



To Camara QoD Working Group

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Current Camara QoD

```
POST /qos-latency-senf/v1/sessions
{

"ueAddr": "152.190.161.1",

"asAddr": "192.176.1.84",

"uePorts": "45342",

"asPorts": "8082",

"protocolIn": "TCP",

"protocolOut": "TCP",

"qos": "LOW_LATENCY",

"notificationUri": "http://as.com/notifications"
}
```

3GPP NEF AsSessionWithQoS

```
POST /3gpp-as-session-with-qos/v1/{afId}/subscriptions {
    "ueIpv4Addr": "152.190.161.1",
    "flowInfo": [
    {
        "flowDescriptions": [
        "permit in 6 from 152.190.161.1 45342 to 192.176.1.84 8082",
        "permit out 6 192.176.1.84 8082 to 152.190.161.1 45342"
    ]
    }
    ],
    "qosReference": "LOW_LATENCY",
    "notificationDestination": "http://camara-layer.com/notifications"
}
```

<u>Issues</u>



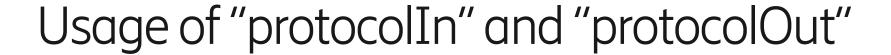
- Clarify the concepts of "protocolIn" and "protocolOut"
 - Please clarify the scenario to designate different protocols for uplink and downlink in a flow
- Weak forward compatibility to the known 3GPP features (e.g., Ethernet flows and external App ID)
- Lose the flexibility to define multiple flows in a QoD session (3GPP AsSessionWithQos API provides this flexibility)

IPFilterRule

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- Existing 3GPP Specifications
 - Use the IPFilterRule definition (e.g., RFC 6733, Diameter Base Protocol)
 - Text-based format aligned to ipfw(8) from FreeBSD
 - Example: "permit in 6 from 152.190.161.1 45342 to 192.176.1.84 8082"

```
IPFilterRule filters MUST follow the format:
     action dir proto from src to dst [options]
                  permit - Allow packets that match the rule.
      action
                  deny - Drop packets that match the rule.
                   "in" is from the terminal, "out" is to the
     dir
                   terminal.
                  An IP protocol specified by number. The "ip"
      proto
                  keyword means any protocol will match.
     src and dst <address/mask> [ports]
                  The <address/mask> may be specified as:
                              An IPv4 or IPv6 number in dotted-
                              quad or canonical IPv6 form. Only
                             this exact IP number will match the
                              rule.
```





- The Camara QoD API allows API invoker to define a QoS Profile to selected IP flow(s)
- Conceptually, an IP flow can be described by a 5-Tuple: Client IP, Server IP, Protocol, Client Port and Server Port
 - TCP (6) is a bi-directional protocol on the same socket pairs
 - UDP (17) can be used uni-directional or bi-directional on the same socket pair
- Question:
 - Since current Camara QoD API only allows to define a single IP flow,
 - Why there are two protocol parameters ("protocolIn" and "protocolOut") needed in one IP flow?
 - And how are they set?

```
"ueAddr": "152.190.161.1",

"asAddr": "192.176.1.84",

"uePorts": "45342",

"asPorts": "8082",

"protocolIn": "TCP",

"protocolOut": "TCP",

"qos": "LOW_LATENCY",

"notificationUri": "http://as.com/notifications"
```

FlowInfo in 3GPP

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- "flowInfo" (for IP flows) parameter in 3GPP AsSessionWithQos API may contain 1 or more IP flows
- Each IP flow shall contain at least 1 and maximum 2 IPFilterRules
 - 1 for uplink and 1 for downlink
- Example:





		,	subscribe to.		
NOT	E 1: Prop	Properties marked with a feature as defined in subclause 5.14.4 are applicable as described in			
	subclause 5.2.7. If no features are indicated, the related property applies for all the features.				
NOT	flow i Ether	nformation shall be provided the flow information shall be the flow information (if EthC	" or "macAddr" shall be included. If ipvoling and the Approvided and the Approvided. If the Appld feature is supported or External Apple (approximately) or External Apple (approximately).	ppld feature is not sup rted, one of IP flow info	ported, ormation,
		property is only applicable for			
NOT	NOTE 4: The attributes "altQoSReferences" and "altQosReqs" are mutually exclusive. Of the two, only the att				
	"altQoSReferences" may be provided if the attribute "qosReference" is provided, while only the attribute			attribute	
	"altQ	osReqs" may be provided if	he attribute "qosReference" is not prov	ided.	

* Source: 3GPP TS 29.122





Improved Camara QoD

```
POST /qos-latency-senf/v1/sessions
  "ueAddr": "152.190.161.1",
  "ipFlowInfos": [
      "flowId": 1,
      "flowDescriptions": [
          "direction": "BIDIRECTION",
          "protocol": "TCP",
          "ueIpAddr": "152.190.161.1",
          "uePorts": [
           45342
          "remoteIpAddr": "192.176.1.84",
          "remotePorts": [
            8082
      "flowId": 2,
      "flowDescriptions": [
          "direction": "BIDIRECTION",
          "protocol": "TCP",
          "ueIpAddr": "152.190.161.1",
          "uePorts": [
           45343
          "remoteIpAddr": "192.176.1.85",
          "remotePorts": [
            8083
  "qos": "LOW LATENCY",
  "notificationUri": "https://as.com/notifications",
```

3GPP NEF AsSessionWithQoS

```
POST /3qpp-as-session-with-gos/v1/{afId}/subscriptions
 "ueIpv4Addr": "152.190.161.1",
 "flowInfo": [
   "flowId": 1,
   "flowDescriptions": [
   "permit in 6 from 152.190.161.1 45342 to 192.176.1.84 8082",
    "permit out 6 192.176.1.84 8082 to 152.190.161.1 45342"
   "flowId": 2,
   "flowDescriptions": [
   "permit in 6 from 152.190.161.1 45343 to 192.176.1.85 8083",
    "permit out 6 192.176.1.85 8083 to 152.190.161.1 45343"
 "gosReference": "LOW LATENCY",
 "notificationDestination": "http://camara-layer.com/notifications"
```

