Diameter QoS Attributes and Diameter Qos Parameters

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References
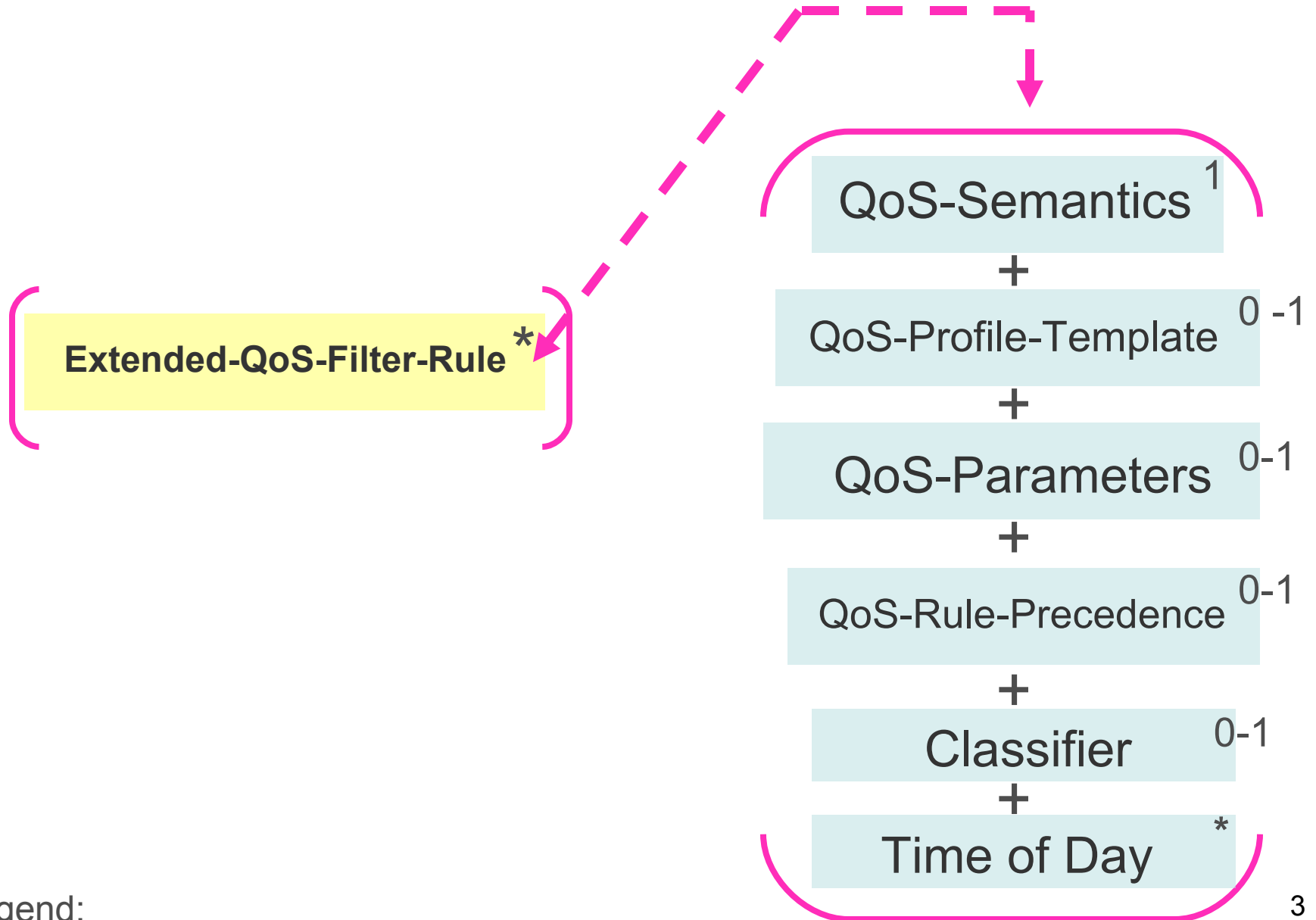
- QoS Attributes (Actions)

  http://tools.ietf.org/html/draft-ietf-dime-qos-attributes

- QoS Parameters (values)

  http://tools.ietf.org/html/draft-ietf-dime-qos-parameters

QoS-Resources*

Extended-QoS-Filter-Rule *

QoS-Semantics ^{1}

+

QoS-Profile-Template $^{0-1}$

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QoS-Parameters $^{0-1}$

+

QoS-Rule-Precedence $^{0-1}$

+

Classifier $^{0-1}$

+

Time of Day *

Legend:
*: May appear more than once

3

Extended QoS-Filter

- QoS-Semantics (QoS-Desired, QoS-Available, Minimum QoS)
- QoS-Precedence rules(execution order of the rules present in QoS-Resources)
- Classifier (classifies the packets for treatment [From, to direction, Ip options etc])
- QoS-Template (the template of the Qos-parameters)
- QoS-Parameters (http://tools.ietf.org/html/draft-ietf-dime-qos-|)
- Time-of-Day

Example 1
Semantic

- AAA server provides QoS information for a particular end host to the NAS

- Subsequent signaling is necessary to activate the QoS parameters.

- The example should indicate that the user is allowed to consume X/sec

Example 1
Message flow

```
End                                          Diameter
Host                 NAS                      Server
 |                    |                         |
 |                    |                         |
 |  QoS Request       |                         |
 +------------------> |                         |
 |                    |                         |
 |                    |AA-Request               |
 |                    |Auth-Request-Type=AUTHORIZE_ONLY
 |                    |NASREQ-Payload           |
 |                    |QoS-Resources(QoS-Desired)|
 |                    +------------------------------------------->|
 |                    |                         |
 |                    |              AA-Answer  |
 |                    |        NASREQ-Payload(Success)|
 |                    |     QoS-Resources(QoS-Authorized)|
 |                    |<-------------------------------------------+
 |  Accept            |                         |
 |<------------------+                          |
 |                    |                         |
```

Example 1
QoS-Parameter content

```
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|1|0|0|0|           1              |r|r|r|r|           4          |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|   TMOD Rate-1 [r] (32-bit IEEE floating point number)          |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|   TMOD Size-1 [b] (32-bit IEEE floating point number)          |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|   Peak Data Rate-1 [p] (32-bit IEEE floating point number)     |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|   Minimum Policed Unit-1 [m] (32-bit unsigned integer)         |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
```
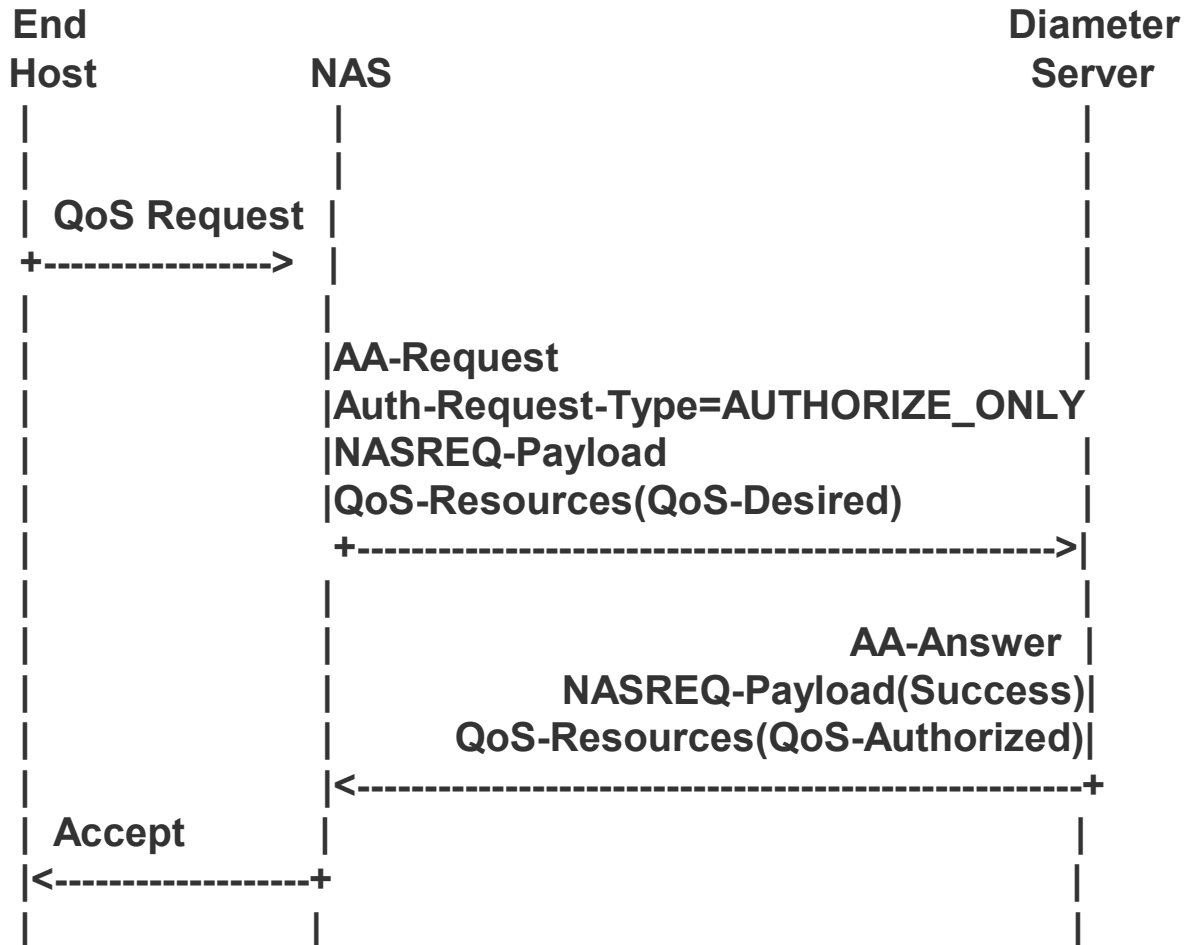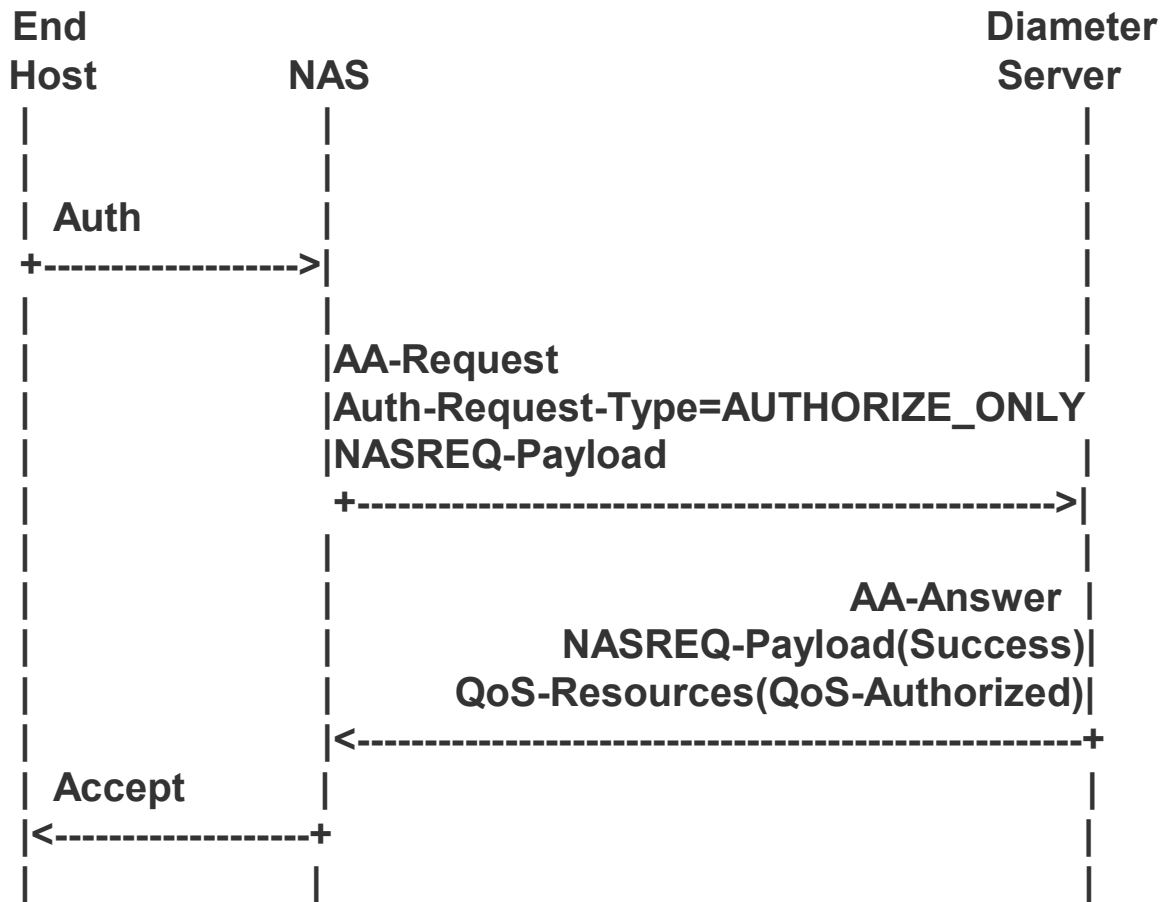
Example 2 Semantic

- AAA server provides QoS information for a particular end host to the NAS

- No signaling is necessary for the end host

- Examples indicates that a particular user is allowed to consume a certain uplink and downlink bandwidth

Example 2
Description

```
End                                              Diameter
Host              NAS                             Server
 |                 |                                |
 |                 |                                |
 | Auth            |                                |
 +---------------->|                                |
 |                 |                                |
 |                 |AA-Request                      |
 |                 |Auth-Request-Type=AUTHORIZE_ONLY|
 |                 |NASREQ-Payload                  |
 |                 +------------------------------->|
 |                 |                                |
 |                 |                     AA-Answer  |
 |                 |           NASREQ-Payload(Success)|
 |                 |        QoS-Resources(QoS-Authorized)|
 |                 |<-------------------------------+
 | Accept          |                                |
 |<----------------+                                |
 |                 |                                |
```

Example 2 Description

- **Extended-QoS-Filter-Rule**
  - **QoS-ID** = 1
  - **Direction = upstream**
  - **QoS-ObjectType = QoS-Authorized**
  - **QoS-Parameters**
- **Extended-QoS-Filter-Rule**
  - **QoS-ID** = 2
  - **Direction = downstream**
  - **QoS-ObjectType = QoS-Authorized**
  - QoS-Parameters

Example 2
QoS-Parameters Content

- *All 4 of the sub-parameters MUST be included in the TMOD parameter. The TMOD parameter can be set to describe the traffic source. If, for example, TMOD is set to specify bandwidth only, then set r = peak rate = p, b = large, m = large. As another example if TMOD is set for TCP traffic, then set r = average rate, b = large, p = large.*

```
 +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|1|0|0|0|            1              |r|r|r|r|         4          |
 +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|   TMOD Rate-1 [r] (32-bit IEEE floating point number)         |
 +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|   TMOD Size-1 [b] (32-bit IEEE floating point number)         |
 +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|   Peak Data Rate-1 [p] (32-bit IEEE floating point number)    |
 +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|   Minimum Policed Unit-1 [m] (32-bit unsigned integer)        |
 +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
```

- If the uplink and the downlink bandwidth is identical then only one QoSBlob-Group AVP is needed.