

- The main changes are:
 - Included nomadic nodes within the site
 - Noted multiple interface (mif) issue
 - e.g. use of VPNs
 - Discussed possible policy conflicts
 - Due to host receiving policy information from multiple administrative domains
 - Initial text on push vs pull (dhc) solutions
 - Suggestion of 'default policy in use?' indicator
 - Noting that routing hints may be of value to hosts



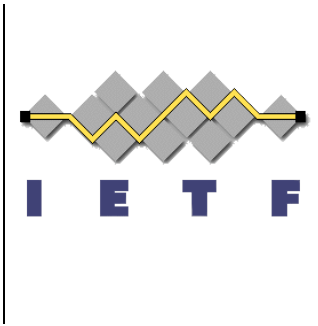
On frequency of updates

- Most triggers for policy changes are administrative
 - Application of new policy
 - Usually one-time (possibly phased across a large site)
- Frequency higher if many nomadic hosts
 - Depends then on how policy varies across a site (and how host detects that the policy has changed)
- Frequency higher if dynamic traffic engineering used
 - Then need to communicate policy in a timely manner



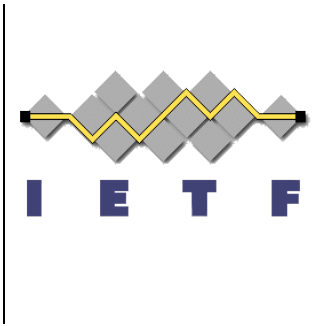
[IPv4 NAT/IPv6 transition?]

- An interesting issue raised this week in v6ops by
 - draft-denis-v6ops-nat-addrsel
- How to choose whether to use IPv4 NAT or IPv6 transition tools?
 - Host can use RFC1918+NAT for IPv4, or some IPv6 transition mechanism (e.g. Teredo)
 - Problem is scope of RFC1918 addresses that are translated by NATs is not global
- Implies need for a dynamic policy distribution tool to handle such a case
 - One that can be applied to typical usage environment



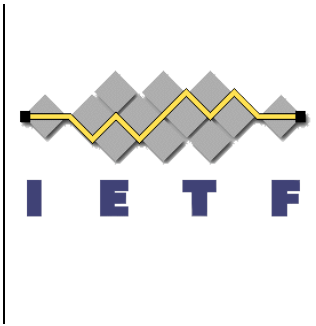
Questions for the WG

- A number of questions have arisen, for which the DT would like WG input, including:
 - Overlap with new mif BoF/WG
 - Considering multiple administrative domains
 - Policy conflicts
 - About the possible 3484 'default' update
 - Information from routing state
- A little more on these in the remaining slides...



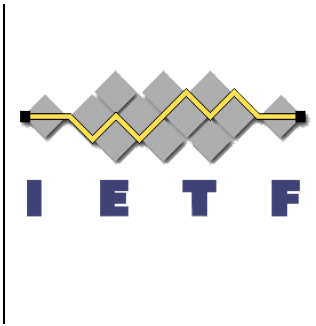
Relationship with mif?

- DT is focused on site/enterprise networks
- mif seems focused on mobile nodes
 - With multiple interfaces in use
- DT should ensure all scenarios considered
- Nodes in an enterprise may still receive policy information/updates over multiple interfaces, e.g.:
 - Nodes running VPNs to remote home network
 - Nodes with second (e.g. wireless) interface
- Propose to work separately at this stage
 - Possibly align efforts as mif firms up



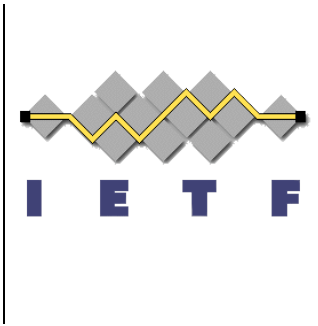
Multiple admin domains?

- Considering a single administrative domain would simplify work (minimising policy conflicts)
- In what cases does a host receive policy updates from two administrative domains?
 - VPNs
 - Multiple interfaces to multiple providers?
 - Possibly against site administrator's will
- If a site has multiple uplinks, hosts should receive consistent policy information
- Note that our chosen solution may affect the impact of being in multiple domains



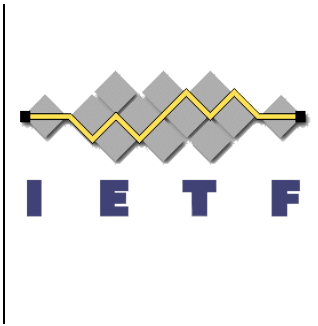
Policy conflicts

- If we accept multiple administrative domains as in scope, policy conflicts are likely
 - How do we prioritise them?
 - Do/can we sensibly merge them?
 - Perhaps one interface has higher priority?
 - Perhaps fall back to default policy if conflicting policies are observed?
- Note here that 3484 is currently node-specific



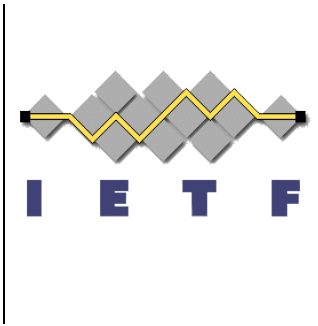
RFC3484 'default' update

- In principle we could use better general default rules for RFC3484
 - ULAs, Teredo, Rule 9, etc.
 - Policy table syntax updates
- Are we ready to proceed?
 - Undertake update in parallel?
- Or are use cases so variable that aiming for a 'better' set of defaults is flawed?
- Or do requirements arising here on dynamic policy mean we should wait?



Routing state information?

- Can we pass routing information to a host to assist its address selection decision?
 - Some early mif drafts in this space, using DHCPv6
- Impact on use of RFC3484?
 - Some mif drafts offer 3484 policy via DHCPv6, some offer routing information
- Do we really want hosts to hold this information?
 - There are potential benefits
 - But how do hosts gain access to current routing state information?



Next steps?

- Continue work on the draft
 - Adopt as WG item?
 - Include WG feedback on the open questions
- Ensure our focus is clear
- Agree whether a need for 3484 'default' update
 - Varying degrees possible
- Track mif activities
 - Possible sharing of effort later
- Take steps into solution space(s)
 - Analyse existing work in progress