Updates: Information Distribution in Autonomic Networking

draft-ietf-anima-grasp-distribution-02-03

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Recall: Draft Content and Scope

- **GRASP Basic:** Discovery/Negotiation/Sync
- **GRASP Extension:** Unsolicited Sync/Sub-Pub

**Specific ASAs**
(IGP-config/VPN-config/Slicing etc.)

**ASA APIs**

**Infrastructure ASAs**
- ASA Lifecycle Management
- ASA Conflict

**Information Distribution**
- Selective Flooding
- Event Queue
- Data Storage

**GRASP APIs**

**GRASP Protocol Stack**

- Our draft
Recall (since IETF’107)

- Adopted as a working group document in Feb. 2020
  - A “version-00” was uploaded
- Collected all comments in the mailing list, included in version-00 as open issues in Appendix A:
  - More reference to the use cases in the introduction
    - Better explanation of the required context of the Connected-Car
    - Consider use-case/example of firmware update
  - Rethink/refine terminology,
    - e.g.: "module“ seems to be too prescriptive
    - better match/reuse-the established terminology from the pre-existing ANIMA documents
  - Provide more protocol behavior description instead of only implementation / software module architecture description
  - Etc.
Major Changes (since IETF’108) – ‘00’→’01’

- Integrated “draft-carpenter-anima-grasp-bulk-05”

- Consider **bulk** information distribution in ANI
  - Information that cannot be transferred at once
Major Changes (since IETF’109) – ‘01’ → ’02’

- Focused on addressing comments about “Use Cases”:

1. More reference to the use cases in the introduction.

2. Better explanation of the required context of the Connected-Car case: Not applicable unless the ACP will be extended to the car, which may not be desirable with the current ACP design, but maybe refocusing on an "autonomous fleet" use-case (e.g.: all cars operated by some taxi like service).

3. Consider use-case/example of firmware update. By abstracting the location of the firmware from the name of the firmware, while providing a way to notify about it, this significantly supports distribution of firmware updates. References to SUIT would appropriate.

8. Consider moving examples from appendices into core-text. Ideally craft a single use-case showing/applying all extensions (most simple use case that uses them all).
Major Changes (since IETF’109) – ‘02’ → ’03’

- Authors change: Xun Xiao took as 1st author (Bing Liu as 2nd)
- Still focused on polishing “Use Cases” and “Requirements”:

1. More reference to the use cases in the introduction.

2. Better explanation of the required context of the Connected-Car case: Not applicable unless the ACP will be extended to the car, which may not be desirable with the current ACP design, but maybe refocusing on an "autonomous fleet" use-case (e.g.: all cars operated by some taxi like service).

3. Consider use-case/example of firmware update. By abstracting the location of the firmware from the name of the firmware, while providing a way to notify about it, this significantly supports distribution of firmware updates. References to SUIT would appropriate.

8. Consider moving examples from appendices into core-text. Ideally craft a single use-case showing/applying all extensions (most simple use case that uses them all).
Major Changes (since IETF’109) – ‘01’→’02’

- Focused on addressing comments about “Use Cases”:
  - Moved “Use Cases” appendix to core text
  - Completely revised the V2X use cases – referring 5GAA whitepaper
    - **Real-time HD Maps**: real-time information stored in the network and distributed on-demand
    - **In-car Infotainment**: QoS-guaranteed data streaming services, related to edge services
    - Software Updates
  - Added a new use case – **distributed computing applications**
    - AFs on autonomic nodes may have to process local data (e.g. data training, 3D rendering and so on)
    - Data privacy considerations
  - 3GPP SBA Extension remains
Major Changes (since IETF’110) – ‘02’ → ’03’

- Focused on addressing comments about “Use Cases”:
  
  - **Changed** use case – distributed computing to **in-network computing (INC)**:
    - Better match current situations / examples
    - Better generalize the requirements of most application scenarios

  - Requirements of INC use cases:
    - Data backup
    - Data aggregation
    - ...
    - ...

  - ...
Major Changes (since IETF’110) – ‘02’ → ‘03’

- Info. Dist. for INC use cases:

  - Info. Dist. Should consider how to support *Data Backup*:
    - Master-Slave sync.
    - Keep slave nodes up-to-date
  - Examples:
    - Core Network NF Set

  - Info. Dist. Should consider how to support *Data Aggregation*:
    - Data generated at different places have to be “federated”
    - Exchange rules for data aggregation
  - Examples:
    - Derived neural network parameters via dist. AI training

→ Should Info. Dist. Consider “consensus” among AFs?
Future Work

- Further update the current text
- We will focus on other set of comments to prepare the next version ‘-04’
- After two more updates, submit to external review?
Thank You

IETF111-Virtual from Munich, Germany