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Identification of provisioning domains
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Abstract

The MIF working group is producing a solution to solve the issues that are associated with nodes that can be attached to multiple networks. This document describes several methods of generating identification information for provisioning them and a format for carrying such identification in configuration protocols.

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[1.](#) Introduction

The MIF working group is producing a solution to solve the issues that are associated with nodes that can be attached to multiple networks based on the Multiple Provisioning Domains (MPVD) architecture work [[RFC7556](#)]. This document describes a format for carrying identification information along with a few alternatives for reasonable sources for Provisioning Domain (PVD) identification. Since the PVD identities (PVD ID) are expected to be unique, the identification sources provide some level of uniqueness using either a hierarchical structure (e.g. FQDNs and OIDs) or some form of randomness (e.g. UUID and ULAs). Any source that does not provide either guaranteed or probabilistic uniqueness is probably not a good candidate for identifying provisioning domains.

[2.](#) Terminology

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [[RFC2119](#)].

[3.](#) Provisioning domain identity format

The identity of the PVD is independent of the configuration protocol used to communicate it. Furthermore, the PVD identity SHOULD only contain information related to the identification purposes and not encode additional provisioning domain specific configuration information. The configuration protocol used and its extensions are meant for that purpose [[I-D.ietf-mif-mpvd-dhcp-support](#)]

[[I-D.ietf-mif-mpvd-ndp-support](#)]. The PVD identity is formatted as follows.

```

      0               1               2               3
      0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
|  id-type   |  id-length   |                               |
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
+                               PVD identity information      +
+                               (variable length)              +
+-----+-----+-----+-----+-----+-----+-----+-----+

```

PVD ID Option

- o id-type: Describes the type of identification information.
This document defines six types of PVD identity information
 - 0x01: UUID [[RFC4122](#)]
 - 0x02: UTF-8 string
 - 0x03: OID [[OID](#)]
 - 0x04: NAI Realm [[RFC4282](#)]
 - 0x05: FQDN [[RFC1035](#)]
 - 0x06: ULA Prefix [[RFC4193](#)]
 Further types can be added by IANA action.
- o id-length: Length of the PVD identification in octets not including the id-type and id-length fields. The length of the PVD identity is dependent on the id-type and is defined by the document that specifies that kind of ID.
- o PVD identity information: The PVD identification that is based on the id-type. The format of the PVD identity is dependent on the id-type and is defined by the document that specifies that kind of ID.

4. Security Considerations

An attacker may attempt to modify the PVD identity provided in a configuration protocol. These attacks can be prevented by using the configuration protocol mechanisms such as SEND [[RFC3971](#)] and DHCPv6 AUTH option [[RFC3315](#)] that detect any form of tampering with the configuration.

A compromised configuration source, on the other hand, cannot easily be detected by a configuration client. The only real way to avoid this is that the PVD identification is directly associable to some form of authentication and authorization information from the owner

of the PVD (e.g. an FQDN can be associated with a DANE cert). Then, this attack can be detected by the client by verifying the authentication and authorization information provided inside the PVD container option (such as the OPTION_PVD_AUTH inside OPTION_PVD [[I-D.ietf-mif-mpvd-dhcp-support](#)] or the Key Hash and Digital Signature inside PVD_CO [[I-D.ietf-mif-mpvd-ndp-support](#)]) verifying its trust towards the PVD owner (e.g. a certificate with a well-known /common trust anchor that).

5. IANA Considerations

This document creates a new registry for PVD id types. The initial values are listed below

0x01: UUID [[RFC4122](#)]
0x02: UTF-8 string
0x03: OID [[OID](#)]
0x04: NAI Realm [[RFC4282](#)]
0x05: FQDN [[RFC1035](#)]
0x06: ULA Prefix [[RFC4193](#)]

6. Acknowledgements

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