Support for multiple provisioning domains in DHCPv6

draft-kkb-mpvd-dhcp-support-00

Suresh Krishnan, Jouni Korhonen, Shwetha Bhandari
Background

• During the most recent phase of discussion on the architecture document in the design team there was a work item to come up with strawman proposals for mpvd support in DHCPv6 and ND

• This presentation addresses the DHCPv6 extensions and the next one will address the ND protocol extensions
Goals

• Describe how to associate configuration information with provisioning domains
• Describe a mechanism for identifying provisioning domains
• Describe the authentication and authorization issues with the use of mPVDss
  – Generalize the issues and contribute to arch document (done)
  – Work on configuration protocol specific mechanisms
Basic concepts

• The basic construct for compartmentalizing the configuration information per PVD is realized using a container option
  – Encapsulates all configuration information pertaining to a given PVD
  – Multiple PVD containers can occur inside the same DHCPv6 message
    • The PVD identities need to be different though
Container option format

Figure 1: PVD Container Option
Identifying PVDs

• We wanted to have some flexibility on how we identify the PVDs
  – A one-size-fits-all approach didn’t seem too likely to be universally acceptable
  – Decided to use a mechanism where we can start of with a few well known types and register new ID types if needed later

• The PVD identity information is carried in a PVD ID option
  – Exactly one PVD ID per PVD container
PVD ID option format

<table>
<thead>
<tr>
<th>0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>+-------------------------------------------</td>
</tr>
<tr>
<td>OPTION_PVD_ID</td>
</tr>
<tr>
<td>+-------------------------------------------------</td>
</tr>
<tr>
<td>id-type</td>
</tr>
</tbody>
</table>
| +------------------------------------------------
| (variable length) |

Figure 2: PVD ID Option

- option-code: OPTION_PVD_ID (TBA2)
- option-length: Length of PVD identity information + 1
- id-type: Describes the type of identification information. This document defines four types of PVD identity information:
  - 0x01: UUID [RFC4122]
  - 0x02: UTF-8 string
  - 0x03: OID [OID]
  - 0x03: NAI Realm [RFC4282]

Further types can be added by IANA action.

- PVD identity information: The PVD identification that is based on the id-type.
Authentication/Authorization

• The PVD Auth option is a mechanism for tying the configuration information inside a container to the *original source* of the information
  – Not for authenticating the configuration source (i.e. the DHCPv6 server)

• Strive to use a common mechanism for DHCPv6 and RA
  – Propose to reuse mechanisms specified for SeND (RFC6494/RFC6495)
PVD Auth option format

Figure 3: PVD Auth Option
Features

• Backward compatible
  – Clients indicate support using an ORO
    • Legacy clients will not request this option
    • Legacy servers will ignore option

• Allows clients to request information for selected pvds by including one or more OPTION_PVD_IDs
  – Default is to provide info for all available PVDs
Next steps

• Work on Dmitry’s comments
• Work on the authentication/authorization piece further
• Other changes necessitated by arch document and charter discussions
• Get dhc working group review