

**Generic Discovery and Negotiation
Protocol for Autonomic Networking**
**draft-carpenter-anima-gdn-
protocol-00**

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Three main parts

1. Requirements

2. Capability of existing protocols

3. A protocol design

- These slides focus on the requirements.
- Other suggestions for existing protocols to review are welcome (on the list please).
- The design is a proof of concept. Details could all change. Comments welcome (on the list).
- Detailed comparison with existing protocols including HNCP remains to be done.

Specific terminology

- Discovery: device discovers other devices that can handle a specific objective.
- Negotiation: devices interact to agree on settings that satisfy objectives of one or more devices.
 - State Synchronization: devices interact to agree on state of stored parameters. Not yet developed in the draft.
- Discovery Objective, Negotiation Objective: specific content (parameter) to be discovered or negotiated.
- Device Identifier: associated with a public key trusted within the AN domain.

Requirements for Discovery

- When a device starts up, assume it has no information about any peers.
- It might be necessary to set up resources and update security settings on multiple other devices.
- There must be a mechanism for a device to discover peers, either on the same layer 2 link or only accessible via layer 3.
- Relevant peer devices may be different for different discovery objectives, so discovery needs to be repeated to find counterparts for each objective .
 - Often, negotiation follows discovery, and the objectives correspond.
- Two special cases: discovering hierarchical superior & discovering the AN trust anchor.

Requirements for Negotiation (1)

- Autonomic networks need to manage everything. A basic requirement is therefore the ability to represent, discover, synchronize and negotiate any kind of network parameter.
- The protocol must be installable in any device that would otherwise need human intervention.
- The protocol must be installable in any device that would otherwise be managed by an NMS, and it must co-exist with an NMS.
- Absent human intervention, the network must "think ahead" before changing parameters. So the protocol must support a "dry run" or "try before buy" mode.

Requirements for Negotiation (2)

- Able to support parameter request/response exchanges, until negotiation ends.
- Able to detect unexpected events such a peer failing, to initiate recovery.
- Either an explicit information model describing protocol messages, or at least a flexible and extensible message format.
 - Adopt an existing information model?
 - Carry message formats used by existing configuration protocols?
- Secure against forged messages, DOS and eavesdropping.

Discussion please