

Distributed Mobility Management (DMM) WG

DMM Work Item:
Forwarding Path & Signaling Management
(FPSM)

draft-ietf-dmm-fpc-cpdp-01.txt

IETF93, Prague

2015-07-20

Outline

- ❑ Functional Architecture
- ❑ Current Status
- ❑ Known open items
- ❑ Discussion items
- ❑ Next steps

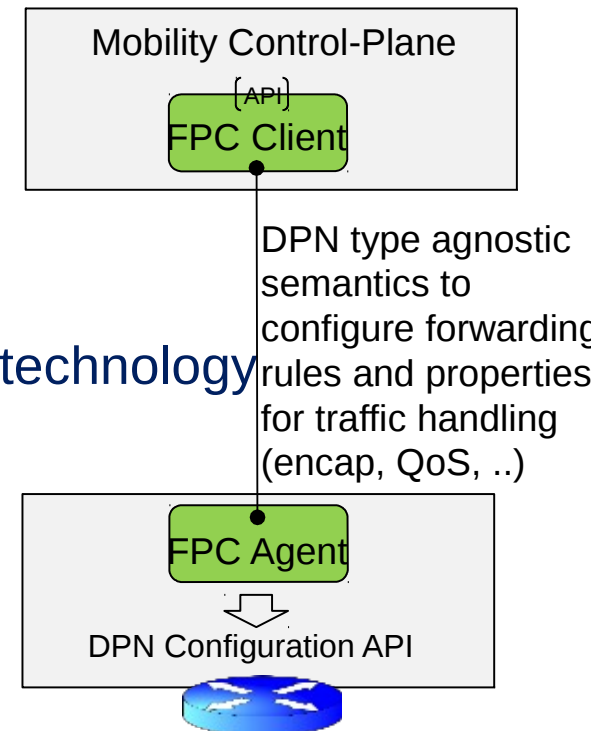
Functional Architecture

❑ Client Function – Associated with Mobility Control-Plane

- Mobility Control-Plane utilizes Client function to configure Data-Plane nodes (DPN) to serve as mobile Data-Plane (mobility anchor, mobile access gateway, ..)
- Client uses messages, attributes and the operation as per this specification to communicate with Agent
- Client can connect to multiple Agents

❑ Agent Function

- Agent can be installed on Router, Switch or Network Controller
- Applies common protocol semantics to DPN-technology specific configuration API
- Agent can connect to multiple Clients



Current Status

Mature information

- ❑ Functional Architecture
- ❑ Information model
 - Messages, identifiers, attributes
- ❑ Protocol operation
- ❑ Experimental Yang Data Model in the appendix
- ❑ Traffic descriptors
 - Destination IP (prefix)
 - Source IP (prefix)
 - Traffic Selector
- ❑ Forwarding policies
 - Encapsulation (IPIP, GRE, GTP-U)
 - IP address and port re-write
 - QoS (QoS class index, DSCP marking, (A)MBR, GBR)
 - Next Hop IP address

Current Status

Needs more discussion/details

❑ Event Handling

- Event registration and description of monitoring policies (Client→Agent)
- Probe of monitored information (Client→Agent)
- Reporting of monitored information (Agent→Client)
 - Based on Probe or Event Trigger

❑ Query

- Request to update (missing) policy/forwarding information (Agent→Client)
 - Example: MN's idle mode may result in outdated policies/states in the Data-Plane

Known open items

Event Registration / Deregistration

- ❑ Objective: Client can request Agent to monitor status/statistics
 - Example: load, aggregated/per-flow traffic volume

- ❑ Status can be probed from Client or reported by Agent
- ❑ Event registration must convey monitoring and reporting rules
 - Event trigger condition
 - Condition for termination of monitoring
 - after single event trigger, duration, explicit event deregistration

Proposal:

- ❑ Add new message: EVENT_DEREG (Client→Agent)
- ❑ Add example about supported use case
- ❑ Add detailed attributes
 - monitored data description
 - trigger condition
 - reporting format and policy

Discussion items

Re-synchronization of Client-Agent pair

- Objective: Client can retrieve configuration from Agent
- Reasons: (partial) failure of Client, out-of-sync Client, Client needs to confirm Agent is in-sync

Proposal:

- New message: SEND_ALL_PORTS (Client→Agent)
- Agent returns all ports configuration using NOTIFY message

Options to consider:

- Single NOTIFY message per port configuration?
- Reduce Control-Plane costs: Define bulk operation, where NOTIFY can group multiple configurations within a single NOTIFY message
- Last NOTIFY message must indicate End of Story..

Discussion items

Re-configuration of Agent

- ❑ Objective: Client can re-configure Agent with minimal disruption
- ❑ Reasons: (partial) failure of Client, out-of-sync Client

Proposal:

- ❑ New messages: PRT_RECONF, END_RECONF (Client→Agent)
- ❑ Client send all ports configuration to Client
- ❑ End of re-configuration signaled by END_RECONF

Agent behaviour:

- ❑ Agent updates configuration (updated properties, new port configuration) in case of mismatch with Agent's configuration
- ❑ Agent ignores port re-configuration in case of match with Agent's configuration

Options to consider:

- ❑ Grouping of multiple re-configuration attributes in single PRT_RECONF

Discussion items

Agent requests re-configuration

- ❑ Objective: Agent can request re-configuration
- ❑ Reasons: (partial) failure of Agent, out-of-sync Agent

Proposal:

- ❑ New messages: REQ_RECONF (Agent→Client)
- ❑ Agent can request re-configuration of all ports

Discussion items

Reliable protocol operation

- ❑ Objective: Include ACK/NACK + Status info into protocol operation
- ❑ Reason: Processing of message may fail
 - Example: PRT_DEL deletes a port which is not configured on Agent

Proposal:

- ❑ Mandate protocol feedback from implementations
- ❑ Add Protocol message Acknowledgements to Protocol Operation section
- ❑ Add new section about Status Info/Code

Discussion items

Exception handling

- ❑ Objective: Behavior of Client/Agent in case of exceptions

Proposal:

- ❑ Current section Protocol Operation (Sec. 4.3) describes messages and attributes in detail
 - Move this part into Protocol Messages (Sec. 4.1) and Protocol Attributes (Sec. 4.2) resp.
- ❑ Add new Section Protocol Operation, which describes Client/Agent behaviour
- ❑ Include description of exceptions and Client/Agent

Discussion items

Identifier format Client/Agent

- ❑ Objective: Identifier structured to tag Functional Element, Network and Carrier (Administrative domain)
- ❑ Clarification:
 - Functional Element: Identifies the Client/Agent within the same network (32bit)
 - Network: Identifies network where the Client/Agent is deployed (16-bit)
 - Carrier: Identifies the administrative domain to which the network of the Client/Agent belongs to (16-bit)
- ❑ Identification of Carrier is required only in case Client-Agent-association between different carriers
- ❑ Options for Carrier tag format
 - Currently 32bit (to address the comment from Laurent)
 - Adopt standardized identifier format

Discussion items

Client or Agent assigns Identifier for ports and properties

- ❑ Current assumption: Client assigned identifiers to ports and properties
 - Agent must unambiguously assign port configuration to associated Client

- ❑ Alternative option to consider: Agent assigns identifiers to ports and properties

Discussion items

Grouping configuration of multiple ports into single message

- ❑ Objective: Single message can carry multiple configurations to reduce signaling costs
- ❑ Issue: Unambiguous identification of configuration which belongs to the same port
- ❑ Options to group multiple ports configurations
 - Nested TLV
 - Dedicated group message: GRP_PRT_ADD (Client->Agent)
 - Container to identify port and group properties + rules
 - ..

Discussion items

Definition of Type-Length-Value format for attributes

- ❑ Objective: Interoperability on protocol and C-Plane Functional level

Proposal:

- ❑ Add TLV format for all attributes to this specification

Next Steps

- ❑ Continue discussion during this week
 - Let's try to get a room and whiteboard
- ❑ Resolve open items
- ❑ Decision on discussion items / proposed options
- ❑ Get the core part (messages, attributes, protocol operation) mature by e.o. Sept 2015