A Reference Model for Autonomic Networking

draft-ietf-anima-reference-model-02.txt

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Reference Model – High Level View

Network with autonomic functions

Autonomic Networking Infrastructure:
GRASP, Bootstrap, ACP, Naming, Addressing, Discovery

Base infra: Every node must support

Pre-set ID

Domain ID

AutoS

AutoS

AutoS

AutoS

Registrar

AutoS

AutoS

AutoS

AutoS

ASAs deployed as needed
Changes from -01:
New section on ASA life cycle management

• New section 7.2; key points:
  • ASAs will come from different organisations, have different objectives
    • Therefore: Need an agreed management model
  • Life cycle: Install, deploy, control
  • Describe interactions between ASA and ANI in different states
    • Self-description: Needed for ASA management
    • Control the execution (at least “start” and “stop”)

• Added Pierre Peloso as co-author.
Changes from -01: Simplified Naming Section

• “Should” assign a unique name
• Consistent scheme within a domain
• Typically assigned by registrar
• Persistent

• Default naming scheme:
  • <registrar-part>-<device number>
  • Example: 0123-4567-89ab-0001
Changes from -01: Intent Distribution

• Marked with a (*) → Not part of current charter
• Mostly a re-write, high-level only

• Intent distribution is part of the ANI
• Should change infrequently (order of days)
• Should flood to all nodes
• No need for targeted distribution models for now
• Monolithic: Flooded as a whole
Changes from -01:
Other

• Intent section shortened
• updated / added references
• Some re-ordering
• Other editorial changes
Adjacency Table

• Information about adjacent nodes
  • “Note down what you see” – no judgement yet!
• Used to control autonomic processes, such as constructing the ACP, bootstrapping, etc.

<table>
<thead>
<tr>
<th>Node-ID</th>
<th>i/f</th>
<th>Link address</th>
<th>ACP address</th>
<th>Domain</th>
<th>Certificate</th>
<th>Validity</th>
<th>Trust</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;UDI-1&gt;</td>
<td>Eth0</td>
<td>FE80:...</td>
<td>FD...</td>
<td>Example.com</td>
<td>&lt;cert-info&gt;</td>
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<td>Full (In domain)</td>
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<tr>
<td>&lt;UDI-2&gt;</td>
<td>Eth1</td>
<td>FE80:...</td>
<td>-</td>
<td>Example1.com</td>
<td>&lt;cert-info&gt;</td>
<td>valid</td>
<td>No</td>
</tr>
<tr>
<td>&lt;UDI-3&gt;</td>
<td>-</td>
<td>2000:...</td>
<td>FD...</td>
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<td>Valid</td>
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</tr>
<tr>
<td>&lt;UDI-4&gt;</td>
<td>Eth2</td>
<td>FE80:...</td>
<td>-</td>
<td>-</td>
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# Feeding the Adjacency Table

## AN discovery (local)

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## AN discovery (cloud redirect)

## Non-autonomic inputs:
- Configured adjacencies
- DHCP options for AN
- DNS based
- ... 

| draft-ietf-anima-grasp | draft-ietf-anima-bootstrapping-keyinfra-00 section-5.3 or Reference model ?? |

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*draft-ietf-anima-reference-model-02.txt*
## Using the Adjacency Table

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- **draft-ietf-anima-bootstrapping-keyinfra-00 section-3.2**
- **draft-ietf-anima-bootstrapping-keyinfra-00 section-3.1**
- **draft-ietf-anima-autonomic-control-plane Section 5.1**
- **Outside scope for now.**

- **Node has no domain**
  - And I have domain
  - Be a proxy to bootstrap that node

- **Node has domain**
  - And I don’t have domain
  - I bootstrap

- **Node has same domain**
  - Build ACP
  - Add ACP parameters to table

If response = “redirect”

- Enter the redirect target into adjacency table; use this node to bootstrap.

ACP based functions, e.g,
- Intent distribution, negotiation,
- Synchronisation, etc.

**Intent driven behaviour (tbd)**
Open Issues: Re-Work of ASA Section

- Some input already received (mostly Brian)
- Feedback after more implementation experience.

7. Autonomic Service Agents (ASA)
   7.1. General Description of an ASA
   7.2. ASA Life-Cycle Management
   7.3. Specific ASAs for the Enrolment Process
      7.3.1. The Enrolment ASA
      7.3.2. The Enrolment Proxy ASA
      7.3.3. The Registrar ASA
Open Issues

• Bring all future items into a single section?
  • Several people in favour, one suggested even an appendix.
  • But: Then sections are out of context (ex: security).
  • Still thinking... More feedback, please!
Open Issue:
Relationship ASA / Autonomic Function

• Needs to be more clearly formalised.