Captive Portals over PvD
draft-bruneau-intarea-provisioning-domains

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CAPPORT
IETF 99, July 2017, Prague
Review of PvD Document

Provisioning Domains (PvDs) are **consistent sets of network properties** that can be implicit, or advertised explicitly.

Explicit PvD is advertised as an FQDN in a **Router Advertisement** option.

Additional PvD information is provided as **JSON** via an **HTTPS** request.

Captive Portal properties can be added to JSON.
What are the options for captive portal discovery and interaction?
Flow Examples

Status Quo

**Host**

**With Captivity**
- Send Probe
- User Portal Interaction
- User Requests

**Network**
- DHCP/RA
- Redirect to Captive Portal
- Portal Complete
- Pass Requests

**Without Captivity**
- Send Probe
- User Requests
- Pass Probe
- Pass Requests
Flow Examples

Status Quo

**Host**

With Captivity:

- Send Probe
- User Requests

Without Captivity:

- Send Probe
- User Requests

**Network**

DHCP/RA

Redirect to Captive Portal

Portal Complete

Pass Requests

**Discovery**

- Requires probe with or without captivity
- No updates of captivity changes
- Relies on redirects of what look like user requests
- No support for non-browser clients
## Flow Examples

**RFC 7710**

### With Captivity

<table>
<thead>
<tr>
<th>Host</th>
<th>Network</th>
</tr>
</thead>
<tbody>
<tr>
<td>Request Captive URI</td>
<td>DHCP/RA + Captive URI</td>
</tr>
<tr>
<td>User Portal Interaction</td>
<td>Send Captive Portal</td>
</tr>
<tr>
<td>User Requests</td>
<td>Portal Complete</td>
</tr>
<tr>
<td></td>
<td>Pass Requests</td>
</tr>
</tbody>
</table>

### Without Captivity

<table>
<thead>
<tr>
<th>Host</th>
<th>Network</th>
</tr>
</thead>
<tbody>
<tr>
<td>Send Probe</td>
<td>Pass Probe</td>
</tr>
<tr>
<td>User Requests</td>
<td>Pass Requests</td>
</tr>
</tbody>
</table>
Flow Examples
RFC 7710

With Captivity

Request Captive URI

- Explicit URI of Captive Portal provided, so no redirect
- No updates of captivity changes
- Requires probe if no URI is provided
- No JSON API or support for non-browser clients

Without Captivity

User Requests

Send Probe

Pass Probe

User Requests

Pass Requests

Host

Network

Discovery
Interaction
Flow Examples
RFC 7710 + ICMP

With Captivity

Request Captive URI
✓ Explicit URI of Captive Portal provided, so no redirect
✓ Updates to captivity can be sent through ICMP
✗ Requires probe if no URI is provided

Without Captivity

User Requests
✗ No JSON API or support for non-browser clients

Host

Network

DHCP/RA + Captive URI

Send Captive Portal
Portal Complete
Pass Requests

Send Probe
Pass Probe
Pass Requests

Discovery
Interaction
Flow Examples

PvD

Without Captivity (with PvD URI)

Host

- Request PvD URI

Network

- DHCP/RA + PvD ID & URI
- Send PvD JSON

User Requests

Pass Requests
Flow Examples

PvD

Host

Without Captivity (with PvD URI)

Request PvD URI

DHCP/RA + PvD ID & URI

Send PvD JSON

Network

✓ No captive probe needed
✓ Other network properties are conveyed through PvD

User Requests

Pass Requests

PvDs - CAPPORT - T. Pauly, Apple - IETF 99
Flow Examples

PvD

Without Captivity (without PvD URI)

Host

Network

User Requests

DHCP/RA + PvD ID

Pass Requests
Flow Examples

**PvD**

<table>
<thead>
<tr>
<th>Host</th>
<th>Network</th>
</tr>
</thead>
<tbody>
<tr>
<td>Without Captivity (without PvD URI)</td>
<td>DHCP/RA + PvD ID</td>
</tr>
<tr>
<td>User Requests</td>
<td>Pass Requests</td>
</tr>
</tbody>
</table>

- ✓ No captive probe needed
- ✓ No extra HTTPS/JSON for basic PvDs
Flow Examples
PvD

Host

Network

With Captivity as Separate URI

Request PvD URI

Request Captive URI

User Portal Interaction

User Requests

DHCP/RA + PvD ID & URI

Send PvD JSON

Send Captive Portal

Portal Complete

Pass Requests

Discovery
Interaction
Flow Examples
PvD

Host

Network

With Captivity as Built-In Interaction

Request PvD URI

System Portal Interaction

User Requests

DHCP/RA + PvD ID & URI

Send PvD JSON

Portal Complete

Pass Requests

Discovery
Interaction
Flow Examples

PvD

Host

Network

With Captivity as Built-In Interaction

Request PvD URI

DHCP/RA + PvD ID

System Portal Interaction

Portal Complete

Send PvD JSON

Pass Requests

User Requests

Explicit URI of Captive Portal provided, so no redirect

✓ No probes needed for non-captive PvD networks

✓ Supports non-browser clients

? Updates to captivity based on JSON API + tokens
Making the Captive experience better

• **Indicate that there isn’t a portal.** An explicit PvD that doesn’t mark captivity MUST NOT be a captive network.

• **Bootstrap system-level interaction.** Discovery needs to be able to point to an JSON API server, not just a webpage. This JSON API should handle lifetimes, updates, tokens, etc.

• **Separating discovery from interaction** is key.
Concerns

• What about lying PvDs?
  If a PvD claims to not be captive and is, then we are in the same case as a network that passes probes but blocks other traffic.
  If a PvD advertises a portal that isn’t there, it will be skipped.
  If a PvD has a valid portal but doesn’t block, it’s not bad.

• Where is the PvD server located? Is it too broad?
  For captive networks, the JSON can/should be served from the same location as the traditional captive portal
How should Captive Portal info be represented in PvD JSON?
Options to Embed Captive in PvD
Multiple choice, choose one or more!

• Provide URI of traditional Captive HTTP Portal
• Provide URI of new Captive JSON Server
• Extend PvD JSON with Captive JSON