UE IP Address and Ports in QoD
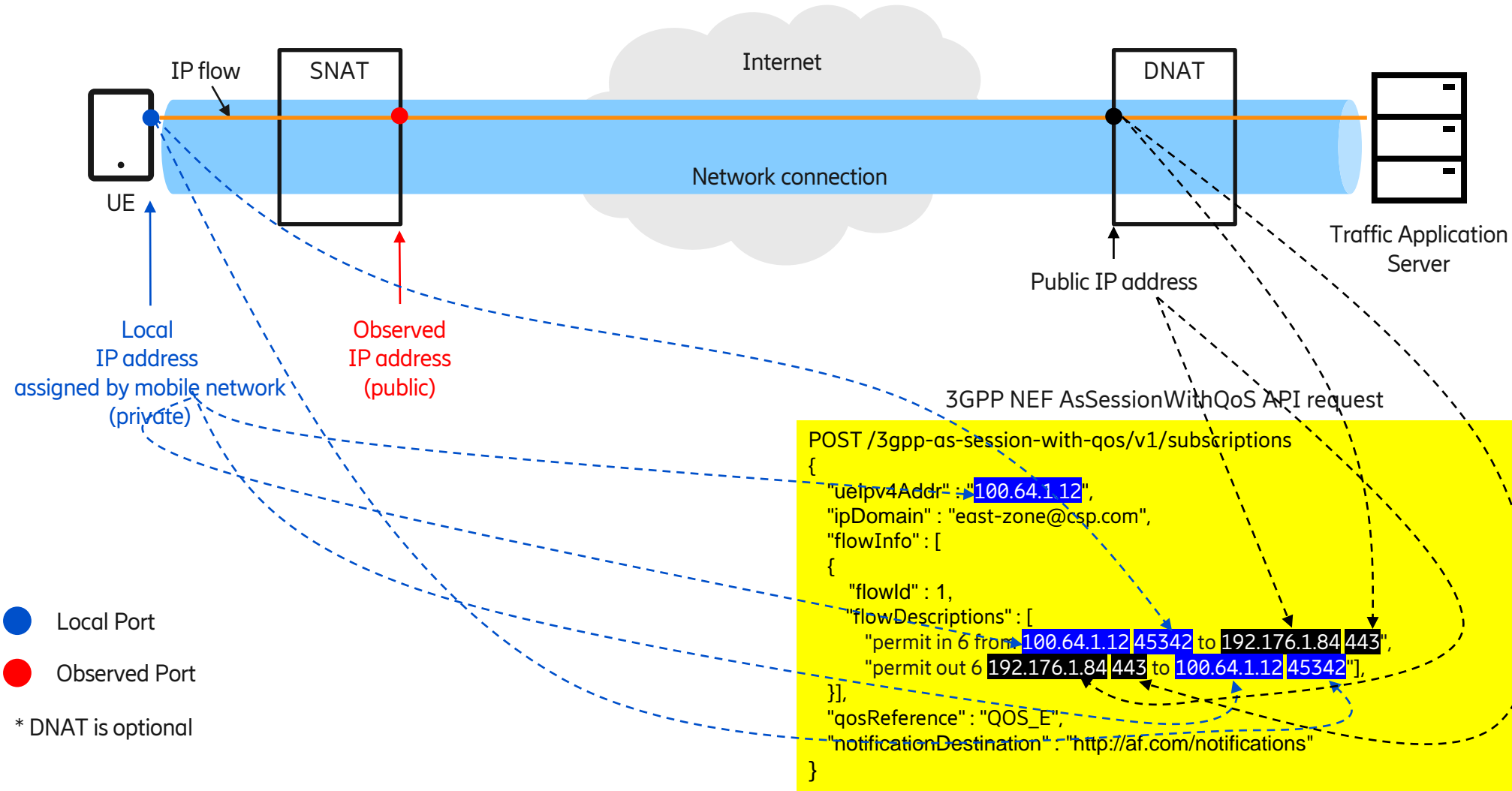
To Camara QoD Working Group
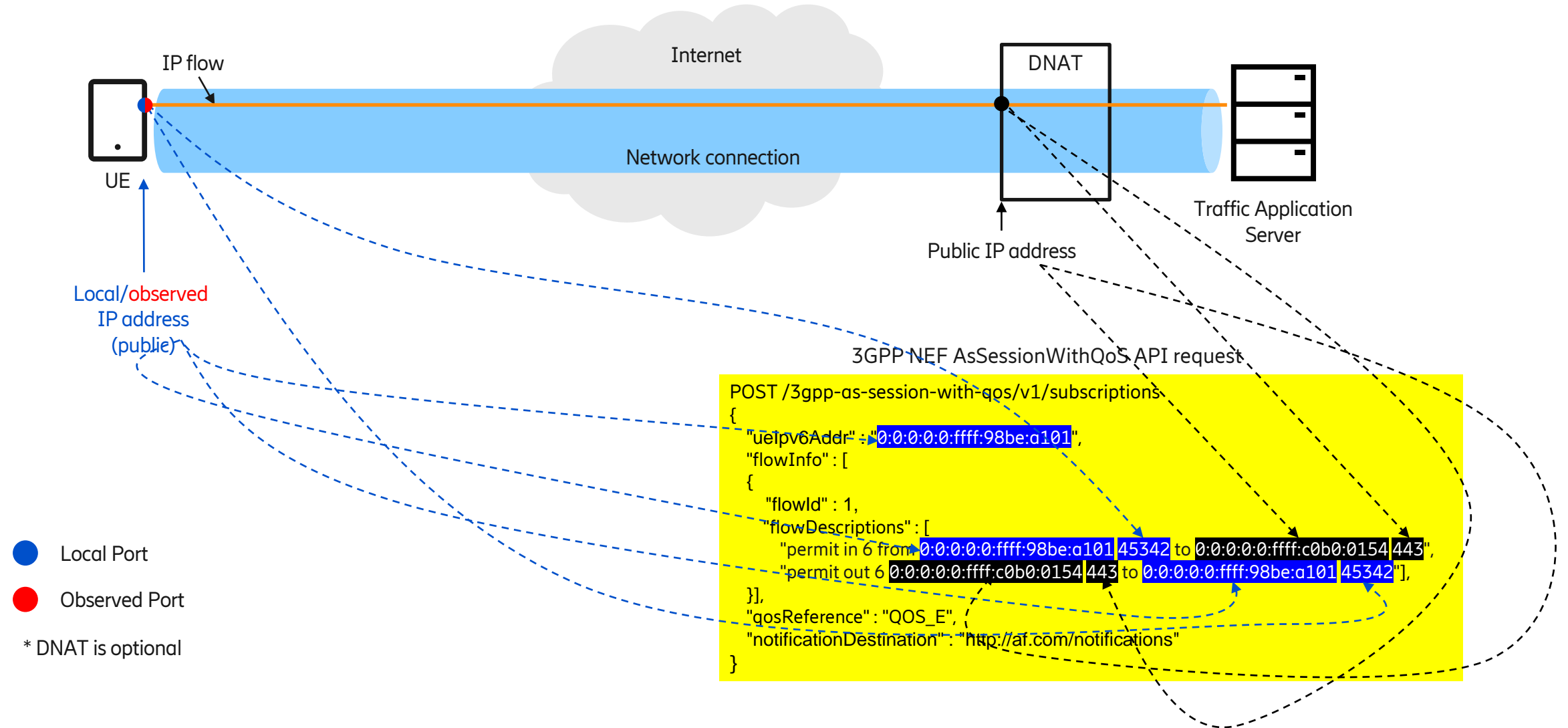
Emil Zhang   Ericsson

Concepts (1/3)

Concepts (2/3)

3GPP NEF AsSessionWithQoS API request

POST /3gpp-as-session-with-qos/v1/subscriptions
{
    "ueIpv4Addr" : "100.64.1.12",
    "ipDomain" : "east-zone@csp.com",
    "flowInfo" : [
    {
        "flowId" : 1,
        "flowDescriptions" : [
        "permit in 6 from 100.64.1.12 45342 to 192.176.1.84 443",
        "permit out 6 192.176.1.84 443 to 100.64.1.12 45342"],
    }],
    "qosReference" : "QOS_E",
    "notificationDestination" : "http://af.com/notifications"
}

Concepts (3/3)

Internet

DNAT

Network connection

UE

IP flow

Traffic Application Server

Public IP address

Local/observed IP address (public)

3GPP NEF AsSessionWithQoS API request

```
POST /3gpp-as-session-with-qos/v1/subscriptions
{
    "ueIpv6Addr" : "0:0:0:0:0:ffff:98be:a101",
    "flowInfo" : [
    {
        "flowId" : 1,
        "flowDescriptions" : [
        "permit in 6 from 0:0:0:0:0:ffff:98be:a101 45342 to 0:0:0:0:0:ffff:c0b0:0154 443",
        "permit out 6 0:0:0:0:0:ffff:c0b0:0154 443 to 0:0:0:0:0:ffff:98be:a101 45342"],
    }],
    "qosReference" : "QOS_E",
    "notificationDestination" : "http://af.com/notifications"
}
```
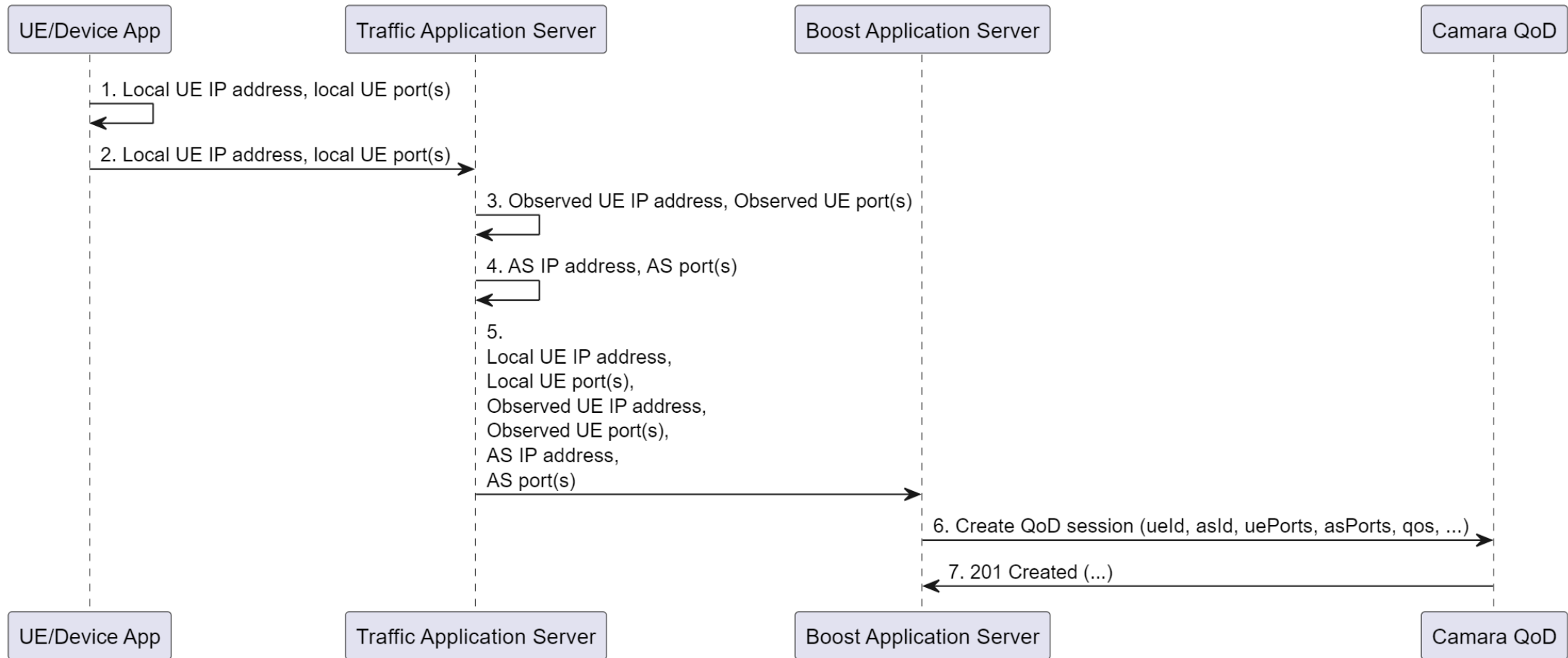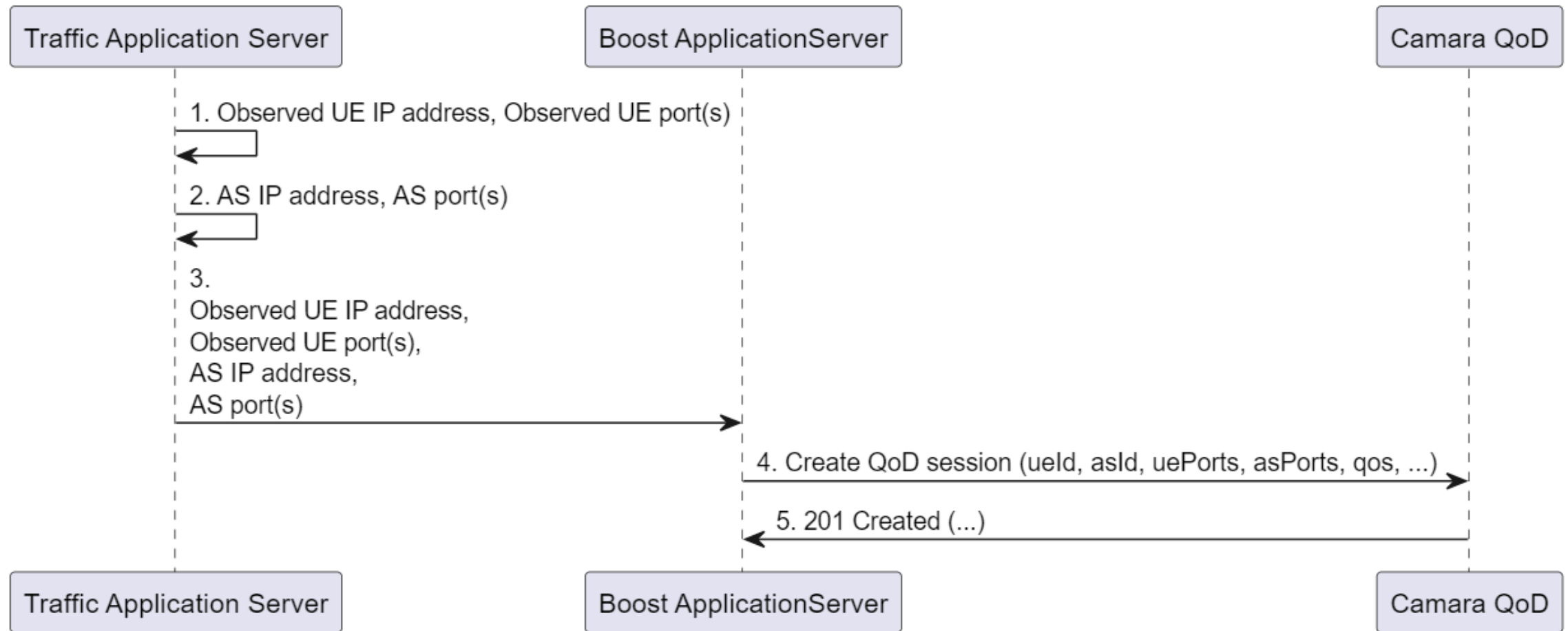
● Local Port

● Observed Port

* DNAT is optional

2 scenarios to collect QoD information
Device-assisted QoD Boost

2 scenarios to collect QoD information
Non-device-assisted QoD Boost

Think as a developer

Where to obtain	Information	Used for
UE/Device App	Local IP address (assigned by mobile network)	• Flow descriptions • PDU session identification
UE/Device App	Local UE port(s)	• Flow descriptions
Traffic Application Server	Observed UE IP address (observed from Traffic Application Server)	• PDU session identification
Traffic Application Server	Observed UE port(s) (observed from Traffic Application Server)	• PDU session identification

- As a developer, I only need to differentiate between the IP address is assigned to the UE and the IP address observed by the Traffic Application Server (no need to differentiate between public or private, no need to understand mobile network topology)
- As a developer, I do know where the information comes from (i.e., Device App or Traffic Application Server).
  - From Device App, I obtain local UE IP address + local UE port(s)
  - From Traffic Application Server, I obtain observed UE IP address + observed UE port(s)
    - The observed UE IP address + observed UE port(s) are always together
- As a developer, I shall not know how the information will be used

Proposal (1/2)

- Ericsson agree and appreciate the technical details Vodafone initiated in [issue #34](#)

- Ericsson just try to propose another alternative of the API design to address this issue
  - Introduce concepts
    - Local UE IP address (assigned by mobile network)
    - Local UE ports
    - Observed UE IP address (observed from Traffic Application Server)
    - Observed UE ports (observed from Traffic Application Server)
  - Introduce 'Local UE IP address' & 'Observed UE IP address' to 'UE ID' datatype
  - Introduce a new 'UE Ports' datatype includes 'Local UE ports' and 'Observed UE ports'

Proposal (2/2)

```yaml
    UeId:
      type: object
      properties:
        externalId:
          $ref: "#/components/schemas/ExternalId"
        msisdn:
          $ref: "#/components/schemas/MSISDN"
        localIpAddr:
          oneOf:
            - $ref: "#/components/schemas/Ipv4Addr"
            - $ref: "#/components/schemas/Ipv6Addr"
        observedIpAddr:
          oneOf:
            - $ref: "#/components/schemas/Ipv4Addr"
            - $ref: "#/components/schemas/Ipv6Addr"
      description: User equipment identifier
```

```yaml
    UePorts:
      type: object
      properties:
        localPorts:
          $ref: "#/components/schemas/PortsSpec"
        observedPorts:
          $ref: "#/components/schemas/PortsSpec"
```